

**TECHNICAL MANUAL**

**USAF TECHNICAL ORDER NUMBERING SYSTEM**

Prepared By: Automated Technical Order System (ATOS)

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## CHAPTER 1

### INTRODUCTION

#### 1-1 PURPOSE AND SCOPE.

1-1.1 This technical order (TO) describes the procedures and techniques employed to assign TO numbers to technical data used to operate, install, maintain, inspect, perform procedural functions on, and modify Air Force weapons systems and equipment. Numbering techniques are not included in this TO for TO numbering assignments made according to waivers or deviations from established procedures.

1-1.2 Chapter 42 of this TO provides an alphabetical listing of equipment names cross-referenced to appropriate TO number groups as they appear in the Air Force TO Catalog. Basic names of equipment systems and components are in bold print. Variations or breakdowns of the equipment follow in small print. This listing does not indicate the status of individual publications. The only authorized sources for determining the status and availability of individual publications are the JCALS Pub Index and the TO Catalog.

1-1.3 Recommendations or suggestions concerning this document should be submitted by AFTO Form 22 or the JCALS Recommend a TM Change process to OC-ALC/TILUB, 7851 Arnold St Ste 201, Tinker AFB OK 73145-9147.

#### 1-2 REFERENCES.

Directives identified below provide policy, guidance and references used to make TO number assignments to approved TO data.

1-2.1 AFMAN 23-110, Volume 9, Security Assistance Program Procedures.

1-2.2 AFPD 21-3, Technical Orders.

1-2.3 AFMCI 21-301, Air Force Materiel Command Technical Order System Implementing Policies.

1-2.4 AFMCMAN 21-1, Air Force Materiel Command Technical Order System Procedures.

1-2.5 AFMCMD 406, Oklahoma City Air Logistics Center (OC-ALC).

1-2.6 JCALS Desktop Instructions (DI) (URL: [http://www.pdsm.wpafb.af.mil/toprac/jcals\\_di.htm](http://www.pdsm.wpafb.af.mil/toprac/jcals_di.htm)).

1-2.7 MIL-STD-196, Joint Electronics Type Designation System.

1-2.8 Department of the Army Pamphlet (DA PAM) 25-30, Consolidated Index of Army Publications and Blank Forms.

1-2.9 DoD 4120.15-L, Model Designation of Military Aerospace Vehicles.

1-2.10 DoD 5105.38-M, Appendix D, Security Assistance Management Manual.

1-2.11 TO 00-5-1, AF Technical Order System.

1-2.12 TO 00-5-2, Technical Order Distribution System.

1-2.13 TO 00-5-15, AF Time Compliance TO System.

1-2.14 D086, Mission Workload Assignments System.

1-2.15 The Air Force TO Catalog Application (CD-ROM 0-1-CD-1 or Internet (URL: <http://www.pdsm.wpafb.af.mil/toprac/catalog.htm>).

1-2.16 Appropriate military specifications and standards.

#### 1-3 RESPONSIBILITIES.

1-3.1 TOs are published under the authority of the Secretary of the Air Force according to AFPD 21-3.

1-3.2 The Air Force Materiel Command (AFMC) is responsible to Headquarters, US Air Force, for staff surveillance over TO System operations and development of system policies and procedures.

1-3.2.1 The Directorate of Engineering (EN) is responsible for developing and coordinating Air Force TO System policy, and for implementing AFMC TO policies.

1-3.2.2 The Integrated Digital Environment (IDE) Program Office, MSG/MMF, is responsible for developing and coordinating AF and AFMC TO System practices and procedures.

1-3.3 The USAF Technical Order Systems Section, (OC-ALC/TILUB) is responsible for developing TO numbering procedures, assigning TO numbers (AFMCI 21-301, AFMCMAN 21-1 and the JCALS DI). A description of special catalogues for specified TO categories is provided in paragraph 1-4.6.

1-3.4 Requests for deviations from established TO numbering procedures, including proposals for new TO numbering patterns, must be coordinated through OC-ALC/TILUB. When opinions differ between TO managers and the TO numbering specialists regarding the application of numbering principles, the numbering specialists will determine the TO number assignment. If a TO number assignment by OC-ALC/TILUB is not acceptable to the TO Manager and agreement cannot be reached through further exchange of technical information, the TO Manager will refer the problem to MSG/MMF for review and resolution.

#### 1-4 GENERAL.

1-4.1 TOs are procured from contractors or prepared in-house by Air Force activities. The Single Manager (SM) responsible for a weapon system or commodity is also responsible for TOs to support that system or item. SMs will assign TO Managers to carry out this responsibility. Only the responsible TO Manager is authorized to request TO number assignment. Only OC-ALC/TILUB is authorized to approve and assign TO numbers. Publications not authorized by TO 00-5-1 will not be numbered in the TO system without prior approval by MSG/MMF.

1-4.2 TO Managers complete the TO Numbering Request Screens in JCALS and submit them to OC-ALC/TILUB for TO number approval. Contractors and TO Managers not on-line with JCALS may continue to use the AFMC Forms 203, TO Numbering, Indexing and Control Record. Instructions on completing the JCALS screens are in the JCALS Desktop Instructions (DI). Procedures for completing and submitting the forms are in AFMCMAN 21-1. The screens and form are the primary sources for establishing a record in JCALS.

1-4.3 Most TOs are prepared according to military standards and performance specifications which prescribe the contents of each TO type. This standardized approach facilitates the uniform assignment of descriptive TO numbers. However, there is increased emphasis on purchasing Commercial Off-The-Shelf (COTS) manuals. The lack of a standard format between COTS manuals complicates the grouping of like data into established TO numbering patterns. To maintain stability in the numbering system, OC-ALC/TILUB and MSG/MMF provide guidance to TO Managers and develop, coordinate and implement new numbering patterns as required.

1-4.4 TO numbers categorize TO data by Air Force technical systems and equipment, provide sequences for filing, and furnish a means for users to identify and establish requirements for distribution of TOs. The structure of the TO number identifies a category of Air Force systems or commodities, a design or series of equipment within a system or commodity category, an equipment sub-series within an equipment series, the type of data included in the TO, and the medium on which the TO is distributed.

1-4.5 TO categories are not numbered in a consecutive sequence. Currently, 42 categories are identified between Category 0 and Category 71. Category 0 is assigned to the TO catalog and cross-reference table TOs. Category 00 is assigned to Methods and Procedures TOs (MPTOs). Categories 1 through 22 are assigned to airborne systems for aircraft, missiles, aerospace vehicles, and related airborne equipment and component assemblies. Exceptions are the photographic equipment in category 10 and the armament equipment in category 11. Categories 31 through 51 are assigned to Air Force ground systems and related equipment. Category 60 is assigned to Explosives Ordnance Disposal (EOD) TOs, and Category 71 is assigned to the Country Standard TO (CSTO) index used by Foreign Military Sales/Security Assistance Program (FMS/SAP) customers.

1-4.6 The TO Catalog Application lists current TOs and changes since the last publication of the application. It is published periodically on the Internet (limited to “\*.mil” access) and on CD-ROM (TO 0-1-CD-1). It includes all active TOs in Categories 0 through 51. A special, releasable “XX” version of the Air Force TO Catalog is provided for FMS/SAP customers. Other special indexes and responsibilities are as follows:

1-4.6.1 The Nuclear Weapons Product Support Center, AAC/WNL, Kirtland AFB NM, is responsible for numbering, indexing and distributing Nuclear Weapons TOs. These TOs are announced in TO 0-1-11N and TO 0-1-11N-C.

1-4.6.2 AAC/WNL also numbers and indexes Nuclear Weapons Explosive Ordnance Disposal (NW-EOD) TOs. These TOs are included in TO 0-1-11N.

1-4.6.3 The AF EOD Liaison Office, Det 63 AAC/CC, Naval EOD Technology Division, Indian Head Maryland, numbers and indexes Non-Nuclear Explosive Ordnance Disposal (EOD) TOs on CD-ROM as part of the Automated EOD Publications System (AEODPS), published quarterly.

1-4.6.4 The Security Assistance TO Data System (SATODS), managed by OC-ALC/TILUF, Tinker AFB OK, provides a special Category 71 index that lists CSTOs used only by FMS/SAP.

1-4.7 A close working relationship is needed between TO numbering specialists in OC-ALC/TILUB and TO managers to avoid inaccurate TO number assignments. Numbering specialists must verify and approve TO numbers requested by TO managers, using information provided in JCALS entry screens or on AFMC Forms 203. If the information is misleading, insufficient, or in error, the numbering specialists could approve an incorrect TO number. This error could have adverse effects on anyone attempting to identify and obtain TOs to support operations and maintenance. One major impact of an incorrect TO number assignment is the sizeable funds expenditure required to correct the number, especially when not only must the TO involved be renumbered, but other technical data that contains cross references to the incorrect TO number must be changed as well.

1-4.8 In addition to correctly completing JCALS screens and AFMC Forms 203, TO managers provide assistance to numbering specialists by suggesting TO numbers, identifying categories and equipment, and furnishing telephone and written communications that aid in categorizing specific TO data. TO numbering specialists rely heavily on the technical competence of TO managers and associated activities located at each ALC and Product Center.

## 1-5 JOINT COMPUTER-AIDED ACQUISITION AND LOGISTICS SUPPORT (JCALS) JOINT TECHNICAL MANUAL SYSTEM (JTMS).

1-5.1 The JCALS JTMS is the multi-service system which replaced the previous G022 system in 1999. It is currently deployed at the ALCs, and will eventually provide direct on-line connectivity from every base into the management system to allow TO ordering, submission of improvements, TO account status, and even on-line distribution of digital TOs to the base. JCALS enables TO Managers to establish records on each TO, assign TO numbers (with TILUB approval) and input TO data into the JCALS Pub Index.

1-5.2 In addition to the standard TO number system described below, JCALS also assigns “Publication Stock Numbers (PSNs)” to each TO and TO increment as they are indexed. See paragraph 1-29 for a guide to interpreting TO PSNs.

## 1-6 TECHNICAL ORDER NUMBERING THEORY.

1-6.1 The basic task of TO numbering specialists is to group similar TO data into categories, systems, equipment series and equipment sub-series by means of an identifying numeric or alpha-numeric TO number.

1-6.2 TO Categories. TOs are grouped numerically by type of equipment covered by the TO Category.

- 0 TO Catalog, Indexes and Cross-Reference Table
- 00 General Technical Orders
- 1 Aircraft
- 2 Airborne Engines and Associated Equipment
- 3 Aircraft Propellers and Rotors
- 4 Aircraft Landing Gear

- 5 Airborne Instruments
- 6 Aircraft and Missile Fuel Systems
- 7 Airborne Engine Lubricating Systems
- 8 Airborne Electrical Systems
- 9 Aircraft and Missile Hydraulic, Pneumatic and Vacuum Systems
- 10 Photographic Equipment
- 11 Armament Equipment
- 12 Airborne Electronic Equipment
- 13 Aircraft Furnishings and In-Flight Feeding Equipment, Cargo Loading, Aerial Delivery and Recovery Equipment, Aircraft Fire Detection and Extinguishing Equipment
- 14 Deceleration Devices, Personal and Survival Equipment
- 15 Aircraft and Missile Temperature Control, Pressurizing, Air Conditioning, Heating, Ice Eliminating and Oxygen Equipment
- 16 Airborne Mechanical Equipment
- 21 Guided Missiles
- 22 Aerospace Vehicles
- 31 Ground Electronic Equipment
- 32 Standard and Special Tools
- 33 Test Equipment
- 34 Shop Machinery and Shop Support Equipment
- 35 Ground Handling, Support, Air and Missile Base Operating Equipment
- 36 Vehicles, Construction and Material-Handling Equipment
- 37 Fuel-, Oil- and Propellant-Handling Equipment
- 38 Non-aeronautical Engines
- 39 Watercraft Equipment
- 40 Commercial Air-Conditioning, Heating, Plumbing, Refrigerating, Ventilating and Water Treating Equipment
- 41 Subsistence and Food Service Equipment
- 42 Coating, Cleaning and Sealing Compounds and Fuels, Gases, Lubricants, Chemicals and Materials
- 43 Simulator and Training Devices
- 44 Common Hardware Equipment
- 45 Railroad Equipment
- 46 Office, Duplicating, Printing and Binding Equipment
- 47 Agriculture Equipment
- 49 Optical Instruments, Timekeeping and Navigational Equipment
- 50 Special Services Equipment
- 51 Automatic Test Systems
- 60 Explosive Ordnance Disposal Procedures
- 71 International Logistics (Security Assistance Programs)

1-6.3 Each category of TO data has its own TO numbering pattern. Sufficient flexibility exists within the total numbering system to allow for expansion or contraction within numbering parameters, yet maintain standard application of numbering patterns within each category.

1-6.4 TO numbers are composed of groups separated by dashes, and each group is further divided into parts. The number of parts within any group varies according to the TO data being numbered in a specific category. Each part of a group consists of one or more numeric characters or one or more alpha characters. The numbering patterns used to identify TO data in each category are outlined in Chapters 2 through 41.

1-6.5 A total of seven groups may be used in the TO numbering pattern (see table 1-1). TO data is identified, in most categories, by using only the first three or four basic groups. The remaining groups are primarily used to extend the TO number to identify specific sections of sectionalized TOs; supplemental manuals; and supplement, checklist and work-card sequence numbers.

Table 1-1. Guidelines for TO Numbering

GROUP	MAXIMUM PARTS IN THIS GROUP	MAXIMUM POSITIONS	MAXIMUM ALPHANUMERIC CHARACTERS AND PROGRAM SEQUENCE
1	3	9	NNNNAANN or AAAANNAAA
2	6	21	NNNNNAAAAAANNNNAAAAANA or AAAAANNNNNNNAAAAANNNNAN
3	3	10	NNNNNAAAANN or AAAAANNNA
4	3	11	NNNNNAAAANN or AAAAANNNA
5	3	7	NNNAAAN or AAANNNA
6	2	5	NNNAA or AAANN
7	1	2	AA or NN

1-6.6 The five major elements of information considered most essential in assigning TO numbers are discussed below:

1-6.6.1 Federal Supply Class (FSC). An FSC is assigned to Air Force stocklisted equipment by cataloging specialists. A system or equipment that has not been assigned an FSC is non-stocklisted, and a TO number will normally not be assigned to the related TO data. The FSC identifies a system, sub-equipment and equipment series that can be related to a TO category and equipment series; e.g., FSC 5825 identifies ground radio navigation equipment and relates to TO numbering as follows:

31R4  
31 Ground Electronic Equipment (Category 31)  
R Radio System  
4 Navigation Equipment Series

1-6.6.1.1 FSC 5826 identifies airborne radio navigation equipment and relates to TO numbering as follows:

12R5  
12 Airborne Electronic Equipment (Category 12)  
R Radio System  
5 Navigation Equipment Series

1-6.6.2 Descriptive nomenclature. The nomenclature provided on the JCALS Screens or AFMC Forms 203 supplements the FSC by further defining the system or equipment series. A combination of only the FSC and the descriptive nomenclature can, in many instances, provide the numbering specialist with a complete TO number. For example, if FSC 5826, airborne radio navigation equipment, is provided in conjunction with an equipment nomenclature reading "Maintenance Manual -- Radio Set, Type AN/ARN-24," the following TO number may be assigned:

12R5-2ARN24-2  
12 Airborne Electronic Equipment (Category 12)  
R Radio system  
5 Navigation Equipment Series  
2 Numeric 2 indicates the Equipment is JETDS Nomenclatured  
ARN JETDS Nomenclature that indicates:  
A - Airborne  
R - Radio  
N - Navigation  
24 Radio Model 24  
2 Maintenance Manual

1-6.6.3 **Functional system.** The functional system furnished on the JCALS screens or AFMC Form 203 is the next higher echelon of equipment or system for the equipment covered by the subject TO. The functional system identifies an equipment series if the TO being numbered covers an equipment sub-equipment series. The functional system identifies a system if the TO being numbered covers an equipment series.

1-6.6.4 **Part Number.** A TO number will not normally be assigned to equipment without a part number, model number or other identifier. Most equipment will have a part number which is included in the TO title. If the equipment is not already listed in the JCALS database, it must be entered by the Equipment Specialist (ES) using JCALS "Acquisitions" screens. This data is then extracted for the part number-to-TO number cross-reference section of the TO catalog.

1-6.6.5 **AN Nomenclature.** If the AN nomenclature appears in the title lines of a TO, it must be reflected in the TO number. Air Force personnel request AN nomenclatures using a DD Form 61 submitted to the AFMC Logistics Support Office (AFMC/LSO-LGIS) at Battle Creek Michigan for approval. For further information concerning this system contact the LSO at DSN 932-5169.

## 1-7 TECHNICAL ORDER NUMBERING PROCEDURES.

TO Managers requesting TO number assignment submit JCALS screens or AFMC Forms 203 according to procedures provided in the JCALS DI or AFMCMAN 21-1. The TO numbering specialist will comply with the procedures and guidance provided in the following paragraphs when assigning TO numbers to approved technical data.

1-7.1 Compare the Federal Stock Class (FSC), Material Management Aggregate Code (MMAC), and D086, Mission Workload Assignments System, to determine if the requesting ALC or PC is responsible for indicated FSC or MMAC. Review the title of the FSC to determine the appropriate TO Category.

1-7.2 Using the FSC and equipment nomenclature, determine the appropriate TO category, equipment series and sub-series. For numbering General TOs, see paragraphs 1-22 and 1-23.

1-7.3 Once the category, series and sub-series have been determined, use the appropriate chapter of this TO for proper numbering patterns within that category.

## 1-8 IDENTIFYING TYPES OF TECHNICAL ORDERS.

1-8.1 Each of the various types of TOs: operations manuals, inspection and maintenance instructions, Illustrated Parts Breakdowns (IPBs), etc. is represented in a TO number by a designated number. These designated numbers are standard within a category, but are not necessarily standard among categories. An example is a field maintenance manual, which is represented by "-6" in category 2, but is represented by "-2" in other categories. Numbering specialists should consult the listings of designated numbers for the appropriate category before assigning a number to represent a specific type of TO.

1-8.2 The type of TO is identified in the last basic group of the TO number. Normally this is the third or fourth group; however, in some categories it is necessary to identify an equipment sub-series in the TO number. In these categories, the type of TO will be identified in the fifth group.

## 1-9 NUMBERING RELATED TECHNICAL ORDERS.

1-9.1 Chapters 2 through 41 include complete lists of numbers authorized to identify specific types of TOs in each TO category. The following list provides brief definitions of dedicated numbers used in all TO categories, except categories 1, 21 and 22. (Additional numbers are required in categories 1, 21, and 22 to identify distinct types of TO data.)

- 01- List of Applicable Publications (LOAP)
- 06- Work Unit Code Manuals
- 1- Operating Instructions
- 2- Organizational, Intermediate, Field Maintenance, or Service Manuals
- 3- Depot Maintenance, Overhaul, Schematic, or Wiring Diagram Manuals
- 4- Parts List, Parts Breakdown or Illustrated Parts Breakdown Manuals
- 6- Inspection Requirement Manuals
- 7- Installation and Installation Test Procedure Manuals
- 8- Test Procedures, User Manuals, Reference Manuals, Programmed Test Manuals, or Software-Related Instruction Manuals
- 9- Alignment Instruction Manuals

## NOTE

The number -5 is used to identify a wide variety of types of TOs, depending on the applicable TO category. Refer to paragraph 1-16 for numbering abbreviated TOs and to paragraph 1-18 for numbering TCTOs.

1-9.2 TO data pertaining to the same specific equipment, but contained in more than one type of TO listed in subparagraph 1-9.1 above, is considered to be compatible and, therefore, is numbered together by using the same basic TO number configuration. An operations manual, a maintenance manual and a parts breakdown manual that are compatible will be numbered in the same TO number series, like those shown in the following examples:

36A12-13-18-1 OPERATIONS MANUAL  
 36A12-13-18-2 MAINTENANCE MANUAL  
 36A12-13-18-4 Parts Breakdown

1-9.3 Equipment modifications cause changes in TO data; and new TOs are issued to reflect the changes. The new or modified TO data does not always replace existing TOs; therefore, it must be identified in the TO number series that is already established. This identification is accomplished by determining the specific type of TO to be numbered and adding 10 to the designator number (e.g., an operations manual, normally a "-1," would become a "-11"). This addition provides another sequence for numbering slightly different TO data, pertaining to the same equipment, in the same TO number series. Any subsequent operations manuals will be numbered -21, -31, -41, -51, etc. This 10-number sequence within a TO number series preserves the integrity of the -1 designated number that identifies operations manuals; and it also provides a method of grouping compatible TOs in the same sequence. This same sequence-numbering procedure will be applied to various other types of TOs as required.

1-9.4 Different types of TOs that relate to the same specific equipment, but contain data that is not compatible, will be numbered with the same basic TO number, but will not be numbered in the same 10-number sequence. For example, an operating instructions manual pertaining to specific equipment and a maintenance manual pertaining to a modification of the same equipment are not compatible. The operating instructions manual will receive a basic TO number ending in -1; and the maintenance manual will receive a TO number ending in -12 (in the subsequent 10-number sequence). The same basic TO number will be used (e.g., 10E5-2-14-1 and 10E5-2-14-12).

1-9.5 Two TOs of the same type will not be numbered in the same 10-number sequence of a TO number series. An intermediate maintenance manual and a service manual (each normally numbered -2) cannot be numbered in the same 10-number sequence. One of the manuals will receive a basic TO number ending in -2 and the other will receive the same basic TO number, but will end in -12 (from the following 10-number sequence).

1-9.6 If a TO is too large for efficient use, it may be sectionalized by dividing it into logical equipment segments of two or more sections. Each of the sections will receive the same 10-number sequence designator for the type of TO. A dash will be added and will be followed by a consecutive serial number to identify each section (e.g., 12P6-4-14-3-1, 12P6-4-14-3-2, 12P6-4-14-3-3, 12P6-4-14-3-4). Sectionalizing is further described in paragraph 1-14.

#### 1-10 NUMBERING FUNCTIONALLY ORIENTED MAINTENANCE MANUALS.

Functionally oriented maintenance manuals (FOMMs) will be numbered with a -2, to designate the type of TO, as described in paragraph 1-9 and the appropriate section for the category involved. Section numbers may be assigned according to paragraph 1-14, if appropriate.

#### 1-11 NUMBERING MAINTENANCE DEPENDENCY CHARTS.

Maintenance dependency charts will be numbered with a -2, like maintenance TOs.

#### 1-12 NUMBERING CALIBRATION AND MEASUREMENT SUMMARIES TECHNICAL ORDERS.

Calibration and Measurement Summaries TOs will be numbered in the appropriate categories and TO series for the aerospace systems (aircraft, missile, communications-electronics) to which they apply. Calibration and Measurement Summaries TOs relating to general equipment, if no aerospace systems are identified, will be numbered in category 33K.

**1-13 NUMBERING COMBINED TYPES OF TECHNICAL ORDERS.**

For a TO that combines TO data relating to more than one type of TO, the designated number of the first type of TO identified in the title will be assigned. Thus, a TO bearing the title "Operations, Maintenance, and IPB" will be numbered "-1" because operations is the first type of TO identified in the title; a TO bearing the title "Overhaul and IPB" will be numbered "-3" because overhaul is the first type of TO identified in the title. This numbering procedure will be used with any combination of types of TOs and with CDs containing multiple TO types.

**1-14 NUMBERING SECTIONALIZED TECHNICAL ORDERS.**

When TO data is sufficiently large and has natural divisions in tasks or equipment breakout which make several smaller manuals more usable and more manageable, a separate TO number is assigned for each section. One example that meets this criterion is aircraft maintenance data, which contains many detailed tasks. Sectionalized documents normally relate to the same system or equipment and are the same type of TO. Different types of TOs will not be sectionalized together in the same serial number sequence. After numbering specialists have assigned the basic TO number and determined that sectionalization is necessary, an additional group will be added to the basic TO number. This new group will identify the section number of a sectionalized TO as in the following examples:

12P3-2ALQ101-32-1		
	32	Maintenance Manual (Last Basic Group of TO Number)
	1	First Section of a Sectionalized Maintenance Manual
12P6-4-14-3-4		
	3	Overhaul Instructions Manual (Last Basic Group of TO Number)
	4	Fourth Section of a Sectionalized Overhaul Instructions Manual
12P3-2ASR5-4-2		
	4	Illustrated Parts Breakdown (Last Basic Group of TO Number)
	2	Second Section of a Sectionalized Illustrated Parts Breakdown Manual

**1-15 NUMBERING TECHNICAL ORDER SUPPLEMENTS, CHANGES, AND PAGE SUPPLEMENTS.**

NOTE

See TO 00-5-1 for restrictions on the use of various types of supplements.

1-15.1 TO supplements are issued to augment or change data in the basic TO. Data in the supplement will normally be incorporated into the basic TO when the next change is issued. TO supplement numbers are assigned by the TO Managers according to established TO policy.

1-15.1.1 A routine supplement is identified by adding one or two alpha characters to the last group of the TO number; e.g., 12P3-2ALA7-3C. The characters A, B, AA through BZ are not used except to designate classified supplements. Unclassified routine supplements will be numbered using the alpha characters C through Z when only one alpha character is required and assigned, or the characters CC through CZ progressing to DC through DZ and so forth to ZZ when two alpha characters are required. The alpha characters I and O are also not used, to prevent confusion with the numeric characters 1 and 0.

NOTE

A classified, routine TO supplement will not be issued if its classification would be higher than that of the basic TO. Rather, the classified supplementing material will be issued and numbered as a supplemental manual (paragraph 1-17). This procedure is necessary to overcome special problems encountered in establishing user requirements and distributing classified TOs.

1-15.1.2 An operational supplement is identified by adding an alpha S to the last group of the TO or Flight Manual Program Publication number. A safety supplement is identified by adding an alpha SS to the last group of the TO/Flight Manual number. A single block of sequential numbers is used to assign both operational and safety supplement numbers.

Examples: 1B-52G-1-1SS-1,  
 1B-52G-1-1S-2,  
 1B-52G-1-1SS-3.



1-15.1.3 The number of a Flight Manual Program (FMP, AFI 11-215) publication safety or operational supplement is used only one time (TO 00-5-1).

1-15.1.4 For other TOs, supplement numbers will restart with "1" after a revision.

1-15.1.5 A Technical Order Page Supplement (TOPS) is identified by adding the alphas TP to the last group of the TO number and adding a serial number (-1, -2, -3, etc.); e.g., 10E5-3-12TP-1.

1-15.1.6 An Identifying Technical Publications Sheet (ITPS) is issued to change or supplement a commercial or contractor publication and will be numbered as a routine supplement (paragraph 1-15.1.2). An ITPS will not be issued solely to add the TO number and date, if these were assigned prior to distribution.

1-15.2 TO changes are numbered 1 through 99, A01 through A99, B01 through B99, etc. The change designator appears on the TO title page, but does not become part of the TO number.

#### 1-16 NUMBERING ABBREVIATED TECHNICAL ORDERS.

Abbreviated TOs, including checklists (CLs), workcards (WCs), etc., are identified by adding the alpha designator to the last group of the TO number and adding a sequential number (-1, -2, -3, etc.) to identify the TO as the first, second, third, etc. in a series.

Examples: 1F-15A-2-10CL1  
31S5-2FYQ45-6WC-2

#### 1-17 NUMBERING SUPPLEMENTAL MANUALS.

A supplemental manual does not stand alone, but must be used in conjunction with another TO. Supplemental manuals may be used to publish classified data while allowing the parent manual to remain unclassified, to publish data provided by a source other than the SM, and/or to publish data in a form other than the parent manual. Supplemental manuals differ from supplements in that they are assigned a separate TO dash number. The TO identification number for supplemental manual is established by adding a serial number to the parent TO number. The first supplemental manual is -1, the second is -2, etc.

Examples: 31S5-2FYQ45-3-1 is a supplemental manual used with 31S5-2FYQ45-3.  
1F-4D-34-1-1-1 is a supplemental manual used with 1F-4D-34-1-1.

#### 1-18 NUMBERING TIME COMPLIANCE TECHNICAL ORDERS.

1-18.1 A time compliance technical order (TCTO) contains technical instructions for the modification or inspection of a specific item of Air Force equipment, or distribution of revised CPIN items. A TCTO may also cause publication of a change or supplement to technical data already established in the TO system. A TCTO is identified by a serial number beginning with the number 501 for the first TCTO issued for the item of equipment, and its basic number indicates data that has already been numbered in the TO system. Since a TCTO may affect more than one type of manual, a type-of-manual designator is not included in the TCTO number. The TCTO serial number replaces the type-of-manual designator in the basic TO number.

Examples: 1F-111A-1254  
16G1-148-501  
21M-LGM30-1030  
31P5-2MPN14-534  
35A2-2-76-501

#### NOTE

When a requirement exists to reactivate a TCTO that has been rescinded, the TCTO will be reinstated with the same TCTO number, but with a current date. The number of an inactive TCTO is never reused for a different modification or inspection.

#### NOTE

If a program was formerly operating outside of the standard Air Force TO numbering policies/procedures, they may request a waiver to continue use of the non-standard formats and avoid the cost of converting existing TOs and TCTOs.

1-18.2 A TCTO supplement is identified by adding an alpha suffix to the TCTO serial number; e.g., 16G1-149-501C.

1-18.3 A TCTO series header includes only those TO number groups necessary to identify the model, type, or part number of a specific item of equipment. Separate series headers are required for each different classification of TCTO to be issued. They usually contain two or three groups.

Examples: 1F-111A[S] (Secret TCTOs)  
16G1-148  
21M-LGM30[C] (Confidential TCTOs)  
31P5-2MPN14  
35A2-2-76

1-18.4 To establish a TCTO series header, the TO Manager submits a JCALS screen or AFMC Form 203 according to the DI or AFMCMAN 21-1. When it is expected that a TCTO covering more than one item of equipment will be forthcoming, a general TCTO series listing will be established at the appropriate level of generality.

Examples:  
1F-1 Applicable to More Than One Fighter Aircraft  
1F-111 Applicable to More Than One Series of F-111 Aircraft  
1F-111A Applicable Only to the A Series of F-111 Aircraft

1-18.4.1 The mission-design-series (MDS) designators assigned to the B-1, H-1, and T-1 aircraft caused necessary exceptions to be made when numbering general TCTO series and general TOs for these three categories of aircraft. Since the aircraft MDS are the same as normally used for system general TCTO series listings, the number zero (0) is used in the second group of the number to designate a TCTO applying to more than one aircraft series.

1-18.4.2 Examples:

1B-0 Applicable to all bomber aircraft.  
1B-1 Applicable to all models of the B-1 aircraft.  
1B-1B Applicable to the B-1B aircraft.  
1H-0 Applicable to all helicopter aircraft.  
1H-1 Applicable to all models of the H-1 helicopter.  
1H-1H Applicable to the H-1 helicopter, model H.  
1T-0 Applicable to all trainer aircraft.  
1T-1A Applicable to the T-1 trainer, model A.

1-18.5 TO Managers request individual TCTO numbers through JCALS, which automatically assigns the next consecutive serial number within the header series. For assignment of TCTO Data Codes, see AFMCMAN 21-1.

#### 1-19 EMERGENCY TECHNICAL ORDER NUMBERING REQUESTS.

Timely submittal of TO numbering requests will minimize the use of emergency procedures. In the event of a work stoppage or other justified emergency, the TO Manager will call OC-ALC/TILUB to arrange expedited review and approval of the numbering requests.

#### 1-20 RENUMBERING.

TO renumbering shall be held to the minimum necessary to correct serious TO numbering errors. Renumbering will not be accomplished to align TO numbers with local sequence numbers or other cross reference identifiers. TO numbers will not be cancelled and new TO numbers assigned just for the purpose of renumbering. The responsible TO Manager will renumber a TO using the JCALS TM Processes, after coordinating the new number with TILUB. (Coordination is not required to assign or change a supplement number.)

## 1-21 ASSIGNING TO NUMBERS TO OTHER DOD COMPONENT TECHNICAL MANUALS.

TO numbers will be assigned to other DoD component Technical Manuals (TMs) that are adopted for Air Force use according to AFJI 21-301. The Army numbering patterns for TMs are described in Department of the Army Pamphlet (DA PAM) 25-30. To assign appropriate Air Force TO numbers to Army TMs, research DA PAM 25-30, this TO, and other appropriate source data. Navy, Marine Corps and Defense Logistics Agency TMs are given AF TO numbers in a similar fashion.

1-21.1 Table 1-2 provides a list of the most common types of technical manual designators used for Army TMs and corresponding Air Force type of TO designators. This table is provided as an aid but should not be used to make final determination of an Air Force TO number.

1-21.2 The Army technical manual number should be shown in the numbering request, according to AFMCMAN 21-1.

*Table 1-2. Army TM and Air Force Type of TO Designators*

FOR ARMY TM NUMBERS ENDING IN:	USE AIR FORCE TYPE-OF-TO DESIGNATORS:
-10 -12 -13 -14 -HR (Hand Receipt)	-1, -11, -21, etc.
-20 -23 -24 -25 -30 -34 -35 -40 -45	-2, -12, -22, etc.
-50	-3, -13, -23, etc.
-L (LOAP)	-01
Any of the above numbers with a P suffix. (P is not the same as &P, which does not affect the AF designator.)	-4, -14, -24, etc.

## 1-22 GENERAL TECHNICAL ORDERS.

In the numbering patterns for each category described in Chapters 2 through 41, numeric characters are used in the second or third group of a TO number to identify the specific equipment covered by the TO. The distinct pattern for a category, or a system within a category, indicates whether the second or third group is used for the specific equipment identifier. The number used as a specific equipment identifier will be greater than 1.

1-22.1 If the number 1 is used in lieu of a specific equipment identifier, the TO is a general technical order (category general, system general, or equipment-series general TO). **EXCEPTION:** The pattern established for numbering TCTO series for B-1, H-1, and T-1 aircraft (paragraph 1-18.4.1) is also used for general TOs in these systems.

1-22.1.1 Category general TOs apply to more than one type of aircraft, missile, or engine or to more than one equipment system in the category.

1-22.1.2 System general TOs apply to more than one type of aircraft, missile, or engine or to more than one equipment series within the equipment system.

1-22.1.3 Equipment-series general TOs apply to more than one sub-series of equipment within the equipment-series.

Examples:

<u>TO Number</u>	<u>Equipment-Series</u>
9H1-1-102	Accumulators
9H2-1-102	Cylinders and Actuators
34C1-1-101	Leather Cutting Machines
34F2-1-111	Metal Finishing Machines
36A1-1-141	Ambulances
36A2-1-1	Commercial Fleet Vehicles

1-22.1.4 Equipment-sub-series general TOs apply to more than one equipment within the equipment sub-series.

Examples:

<u>TO Number</u>	<u>Equipment-Sub-Series</u>
34F2-2-1-111	Grinders
34F2-3-1-121	Hones
36A2-3-1-1-3	Ford Vehicles
36A2-4-1-102	GMC Vehicles
36A2-5-1-104	Chrysler Motors Vehicles

1-22.2 JETDS general TOs are described in paragraph 1-23.

### 1-23 JOINT ELECTRONICS TYPE DESIGNATION SYSTEM (JETDS) GENERAL TECHNICAL ORDERS.

1-23.1 A large portion of the TOs in categories 12 and 31 cover equipment identified by JETDS equipment numbers. The JETDS (formerly AN nomenclature system) is described in MIL-STD-196.

1-23.1.1 A typical JETDS equipment number is AN/APN-167. The alphas AN indicate JETDS equipment. The A (first alpha character following the diagonal) designates the installation as piloted aircraft. The P (second alpha character following the diagonal) designates the type of equipment as radar. The N (third alpha character following the diagonal) designates the purpose of the equipment as navigational aids. The number following the dash designates a specific set of equipment. Table 1-3 provides a complete list of equipment indicators.

1-23.1.2 A typical JETDS component number is RT-771/APN-167. The RT, in accordance with MIL-STD-196D, indicates a receiver and transmitter. The 771 identifies a specific equipment component. The APN-167 (following the diagonal) indicates the component is applicable to the AN/APN-167 equipment set described above.

1-23.1.3 Identifying numbers for TOs covering JETDS equipment and components use a portion of the JETDS number in the second group of the TO number. (See examples of TO numbers in Chapters 15 and 22.)

1-23.1.4 If a single TO is applicable to more than one JETDS equipment set or component at any level of breakdown, a JETDS general TO may be established at that level.

1-23.2 JETDS system-general TOs apply to equipment sets in more than one kind of JETDS installation. These TOs are identified by the numeric 2 in the second group of the TO number.

Examples:

- 31P5-2-137 is applicable to both fixed ground installation (indicated by the F following the diagonal in AN/FSA-4A) and general ground-use (indicated by the G following the diagonal in AN/GRC-30).
- 31W4-2-121 is applicable to both general utility installation (indicated by the U following the diagonal in SB-1203/UG) and water installation (indicated by the S following the diagonal in TT-23/SG).

1-23.3 JETDS installation-general TOs apply to equipment sets in more than one JETDS type of equipment within one installation kind. The second group of the TO number will contain a 2 followed by an alpha character that designates the installation kind.

Examples:

- 31W4-2G-101 is applicable to a general, general-ground-use component C-7185/G.
- 31W4-2T-102 is applicable to a general-use, ground transportable component CU-1819/T.

1-23.4 JETDS equipment-type general TOs apply to more than one equipment purpose within one type of equipment. The second group of the TO number will contain a 2 followed by an alpha character that designates the equipment installation kind and a second alpha character that designates the type of equipment.

Examples:

- 31W4-2GG-162 is applicable to a general-use component CV-2696/GG. The first G after the diagonal indicates general ground-use installation. The second alpha indicates telegraph or teletype type of equipment.
- 31W4-2TG-144 is applicable to a general-use component TH-5/TG. The T following the diagonal indicates a ground transportable installation. The G indicates the type of equipment is telegraph or teletype.

1-23.5 JETDS purpose general TOs apply to more than one specific equipment set within one equipment purpose. The second group of the TO number will contain a 2 followed by three alpha characters that designate the installation, type of equipment, and purpose, respectively.

Examples:

- 31W4-2GGC-142 is applicable to components OU-60/GGC-30 and OU-61/GGC-31.
- 31W4-2TGC-122 is applicable to equipment sets AN/TGC-27 and AN/TGC-28.

## 1-24 COUNTRY STANDARD TECHNICAL ORDER NUMBERS.

1-24.1 Country Standard TO (CSTO) numbers are assigned to readily identify TOs that support equipment acquired by foreign countries through the Foreign Military Sales Program. These TOs are not used by the United States Air Force (USAF), but are centrally managed in the Security Assistance Technical Order Distribution System (SATODS) for support of the foreign customers. A CSTO may be a complete standalone publication or it may be a supplemental manual containing difference data used in conjunction with a baseline TO.

1-24.2 CSTO numbers are distinguished from USAF TO numbers by a two-position alpha prefix (country designator) that identifies the country involved. The balance of the CSTO number is established in the same manner described in this document for USAF TOs. Country designators will be compatible with country codes listed in AFMAN 23-110, Vol 9 and DOD Manual 5105.38-M, Appendix D.

1-24.3 If the CSTO is a standalone publication used in lieu of a USAF TO, the CSTO will be identified by a country designator plus the same number as the related USAF TO. Only the country designator prefix in the CSTO number will distinguish between them.

1-24.4 When the CSTO is supplemental to a USAF TO or to a standalone CSTO, it will be identified by a country designator prefix plus a -1 or other appropriate designation according to the concept described in paragraph 1-17.

1-24.5 In some instances a standalone CSTO will be for component equipment of a major design departure from any USAF equipment; therefore, it will not be related to any USAF TO.

Table 1-3. Table of JETDS Equipment Indicators <sup>1</sup>

Installation (1 <sup>st</sup> letter)	Type of Equipment (2 <sup>nd</sup> letter)	Purpose (3 <sup>rd</sup> letter)
A - Piloted aircraft B - Underwater mobile submarine D - Pilotless carrier F - Fixed Ground G - General Ground Use K - Amphibious M- Ground, mobile P - Portable S - Water T - Ground, transportable U - General Utility V - Ground, vehicular W- Water surface and underwater combination Z - Piloted and pilotless airborne vehicle combination	A - Invisible light, heat radiation C - Carrier D - Radiac E - Laser G - Telegraph or Teletype I - Interphone and public address J - Electromechanical or inertial wire covered K - Telemetry L - Countermeasures M- Meteorological N - Sound in air P - Radar Q - Sonar and underwater sound R - Radio S - Special types, magnetic, etc or combination of types T - Telephone V - Visual and visible light W- Armament (peculiar to armament, not otherwise covered) X - Facsimile or Television Y - Data Processing	A - Auxiliary assembly <sup>2</sup> B - Bombing C - Communications (receiving and transmitting) D - Direction finder reconnaissance and/or surveillance E - Ejection and/or release G - Fire control, or searchlight directing H - Recording and/or reproducing (graphic meteorological and sound) K - Computing M- Maintenance and/or test assemblies (including tool) N - Navigational aids (including altimeters, beacons, compasses, racons, depth sounding, approach and landing) Q - Special, or combination of purposes R - Receiving, passive detecting S - Detecting and/or range and bearing, search T - Transmitting W- Automatic flight or remote control X - Identification and recognition Y - Surveillance (search, detect, and multiple target tracking) and control (both fire and air control)

**NOTES:**

1 - The following indicator letters, removed from Table 1-3, are not to be used for new type designation assignments:

Installation: C - Air Transportable.

Type of Equipment: B - Pigeon; E - Nupac; F - Photographic purpose; L - Searchlight control;

P - Reproducing.

2 - For Department Control Point Use. Not for use by contractors unless directed by procuring activity.

1-24.6 Examples of CSTOs are as follows:

- Standalone CSTO - Job guide manual used by Saudi Arabia for F-15 aircraft:

SR1F-15C-2-32JG-30-3

SR	Designates Saudi Arabia
1	Category 1
F	Basic Mission Fighter Aircraft
15	Aircraft Production Model
C	Aircraft Production Series
2	Number Reserved for Maintenance Instructions
32	Landing Gear System (MIL-STD-1808, Chapter 32)
JG	Job Guide Manual
30	Subsystem and Sub-Subsystem
3	Third in a Series of Manuals

- CSTO - Supplemental Manual to a USAF TO or to a Standalone CSTO:

VE33D7-3-181-2-1

VE	Designates Venezuela
33	Category 33
D	Special Purpose Test Equipment
7	Electrical and Electronic
3	Computers Sub-series
181	Represents Part Number 2120300 Series
2	Maintenance Instructions
1	Supplemental Manual

- CSTO - Supplemental to Another CSTO (to be used with SR43D3-4-12-1-1):

SR43D3-4-12-1-1-1

SR	Saudi Arabia
43	Category 43
D	Training Devices
3	Flight Simulators Sub-series
4	Fighter Aircraft Simulators Sub-series
12	Represents Model F-15 Series Aircraft
1	Operating Instructions
1	First Section of a Sectionalized Manual
1	Supplemental to CSTO

## 1-25 OPERATION AND MAINTENANCE INSTRUCTIONS IN WORK PACKAGE FORMAT.

1-25.1 Operation and maintenance instructions in work package format and subordinate work package format are prepared according to MIL-PRF-87929. The complete TO, which consists of a set of work packages, is numbered according to numbering procedures for the specific equipment category.

1-25.2 Individual work packages will be numbered by the TO Manager using the following criteria:

1-25.2.1 The number will consist of five numeric characters and an alpha prefix of WP or SWP to identify a Work Package or a Subordinate Work Package as defined in MIL-PRF-87929.

1-25.2.2 A work package will be identified in the first three numeric positions; the last two numeric positions will be zeros (e.g., WP 116 00).

1-25.2.3 A subordinate work package will be identified by using the first three positions to specify the work package and the last two positions to specify the subordinate work package (e.g., SWP 126 19).

1-25.2.4 The alphabetical index work package (as defined in MIL-M-87929) will always be the first work package in the TO (i.e., WP 001 00).

1-25.2.5 The introduction work package (as defined in MIL-PRF-87929) will always be the second work package in the TO (i.e., WP 002 00).

1-25.2.6 Other work packages will be numbered WP 003 00, WP 004 00, and so on as required.

**1-26 TOs AVAILABLE ON MULTIPLE MEDIA.**

1-26.1 Some TOs may present the same technical data on two or more types of distribution media, such as paper, Compact Disk-Read Only Memory (CD-ROM) and through direct electronic access.

1-26.2 Media-type suffix codes (see below) are used in index listings to identify any TOs available in any medium other than paper, and will allow users to order TO copies on that medium. Index listings for non-paper versions of the TO will include the applicable media-type suffixes followed by an index number. Media-type suffixes will not be used for paper copies, or if the alternate media format is the only one available. TO media-type suffix codes are:

<u>CODE</u>	<u>MEDIUM</u>
CD	CD-ROM
WA	Electronic Access (WWW or WAN)
DV	Digital Video Disk (DVD)
FD	Floppy Disk
MF	Microfiche
MT	Magnetic Tape
VT	Video Tape/Disk

NOTE

Media-type suffixes appear only in the TO Index for ordering purposes. They are not placed on the TOs themselves.

1-26.3 All TO 00-5-1-authorized update methods, including interim supplements, may be used with printed (paper) copies; but these methods are not always suitable for use with the other media. TOs on CDs, floppy disks, and magnetic type will normally require update by a replacement medium containing either merged TO/Change files or revised TOs (no supplements). TOs on DVD, microfiche and video tape normally require revision. TOs available through electronic access will be updated by merged Changes or revisions.

1-26.4 The media-type suffix code will allow sight recognition of TOs available on other-than-paper media. The index number following the suffix will be used for several purposes:

1-26.4.1 All media-type suffixes will carry the index "-1," except as described below.

1-26.4.2 If a TO or set of TOs (paragraph 1-27) requires more than one disk or tape, the index number will indicate individual disks/tapes in the set (i.e., disk one of three is -1, disk two of three is -2, and disk three of three is -3).

1-26.4.3 If a set of TOs contains manuals with different classifications or distribution limitations, these TOs may be segregated by disk with different index numbers assigned to the different levels of protection required.



### 1-26.5 Examples:

- TO 1B-52G-4-1 is a paper IPB for the B52G and B52H aircraft. A microfiche containing this TO would be indexed as 1B-52G-4-1-MF-1.
- TO 12P2-2APQ120-2 is an intermediate maintenance manual for a radar indicator. A magnetic tape containing the same TO would be indexed 12P2-2APQ120-2-MT-1.
- TO 33K-1-100 (calibration procedures) is only available on CD. If a paper version existed, this CD version would be indexed as 33K-1-100-CD-1.
- The database for the F-22 fighter Interactive Electronic Technical Manual (IETM) will be available on-line through a WAN, and because it is only provided electronically, should be numbered 1F-22A-1 (no suffix code), followed by a note on how to access it. Note that the basic TO number ends in “-1” because ALL procedures, operations and maintenance, are contained in the one database (see paragraph 1-13).

### 1-27 DISTRIBUTION MEDIA CONTAINING MULTIPLE TOs.

1-27.1 Some digital media have the capacity to store multiple digital TO files on a single unit of the medium. For example, since a CD-ROM will hold approximately 650 megabytes (Mb) of information, and most digital TO files are 10 Mb or less, a single CD ROM disk can easily hold many average-size TOs.

1-27.2 To conserve increasingly sparse publication and distribution funds, TCMs must take advantage of this capability by grouping TOs on electronic media for distribution whenever possible. Groupings shall be made logically (e.g., by TO category, series, sub-system, subject, distribution limitation, classification, etc.) by the TCM, with the concurrence of the Using/Lead Command.

1-27.3 Digital media containing multiple TOs will be numbered and indexed in the TO System to facilitate management and distribution. The number will be indicative of the contents of the disk, be formatted like a TCTO-series number (paragraph 1-18), and include a media-type suffix (paragraph 1-26).

#### Examples:

- TO 1B-52H-2-CD-1 through 1B-52H-2-CD-5 would contain the Organizational Maintenance Manual Set for the B-52H, provided on a set of 5 CD-ROMs;
- TO 33D2-17-2-CD-1 would contain unclassified TOs on an Aircraft Field Test Stand provided on CD-ROM, while 33D2-17-2-CD-2 (C) would contain confidential TOs for the same equipment; and
- TO 35D-1-DV-1 would be unclassified, Distribution Statement A TOs for Miscellaneous Aircraft Loading and Servicing Equipment provided on digital video disk.

1-27.4 The TO Catalog listing for a digital medium containing a group of TOs will include a list of the individual TOs contained on the medium and indicate the viewing system required.

1-27.5 Catalog listings for individual TOs provided on a multi-TO medium will have a note referencing that medium. Example: TO 42B5-1-2 is available on the WWW and in paper. The catalog listing for the paper copy should contain a note similar to “(Available on the WWW at URL <https://afpet.lackland.af.mil/sft/techorders/>).

### 1-28 COMMERCIAL MANUALS.

When requesting TO number assignment for a commercial manual, the commercial manual number shall be included on JCALS screens or the NOTE transaction line (“N01”) of the AFMC Form 203.

### 1-29 PUBLICATION STOCK NUMBER (PSN).

A PSN is a 15-character number created by the JCALS system to manage each TO and TO increment. The number is based on information entered by the TO manager when the TO or increment is indexed. The PSN consists of six parts, broken out as follows:

1-29.1 The first two digits indicate the TO Category (00, 01, 21, etc.).

1-29.2 The third character will always be a “T” for Air Force TOs.

1-29.3 The fourth through ninth digits are a number assigned by JCALS to the basic TO and each revision. Each revision will have a unique number which will be assigned to every increment applicable to that revision (“family”).

1-29.4 The tenth character indicates whether the increment is a basic/revision/change (0), or a supplement (S = Safety Supplement, P = Operational Supplement, T = TOPS, and C = Routine Supplement).

1-29.5 The eleventh through thirteenth digits indicate the change or supplement number of the increment. All zeroes indicate there are no changes or supplements.

1-29.6 The fourteenth and fifteenth characters are the media code for the increment (the 15<sup>th</sup> digit is not used when the 14<sup>th</sup> digit is a letter). Examples of these codes include:

- 06 -- Paper
- 10 -- 3.5" Floppy Disk (1.44 Mb)
- 11 -- Digital On-Line
- M -- Microfiche
- P -- Printed Copy (interim TOs distributed via message)
- R -- CD-ROM
- V -- Video Cassette

## CHAPTER 2

### CATEGORY 0 - TO CATALOG, INDEXES AND CROSS-REFERENCE TABLES

#### 2-1 GENERAL.

2-1.1 There is only one Air Force TO Catalog. The catalog incorporates the Equipment and TO Number Cross-Reference formerly provided in TO 0-4-6-2. A sanitized ("XX") version of the Catalog is made available to FMS/SAP customers. The nuclear weapon and CSTO indexes are also numbered in Category 0. The Navy publishes a Joint Interest List (JIL) of Tech Manuals used by multiple services, and although it carries Air Force TO Number 0-4-5, it is not active for Air Force at this time.

#### NOTE

Nonnuclear EOD TOs, Category 60, are indexed on the Automated EOD Publication System (AEODPS) CD-ROM.

2-1.2 The Air Force TO Catalog Application is available on two media. The CD-ROM version, TO 0-1-CD-1, is available to all US government and contractor TO Distribution Offices. The Internet version, located at URL: <http://toindex-s.robins.af.mil/toindex/>, is restricted to DoD users with "\*.mil" domain.

2-1.3 Both versions of the Catalog provide five main functions: "Search TO Catalog" (information on all active TOs); "New, Updated and Rescinded TOs" (changes since the last edition); "Search TCTOs" (all active and rescinded TCTO's); "Equipment to TO Cross-Reference" (search for applicable TOs by equipment part number); and "Digital TOs" (links to TOs available on-line). Other functions provide information and tips to help users of the catalog.

2-1.4 TO 0-4-6-2-CD-1, Equipment No. to Tech Order No. Cross-Reference, is being rescinded. This contained the Interservicing of Technical Information Exchange Subsystem (ITIES) Cross Reference File (ICRF), and has been replaced by the cross-reference function of the TO catalog.

#### 2-2 NUMBERING PATTERNS.

The catalogues are numbered in TO Category "0," with the numerical catalog and indexes in sub-group "-1," and the cross-reference table in sub-group "-4."

#### 2-3 CATEGORY 0 NUMBERS.

The only active TO numbers in the Catalog Category are:

- 0-1-CD-1 USAF Technical Order Catalog Data;
- 0-1-11N Numerical Indexes to Joint Nuclear Weapons Publications
- 0-1-11N-C Numerical Indexes to Joint Nuclear Weapons Publications - AF Supplement
- 0-1-71 Consolidated Security Assistance Technical Order Index



## CHAPTER 3

### CATEGORY 00 - METHODS AND PROCEDURES TECHNICAL ORDERS

#### 3-1 GENERAL.

3-1.1 HQ AFMC/ENBP establishes responsibilities for preparing Category 00 Methods and Procedures TOs (MPTOs). When a TO Manager requests a new Category 00 TO number, OC-ALC/TILUB determines if ENBP coordination and approval have been obtained before assigning a TO number.

3-1.2 Category 00 TOs contain management data or data which is related to multiple equipment categories; or data which cannot be identified with any other established category.

3-1.3 The TO numbering pattern in Category 00 uses three basic groups. A fourth group is sometimes added to further separate MPTOs or to sectionalize by equipment subdivisions as described in the introduction. The numbering pattern is explained in paragraph 3-2.

#### 3-2 NUMBERING PATTERNS.

3-2.1 **GROUP ONE.** This group contains one part. The designator 00 identifies the TO as being an MPTO.

3-2.2 **GROUP TWO.** This group contains two parts.

3-2.2.1 Part one is made up of one or more numeric characters that identify the subject matter series. The numbering series are listed in paragraph 3-4.

3-2.2.2 Part two, when used, consists of one or more alpha characters that further breakdown the subject matter into sub-series.

3-2.3 **GROUP THREE.**

3-2.3.1 This group has one or more numeric characters that identify the specific type of TO.

**NOTE:** MPTOs, except for support equipment general "-06" Work Unit Code manuals, do not have "types."

3-2.3.2 In some instances the numeric characters in group three are followed by one or more alpha characters that indicate a series of checklists or supplements. The following alpha characters are authorized for use in Category 00.

CL - Checklists

S - Operational Supplements

3-2.3.3 In addition to the three basic groups, another group may result by sectionalizing, according to paragraph 1-14, or by using an aircraft or engine type-model-series designator to identify the section.

#### 3-3 EXAMPLES OF TECHNICAL ORDER NUMBERING PATTERNS IN CATEGORY 00.

3-3.1 A MPTO covering the use of tape for packaging:

00-85-35

00 MPTO Category

85 Protective Packaging and Preservation Packaging

35 Selection and Use of Tape for Packaging

TO 00-5-18

3-3.2 A MPTO covering disposal of critical alloys for C135 aircraft:

00-25-113-C135

00 MPTO Category  
25 Miscellaneous TOs  
113 TO on Conservation, Segregation, and Disposal of Critical Alloys and Precious Metals  
C135 Section for C135 Aircraft

3-3.3 A MPTO on installation and operation of part number (PN) 6650 series electrical systems:

00-105A-12

00 MPTO Category  
105 Air Installation TOs  
A Electrical Facilities Installation  
12 Designator for Specific Manual for PN 6650 Series Equipment

**3-4 LISTING OF CATEGORY 00 NUMBERING SERIES.**

00 MPTOs  
00-5 Technical Publications Systems  
00-20 Maintenance Management System  
00-20B Vehicles  
00-20D Railroad Equipment  
00-20F Office Equipment  
00-25 Miscellaneous TOs  
00-35 Administrative Publications  
00-35A Supply  
00-35D Blank Forms, Etc.  
00-75 Air Evacuation  
00-80 Special TOs  
00-80A Shipping Export  
00-80C Aircraft Crash Procedures  
00-80F Mortuary Equipment  
00-80G Public Display Procedures  
00-85 Protective Packing and Preservation Packaging, General  
00-85A Specific Equipment TOs  
00-85B Transportation Packaging Orders  
00-105 Air Installation TOs, General  
00-105A Electrical Facilities  
00-105E Fire Protection and Rescue  
00-105K Harvest Eagle Water System  
00-110 Special Weapons, Defense, and Nuclear Disposal and Decontamination  
00-110A Atomic and Radiological Warfare  
00-110N Nuclear Applications, Monitoring, Handling, Disposal and Decontamination

## CHAPTER 4

### CATEGORY 1 - AIRCRAFT

#### 4-1 GENERAL.

4-1.1 TO data numbered in the aircraft category includes flight and operations manuals; organizational (flight line) maintenance and overhaul instructions; inspection requirements and specified procedures performed on the various types of aircraft. TO numbers incorporate the aircraft basic Mission/Design/Series (MDS) designators specified in DOD 4120.15-L to group types of aircraft data together according to mission.

4-1.2 TO data pertaining to more than one type of aircraft or more than one model within a specific type of aircraft is numbered as a General TO as described in paragraph 1-22.

4-1.3 TO data pertaining to more than one production series of a specific aircraft model is numbered as the earliest production series. A sectionalized structural repair manual applicable to the F-111 aircraft production series D, E and F is numbered in the D series.

#### 4-2 NUMBERING PATTERNS.

This paragraph describes complete numbering patterns for all Category 1 TOs, except those maintenance manuals prepared following Specification MIL-M-83495. Numbering patterns for MIL-M-83495 organizational maintenance manuals are covered in paragraphs 4-2.1, 4-2.2, 4-4 and 4-5.

4-2.1 **GROUP ONE.** In Category 1, this group has only two parts identifying the category and aircraft mission.

4-2.1.1 Part one is always the numeric 1 to identify Category 1.

4-2.1.2 Part two is an alpha character identifying the aircraft basic mission as outlined in AFJI 16-401, Designating and Naming Defense Military Aerospace Vehicles. The following is a list of the basic mission alpha identifiers:

A - Attack Aircraft	H - Helicopter Aircraft
B - Bomber Aircraft	L - Observation Aircraft
C - Cargo/Transport Aircraft	P - Patrol
E - Special Electronic Aircraft	T - Trainer Aircraft
F - Fighter Aircraft	U - Utility Aircraft
G - Gliders	V - VTOL/STOL

#### NOTE

Observation aircraft are identified by the basic mission symbol L instead of the alpha O as identified in AFJI 16-401. To avoid possible confusion with numerals, the alpha characters I and O are not used.

4-2.2 **GROUP TWO.** Group two contains two or three parts that incorporate the aircraft model number; the modified aircraft mission (in parentheses) if applicable; and aircraft production series if required.

4-2.2.1 Part one contains one or more numeric characters identifying the aircraft model.

4-2.2.2 If part two is an alpha character in parentheses, it identifies a modified aircraft mission. If the modified mission is not applicable, the aircraft production series identifier described in part three follows the aircraft model number. The following is a listing of modified aircraft mission identifiers outlined in AFJI 16-401:

A - Attack	Q - Drone	K - Tanker
B - Bomber	R - Reconnaissance	T - Trainer
C - Cargo/Transport	E - Special Electronics	U - Utility
D - Director	F - Fighter	V - Staff
M - Multi-Mission	H - Search Rescue	W - Weather
P - Patrol		

4-2.2.3 Part three is an alpha character indicating the aircraft production series. The first series manufactured is identified with the alpha A, the second series with the alpha B, continuing through the alphabet.

4-2.2.4 If the number is for a general aircraft TO (paragraph 1-22), groups one and two are established using the following designators:

- 1-1 - General Aircraft
- 1-1A - General Engineering Manuals
- 1-1B - Weight and Balance
- 1-1C - Air Refueling
- 1-1G - Maintenance Analysis and Structural Integrity Information System
- 1-1H - Aircraft Battle Damage Repair
- 1-1M - Non-Nuclear Munitions Delivery

4-2.3 GROUP THREE. In Category 1, group three primarily identifies the type of TO, instruction or procedure. This can be accomplished by using either one or two parts.

4-2.3.1 Part one consists of one or more numeric characters reserved to indicate a specific type of TO. The following is a list of numbers reserved to identify the TOs in Category 1.

- 01 List of Applicable Publications (LOAP)
- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Flight Manuals
- 2 Maintenance Instructions
- 3 Structural Repair, Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 5 Basic Weight Checklist and Loading Data
- 5-1 Sample Checklist Basic Weight
- 5-2 Loading Data
- 6 Inspection Requirements
- 7 Winterization Instructions
- 8 Test Procedures, or Checkout Manuals
- 9 Cargo Loading
- 10 Power Package Buildup Instructions
- 11 Auxiliary Power Package Buildup Instructions
- 12 Maintenance Materiel Management Manuals
- 13 Weapons Loading Manuals
- 14 Atomic Loading and In-Flight
- 15 Assembly, Test, and Storage Procedures

NOTE

AAC/WNL has responsibility for assigning Category 1 TO numbers when the group three, part one is -16 or -25 through -31 (paragraph 1-4.6.1).

- 16 Atomic Loading and In-Flight (Reserved for Special Weapons)
- 17 Storage of Aircraft
- 18 Maintenance of Airborne Equipment
- 19 Conversion Instructions
- 20 Standard Practices
- 21 Aircraft Inventory Record Master Guides
- 22 Reserved
- 23 Corrosion Control



- 24 Reserved
- 25 Air Crew Weapon Delivery Manuals (Reserved for Special Weapons)
- 26 Air Crew Weapon Delivery Manuals (Reserved for Special Weapons)
- 27 Air Crew Weapon Delivery Manuals (Reserved for Special Weapons)
- 28 Air Crew Weapon Delivery Manuals (Reserved for Special Weapons)
- 29 Air Crew Weapon Delivery Manuals (Reserved for Special Weapons)
- 30 Air Crew Weapon Delivery Manuals (Reserved for Special Weapons)
- 31 Air Crew Weapon Delivery Manuals (Reserved for Special Weapons)
- 32 In-Flight Maintenance Manuals
- 33 Non-Nuclear Munitions Loading
  - 33-1 Non-Nuclear Munitions Loading - Tactical Missions
  - 33-2 Non-Nuclear Munitions Loading - Strategic Missions
  - 33-3 Non-Nuclear Munitions Loading - Defense Missions
  - 33-4 Non-Nuclear Munitions Loading - Transport Missions
- 34 Non-Nuclear Munitions Delivery
  - 34-1 Non-Nuclear Munitions Delivery - Tactical Missions
  - 34-2 Non-Nuclear Munitions Delivery - Strategic Missions
  - 34-3 Non-Nuclear Munitions Delivery - Defense Missions
  - 34-4 Non-Nuclear Munitions Delivery - Transport Missions
- 35 Non-Munitions Accessories
- 36 Non-Destructive Inspection Manuals
- 37 Calibration and Measurement
- 38 Aircraft Structural Integrity Program
- 39 Aircraft Battle Damage Repair TOs
- 43 Aircraft Mission Maintenance Data
- 44 Combat Weapon Delivery System (Shall not include imbedded data)
- 501 and higher Time Compliance TOs

4-2.3.2 Part two. In some instances some of the reserved numbers listed in part one above are followed by one or more alpha characters indicating a series of checklists, workcards, supplements, and other functions. Alpha characters authorized for use in Category 1 are listed as follows (also see paragraph 4-4.1.2):

- CF - Acceptance or Functional Check Flight Procedures
- CL - Checklists
- FP - Film Packs
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards
- WS - Worksheets

4-2.4 GROUP FOUR. This group consists of either one or two parts that identify a supplemental manual, identify sections of a sectionalized TO or indicate the sequence number of specific TO data in a series of inspections, supplements, or functions.

4-2.4.1 Part one contains one or more numeric characters identifying a supplemental manual, indicating the sequence number of data in a series or identifying the section number of a sectionalized TO.

#### NOTE

When used immediately following the number “-6WC” in Category 1, the number “-101” designates Contingency (Quick Look) Workcards.

4-2.4.2 Part two may be used, as in paragraph 4-2.3.2, to add one or more of the alpha characters indicating a series of checklists, workcards, supplements, and other functions.

4-2.5 GROUP FIVE. If TO numbers have been extended by sectionalizing or establishing supplemental numbers, the use of group five may be necessary to complete the TO number. Group five may consist of one to two parts (used in the same manner as described in paragraph 4-2.4) and identifies a supplemental manual or sections of a sectionalized TO or indicates the sequence number of specific TO data in a series of inspections, supplements, or functions.

4-2.6 GROUP SIX: In some instances sectionalizing Category 1 TOs will extend the number to require using group six to complete the TO number. Group six will consist of one part made up of one or more numeric characters. Group six identifies a supplemental manual; identifies sections of a sectionalized TO; or indicates the sequence number of specific TO data in a series of inspections, supplements or functions in the same manner described in paragraph 4-2.4.1.

**4-3 EXAMPLES OF NUMBERING PATTERNS.**

The following are examples of common numbering patterns for Category 1 TOs (numbering patterns for Specification MIL-M-83495 maintenance manuals are described elsewhere in paragraphs 4-4 and 4-5).

**4-3.1 Flight manual:**

1B-52D-1  
1           Category 1  
  B           Basic Mission Bomber  
    52        Aircraft Model Number  
      D       Aircraft Production Series  
        1     Number Reserved for Flight Manuals

**4-3.2 IPB:**

1C-135(K)A-4  
1           Category 1  
  C           Basic Mission Cargo/Transport  
    135       Aircraft Model Number  
      (K)      Modified Aircraft Mission Tanker  
        A     Aircraft Production Series  
          4    Number Reserved for IPBs

**4-3.3 Inspection workcard:**

1C-131A-6WC-7  
1           Category 1  
  C           Basic Mission Cargo/Transport  
    131       Aircraft Model Number  
      A       Aircraft Production Series  
        6     Number Reserved for Inspection Requirements  
          WC   Indicates Workcard Media  
          7    Sequence Number of the Workcard

**4-3.4 Sectionalized TO:**

1C-130A-2-3  
1           Category 1  
  C           Basic Mission Cargo/Transport  
    130       Aircraft Model Number  
      A       Aircraft Production Series  
        2     Number Reserved for Maintenance Instructions  
        3     Identifies a Section Covering Hydraulic Systems.

## 4-3.5 Supplemental manual:

1F-5E-1-1  
 1 Category 1  
 F Basic Mission Fighter  
 5 Aircraft Model Number  
 E Aircraft Production Series  
 1 Number Reserved for Flight Manuals  
 1 Identifies the First Supplemental Manual

## 4-3.6 Supplemental manual to a sectionalized maintenance instruction:

1F-4C-2-14-1  
 1 Category 1  
 F Basic Mission Fighter  
 4 Aircraft Model Number  
 C Aircraft Production Series  
 2 Number Reserved for Maintenance Instructions  
 14 Identifies a Section for Integrated Electronic Central Radar Altimeter, Radar Beacon System, Speech Security System, ILS/VOL System  
 1 Identifies the First Supplemental Manual

## 4-3.7 Safety supplement to a sectionalized TO:

1B-52D-33-2-2SS-1  
 1 Category 1  
 B Basic Mission Bomber  
 52 Aircraft Model Number  
 D Aircraft Production Series  
 33 Number Reserved for Non-Nuclear Munitions Loading Procedures  
 2 Number Reserved for Strategic Missions  
 2 Identifies a Section Covering External Stores Munitions  
 SS Indicates a Safety Supplement  
 1 Sequence Number of the Safety Supplement

4-4 MILITARY SPECIFICATION MIL-PRF-83495 MAINTENANCE MANUALS.

Organizational maintenance manuals that conform to Specification MIL-PRF-83495 use a special numbering pattern. TO numbers assigned for these manuals shall agree with the System/Subsystem/Sub-subsystem categories listed in MIL-STD-1808. Groups one, two and three of the TO number are formed in the same manner described in paragraph 4-2. However, groups four, five, six and seven are formed in a different manner as described below.

4-4.1 GROUP FOUR. For MIL-PRF-83495 maintenance manuals, this group consists of two parts.

4-4.1.1 Part one contains two numeric characters that identify the chapter number in MIL-STD-1808 and the equipment system or subject matter that the TO covers. Systems designators used in group four, part one are as follows:

**GENERAL**

00 - Aircraft - General  
 01 through 04 - Reserved  
 05 - Time Limits/Maintenance Checks  
 06 - Dimensions and Areas  
 07 - Lifting, Shoring, Recovery and Transporting  
 08 - Leveling and Weighing

**GENERAL Cont.**

- 09 - Towing and Taxiing
- 10 - Parking and Mooring
- 11 - Placards and Markings
- 12 - Servicing
- 13 - Equipment Storage
- 14 - Aircraft Loading and Off-Loading
- 15 - Support Equipment
- 16 - Siting Installation
- 17 - Preparation for Use and Shipment
- 18 - Weapons Instrumentation
- 19 - Training Equipment

**AIRFRAME SYSTEMS**

- 20 - Standard Practices - Airframe Systems
- 21 - Air Conditioning
- 22 - Auto Flight
- 23 - Communications
- 24 - Electrical Power
- 25 - Equipment/Furnishings
- 26 - Fire Protection
- 27 - Flight Controls
- 28 - Fuel
- 29 - Hydraulic Power
- 30 - Ice and Rain Protection
- 31 - Indicating/Recording Systems
- 32 - Landing Gear
- 33 - Lights
- 34 - Navigation
- 35 - Oxygen
- 36 - Pneumatic
- 37 - Vacuum
- 38 - Water/Waste
- 39 - Electrical/Electronic Components and Multifunction Units
- 40 - Standard Practices - Integrated Avionics
- 41 - Water Ballast
- 42 - Integrated Avionics Architecture
- 43 - Communications - Staff
- 44 - In-Flight Refueling-Tanker
- 45 - Central Maintenance System (CMS)
- 46 - System Integration and Display
- 47 - Liquid/Gaseous Nitrogen
- 48 - Communications/Navigation/Identification
- 49 - Airborne Auxiliary Power

**STRUCTURE**

- 50 - Reserved
- 51 - Standard Practices - Structures
- 52 - Doors

**STRUCTURE Cont.**

- 53 - Fuselage
- 54 - Nacelles/Pylons
- 55 - Stabilizers num
- 56 - Windows and Canopies
- 57 - Wings
- 58 - Reserved
- 59 - Reserved

**PROPELLER/ROTOR**

- 60 - Standard Practices - Propeller
- 61 - Propellers/Propulsors
- 62 - Rotors
- 63 - Rotor Drives
- 64 - Tail Rotor
- 65 - Tail Rotor Drives
- 66 - Folding Blades/Pylon
- 67 - Rotors Flight Controls
- 68 - Reserved
- 69 - Reserved

**POWER PLANT**

- 70 - Standard Practices - Engine
- 71 - Power Plant
- 72 - Engine
- 72(1) - Engine - Turbine/Turboprop
- 72(2) - Engine - Reciprocating
- 73 - Engine Fuel and Control
- 74 - Engine Ignition
- 75 - Engine Air
- 76 - Engine Controls
- 77 - Engine Indicating
- 78 - Engine Exhaust
- 79 - Engine Oil
- 80 - Engine Starting
- 81 - Turbines
- 82 - Water Injection
- 83 - Accessory Gearboxes
- 84 - Propulsion Augmentation
- 85 through 90 - Reserved

**MILITARY SYSTEMS**

- 91 - Charts/Diagrams
- 92 - Electrical Power Multiplexing
- 93 - Surveillance
- 94 - Weapon System
- 95 - Crew Escape and Safety
- 96 - Missiles, Drones and Telemetry
- 97 - Image Recording
- 98 - Meteorological and Atmospheric Research
- 99 - Electronic Warfare

4-4.1.2 Part two consists of two alpha characters that identify the function of maintenance manuals and are used in conjunction with the chapter numbers listed in MIL-STD-1808. The following is a list of authorized alpha designators to be used with these functions:

- FI - Fault Isolation Manual
- FR - Fault Reporting Manual
- GE - General Equipment Manual
- GS - General System Manual
- JG - Job Guide Manual
- SD - Schematic Diagram Manual
- WD - Wiring Data Manual

4-4.1.3 Other previously authorized alpha designators remaining in use on some current TOs include the following:

- GA - General Aircraft Manual
- MS - Maintenance Support Manual
- TS - Troubleshooting Manual

4-4.2 GROUP FIVE. This group has one part consisting of two numeric characters. The first digit denotes the subsystem, as defined under the appropriate system in MIL-STD-1808. The second digit is assigned by the manufacturer and denotes the sub-subsystem if further breakout is required for a complex subsystem. A zero in either, or both, positions indicates there is no equipment breakout at that level.

4-4.3 GROUP SIX. This group has only one part, consisting of one or more numeric characters, that identify the TO series number of the subsystem indicated in group five.

4-4.4 GROUP SEVEN. In the rare instances when it is used, this group has one part and consists of one or more numeric characters identifying a section of a sectionalized TO or identifying a supplemental manual (paragraph 4-5.1).

4-4.5 ILLUSTRATED PARTS BREAKDOWN. When maintenance manuals are written to conform to MIL-PRF-83495, the related Illustrated Parts breakdown will be numbered to indicate the system involved. Groups one, two, and three of the TO number are formed in the same manner described in paragraph 4-2. Groups four and five are described below.

4-4.5.1 GROUP FOUR. This group consists of one part, which is the chapter number from MIL-STD-1808, indicating the system for the equipment covered.

4-4.5.2 GROUP FIVE. This group consists of one part. One or more numeric characters identify the manual series number of the system indicated in group four.

**4-5 EXAMPLES OF NUMBERING PATTERNS FOR MIL-PRF-83495 MANUALS.**

4-5.1 Supplemental manual applicable to F16A aircraft:

- 1F-16A-2-93JG-00-1-1
- 1 Category 1
- F Basic Mission Fighter
- 16 Aircraft Production Model
- A Aircraft Production Series
- 2 Number Reserved for Maintenance Instructions
- 93 Surveillance System (MIL-STD-1808, Chapter 93)
- JG Job Guide Manual
- 00 General (No Specific Subsystem Identified)
- 1 First in a Series of Manuals
- 1 Identifies the First Supplemental Manual

## 4-5.2 General fault reporting manual for F16B aircraft:

1F-16B-2-00FR-00-1

1	Category 1
F	Basic Mission Fighter
16	Aircraft Production Model
B	Aircraft Production Series
2	Number Reserved for Maintenance Instructions
00	General (No Specific System Identified)
FR	Fault Reporting Manual
00	General (No Subsystem Identified)
1	First in a Series of Manuals

## 4-5.3 Job guide manual for air-conditioning system applicable to F15A aircraft:

1F-15A-2-21JG-61-2

1	Category 1
F	Basic Mission Fighter
15	Aircraft Production Model
A	Aircraft Production Series
2	Number Reserved for Maintenance Instructions
21	Air-Conditioning (MIL-STD-1808, Chapter 21)
JG	Job Guide Manual
61	6 Indicates Temperature Control Subsystem (MIL-M-83495); 1 Indicates the First Subsystem Identified by the Manufacturer
2	Second in Series of Manuals

## 4-5.4 Job guide manual for landing gear system applicable to F16B aircraft:

1F-16B-2-32JG-30-3

1	Category 1
F	Basic Mission Fighter
16	Aircraft Production Model
B	Aircraft Production Series
2	Number Reserved for Maintenance Instructions
32	Landing Gear System (MIL-STD-1808, Chapter 32)
JG	Job Guide Manual
30	Extension and Retraction Subsystem
3	Third in a Series of Manuals

## 4-5.5 Illustrated parts breakdown for air-conditioning system of F16A aircraft:

1F-16A-4-21-1

1	Category 1
F	Basic Mission Fighter
16	Aircraft Production Model
A	Aircraft Production Series
4	Number Reserved for IPBs
21	Air-Conditioning System (MIL-STD-1808, Chapter 21)
1	First in a Series of Manuals





## CHAPTER 5

### CATEGORY 2 - AIRBORNE ENGINES AND ASSOCIATED EQUIPMENT

#### 5-1 GENERAL.

5-1.1 Category 2 contains TOs pertaining to four basic types of airborne engines. Numbering patterns are established primarily to identify these engine types that are: auxiliary gas turbine engines, jet engines, rocket engines and reciprocating engines. TO numbers for airborne engine associated equipment use both three and four basic groups. Other TO numbers for airborne engines use only three basic groups.

5-1.2 TO data pertaining to more than one type of engine is numbered in the category general series.

5-1.3 Data pertaining to more than one engine model within an engine type is numbered in the engine type general series.

#### 5-2 NUMBERING PATTERNS.

5-2.1 **GROUP ONE.** This group basically has three parts that identify the category, type of engine and any associated equipment identifiers.

5-2.1.1 Part one is always the numeric 2 identifying Category 2.

5-2.1.2 Part two is an alpha character that identifies one of four types of engines, i.e., G - auxiliary gas turbine engine; J - jet engine; K - booster and rocket engine; and R - reciprocating engine. When the TO number is for associated equipment, the alpha A is added immediately following the engine type designator, i.e., GA, JA, KA, and RA.

5-2.1.3 Part three contains one or more numeric characters that identify the associated equipment series. The associated equipment series numbers are outlined in paragraph 5-4.

5-2.2 **GROUP TWO.** In group two, each engine type is further defined according to the method of propulsion. Numbering patterns used with each method of propulsion are outlined in the following examples:

##### 5-2.2.1 **JET ENGINES.**

5-2.2.1.1 Part one consists of one or two alpha characters that identify the type of propulsion for jet engines as follows: J - turbojet, RJ - ramjet, T - turboshaft and turboprop; and for turbofan two designators have been used: TF and F. The TF designator was used for turbofan prior to November 1972 and F has been used since MIL-STD-879A was published on 14 November 1972.

5-2.2.1.2 The second part of group two has one or more numeric characters identifying the engine model number, i.e.:

2J-F100

2	Category 2
J	Jet Engines
F	Turbofan Subtype
100	Engine Model Number

##### 5-2.2.2 **BOOSTER AND ROCKET ENGINES.**

5-2.2.2.1 Part one of group two pertaining to this type engine identifies the fuel as either LR - liquid fuel or SR - solid fuel.

5-2.2.2.2 The second part of group two identifies the rocket engine model number, i.e.:

2K-SR97

2           Category 2  
K           Booster or Rocket Engine  
  SR       Solid Fuel Subtype  
    97      Engine Model Number

5-2.2.3 RECIPROCATING ENGINES.

5-2.2.3.1 Part one of group two pertaining to this type engine identifies the engine sub-type as L - in line; O - opposed; and R - radial.

5-2.2.3.2 The second part of group two identifies the reciprocating engine model number, i.e.:

2R-R1830

2           Category 2  
R           Reciprocating Engine  
  R        Radial Subtype  
    1830   Engine Model Number

5-2.2.4 AUXILIARY GAS TURBINE ENGINES. These engines are auxiliary types including gas turbine engines; gas turbine generators; gas turbine power units; etc. Group two is composed of alpha and numeric characters identifying the equipment model number, i.e.:

2G-GTCP165

2           Category 2  
G           Auxiliary Gas Turbine Engines  
  GTCP     Alpha Prefix for Model Number  
    165    Model Number

5-2.2.5 ASSOCIATED EQUIPMENT.

5-2.2.5.1 When the TO number has only three groups, group two contains one or more numeric characters representing the model, type, or PN assigned to specific equipment.

5-2.2.5.2 When the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, the equipment subseries is identified with one or more numeric characters in group two and the model, type or PN is identified in group three.

5-2.3 GROUP THREE.

5-2.3.1 When a TO number has only three basic groups, the third group of the TO number identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 2:

- 01 List of Applicable Publications (LOAP)
- 1 Operating Instructions
- 2 Service or Maintenance Instructions
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 5 Overhaul Changes or Calibration and Measurement Summary
- 6 Field Maintenance
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals or Programmed Tests
- 9 Non-Destructive Inspection Manuals

5-2.3.2 In some instances the reserved numbers in the third group are followed by an alpha character or characters indicating a series of checklists, workcards and supplements. The following alpha characters are authorized for use in Category 2:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

5-2.3.3 When the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

5-2.4 GROUP FOUR. When the TO number has four basic groups, the fourth group identifies specific types of TOs as described in paragraph 5-2.3.1, above.

### 5-3 CATEGORY 2 NUMBERING PATTERNS.

5-3.1 Operation manual for a gas turbine generator, model GTG 331:

2G-GTG331-1  
 2 Category 2  
 G Gas Turbine Engines  
 GTG331 Engine Model Number  
 1 Number Reserved for Operating Instructions

5-3.2 Maintenance workcard for J-75 turbo-jet engine:

2J-J75-6WC-1  
 2 Category 2  
 J Jet Engines  
 J Turbojet  
 75 Engine Model Number  
 6 Number Reserved for  
 Field Maintenance  
 WC Identifies Workcards  
 1 First in a Series of  
 Workcards

5-3.3 Overhaul instructions for liquid fuel rocket engine, model LR-89:

2K-LR89-3  
 2 Category 2  
 K Rocket Engines  
 LR Liquid Fuel  
 89 Rocket Engine Model Number  
 3 Number Reserved for Overhaul  
 Instructions

5-3.4 Overhaul instructions with illustrated parts breakdown for lube oil pump assembly, PN 7453 on C124 aircraft:

2JA6-2-2-3  
 2 Category 2  
 J Jet Engines  
 A Associated Equipment  
 6 Power Plant Equipment Series  
 2 Pump Equipment Subseries  
 2 Identifies PN 7453

3 Number Reserved for Overhaul Instructions

5-3.5 Overhaul instructions with illustrated parts breakdown for push-pull assembly PN 12375, F106 aircraft:

2JA8-12-3

2	Category 2
J	Jet Engines
A	Associated Equipment
8	Throttle Control Series
12	Identifies PN 12375
3	Number Reserved for Overhaul Instructions

5-4 CATEGORY 2 NUMBERING INDICATORS.

2	AIRBORNE ENGINES AND ASSOCIATED EQUIPMENT
2G	AUXILIARY GAS TURBINE ENGINES
2GA	ASSOCIATED EQUIPMENT
2GA1	CONTROL ASSEMBLIES
2J	JET ENGINES
2J-F	Turbofan
2J-J	Turbojet
2J-RJ	Ramjet
2J-T	Turboprop
2J-TF	Turbofan (Use 2J-F)
2JA	ASSOCIATED EQUIPMENT
2JA1	AFTERBURNER CONTROL SYSTEMS
2JA2	AIR INLETS
2JA3	TURBINE STARTERS AND PROPULSION STARTING DEVICES
2JA4	JET ENGINE BRAKING DEVICES
2JA5	GAS TURBINE AUXILIARY POWER PLANTS
2JA6	POWER PLANT ASSOCIATED EQUIPMENT
2JA6-2	Pumps
2JA6-3	Control and Governor Assemblies
2JA6-4	Gas Turbine Compressors
2JA6-5	Generators
2JA7	CAP ASSEMBLIES
2JA8	THROTTLE CONTROLS
2JA9	GRIP ASSEMBLIES
2JA10	VALVES
2JA10-2	Control
2JA11	HARNESS ASSEMBLIES
2JA12	ENGINE CONTROLS
2JA13	CONTAINERS (use 35E20)
2JA14	ENGINE DRAIN SYSTEMS
2JA15	STARTER GENERATORS

2JA16	GEARS
2JA17	Do not use
2JA18	POWER PACKAGE QEC
2K	BOOSTER AND ROCKET ENGINES
2K-LR	Liquid-Type Rocket Motors
2K-SR	Solid-Type Rocket Motors
2K-SRM	Solid-Type Propellant Missiles
2KA	ASSOCIATED EQUIPMENT
2KA1	POWER PLANT ASSOCIATED EQUIPMENT
2KA1-2	Control and Governor Assemblies
2KA1-3	Propulsion Valves
2KA1-4	Vent Adapters (Propulsion)
2KA1-5	Ejectors (Propulsion)
2KA1-6	Turbine Pumps
2KA1-7	Pack Assemblies
2KA1-8	Consoles
2KA1-9	Panel Assemblies (Propulsion)
2KA1-10	Nozzles
2R	RECIPROCATING ENGINES
2R-L	In-Line
2R-O	Opposed
2R-R	Radial
2RA	ASSOCIATED EQUIPMENT
2RA1	ENGINE CONTROL SYSTEMS
2RA1-2	Automatic
2RA1-3	Manual
2RA2	ENGINE COOLING EQUIPMENT
2RA2-2	Engine Cooling and Anti-Icing Fans
2RA3	ENGINE MOUNTING SYSTEMS
2RA3-2	Engine Mounts
2RA3-3	Vibration Isolators
2RA4	TURBO AND ENGINE DRIVEN SUPERCHARGERS
2RA5	SUPERCHARGER CONTROL SYSTEMS
2RA5-2	Control Systems
2RA5-3	Actuators
2RA5-4	Regulators
2RA5-5	Governors
2RA5-6	Junction Boxes
2RA5-7	Amplifiers
2RA5-8	Motors, Waste-Gate
2RA5-9	Pressuretrols
2RA5-10	Boost Selectors
2RA5-11	Control Valves
2RA5-12	Valves, Barometric Anti-Leak
2RA5-13	Adapter Units, Turbo-Regulators
2RA5-14	Switches, Air-Pressure
2RA6	SUPERCHARGER RELATED EQUIPMENT
2RA6-2	Intercoolers
2RA6-3	Motor Assemblies
2RA6-4	Solenoids
2RA6-5	Link Assemblies

TO 00-5-18

2RA7        AUXILIARY POWER PLANTS  
2RA8        ENGINE PREHEATERS (Airborne only)  
2RA9        EXHAUST ASSEMBLIES  
2RA10      STARTERS (Use 2JA3)

## CHAPTER 6

### CATEGORY 3 - AIRCRAFT PROPELLERS AND ROTORS

#### 6-1 GENERAL.

6-1.1 Category 3 has four major divisions: one for each of the three types of propellers and one for rotor assemblies. TO numbers for propellers use three basic groups. TO numbers for propellers associated equipment use both three and four basic groups.

6-1.2 TO data pertaining to more than one type of propeller assembly control is numbered in the category general series.

6-1.3 Information pertaining to more than one propeller assembly, within one type of propeller control motivation, is numbered in the propeller control general series.

#### 6-2 NUMBERING PATTERNS.

6-2.1 **GROUP ONE.** This group has three parts identifying the category, type of propeller control and equipment series.

6-2.1.1 Part one is always the numeric 3 that identifies Category 3.

6-2.1.2 Part two identifies the type of aircraft propeller control by using alpha designators, i.e., E - electrical control; H - hydraulic control; and M - mechanical control. Rotor assemblies and equipment are designated by an R identifier in part two. Aircraft propeller associated equipment is identified by adding the alpha character A after the propeller control identifier, i.e., EA, HA, and MA. Rotor assemblies do not have associated equipment identified in the TO system.

6-2.1.3 Part three of this group identifies an equipment series representing further breakout of each type of propeller, its associated equipment and rotor assemblies. A listing of the series numbers is included in paragraph 6-4.

6-2.2 **GROUP TWO.** TO numbering patterns in Category 3 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes the numbering pattern for both groups:

6-2.2.1 If only three basic groups are used in the numbering pattern, group two contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

6-2.2.2 If the TO number contains four basic groups, the equipment series has been further divided into equipment subseries. In this case the subseries is identified with one or more numeric characters in group two and the model, type or PN is identified in group three.

6-2.3 **GROUP THREE.**

6-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 3:

- 1 Operating Instructions
- 2 Service or Maintenance Instructions
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements

6-2.3.2 In some instances the reserved numbers in the third group are followed by one or more alpha characters indicating a series of checklists, workcards, and supplements. The following alpha characters are authorized for use in Category 3:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

6-2.3.3 If the TO number contains four basic groups, the third group will have one or more numeric characters representing the model, type, or PN assigned to specific equipment.

6-2.4 GROUP FOUR. In those cases where the TO number has four basic groups, the fourth group identifies specific types of TOs as described in paragraph 6-2.3.1 above.

**6-3 EXAMPLES OF CATEGORY 3 NUMBERING PATTERNS.**

6-3.1 A general manual entitled List of Props and Governors for Service Aircraft:

3-1-1

- 3 Category 3
- 1 Identifies General Instructions
- 1 First In a Series of General Instructions

6-3.2 Operating instructions for a turboprop, model A6441FN-606, for the VC-131 aircraft:

3E3-5-1

- 3 Category 3
- E Electrically Controlled Prop
- 3 Turbo-Electric Series
- 5 Number Assigned to Model A6441FN-606
- 1 Number Reserved for Operating Instructions

6-3.3 An overhaul instruction for a tail rotor blade, PN 212-010-750-11, for UH-1N helicopter:

3R1-3-6-3

- 3 Category 3
- R Rotors
- 1 Rotor Assembly Group Series
- 3 Tail Blade Subseries
- 6 Number Assigned to PN 212-010-750-11
- 3 Number Reserved for Overhaul Instructions

**6-4 CATEGORY 3 TECHNICAL ORDER NUMBERING SERIES.**

- 3 AIRCRAFT PROPELLERS AND ROTORS
- 3E PROPELLERS, ELECTRICALLY-CONTROLLED
- 3E3 TURBO-ELECTRIC
- 3EA ASSOCIATED EQUIPMENT
- 3EA1 ALTERNATORS
- 3EA2 BLADES, CUFFS, PLASTIC FAIRINGS
- 3EA3 CONTROL SYSTEMS
- 3EA3-2 Electric Propellers
- 3EA3-3 Turbo-Electric Propellers
- 3EA4 DEICING SYSTEMS
- 3EA5 GOVERNORS



3EA6 HUBS, SPINNERS, POWER UNIT ASSEMBLIES  
3EA7 PROPELLER ATTACHMENT ASSEMBLIES  
3EA8 SPEED REDUCERS  
3EA9 RELAYS  
3EA10 SYNCHRONIZERS  
3EA11 TIMERS  
3EA12 SPEED SETTING ASSEMBLIES  
3EA13 COORDINATORS  
3EA14 PANEL ASSEMBLIES  
3EA15 CHANNEL ASSEMBLIES  
3H PROPELLERS, HYDRAULICALLY-CONTROLLED  
3H1 HYDROMATIC  
3H3 CONSTANT SPEED (Use 3H1)  
3HA ASSOCIATED EQUIPMENT  
3HA1 BLADES AND CUFFS  
3HA2 CONTROLS  
3HA3 DEICING ASSEMBLIES  
3HA3-2 Drum  
3HA4 GOVERNORS  
3HA4-2 Counterweight Oil  
3HA4-3 Hydromatic  
3HA4-4 Electronic  
3HA4-5 Manual  
3HA5 PUMPS  
3HA5-2 Anti-Icing  
3HA5-3 Feathering  
3HA5-4 Integral Oil Control  
3HA6 SPINNERS  
3HA7 SYNCHRONIZERS  
3HA8 TIMERS  
3HA9 SWITCH ASSEMBLIES  
3HA10 FILTER BOX ASSEMBLIES  
3HA11 ALTERNATORS  
3HA12 PANEL ASSEMBLIES  
3M PROPELLERS, MECHANICALLY-CONTROLLED  
3M1 CONTROLLABLE PITCH  
3M2 AUTOMATIC, VARIABLE-PITCH  
3M3 FIXED PITCH  
3MA ASSOCIATED EQUIPMENT  
3MA1 CONTROL ASSEMBLIES

3R	ROTOR ASSEMBLIES AND EQUIPMENT
3R1	ROTOR ASSEMBLY GROUP
3R1-2	Main Blade
3R1-3	Tail Blade
3R1-4	Rotor Head
3R1-5	Tail Rotor
3R1-6	Main Hub Rotor
3R1-7	Forward Hub Rotor
3R1-8	Aft (Tail) Hub Rotor
3R2	CONTROLS
3R2-2	Damper
3R2-3	Limiter
3R2-4	Power Plant
3R2-5	Swashplate
3R3	SERVO ASSEMBLIES
3R4	GEAR BOX ASSEMBLIES
3R4-2	Main (Central)
3R4-3	Intermediate
3R4-4	Tail
3R4-5	Decreasers, Pumps
3R4-6	Nose Gear Box
3R4-7	Accessory Gear Box
3R5	AZIMUTH ASSEMBLIES
3R6	SLIP RING ASSEMBLIES
3R7	TRANSMISSIONS
3R7-2	Main Rotor
3R7-3	Forward Rotor
3R7-4	Aft Transmission
3R8	CLUTCH AND FAN ASSEMBLIES
3R9	GENERATORS AND DRIVE ASSEMBLIES
3R10	BRAKE AND DRUM ASSEMBLIES
3R11	STATOR ASSEMBLIES
3R12	SHAFT AND HOUSING ASSEMBLIES
3R13	CYLINDERS
3R14	STRUT ASSEMBLIES
3R15	FREEWHEEL UNITS
3R16	COUPLING ASSEMBLIES
3R17	BLOWERS AND DUCTS
3R18	RADIATORS
3R19	MAST ASSEMBLIES
3R20	SCISSORS
3R21	HANGARS

## CHAPTER 7

### CATEGORY 4 - AIRCRAFT LANDING GEAR

#### 7-1 GENERAL.

7-1.1 Category 4 has five primary landing gear systems. These systems are divided into equipment series and some of the systems are further divided into equipment subseries within each series. The TO numbering pattern for Category 4 uses three basic groups for data identification.

7-1.2 Technical data pertaining to more than one system is numbered in the category general series.

7-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 7-2 NUMBERING PATTERNS.

7-2.1 **GROUP ONE.** This group has three parts identifying the category, system, and equipment series within the system.

7-2.1.1 Part one is always the numeric 4 identifying Category 4.

7-2.1.2 Part two is an alpha character identifying the landing gear system, i.e., A - landing gear; B - brakes; S - struts; T - tires and tubes; and W - wheels. Associated Equipment for these systems is identified by adding the alpha A immediately following the system identifier, i.e., AA, BA, and SA. Associated Equipment is not appropriate for tires, tubes and wheels systems.

7-2.1.3 Part three contains one or more numeric characters identifying an equipment series within the system. The TO numbering series is outlined in paragraph 7-4.

7-2.2 **GROUP TWO.** Although all TO numbers in Category 4 use three basic groups, the identifiers in group two are not constant. The two distinct numbering patterns in use are described below:

7-2.2.1 For certain systems one or more numeric characters in group two represent the model, type or PN assigned to specific components. Systems for which this pattern is used are:

- 4A Landing Gear
- 4AA Landing Gear Associated Equipment
- 4BA Brake System Associated Equipment
- 4S Struts, Shock-Absorbing
- 4SA Struts Associated Equipment

7-2.2.2 For other systems, group two indicates the equipment series, identified in part three of group one, has been further divided into equipment subseries. In this case, group two identifies the equipment subseries with one or more numeric characters, and the model, type or PN is identified in group three. Systems for which this pattern is used are:

- 4B Brake System
- 4T Tires and Tubes, Aircraft
- 4W Wheels, Aircraft-Landing-Gear

7-2.3 GROUP THREE.

7-2.3.1 The third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 4:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions
- 8 Test procedures, Checkout Manuals, or Programmed Tests

7-2.3.2 In some instances the reserved numbers in the third basic group are followed by one or more alpha characters indicating a series of checklists, workcards, or supplements. The following alpha characters are authorized for use in Category 4:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

7-2.3.3 When group two identifies the equipment subseries, as described in paragraph 7-2.2.2, group three will indicate the type of TO (reference paragraph 7-2.3.1), and must also represent the model, type or PN assigned to specific components.

**7-3 EXAMPLES OF CATEGORY 4 TECHNICAL ORDER NUMBERING PATTERNS.**

7-3.1 A Maintenance manual pertaining to main wheels, brakes, and tires for C-12A aircraft (general series):

- 4-1-102
- 4 Category 4
- 1 General Series
- 102 Maintenance Manual General Series Number

7-3.2 Overhaul instructions with illustrated parts breakdown for a multiple disc brake, PN 2-1179-2, on a C-5A aircraft:

- 4B1-2-1063
- 4 Category 4
- B Brakes
- 1 Brake Series
- 2 Disc-Type Subseries
- 1063 Overhaul Instruction Series and Number Assigned to PN 2-1179-2

7-3.3 Overhaul instructions with illustrated parts breakdown for master brake cylinder PN 12550 on H-43B aircraft:

- 4BA1-9-13
- 4 Category 4
- B Brakes
- A Associated Equipment
- 1 Cylinder Series
- 9 Number Assigned to PN 12550
- 13 Number Reserved for Overhaul Instructions

7-3.4 Overhaul instructions for a nose gear drag brace assembly, PN 65-1390-1 on a KC-135A aircraft:

4SA6-5-3

- 4 Category 4
- S Struts
- A Associated Equipment
- 6 Brace Assembly Series
- 5 Number Assigned to PN 65-1390-1
- 3 Number Reserved for Overhaul Instructions

7-3.5 Overhaul instructions with illustrated parts breakdown for main wheel assembly, PN 151522-1, used on F-101B aircraft:

4W1-7-473

- 4 Category 4
- W Wheels, Landing-Gear
- 1 Main Wheel Series
- 7 Type VII (Extra High Pressure) Subseries
- 473 Overhaul Instruction Series and Number Assigned to PN 151522-1

#### 7-4 CATEGORY 4 TO NUMBERING SERIES.

- 4 AIRCRAFT LANDING GEAR
- 4A LANDING GEARS
- 4A1 FLOAT
- 4A2 SKI
- 4A3 TRACK
- 4A4 WHEEL
- 4A5 FLOTATION
- 4A6 POSITIONER
- 4AA ASSOCIATED EQUIPMENT
- 4AA1 SKI
- 4B BRAKE SYSTEMS
- 4B1 BRAKES
- 4B1-2 Disc
- 4B1-3 Expander Tube
- 4B1-4 Segmented Rotor
- 4B1-5 Shoe
- 4B1-6 Solid Rotor
- 4BA ASSOCIATED EQUIPMENT
- 4BA1 CYLINDERS
- 4BA2 SKID DETECTORS
- 4BA3 RESERVOIRS, HYDRAULIC-BRAKE
- 4BA4 VALVES, HYDRAULIC-BRAKE-CONTROL
- 4BA5 VALVES, AIR-BRAKE
- 4BA6 VALVES, BRAKE-DEBOOST
- 4BA7 LINE ASSEMBLIES

- 4BA8 CONTROLS
- 4BA9 CONTROL SHIELDS
- 4BA10 EXPANSION CHAMBERS
- 4BA11 TRANSDUCER ASSEMBLIES
- 4S STRUTS, SHOCK-ABSORBING
- 4S1 MAIN LANDING GEAR
- 4S2 NOSE LANDING GEAR
- 4S3 TAIL LANDING GEAR
- 4S4 OUTRIGGER LANDING GEAR
- 4S5 TAIL SKID LANDING GEAR
- 4S6 TIP PROTECTION GEAR
- 4SA ASSOCIATED EQUIPMENT
- 4SA1 DAMPERS, SHIMMY
- 4SA2 STEERING UNITS AND STEERING DAMPERS
- 4SA3 VALVES, HYDRAULIC, NOSE-WHEEL-STEERING
- 4SA4 BRAKE LINE INSTALLATIONS
- 4SA5 CONDUIT INSTALLATIONS
- 4SA6 BRACE ASSEMBLIES
- 4SA7 VALVES, PNEUMATIC
- 4SA8 SPRINGS
- 4SA9 GENERATORS
- 4SA10 CARTRIDGES
- 4T TIRES AND TUBES, AIRCRAFT
- 4T1 TIRES
- 4T2 TUBES
- 4W WHEELS
- 4W1 MAIN
- 4W1-2 Type I (Smooth Contour)
- 4W1-3 Type II (High Pressure)
- 4W1-4 Type III (Low Pressure)
- 4W1-5 Type IV (Extra Low Pressure)
- 4W1-6 Type VI (Low Profile)
- 4W1-7 Type VII (Extra High Pressure)
- 4W1-8 Type VIII (Extra High Pressure)
- 4W2 TAIL
- 4W2-2 Type I (Smooth Contour)
- 4W2-3 Type II (High Pressure)
- 4W2-4 Type III (Low Pressure)
- 4W2-5 Type IV (Low Pressure)
- 4W2-6 Type VI (Low Profile)
- 4W2-7 Type VII (Extra High Pressure)
- 4W3 NOSE

- 4W3-2 Type I (Smooth Contour)
- 4W3-3 Type II (High Pressure)
- 4W3-4 Type III (Low Pressure)
- 4W3-5 Type IV (Extra Low Pressure)
- 4W3-6 Type VI (Low Profile)
- 4W3-7 Type VII (Extra High Pressure)
- 4W3-8 Type VIII (Extra High Pressure)
  
- 4W4 OUTRIGGER
- 4W4-2 Type VII (Extra High Pressure)
  
- 4W5 HELICOPTER





## CHAPTER 8

### CATEGORY 5 - AIRBORNE INSTRUMENTS

#### 8-1 GENERAL.

8-1.1 Category 5 contains seven aircraft and missile instrument systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore TO numbers in Category 5 use both three and four basic groups for data identification. Numbering patterns for both groups are identified in paragraph 8-2.

8-1.2 TO data pertaining to more than one system is numbered in the category general series.

8-1.3 Information pertaining to more than one series within a system is numbered in the system general series.

#### 8-2 NUMBERING PATTERNS.

8-2.1 **GROUP ONE.** This group has three parts identifying the category, system, and equipment series within the system.

8-2.1.1 Part one is always the numeric 5 identifying Category 5.

8-2.1.2 Part two is an alpha character identifying the instrument system, i.e., A - automatic flight control; E - engine instruments; F - flight instruments; L - liquid measuring instruments; M - electric circuit instruments; N - navigation instruments; and P - position and pressure instruments. Flight instruments is the only system that has associated equipment; it is identified by the system identifier FA.

8-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series is outlined in paragraph 8-4.

8-2.2 **GROUP TWO.** TO numbering patterns in Category 5 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

8-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific equipment.

8-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case group two identifies the equipment subseries with one or more numeric characters and the model, type or PN identified in group three.

#### 8-2.3 **GROUP THREE.**

8-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 5.

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests

8-2.3.2 In some instances the reserved numbers in the third group are followed by one or more alpha characters indicating a series of checklists, workcards, or supplements. The following alpha characters are authorized for use in Category 5.

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

8-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PNs assigned to specific component assemblies.

8-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 8-2.3.1 above.

### 8-3 EXAMPLES OF CATEGORY 5 NUMBERING PATTERNS.

8-3.1 An overhaul manual for a flight computer, model 562A-5M for VC-137 aircraft:

5A7-3-34-3  
5           Category 5  
  A           Automatic Flight Control System  
    7           Computer Series  
      3           Flight Control Computer Subseries  
        34       Identifies Model 562A-5M  
          3       Number Reserved for Overhaul Instructions

8-3.2 A maintenance manual, overhaul instructions and illustrated parts breakdown for an acceleration sensor assembly, type TR-272/ASW for F-15 aircraft:

5F25-4-2  
5           Category 5  
  F           Flight Instruments  
    25        Sensor Unit Series  
      4        Identifies Type TR-272/ASW  
        2        Number Reserved for Maintenance Instructions

8-3.3 Overhaul manual with parts breakdown for a liquid quantity transmitter assembly, PN EA 772-GDB, for F-105 aircraft:

5L13-3-18-3  
5           Category 5  
  L           Liquid Measuring Instruments  
    13        Transmitters  
      3        Fuel Quantity Transmitter  
        18     Identifies PN EA 772-GDB  
          3     Number Reserved for Overhaul Instructions

### 8-4 CATEGORY 5 NUMBERING SERIES.

5           AIRBORNE INSTRUMENTS  
5A         AUTOMATIC FLIGHT CONTROL SYSTEMS  
5A1       SYSTEM PUBLICATIONS  
5A1-2     Autopilot  
5A1-3     Remote Flight  
5A1-4     Stabilization  
5A1-5     Yaw Damper  
5A1-6     Inlet Control  
5A1-7     Pitch Control  
5A1-8     All Weather Landing  
5A1-9     Attitude Reference

5A2        ADAPTERS  
5A2-2     Amplifier  
5A2-3     Rate Gyroscope  
5A2-4     Attitude Trim  
5A2-5     Phase Adapter  
5A2-6     Autopilot  
5A2-7     Compass  
5A2-8     Flight Director

5A3        AMPLIFIERS

5A4        BOXES  
5A4-2     Relay  
5A4-3     Junction  
5A4-4     Control

5A5        CALIBRATORS

5A6        COMPENSATORS  
5A6-2     Airspeed  
5A6-3     Altitude  
5A6-4     Air Data Scheduler  
5A6-5     Mach Trim

5A7        COMPUTERS  
5A7-2     Calibration  
5A7-3     Flight Control  
5A7-4     Amplifier  
5A7-5     Flight Director  
5A7-6     Angle  
5A7-7     Mach

5A8        CONTROLS  
5A8-2     Amplifier  
5A8-3     Angular Path  
5A8-4     Differential Pressure  
5A8-5     Directional Gyroscope  
5A8-6     Follow up  
5A8-7     Formation Stick  
5A8-8     Rate Gyroscope  
5A8-9     Roll and Pitch  
5A8-10    Servo  
5A8-11    Three-Axis Gyroscope  
5A8-12    Turbo (Remote Flight)  
5A8-13    Vertical Gyroscope  
5A8-14    Yaw Damper  
5A8-15    Altitude  
5A8-16    Computer  
5A8-17    Mach Hold  
5A8-18    Air Data  
5A8-19    Signal  
5A8-20    Stability Augmenter  
5A8-21    Adapter  
5A8-22    Inlet Spike Positioner  
5A8-23    Variable Inlet  
5A8-24    Monitor  
5A8-25    Attitude Reference

5A9        CONTROLLERS  
5A9-2     Flight  
5A9-3     Remote Pitch  
5A9-4     Turn

5A9-5	Turn and Pitch
5A9-6	Altitude
5A9-7	Power
5A9-8	Selector
5A9-9	Engaging
5A10	FILTERS
5A10-2	Oil
5A10-3	Gyroscope
5A11	GYROSCOPES
5A11-2	Rate
5A11-3	Vertical
5A11-4	Directional
5A11-5	Attitude
5A11-6	Integrating
5A11-7	Displacement
5A12	INDICATORS
5A12-2	Direction
5A12-3	Trim
5A12-4	Attitude
5A12-5	Flight
5A12-6	Distance
5A12-7	Attitude (Use 5A12-4)
5A13	PANELS AND FRAMES
5A13-2	Directional
5A13-3	Function Selector
5A13-4	Servo Cutout Switch
5A13-5	Control
5A13-6	Relay
5A13-7	Adjustment
5A13-8	Damper
5A13-9	Engage
5A14	SERVOS
5A14-2	Electromechanical
5A14-3	Hydraulic
5A14-4	Transmitter
5A14-5	Central Gyroscope Reference System
5A15	SERVO MECHANISMS
5A15-2	Drum and Bracket Assembly
5A15-3	Motor and Drive Assembly
5A15-4	Disconnect Clutch Assembly
5A15-5	Throttle
5A15-6	Disconnect
5A15-7	Friction Release Hub Assembly
5A15-8	Altitude
5A15-9	Flight Control
5A15-10	Course Repeater
5A15-11	Positioner
5A16	STABILIZERS
5A16-2	Directional
5A17	SWITCHES
5A17-2	Differential Pressure
5A17-3	Engaging (Automatic Approach)
5A17-4	Limit
5A17-5	Selector
5A17-6	Transfer

5A17-7 Clutch  
 5A17-8 Interrupter  
 5A17-9 Solenoid  
 5A17-10 Scheduling  
 5A17-11 Force  
 5A18 TRANSMITTERS  
 5A19 VIBRATORS  
 5A20 MOUNTS AND RACKS  
 5A21 POWER SUPPLIES  
 5A22 SENSORS  
 5A22-2 Vertical  
 5A22-3 Angle of Attack  
 5A22-4 Wing Sweep  
 5A22-5 Airspeed  
 5A23 TRANSDUCERS  
 5A23-2 Pressure  
 5A23-3 Altitude  
 5A23-4 Pitch  
 5A24 ACCELEROMETERS  
 5A24-2 Linear and Lateral  
 5A24-3 Limiting  
 5A25 CIRCUTROLS  
 5A25-2 Differential  
 5A26 VALVES  
 5A26-2 Shutoff  
 5A26-3 Purge  
 5A26-4 Transfer  
 5A26-5 Check  
 5A26-6 Control  
 5A26-7 Selector (Do not use)  
 5A27 DEMODULATORS AND MODULATORS  
 5A28 COUPLERS  
 5A29 COMPARATORS (See 5A3)  
 5A30 POTENTIOMETERS  
 5A31 STOP ASSEMBLIES  
 5A32 UNITS  
 5A32-2 Gyroscope and Accelerometer  
 5A32-3 Reference  
 5A32-4 Parameter  
 5A32-5 Self-Test and Monitor  
 5A32-6 Interface  
 5A33 LINKAGE ASSEMBLIES  
 5A33-2 Power Control  
 5A34 DRIVE UNITS  
 5A35 GENERATORS (Use Category 8)  
 5A36 MEMORY ASSEMBLIES (Do not use)  
 5A37 RELAYS (Use 8R)  
 5A38 SYNCHRONIZERS

5A39 CYLINDERS  
5A40 DETECTORS  
5A41 CONVERTERS  
5A42 PLATFORMS  
5A43 CLUTCH PACKS  
5A44 ACTUATORS  
5A45 TRANSFORMERS  
5A46 PROCESSORS  
5A46-2 Signal Data  
5A47 DISTANCE MEASURING EQUIPMENT  
5A48 DESENSITIZERS  
5E ENGINE AND TEMPERATURE INSTRUMENTS  
5E1 SYSTEMS PUBLICATIONS  
5E1-2 Engine Analyzer  
5E2 ADAPTERS  
5E3 AMPLIFIERS  
5E4 GAUGES  
5E5 GENERATORS  
5E5-2 Propeller Synchronizer  
5E5-3 Tachometer  
5E6 INDICATORS  
5E6-2 Tachometer  
5E6-3 Temperature  
5E6-4 Pressure (See 5P3-4)  
5E6-5 Thrust  
5E6-6 Torque  
5E6-7 Jet Nozzle  
5E6-8 Discharge (Carbon Dioxide)  
5E6-9 Gas Generator  
5E6-10 Cruise Guide  
5E6-11 Dual  
5E7 SHAFTS  
5E8 SYNCHROSCOPES  
5E9 COUNTERS  
5E10 THERMOCOUPLES  
5E11 RECORDERS  
5E12 TRANSMITTERS  
5E13 THERMOSTATS  
5E14 THROTTLES  
5E15 REGULATORS  
5E15-2 Pressure  
5E16 POWER UNITS  
5E17 CONVERTERS  
5E18 PROCESSORS

5E19 DISPLAY UNITS  
 5E19-2 Umbilical  
 5E19-3 Multi-Integrated  
 5F FLIGHT INSTRUMENTS  
 5F1 SYSTEMS  
 5F1-2 Flight Computer  
 5F1-3 Gyroscope  
 5F1-4 Flight Control  
 5F1-5 Flight Directional  
 5F1-6 Navigation (Use 5N)  
 5F1-7 Data Recording  
 5F2 ACCELEROMETERS  
 5F3 ALTIMETERS  
 5F3-2 Density  
 5F3-3 Pressure  
 5F3-4 Sensitive  
 5F4 AMPLIFIERS  
 5F5 COMPUTERS  
 5F5-2 Angle of Attack  
 5F5-3 True Airspeed  
 5F5-4 Air Data  
 5F5-5 Steering  
 5F5-6 Gyroscope Rate  
 5F5-7 Quadratic Arc  
 5F5-8 Flight Director  
 5F5-9 Lift  
 5F5-10 Stall Prevention  
 5F5-11 Maximum Hover Weight  
 5F5-12 Landing Gear  
 5F5-13 Flight Control  
 5F6 CONTROLS  
 5F6-2 Flight Computer  
 5F6-3 Vertical Gyroscope  
 5F6-4 Rate Gyroscope  
 5F6-5 Stability  
 5F6-6 Box Assembly  
 5F6-7 Inertial Navigator  
 5F6-8 Position  
 5F7 FILTERS  
 5F7-2 Air  
 5F8 INDICATORS  
 5F8-2 Airspeed  
 5F8-3 Attitude Gyroscope  
 5F8-4 Bank and Turn (Turn and Slip)  
 5F8-5 Directional Gyroscope  
 5F8-6 Flight Computer  
 5F8-7 Gyroscope Horizon  
 5F8-8 Machmeter  
 5F8-9 Rate of Climb  
 5F8-10 Vertical Gyroscope  
 5F8-11 Pilot Directional  
 5F8-12 Dive and Roll  
 5F8-13 Horizon Approach  
 5F8-14 Course

5F8-15	Ground Speed
5F8-16	Horizontal Situation
5F8-17	Position
5F8-18	Tachometer
5F8-19	Angle of Attack
5F8-20	Cabin Altitude
5F8-21	Warning
5F8-22	Vertical Situation
5F9	SWITCHES
5F9-2	Selector
5F10	TRANSMITTERS
5F10-2	True Airspeed
5F10-3	Altitude
5F10-4	Angle of Attack and Rate Gyroscope
5F10-5	Accelerometer
5F10-6	Synchronizer
5F10-7	Asymmetry
5F10-8	Position
5F11	TUBES
5F11-2	Pitot Static
5F11-3	Power Venturi
5F12	TRANSDUCERS
5F12-2	Wind Direction
5F12-3	Mach Number
5F12-4	Angle of Attack
5F12-5	Lift
5F12-6	Altitude
5F12-7	Augmentor
5F12-8	Flap Position
5F13	PROBES
5F13-2	Temperature
5F13-3	Local Mach
5F14	CONVERTERS
5F14-2	Air Data
5F15	SETS
5F15-2	Accessory
5F16	TRACK KEEPERS
5F17	INSTRUMENT GUIDANCE (Do not use)
5F18	COMPENSATORS
5F18-2	Central Air Data
5F19	SHAKER ASSEMBLIES
5F20	DETECTORS
5F21	MONITORS
5F22	UNITS AND ASSEMBLIES
5F23	RECORDERS AND TAPE UNITS
5F23-2	Tape Unit
5F23-3	Recorder
5F24	INDEXERS
5F25	SENSORS
5F26	COUNTERS



5F27	MULTIPLEXERS
5F28	CONTROLLERS
5F29	MODULES
5F30	PRINTERS
5F31	DISPLAY UNITS
5FA	ASSOCIATED EQUIPMENT
5FA1	COUPLERS
5FA2	CHASSIS ASSEMBLIES
5FA3	POWER SUPPLIES
5FA4	LOGIC CARDS
5L	LIQUID-LEVEL, QUANTITY, AND FLOW MEASURING INSTRUMENTS
5L1	SYSTEMS
5L1-2	Fuel Level
5L1-3	Fuel Quantity
5L2	AMPLIFIERS
5L2-2	Fuel Flowmeter
5L2-3	Fuel Quantity
5L3	BOXES
5L3-2	Control
5L3-3	Fuel Quantity
5L4	CALIBRATORS
5L4-2	Bridge
5L5	COMPENSATORS
5L5-2	Voltage
5L6	INDICATORS
5L6-2	Fuel Flow
5L6-3	Fuel Quantity
5L6-4	Liquid Level
5L7	PANELS
5L7-2	Stroke Adjustment
5L7-3	Control
5L8	MOUNTS AND RACKS
5L8-2	Bridge Calibrator
5L8-3	Power Unit
5L9	RELAYS
5L9-2	Transfer Tank Unit
5L10	SIMULATORS
5L11	SUMMATORS
5L12	SWITCHES
5L12-2	Densitometer
5L12-3	Float Operated
5L12-4	Relay and Transfer
5L12-5	Potentiometer
5L13	TRANSMITTERS
5L13-2	Fuel Flow
5L13-3	Fuel Quantity

5L13-4	Liquid Level
5L14	UNITS
5L14-2	Power
5L14-3	Tank
5L14-4	Totalizer Bridge
5L14-5	Totalizer Assembly
5L14-6	Control
5L14-7	Sensing
5L14-8	Ratio
5L15	NETWORKS
5L15-2	Time Delay
5L16	CONTROLS
5L17	GAUGES
5L18	COMPUTERS
5L19	REGULATORS
5L20	METERS
5L21	COUNTERS
5L22	DETECTORS
5L23	CONDENSORS (CAPACITORS)
5M	ELECTRICAL CIRCUIT INSTRUMENTS
5M1	METERS
5M1-2	Ammeter
5M1-3	Frequency
5M1-4	Voltmeter
5M1-5	Wattmeter
5M1-6	Steering
5M1-7	Time
5M1-8	Multimeter
5M1-9	Arbitrary Scale
5M1-10	Audio Level
5M1-11	Antenna
5M1-12	Phase (Time)
5M1-13	Velocity
5M1-14	Factor
5M1-15	Fuel Pressure
5M1-16	Galvanometer
5M2	INDICATORS
5M2-2	Control Panel
5M3	GENERATORS
5M3-2	Impulse
5N	NAVIGATION INSTRUMENTS
5N1	SYSTEMS
5N1-2	Compass
5N1-3	Computer
5N1-4	Navigator Unit
5N1-5	Display
5N2	AMPLIFIERS
5N2-2	Compass
5N2-3	Electronic Control
5N2-4	Power Supply

5N2-5 Navigational Computer  
 5N3 COMPASSES  
 5N3-2 Astro  
 5N3-3 Magnetic (Direct Reading)  
 5N4 COMPENSATORS  
 5N4-2 Quadrantal Error  
 5N4-3 Synchronizer  
 5N4-4 Magnetic  
 5N4-5 Thin  
 5N4-6 Detector  
 5N5 COMPUTERS  
 5N5-2 Altitude Correction  
 5N5-3 Course and Distance  
 5N5-4 Dead Reckoning  
 5N5-5 Time and Distance  
 5N5-6 True Airspeed  
 5N5-7 Programmer  
 5N5-8 Latitude and Longitude  
 5N5-9 Wind Drift  
 5N5-10 Radiation  
 5N5-11 Tracking  
 5N5-12 Meteorological  
 5N5-13 Navigation  
 5N5-14 Performance  
 5N5-15 Ballistic  
 5N5-16 Flare  
 5N5-17 Rotation  
 5N5-18 Position  
 5N5-19 Digital  
 5N6 CONTROLS  
 5N6-2 Directional Gyroscope  
 5N6-3 Slaving  
 5N6-4 Computer  
 5N6-5 Stability  
 5N6-6 Indicator  
 5N6-7 Alignment  
 5N6-8 Compass, Control Unit  
 5N6-9 Navigational  
 5N6-10 Designator  
 5N7 DRIFTMETERS  
 5N7-2 Gyroscope Stabilized  
 5N7-3 Nonstabilized  
 5N8 INDICATORS  
 5N8-2 Director  
 5N8-3 Compass (Master Direction)  
 5N8-4 Compass (Repeater)  
 5N8-5 Course (See 12R5)  
 5N8-6 Radio Converter (See 12R5)  
 5N8-7 Radio (See 12R5)  
 5N8-8 Latitude and Longitude  
 5N8-9 Wind Direction  
 5N8-10 Horizontal Display  
 5N8-11 Vertical, Velocity  
 5N8-12 Analog Display  
 5N8-13 Digital Data  
 5N8-14 Drift

5N8-15	Temperature
5N8-16	Navigation Control
5N9	ACCELEROMETERS
5N10	SEXTANTS AND MOUNTS
5N10-2	Hand Held
5N10-3	Periscopic
5N10-4	Horizon
5N10-5	Mount, Periscopic
5N10-6	Mount, Horizon
5N10-7	Celestial
5N11	TIME PIECES
5N11-2	Clock
5N11-3	Watch
5N11-4	Chronometer
5N12	TRANSMITTERS
5N12-2	Compass
5N12-3	Wind Direction
5N12-4	Temperature
5N13	STABILIZERS
5N13-2	Binocular
5N14	PANELS
5N14-2	Display
5N14-3	Control
5N14-4	Manual Set
5N15	TRACKERS
5N15-2	Astro
5N16	UNITS
5N16-2	Power Supply
5N16-3	Inertial Measuring
5N16-4	Distribution
5N17	BOXES
5N17-2	Junction
5N17-3	Distribution
5N18	GYROSCOPES
5N19	ADAPTERS
5N20	COUPLERS
5N21	ISOLATORS
5N22	COUNTERS
5N23	DETECTORS
5N24	PLATFORMS
5N25	SELECTORS
5N26	INVERTERS
5N27	ENCODERS
5N28	MODULES
5N29	DISPLAY SETS
5N30	CONVERTERS
5N31	PROCESSORS

5N32 SIGHTS  
5N33 DEHYDRATORS  
5N34 MONITORS  
5N35 GIMBAL ASSEMBLIES  
5P POSITION AND PRESSURE INSTRUMENTS  
5P1 AMPLIFIERS  
5P1-2 Audio  
5P1-3 Servo  
5P1-4 Engine  
5P1-5 Computer  
5P2 GAUGES  
5P2-2 Pressure  
5P2-3 Suction  
5P3 INDICATORS  
5P3-2 Air Flow, Cabin Pressure  
5P3-3 Position  
5P3-4 Pressure  
5P4 TRANSDUCERS  
5P4-2 Pressure  
5P5 TRANSMITTERS  
5P5-2 Position  
5P5-3 Pressure  
5P6 PRESSURE RATIO SYSTEMS  
5P7 CONTROLS  
5P7-2 Pressure  
5P7-3 Position  
5P8 COMPENSATORS  
5P8-2 Static Pressure and Angle of Attack  
5P9 SELECTORS  
5P9-2 Pressure  
5P10 SENSORS  
5P10-2 Flow  
5P10-3 Pressure



## CHAPTER 9

### CATEGORY 6 - AIRCRAFT AND MISSILE FUEL SYSTEMS

#### 9-1 GENERAL.

9-1.1 Category 6 has six primary aircraft and missile fuel systems. These systems are divided into equipment series and further divided into equipment subseries within each equipment series. TO numbers in Category 6 will use both three and four basic groups for data identification. Numbering patterns for both groups are discussed in paragraph 9-2.

9-1.2 TO data pertaining to more than one system is numbered in the category general series.

9-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 9-2 NUMBERING PATTERNS.

9-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within the system.

9-2.1.1 Part one is always the numeric 6 identifying Category 6.

9-2.1.2 Part two is an alpha character which identifies the fuel system, i.e.,

- A - air refueling
- J - aircraft and missile jet engine fuel systems
- K - Depot Maintenance or Overhaul Instructions
- P - purging system
- R - reciprocating engine fuel systems
- S - offensive systems. There is no associated equipment identified in this category.

9-2.1.3 Part three contains one or more numeric characters that identify an equipment series within a system. The TO numbering series is outlined in paragraph 9-4.

9-2.2 **GROUP TWO.** TO numbering patterns in Category 6 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

9-2.2.1 If the TO number uses only three groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific components.

9-2.2.2 If the TO number contains four groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

#### 9-2.3 **GROUP THREE.**

9-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 6:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests

9-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards, or supplements. The following alpha characters are authorized for use in Category 6:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

9-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PN assigned to specific component assemblies.

9-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 9-2.3.1 above.

### 9-3 EXAMPLES OF CATEGORY 6 NUMBERING PATTERNS.

9-3.1 Overhaul instructions with parts breakdown for a fuel filter assembly, PN 52-2145-002, for H-43B helicopter:

- 6R2-19-3
- 6 Category 6
  - R Reciprocating Engine Fuel System
  - 2 Filter and Strainer Series
  - 19 Identifies PN 52-2145-002
  - 3 Number Reserved for Overhaul Instructions

9-3.2 Overhaul instructions for a motor operated gate valve, PN AV16V1830D for KC-135A aircraft:

- 6A9-2-12-3
- 6 Category 6
  - A Air Refueling System
  - 9 Valve Series
  - 2 Control Valve Subseries
  - 12 Identifies PN AV16V1830D
  - 3 Number Reserved for Overhaul Instructions

9-3.3 Section one of two sections of overhaul instructions for main fuel control, Bendix PN 440955, on F-100 engine:

- 6J3-4-97-3-1
- 6 Category 6
  - J Jet and Turbojet Engine and Aircraft
  - 3 Fuel Control Series
  - 4 Main Fuel Control Subseries
  - 97 Identifies Bendix PN 440955
  - 3 Number Reserved for Overhaul Instructions
  - 1 Identifies Section One

### 9-4 CATEGORY 6 NUMBERING SERIES.

- 6 AIRCRAFT AND MISSILE FUEL SYSTEMS
- 6A AIR REFUELING SYSTEMS
- 6A1 ACTUATORS
- 6A1-2 Hydraulic
- 6A2 AMPLIFIERS (Use 8D or 8A)
- 6A3 BOOM ASSEMBLIES



6A4	INDICATORS
6A5	NOZZLE ASSEMBLIES
6A6	RECEPTACLE ASSEMBLIES
6A7	STATIC DISCONNECTOR ASSEMBLIES
6A8	HOSE REEL ASSEMBLIES
6A9	VALVES
6A9-2	Control
6A9-3	Relief
6A9-4	Float
6A9-5	Selector
6A9-6	Check
6A9-7	Regulator
6A9-8	Shutoff
6A9-9	Adapter
6A9-10	Response
6A10	PUMPS
6A10-2	Fuel Transfer
6A11	TRANSMITTERS
6A12	RECOIL ASSEMBLIES
6A13	DRIVE UNITS
6A14	SUPPRESSOR ASSEMBLIES
6A15	COUPLINGS
6A16	BUNGEE ASSEMBLIES
6A17	ADAPTERS
6A18	PROBES
6A19	SELECTORS
6A20	CYLINDERS
6A21	DROGUES
6A22	THERMISTORS
6J	AIRCRAFT AND MISSILE ENGINE FUEL SYSTEMS - TURBOJET AND TURBOPROP
6J1	AMPLIFIERS
6J1-2	Main System
6J1-3	Afterburner System
6J2	BAROMETRIC ASSEMBLIES
6J3	FUEL CONTROLS
6J3-2	Afterburner
6J3-3	Emergency
6J3-4	Main
6J3-5	Starting
6J3-6	Speed Limiter
6J3-7	Valve
6J3-8	Nozzle and Actuator
6J4	QUICK DISCONNECT COUPLINGS
6J5	FILTERS AND STRAINERS

6J6	(Not Used)
6J7	GOVERNORS
6J8	NOZZLES
6J9	PRIMER AND IGNITER ASSEMBLIES
6J10	PUMPS, FUEL AND WATER
6J10-2	Air Driven Turbine
6J10-3	Electric Motor Driven
6J10-4	Engine Driven
6J10-5	Hydraulic Motor Operated
6J11	REGULATORS, FUEL AND WATER
6J12	SERVICING UNITS AND ADAPTERS
6J13	SWITCHES (Do Not Use)
6J14	TANKS
6J14-2	Jettisonable Type
6J14-3	Pylon
6J14-4	Fixed
6J14-5	Auxiliary
6J14-6	Ethylene Oxide (Missile)
6J14-7	Internal
6J15	VALVES, FUEL AND WATER
6J15-2	Check (See 6R9-2 also)
6J15-3	Control (See 6R9-3 also)
6J15-4	Drain (See 6R9-4 also)
6J15-5	Float (See 6R9-5 also)
6J15-6	Metering
6J15-7	Pressure Regulator (See 6R9-7)
6J15-8	Relief and Vent (See 6R9-8 also)
6J15-9	Selector (See 6R9-9 also)
6J15-10	Shutoff (See 6R9-10 also)
6J15-11	Stopcock
6J15-12	Flow Divider
6J15-13	Fuel Flow Equalizer
6J15-14	Pressurizing
6J15-15	By-Pass
6J15-16	Breakaway
6J15-17	Slide
6J15-18	Fuel Flow Interconnect
6J15-19	Screen
6J15-20	Bleed
6J15-21	Transfer
6J16	TRANSMITTERS, FUEL AND WATER
6J16-2	Pressure
6J17	COOLERS
6J17-2	Clycol, Radiator, (See 7J1-17)
6J18	CAPS, FUEL AND WATER
6J18-2	Fuel Tank
6J19	EJECTORS
6J19-2	Gun
6J19-3	Fuel
6J20	FUEL CELLS
6J20-2	Internal

6J21	LIMITERS
6J21-2	Acceleration
6J22	COOLERS (Heat Exchangers)
6J23	MISSILE PLUMBING, FUEL
6J23-2	Restrictor
6J24	HEATERS
6J25	ACCUMULATORS
6J26	DETECTORS
6J27	CYLINDERS
6J28	MANIFOLDS
6J29	ACTUATOR ASSEMBLIES
6K	ROCKET ENGINE FUEL SYSTEMS
6K1	VALVES
6K1-2	Control
6K1-3	Drain
6K1-4	Shutoff
6K1-5	Relief, Vent
6K1-6	Disconnect
6K2	GENERATOR ASSEMBLIES
6K2-2	Gas
6K3	GIMBAL AND MOUNT ASSEMBLIES
6K3-2	Thrust Chamber
6K4	SWIVEL ASSEMBLIES
6K4-2	Mechanical
6K5	THRUST CHAMBER ASSEMBLIES
6K5-2	Boost Rocket
6K6	REGULATORS
6K6-2	Pressure
6K7	COUPLINGS AND DISCONNECTS
6K7-2	Couplings
6K8	PUMP ASSEMBLIES
6K8-2	Turbo
6K9	INITIATORS
6K10	NOZZLE ASSEMBLIES
6K11	ADAPTERS
6K12	ACTUATOR ASSEMBLIES
6K13	PROBE ASSEMBLIES
6P	PURGING SYSTEMS
6P1	NITROGEN VALVES
6P1-2	Check Nitrogen
6P1-3	Pressure Regulating
6P1-4	Relief Nitrogen
6P1-5	Control
6P1-6	Shutoff

6P2	GENERATOR PACKAGES
6P2-2	Purge Gas
6P3	CONTROLLERS
6P3-2	Fuel Air Ratio
6P4	PUMPS
6R	AIRCRAFT RECIPROCATING ENGINE FUEL SYSTEMS
6R1	CARBURETORS
6R1-2	Float
6R1-3	Injection
6R1-4	Variable Venturi
6R2	FILTERS AND STRAINERS
6R3	INJECTION SYSTEMS
6R4	FUEL INJECTION
6R5	PUMPS, FUEL- AND WATER-
6R5-2	Electric Motor Driven
6R5-3	Engine Driven
6R5-4	Injection
6R5-5	Hand Operated
6R5-6	Hydraulic Motor Operated
6R6	REGULATORS
6R6-2	Fuel
6R6-3	Water
6R7	SWITCHES (See Category 8)
6R8	TANKS
6R8-2	Jettisonable
6R9	VALVES
6R9-2	Check
6R9-3	Control
6R9-4	Drain
6R9-5	Float
6R9-6	Metering
6R9-7	Pressure Regulating
6R9-8	Vent, Relief
6R9-9	Selector
6R9-10	Shutoff
6R9-11	Coupling, Quick-Disconnect
6R9-12	Slide
6R9-13	Swivel
6R9-14	Dump
6R9-15	Flow Divider
6R9-16	Gate
6R10	PRIMER AND IGNITER ASSEMBLIES
6R11	AMPLIFIERS
6S	OFFENSIVE SYSTEMS
6S1	SYSTEMS
6S2	VALVES
6S3	CYLINDERS
6S4	CHAMBERS

## CHAPTER 10

### CATEGORY 7 - AIRBORNE ENGINE LUBRICATING SYSTEMS

#### 10-1 GENERAL.

10-1.1 Category 7 has only two systems relating to airborne engine lubrication. These two systems are divided into equipment series and then further divided into equipment subseries within each equipment series. TO numbers in Category 7 use both three and four basic groups for data identification. Numbering patterns for both groups are discussed in paragraph 10-2.

10-1.2 TO data pertaining to more than one system is numbered in the category general series.

10-1.3 Information involving more than one equipment series within a system is numbered in the system general series.

#### 10-2 NUMBERING PATTERN.

10-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within the system.

10-2.1.1 Part one is always the numeric 7 identifying Category 7.

10-2.1.2 Part two is an alpha character that identifies the lubrication system. These alpha characters are: J - jet engine lubricating systems, or R - reciprocating engine lubricating systems. There is no associated equipment identified in this category.

10-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series is outlined in paragraph 10-4.

10-2.2 **GROUP TWO.** TO numbering patterns in Category 7 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

10-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific components.

10-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

#### 10-2.3 **GROUP THREE.**

10-2.3.1 If the TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 7.

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements

10-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards, or supplements. The following alpha characters are authorized for use in Category 7:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

10-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing model, type or PN assigned to specific component assemblies.

10-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 10-2.3.1, above.

**10-3 EXAMPLES OF CATEGORY 7 NUMBERING PATTERNS.**

10-3.1 Depot maintenance instructions with illustrated parts breakdown for a transmission fluid cooler, PN 215-55302-1 for A7D aircraft jet engine:

7J1-65-3

- 7 Category 7
- J Jet Engine Lubrication System
- 1 Cooler Series
- 65 Identifies PN 215-55302-1
- 3 Number Reserved for Depot Maintenance Instructions

10-3.2 Checkout and service instructions for a temperature control valve, PN 154605-1-1, for C-141 aircraft jet engine:

7J6-10-10-2

- 7 Category 7
- J Jet Engine Lubrication Systems
- 6 Valve Series
- 10 Relief Valve Subseries
- 10 Identifies PN 154605-1-1
- 2 Number Reserved for Service Instructions

10-3.3 Overhaul instructions with illustrated parts breakdown for oil separator assembly, PN 1545-4-E for C-121C aircraft reciprocating engine:

7R6-2-13

- 7 Category 7
- R Reciprocating Engine Lubrication System
- 6 Separator Series
- 2 Identifies PN 1545-4-E
- 13 Number Reserved for Overhaul Instructions

**10-4 CATEGORY 7 NUMBERING SERIES.**

- 7 AIRBORNE ENGINE LUBRICATING SYSTEMS
- 7J JET ENGINE LUBRICATING SYSTEMS
- 7J1 COOLERS
- 7J2 FILTERS
- 7J3 HEATERS
- 7J4 PUMPS
- 7J4-2 Lube, Scavenge
- 7J4-3 Transfer
- 7J4-4 Lubricator
- 7J5 REGULATORS
- 7J5-2 Oil Temperature
- 7J5-3 Pressure
- 7J6 VALVES
- 7J6-2 Check (See 7J6-8)
- 7J6-3 Diverter
- 7J6-4 Flow Divider
- 7J6-5 Shutoff

7J6-6 Control  
7J6-7 Pressurizing  
7J6-8 Check  
7J6-9 Drain  
7J6-10 Relief  
7J6-11 Selector  
7J7 THERMOSTATS  
7J8 SOCKET ASSEMBLIES  
7J9 AMPLIFIERS  
7J10 TANKS  
7J11 INDICATORS  
7J12 NIPPLE ASSEMBLIES  
7J12-2 Oil  
7J13 TRANSDUCERS  
7J14 SENSORS  
7J15 FAN ASSEMBLIES  
7R RECIPROCATING ENGINE LUBRICATING SYSTEMS  
7R1 COOLERS  
7R1-3 Oil Coolers  
7R2 FILTERS  
7R3 HEATERS  
7R4 PUMPS, RECIPROCATING-ENGINES  
7R4-2 Hydraulic Gear  
7R4-3 Transfer  
7R5 REGULATORS  
7R6 SEPARATORS  
7R7 THERMOSTATS  
7R8 VALVES  
7R8-3 Control  
7R8-5 Drain  
7R8-7 Selector  
7R8-8 Sequence  
7R8-9 Shutoff  
7R6-10 Diverter Segregator  
7R8-12 By-Pass  
7R9 SOCKET ASSEMBLIES  
7R10 FANS





## CHAPTER 11

### CATEGORY 8 - AIRBORNE ELECTRICAL SYSTEMS

#### 11-1 GENERAL.

11-1.1 Category 8 contains six airborne electrical systems. These systems are divided into equipment subseries within each equipment series. Therefore TO numbers in Category 8 use both three and four basic groups for data identification. Numbering patterns for both groups are discussed in paragraph 11-2.

11-1.2 TO data pertaining to more than one system is numbered in the category general series.

11-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 11-2 NUMBERING PATTERNS.

11-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within a system.

11-2.1.1 Part one is always the numeric 8 identifying Category 8.

11-2.1.2 Part two is an alpha character identifying the electrical system, i.e.,

- A - alternating current electrical equipment
- C - combination of both alternating and direct current electrical equipment
- D - direct current electrical equipment
- E - ignition systems
- R - relays
- S - switches

11-2.1.3 Part three contains one or more numeric characters identifying an equipment series within the system. The TO numbering series is outlined in paragraph 11-4.

11-2.2 **GROUP TWO.** Since TO numbering patterns in Category 8 use both three and four basic groups, the identifiers in group two are not constant. The following explains the numbering patterns for both groups:

11-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific components.

11-2.2.2 If the TO number contains four basic groups, the equipment series identified in group one, part three, has been divided into equipment subseries. In this case group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

#### 11-2.3 **GROUP THREE.**

11-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 8:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests

11-2.3.2 In some instances, the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards, or supplements. The following alpha characters are authorized for use in Category 8:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

11-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing model, type or PN assigned to specific equipment and the specific types of TOs are then identified in group four.

11-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 11-2.3.1.

**11-3 EXAMPLES OF CATEGORY 8 NUMBERING PATTERNS.**

11-3.1 Operating and maintenance instructions with illustrated parts breakdown for an alternating current electric motor, PN 6818-1, applicable to a pump installation on C-119 aircraft:

- 8A1-15-35-1
- 8 Category 8
- A Alternating Current
- 1 Actuator and Motor Series
- 15 Pump Subseries
- 35 Identifies PN 6818-1
- 1 Number Reserved for Operating Instructions

11-3.2 A field maintenance instruction for a combination alternating/direct current inverter, PN F15-2M, for H-19A helicopter:

- 8C7-2-5-2
- 8 Category 8
- C Alternating/Direct Current
- 7 Motor Generator (Inverter) Series
- 2 1-250 Volt Ampere Subseries
- 5 Identifies PN F15-2M
- 2 Number Reserved for Field Maintenance

11-3.3 Overhaul instruction with parts breakdown for a fuel float switch assembly, PN F-7860 for a B-52 aircraft:

- 8S1-2-24-3
- 8 Category 8
- S Switches
- 1 Float Switch Series
- 2 Fuel Float Switch Subseries
- 24 Identifies PN F-7860
- 3 Number Reserved for Overhaul Manuals

**11-4 CATEGORY 8 NUMBERING SERIES.**

- 8 AIRBORNE ELECTRICAL SYSTEMS
- 8A ALTERNATING-CURRENT
- 8A1 ACTUATORS AND MOTORS
- 8A1-2 Bomb Bay Door
- 8A1-3 Camera Door
- 8A1-4 Magnetron
- 8A1-5 Cowl Flap and Air Plug

8A1-6 Tachometer (See 8A1-28)  
8A1-7 Wing Flap, Dive Flap  
8A1-8 Trim Tab, Boost  
8A1-9 Oil Cooler, Inter-Cooler  
8A1-10 Carburetor Air  
8A1-11 Cockpit Heat and Vent  
8A1-12 Anti-Ice, De-Ice  
8A1-13 Engine, Prop Control  
8A1-14 Valve  
8A1-15 Pump  
8A1-16 Radome Retract  
8A1-17 Fan, Blower  
8A1-18 Windshield Wiper  
8A1-19 Compressor  
8A1-20 Tip Tank, Jato Release  
8A1-21 Fractional Horsepower  
8A1-22 Integral Horsepower  
8A1-23 Air Inlet Door, Screen  
8A1-24 Nose Turret Empty Disposal  
8A1-25 Regulating  
8A1-26 Seat Control  
8A1-27 Navigational  
8A1-28 Generator, Tachometer  
8A1-29 Heater  
8A1-30 Hoist  
8A1-31 Selector Door  
8A1-32 Transmitter  
8A1-33 Radar  
8A1-34 Throttle  
8A1-35 Antenna  
8A1-36 Ram Air  
8A1-37 Wingfold  
8A1-35 Photographic Equipment  
8A1-39 Switch  
8A1-40 Autopilot  
8A1-41 Spike Positioning  
8A1-42 Pitot Tube  
8A1-43 Turret Drive  
8A1-44 Potentiometer  
8A1-45 Training Equipment  
8A1-46 Radio  
8A1-47 Computer  
8A1-48 Gearhead  
8A1-49 Inflight Printer, Control  
8A1-50 Test Set  
8A1-51 Rudder  
8A1-52 Transmission  
8A1-53 Stabilizer  
8A1-54 Launch Gear  
8A1-55 Guidance  
8A1-56 Lights  
8A1-57 Ammunition Booster, Gunnery  
8A1-58 Cryptographic Equipment  
8A1-59 TV Viewfinder  
8A1-60 Launcher, Guided-Missile (See 35M)  
8A1-61 Engine Temperature Control  
8A1-62 Driftmeter Fairing  
8A1-63 Pressurization Unit

8A1-64	Indicator
8A1-65	Amplifier
8A1-66	Fire Control
8A1-67	Controlled Line Platform
8A1-68	Escape Capsule
8A1-69	Electronic Countermeasure
8A1-70	Lights (See 8A1-56)
8A1-71	Flare Ejection
8A1-72	Servo
8A1-73	Control
8A1-74	Timer
8A1-75	Recorder
8A1-76	Ramp
8A1-77	Plumbing
8A1-78	Drive (See 8A1-43)
8A1-79	Static Line Cable
8A1-80	Air Exit Door
8A1-81	Landing Gear
8A1-82	Shaker Assembly
8A1-83	Filter
8A1-84	Linear
8A2	POWER SUPPLIES
8A3	CONTROLLERS
8A3-2	Trim Tab
8A3-3	Afterburner
8A3-4	Starter
8A3-5	Generator
8A3-6	Wing Flap
8A3-7	Flasher
8A3-8	Timer
8A3-9	Temperature
8A3-10	Oil Cooler
8A3-11	Calibration
8A3-12	Rudder
8A3-13	Frequency and Load
8A3-14	Steering
8A3-15	Air Inlet
8A3-16	Paralleling
8A3-17	Warning Device
8A3-18	Panel
8A3-19	Winch and Hoist
8A4	CONNECTORS, PLUGS, ETC.
8A4-2	Mounting Rack and Tray
8A4-3	Contactors
8A5	DYNAMOTORS
8A5-2	0-100 MA
8A5-3	101-200 MA
8A5-4	201-300 MA
8A5-5	301-400 MA
8A6	GENERATORS (ENGINE DRIVEN)
8A6-2	0-1 KVA
8A6-3	2-7 KVA
8A6-4	8-9 KVA
8A6-5	10-15 KVA
8A6-6	16-20 KVA
8A6-7	21-30 KVA

8A6-8	31-40 KVA
8A6-9	41-60 KVA
8A6-10	61-120 KVA
8A7	MOTOR GENERATORS (ROTARY INVERTER)
8A7-2	0-1 AMP
8A7-3	1-250 VA
8A7-4	251-500 VA
8A7-5	501-1000 VA
8A7-6	1001-3000 VA
8A8	HEATERS AND DEFROSTERS
8A8-2	0-500 Watts
8A8-3	501-1000 Watts
8A8-4	1001-2000 Watts
8A9	VIBRATORS
8A9-2	Instrument Panel
8A10	LIGHTING EQUIPMENT
8A10-2	Landing
8A10-3	Taxi
8A10-4	Inter-Aircraft
8A10-5	Fluorescent Lights, Related Equipment
8A10-6	Flasher
8A10-7	Vibrator Pack
8A10-8	Anti-Collision
8A10-9	Display
8A10-10	Warning, Dimming Control
8A11	POWER SUPPLIES (See 8A2)
8A12	STARTERS
8A12-2	Combination Inertia - Direct Crank
8A12-3	Direct Crank
8A13	STARTER GENERATORS
8A13-2	1-100 amps
8A13-3	101-200 amps
8A13-4	201-300 amps
8A13-5	301-400 amps
8A14	TRANSFORMER RECTIFIERS
8A15	WARNING DEVICES
8A15-2	Audible Signal
8A15-3	(Do not use)
8A15-4	Fuel, Water Pressure
8A15-5	Stall Warning
8A16	VOLTAGE REGULATORS
8A17	SUPPRESSOR ASSEMBLIES
8A18	EJECTORS
8A19	TRANSFORMERS
8A20	AMPLIFIERS
8A21	FANS AND BLOWERS
8A22	TRANSMITTERS
8A23	CABLES
8A24	BOXES

8A24-2	Distribution
8A24-3	Junction
8A24-4	Control
8A25	PANELS - POWER DISTRIBUTION
8A26	INDICATORS
8A27	POWER MONITORS
8A28	ELECTROMAGNETIC UNITS
8C	COMBINATION ALTERNATING-AND DIRECT-CURRENT
8C1	ACTUATORS AND MOTORS
8C1-2	Bomb Door
8C1-3	Camera Door
8C1-4	Cockpit Canopy
8C1-5	Cowl Flap
8C1-6	Landing Gear
8C1-7	Wing Flap, Dive Flap
8C1-8	Trim Tab, Boost
8C1-9	Radio Set
8C1-10	Carburetor Air
8C1-11	Cockpit Heating and Ventilating
8C1-12	Anti-Ice and De-Ice
8C1-13	Engine Control
8C1-14	Valve
8C1-15	Pump
8C1-16	Radome Retract
8C1-17	Fan, Blower
8C1-18	Windshield Wiper
8C1-19	Compressor
8C1-20	Tip Tank, Jato Release
8C1-21	Fractional Horsepower Motor
8C1-22	Integral Horsepower Motor
8C1-23	Propeller Pitch and Mixture
8C1-24	Fire Detection
8C1-25	Positioning Control System
8C1-26	Temperature Control
8C1-27	Ground Cooling Door
8C1-28	Tachometer
8C1-29	Re-Entry Decoy
8C1-30	Cabin Pressure
8C1-31	Thrust Recovery
8C1-32	Winch
8C2	DO NOT NUMBER IN THIS SERIES
8C3	CONTROLLERS
8C3-2	Trim Tab
8C3-3	Afterburner Control
8C3-4	Starter
8C3-5	Generator
8C3-6	Wing Flap
8C3-7	Flasher
8C3-8	Timers
8C3-9	Temperature
8C3-10	Air Inlet
8C3-11	Inverter
8C3-12	Pylon
8C3-13	Voltage

8C3-14	Panel
8C3-15	Warning Device
8C3-16	Electrical
8C3-17	Landing Gear
8C3-18	Electronic
8C3-19	Digital Electronic
8C4	CONNECTORS, PLUGS, TERMINALS
8C5	DYNAMOTORS
8C5-2	0-100 MA
8C5-3	101-200 MA
8C5-4	201-300 MA
8C5-5	301-400 MA
8C5-6	401-1000 MA
8C5-7	1001-2000 MA
8C5-8	2001-3000 MA
8C5-9	3001-4000 MA
8C6	GENERATORS
8C6-2	200 amp DC - 1200 VA AC
8C6-3	60 amp - 28 VA DC
8C7	MOTOR GENERATORS
8C7-2	1-250 VA
8C7-3	251-500 VA
8C7-4	501-750 VA
8C7-5	751-1000 VA
8C7-6	1001-1500 VA
8C7-7	1501-2500 VA
8C7-8	2501-5000 VA
8C8	BOX ASSEMBLIES
8C9	INSTRUMENT PANEL VIBRATORS
8C9-2	0-5 lbs
8C9-3	6-10 lbs
8C9-4	11-15 lbs
8C9-5	16-20 lbs
8C9-6	21-25 lbs
8C10	LIGHTING EQUIPMENT
8C10-2	Landing
8C10-3	Cockpit
8C10-4	Inter-Aircraft
8C10-5	Fluorescent
8C10-6	Flasher
8C10-7	Flood
8C10-8	Panels
8C11	POWER SUPPLIES
8C11-2	110V AC Input - 300V DC Output
8C11-3	28V DC Input - 28V AC Output
8C11-4	115V AC Input - 275V DC Output
8C11-5	195/210V AC Input - 24/31V DC Output
8C11-6	28V DC Input - 115V AC Output
8C11-7	195/210V AC Input - 28V DC 100 Amps Output
8C11-8	Converter
8C12	STARTERS
8C12-2	Inertia and Direct Crank
8C12-3	Direct Crank
8C12-4	Energizer

8C13	STARTER GENERATORS
8C13-2	1-100 amps
8C13-3	101-200 amps
8C13-4	201-300 amps
8C13-5	301-400 amps
8C13-6	Direct Current
8C14	TRANSFORMER RECTIFIERS
8C14-2	0-25 amps
8C14-3	26-50 amps
8C14-4	51-100 amps
8C14-5	0-120 amps
8C14-6	101-200 amps
8C15	WARNING DEVICES
8C15-2	Horn
8C15-3	Bell
8C15-4	Lamp
8C15-5	Warning Unit, Vacuum
8C15-6	Fuel Pressure
8C15-7	Oil Pressure
8C15-8	Warning, Caution Panel
8C15-9	Fire Detector
8C15-10	Stall Warning
8C15-11	Audible Signal
8C16	RESISTORS
8C16-2	Powerstats, Autotransformers
8C17	AMPLIFIERS
8C17-2	Autopilot
8C18	VOLTAGE REGULATORS
8C19	BOXES
8C19-2	Distribution
8C19-3	Junction
8C20	HEATING SYSTEM
8C20-2	Electrical
8C21	PANELS
8C22	FILTER ASSEMBLIES
8D	DIRECT CURRENT
8D1	ACTUATORS AND MOTORS
8D1-2	Cargo, Ramp Door
8D1-3	Camera Door
8D1-4	Cockpit Canopy
8D1-5	Cowl Flap, Air Plug
8D1-6	Landing Gear
8D1-7	Wing Flap, Dive Flap
8D1-8	Trim Tab, Boost
8D1-9	Oil Cooler, Intercooler
8D1-10	Carburetor Air
8D1-11	Cockpit Heat, Vent
8D1-12	Anti-Ice and De-Ice
8D1-13	Engine Control
8D1-14	Valve
8D1-15	Pump
8D1-16	Radome Retract



8D1-17 Fan, Blower  
8D1-18 Windshield Wiper  
8D1-19 Compressor  
8D1-20 Tip Tank, Jato Release  
8D1-21 Fractional Horsepower  
8D1-22 Integral Horsepower  
8D1-23 Propeller Pitch and Mixture  
8D1-24 Hose Reel  
8D1-25 Air Inlet Door, Scoop, Screen  
8D1-26 Seat Control  
8D1-27 Paratrooper, Spoiler Door  
8D1-28 Rescue Door  
8D1-29 Launcher Reel  
8D1-30 Landing Light  
8D1-31 Cargo Hook Unlatch  
8D1-32 Bleed Air Supply System  
8D1-33 Purge Gas Control  
8D1-34 Approach Chute Door  
8D1-35 Flight Refueling System  
8D1-36 Hoist, Winch  
8D1-37 Rescue Hatch  
8D1-38 Nacelle Vent  
8D1-39 Selector Door  
8D1-40 Oil Cooler Door  
8D1-41 Camera Hoist  
8D1-42 Clutch  
8D1-43 Wrench  
8D1-44 Wing Heating, Venting  
8D1-45 Guidance System  
8D1-46 Step  
8D1-47 Pitch Control  
8D1-48 Hose Reel Door  
8D1-49 Wing Tip Door  
8D1-50 Ejection Door  
8D1-51 Gun Post Door  
8D1-52 Flight Refueling Pod Door  
8D1-53 Locks (See 8D1-92)  
8D1-54 Tail Skid  
8D1-55 Alternator Cooling Door  
8D1-56 Landing Gear Door  
8D1-57 Bomb Sight  
8D1-58 Amplifier  
8D1-59 Power Unit  
8D1-60 Beacon, Anti-Collision  
8D1-61 Fuel Control  
8D1-62 Switch  
8D1-63 Transmission  
8D1-64 Flight Control  
8D1-65 Intervalometer  
8D1-66 Rudder Control  
8D1-67 Arming System  
8D1-68 Trajectory Control  
8D1-69 Fire Control  
8D1-70 Paratainer Door  
8D1-71 Missile Surface Control  
8D1-72 Antenna  
8D1-73 Turret Drive  
8D1-74 Governor

8D1-75 Static Line Retriever  
8D1-76 Gear Case  
8D1-77 Calibrator  
8D1-78 Particle Sampler  
8D1-79 Training Equipment  
8D1-80 Trailer  
8D1-81 Camera  
8D1-82 Radio, Radar Equipment  
8D1-83 Transducer  
8D1-84 Heat Exchanger  
8D1-85 Brake  
8D1-86 Rotor Blade Tracking  
8D1-87 Generator  
8D1-88 Thermostat  
8D1-89 Launch Gear  
8D1-90 Shifter  
8D1-91 Pylon  
8D1-92 Missile Release and Lock  
8D1-93 Cooling  
8D1-94 Launcher, Airborne Guided-Missile  
8D1-95 Chaff Dispenser  
8D1-96 Starter  
8D1-97 Indicator  
8D1-98 Bomb Rack  
8D1-99 Transmitter  
8D1-100 Stick Shaker  
8D1-101 Thrust Reverse  
8D1-102 Lateral Control  
8D1-103 Arresting Hook

8D2 BATTERIES AND CHARGERS

8D3 CONTROLLERS

8D3-2 Trim Tab  
8D3-3 Electronic  
8D3-4 Afterburner  
8D3-5 Starter  
8D3-6 Generator  
8D3-7 Interior Lighting  
8D3-8 Flasher  
8D3-9 Timer  
8D3-10 Temperature  
8D3-11 Landing Gear  
8D3-12 Warning System  
8D3-13 Brake System  
8D3-14 Steering  
8D3-15 Pressure Sensor  
8D3-16 Rudder  
8D3-17 Shaker  
8D3-18 Panel Assembly  
8D3-19 Control Box  
8D3-20 Motor Control  
8D3-21 Switch  
8D3-22 Inverter, Synchronizer  
8D3-23 Deceleration Parachute  
8D3-24 Hoist  
8D3-25 Counter  
8D3-26 Dimming Control  
8D3-27 Sight

8D3-28 Empennage (Stabilizing Tail Assembly)  
 8D3-29 Camera Control  
 8D3-30 Overhead Delivery  
 8D3-31 Detecting System  
 8D3-32 Wing Flap  
 8D3-33 Pitch, Roll  
 8D3-34 Systems  
  
 8D4 CONNECTORS, PLUGS, TERMINALS, ETC.  
 8D4-2 Conduit Assemblies  
 8D4-3 Rheostats  
 8D4-4 Plugs  
 8D4-5 Receptacles  
  
 8D5 DYNAMOTORS  
 8D5-2 0-100 MA  
 8D5-3 101-200 MA  
 8D5-4 201-300 MA  
  
 8D6 GENERATORS, ENGINE-DRIVEN  
 8D6-2 1-50 amps  
 8D6-3 51-100 amps  
 8D6-4 101-200 amps  
 8D6-5 201-300 amps  
 8D6-6 301-400 amps  
 8D6-7 20 KW  
 8D6-8 Tachometer Generators  
  
 8D7 MOTOR GENERATORS  
 8D7-2 Voltage Boosters  
  
 8D8 HEATERS AND DEFROSTERS  
 8D8-2 Ignition Heater  
 8D8-3 501-1000 watts  
 8D8-4 1001-2000 watts  
 8D8-5 2001-3000 watts  
 8D8-6 Purging Heater  
  
 8D9 INSTRUMENT PANEL VIBRATORS  
 8D9-2 0-5 pounds  
 8D9-3 6-10 pounds  
 8D9-4 11-15 pounds  
 8D9-5 16-20 pounds  
 8D9-6 21-25 pounds  
  
 8D10 LIGHTING EQUIPMENT  
 8D10-2 Landing  
 8D10-3 Cockpit  
 8D10-4 Inter-Aircraft  
 8D10-5 Fluorescent  
 8D10-6 Navigation  
 8D10-7 Panel  
 8D10-8 Indicator  
 8D10-9 Vibrator Pack  
 8D10-10 Clearance  
 8D10-11 Anti-Collision  
 8D10-12 Fire Control  
 8D10-13 Map Reading  
 8D10-14 Airborne Search  
  
 8D11 POWER SUPPLIES  
 8D11-2 Static Converter

8D11-3	Power Unit
8D12	STARTERS
8D12-2	Combination Inertia-Direct Crank
8D12-3	Direct Crank
8D13	STARTER GENERATORS
8D13-2	1-100 amps
8D13-3	101-200 amps
8D13-4	201-300 amps
8D13-5	301-400 amps
8D13-6	401-500 amps
8D13-7	1000 amps
8D14	TRANSFORMER RECTIFIERS
8D14-2	0-25 amps
8D14-3	26-50 amps
8D14-4	51-100 amps
8D14-5	101-150 amps
8D15	WARNING DEVICES
8D15-2	Horn
8D15-3	Bell
8D15-4	Carbon Monoxide Signal
8D15-5	Automatic
8D15-6	Signal Amplifier
8D15-7	Stall Warning - Safe Flight
8D15-8	Flasher
8D15-9	Panel
8D15-10	Audible Signal
8D15-11	Trip Signal
8D15-12	Detector
8D15-13	Visual Signal
8D16	VOLTAGE REGULATORS
8D17	SOLENOIDS
8D18	FANS AND BLOWERS
8D18-2	Flying Suits
8D19	AMPLIFIERS
8D19-2	Fuel Signal
8D20	DISCONNECTS (ELECTRICAL)
8D21	SENSORS
8D22	HARNESS ASSEMBLIES
8D23	CABLE ASSEMBLIES
8D24	PANELS
8D25	JUNCTION BOX ASSEMBLIES
8D26	UNITS AND ASSEMBLIES
8D27	ELECTRICAL MODULES
8E	IGNITION SYSTEMS AND COMPONENTS
8E1	TURBOJET AND TURBOPROP
8E1-2	Ignition System
8E1-3	Spark Plug Igniter
8E1-4	Ignition Timer
8E1-5	Coil

8E1-6	Cable
8E1-7	Lead, Cable Assembly
8E1-8	Exciter
8E1-9	Harness
8E1-10	Stator
8E1-11	Generator Assembly
8E1-12	Thermocouple
8E2	RECIPROCATING ENGINES
8E2-2	System
8E2-3	Coil
8E2-4	Ignition Harness
8E2-5	Magneto
8E2-5-2	4-, 5-, and 6- Cylinder
8E2-5-3	7- and 9- Cylinder
8E2-5-4	12- Cylinder
8E2-5-5	14- Cylinder
8E2-5-6	18- Cylinder
8E2-5-7	2- Cylinder
8E2-6	Spark Plug
8E2-7	Switch
8E2-8	Vibrator
8E2-9	Tachometer
8E3	AUXILIARY POWER UNITS
8E3-2	Exciter
8E3-3	Panel Assemblies
8R	RELAYS - INCLUDING SOLENOIDS AND CONTACTORS
8R1	GENERATOR RELAYS
8R1-2	Alternating-Current
8R1-3	Direct-Current
8R2	MOTOR GENERATORS (INVERTER)
8R3	MULTIPLE APPLICATION
8R4	STARTER RELAYS
8R5	CABIN PRESSURE CONTROL SYSTEMS
8R6	FIRE CONTROL SYSTEMS
8R7	RADAR RELAYS
8R7-2	Switch
8R8	ROTARY AND SELECTOR RELAYS
8R8-2	Ignition System Rotary
8R8-3	Switch Selector
8R8-4	Function Selector
8R9	TRANSFER RELAYS
8R9-2	Fuel Quantity
8R10	METER RELAYS
8R11	CAPACITORS
8RA	ASSOCIATED EQUIPMENT
8RA1	PANEL
8S	SWITCHES
8S1	FLOAT
8S1-2	Fuel Float

8S1-3	Oil Level
8S2	PRESSURE
8S2-2	Fuel
8S2-3	Hydraulic, Pneumatic, Vacuum
8S2-4	Miniature
8S2-5	Oil
8S2-6	Signal
8S2-7	Wave Guide
8S2-8	Manifold
8S2-9	Airspeed
8S2-10	Thrust
8S2-11	Barometric
8S2-12	Brake
8S2-13	Depressurized
8S3	ROTARY AND SELECTOR
8S3-2	Auxiliary
8S3-3	Wing Flap System
8S4	CIRCUIT BREAKER
8S4-2	Three Phase, Four Wire Circuit
8S5	PUSH BUTTON
8S5-2	Micro
8S5-3	Manual
8S6	THERMOSTAT
8S6-2	Anticipator
8S6-3	Detector
8S6-4	Temperature Control
8S6-5	Landing Gear Control
8S6-6	Altitude Control
8S6-7	Flight Control
8S7	LIMIT
8S8	LEVER
8S9	RADAR
8S9-2	Electromagnetic
8S9-3	Pressure
8S9-4	Coaxial
8S10	TIMER
8S11	INERTIA (ACCELERATION)
8S12	DECELERATION
8S13	PUSH/PULL

## CHAPTER 12

### CATEGORY 9 - AIRCRAFT AND MISSILE HYDRAULIC, PNEUMATIC AND VACUUM SYSTEMS

#### 12-1 GENERAL.

12-1.1 Category 9 contains airborne hydraulic, pneumatic, and vacuum systems. These systems are divided into equipment series and further divided into equipment subseries within each equipment series. TO numbers in Category 9 use both three and four basic groups for data identification. Numbering patterns for both groups are discussed in paragraph 12-2.

12-1.2 TO data pertaining to more than one system is numbered in the category general series.

12-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 12-2 NUMBERING PATTERNS.

12-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within a system.

12-2.1.1 Part one is always the numeric 9 that identifies Category 9.

12-2.1.2 Part two is an alpha character indicating the system, i.e., H - hydraulic systems; P - pneudraulic systems; and V - vacuum systems.

12-2.1.3 Part three contains one or more numeric characters identifying the equipment series within a system. These TO numbering series are outlined in paragraph 12-4.

12-2.2 **GROUP TWO.** Since TO numbering patterns in Category 9 use both three and four basic groups, the identifiers in group two are not constant. The following explains both numbering patterns:

12-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific components.

12-2.2.2 If the TO number contains four basic groups, the equipment series identified in group one, part three, has been divided into equipment subseries. In this case, group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

#### 12-2.3 **GROUP THREE.**

12-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 9:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 8 Test Procedures, Checkout Manuals, or Programmed Tests

12-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 9:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

12-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PN assigned to specific equipment or components. When this occurs the specific types of TOs are then identified in group four.

12-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 12-2.3.1, above.

**12-3 EXAMPLES OF CATEGORY 9 NUMBERING PATTERNS.**

12-3.1 Overhaul instructions for a hydraulic filter for the C-135A aircraft, type G187M-68:

9H3-3-55-3

9           Category 9  
  H           Hydraulic System  
    3           Filter and Restrictor Series  
      3           Line Type Filter Subseries  
      55          Represents Type G187M-68  
      3           Number Reserved for Overhaul Instructions

12-3.2 An illustrated parts breakdown for a pressure pump, type MA-2, for C-141A aircraft:

9P4-2-16-24

9           Category 9  
  P           Pneumatic Systems  
    4           Pump and Compressor Series  
      2           Pump Subseries  
      16          Represents Type MA-2  
      24          Number Reserved for Illustrated Parts Breakdown

12-3.3 Illustrated parts breakdown for a vacuum shut-off valve, PN 2V-750 to be used on multiple aircraft:

9V1-3-7-4

9           Category 9  
  V           Vacuum Systems  
    1           Valve Series  
      3           Shutoff Valve Subseries  
      7           Represents PN 2V-750  
      4           Number Reserved for Illustrated Parts Breakdown

**12-4 CATEGORY 9 NUMBERING SERIES.**

9           AIRCRAFT AND MISSILE HYDRAULIC, PNEUMATIC, AND VACUUM SYSTEMS

9H          HYDRAULIC SYSTEMS AND EQUIPMENT

9H1        ACCUMULATORS

9H1-2      Cylindrical

9H1-3      Spherical

9H1-4      Sustainer

9H1-5      Booster

9H2        CYLINDERS AND ACTUATORS

9H2-2      Main Landing Gear

9H2-3      Nose Landing Gear

9H2-4      Flight Surface Control

9H2-5      Auxiliary Control

9H2-6      Air Refueling

9H2-7      Engine Control

9H2-8      Missile Guidance

9H3        FILTERS AND RESTRICTORS



9H3-2	Reservoir
9H3-3	Line
9H3-4	Vent
9H3-5	Magnetic
9H4	PUMPS
9H4-2	Engine Driven
9H4-3	Electric Motor Driven
9H4-4	Hand Driven
9H4-5	Air Driven
9H4-6	Engine Oil Driven
9H5	RESERVOIRS
9H5-2	Non-Pressurized
9H5-3	Pressurized
9H6	TRANSMISSIONS
9H6-2	Reciprocating Engine Driven
9H6-3	Jet Engine Driven
9H6-4	Turbine Driven
9H6-5	Transmission Drive
9H7	POWER PACKS
9H7-2	Electric Driven
9H7-3	Turbine Driven
9H8	VALVES
9H8-2	Relief
9H8-3	Regulator
9H8-4	Shutoff
9H8-5	Shuttle
9H8-6	Check
9H8-7	Flow Equalizer
9H8-8	Restrictor
9H8-9	Sequence
9H8-10	Self-Sealing Coupling
9H8-11	By-Pass
9H8-12	Pressure Switch
9H8-13	Drain
9H8-14	Selector
9H8-15	Pressure Reducing
9H8-16	Flow Regulator
9H8-17	Isodraulic
9H8-18	Swivel
9H8-19	Pressure Damper
9H8-20	Up-Latch
9H8-21	Auto-Lock Wing Flap
9H8-22	Snubber
9H8-23	Limit
9H8-24	Constant Flow
9H8-25	Gland
9H8-26	Priority
9H8-27	Manifold Distribution
9H8-28	Metering
9H8-29	Slide
9H8-30	Control
9H8-31	Purge
9H8-32	Override
9H8-33	Transfer
9H8-34	Dump
9H8-35	Pilot

9H8-36	Fill
9H8-37	Diverter
9H9	WINDSHIELD WIPERS
9H9-2	Single
9H9-3	Dual
9H10	MOTORS
9H10-2	1000 PSI
9H10-3	3000 PSI
9H10-4	2000 PSI
9H10-5	1600 PSI
9H10-6	4000 PSI
9H11	COUPLINGS
9H12	MODULATOR ASSEMBLIES
9H13	DAMPERS
9H14	COOLERS AND RADIATORS
9H15	STOP ASSEMBLIES
9H16	RESTRICTORS (Use 9H3)
9H17	REGULATORS
9H17-2	Pressure
9H17-3	Control
9H17-4	Power Steering
9H18	MANIFOLD ASSEMBLIES
9H19	COMPENSATOR ASSEMBLIES
9H20	SEPARATORS
9H21	STARTERS
9H22	REELING MACHINES
9H23	GENERATORS
9H24	TRANSFORMERS
9H25	EXTENSIONS
9H26	INTERCONNECTING ASSEMBLIES
9H27	CHANNEL ASSEMBLIES
9H28	DRIVES AND MECHANISMS, DIFFERENTIAL ASSEMBLIES
9H29	DISCONNECTS
9P	PNEUMATIC SYSTEMS
9P1	ACCUMULATORS AND BOTTLES
9P1-2	Bottle
9P1-3	Accumulator
9P2	CYLINDERS AND ACTUATORS
9P2-2	Landing Gear
9P2-3	Auxiliary
9P2-4	Escape Hatch
9P3	DEHYDRATORS AND CHEMICAL DRYERS
9P3-2	Dehydrator
9P3-3	Chemical Dryer
9P3-4	Mechanical Moisture Separator

9P4	PUMPS AND COMPRESSORS
9P4-2	Pump
9P4-3	Compressor
9P5	VALVES
9P5-2	Relief
9P5-3	Regulator
9P5-4	Quick Disconnect
9P5-5	Shutoff
9P5-6	Filler
9P5-7	Priority
9P5-8	Pressure Reducing and Fuse
9P5-9	Selector
9P5-10	Shuttle
9P5-11	Warning Switch
9P5-12	Check
9P5-13	Restrictor
9P5-14	Control
9P5-15	By-Pass
9P5-16	Metering
9P5-17	Bleed
9P5-18	Starter
9P5-19	Gun Gas Purging
9P5-20	Pressure Operated
9P5-21	Dump
9P5-22	Sequence
9P5-23	Butterfly
9P5-24	Flow Divider
9P6	FILTERS
9P6-2	Liquid
9P6-3	Nitrogen Gas
9P7	DRIVES
9P8	COUPLINGS
9P9	HEAT EXCHANGERS
9P10	REGULATORS
9P10-2	Elevator Control Feel
9P10-3	Pneudraulic
9P10-4	Pressure
9P11	CONTROLS
9P12	MOTORS
9P13	RELAYS
9P14	RESERVOIRS
9P15	VENTILATION UNITS
9V	VACUUM SYSTEMS
9V1	VALVES
9V1-2	Relief
9V1-3	Shutoff
9V1-4	Selector
9V1-5	Regulator
9V2	PUMPS
9V2-2	Engine Driven

TO 00-5-18

9V2-3	Electric Motor Driven
9V3	DECOYS
9V4	FILTERS
9V4-2	Vent

## CHAPTER 13

### CATEGORY 10 - PHOTOGRAPHIC EQUIPMENT

#### 13-1 GENERAL.

13-1.1 Category 10 contains twelve primary photographic systems. These systems are divided into equipment series and in some instances further divided into equipment subseries within each equipment series. Therefore TO numbers in Category 10 use both three and four groups for data identification. Numbering patterns for both groups are discussed in paragraph 13-2.

13-1.2 TO data pertaining to more than one system is numbered in the category general series.

13-1.3 Information pertaining to more than one equipment series within a system is numbered in the system general series.

#### 13-2 NUMBERING PATTERNS.

13-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within each system.

13-2.1.1 Part one is always the numeric 10 identifying Category 10.

13-2.1.2 Part two is an alpha character that indicates the photographic equipment system, i.e.,

- A - airborne cameras
- B - ground cameras
- C - motion picture cameras
- D - projection equipment
- E - processing equipment
- F - microfilm equipment
- G - photographic kits
- H - interpretation and photogrammetric equipment
- J - sensitized materials
- K - radar assessing equipment
- L - photographic instrumentation equipment
- M - mobile photographic laboratories

13-2.1.3 Part three contains one or more numeric characters identifying the equipment series within a system. These TO numbering series are outlined in paragraph 13-4.

13-2.2 **GROUP TWO.** Since TO numbering patterns in Category 10 use both three and four basic groups, the identifiers in group two are not constant. The following explains both numbering patterns:

13-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific components.

13-2.2.2 If the TO number contains four basic groups, the equipment series identified in group one, part three, has been divided into equipment subseries. In this case group two identifies the equipment subseries with one or more numeric characters and the model, type or PN identified in group three.

13-2.3 GROUP THREE.

13-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 10:

- 01 List of Applicable Publications (LOAP)
- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests
- 9 Corrosion Control

13-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards, or supplements. The following alpha characters are authorized for use in Category 10:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

13-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing model, type or PN assigned to specific equipment or components. When this occurs the specific types of TOs are then identified in group four.

13-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 13-2.3.1.

**13-3 EXAMPLES OF CATEGORY 10 NUMBERING PATTERNS.**

13-3.1 A service manual for a still picture camera, type KB-18A, for use on RF-4C aircraft:

- 10A1-6-6-2
- 10 Category 10
- A Airborne Cameras
- 1 Aircraft Camera Series
- 6 Strike Camera Subseries
- 6 Represents Type KB-18A
- 2 Number Reserved for Service Manuals

13-3.2 Operating and service instructions for a Mark II contact printer:

- 10E8-2-19-1
- 10 Category 10
- E Processing Equipment
- 8 Printer Series
- 2 Contact Printer Subseries
- 19 Represents Type Mark II
- 1 Number Reserved for Operating Instructions

13-3.3 Operating and maintenance instructions with illustrated parts breakdown for a mobile photo laboratory, type ES-64A:

10M1-7-3-1

10           Category 10  
 M           Photographic Laboratories  
   1         Mobile Laboratory Series  
     7       Photo Interpretation Subseries  
       3      Represents Type ES-64A  
         1     Number Reserved for Operating Instructions

13-4 CATEGORY 10 NUMBERING SERIES.

10           PHOTOGRAPHIC EQUIPMENT  
 10A         AIRBORNE CAMERAS AND EQUIPMENT  
 10A1        AIRCRAFT CAMERAS  
 10A1-2      Gun  
 10A1-3      Mapping  
 10A1-4      Radar Recording  
 10A1-5      Reconnaissance  
 10A1-6      Strike  
 10A1-7      Continuous Strip  
 10A1-8      Pair  
 10A1-9      Motion Picture  
 10A1-10     Optical  
 10A2        BODIES, LENS, CONES, REELS, ETC.  
 10A2-2      Bodies  
 10A2-3      Lens, Cone  
 10A2-4      Film Magazine  
 10A2-5      Reel  
 10A2-6      Magnetic Clutch and  
               Brake Assembly  
 10A3        MOUNTS AND GYROSCOPES  
 10A4        VIEWFINDERS  
 10A5        CONTROLS  
 10A5-2      Film Magazine  
 10A5-3      Gun Camera  
 10A5-4      Mapping Camera  
 10A5-5      Radar Recording Camera  
 10A5-6      Reconnaissance Camera  
 10A5-7      Strike Camera  
 10A5-8      Strip Camera  
 10A6        CAMERA CONTROL SYSTEMS, UNIVERSAL  
 10A6-2      Amplifier Unit  
 10A6-3      Amplifier  
 10A6-4      Base Mounting  
 10A6-5      Chassis  
 10A6-6      Computer Unit  
 10A6-7      Computer  
 10A6-8      Control  
 10A6-9      Detector  
 10A6-10     Discriminator  
 10A6-11     Generator  
 10A6-12     Indicator  
 10A6-13     Intervalometer  
 10A6-14     Junction Box

10A6-15	Memory Delay Unit
10A6-16	Power Supply
10A6-17	Synchronizer Marker Unit
10A6-18	Pulse Shaper
10A6-19	Converter
10A6-20	Adapter
10A7	NIGHT PHOTO EQUIPMENT
10A7-2	Lamp Assembly
10A7-3	Photoflash Cartridge Ejector
10A7-4	Detector
10A8	PHOTO NAVIGATION EQUIPMENT
10A8-2	Pilot Director
10A8-3	Control System
10A8-3-2	Servo Amplifier
10A8-3-3	Heading Error Compensator
10A8-3-4	Indicator
10A8-3-5	Drift Angle Control Box
10A8-3-6	Tripping Pulse Duration
10A8-4	Converter
10A9	RECONNAISSANCE DEVICES
10A10	DATA DISPLAY SETS
10A11	TEST EQUIPMENT (Use 33D10)
10A12	LIGHT BOXES
10A13	PHOTOMETERS
10A14	ENCODERS
10A15	COOLING UNITS
10A16	CALIBRATORS
10A17	CAMERA PODS
10B	GROUND CAMERAS AND EQUIPMENT
10B1	GROUND CAMERAS
10B1-2	16MM (Still)
10B1-3	35MM (Still)
10B1-4	50MM (Still)
10B1-5	3 1/4 X 4 1/4
10B1-6	4 X 5
10B1-7	8 X 10
10B1-8	Copying
10B1-9	Identification
10B1-10	Data Recording
10B1-11	Oscilloscope
10B1-12	Hand
10B1-13	Tracking
10B2	EXPOSURE METERS
10B3	FLASH UNITS
10B4	LIGHT ASSEMBLIES
10B5	TRIPODS
10B6	STANDS
10B7	VIEWERS
10B8	ELECTRONIC OPTICAL TRACKING SYSTEM



10C	MOTION PICTURE CAMERAS AND EQUIPMENT
10C1	CAMERAS
10C1-2	8 MM
10C1-3	16 MM
10C1-4	35 MM
10C1-5	Missile
10C1-6	70 MM
10C2	CLEANERS
10C3	EDITORS AND VIEWERS
10C4	MACHINE MEASURING EQUIPMENT
10C5	REWIND EQUIPMENT
10C6	SOUND RECORDING EQUIPMENT
10C7	SPLICERS
10C8	TRIPODS AND HEADS
10C9	FILM TITLERS
10C10	SCORING ASSEMBLIES
10C11	BODIES AND MAGAZINES
10C12	COATERS
10C13	HAND HELD CAMERAS
10C14	VIDEO SYSTEMS
10D	PROJECTION EQUIPMENT
10D1	PROJECTORS
10D1-2	Motion Picture
10D1-3	Still Picture
10D1-4	Continuous Stereoscopic
10D2	POINTERS (Optical)
10D3	SCREENS
10D4	VIEWERS
10D4-2	Still Picture
10D4-3	Motion Picture
10D4-4	Stereoscopic
10D5	COMPARATORS
10D5-2	Photographic
10E	PROCESSING EQUIPMENT
10E1	DEHUMIDIFIERS
10E2	DEVELOPERS AND PROCESSORS
10E3	DRYERS
10E3-2	Film
10E3-3	Print
10E4	HEATERS AND CHILLERS (WATER)
10E5	PROCESSING, EXPOSURE, TEST, AND STAMPING MACHINES
10E5-2	Continuous Processing
10E5-3	Exposure Test
10E5-4	Stamping

10E6 DRY MOUNTING PRESSES  
10E7 PHOTOCOPY EQUIPMENT  
10E8 PRINTERS  
10E8-2 Contact (Manual)  
10E8-3 Continuous  
10E8-4 Projection  
10E9 SINKS  
10E10 STRAIGHTENERS  
10E11 MIXERS  
10E12 TIMERS  
10E12-2 Electrical  
10E13 WASHERS  
10E14 WRINGERS  
10E15 MIXER-DISTRIBUTORS  
10E16 CHOPPERS  
10E17 EASELS  
10E18 LIGHT ASSEMBLIES  
10E19 CONTROLS  
10E20 MECHANISMS  
10E21 CODERS  
10E22 SIMULATORS  
10E23 REPRODUCERS  
10E24 ANALYZERS  
10E25 TRANSLATORS  
10E26 EJECTOR SETS  
10E27 METERS  
10E27-2 Sensitometer  
10E27-3 Densitometer  
  
10E28 RECTIFIERS  
10E29 FOCATRONS  
10E30 LIGHT TABLES  
10E31 SILVER RECOVERY UNITS  
10E32 FILM FINISHING  
10E33 PRESSURE REDUCING VALVES  
10E34 DUPLICATORS  
10E35 VALVES  
10F MICROFILM EQUIPMENT  
10F1 CAMERAS  
10F2 ENLARGERS MARKING  
10F3 READERS

10F4	CUTTERS
10G	KITS, PHOTOGRAPHIC-EQUIPMENT
10G1	DARKROOM
10G2	DEHUMIDIFYING
10G3	DEVELOPING
10G4	DRYING
10G5	LABORATORY
10G6	LIGHTING
10G7	MIXER
10G8	NEGATIVE MARKING
10G9	COPYING AND ENLARGING
10G10	PRINTING
10G11	SINK
10G12	TEMPERATURE CONTROL
10G13	WATER SUPPLY
10G14	VECTOGRAPH
10G15	OPTIC
10G16	CARRYING AND STORAGE CASES
10G17	ADAPTER KITS
10H	INTERPRETATION AND PHOTOGRAMMETRY EQUIPMENT
10H1	HEIGHT FINDERS
10H2	PHOTO INTERPRETERS
10H3	PLOTTERS
10H4	FILM PLOTTING TABLES
10H5	SKETCHMASTERS
10H6	TEMPLET SETS, SLOTTED
10H7	RECTIFIERS
10H8	PROJECTORS
10H9	INTERPRETATION EQUIPMENT
10H10	REEL BRACKETS
10H11	ANALYTICAL SYSTEMS
10J	SENSITIZED MATERIALS AND SUPPLIES
10K	RADAR ASSESSING EQUIPMENT
10K1	GENERAL
10K2	PLOTTING BOARDS
10L	PHOTO INSTRUMENTATION EQUIPMENT
10L1	CAMERAS
10L2	MAGAZINES
10M	PHOTO LABORATORIES

10M1	MOBILE
10M1-2	Processing (Shelter)
10M1-3	Printing
10M1-4	Reproduction
10M1-5	Maintenance Shop
10M1-6	Edit, Inspection
10M1-7	Interpretation
10M1-8	Storage Facility
10M1-9	Chemical Mixing, Distribution
10M1-10	Film Titling, Cleaning
10M1-11	Film Handling Facility
10M1-12	Administration
10M1-13	Accessing-Briefing
10M1-14	Water Conditioner
10M1-15	Electronic Optical Tracking

## CHAPTER 14

### CATEGORY 11 - ARMAMENT EQUIPMENT

#### 14-1 GENERAL.

14-1.1 Category 11 contains thirteen armament systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore, TO numbers in Category 11 use both three and four basic groups for data identification. Numbering patterns for both groups are discussed in paragraph 14-2.

#### NOTE

Nuclear Weapons TO Numbers (subcategory 11N) are not described here. SA-ALC/NWDT is the only organization authorized to assign 11N series TO numbers (paragraph 1-4.6.1).

14-1.2 TO data pertaining to more than one system is numbered in the category general series.

14-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 14-2 NUMBERING PATTERNS.

14-2.1 **GROUP ONE.** This group has three parts that identify the category, system and equipment series within the system.

14-2.1.1 Part one is always the numeric 11 identifying Category 11.

14-2.1.2 Part two is an alpha character identifying the armament system, i.e., A - ammunition; B - bombing systems and equipment; C - chemical warfare agents, explosives, gases and weapons; D - decontamination, impregnating and protective equipment; E - biological warfare agents; F - fire control systems and equipment; G - guidance and control systems and equipment; H - hazard detecting equipment; K - guided glide weapons; L - launchers and equipment; P - egress systems, explosive devices and equipment; R - missile re entry vehicles and equipment; and W - weapons and equipment. Only two of the 13 systems in Category 11 have associated equipment identified. These two systems are: launchers and equipment, and weapons and equipment. The associated equipment is identified by adding the alpha A immediately following the armament system identifier, i.e., LA and WA.

14-2.1.3 Part three contains one or more numeric characters identifying an equipment series within the system. The TO numbering series are outlined in paragraph 14-4.

14-2.2 **GROUP TWO.** TO numbering patterns in Category 11 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

14-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific equipment.

14-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

14-2.2.3 Bombing systems and fire control systems with JETDS (Joint Electronics Type Designator System) numbers or Air Force type numbers are numbered in the 11B1 and 11F1 series respectively. The type designator, in this instance, is used to form group two of the TO number. (See examples in paragraphs 4-3.4 and 4-3.5.)

14-2.3 GROUP THREE.

14-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 11:

- 01 List of Applicable Publications (LOAP)
- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Storage, Installation and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests

14-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 11:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

14-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing model, type or PN assigned to specific component assemblies.

14-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 14-2.3.1.

14-3 EXAMPLES OF CATEGORY 11 NUMBERING PATTERNS.

14-3.1 Storage procedures for cluster munitions, type CBU-30/A:

11A9-14-7

- 11 Category 11
- A Ammunition
- 9 Cluster Munition Series
- 14 Identifies Type CBU-30/A
- 7 Number Reserved for Storage Instructions

14-3.2 Operating and maintenance instructions for a smoke tank, PN 2105220:

11C15-2-7-1

- 11 Category 11
- C Chemical Warfare Agents, Explosives, Gases and Weapons
- 15 Tank Series
- 2 Smoke Tank Subseries
- 7 Identifies PN 2105220
- 1 Number Reserved for Operating Instructions

## 14-3.3 Overhaul instructions for a target position computer, PN 737511:

11F12-13-2-3

- 11 Category 11
- F Fire Control Systems
- 12 Computer Series
- 13 Target Position Type Subseries
- 2 Identifies PN 737511
- 3 Number Reserved for Overhaul Instructions

## 14-3.4 Field maintenance instructions for bombing navigation system, optical and radar, type AN/ASB-15A,B:

11B1-ASB15-2-3

- 11 Category 11
- B Bombing Systems and Equipment
- 1 Bombing System Series
- ASB15 Identifies Type AN/ASB-15
- 2 Number Reserved for Maintenance Instructions
- 3 Identifies the Third Section

## 14-3.5 Field maintenance instructions for fire control system, type MA-8, PN 521E747G8, G9 used on F-105 aircraft.

11F1-MA8-12

- 11 Category 11
- F Fire Control Systems and Equipment
- 1 Fire Control System Series
- MA8 Identifies Type MA-8
- 12 Number Reserved for Maintenance Instructions

14-4 CATEGORY 11 NUMBERING SERIES.

- 11 ARMAMENT EQUIPMENT
- 11A MUNITIONS
- 11A1 BOMBS, EXPLOSIVE
- 11A2 BOMBS, INCENDIARY
- 11A3 BOMBS, PRACTICE AND LEAFLET
- 11A4 BOOSTERS AND BURSTERS
- 11A5 AERIAL MINES, NON-CLUSTERED
- 11A6 FINS, BOMB
- 11A7 FUSES, BOMB
- 11A8 MISCELLANEOUS GROUND MUNITIONS
- 11A9 CLUSTER MUNITIONS
- 11A10 FLARES, MARKERS, SIGNALS, AND SIMULATORS
- 11A11 ROCKETS AND ROCKET COMPONENTS
- 11A12 ADAPTERS, CLUSTER-BOMB
- 11A13 GUN AMMUNITION
- 11A14 RIOT CONTROL AND SMOKE MUNITIONS
- 11A15 MISSILE EXPLOSIVE COMPONENTS

11A16	COUNTERMEASURES
11A17	CARGO, PARACHUTE, AND WEAPONS RETARDATION SYSTEMS
11A18	AIRCRAFT STORES JETTISONING, AIRCRAFT STARTING, AND RELATED EXPLOSIVE DEVICES
11A19	RIOT CONTROL AIDS
11A20	DEMOLITION MATERIAL AND DESTRUCTIVE DEVICES
11A21	DISPENSERS, FLARE
11A22	EXPLOSIVE DEVICES, TARGET DRONE, AND SPECIAL PURPOSE AIRCRAFT
11A23	IGNITERS
11A24	CARTRIDGES
11B	BOMBING SYSTEMS AND EQUIPMENT
11B1	BOMBING SYSTEMS
11B1-A	Type A
11B1-K	Type K
11B1-M	Type M
11B2	AMPLIFIERS
11B2-2	AN Type
11B2-3	V Type
11B2-4	Computer
11B2-5	Sealed
11B2-6	Servo
11B2-7	Stabilization
11B2-8	Audio Frequency
11B2-9	Electronic Control
11B2-10	Video
11B2-11	Radar Indicator Sweep
11B2-12	Intermediate Frequency
11B2-13	Current Deflection
11B2-14	Power Supply
11B2-15	Displacement
11B3	ANTENNAS
11B3-2	Radar
11B3-3	Radio
11B4	BANKS
11B4-2	Relay
11B5	BOXES
11B5-2	Control
11B5-3	Junction
11B5-4	Potentiometer
11B5-5	Relay
11B5-6	Fuse
11B6	BRACES
11B6-2	Sway
11B7	COMPARATORS
11B7-2	Type CM
11B7-3	Type GS
11B7-4	Type MA-2
11B7-5	Type AN
11B7-6	Groundspeed and Track



11B8           COMPENSATORS  
 11B8-2        Transmission Error  
 11B8-3        Compass  
  
 11B9           COMPRESSORS  
 11B9-2        Air  
  
 11B10          COMPUTERS  
 11B10-2       Type A Bombing, Navigation  
 11B10-3       Azimuth  
 11B10-4       Ballistic  
 11B10-5       Bomb Release  
 11B10-6       BT Type (Toss Bomb)  
               (Use 11B10-9)  
 11B10-7       Electronic  
 11B10-8       Type K Position  
 11B10-9       Toss Bomb  
 11B10-10      Altitude  
 11B10-11     Missile Release Navigational  
 11B10-12     Range  
 11B10-13     Tracking  
 11B10-14     Air Navigation  
 11B10-15     Type MA-2  
 11B10-16     Velocity  
 11B10-17     Dive Angle  
 11B10-18     Simulator  
 11B10-19     Roll Error  
 11B10-20     Panels and Racks  
 11B10-21     Terrain Clearance  
 11B10-22     Time  
 11B10-23     Flight Directional  
 11B10-24     Programmers  
 11B10-25     Data Subsystems  
  
 11B11          CONTAINERS  
 11B11-2       Aero  
  
 11B12          CONTROLS  
 11B12-2       Arming  
 11B12-3       Ballistics  
 11B12-4       Bomb Release Interval  
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11F12-13    Target Position  
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11F12-18    Roll Error  
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11F13-6     Indicator  
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11F22-2	Antenna
11F23	INDICATORS
11F23-2	Cathode Ray
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11F24	INDICATOR CIRCUITS
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11F25-2	Mounting
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11F26	LINES
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11F27	MIXERS
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11F28      MODULATORS  
 11F29      MOTORS  
 11F29-2    AC Induction  
 11F29-3    Fractional Horsepower  
 11F29-4    Direct-Current  
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 11F29-6    Rotating  
 11F30      MOTOR GENERATORS  
 11F30-2    Amplidyne  
 11F30-3    Type PU  
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 11F30-11   Induction  
 11F30-12   Range Function  
 11F31      MOUNTINGS AND MOUNTS  
 11F32      PANELS  
 11F32-2    Control  
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 11F33      POWER SUPPLIES  
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 11F33-11   Television  
 11F33-12   Transistor  
 11F33-13   Control  
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 11F38      SERVOS  
 11F38-2    Range  
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11F39 SIGHTS  
11F39-2 Automatic Computing  
11F39-3 Compensating  
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11F40 SIGHTING STATIONS  
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11F41 SIMULATORS  
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11F47-8 Switching  
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11F74 HANDLES  
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11F81-4 Radio  
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11F96-2 Toss Bomb Computer  
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11G2-9 Airborne  
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11G6	COMPUTERS
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11G6-3	Electronic
11G6-4	Gyro
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11G6-6	Signal
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11G6-8	Elevation
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11G8-2	Signal
11G8-3	Control
11G8-4	Astrotracker
11G8-5	Platform
11G8-6	Digital
11G8-7	Electronic Control
11G8-8	Magnetic
11G8-9	Power
11G8-10	Servo
11G8-11	Preamplifiers
11G9	POWER SUPPLIES
11G9-2	Electrical
11G9-3	Pneumatic
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11G10-3	Stable
11G10-4	Sensing
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11G12-3	Elevon
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11G13	OPERATING MECHANISMS
11G13-2	Spoiler
11G14	INSTRUMENTS
11G14-2	Range Safety
11G14-3	Inertial
11G14-4	Accelerometer
11G15	GIMBAL ASSEMBLIES
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11G18	PANELS
11G18-2	Electrical
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11G22-3	Flight Control (Use 11G1)
11G22-4	Measurement
11G22-5	Processor, Distributor
11G22-6	Regulator
11G22-7	Station Program
11G23	FANS AND BLOWERS
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11G24-3	Motor
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11G24-5	Signal
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11G28	TIMER ASSEMBLIES
11G29	REFERENCES
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11G32	DETECTORS
11G33	MODULE ASSEMBLIES
11G34	DISCRIMINATORS
11G35	SIGNAL CONDITIONERS
11G36	OSCILLATORS
11G37	DISTRIBUTION ASSEMBLIES
11G38	TRANSDUCERS
11G39	CABLE ASSEMBLIES
11G40	CHASSIS ASSEMBLIES
11G41	INTERCONNECT ASSEMBLIES
11G42	CIRCUIT CARD ASSEMBLIES



11G43 TARGET DETECTING DEVICES  
 11H HAZARD DETECTING EQUIPMENT  
 11H1 BIOLOGICAL DETECTING EQUIPMENT  
 11H2 CHEMICAL DETECTING EQUIPMENT  
 11H3 MINE DETECTING EQUIPMENT  
 11H4 RADIOLOGICAL DETECTING EQUIPMENT  
 11H4-2 Radiac  
 11H4-3 Computer Indicator  
 11H4-4 Counter  
 11H4-5 Densitometer  
 11H4-6 Dosimeter  
 11H4-7 Meter  
 11H4-8 Radioactive Test Sample  
 11H4-9 Container  
 11H4-10 Vapotester  
 11H4-11 Monitor  
 11H5 INDUSTRIAL HAZARDS DETECTING EQUIPMENT  
 11K GUIDED GLIDE WEAPONS  
 11K1 AIR LAUNCHED  
 11K2 GUIDED BOMBS, TYPE GBU-2  
 11K10 GUIDED BOMBS, TYPE GBU-10  
 11K15 GUIDED BOMBS, TYPE GBU-15  
 11K20 GUIDED BOMBS, TYPE GBU-20, -22, AND -24  
 11K25 GUIDED BOMBS, TYPE GBU-27/B  
 11K28 GUIDED BOMBS, TYPE GBU-28A/B  
 11K31 GUIDED BOMBS, TYPE GBU-31  
 11K36 GUIDED BOMBS, TYPE GBU-36  
 11L LAUNCHERS AND EQUIPMENT  
 11L1 AIRBORNE LAUNCHERS  
 11L1-2 Missile  
 11L1-3 Rocket  
 11L1-4 Dispensing  
 11L1-5 Flare  
 11L2 GROUND LAUNCHERS  
 11L2-2 Grenade  
 11L2-3 Missile  
 11L2-4 Rocket  
 11L2-5 Rotary  
 11L3 CONTROLS  
 11L3-2 Projector Release  
 11L3-3 Missile Launcher  
 11L4 MOUNTS  
 11LA ASSOCIATED EQUIPMENT  
 11LA1 TABLES  
 11LA1-2 Firing

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11LA2 CYLINDERS  
11LA3 HOISTS  
11LA4 GENERATORS  
11LA5 EJECTORS  
11LA6 ROCKET RACKS  
11LA7 POWER SUPPLIES  
11LA8 ADAPTERS  
11LA9 STATIONS  
11LA10 CABLES  
11LA11 CHASSIS ASSEMBLIES  
11LA12 RELAY ASSEMBLIES  
11LA13 SWITCHING UNITS  
11LA14 LAUNCHER ROTATION TOOLS  
11P EGRESS SYSTEMS, EXPLOSIVE DEVICES, AND EQUIPMENT  
11P1 CATAPULTS  
11P2 EJECTORS  
11P3 INITIATORS AND TIMERS  
11P3-2 Delay  
11P3-3 Instant  
11P4 REMOVERS (CANOPY)  
11P5 SQUIBS AND BLASTING CAPS  
11P6 THRUSTERS  
11P7 CARTRIDGES  
11P8 FIRING MECHANISMS  
11P9 GENERATORS, MOTORS, ACTUATORS  
11P10 RETRACTORS  
11P11 BOOMS  
11P12 CUTTERS AND BOLTS  
11P13 TRANSMITTERS  
11P14 INERTIAL REELS  
11P15 DEPLOYMENT GUNS (DROGUE GUN)  
11P16 FUSES  
11P17 LEAD ASSEMBLIES  
11P18 MANIFOLDS  
11P19 EXPLOSIVE KITS  
11P20 SINGLE POINT HARNESS RELEASES  
11P21 SEVERANCE SYSTEMS  
11P22 SEQUENCE SELECTORS  
11R MISSILE RE-ENTRY VEHICLES AND EQUIPMENT (Do not use)

11W	WEAPONS AND EQUIPMENT
11W1	AIRBORNE WEAPONS AND EQUIPMENT
11W1-2	Adapter
11W1-3	Booster
11W1-4	Charger
11W1-5	Chute
11W1-6	Container
11W1-7	Feeder
11W1-8	Gauge
11W1-9	Generator
11W1-10	Grip
11W1-11	Heater
11W1-12	Heavy Caliber Gun
11W1-13	Light Caliber Gun
11W1-14	Machine
11W1-15	Mount
11W1-16	Pyrotechnic
11W1-17	Solenoid
11W1-18	Switch
11W1-19	Synchronizer
11W1-20	Tool (Breech Block Unlocking)
11W1-21	Valve
11W1-22	Winder-Feeder
11W1-23	Recoil
11W1-24	Charger
11W1-25	Rack
11W1-26	Tool (Ammo Reel Loading)
11W1-27	Control
11W1-28	Gun Drive
11W1-29	Assembly
11W1-30	Counter
11W1-31	Armament Pod
11W1-32	Armament Module
11W1-33	Armament System
11W1-34	Armament Kit
11W1-35	Drum Drive
11W1-36	Lubricator
11W1-37	Expended Case Bin
11W2	GROUND WEAPONS AND EQUIPMENT
11W2-2	Activator
11W2-3	Bayonet and Knife
11W2-4	Clinometer
11W2-5	Heavy Caliber Gun
11W2-6	Light Caliber Gun
11W2-7	Machines, Repositioning- and Linking-
11W2-8	Mount
11W2-9	Pyrotechnic
11W2-10	Quadrant
11W2-11	Self-Propelled
11W2-12	Rack
11W2-13	Sight
11W2-14	Slide Rule
11W2-15	Sniperscope
11W2-16	Solenoid
11W2-17	Adapter
11W2-18	Director

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11W3	SMALL ARMS
11W3-2	Carbine
11W3-3	Pistol
11W3-3-2	.22 Caliber
11W3-3-3	.45 Caliber
11W3-3-4	9MM
11W3-4	Revolver
11W3-4-2	.38 Caliber
11W3-4-3	.45 Caliber
11W3-5	Rifle
11W3-5-2	.22 Caliber
11W3-5-3	.30 Caliber
11W3-5-4	7.62MM
11W3-5-5	5.56MM
11W3-6	Shotgun
11W3-6-2	12-Gauge
11W3-6-3	16-Gauge
11W3-7	Submachine Gun
11W3-8	Line Throwing Gun
11W3-9	Grenade Launcher
11WA	WEAPONS ASSOCIATED EQUIPMENT
11WA1	FIRING TABLES
11WA1-2	Heavy Caliber
11WA1-3	Light Caliber
11WA1-4	Mortar
11WA1-5	Rifle
11WA2	CAMOUFLAGE EQUIPMENT
11WA3	POWER UNIT

## CHAPTER 15

### CATEGORY 12 - AIRBORNE ELECTRONIC EQUIPMENT

#### 15-1 GENERAL.

15-1.1 Much of the equipment covered by TOs in this category is identified under the Joint Electronics Type Designation System (JETDS). The JETDS, formerly known as the AN nomenclature system, is described in MIL-STD-196D.

15-1.2 Category 12 contains seven primary airborne electronic equipment systems. These systems are divided into equipment series and further divided into equipment subseries within each equipment series. TO numbers in Category 12 use both three and four basic groups for data identification. Numbering patterns for both groups are discussed in paragraph 15-2.

15-1.3 TO data pertaining to more than one system is numbered in the category general series.

15-1.4 Information relating to more than one equipment series is numbered in the system general series.

15-1.5 General TOs for JETDS equipment are described in paragraph 1-23.

#### 15-2 NUMBERING PATTERNS.

15-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within the system.

15-2.1.1 Part one is always the numeric 12 identifying Category 12.

15-2.1.2 Part two is an alpha character identifying the electronic system, i.e., A - synchros and resolvers; C - crystal units; M - meteorological equipment; P - radar equipment; R - radio equipment; and S - special electronic equipment.

15-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series is outlined in paragraph 15-4.

15-2.2 **GROUP TWO.** TO numbering patterns in Category 12 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following explains both numbering patterns:

15-2.2.1 If the equipment types are JETDS nomenclatured, only three basic groups are used in the TO number. The numeric 2 followed immediately by an alphameric JETDS nomenclature comprises group two.

15-2.2.2 If the equipment types are Signal Corps nomenclatured, three basic groups are used in the TO number. The numeric 3 followed immediately by an alphameric Signal Corps nomenclature comprises group two.

15-2.2.3 If the equipment types are Air Force nomenclatured, three basic groups are used in the TO number. The numeric 5 followed immediately by an alphameric AF nomenclature comprises group two.

15-2.2.4 Where the equipment types are commercially nomenclatured, four basic groups are used in the TO number and the numeric 4 is the only character in group two.

#### 15-2.3 **GROUP THREE.**

15-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 12:

- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown

- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests
- 9 Alignment Manuals

15-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 12:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

15-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PN assigned to specific equipment or components. When this occurs the specific types of TOs are then identified in group four.

15-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 15-2.3.1, above.

**15-3 EXAMPLES OF CATEGORY 12 NUMBERING PATTERNS.**

15-3.1 A service instruction manual with illustrated parts breakdown for a radiosonde receiver, model RC-1074:

12M1-4-9-2

- 12 Category 12
- M Meteorological Equipment
- 1 Auxiliary Equipment Series
- 4 Identifies Commercial Data
- 9 Represents Model RC-1074
- 2 Number Reserved for Service Instruction

15-3.2 Illustrated parts breakdown for a terrain following radar set, type AN/APQ-128:

12P2-2APQ128-34

- 12 Category 12
- P Radar Equipment
- 2 Control Equipment Series
- 2 JETDS Nomenclature Equipment
- APQ128 Identifies Specific Terrain Following Radar Set
- 34 Number Reserved for Illustrated Parts Breakdown

15-3.3 Operating and maintenance instructions with illustrated parts breakdown for electronic counter-measure set, type QRC-128A(T):

12P3-5QRC128-1

- 12 Category 12
- P Radar Electronic Equipment
- 3 Electronic Countermeasure Series
- 5 JETDS Nomenclature Equipment
- QRC128 Identifies Specific Electronic Countermeasure Set
- 1 Number Reserved for Operating Instructions

15-3.4 Operating and maintenance instructions and illustrated parts breakdown for an airborne radio set, type AN/ARC-59:

12R2-2ARC59-1  
 12 Category 12  
 R Radio Equipment  
 2 Communication Series  
 2 JETDS Nomenclature Equipment  
 ARC59 Identifies a Specific Radio Set  
 1 Number Reserved for Operating Instructions

15-4 CATEGORY 12 NUMBERING SERIES.

12 AIRBORNE-ELECTRONIC EQUIPMENT  
 12A SYNCHRONIZERS AND RESOLVERS  
 12A1 SYNCHRONIZERS  
 12A2 RESOLVERS  
 12C CRYSTAL UNITS  
 12M METEOROLOGICAL-ELECTRONIC EQUIPMENT, AIRBORNE  
 12M1 AUXILIARY EQUIPMENT  
 12M1-2 JETDS Nomenclature  
 12M1-3 Signal Corps Nomenclature  
 12M1-4 Commercial Nomenclature  
 12M1-5 AF Nomenclature  
 12M2 BAROMETRIC  
 12M2-2 JETDS Nomenclature  
 12M2-3 Signal Corps Nomenclature  
 12M2-4 Commercial Nomenclature  
 12M2-5 AF Nomenclature  
 12M3 TEMPERATURE AND HUMIDITY  
 12M3-2 JETDS Nomenclature  
 12M3-3 Signal Corps Nomenclature  
 12M3-4 Commercial Nomenclature  
 12M3-5 AF Nomenclature  
 12M4 WIND DIRECTION AND VELOCITY  
 12M4-2 JETDS Nomenclature  
 12M4-3 Signal Corps Nomenclature  
 12M4-4 Commercial Nomenclature  
 12M4-5 AF Nomenclature  
 12M5 ATMOSPHERIC RESEARCH  
 12M5-2 JETDS Nomenclature  
 12M5-3 Signal Corps Nomenclature  
 12M5-4 Commercial Nomenclature  
 12M5-5 AF Nomenclature  
 12P RADAR-ELECTRONIC EQUIPMENT  
 12P1 AUXILIARY EQUIPMENT  
 12P1-2 JETDS Nomenclature  
 12P1-3 Signal Corps Nomenclature  
 12P1-4 Commercial Nomenclature  
 12P1-5 AF Nomenclature  
 12P2 CONTROLS

12P2-2	JETDS Nomenclature
12P2-3	Signal Corps Nomenclature
12P2-4	Commercial Nomenclature
12P2-5	AF Nomenclature
12P3	ELECTRONIC COUNTERMEASURES
12P3-2	JETDS Nomenclature
12P3-3	Signal Corps Nomenclature
12P3-4	Commercial Nomenclature
12P3-5	AF Nomenclature
12P4	IFF
12P4-2	JETDS Nomenclature
12P4-3	Signal Corps Nomenclature
12P4-4	Commercial Nomenclature
12P4-5	AF Nomenclature
12P5	NAVIGATION
12P5-2	JETDS Nomenclature
12P5-3	Signal Corps Nomenclature
12P5-4	Commercial Nomenclature
12P5-5	AF Nomenclature
12P6	SEARCH AND HEIGHT FINDING
12P6-2	JETDS Nomenclature
12P6-3	Signal Corps Nomenclature
12P6-4	Commercial Nomenclature
12P6-5	AF Nomenclature
12R	RADIO-ELECTRONIC EQUIPMENT, AIRBORNE
12R1	AUXILIARY EQUIPMENT
12R1-2	JETDS Nomenclature
12R1-3	Signal Corps Nomenclature
12R1-4	Commercial Nomenclature
12R1-5	AF Nomenclature
12R2	COMMUNICATIONS
12R2-2	JETDS Nomenclature
12R2-3	Signal Corps Nomenclature
12R2-4	Commercial Nomenclature
12R2-5	AF Nomenclature
12R3	CONTROLS
12R3-2	JETDS Nomenclature
12R3-3	Signal Corps Nomenclature
12R3-4	Commercial Nomenclature
12R3-5	AF Nomenclature
12R4	ELECTRONIC COUNTERMEASURES
12R4-2	JETDS Nomenclature
12R4-3	Signal Corps Nomenclature
12R4-4	Commercial Nomenclature
12R4-5	AF Nomenclature
12R5	NAVIGATION
12R5-2	JETDS Nomenclature
12R5-3	Signal Corps Nomenclature
12R5-4	Commercial Nomenclature
12R5-5	AF Nomenclature
12R6	RELAY
12R7	DRONE MISSILE



12S SPECIAL-ELECTRONIC EQUIPMENT

12S1 AUXILIARY  
12S1-2 JETDS Nomenclature  
12S1-3 Signal Corps Nomenclature  
12S1-4 Commercial Nomenclature  
12S1-5 AF Nomenclature

12S2 DATA PROCESSING  
12S2-2 JETDS Nomenclature  
12S2-3 Signal Corps Nomenclature  
12S2-4 Commercial Nomenclature  
12S2-5 AF Nomenclature

12S3 LIGHT OR HEAT

12S4 MAGNETIC

12S5 RECORDING  
12S5-2 JETDS Nomenclature  
12S5-3 Signal Corps Nomenclature  
12S5-4 Commercial Nomenclature  
12S5-5 AF Nomenclature

12S6 TELEVISION  
12S6-2 JETDS Nomenclature  
12S6-3 Signal Corps Nomenclature  
12S6-4 Commercial Nomenclature  
12S6-5 AF Nomenclature

12S7 TELEMETERING  
12S7-2 JETD5 Nomenclature  
12S7-3 Signal Corps Nomenclature  
12S7-4 Commercial Nomenclature  
12S7-5 AF Nomenclature

12S8 TAPEWRITERS

12S9 MISSILE OFFENSIVE SYSTEMS

12S10 NIGHT VISION  
12S10-2 JETDS Nomenclature  
12S10-3 Signal Corps Nomenclature  
12S10-4 Commercial Nomenclature  
12S10-5 AF Nomenclature

12S12 SECURE COMMUNICATION EQUIPMENT  
12S12-2 JETDS Nomenclature  
12S12-3 Signal Corp Nomenclature  
12S12-4 Commercial Nomenclature



## CHAPTER 16

### CATEGORY 13 - AIRCRAFT FURNISHINGS AND IN-FLIGHT FEEDING EQUIPMENT, CARGO LOADING, AERIAL DELIVERY AND RECOVERY EQUIPMENT, AIRCRAFT FIRE DETECTION AND EXTINGUISHING EQUIPMENT

#### 16-1 GENERAL.

16-1.1 Category 13 contains five primary systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore TO numbers in Category 13 use both three and four basic groups for data identification. Numbering patterns for both groups are discussed in paragraph 16-2.

16-1.2 TO data pertaining to more than one system is numbered in the category general series.

16-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 16-2 NUMBERING PATTERNS.

16-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within the system.

16-2.1.1 Part one is always the numeric 13 identifying Category 13.

16-2.1.2 Part two is an alpha character identifying the system, i.e., A - aircraft furnishings; B - in-flight feeding equipment; C - cargo loading, tiedown and aerial delivery equipment; D - recovery equipment; and F - aircraft fire detection and extinguishing equipment.

16-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series is outlined in paragraph 16-4.

16-2.2 **GROUP TWO.** TO numbering patterns in Category 13 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

16-2.2.1 If the TO number uses only three basic groups, group two has one or more numeric characters representing the model, type or PN assigned to specific components.

16-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

#### 16-2.3 **GROUP THREE.**

16-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 13:

- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions

16-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 13:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

16-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PN assigned to specific components.

16-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 16-2.3.1, above.

**16-3 EXAMPLES OF CATEGORY 13 NUMBERING PATTERNS.**

16-3.1 An operation and service instruction manual for a food warming oven, model 200:

13B1-8-1

- 13 Category 13
- B In-Flight Feeding Equipment
- 1 Food Warming Ovens
- 8 Represents Model 200
- 1 Number Reserved for Operating Instructions

16-3.2 An operating and maintenance manual for a cargo restraint barrier, type HBU-8/A:

13C2-5-1

- 13 Category 13
- C Cargo Loading Equipment
- 2 Cargo Tiedown Devices
- 5 Represents Type HBU-8/A
- 1 Number Reserved for Operating Instructions

16-3.3 Overhaul instructions with illustrated parts breakdown for an aircraft fire extinguisher, PN 7720082-101:

13F3-4-13

- 13 Category 13
- F Aircraft Fire Detecting and Extinguishing Equipment
- 3 Fixed Extinguishing System Series
- 4 Represents PN 7720082-101
- 13 Number Reserved for Overhaul Instructions

**16-4 CATEGORY 13 NUMBERING SERIES.**

- 13 AIRCRAFT FURNISHINGS AND IN-FLIGHT FEEDING EQUIPMENT, CARGO LOADING, AERIAL DELIVERY AND RECOVERY EQUIPMENT, AIRCRAFT FIRE DETECTION AND EXTINGUISHING EQUIPMENT
- 13A AIRCRAFT FURNISHINGS
- 13A1 BELTS, SAFETY AND SHOULDER HARNESSSES
- 13A2 PERSONNEL RELIEF FACILITIES
- 13A3 KITS, FIRST-AID
- 13A4 REELS, LOCKING, AIRCRAFT SEAT
- 13A5 EJECTION SEATS

13A6 ADJUSTABLE SEATS  
13A7 TAIL GUNNER SEATS  
13A8 EJECTION SEAT GUIDE RAILS AND TRACK ASSEMBLIES  
13A9 COVERS  
13A9-2 Canopy  
13A9-3 Nose cap  
13A9-4 Blade  
13A9-5 Pod  
13A9-6 Engine Shield  
13A10 GUARDS AND SEALS  
13A10-2 Engine  
13A10-3 Escape Capsule System  
13A11 ASTRODOMES  
13A12 DISCONNECT ASSEMBLIES  
13A13 VALVES  
13A14 DEVICES  
13A15 CONTAINERS  
13A16 HEADREST ASSEMBLIES  
13A17 STABILIZERS  
13A18 STRAP ASSEMBLIES  
13A19 SLIDE ASSEMBLIES  
13A20 PLUMBING FIXTURES  
13A21 SENSORS  
13A22 COMPACTORS  
13A23 TABLES  
13B IN-FLIGHT FEEDING EQUIPMENT  
13B1 FOOD WARMING OVENS  
13B2 FOOD STORAGE UNITS  
13B3 TEMPERATURE CONTROL REGULATORS  
13B4 BUFFETS  
13B5 REFRIGERATORS  
13B6 BEVERAGE UNITS  
13B7 WATER COOLERS  
13B8 MOTORS AND PUMPS  
13C CARGO LOADING, TIEDOWN, AND AERIAL DELIVERY EQUIPMENT  
13C1 HOISTS AND CRANES  
13C2 CARGO TIEDOWN DEVICES  
13C3 AERIAL DELIVERY SYSTEMS  
13C3-2 Monorail  
13C3-3 Center Guide Rail  
13C3-4 Dual Rail  
13C4 CONTAINERS, AERIAL-DELIVERY  
13C5 PARACHUTES, AERIAL-DELIVERY

13C6 PARACHUTES AND CARGO DISCHARGERS

13C7 AERIAL DELIVERY KITS

- 13C7-1 Rigging
- 13C7-2 Truck
- 13C7-3 Trailer
- 13C7-4 Motor
- 13C7-5 Welding Set
- 13C7-6 Tractor
- 13C7-7 Water Purification Equipment
- 13C7-8 Electric Tool Set
- 13C7-9 Shelter
- 13C7-10 Infantry Weapon
- 13C7-11 Bridge
- 13C7-12 Rocket System
- 13C7-13 Reeling Machine
- 13C7-14 Radio Set
- 13C7-15 Air Compressor
- 13C7-16 Weapon Carrier
- 13C7-17 Water Tank
- 13C7-18 Ammunition
- 13C7-19 Rations, Petroleum, Oil and Lubricant
- 13C7-20 Spat Gun
- 13C7-21 Rotary Tiller
- 13C7-22 Missile, Rocket
- 13C7-23 Beacon Light
- 13C7-24 Crane
- 13C7-25 Ambulance
- 13C7-26 Road Roller
- 13C7-27 Scraper, Grader
- 13C7-28 Boat
- 13C7-29 Wrecker
- 13C7-30 Army Aircraft (Use 13C7-51)
- 13C7-31 Bucket Loader
- 13C7-32 Rocket Launcher, Platform
- 13C7-33 Mixer
- 13C7-34 Medical Supply
- 13C7-35 Warhead
- 13C7-36 Instrument
- 13C7-37 Container
- 13C7-38 Transporter
- 13C7-39 Bulk Materiel
- 13C7-40 Generator Set
- 13C7-41 Bath Unit
- 13C7-42 Anti-Tank Weapon
- 13C7-43 Test Set
- 13C7-44 Amp Kit
- 13C7-45 M-55 Rocket (Use 13C7-22)
- 13C7-46 M-66 Rocket (Use 13C7-22)
- 13C7-47 Atomic Weapon
- 13C7-48 Radar Set
- 13C7-49 Miscellaneous Air Drop
- 13C7-50 Airfield Repair Kit
- 13C7-51 Army Aircraft
- 13C7-52 Platform
- 13C7-53 Teletypewriter
- 13C7-54 Forklift
- 13C7-55 Motorcycle

13C8 AERIAL PICK UP SYSTEMS

13C9 CARGO HOOKS

13C10 UNLOADING KITS  
13C11 REELS  
13C12 WEIGHT AND BALANCE EQUIPMENT  
13C13 ACTUATORS  
13D RECOVERY EQUIPMENT  
13D1 SPACE VEHICLES  
13D2 AIR-TO-AIR RECOVERY EQUIPMENT  
13D3 GROUND-TO-AIR RECOVERY EQUIPMENT  
13F AIRCRAFT FIRE DETECTION AND EXTINGUISHING EQUIPMENT  
13F1 FIRE DETECTOR SYSTEMS  
13F1-2 Fusible Alloy Detector  
13F1-3 Photoelectric  
13F1-4 Thermocouple  
13F1-5 Probe Detector  
13F1-6 Dual Loop Thermistor  
13F2 SMOKE DETECTORS  
13F3 FIXED EXTINGUISHERS  
13F3-2 Carbon Dioxide  
13F3-3 Methyl Bromide  
13F3-4 Bromochloromethane  
13F3-5 Carbon Tetrachloride  
13F3-6 Water  
13F3-7 Bromotrifluoromethane (Halon 1301)  
13F4 PORTABLE EXTINGUISHERS  
13F4-2 Carbon Dioxide  
13F4-3 Methyl Bromide  
13F4-4 Bromochloromethane  
13F4-5 Carbon Tetrachloride  
13F4-6 Water  
13F5 CONTROL UNITS  
13F6 CONTAINERS, FIRE EXTINGUISHER BOTTLES  
13F7 VALVES  
13F8 RECEPTACLES  
13F9 PANELS  
13F10 DISCS  
13F11 SOLENOIDS  
13F12 REGULATORS  
13F13 PROBE ASSEMBLIES  
13F14 SERVICING UNITS





## CHAPTER 17

### CATEGORY 14 - DECELERATION DEVICES, PERSONAL AND SURVIVAL EQUIPMENT

#### 17-1 GENERAL.

17-1.1 Category 14 contains three systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore TO numbers in Category 14 use both three and four basic groups for data identification. Numbering patterns for both groups are discussed in paragraph 17-2.

17-1.2 TO data pertaining to more than one system is numbered in the category general series.

17-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 17-2 NUMBERING PATTERNS.

17-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within the system.

17-2.1.1 Part one is always the numeric 14 identifying Category 14.

17-2.1.2 Part two is an alpha character identifying one of the three systems, i.e., D - deceleration devices; P - personal equipment; and S - survival equipment.

17-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series are outlined in paragraph 17-4.

17-2.2 **GROUP TWO.** TO numbering patterns in Category 14 use both three and four groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

17-2.2.1 If the TO number uses only three basic groups, group two has one or more numeric characters representing the model, type or PN assigned to specific components.

17-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case group two identifies the specific equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

#### 17-2.3 **GROUP THREE.**

17-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 14:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions

17-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 14:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

17-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PN assigned to specific components.

17-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 17-2.3.1, above.

**17-3 EXAMPLES OF CATEGORY 14 NUMBERING PATTERNS.**

17-3.1 Inspection, maintenance and packing instructions for USAF personnel parachute, PN 811058-401:

14D1-2-1-106

14           Category 14  
  D           Deceleration Devices  
    1          Parachute Series  
      2        Personnel Subseries  
        1       Represents PN 811058-401  
        106     Number Reserved for Inspection Requirements

17-3.2 Operations, service and repair instructions for a high altitude helmet, type MA-2:

14P3-4-21

14           Category 14  
  P           Personal Equipment  
    3          Clothing Series  
      4        Represents Helmet Type MA-2  
        21     Number Reserved for Operating  
              Instructions

17-3.3 Maintenance manual for seven man life raft, PN D23810-103:

14S3-6-2-2

14           Category 14  
  S           Survival Equipment  
    3          Life Raft Series  
      6        Seven Man Series  
        2       Represents PN D23810-103  
        2     Number Reserved for Maintenance Instructions

**17-4 CATEGORY 14 NUMBERING SERIES.**

14           DECELERATION DEVICES, PERSONAL AND SURVIVAL EQUIPMENT  
14D          DECELERATION DEVICES  
14D1         PARACHUTES  
14D1-2       Personnel  
14D1-3       Drag  
14D1-4       Missile Component  
14D2         AUTOMATIC RELEASE PARACHUTES  
14D3         RECOVERY PARACHUTES  
14D4         CARGO  
14P          PERSONAL EQUIPMENT  
14P1         BAGS  
14P2         BLANKETS  
14P3         CLOTHING  
14P3-2       Boots

14P3-3 Gloves  
14P3-4 Helmet  
14P3-5 Suit, Anti-Exposure  
14P3-6 Suit, Pneumatic  
14P3-7 Suit and Accessories, Heated  
14P3-8 Suit, Flying Nonheated  
14P3-9 Sun Glasses  
14P3-10 Flying Jackets  
14P3-11 Protective  
14P3-12 Support Pads  
  
14P4 MASKS, GAS  
14P5 RESPIRATORS  
14P6 ARMOR  
14S SURVIVAL EQUIPMENT  
14S1 KITS, EMERGENCY  
14S2 PRESERVERS, (LIFE JACKETS)  
14S2-2 Vest, Inflated  
14S2-3 Underarm  
14S2-4 Infant Floating Cot  
14S3 RAFTS, LIFE  
14S3-2 One Man  
14S3-3 Four and Six Man  
14S3-4 20 Man  
14S3-5 25 Man  
14S3-6 Seven Man  
14S3-7 46 Man  
14S3-8 12 Man  
14S4 REPELLANTS-OINTMENTS  
14S5 BREATHING UNITS  
14S6 RESCUE SEATS  
14S7 CONTAINERS (FOOD)  
14S8 FLOTATION ASSEMBLIES (BAG)  
14S9 SKYANCHORS (HOOKS)  
14S10 LIGHTS  
14S11 PUMPS



## CHAPTER 18

### CATEGORY 15 - AIRCRAFT AND MISSILE TEMPERATURE CONTROL, PRESSURIZING, AIR-CONDITIONING, HEATING, ICE ELIMINATING AND OXYGEN EQUIPMENT

#### 18-1 GENERAL.

18-1.1 Category 15 contains five systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore, TO numbers in Category 15 use both three and four basic groups for data identification. Numbering patterns for both groups are discussed in paragraph 18-2.

18-1.2 TO data pertaining to more than one system is numbered in the category general series.

18-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 18-2 NUMBERING PATTERNS.

18-2.1 **GROUP ONE.** This group has three parts which identify the category, system, and equipment series within a system.

18-2.1.1 Part one is always the numeric 15 identifying Category 15.

18-2.1.2 Part two is an alpha character identifying one of five systems, i.e., A - air conditioning and pressurizing equipment; E - ice eliminating equipment; H - cabin heating equipment; M - missile temperature control equipment; and X - aircraft oxygen systems and equipment.

18-2.1.3 Part three contains one or more numeric characters identifying an equipment series within the system. The TO numbering series are outlined in paragraph 18-4.

18-2.2 **GROUP TWO.** TO numbering patterns in Category 15 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

18-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to a specific component.

18-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

#### 18-2.3 **GROUP THREE.**

18-2.3.1 If the TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 15:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests

18-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards, or supplements. The following alpha characters are authorized for use in Category 15:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

18-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PN assigned to a specific component.

18-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 18-2.3.1, above.

**18-3 EXAMPLES OF CATEGORY 15 NUMBERING PATTERNS.**

18-3.1 Overhaul instructions for an aircraft cabin air pressure regulator, PN 102166-1:

15A1-4-13-3

- 15 Category 15
- A Air-Conditioning and Pressurizing Equipment
- 1 Regulator Series
- 4 Air Pressure Regulator Subseries
- 13 Represents PN 102166-1
- 3 Number Reserved for Overhaul Instructions

18-3.2 An illustrated parts breakdown for a temperature control panel, PN A14A9718:

15E3-2-17-4

- 15 Category 15
- E Ice Eliminating Equipment
- 3 Control Series
- 2 Electric Control Subseries
- 17 Represents PN A14A9718
- 4 Number Reserved for Illustrated Parts Breakdown

18-3.3 Overhaul instructions with parts breakdown for an oxygen breathing mask assembly, PN 249-350:

15X5-4-5-3

- 15 Category 15
- X Aircraft Oxygen Systems and Equipment
- 5 Oxygen Mask Series
- 4 Pressure Demand Subseries
- 5 Represents PN 249-350
- 3 Number Reserved for Overhaul Instructions

**18-4 CATEGORY 15 NUMBERING SERIES.**

15 AIRCRAFT AND MISSILE TEMPERATURE CONTROL, PRESSURIZING, AIR-CONDITIONING, HEATING, ICE ELIMINATING, AND OXYGEN EQUIPMENT

15A AIR CONDITIONING AND PRESSURIZING EQUIPMENT  
15A-2 Systems

15A1 REGULATORS  
15A1-2 Cabin Pressure  
15A1-3 Cabin Temperature  
15A1-4 Air Pressure

15A2 VALVES

15A2-2	Shutoff
15A2-3	Control
15A2-4	Safety
15A2-5	Selector
15A2-6	Mixing
15A2-7	Pressure Regulator
15A2-8	Check
15A2-9	Relief
15A2-10	Spill
15A2-11	Dump
15A2-12	Filter
15A2-13	By-Pass
15A2-14	Shuttle
15A2-15	Slide
15A2-16	Modulating
15A2-17	Flood
15A2-18	Drain
15A3	REFRIGERATION AND PRESSURIZATION UNITS
15A3-2	Turbine
15A3-3	Refrigeration Package
15A3-4	Fan, Blower
15A4	INTERCOOLERS (HEAT EXCHANGERS)
15A5	TEMPERATURE SENSING DEVICES
15A5-2	Control
15A5-3	Anticipator
15A5-4	Thermostat
15A5-5	Pick-Up Assembly
15A5-6	Sensor
15A5-7	Transmitter
15A6	FILTERS
15A6-2	High Temperature
15A7	SEPARATORS
15A7-2	Air Moisture
15A8	CONTROLS
15A8-2	Limit
15A8-3	Air
15A8-4	Pressure
15A8-5	Temperature
15A8-6	Changer
15A8-7	Timer
15A8-8	Selector
15A8-9	Dive Rate
15A8-10	Turbine
15A8-11	Panels
15A9	PUMPS
15A9-2	Air Turbine
15A9-3	Centrifugal
15A10	LINKAGE ASSEMBLIES
15A10-2	Air-Conditioning Package Unit
15A11	SUPERCHARGERS
15A11-2	Cabin
15A12	DETECTORS
15A12-2	Air Flow

15A12-3	Ice
15A13	EJECTORS
15A14	DEHYDRATORS
15A15	VENTURI TUBES
15A16	COMPRESSORS
15A17	ABSORBERS
15A18	DEHUMIDIFIERS
15A19	TIRE INFLATION UNITS
15A20	INDICATORS
15A21	AIR OUTLETS
15A22	TRANSDUCERS
15E	ICE ELIMINATING EQUIPMENT
15E1	PUMPS
15E1-2	Circulating
15E1-3	Metering
15E2	VALVES
15E2-2	Shutoff
15E2-3	Selector
15E2-4	Regulating
15E2-5	Control
15E2-6	Relief
15E2-7	Drain
15E2-8	By-Pass
15E3	CONTROLS
15E3-2	Electric
15E3-3	Manual
15E3-4	Air
15E4	SEPARATORS
15E4-2	Oil
15E4-3	Water
15E5	FILTERS
15E5-2	Fluid
15E5-3	Hot Air
15E6	RESERVOIRS (TANKS)
15E6-2	Fluid
15E7	FANS AND BLOWERS
15E7-2	Nose Radome
15E7-3	Cockpit Defogging
15E8	JOINT ASSEMBLIES
15E9	EJECTORS
15H	CABIN HEATING EQUIPMENT
15H1	HEATERS
15H1-2	Combustion
15H1-3	Electric
15H2	PUMPS
15H2-2	Vane



15H2-3	Cam
15H2-4	Air Driven
15H3	BLOWERS
15H3-2	Fan
15H4	IGNITION UNITS
15H4-2	Vibrator
15H5	VALVES
15H5-2	Control
15H5-3	Butterfly
15H5-4	Check
15H6	THERMOSTATS
15H6-2	Control
15H6-3	Anticipator
15H6-4	Fuel
15H6-5	Air
15H7	IMPELLERS
15M	MISSILE TEMPERATURE CONTROL EQUIPMENT
15M1	COOLING SYSTEMS
15M2	VALVES
15M2-2	Check
15M2-3	Control
15M3	HEAT EXCHANGERS
15M4	FANS AND BLOWERS
15M5	CONTROLS
15X	AIRCRAFT OXYGEN SYSTEMS AND EQUIPMENT
15X1	SUPPLY CYLINDERS
15X1-2	Low Pressure
15X1-3	High Pressure
15X1-4	Emergency Bailout
15X1-5	Cylinder, Valve Assembly
15X2	CONVERTERS, LIQUID-OXYGEN
15X2-2	5-Liter Capacity
15X2-3	25-Liter Capacity
15X2-4	8-Liter Capacity
15X2-5	20-Liter Capacity
15X2-6	10-Liter Capacity
15X2-7	75-Liter Capacity
15X2-8	15-Liter Capacity
15X3	GAUGES, OXYGEN
15X3-2	Gaseous
15X3-2-2	Low Pressure
15X3-2-3	High Pressure
15X3-3	Liquid
15X4	INDICATORS
15X4-2	Gaseous Oxygen
15X4-3	Liquid Oxygen
15X4-4	Oxygen Deficiency
15X4-5	Pressure
15X5	MASKS, OXYGEN

15X5-2	Continuous Flow
15X5-3	Demand
15X5-4	Pressure Demand
15X5-5	Smoke
15X6	REGULATORS, OXYGEN FLOW
15X6-2	Continuous Flow
15X6-3	Demand
15X6-4	Manual Pressure Demand
15X6-5	Automatic Pressure Demand
15X7	AIRBORNE TEST EQUIPMENT (Do not use)
15X8	VALVES
15X8-2	Low Pressure
15X8-3	High Pressure
15X8-4	Pressure Reducing Release
15X8-5	Filler
15X8-6	Liquid, Buildup, Vent
15X8-7	Regulating
15X8-8	Filter
15X8-9	Check
15X8-10	Drain
15X8-11	Shutoff
15X8-12	Coupling
15X9	TRANSDUCERS
15X10	CONTROL PANELS
15X11	SURVIVAL KITS
15X12	SEAT PACKS
15X13	DISCONNECT ASSEMBLIES
15X14	TRANSMITTERS
15X15	MANIFOLDS
15X16	SWITCHES
15X17	HEAT EXCHANGERS
15X18	HOSE ASSEMBLIES
15X19	GENERATORS
15X20	METERS
15X21	VENTILATORS
15X22	SEPARATORS
15X23	CONTROLLERS

## CHAPTER 19

### CATEGORY 16 - AIRBORNE MECHANICAL EQUIPMENT

#### 19-1 GENERAL.

19-1.1 Category 16 contains seven mechanical systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore TO numbers in Category 16 use both three and four basic groups for data identification. Numbering patterns for both forms are discussed in paragraph 19-2.

19-1.2 TO data pertaining to more than one system is numbered in the category general series.

19-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 19-2 NUMBERING PATTERNS.

19-2.1 **GROUP ONE.** This group has three parts identifying the category, system, and the equipment series within the system.

19-2.1.1 Part one is always the numeric 16 identifying Category 16.

19-2.1.2 Part two is an alpha character identifying the mechanical systems, i.e., A - actuators; C - control units; G - gear box, drive and screwjack assemblies; K - release mechanisms; L - lock and latching mechanisms; R - regulating mechanisms; and W - structural components. Associated equipment for these systems are identified by adding the alpha A immediately following the mechanical system identifier, e.g., GA.

19-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series are outlined in paragraph 19-4.

19-2.2 **GROUP TWO.** TO numbering patterns in Category 16 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

19-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific equipment.

19-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

#### 19-2.3 **GROUP THREE.**

19-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 16:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 7 Installation Instructions

19-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 16:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

19-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing model, type or PN assigned to specific components.

19-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 19-2.3.1, above.

**19-3 EXAMPLES OF CATEGORY 16 NUMBERING PATTERNS.**

19-3.1 A maintenance manual for a control stick grip, PN 28000-7:

16C1-27-12-12

16                   Category 16  
                      Mechanical Control Mechanisms  
    1                Control Unit Series  
      27            Control Stick Subseries  
          12        Represents PN 28000-7  
            12     Number Reserved for Maintenance Instructions

19-3.2 Overhaul instructions with illustrated parts breakdown for ball nut and screw assembly, PN B-1142:

16G3-2-32-3

16                   Category 16  
    G                Mechanical Gear Box, Drive and Screwjack Assemblies  
      3               Screwjack Mechanism Series  
        2             Screwjack Assembly Subseries  
          32         Represents PN B-1142  
            3        Number Reserved for Overhaul Instructions

19-3.3 Overhaul instructions for missile pylon package, PN 223-68327:

16W6-18-3

16                   Category 16  
    W                Structural Components  
      6               Pylon Assembly Series  
        18            Represents PN 223-68327  
          3            Number Reserved for Overhaul Instructions

**19-4 CATEGORY 16 NUMBERING SERIES.**

16                   AIRBORNE MECHANICAL EQUIPMENT  
16A                  ACTUATING MECHANISMS  
16A1                 ACTUATORS  
16A1-2              Bomb Bay Door  
16A1-3              Dive Brake  
16A1-4              Hoist Traversing  
16A1-5              Linear  
16A1-6              Main Landing Gear  
16A1-7              Nacelle Cooling Door  
16A1-8              Nose Gear  
16A1-9              Rocket Door  
16A1-10             Rudder Control  
16A1-11             Tab Control  
16A1-12             Tail Skid  
16A1-13             Wing Flap  
16A1-14             Auxiliary  
16A1-15             Canopy Jettison  
16A1-16             Dive Flap  
16A1-17             Main Landing Gear Door  
16A1-18             Camera Door  
16A1-19             Rear Landing Gear Door

16A1-20	Windshield
16A1-21	Air Exit Door
16A1-22	Throttle Control
16A1-23	Drag Chute Door
16A1-24	Nose Landing Gear Door
16C	CONTROL MECHANISMS
16C1	CONTROL UNITS
16C1-2	Tab, Aileron
16C1-3	Flap
16C1-4	Brake
16C1-5	Rudder
16C1-6	Door
16C1-7	Elevator
16C1-8	Spoiler
16C1-9	Wheel
16C1-10	Stabilizer
16C1-11	Steering
16C1-12	Landing Gear
16C1-13	Antenna
16C1-14	Valve
16C1-15	Parachute Release
16C1-16	Special Stores
16C1-17	Bombing System
16C1-18	Fuel Boom
16C1-19	Flight Simulator
16C1-20	Canopy Latch
16C1-21	Head
16C1-22	Instrument Box
16C1-23	Emergency Hydraulic Power
16C1-24	Gimbal Assembly
16C1-25	Sector Box
16C1-26	Mixer
16C1-27	Control Stick
16C1-28	Positioning Lever
16C1-29	Pod Release
16C1-30	Surface, Wing-Fold, Wing-Tip, Fold-up, Trailing Edge
16C1-31	Propeller
16C1-32	Air Inlet
16C1-33	Stairs, Ladder
16G	GEAR BOX, DRIVE, AND SCREWJACK ASSEMBLIES
16G1	GEAR BOXES
16G2	DRIVE MECHANISMS
16G2-2	Angle
16G2-3	Torque
16G2-4	Bevel
16G2-5	Hexagon
16G2-6	Worm
16G2-7	Power Plant
16G3	SCREWJACK MECHANISMS
16G3-2	Screwjack Assembly
16G4	UNIVERSAL JOINTS
16G5	SHAFTS
16G5-2	Alternator
16G5-3	Disconnect Assembly
16G5-4	Torque
16G5-5	Power Transmission

16G5-6	Nozzle
16GA	ASSOCIATED EQUIPMENT
16GA3	SCREWJACK MECHANISMS
16GA3-2	Limiter
16GA3-3	Plug (Do not use)
16GA4	GEAR BOXES (Do not use)
16K	RELEASE MECHANISMS
16K1	RELEASE ASSEMBLIES
16K1-2	Jettison
16K1-3	Landing Gear
16K1-4	Parachute
16K1-5	Escape Hatch
16K1-6	Capsule Disconnect
16K1-7	Pod
16K1-8	Bomb Bay Rack
16K1-9	Disconnect
16K1-10	Carriage Shackle
16L	LOCKING AND LATCHING MECHANISMS
16L1	LOCKING AND LATCHING
16L1-2	Drag Parachute Compartment
16L1-3	Gear
16L1-4	Door
16L1-5	Pilot's Canopy
16L1-6	Strut
16L1-7	Rudder, Stabilizer, Elevator
16L1-8	Pod
16L1-9	Arresting Hook
16L1-10	Aerial Delivery
16L1-11	Wing Flap
16R	REGULATING MECHANISMS
16R1	REGULATORS
16R1-2	Cable Tension
16R1-3	Quadrant
16R1-4	Canopy Seal
16R1-5	Control Box
16R1-6	Linkage Assembly
16W	STRUCTURAL COMPONENTS (AIRFRAME)
16W1	WINDOW ASSEMBLIES
16W1-2	Window
16W2	CANOPY ASSEMBLIES
16W3	DOOR ASSEMBLIES
16W4	CAPSULE ASSEMBLIES
16W5	RADOME ASSEMBLIES
16W6	PYLON ASSEMBLIES
16W7	PANEL ASSEMBLIES
16W8	CARRIAGE AND SHACKLE ASSEMBLIES
16W9	BODY ASSEMBLIES
16W10	COUNTERBALANCE ASSEMBLIES
16W11	PLATE ASSEMBLIES

16W12 SUPPORT ASSEMBLIES  
16W13 SNUBBERS  
16W14 DUCT ASSEMBLIES  
16W15 RAIL ASSEMBLIES  
16W16 CASE AND CARTRIDGE ASSEMBLIES  
16W17 DASHPOT ASSEMBLIES  
16W18 COUNTERPOISE ASSEMBLIES  
16W19 ENGINE MOUNT ASSEMBLIES  
16W20 FLARE BOXES  
16W21 MISSILE SPACERS  
16W22 PIN ASSEMBLIES  
16W23 SEAL ASSEMBLIES  
16W24 REVERSER ASSEMBLIES  
16W25 BEARINGS  
16W26 RACK AND MOUNT ASSEMBLIES  
16W27 CONSOLES  
16W28 EXHAUST VALVES  
16W29 TUBES  
16W30 BATTERY BOX ASSEMBLIES  
16W31 NACELLE VENTILATION EJECTORS  
16W32 LEADING EDGE ASSEMBLIES (WING)  
16W33 ARRESTING GEAR ASSEMBLIES  
16W34 TANK ASSEMBLIES  
16W35 ADAPTER ASSEMBLIES  
16W36 LINERS  
16W37 COVERS  
16W38 CONTROL COLUMN ASSEMBLIES  
16W39 CONNECTING LINKS  
16W40 NOSE ASSEMBLIES  
16W41 PODS  
16W42 GLARESHIELD ASSEMBLIES





## CHAPTER 20

### CATEGORY 21 - GUIDED MISSILES

#### 20-1 GENERAL.

20-1.1 Technical data numbered in the missile category includes operations manuals, organization (on site) maintenance instructions, inspection requirements, overhaul instructions and specified procedures relating to missiles. TO numbers incorporate the missile type or mission, model and production series, which groups types of missile data accordingly.

20-1.2 Technical information pertaining to more than one type of missile is numbered in the category general series. Since the data pertains to more than one type of missile, TO numbers assigned in the category general series do not reflect the missile type, model or production series. A manual entitled, "Plating Procedures for the AIM-4 and the LGM-30" would be numbered as follows:

21M-1-107

21	Category 21
M	Missile
1	Category General Series
107	Serialized Manual Number

20-1.3 TOs pertaining to more than one model of a specific type of missile are numbered in the general series of that missile type. An operational manual relating to the AIM-4 and the AIM-26 would be numbered as follows:

21M-AIM-101

21	Category 21
M	Missile
AIM	Air Launched, Intercept Aerial, Missile
101	Serialized Manual Number

20-1.4 Technical information pertaining to more than one production series of a missile model is numbered in the first production series. A field checkout instruction for the AIM-4A, AIM-4D and AIM-4G would be numbered in the "A" production series.

20-1.5 TOs for earlier guided missiles are numbered as described in paragraphs 20-2 and 20-3. TOs for the M-X and later guided missile systems are numbered as described in paragraphs 20-4 and 20-5.

#### 20-2 NUMBERING PATTERNS.

20-2.1 **GROUP ONE.** In Category 21, the first group has only two parts, identifying the category, and a designator indicating missiles.

20-2.1.1 Part one is always the numeric 21 identifying Category 21.

20-2.1.2 Part two is always the alpha M identifying missiles.

20-2.2 **GROUP TWO.** This group can have either two or three parts. If two parts are used, the missile type and model only are identified. This normally means the TO contains general information pertaining to all production series of a specific missile type and model. In most cases, three parts are used in group three, indicating the missile type, model and production series.

20-2.2.1 Part one is composed of three alpha characters. The first alpha character identifies the missile launch environment; the second indicates the basic mission of the missile; and the third describes the missile vehicle type. The following listing outlines these alpha designators as established by AFR 82-1:

LAUNCH ENVIRONMENT

- A - Air
- B - Multiple
- C - Coffin
- F - Individual
- G - Runway
- H - Silo Stored
- L - Silo Launched
- M - Mobile
- P - Soft Pad
- R - Ship
- U - Underwater

BASIC MISSION

- D - Decoy
- E - Special Electronic Installation
- G - Surface Attack
- I - Intercept Aerial
- Q - Drone
- T - Training
- U - Underwater Attack
- W - Weather

VEHICLE TYPE

- M - Guided Missile/Drone

20-2.2.2 Part two contains one or more numeric characters identifying the missile model number.

20-2.2.3 Part three is an alpha character indicating the missile production series. The first production series of a particular missile is designated with the alpha A, the second with the alpha B and continuing through the alphabet as required.

20-2.2.4 It is possible that a fourth part may be required for group two in order to identify a missile production configuration. If this becomes a requirement, the production configuration identifier (PCI) will be an alpha character immediately following the production series identifier. The alpha A is reserved to indicate USAF missile configurations and the remainder of the alphabet will be used for those configurations produced for foreign countries. Although the alpha A is reserved to identify USAF missile configurations, no specific alpha character will be associated with or reserved for missile configurations for a particular foreign country.

20-2.3 GROUP THREE. In Category 21, the third group primarily identifies the type of inspection, instruction, or procedure. This can be accomplished by either one or two parts.

20-2.3.1 Part one consists of one or more numeric characters reserved to indicate a specific type of TO. The following is a list of reserved numbers authorized for use in Category 21:

- 01 List of Applicable Publications (LOAP)
- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Operating Instructions
- 2 Organizational Maintenance Manuals
- 3 Structural Repair and Overhaul Manuals
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements

- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests
- 10 Engine Buildup Manuals
- 12 Special Maintenance Manuals
- 16 Warhead Loading
- 17 Storage of Missiles
- 18 Field Maintenance and Materials Manuals
- 21 Missile Inventory Record Master Guides
- 22 Control Manuals
- 23 Corrosion Control Manuals
- 26 Non-Destructive Inspection Manuals
- 27 Calibration and Measurement Manuals
- 33 Contractor Maintenance Data

20-2.3.2 Part two. In some instances some of the reserved numbers listed in part one, above, are followed by one or more alpha characters indicating a series of checklists, workcards, supplements, and other media. The following lists the alpha characters authorized for use in Category 21:

- CL - Checklist
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards
- WS - Worksheets

20-2.4 GROUP FOUR. This group consists of one or more numeric characters identifying sections of a sectionalized manual or indicating the series number of specific TO data in a series of inspections, supplements, or functions.

20-2.5 GROUP FIVE. When required, this group contains one or more numeric characters indicating a further sectionalization or serialization of a TO.

### 20-3 EXAMPLES OF CATEGORY 21 NUMBERING PATTERNS.

20-3.1 A work unit code manual for the AIM-9E missile:

21M-AIM9E-06

- 21 Category 21
- M Missiles
- AIM Air Intercept Missile
- 9 Missile Model Number
- E Production Series
- 06 Number Reserved for Work Unit Code Manual

20-3.2 Inspection requirements for the AGM-12C missile:

21M-AGM12C-6

- 21 Category 21
- M Missiles
- AGM Air-to-Ground Missile
- 12 Missile Model Number
- C Production Series
- 6 Number Reserved for Inspection Requirements

20-3.3 Structural repair manual for the LGM-30A missile:

21M-LGM30A-3

21	Category 21
M	Missiles
LGM	Launched Ground Missiles
30	Missile Model Number
A	Product Series
3	Number Reserved for Structural Repair Manuals

**20-4 SHORTENED NUMBERING FOR MISSILE TECHNICAL ORDER MANUALS.**

20-4.1 To eliminate redundancy, TO numbers for future missiles will be shortened by eliminating the M in category designator 21M and by eliminating the M in model designators such as LGM. These codes are redundant, since only missile TOs appear in Category 21.

20-4.2 Using shortened TO numbers will be effective with the LGM-118A and future missile designs. Use of the former numbering practice will continue for earlier designated missiles. Existing TOs in Category 21 will not be renumbered for the sole purpose of shortening the TO numbers.

20-4.3 The following is an example of this method applied to an organizational maintenance instruction for launch facility and launch control facility environmental control system for the LGM-118A missile:

21-LG118A-2-7-4

21	Identifies Missile Category
L	Silo Launch Environment
G	Surface Attack Mission
118	Design Number
A	Design Series
2	Maintenance Manual
7	Launch Facility and Launch Control Facility Environmental Control System
4	Designates Specific Installation

## CHAPTER 21

### CATEGORY 22 - AEROSPACE VEHICLES

#### 21-1 GENERAL.

21-1.1 TO data numbered in this category identifies operational, organizational maintenance, inspection and procedures related to aerospace vehicles and systems. Aerospace vehicles are either manned or unmanned flight vehicles operating in the atmosphere or space environment. TO numbers incorporate the aerospace vehicle type and model or the aerospace system which identifies family groups according to mission or function.

21-1.2 Information pertaining to more than one aerospace vehicle is numbered in the category general series. Numbers assigned in this section do not contain the aerospace vehicle type and model in the TO number.

21-1.3 TOs pertaining to only one type of aerospace vehicle but containing information relative to more than one vehicle model within that type, will be numbered in the general series of the aerospace vehicle type.

21-1.4 TO data pertaining to more than one production series of an aerospace vehicle model will be numbered in the first series, i.e., operational data applicable to the MER-6A, MER-6B and MER-6C would be numbered as 22R-MER6A-1.

#### 21-2 NUMBERING PATTERNS.

21-2.1 **GROUP ONE.** With the exception of the Category 22 general series TO numbers, the first group of the TO numbering pattern for aerospace TOs consists of a numeric 22, denoting Category 22, and an alpha character identifying one of five aerospace systems, i.e., R - rockets; G - boosters; J - spacecraft; P - probes; and S -satellites.

21-2.2 **GROUP TWO.** The second group of the TO number contains the aerospace vehicle type, model and production series; or an L system which is used in the aerospace program.

#### 21-2.3 **GROUP THREE.**

21-2.3.1 In this category the third group of the numbering pattern identifies the type of TOs by using a number reserved for each type. The following is a list of reserved numbers authorized for Category 22:

- 01 List of Applicable Publications (LOAP)
- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Operating Instructions
- 2 Maintenance Manuals
- 3 Structural Repair Instructions
- 4 Illustrated Parts Breakdown
- 5 Weight and Balance Manuals
- 6 Inspection Requirements
- 8 Test Procedures, Checkout Manuals, or Programmed Tests
- 17 Storage of Aerospace Vehicles
- 18 Field Maintenance of Material

21-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 22:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards
- WS - Worksheets

**21-3 EXAMPLES OF CATEGORY 22 NUMBERING PATTERNS.**

21-3.1 An operational manual for the MER-6A aerospace rocket:

22R-MER6A-1

22	Category 22
R	Rockets
MER	Rocket Type
6	Rocket Model Number
A	Production Series A
1	Number Reserved for Operating Instructions

21-3.2 An illustrated parts breakdown for the 494L system used in the aerospace program:

22R-494L-4

22	Category 22
R	Rockets
494L	L System identification
4	Number Reserved for Illustrated Parts Breakdown

## CHAPTER 22

### CATEGORY 31 - GROUND ELECTRONIC EQUIPMENT

#### 22-1 GENERAL.

22-1.1 Much of the equipment covered by TOs in this category is identified under the Joint Electronics Type Designation System (JETDS). The JETDS, which was formerly known as the AN Nomenclature System, is described in MIL-STD-196D.

22-1.2 Category 31 contains seven primary ground electronic equipment systems. These systems are divided into equipment series; some are further divided into equipment subseries within the equipment series. TO numbers in Category 31 use both three and four basic groups for data identification. Numbering patterns for both forms are discussed in paragraph 22-2.

22-1.3 TO data pertaining to more than one system is numbered in the category general series.

22-1.4 Information relating to more than one equipment series is numbered in the system general series.

22-1.5 General TOs for JETDS equipment are described in paragraph 1-23.

#### 22-2 NUMBERING PATTERNS.

22-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within a system.

22-2.1.1 Part one is always the numeric 31 identifying Category 31.

22-2.1.2 Part two is an alpha character identifying the electronic equipment system, i.e., M - meteorological equipment; P - radar equipment; R - radio equipment; S - special electronic equipment; W - wire fixed electronic equipment; X - missile ground operational equipment; and Z - systems and site equipment. Missile ground operational equipment is the only system in Category 31 that has associated equipment. Its associated equipment is identified by XA.

#### NOTE

Although numerous TOs are currently numbered in the 31X and 31XA series, these series will not be used for numbering new TOs. Future TOs for missile ground operational equipment will be numbered in appropriate functional equipment systems of Category 31.

22-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series is outlined in paragraph 22-4.

22-2.2 **GROUP TWO.** The several numbering patterns currently used in Category 31 are most conspicuous in the group two numbering configurations. Numbering patterns are as follows:

22-2.2.1 This paragraph covers numbering patterns for 31M, 31P, 31R, 31S and 31W systems. The numbering patterns use both three and four basic groups; therefore, the identifiers in group two are not constant.

22-2.2.1.1 If the equipment types are JETDS nomenclatured, three basic groups are used in the TO number. The numeric 2 followed immediately by an alphameric JETDS nomenclature comprises group two.

22-2.2.1.2 If the equipment types are Signal Corps nomenclatured, three basic groups are used in the TO number. The numeric 3 followed immediately by an alphameric Signal Corps nomenclature comprises group two.

22-2.2.1.3 If the equipment types are Air Force nomenclatured, three basic groups are used in the TO number. The numeric 5 followed immediately by an alphameric AF nomenclature comprises group two.

22-2.2.1.4 If the equipment types are commercially nomenclatured (not JETDS, Signal Corps, or AF), four basic groups are used in the TO number. The numeric 4 is the only character in group two.

22-2.2.2 This paragraph covers numbering patterns for the 31X system which uses both three and four basic groups.

22-2.2.2.1 The numbering pattern for basic equipment TOs in the 31X System uses four basic groups. In this case one or more numeric characters in group two identify the equipment subseries.

22-2.2.2.2 The numbering pattern for associated equipment TOs (indicator 31XA) uses only three basic groups. In this case one or more numeric characters in group two represent the model, type or PN assigned to specific equipment.

22-2.2.3 The numbering pattern for 31Z series TOs uses three basic groups. Group two, with one or more numeric characters, identifies AFCS (formerly GEEIA) Engineering-Installation Standards or a specific system, site, facility or special project. The type of TO is identified in group three as described in paragraph 22-2.3.1, below.

22-2.3 GROUP THREE.

22-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 31:

- 01 List of Applicable Publications (LOAP)
- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Operating Instructions
- 2 Service or Maintenance Instructions
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 5 Command Manuals
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests
- 9 Alignment Instructions

22-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 31:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

22-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing model, type or PN assigned to specific equipment or components. When this occurs the specific type of TO is then identified in group four.

22-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 22-2.3.1.

22-3 EXAMPLES OF CATEGORY 31 NUMBERING PATTERNS.

22-3.1 Operating and maintenance instructions for timing and telephone set, type ML-110:

31M1-3ML110-1

- 31 Category 31
- M Meteorological Equipment
- 1 Auxiliary Meteorological Equipment Series
- 3 Identifies Signal Corps Nomenclatured Items
- ML110 Identifies Specific Signal Corps Nomenclatured Item
- 1 Number Reserved for Operating Instructions



22-3.2 Operating instructions with service instructions and illustrated parts breakdown for radio transmitter model TCS-4B:

31R2-4-153-1

31 Category 31  
 R Radio Equipment  
 2 Communication Series  
 4 Commercial Nomenclatured Items  
 153 Represents Model TCS-4B  
 1 Number Reserved for Operating Instructions

22-3.3 Operating and service instructions for a combat reporting center, type AN/TSQ-91:

31S1-2TSQ91-1

31 Category 31  
 S Special Electronic Equipment  
 1 Auxiliary Equipment Series  
 2 Identifies JETDS Nomenclatured Items  
 TSQ91 Identifies Specific JETDS Nomenclatured Item  
 1 Number Reserved for Operating Instructions

22-3.4 Illustrated parts breakdown for missile ground checkout equipment generator PN 55-11387:

31X2-9-16-4

31 Category 31  
 X Missile Ground Operational Equipment  
 2 Checkout Equipment Series  
 9 Generator Subseries  
 16 Represents PN 55-11387  
 4 Number Reserved for Illustrated Parts Breakdown

22-3.5 Service instructions for mobile single sideband high frequency medium power facility, communication central, type AN/TSC-40, facility 691:

31Z3-691-2

31 Category 31  
 Z Ground Defense Systems  
 3 Facility Publications Series  
 691 Identifies Facility 691  
 2 Number Reserved for Service Instructions

#### 22-4 CATEGORY 31 NUMBERING SERIES.

31 GROUND-ELECTRONIC EQUIPMENT  
 31M METEOROLOGICAL-ELECTRONIC EQUIPMENT  
 31M-10 AFCS Engineering - Installation (formerly GEEIA) Standards  
 31M1 AUXILIARY  
 31M1-2 JETDS Nomenclature  
 31M1-3 Signal Corps Nomenclature  
 31M1-4 Commercial Nomenclature  
 31M1-5 AF Nomenclature  
 31M2 BAROMETRIC  
 31M2-2 JETDS Nomenclature  
 31M2-3 Signal Corps Nomenclature  
 31M3 STATIONS  
 31M3-2 JETDS Nomenclature

31M3-4	Commercial Nomenclature
31M3-5	AF Nomenclature
31M4	TEMPERATURE AND HUMIDITY
31M4-2	JETDS Nomenclature
31M4-3	Signal Corps Nomenclature
31M4-4	Commercial Nomenclature
31M5	WIND DIRECTION AND VELOCITY
31M5-2	JETDS Nomenclature
31M6	CLOUD HEIGHT, DEPTH, AND DIRECTION
31M6-2	JETDS Nomenclature
31M7	TELEMETERING
31M7-2	JETDS Nomenclature
31M7-4	Commercial Nomenclature
31P	RADAR-ELECTRONIC EQUIPMENT
31P1	AUXILIARY
31P1-2	JETDS Nomenclature
31P1-4	Commercial Nomenclature
31P2	CONTROLS
31P2-2	JETDS Nomenclature
31P2-3	Signal Corps Nomenclature
31P2-4	Commercial Nomenclature
31P3	HEIGHT FINDING
31P3-2	JETDS Nomenclature
31P3-4	Commercial Nomenclature
31P4	IDENTIFICATION, FRIEND-OR-FOE
31P4-2	JETDS Nomenclature
31P5	NAVIGATION
31P5-2	JETDS Nomenclature
31P5-4	Commercial Nomenclature
31P6	SEARCH
31P6-2	JETDS Nomenclature
31P6-3	Signal Corps Nomenclature
31P6-4	Commercial Nomenclature
31P7	SURVEILLANCE
31P7-2	JETDS Nomenclature
31P8	COUNTERMEASURES
31P8-2	JETDS Nomenclature
31P8-4	Commercial Nomenclature
31P9	OVER-THE-HORIZON
31P9-2	JETDS Nomenclature
31R	RADIO-ELECTRONIC EQUIPMENT
31R1	AUXILIARY
31R1-2	JETDS Nomenclature
31R1-3	Signal Corps Nomenclature
31R1-4	Commercial Nomenclature
31R2	COMMUNICATION
31R2-2	JETDS Nomenclature
31R2-3	Signal Corps Nomenclature
31R2-4	Commercial Nomenclature
31R2-5	AF Nomenclature

31R3 CONTROL  
 31R3-2 JETDS Nomenclature  
 31R3-3 Signal Corps Nomenclature  
 31R3-4 Commercial Nomenclature  
  
 31R4 NAVIGATION  
 31R4-2 JETDS Nomenclature  
 31R4-3 Signal Corps Nomenclature  
 31R4-4 Commercial Nomenclature  
  
 31R5 RELAY MICROWAVE  
 31R5-2 JETDS Nomenclature  
 31R5-4 Commercial Nomenclature  
  
 31R6 (Not used)  
  
 31S SPECIAL-ELECTRONIC EQUIPMENT  
  
 31S1 AUXILIARY  
 31S1-2 JETDS Nomenclature  
 31S1-4 Commercial Nomenclature  
  
 31S2 FACSIMILE  
 31S2-2 JETDS Nomenclature  
 31S2-4 Commercial Nomenclature  
  
 31S3 RECORDING  
 31S3-2 JETDS Nomenclature  
 31S3-3 Signal Corps Nomenclature  
 31S3-4 Commercial Nomenclature  
  
 31S4 TELEVISION  
 31S4-2 JETDS Nomenclature  
 31S4-4 Commercial Nomenclature  
 31S4-5 AF Nomenclature  
  
 31S5 COMPUTER SYSTEMS  
 31S5-2 JETDS Nomenclature  
 31S5-4 Commercial Nomenclature  
  
 31S6 COUNTERMEASURES  
 31S6-2 JETDS Nomenclature  
 31S6-4 Commercial Nomenclature  
  
 31S7 TELEMETRY  
 31S7-2 JETDS Nomenclature  
 31S7-4 Commercial Nomenclature  
  
 31S8 CONTROL  
 31S8-2 JETDS Nomenclature  
 31S8-4 Commercial Nomenclature  
  
 31S9 SPECIAL DETECTING  
 31S9-2 JETDS Nomenclature  
 31S9-4 Commercial Nomenclature  
  
 31S10 SIMULATED COHERENT RADIATION DEVICES  
 31S10-2 JETDS Nomenclature  
 31S10-4 Commercial Nomenclature  
  
 31S11 FIBER OPTIC  
 31S11-2 JETDS Nomenclature  
 31S11-4 Commercial Nomenclature  
  
 31S12 NONSTANDARD CRYPTOGRAPHIC EQUIPMENT

31W	GROUND WIRE, FIXED-ELECTRONIC EQUIPMENT
31W1	AUXILIARY
31W1-2	JETDS Nomenclature
31W1-3	Signal Corps Nomenclature
31W1-4	Commercial Nomenclature
31W2	INSIDE PLANT
31W2-2	JETDS Nomenclature
31W2-3	Signal Corps Nomenclature
31W2-4	Commercial Nomenclature
31W2-10	AFCS Engineering - Installation Standards
31W3	OUTSIDE PLANT
31W3-4	Commercial Nomenclature
31W3-10	AFCS Engineering - Installation Standards
31W4	TELETYPE
31W4-2	JETDS Nomenclature
31W4-4	Commercial Nomenclature
31X	MISSILE GROUND OPERATIONAL EQUIPMENT
31X1	COMMUNICATIONS
31X1-2	General
31X1-3	Public Address Set
31X1-4	Connecting Station
31X1-8	Telephone Set
31X1-10	Amplifier
31X1-11	Power Unit, Chassis, Relay
31X1-12	Headset
31X2	CHECKOUT
31X2-2	Checkout Assembly
31X2-3	Console
31X2-4	Panel
31X2-9	Generator
31X2-10	Control Unit
31X2-11	Power Supply
31X2-12	Counter
31X2-15	Selector
31X2-19	Receiver
31X2-20	Monitor
31X2-24	Simulator
31X2-26	Regulator
31X2-28	Meter, Measuring Equipment
31X2-29	Rectifier
31X2-30	Relay
31X2-32	Digital Unit
31X2-35	Switching Unit
31X2-36	Cable Unit
31X2-38	Amplifier Assembly
31X2-41	Signal Source Assembly
31X2-45	Coupler Group
31X2-47	Indicator
31X2-50	Circuit Assembly
31X2-55	Exerciser
31X2-56	Adapter Unit
31X2-57	Recorder, Memory Erase Unit
31X2-58	Reproducer
31X2-61	Modulator, Demodulator
31X2-62	Insertter

31X2-63 Alignment Equipment  
 31X2-66 Zeroing Unit  
 31X2-67 Pulse Assembly  
 31X2-68 Reset Assembly  
 31X2-69 Drawer  
 31X2-71 Filter, Network  
 31X2-73 Instrument Assembly  
 31X2-74 Computer  
 31X2-77 Semiconductor Device Set

31X3 LAUNCH CONTROL AND COUNTDOWN  
 31X3-2 Launch Control - Countdown  
 31X3-3 Console, Launch Control, and Countdown  
 31X3-6 Countdown Relay  
 31X3-8 Panel  
 31X3-10 Control  
 31X3-11 Programmer  
 31X3-12 Monitor  
 31X3-13 Power Supply  
 31X3-15 Recorder Group, Memory Erase Unit  
 31X3-16 Switching Unit  
 31X3-18 Synchronizer  
 31X3-23 Multiplexer  
 31X3-27 Decoder  
 31X3-28 Printed Circuit Assembly  
 31X3-31 Alarm

31X4 POWER DISTRIBUTION EQUIPMENT  
 31X4-2 Power Distribution Unit  
 31X4-3 Generation and Distribution Panel  
 31X4-5 Control Unit  
 31X4-8 Electrical Cable

31X7 GROUND GUIDANCE EQUIPMENT  
 31X7-2 System  
 31X7-3 Control Assembly  
 31X7-5 Power Supply Assembly  
 31X7-8 Amplifier Assembly  
 31X7-14 Converter  
 31X7-16 Computer  
 31X7-24 Storage Device  
 31X7-45 Timing Device  
 31X7-51 Altimeter  
 31X7-52 Stabilizer

31X8 CODE PROCESSING  
 31X8-2 Consoles

31XA ASSOCIATED EQUIPMENT AND COMPONENTS FOR MISSILE GROUND  
 OPERATIONAL EQUIPMENT

31XA2 INTERCONNECTING KITS  
 31XA3 COUPLERS  
 31XA4 VALVES  
 31XA5 SWITCHES  
 31XA6 MOTORS  
 31XA7 JUNCTION BOXES  
 31XA9 PUMPS

TO 00-5-18

31XA16 LOAD DUCTS  
31Z GROUND DEFENSE SYSTEMS  
31Z-10 AFCS Engineering - Installation Standards, General  
31Z1 SYSTEM TECHNICAL ORDERS  
31Z2 SITE TECHNICAL ORDERS  
31Z3 FACILITY TECHNICAL ORDERS  
31Z4 SPECIAL COMMUNICATIONS PROJECTS

## CHAPTER 23

### CATEGORY 32 - STANDARD AND SPECIAL TOOLS

#### 23-1 GENERAL.

23-1.1 Category 32 contains two types of tool systems. These systems are divided into equipment series and both of the systems are further divided into equipment subseries within each equipment series. Therefore TO numbers in Category 32 use both three and four basic groups for data identification. Numbering patterns for both forms are discussed in paragraph 23-2.

23-1.2 TO data pertaining to more than one system is numbered in the category general series.

23-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 23-2 NUMBERING PATTERNS.

23-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within a system.

23-2.1.1 Part one is always the numeric 32, identifying Category 32.

23-2.1.2 Part two is an alpha character identifying the system, i.e., A - special tools and B - standard tools.

23-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series is outlined in paragraph 23-4.

23-2.2 **GROUP TWO.** TO numbering patterns in Category 32 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

23-2.2.1 If the TO number uses only three basic groups, group two has one or more numeric characters representing the model, type or PN assigned to specific equipment.

23-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

23-2.3 **GROUP THREE.**

23-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 32:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 7 Installation Instructions

23-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 32:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

23-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing model, type or PN assigned to specific components.

23-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 23-2.3.1, above.

**23-3 EXAMPLES OF CATEGORY 32 NUMBERING PATTERNS.**

23-3.1 Operating instructions with parts breakdown for a borescope, model 120011-3.

32A2-9-1

32           Category 32  
  A           Special Tools  
    2           Boresight Series  
      9          Represents Model 120011-3  
        1        Number Reserved for Operating Instructions

23-3.2 Operating and service instructions for an actuator repair tool kit, PN 7592417P1:

32A20-3-46-1

32           Category 32  
  A           Special Tools  
    20          Kit Series  
      3          Tool Kit Subseries  
        46       Represents PN 7592417P1  
          1       Number Reserved for Operating Instructions

23-3.3 Operating instructions with illustrated parts breakdown for reversible impact wrench, model 7275:

32B14-4-18-1

32           Category 32  
  B           Standard Tools  
    14          Wrench Series  
      4          Pneumatic Wrenches Subseries  
        18       Represents Model 7275  
          1       Number Reserved for Operating Instructions

**23-4 CATEGORY 32 NUMBERING SERIES.**

32           STANDARD AND SPECIAL TOOLS  
32A          SPECIAL TOOLS  
32A1         BALANCERS  
32A2         BORESIGHTS  
32A3         SPLICERS  
32A3-2       Cable  
32A4         GUNS  
32A4-2       Pressure  
32A4-3       Spring Charging  
32A4-4       Heat  
32A5         WRENCHES  
32A5-2       Torque  
32A5-3       Plain  
32A5-4       Extension  
32A5-5       Special  
32A5-6       Socket  
32A5-7       Power Kit



32A6            FIXTURES  
32A6-2        Heater Curing  
32A6-3        Zeroing  
32A6-4        Spreader  
32A6-5        Initiator Simulator  
32A6-6        Torque  
32A6-7        Fairing Assembly  
32A6-8        Adapter  
32A6-9        Mold  
32A6-10       Turnover  
32A6-11       Rigging  
32A6-12       Airseal Trimming  
32A6-13       Cockpit Display  
32A6-14       Power Control Linkage Assembly  
32A6-15       Mounter, Demounter  
32A6-16       Gluing  
32A6-17       Drill  
32A6-18       Clutch Run-In  
32A6-19       Gauge  
32A6-20       Locating, Attaching Points  
32A6-21       Special Tool  
32A6-22       Spoiler  
32A6-23       Installer, Extractor  
32A6-24       Shipping

32A7           SHARPENERS  
32A7-2        Chain Saw

32A8           DIGGERS  
32A8-2        Clay

32A9           TAMPERS  
32A9-2        Backfill  
32A9-3        Rams

32A10          BREAKERS  
32A10-2       Paving

32A11          VIBRATORS  
32A11-2       Concrete

32A12          LEVELING TOOLS  
32A12-2       Telescopic  
32A12-3       Line Level Indicator  
32A12-4       Guidance System  
32A12-5       Electronic

32A13          WELL DRILLERS  
32A13-2       Gasoline Engine Driven

32A14          GRINDING DEVICES  
32A14-2       Antenna

32A15          PROTRACTORS

32A16          SWAGERS

32A17          DETECTORS

32A18          CALIBRATORS

32A19          TEMPLATES AND GAUGES

32A20          KITS  
32A20-2       Adjusting

32A20-3	Tool, Tire Inflation Assembly Kit
32A20-4	Mount
32A20-5	Rigging
32A20-6	Installation
32A21	BORING TOOLS
32A21-2	Carburetor Jet
32A21-3	Auger
32A21-4	Structural Repair
32A22	TARGET ASSEMBLIES
32A23	EXTRACTORS
32A24	ROLLERS
32A25	TEST TOOLS
32A26	BRAZING TOOLS
32A27	CLAMPS
32A27-2	Guidance Set
32A27-3	Nose
32A28	EJECTORS
32A28-2	Air
32A29	CONTROL UNITS
32A29-2	Heat
32A30	GAUGES (See 32A19)
32A31	PULLERS (See 32A23 Also)
32A32	EXTRACTORS (Use 32A23)
32A33	CUTTERS
32A34	SPREADERS
32A35	PULSER
32A36	ERASING DEVICES
32A37	PROTRACTORS (Use 32A15)
32A38	SERVICE TOOLS
32A39	COUNTERS
32A40	FRONT LENGTH TOOL
32A41	REELS
32B	STANDARD TOOLS
32B1	CUTTERS
32B1-2	Cable
32B2	DRILLS
32B2-2	Electric
32B2-3	Pneumatic
32B3	GAUGES
32B4	GRINDERS
32B4-2	Electric
32B4-3	Pneumatic
32B5	RIVETERS

32B5-2	Pneumatic
32B5-3	Hydraulic
32B6	HAMMERS
32B6-2	Pneumatic
32B6-3	Electric
32B7	IRONS
32B7-2	Electric
32B8	PLANES
32B8-2	Hand
32B8-3	Electric
32B9	PULLERS
32B10	SANDERS
32B10-2	Electric
32B10-3	Pneumatic
32B11	SCREWDRIVERS
32B11-2	Pneumatic
32B12	SHAVERS
32B12-2	Pneumatic
32B13	SAWS
32B13-2	Electric
32B13-3	Pneumatic
32B14	WRENCHES
32B14-2	Electric
32B14-3	Hand
32B14-4	Pneumatic
32B14-5	Hydraulic
32B15	ETCHERS
32B15-2	Electric
32B16	KITS
32B16-2	Canvas Repair
32B17	DRILL ATTACHMENT
32B17-2	Cutoff and Burring Tool
32B18	REFACING TOOLS
32B19	CRIMPING TOOLS
32B20	WRAPPING TOOLS



## CHAPTER 24

### CATEGORY 33 - TEST EQUIPMENT

#### 24-1 GENERAL.

24-1.1 This category contains testers, test equipment and test interface equipment. Test procedures, test control and programmed test TOs are numbered with related equipment identified in the various airborne and ground component categories.

24-1.2 Category 33 contains five test equipment systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore TO numbers in Category 33 use both three and four basic groups for data identification. Numbering patterns for both forms are discussed in paragraph 24-2.

24-1.3 TO data pertaining to more than one system is numbered in the category general series.

24-1.4 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 24-2 NUMBERING PATTERNS.

24-2.1 **GROUP ONE.** This group has three parts that identify the category, system and equipment series within a system.

24-2.1.1 Part one is always the numeric 33 identifying Category 33.

24-2.1.2 Part two is an alpha character identifying one of five aerospace systems, i.e., A - general purpose test equipment; B - inspection test equipment; C - laboratory test equipment; D - special purpose test equipment; and K - calibration procedures. Only 33A and 33D systems have associated equipment TOs. Associated equipment for these systems is identified by adding the alpha A immediately following the system identifier, i.e., AA or DA.

24-2.1.3 Part three contains one or more numeric characters that identify an equipment series within a system. The TO numbering series is outlined in paragraph 24-4.

24-2.2 **GROUP TWO.** TO numbering patterns in Category 33 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

24-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific components.

24-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

#### 24-2.3 **GROUP THREE.**

24-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 33:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance Manuals
- 4 Illustrated Parts Breakdown
- 5 Depot Calibration
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests
- 9 Alignment Instructions

24-2.3.2 In some instances the reserved numbers are followed by one or more alpha characters indicating a series of checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 33:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- VS - Visual Slide
- WC - Workcards

24-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PNs assigned to specific components.

24-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 24-2.3.1, above.

**24-3 EXAMPLES OF CATEGORY 33 NUMBERING PATTERNS.**

24-3.1 Illustrated parts breakdown for a ballistics computer test set, PN T-101235:

33D5-5-78-4

- 33 Category 33
- D Special Purpose Test Equipment
- 5 Armament Equipment Series
- 5 Computer Subseries
- 78 Represents PN T-101235
- 4 Number Reserved for Illustrated Parts Breakdown

24-3.2 Operating and maintenance instructions for a radar analyzer test set, type AN/APM-226:

33D7-10-23-1

- 33 Category 33
- D Special Purpose Test Equipment
- 7 Electrical and Electronic Equipment Series
- 10 Analyzer Subseries
- 23 Represents Type AN/APM-226
- 1 Number Reserved for Operating Instructions

24-3.3 Operating instructions for associated equipment electron tube test set, type AN/USM-31:

33AA21-2-1

- 33 Category 33
- A General Purpose Test Equipment
- A Associated Equipment
- 21 Tube Analyzer Series
- 2 Represents Type AN/USM-31
- 1 Number Reserved for Operating Instructions

24-3.4 Illustrated parts breakdown for magnetic inspection unit, model H144-6AD-1:

33B2-11-14

- 33 Category 33
- B Inspection Test Equipment
- 2 Electrical Series
- 11 Represents Model H144-6AD-1
- 14 Number Reserved for Illustrated Parts Breakdown

24-3.5 Service instructions for a dynamotor test set, type TS-414/U:

33A1-12-95-2

33           Category 33  
 A            General Purpose Test Equipment  
 1            Electrical and Electronic Equipment Series  
 12           Voltage, Current and Resistance Measuring Equipment Subseries  
     95       Represents Type TS-414/U  
       2       Number Reserved for Service Instructions

**24-4   CATEGORY 33 NUMBERING SERIES.**

33           TEST EQUIPMENT  
 33-1        AIRFRAME  
 33A         GENERAL PURPOSE TEST EQUIPMENT  
 33A1        ELECTRICAL AND ELECTRONIC  
 33A1-2      Amplifying  
 33A1-3      Combination Group Test Set  
 33A1-4      Field Intensity Measuring  
 33A1-5      Frequency Measuring  
 33A1-6      Impedance, Standing Wave Ratio Measuring, Noise Meter  
 33A1-7      Power Measuring, Audio Indicating  
 33A1-8      Signal Generating  
 33A1-9      Temperature Measuring, Thermostat  
 33A1-10     Time Base Measuring, Counting  
 33A1-11     Vibration  
 33A1-12     Voltage, Current, Resistance Measuring, Multimeter  
 33A1-13     Wave Form Measuring, Recording  
 33A1-14     Interference Measuring  
 33A1-15     Electrical Circuit Check  
 33A1-16     Auxiliary Power Plant  
 33A2        HYDRAULIC  
 33A2-2      Stand  
 33A2-3      Gauge  
 33A2-4      Valve  
 33A2-5      Cylinder, Actuator  
 33A3        MECHANICAL  
 33A3-2      Analyzer  
 33A3-3      Cable Tensiometer  
 33A3-4      Torque Tester  
 33A3-5      Regulator  
 33A3-6      Unit  
 33A3-7      Actuator, Screw Jack Assembly  
 33A3-8      Anti-Skid  
 33A3-9      Stand  
 33A3-10     Tachometer Generator  
 33A3-11     Lock and Latch Assemblies  
 33A4        PNEUMATIC  
 33A4-2      Accumulator  
 33A4-3      Cabin Heater  
 33A4-4      Cabin Leakage  
 33A4-5      Regulator  
 33A4-6      Valve  
 33A4-7      Leak  
 33A4-8      Pressurization Kit

TO 00-5-18

33A4-9 Pump  
33A4-10 Pneumatic Dehydrator, Chemical Dryer  
33A4-11 Air Filter  
33A4-12 Components

33A5 VACUUM  
33A5-2 Stand

33A6 LIQUIDS  
33A6-2 Density  
33A6-3 Flow Meter  
33A6-4 Pressure  
33A6-5 Temperature  
33A6-6 Viscosity  
33A6-7 Volume  
33A6-8 Analyzer

33A7 GAS  
33A7-2 Density  
33A7-3 Flow Meter  
33A7-4 Pressure  
33A7-5 Temperature  
33A7-6 Volume  
33A7-7 Weight  
33A7-8 Analyzer

33A8 SOLIDS  
33A8-2 Balancing  
33A8-3 Hardness  
33A8-4 Tensile Strength  
33A8-5 Volume  
33A8-6 Weight

33A9 TIME  
33A9-2 Watch Recording Device

33A10 NONAERONAUTICAL ENGINES

33AA ASSOCIATED EQUIPMENT

33AA1 ADAPTERS

33AA2 PANELS

33AA3 BLOWERS

33AA4 BOXES  
33AA4-2 Attenuator  
33AA4-3 Jack  
33AA4-4 Junction  
33AA4-5 Relay  
33AA4-6 Shunt

33AA5 CORDS OR CABLES

33AA6 DECADE RESISTORS

33AA7 DUMMY LOADS

33AA8 DYNAMOTORS

33AA9 AIR SUPPLIES

33AA10 CHAMBERS

33AA11 FREQUENCY CONVERTERS



33AA12 HEADSETS  
33AA13 INVERTERS  
33AA14 JACKS  
33AA15 MICROPHONES  
33AA16 PLUGS  
33AA17 POWER SUPPLIES  
33AA18 PROBES  
33AA19 SHUNTS AND MULTIPLIERS  
33AA20 TEST ANTENNAS  
33AA21 TUBE ANALYZERS  
33AA22 VOLTAGE DIVIDERS  
33AA23 FITTINGS  
33AA24 CAPSULES  
33AA25 CHARGERS  
33AA26 MOTORS  
33AA27 METERS (Use 33A1)  
33AA28 HORNS  
33AA29 COMPRESSORS (TEST)  
33AA30 PUMPS  
33AA31 VALVES  
33AA32 BLOWERS (See 33AA3)  
33AA33 AMPLIFIERS (Use 33A1-2)  
33AA34 SERVOSCOPES  
33AA35 TIMERS  
33AA36 ATTENUATORS  
33AA37 ACCELERATORS  
33AA38 SYNCHRONIZERS  
33AA39 DIGITAL COMPONENTS  
33AA40 COUPLERS  
33AA41 CONVERTERS  
33AA42 COMMUTATORS  
33AA43 CALIBRATION UNITS  
33AA44 KEYBOARDS  
33AA45 INDICATORS  
33AA46 TELETYPEWRITERS  
33AA47 FREQUENCY DIVIDERS  
33AA48 STORAGE DISPLAY UNITS  
33AA49 TRANSLATORS

33AA50	TRANSPORT MAGNETIC TAPE
33AA51	RESISTORS
33B	INSPECTION TEST EQUIPMENT
33B1	CHEMICAL
33B1-2	Penetrants
33B2	ELECTRICAL
33B3	ELECTRONIC
33B3-2	Reflectoscopes
33B3-3	X-Ray
33B4	OPTICAL
33B4-2	Inspectoscope, Borescope
33B4-3	Comparator
33B4-4	Binoculars
33B4-5	Theodolite
33B4-6	Collimator
33B4-7	Indicator
33B4-8	Calibration
33B4-9	Power Meter
33B4-10	Visual
33B4-11	Photometric
33B5	INSPECTION STANDS
33B6	X-RAY (Also see 33B3-3)
33B7	SHOP EQUIPMENT
33B8	LIGHTS AND LAMPS
33C	LABORATORY TEST EQUIPMENT
33C1	ANALYTICAL AND LEAK DETECTORS
33C2	MEASUREMENT
33C3	TEMPERATURE
33C4	LABORATORY FIXTURES
33D	SPECIAL PURPOSE TEST EQUIPMENT
33D1	AIRCRAFT AND MISCELLANEOUS GROUND SUPPORT EQUIPMENT
33D1-2	Bomber
33D1-3	Cargo
33D1-4	Fighter
33D1-5	Helicopter
33D1-6	Liaison
33D1-7	Trainer
33D1-8	Drone
33D2	AIRCRAFT ACCESSORIES (AIRBORNE)
33D2-2	Fire Detector System
33D2-3	Fuel System
33D2-4	Generator
33D2-5	Hydraulic System, Hydraulic Servo Actuator
33D2-6	Instrument, Crash Position Instrument
33D2-7	Landing Gear
33D2-8	Navigation System, Simulator Indexing
33D2-9	Oil System
33D2-10	Oxygen System
33D2-11	Propeller

33D2-12 Vacuum, Pneumatic System  
33D2-13 Aerial Refueling  
33D2-14 Cabin Heat, Vent  
33D2-15 Weight and Balance System  
33D2-16 De-Icing  
33D2-17 Alternator  
33D2-18 Air-Conditioning  
33D2-19 Warning System  
33D2-20 Explosion Extinguishing  
33D2-21 Loader Assembly  
33D2-22 Computer  
33D2-23 Brake System  
33D2-24 Helium Charging System  
33D2-25 Recording System and Components  
33D2-26 Assessment System and Components  
33D2-27 Electrical System  
33D2-28 Pressurization System  
33D2-29 Variable Air Inlet System  
33D2-30 Pod Assembly  
33D2-31 Launch Gear Assembly  
33D2-32 Starter  
33D2-33 Augmenter System  
33D2-34 Ejection System (Canopy)  
33D2-35 Stabilization System  
33D2-36 Hoist Assembly  
33D2-37 Aerial Delivery System  
33D2-38 Guidance System  
33D2-39 Environmental Control System  
33D2-40 Stall Prevention System  
33D2-41 All Weather Landing System  
33D2-42 Cargo Loading  
33D2-43 Rescue and Survival  
33D2-44 Radome System  
33D2-45 Egress System  
33D2-46 Head-Up Display Set  
33D2-47 Atmospheric Research

33D3 AUTOMATIC FLIGHT CONTROL SYSTEMS (AIRBORNE)  
33D3-2 Amplifier  
33D3-3 Voltage, Current  
33D3-4 Control Assembly, Yaw Damper  
33D3-5 Electron Tube  
33D3-6 Gyroscope  
33D3-7 Power Supply  
33D3-8 Servo  
33D3-9 System, Yaw Damper  
33D3-10 Table, (Rate, Speed, Variable, Rate Gyro)  
33D3-11 Ejector  
33D3-12 Linkage Assembly  
33D3-13 Screwjack  
33D3-14 Converter  
33D3-15 Actuator  
33D3-16 Reactor  
33D3-17 Indicator  
33D3-18 Spike Position  
33D3-19 Autopilot (See 33D3-9 Also)  
33D3-20 Valve  
33D3-21 Accelerometer  
33D3-22 Drive Assembly

33D3-23	Transducer
33D3-24	Computer
33D3-25	Adapter, Fixture
33D3-26	Card Assembly
33D3-27	Relay Unit
33D3-28	Regulator
33D3-29	Starter
33D3-30	Limiter
33D3-31	Leak Test
33D3-32	Shifter
33D3-33	Rack, Panel
33D3-34	Comparator
33D3-35	Coupler
33D3-36	Module
33D3-37	Electronic Plug-In
33D3-38	Transmitter
33D3-39	Altimeter
33D3-40	Switch
33D3-41	Sensor
33D4	AIRCRAFT ENGINES
33D4-2	Reciprocating
33D4-3	Rocket
33D4-4	Ramjet
33D4-5	Pulsejet
33D4-6	Turbojet
33D4-7	Turboprop
33D5	ARMAMENT
33D5-2	Amplifier
33D5-3	Cable, Circuit
33D5-4	Compass
33D5-5	Computer
33D5-6	Calibration
33D5-7	Gyroscope
33D5-8	Radar
33D5-9	Sight
33D5-10	Turret
33D5-11	Platform
33D5-12	System
33D5-13	Table
33D5-14	Voltage, Current
33D5-15	Test Bench
33D5-16	Control
33D5-17	Dehydrator
33D5-18	Timing, Sequencing
33D5-19	Cord (Do not use)
33D5-20	Simulator
33D5-21	Panel
33D5-22	Radaltator, Evaluators
33D5-23	Power Supply
33D5-24	Components
33D5-25	Leak Test
33D5-26	Phototube
33D5-27	Astro Tracker
33D5-28	Spring Tester
33D5-29	Squib
33D5-30	Pylon
33D5-31	Boresight

33D5-32	Indicator
33D5-33	Sensor
33D5-34	Compensator
33D5-35	Converter
33D5-36	Switch
33D5-37	Repeater
33D5-38	Generator
33D5-39	Antenna
33D5-40	Detector
33D5-41	Multiplier
33D5-42	Receiver - Transmitter
33D5-43	Display Unit
33D5-44	Gear Accuracy
33D5-45	Limiter
33D5-46	Comparator, Analyzer
33D5-47	Synchronizer
33D5-48	Drive
33D5-49	Infrared Tester
33D5-50	Tool Kit
33D5-51	Ratiometers (Use 33A1)
33D5-52	Transducer
33D5-53	Rack
33D5-54	Plug-In Assembly
33D5-55	Filter
33D5-56	Spray Tank
33D5-57	Rocket
33D5-58	Nitrogen Circulator
33D5-59	Firing Pin
33D5-60	Guided Glide Weapon
33D5-61	Destructor
33D5-62	Eluminator
33D5-63	Stores
33D5-64	Motor
33D5-65	Collimator
33D5-66	Dispenser
33D5-67	Fuze
33D6	AUTOMOTIVE
33D6-2	Brake
33D6-3	Engine
33D6-4	Headlight
33D6-5	Instrument
33D6-6	Wheel
33D7	ELECTRICAL AND ELECTRONIC
33D7-2	Amplifier
33D7-3	Computer
33D7-4	Intercommunication
33D7-5	Phasing and Null Station
33D7-6	Power Supply
33D7-7	Quartz Crystal Unit
33D7-8	Simulator
33D7-9	Gyroscope, Gyroscope Platform
33D7-10	Analyzer
33D7-11	Radome
33D7-12	Data Recorder, Reader
33D7-13	Countermeasures
33D7-14	Identification, Friend-or-Foe - Radar
33D7-15	RF Head

33D7-16 Air Data System  
33D7-17 Converter  
33D7-18 Relay  
33D7-19 Selector  
33D7-20 Indicator  
33D7-21 Shift Register  
33D7-22 Detector, Leak Detectors  
33D7-23 Servo  
33D7-24 Video  
33D7-25 Console  
33D7-26 Teletypewriter  
33D7-27 Antenna Boresight  
33D7-28 Voltage, Current  
33D7-29 Transmitter, Transceiver  
33D7-30 Telemetry  
33D7-31 Circuit  
33D7-32 Pods  
33D7-33 Module, Scanner Test Station  
33D7-34 Tracking  
33D7-35 Antenna  
33D7-36 Receiver  
33D7-37 Detection Radar Data Takeoff  
33D7-38 System, Circuit Board  
33D7-39 Scorer  
33D7-40 Time Delay  
33D7-41 Routing Assembly  
33D7-42 Programmer  
33D7-43 Rectifier  
33D7-44 Radar  
33D7-45 Calibration  
33D7-46 Beacon  
33D7-47 Control, Temperature Controllers  
33D7-48 Miss Distance Measuring  
33D7-49 Electronic Circuit Plug-In  
33D7-50 Adapters, Interface Unit  
33D7-51 Reconnaissance  
33D7-52 Cylinder  
33D7-53 Compressor  
33D7-54 Go-No-Go  
33D7-55 Discriminator  
33D7-56 Oscillator  
33D7-57 Electron Tube  
33D7-58 Device, Drive  
33D7-59 Generator  
33D7-60 Comparator  
33D7-61 Unit, Auxiliary Power Unit  
33D7-62 Meteorological  
33D7-63 Platform, Gyroscope, Accelerometer  
33D7-64 Telegraph  
33D7-65 Evaluator  
33D7-66 Matrix Unit  
33D7-67 Anti-Aircraft Fire Control  
33D7-68 Memory  
33D7-69 Magnetic Drum, Disk  
33D7-70 Binary  
33D7-71 Radio  
33D7-72 Driver  
33D7-73 Target Drone

33D7-74 Refrigeration  
 33D7-75 Multiplexer  
 33D7-76 Card  
 33D7-77 Display  
 33D7-78 Interrogator  
 33D7-79 Motor  
 33D7-80 Laser  
 33D7-81 Readout  
 33D7-82 Certification  
 33D7-83 Buffer  
 33D7-84 Error Corrector  
 33D7-85 Cold Proof Load Tester  
 33D7-86 Monitor  
 33D7-87 Compensator  
 33D7-88 TV Monitor  
 33D7-89 Mixer  
 33D7-90 Assembler  
 33D7-91 Editor  
 33D7-92 PROMS (Programmable Read-Only Memory System)  
 33D7-93 EROMS (Eraseable Read-Only Memory System)  
 33D7-94 ROMS (Read-Only Memory System)  
 33D7-95 Blanking  
 33D7-96 Processor  
 33D7-97 EPROMS (Eraseable Programmable Read-Only Memory Systems)  
 33D7-98 Vessel Assembly  
 33D7-99 Outlet Assembly  
  
 33D9 GUIDED MISSILES  
 33D9-2 Fuel System  
 33D9-3 Guidance System  
 33D9-4 Hydraulic  
 33D9-5 Power Plant (Engine)  
 33D9-6 Power Supply  
 33D9-7 Flight Control  
 33D9-8 Selector Van  
 33D9-9 Missile Components  
 33D9-10 Release Navigation Computer  
 33D9-11 Generator and Case Assembly  
 33D9-12 Hoist Support Boom  
 33D9-13 Payload  
 33D9-14 Simulator  
 33D9-15 Amplifier  
 33D9-16 Power Box  
 33D9-17 Control  
 33D9-18 Actuator, Motor  
 33D9-19 Adapter  
 33D9-20 Fuzing System  
 33D9-21 Oscillator  
 33D9-22 Gauge  
 33D9-24 Resolver  
 33D9-25 Timers  
 33D9-26 Ignitor  
 33D9-27 Targeting Tester  
 33D9-28 Frequency Meter  
 33D9-29 Indicator, Counter  
 33D9-30 Checkout  
 33D9-31 Pneumatic  
 33D9-32 Selector  
 33D9-33 Mechanical Instrument

33D9-34 Exerciser  
 33D9-35 Converter  
 33D9-36 Battery  
 33D9-37 Inverter  
 33D9-38 Circuit  
 33D9-39 Calibration  
 33D9-40 Analyzer, Dynamic Signal  
 33D9-41 Inspection Equipment Tester  
 33D9-42 Radar  
 33D9-43 Command  
 33D9-44 Beacon  
 33D9-45 Launch Control  
 33D9-46 Antenna  
 33D9-47 Transmitter and Receiver  
 33D9-48 Pack  
 33D9-49 Rectifier  
 33D9-50 Reference  
 33D9-51 Tape  
 33D9-52 Junction Box  
 33D9-53 Computer  
 33D9-54 Miscellaneous Test Set  
 33D9-55 Pump  
 33D9-56 Platform  
 33D9-57 Meter, Measuring  
 33D9-58 Generator, Controller  
 33D9-59 Electrical System  
 33D9-60 Interrogator  
 33D9-61 System Tester  
 33D9-62 Transponder  
 33D9-63 Acid System  
 33D9-64 Re-Entry Vehicle  
 33D9-65 Motor Generator  
 33D9-66 Synchro Zeroing  
 33D9-67 Computer (See 33D9-53)  
 33D9-68 Cable  
 33D9-69 Jack Box  
 33D9-70 Density  
 33D9-71 Gimbal Assembly  
 33D9-72 Gyroscope  
 33D9-73 Fluid Transfer System  
 33D9-74 Programmer Device, Fault Isolation  
 33D9-75 Transducer  
 33D9-76 Network  
 33D9-77 Distributor  
 33D9-78 Propellant Handling  
 33D9-79 Auxiliary Ring  
 33D9-80 Hydro-Pneumatic Trailer  
 33D9-81 Liquid Oxygen Trailer  
 33D9-82 Power Distribution Trailer  
 33D9-83 Fault Isolation, Security System Alarm Set  
 33D9-84 Leakage Detector  
 33D9-85 Optical  
 33D9-86 Checkout Tray  
 33D9-87 Signal Conditioner  
 33D9-88 Relay  
 33D9-89 Instrumentation  
 33D9-90 Stabilization Filter  
 33D9-91 Engine (See 33D9-5)



33D9-92 Valve (See 33D9-106)  
33D9-93 Thermal Resistor  
33D9-94 Adjuster  
33D9-95 Moisture Content Tester  
33D9-96 Handler's Environment  
33D9-97 Telephone  
33D9-98 Servo  
33D9-99 Confidence Tester  
33D9-100 Message Generator, Sweep  
33D9-101 Continuity Tester  
33D9-102 Cannister  
33D9-103 Dead Weight  
33D9-104 Recording  
33D9-105 Triplexer  
33D9-106 Valve (See 33D9-92)  
33D9-107 Verifier  
33D9-108 Safety and Arming  
33D9-109 Sensing Instrument  
33D9-110 Injection  
33D9-111 Monitor  
33D9-112 Data Link  
33D9-113 Insulation  
33D9-114 Rapid Firing  
33D9-115 Transistorized Unit  
33D9-116 Video Unit, Monitor  
33D9-117 Reader (Decoder)  
33D9-118 Oscilloscope (Do not use)  
33D9-119 Trucks  
33D9-120 Gas Systems  
33D9-121 Offensive Subsystem  
33D9-122 Heater, Cooler  
33D9-123 Electronic Component  
33D9-124 Trainer  
33D9-125 Signal Generator (See 33D9-100)  
33D9-126 Roofs and Erector  
33D9-127 Ordnance  
33D9-128 Panel, Release Control  
33D9-129 Module  
33D9-130 Cylinder  
33D9-131 Switch  
33D9-132 Sensitol Unit  
33D9-133 Communication  
33D9-134 Umbilical  
33D9-135 Destruction System  
33D9-136 Sequence Assembly  
33D9-137 Alarm  
33D9-138 Contamination Unit  
33D9-139 Sump Tank  
33D9-140 Alignment  
33D9-141 Discriminator  
33D9-142 Accelerometer  
33D9-143 Degausser  
33D9-144 Astrotracker  
33D9-145 Receiver  
33D9-146 Tuning Head  
33D9-147 Ejector Rack  
33D9-148 Common Missile Assembly  
33D9-149 Missile Bit

33D10 PHOTOGRAPHIC EQUIPMENT

- 33D10-2 Camera
- 33D10-3 Diaphragm Test Fixture
- 33D10-4 Ejector
- 33D10-5 Collimator
- 33D10-6 Servo Test
- 33D10-7 Developer, Processor
- 33D10-8 Magazine
- 33D10-9 Shutter Trip, Timer
- 33D10-10 Simulator
- 33D10-11 Spot Scanner
- 33D10-12 Amplifier
- 33D10-13 Control
- 33D10-14 Modulator, Demodulator
- 33D10-15 Power Supply
- 33D10-16 Measuring, Counting
- 33D10-17 Mockup System
- 33D10-18 Oscillator
- 33D10-19 Indicator
- 33D10-20 Table
- 33D10-21 Gyroscope
- 33D10-22 Radar Recording Camera
- 33D10-23 Viewfinder
- 33D10-24 Detector
- 33D10-25 Photogrammetric
- 33D10-26 Mounting Base, Chassis
- 33D10-27 Mount (Use 33D10-26)
- 33D10-28 Analyzer
- 33D10-29 Switch
- 33D10-30 Balance Tester
- 33D10-31 Photo Recording Unit
- 33D10-32 Synchronizer
- 33D10-33 Converter
- 33D10-34 Drive Assembly
- 33D10-35 Photoflash
- 33D10-36 Calibrator
- 33D10-37 Photo Adapter Unit
- 33D10-38 Fixture
- 33D10-39 Cooling Unit
- 33D10-40 Transducer
- 33D10-41 Printer
- 33D10-42 Encoder
- 33D10-43 System
- 33D10-44 Computer
- 33D10-45 Cassette
- 33D10-46 Module
- 33D10-47 Infrared Photo Reconnaissance
- 33D10-48 Focusing Aid
- 33D10-49 Verifier

33D11 PHYSIOLOGICAL

- 33D11-2 Lie Detector
- 33D11-3 Stereoscopic
- 33D11-4 Test Chamber

33D12 TRAINING DEVICES

- 33D12-2 Current and Voltage
- 33D12-3 Recorder
- 33D12-4 Servo

33D12-5 System  
33D12-6 Console  
33D12-7 Tow Target

33D13 FLIGHT SIMULATORS  
33D13-2 Bomber  
33D13-3 Cargo  
33D13-4 Test Rack  
33D13-5 Test Cart

33DA ASSOCIATED EQUIPMENT

33DA1 ADAPTERS

33DA2 RELAYS

33DA3 PANEL ASSEMBLIES

33DA4 EVALUATORS

33DA5 MONITORS

33DA6 INTERROGATORS

33DA7 ENCODERS

33DA8 GENERATORS

33DA9 CONTROLS

33DA10 RF LINK

33DA11 POWER SUPPLIES

33DA12 BOARDS, MULTI-MODULE

33DA13 POWER DISTRIBUTION

33DA14 AIR- AND SELF- TEST

33DA15 MISSILE ELECTRONICS

33DA16 SERVOS

33DA17 COMPARATORS

33DA18 TIMERS (Use 33A1-10)

33DA19 PROGRAMMERS

33DA20 BOX ASSEMBLIES, REGULATOR CHASSIS

33DA21 FIXTURE ASSEMBLIES

33DA22 LOAD BANKS

33DA23 LOAD BOXES (Use 33DA22)

33DA24 REGULATORS

33DA25 BOXES

33DA26 CHARGERS

33DA27 CONVERTERS

33DA28 PNEUMATIC SYSTEMS

33DA29 AMPLIFIERS

33DA30 RECORDERS

33DA31 OSCILLOSCOPES

33DA32 DRAWERS  
33DA33 CHAMBERS  
33DA34 DELAY LINES  
33DA35 CONSOLES  
33DA36 VALVES  
33DA37 ATTACHMENTS  
33DA38 TRANSFORMERS AND TRANSMITTERS  
33DA39 METERS AND MEASURING EQUIPMENT  
33DA40 PUMPS  
33DA41 ANALYZERS  
33DA42 INDICATORS  
33DA43 DRIVES AND GEAR ASSEMBLIES  
33DA44 MEMORY UNITS  
33DA45 SIMULATORS  
33DA46 DETECTORS  
33DA47 BLOWERS (See 35E)  
33DA48 MODULATORS AND DEMODULATORS  
33DA49 FILTERS  
33DA50 DELAY CIRCUITS  
33DA51 AIR CONDITIONING (See 35E)  
33DA52 MICROWAVE  
33DA53 FREQUENCY SOURCE  
33DA54 LIMIT COUNTERS  
33DA55 RESOLVERS  
33DA56 ANTENNA DRIVERS  
33DA57 SOURCE, RADIO-FREQUENCY  
33DA58 CHECKERS  
33DA59 BRIDGES  
33DA60 PLUG-IN ASSEMBLIES  
33DA61 COMPRESSORS (See 34Y1)  
33DA62 CYLINDERS  
33DA63 VOLTMETERS (Use 33A1-12)  
33DA64 CIRCUIT BREAKERS  
33DA65 REGISTERS  
33DA66 MICRO-POSITIONERS  
33DA67 FANS AND BLOWERS (See 35E)  
33DA68 DISC ASSEMBLIES  
33DA69 PRESELECTOR ASSEMBLIES

33DA70 VERNISTATS  
33DA71 SYNCHRONIZERS  
33DA72 TRANSMITTERS  
33DA73 DIGITIZERS  
33DA74 COMMUTATORS  
33DA75 GAUGES  
33DA76 ACCUMULATORS  
33DA77 THERMOSTATS  
33DA78 LEAK TRACING DEVICES (See 33D3-31 and 33D9-84)  
33DA79 PRESSURE BOXES (Use 33DA20)  
33DA80 PLATE ASSEMBLIES  
33DA81 MOTORS AND ACTUATORS (See 33D7-79)  
33DA82 COMPUTERS (See 33D7-3)  
33DA83 COMPENSATORS  
33DA84 TANKS  
33DA85 BENCHES  
33DA86 SWITCHES  
33DA87 TABLES  
33DA88 THERMOMETERS, TEMPERATURE INDICATORS  
33DA89 STARTERS  
33DA90 RECTIFIERS  
33DA91 GRAVITY TESTERS  
33DA92 CALIBRATORS (See 33D7-45)  
33DA93 TRANSPONDER SETS  
33DA94 ALTERNATORS  
33DA95 BRAKE ASSEMBLIES  
33DA96 DOOR AND WINDOW ASSEMBLIES  
33DA97 TRANSDUCERS AND FLOWSENSORS  
33DA98 PROBES  
33DA99 HORNS  
33DA100 COUPLING ASSEMBLIES  
33DA101 CLEANERS (Use 34Y2)  
33DA102 COOLER UNITS  
33DA103 CABLE ASSEMBLIES  
33DA104 TERMINALS  
33DA105 JUMPER ASSEMBLIES  
33DA106 MANIFOLDS  
33DA107 HOSE AND REELS

- 33DA108 PRINTERS
- 33DA109 DIVIDING HEADS
- 33DA110 TRANSPORTS
- 33DA111 PLOTTERS
- 33DA112 LOADERS
- 33DA113 TAPE HEADS
- 33DA114 OPTICAL UNITS
- 33DA115 TAPES AND TAPE COMPONENTS
- 33DA116 TARGETS
- 33DA117 POSITIONERS
- 33DA118 APPLICATORS
- 33DA119 MODULES (See 33D7-33)
- 33DA120 TELESCOPES
- 33DA121 CABINETS
- 33DA122 STANDARDS
- 33DA123 TEST KITS
- 33K CALIBRATION PROCEDURES
- 33K1 PRECISION MEASURING EQUIPMENT (PME), VOLTAGE, CURRENT, AND POWER
- 33K2 PME, IMPEDANCE
- 33K3 PME, FREQUENCY
- 33K4 PME, MICROWAVE
- 33K5 PME, TEMPERATURE
- 33K6 PME, MECHANICAL
- 33K7 PME, RADIAC, AND SPECIAL WEAPONS
- 33K8 PME, ELECTRICAL
- 33K9 AUTOMATIC TEST SYSTEMS

NOTE

Technical Orders containing calibration procedures for nonstocklisted precision measuring equipment are numbered in the 33L1 category, system and series. These TOs are not listed in TO Indexes and are not distributed through the Air Force TO system. Publication and distribution are accomplished by Aerospace Guidance and Metrology Center (MLMA), Newark AFS, OH 43057-5475.

## CHAPTER 25

### CATEGORY 34 - SHOP MACHINERY AND SHOP SUPPORT EQUIPMENT

#### 25-1 GENERAL.

25-1.1 Category 34 contains five shop machinery and shop support equipment systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore, TO numbers in Category 34 use both three and four basic groups for data identification. Numbering patterns for both forms are discussed in paragraph 25-2.

25-1.2 TO data pertaining to more than one system is numbered in the category general series.

25-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 25-2 NUMBERING PATTERNS.

25-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within a system.

25-2.1.1 Part one is always the numeric 34 identifying Category 34.

25-2.1.2 Part two is an alpha character identifying the shop machinery systems, i.e., C - cutting machines; F - finishing machines; G - forming machines; W - welding and heat treating equipment; and Y - shop support equipment.

25-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series are outlined in paragraph 25-4.

25-2.2 **GROUP TWO.** TO numbering patterns in Category 34 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

25-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific components.

25-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

25-2.3 **GROUP THREE.**

25-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 34:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests

25-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 34:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

25-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing model, type or PN assigned to specific components.

25-2.4 GROUP FOUR. When the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 25-2.3.1, above.

**25-3 EXAMPLES OF CATEGORY 34 NUMBERING PATTERNS.**

25-3.1 Operating instructions with parts breakdown for a drill press, model 1024:

34C2-3-12-1  
34           Category 34  
  C           Cutting Machines  
    2           Metal Cutting Machine Series  
      3           Drill Press Subseries  
        12          Represents Model 1024  
          1          Number Reserved for Operating Instructions

25-3.2 Installation instructions for a honing machine, model 244:

34F2-3-13-7  
34           Category 34  
  F           Finishing Machines  
    2           Metal Finishing Series  
      3           Hone Subseries  
        13          Represents Model 244  
          7          Number Reserved for Installation Instructions

25-3.3 An overhaul instruction for a low-pressure air compressor, model MS11:

34Y1-132-3  
34           Category 34  
  Y           Shop Support Equipment  
    1           Air Compressor Series  
      132          Represents Model MS11  
        3          Number Reserved for Overhaul Instructions

**25-4 CATEGORY 34 NUMBERING SERIES.**

34           SHOP MACHINERY AND SHOP SUPPORT EQUIPMENT  
34C          CUTTING MACHINES  
34C1         LEATHER  
34C2         METAL  
34C2-2       Boring  
34C2-3       Drill Press  
34C2-4       Lathe  
34C2-5       Milling  
34C2-6       Planer  
34C2-7       Punch Press  
34C2-8       Saw  
34C2-9       Shaper  
34C2-10      Shear  
34C2-11      Reamer Driver  
34C2-12      Threader  
34C2-13      Disintegrating  
34C2-14      Drum  
34C2-15      Routing  
34C2-16      Centering  
34C2-17      Keyseater



34C3	PAPER
34C3-2	Shredder
34C3-3	Drill
34C4	WOOD
34C4-2	Jointer and Mortiser
34C4-3	Lathe (Use 34C4-8)
34C4-4	Planer
34C4-5	Router
34C4-6	Saw
34C4-7	Shaper
34C4-8	Lathe
34C4-9	Boring
34C4-10	Milling
34F	FINISHING MACHINES
34F1	GLASS
34F2	METAL
34F2-2	Grinder
34F2-3	Honing
34F2-4	Sharpener
34F2-5	Lapping
34F2-6	Electroplating
34F2-7	Vibratory
34F2-8	Gear Hobbing
34F3	WOOD
34F3-2	Floor
34F3-3	Sander
34F3-4	Surfacer
34G	FORMING MACHINES
34G1	METAL
34G1-2	Brakes
34G1-3	Forger
34G1-4	Header
34G1-5	Press
34G1-6	Roll
34G1-7	Shaper
34G1-8	Grooving
34G1-9	Flaring
34G1-10	Bending
34G1-11	Coiler
34G1-12	Stamping
34G1-13	Sheet Metal
34G1-14	Wire
34G2	RUBBER AND PLASTICS
34W	WELDING AND HEAT TREATING EQUIPMENT
34W1	FURNACES, INCINERATORS
34W2	OVENS AND DEHYDRATORS
34W3	SOLDERING POTS
34W4	WELDERS
34W5	EXHAUSTERS
34W6	FORGES
34W7	SOLDERING IRON

34W8	REGULATORS
34W9	CHAMBERS
34Y	SHOP SUPPORT EQUIPMENT
34Y1	AIR COMPRESSORS, PUMPS
34Y2	CLEANERS
34Y3	DEGREASERS
34Y4	PAINT SPRAY EQUIPMENT
34Y4-2	Booth
34Y4-3	Sprayer
34Y4-4	Rejuvenator
34Y4-5	Spray Gun
34Y4-6	Paint Mixer
34Y5	PUMPS
34Y5-2	Water
34Y5-3	Vacuum
34Y5-4	Air
34Y5-5	Oil
34Y5-6	Hand
34Y5-7	Liquid
34Y6	RIVETING MACHINES
34Y7	SEWING MACHINES
34Y8	TANKS
34Y8-2	Dipping
34Y9	TIRE REPAIR EQUIPMENT
34Y9-2	Tire Spreader
34Y9-3	Vulcanizer
34Y9-4	Recapping Machine
34Y9-5	Tire Press
34Y9-6	Breaker
34Y9-7	Retreading Mold
34Y9-8	Safety Inflation Guard
34Y9-9	Reel
34Y10	WIRE MARKING MACHINES
34Y11	WRAPPING AND PACKAGING EQUIPMENT
34Y11-2	Dehydrator
34Y11-3	Nail Machine
34Y11-4	Sealer
34Y11-5	Stitcher
34Y11-6	Tying Machine
34Y11-7	Sprayer, Protective Coating
34Y12	UNIVERSAL VALVING MACHINES
34Y14	GAS TRANSFER AND STORAGE
34Y14-2	Carbon Dioxide
34Y14-3	Oxygen
34Y15	STILLS
34Y15-2	Solvent
34Y15-3	Water
34Y16	VACUUM PUMPS (Use 34Y5)
34Y17	LUBRICATING EQUIPMENT
34Y17-2	Grease Gun
34Y17-3	Oil Gun

34Y17-4 Lubricator  
34Y17-5 Pump  
34Y17-6 Oil Purification Unit  
34Y17-7 Gun Assembly (See 34Y31)

34Y18 WATER SEPARATORS (FILTERS)

34Y19 MOTORS

34Y20 VALVES  
34Y20-2 Solenoid Operated  
34Y20-3 Safety  
34Y20-4 Control

34Y21 ADAPTERS

34Y22 DIMPLING MACHINES

34Y23 CLAMPS  
34Y23-2 Flanging

34Y24 DRYERS  
34Y24-2 Sand

34Y25 VANS  
34Y25-2 Telescoping  
34Y25-3 Cabinet  
34Y25-4 Maintenance Shop

34Y26 STANDS  
34Y26-2 Engine Stand  
34Y26-3 Axle

34Y27 MAGNETIZERS

34Y28 MOTOR GENERATORS

34Y29 STAPLERS

34Y30 HOSE ASSEMBLY MACHINES

34Y31 SEALANT EQUIPMENT

34Y32 PRESSES

34Y33 CABINETS

34Y34 ALIGNING EQUIPMENT  
34Y34-2 Connecting Rod Aligner

34Y35 ENGRAVING MACHINES  
34Y35-2 Pantograph

34Y36 LINKING MACHINES

34Y37 DUST FREE BENCHES

34Y38 MILLING MACHINES (FOUNDRY)

34Y39 THAWING MACHINES

34Y40 DESCALING MACHINES

34Y41 DRYERS

34Y42 CONTROL UNITS

34Y43 CHAMBERS



## CHAPTER 26

### CATEGORY 35 - GROUND HANDLING, SUPPORT, AIR AND MISSILE BASE OPERATING EQUIPMENT

#### 26-1 GENERAL.

26-1.1 Category 35 contains eight ground handling, support and operating systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore TO numbers in Category 35 use both three and four basic groups for data identification. Numbering patterns for both forms are discussed in paragraph 26-2.

26-1.2 TO data pertaining to more than one system is numbered in the category general series.

26-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 26-2 NUMBERING PATTERNS.

26-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within a system.

26-2.1.1 Part one is always the numeric 35 identifying category 35.

26-2.1.2 Part two is an alpha character identifying the ground handling, support or operating system, i.e., A - aircraft maintenance and inspection equipment; B - aircraft handling and weighing equipment; C - electric power supplies; D - loading and servicing equipment; E - air base utility equipment; G - aircraft ground support equipment; and M - missile erection and launching equipment. Associated equipment for these systems are identified by adding the alpha A immediately following the system identifier, e.g., AA, and CA.

26-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series are outlined in paragraph 26-4.

26-2.2 **GROUP TWO.** TO numbering patterns in Category 35 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns.

26-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific components.

26-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

26-2.3 **GROUP THREE.**

26-2.3.1 When a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 35:

- 01 List of Applicable Publications (LOAP)
- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 5 DCSC Technical Maintenance Standards
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests

26-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 35:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

26-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PN assigned to specific components.

26-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group either identifies specific types of TOs described in paragraph 26-2.3.1, or it identifies a sequence number when alpha characters were used in group three as described in paragraph 26-2.3.2. Sequence numbers are described in paragraphs 1-9.2 through 1-9.6.

**26-3 EXAMPLES OF CATEGORY 35 TO NUMBERING PATTERNS.**

26-3.1 Operating instructions for a regulated power supply, model LP-410A-FM:

- 35C1-2-462-1
- 35 Category 35
- C Electric Power Supplies
- 1 System Series
- 2 Electrical Subseries
- 462 Represents Model LP-410A-FM
- 1 Number Reserved for Operating Instructions

26-3.2 Illustrated parts breakdown for runway selector switch PN 3303760:

- 35F14-2-4
- 35 Category 35
- F Field Lighting and Electrical Equipment
- 14 Switch Series
- 2 Represents PN 3303760
- 4 Number Reserved for Illustrated Parts Breakdown

26-3.3 An overhaul instruction for compressed oxygen cylinder trailer, type AF/M32R-3:

- 35D3-6-27-23
- 35 Category 35
- D Loading and Servicing Equipment
- 3 Truck, Dolly, and Trailer Series
- 6 Servicing Truck and Trailer Subseries
- 27 Represents Type AF/M32R-3
- 23 Number Reserved for Overhaul Instructions

**26-4 CATEGORY 35 NUMBERING SERIES.**

- 35 GROUND HANDLING, SUPPORT, AIR, AND MISSILE BASE OPERATING EQUIPMENT
- 35A AIRCRAFT AND MISSILE MAINTENANCE AND INSPECTION EQUIPMENT
- 35A1 DOCKS
- 35A2 JACKS
- 35A2-2 Aircraft
- 35A2-3 Automotive
- 35A2-4 General Purpose
- 35A2-5 Special Purpose

35A3 LADDERS AND STAIRCASES  
 35A4 STANDS  
 35A4-2 Adjustable  
 35A4-3 Nonadjustable  
 35A4-4 Missile Platform  
 35A4-5 Missile Stand  
 35A4-6 Blacklight Inspection (Do not use)  
 35A4-7 Storage  
 35A4-8 Drain  
 35A5 JACKPADS  
 35A6 RACKS  
 35AA ASSOCIATED EQUIPMENT  
 35AA2 JACK COMPONENTS  
 35AA2-2 Cylinder  
 35AA2-3 Pump  
 35AA2-4 Valve  
 35AA3 (Not used)  
 35AA4 STAND COMPONENTS  
 35AA4-2 Valve  
 35AA4-3 Cable Assembly  
 35AA4-4 Pump  
 35AA4-5 Coupling  
 35AA4-6 Adapter  
 35B AIRCRAFT AND MISSILE HANDLING AND WEIGHING EQUIPMENT  
 35B1 GROUND LOCK ASSEMBLIES  
 35B2 WEIGHING EQUIPMENT  
 35B2-2 Aircraft  
 35B2-3 Vehicle  
 35B2-4 Missile  
 35B3 SCALES  
 35B3-2 Balance  
 35B3-3 Counting  
 35B3-4 Platform  
 35B4 STEERING BARS  
 35B5 TOWBARS  
 35B6 TURNTABLES  
 35B7 MISSILE STANDS (Use 35A4)  
 35B8 SKIDS  
 35B8-2 Portable  
 35B9 CHOCK ASSEMBLIES  
 35B10 PRY BARS  
 35B10-2 Wheeled  
 35C ELECTRIC POWER SUPPLIES  
 35C1 SYSTEMS  
 35C1-2 Electrical  
 35C1-3 Combination  
 35C1-4 Converter

35C1-5	Voltage Regulator
35C1-6	Inverter
35C1-7	Transfer Panel
35C2	GENERATORS
35C2-2	Electric Motor Driven
35C2-3	Engine Driven
35C2-4	Missile Generator Sets (Use 35C2-3)
35C3	RECTIFIERS
35C3-2	Battery Charger
35C3-3	Power Supply
35C3-4	Magneto Charger
35C4	TURBOCHARGERS
35CA	ASSOCIATED EQUIPMENT
35CA1	BOXES
35CA1-2	Control
35CA1-3	Junction
35CA2	CABINETS
35CA2-2	Distribution
35CA3	CABLES AND CABLE SYSTEMS
35CA4	CHARGERS
35CA4-2	Magnetic
35CA5	FAN ASSEMBLIES
35CA6	PANELS
35CA7	CONTROLS, OVERVOLTAGE PROTECTION MODULES
35CA8	PUMPS
35CA9	CONTACTORS (Do not use)
35CA10	RELAYS
35CA11	DRIVES AND GEAR MOTORS
35CA12	VALVES
35CA13	CLUTCH ASSEMBLIES
35CA14	FILTERS
35CA15	HYDRAULIC MOTORS
35CA16	OIL COOLERS
35CA17	AXLE ASSEMBLIES
35CA18	MOUNTS
35CA19	SPEED REDUCERS
35CA20	STARTERS
35CA21	GOVERNORS
35CA22	PLUGS
35CA23	TURBOCHARGERS
35CA24	ALTERNATORS
35CA25	TRANSDUCERS



35CA26 STABILIZERS  
 35CA27 OSCILLATORS  
 35CA28 ADAPTERS  
 35CA29 MONITORS  
 35D AIRCRAFT AND MISSILE LOADING AND SERVICING EQUIPMENT  
 35D1 CABLEWAYS  
 35D2 CONVEYORS  
 35D3 TRUCKS, DOLLIES, AND TRAILERS  
 35D3-2 Bomb  
 35D3-3 Engine, Truck Engine Transport  
 35D3-4 Fuselage  
 35D3-5 Propeller  
 35D3-6 Servicing Unit  
 35D3-7 Aircraft  
 35D3-8 Landing Gear  
 35D3-9 Lift  
 35D3-10 Air-Conditioning  
 35D3-11 Missile, Trailer Transporter-Erector  
 35D3-12 Antenna  
 35D3-13 Turret (Trailer)  
 35D3-14 Bomb Sight  
 35D3-15 Flush and Disposal  
 35D3-16 Wheel Change  
 35D3-17 Lavatory  
 35D3-18 Hydraulic  
 35D3-19 Nitrogen (See 35D3-6 also)  
 35D3-20 Cowling  
 35D3-21 Alternator Pack  
 35D3-22 Tow Target  
 35D3-23 Radar Maintenance  
 35D3-24 Platform  
 35D3-25 Missile Fuel  
 35D3-26 Wing  
 35D3-27 Fire Control System  
 35D3-28 Instrument  
 35D3-29 Missile (See 35D3-11 also)  
 35D3-30 Cable  
 35D3-31 Oil Servicing  
 35D3-32 Crash Removal  
 35D3-33 Test Equipment  
 35D3-34 Pod  
 35D3-35 Spray  
 35D3-36 Smoke Generator  
 35D3-37 Field Preflight  
 35D3-38 Radome  
 35D3-39 Chassis Assembly  
 35D3-40 Chaff and Decoy Rocket  
 35D3-41 Corrosion Control  
 35D3-42 Test Station Bay  
 35D3-43 Reel Winder  
 35D3-44 Infrared Unit  
 35D3-45 Fairlead Assembly  
 35D3-46 Camera  
 35D3-47 Seat

35D4	HOISTS
35D4-2	Electric
35D4-3	Hydraulic
35D4-4	Mechanical
35D4-5	Pneumatic
35D4-6	Engine Driven
35D4-7	Electro-Mechanical
35D5	LIFTS
35D5-2	Electric
35D5-3	Hydraulic
35D5-4	Mechanical
35D5-5	Pneumatic
35D5-6	Remote Control
35D6	SLINGS
35D6-2	Engine, Hoisting, Handling
35D6-3	Fuselage
35D6-4	Empennage
35D6-5	Bomb
35D6-6	Missile
35D6-7	Propeller
35D6-8	Canopy
35D6-9	Turret
35D6-10	Pylon
35D6-11	Wing
35D6-12	Inertial Guidance System
35D6-13	Landing Gear
35D6-14	Crash Removal
35D6-15	Door
35D6-16	Scanner
35D7	WINCHES (See 35D4 also)
35D8	CRADLES
35D8-2	Afterburner
35D8-3	Missile
35D8-4	Boom
35D8-5	Wing Removal
35D8-6	Bomb
35D8-7	Radome
35D8-8	Antenna
35D8-9	Pod
35D8-10	Re-Entry Vehicle
35D8-11	Rocket Launcher
35D8-12	Fuselage
35D8-13	Engine Pylon
35D8-14	Ejection Seat
35D8-15	Aircraft Engine
35D8-16	Miscellaneous
35D9	LOADING DOCKS
35D10	(Not used)
35D11	BINS
35D11-2	Cargo
35D12	STARTING EQUIPMENT
35D12-2	Gas Turbine
35D12-3	Adapters
35D13	AUXILLIARY LOADING AND SERVICING

35D13-2 Missile  
 35D14 BEAM ASSEMBLIES  
 35D15 TANKS  
 35D15-2 Liquid Oxygen  
 35D16 MANIFOLDS AND MANIFOLD KITS  
 35D16-2 Drain  
 35D17 DRYING UNITS  
 35D18 FILL UNITS  
 35D19 ADAPTERS (Use 35DA3-6)  
 35D20 CORD ASSEMBLIES  
 35D20-2 Remote Control  
 35D21 SPREADERS  
 35D21-2 Engine  
 35D22 PURGERS (Use 35E22-2)  
 35D23 REGULATORS (Use 35E23)  
 35D24 SIMULATORS  
 35D24-2 Missile  
 35D25 FIXTURE ASSEMBLIES  
 35D25-2 Missile Rigging  
 35D25-3 Breakaway Attachment  
 35D25-4 Elevon Installation and Removal  
 35D25-5 Torquing  
 35D25-6 Bolster Assembly  
 35D25-7 Puller Assembly  
 35D25-8 Handling  
 35D25-9 Landing Gear  
 35D25-10 Engine  
 35D25-11 Support  
 35D25-12 Capsule  
 35D25-13 Nozzle  
 35D25-14 Gearbox  
 35D26 KITS  
 35D26-2 Aligning Fixture  
 35D26-3 Tiedown  
 35D26-4 Rigging  
 35D26-5 Pressurizing  
 35D26-6 Leveling  
 35D26-7 Booster Pump  
 35D26-8 Nose Radome  
 35D27 RAMPS  
 35D27-2 Wheel Set  
 35D28 PRIMING ASSEMBLIES  
 35D28-2 Hydraulic Oil  
 35D29 CARTS  
 35D29-2 Missile Propellant  
 35D29-3 Hydraulic  
 35D29-4 Magnetron  
 35D29-5 Liquid  
 35D29-6 Lavatory Servicing  
 35D29-7 Refrigeration Servicing

TO 00-5-18

35D29-8 Pneumatic

35D30 LOADERS

35D30-2 Missile

35D30-3 Aircraft

35D30-4 Munitions

35D31 CARRIAGES

35D31-2 Re-Entry Vehicle

35D31-3 Rocket Motor

35D32 RINGS

35D32-2 Engine Roll Over

35D33 PALLETS

35D33-2 Air Cargo

35D34 PLATFORMS

35D35 GUIDES

35D36 MAN LIFT DEVICES

35D37 PROCESSORS

35DA ASSOCIATED EQUIPMENT AND COMPONENTS

35DA1 CABLEWAYS

35DA2 CONVEYORS

35DA3 TRUCKS, DOLLIES AND TRAILERS

35DA3-2 Bomb Truck

35DA3-3 Cylinder, Pump Assembly

35DA3-4 Motor, Actuator

35DA3-5 Cylinder Assembly

35DA3-6 Adapter

35DA3-7 Thermostat

35DA3-8 Blower

35DA3-9 Power Pack

35DA3-10 Cap

35DA4 CONTROLS

35DA5 RAIL ASSEMBLIES

35DA6 ACTUATORS

35DA7 INDICATOR, MISSILE POSITION AND ALIGNMENT

35DA8 VALVES

35DA9 FILTER ASSEMBLIES

35DA10 GEAR REDUCER ASSEMBLIES

35DA11 GAUGES

35DA12 METERS

35DA13 CYLINDERS (See 35DA3-3 also)

35DA14 REGULATORS

35DA15 DRIVE ASSEMBLIES

35DA16 CHASSIS

35DA17 GUIDE ASSEMBLIES

35E AIR AND MISSILE BASE UTILITY OPERATING EQUIPMENT

35E1 FIRE FIGHTING EQUIPMENT  
 35E1-2 Fire Extinguisher  
 35E2 LANDING MATS  
 35E3 PREFABRICATED BUILDINGS  
 35E4 SHELTERS  
 35E5 TENTS  
 35E6 BRIDGES  
 35E6-2 Pontoon  
 35E7 HEATERS  
 35E7-2 Aircraft Ground  
 35E7-3 Engine and Shelter  
 35E7-4 Utility, Low Silhouette Heater  
 35E7-5 Heat Exchanger  
 35E7-6 Space  
 35E7-7 Gyro  
 35E8 BARRIERS  
 35E8-2 Runway  
 35E8-3 Runup Fence  
 35E9 AIR-CONDITIONERS AND FREEZERS  
 35E10 GROUND COOLERS  
 35E11 GROUND BLOWERS AND FANS  
 35E12 VENTILATORS  
 35E13 PUMPS  
 35E14 COMPRESSOR BUILDINGS  
 35E15 MISSILE A AND M SHOPS, MAIN GROUND AIDS PENETRATION  
 35E16 ERECTORS  
 35E17 DECONTAMINATION EQUIPMENT, DEICERS  
 35E18 CONTROL EQUIPMENT  
 35E19 CASES (See 35E20 also)  
 35E20 CONTAINERS, SHIPPING AND STORAGE  
 35E20-2 Missile, Warhead Section  
 35E20-3 Engine  
 35E20-4 Miscellaneous  
 35E20-5 Helicopter Blade  
 35E20-6 Checkout Tape  
 35E20-7 Optical Equipment  
 35E20-8 Chemical, Biological Munitions  
 35E20-9 Guided Glide Weapon  
 35E20-10 Dispenser  
 35E20-11 Ammunition  
 35E21 COVERS  
 35E21-2 Missile  
 35E21-3 Aircraft  
 35E21-4 Bomb  
 35E21-5 Camera  
 35E21-6 Scanner

35E22	PURGING AND CLEANING EQUIPMENT
35E22-2	Missile
35E22-3	Aircraft
35E22-4	Engine
35E22-5	Trailer
35E23	REGULATORS
35E23-2	Missile
35E24	LEAK DETECTOR
35E25	MISSILE SHIPPING EQUIPMENT
35E26	PROTECTION EQUIPMENT
35E26-2	Engine Screen, Shield
35E26-3	Personnel Screen, Shield
35E26-4	Insulation
35E27	GAS AND UNDERGROUND PIPING SYSTEMS AND COMPONENTS
35E27-2	System
35E27-3	Valve
35E28	FILTERS AND DEHYDRATORS
35E29	CONVERTERS
35E30	WINDOWS
35E31	TANKS
35E31-2	Mixing
35E31-3	Water Storage
35E32	SWITCHES
35E33	RELOAD FACILITIES
35E34	TOWERS
35E35	SANITATION EQUIPMENT
35E36	WARNING DEVICES
35EA	ASSOCIATED EQUIPMENT
35EA1	NOZZLES
35EA2	SPEED REDUCERS
35EA3	FIRE PROTECTION AND SAFETY SHELTERS
35EA4	AIR-CONDITIONING
35EA4-2	Fan, Blower
35EA4-3	Valve
35EA4-4	Compressor
35EA4-5	Field, Rotor Assembly
35EA4-6	Tachometer
35EA4-7	Adapter, Duct
35EA4-8	Pump
35EA4-9	Filler, Bleeder
35EA5	LAUNCHER SHELTER, HIGH- AND LOW-HELIUM
35EA5-2	Valve
35EA5-3	Control-Indicator Assembly
35EA6	RIM BUILDING COMPONENTS
35EA7	DECONTAMINATION SYSTEM
35EA7-2	Pump

35EA7-3 Valve  
35EA7-4 Measuring, Controlling Instrument  
35EA8 CONTROL BENCH UNITS  
35EA8-2 Pump  
35EA9 PURGING AND CLEANING EQUIPMENT  
35EA9-2 Valve  
35EA9-3 Indicator  
35F AIR FIELD LIGHTING AND ELECTRICAL EQUIPMENT  
35F1 CABINETS  
35F2 CONTROL PANELS  
35F3 CUBICLES  
35F4 LAMP CHANGERS  
35F5 LIGHTS  
35F5-2 Air Traffic Control  
35F5-3 Approach and Runway  
35F5-4 Beacon  
35F5-5 Flood  
35F5-6 Lantern  
35F5-7 Searchlight  
35F5-8 Range  
35F5-9 Flashlight  
35F5-10 Marker  
35F5-11 Launch  
35F6 PANELBOARDS  
35F7 REFLECTORS  
35F8 REGULATORS  
35F9 RELAYS  
35F10 SIRENS  
35F11 SWITCHBOARDS  
35F12 WIND INDICATORS  
35F13 BATTERIES  
35F14 SWITCHES  
35F15 ELECTRIC MOTORS  
35F16 STARTERS  
35F17 FANS  
35F18 ELECTRIC POWER TRANSFER CONTROLS  
35G AIRCRAFT GROUND SUPPORT EQUIPMENT  
35G3 SUPPORT ASSEMBLIES  
35G3-3 Stand  
35G5 KITS (HANDLING)  
35G5-2 Panel and Rack  
35G5-4 Gimbal Kit  
35M MISSILE SUPPORT EQUIPMENT  
35M1 SYSTEM TECHNICAL ORDERS

35M1-2	Fluid Distribution
35M1-3	Propellant Utilization
35M1-4	Gas Distribution
35M1-5	Silo Helium Charge
35M1-6	Monorail
35M1-7	Crib Suspension
35M1-8	Damper, Lock System
35M1-9	Personnel Access
35M1-10	Environmental Control
35M2	ERECTION EQUIPMENT
35M2-2	Mount, Erector
35M2-3	Hydraulic Pumping Unit
35M2-4	Trunnion Erector (Use 35M2-2)
35M2-5	Buffer Assembly
35M2-6	Ratchet Assembly
35M3	LAUNCHING EQUIPMENT
35M3-2	Launcher, Alignment Assembly
35M3-3	Shock Absorber
35M3-4	Indicator
35M3-5	Adapter Unit
35M3-6	Boom
35M3-7	Aligning
35M3-8	Support and Positioner
35M3-9	Pack
35M3-10	Balancer
35M3-11	Rescue
35M4	MISSILE- AND COMPONENT- HANDLING EQUIPMENT
35M4-2	Installation Fixture
35M4-3	Carrier
35M4-4	Loader
35M4-5	Hydraulic Jack (Do not use - see 35A2)
35M5	SERVICERS
35M5-2	Hydro-Pneumatic
35M5-3	Hydraulic
35M5-4	Pneumatic
35M5-5	Electric
35M6	RING ASSEMBLY AND EQUIPMENT
35M6-2	Auxiliary Ring Assembly
35M6-3	Start Assembly
35M6-4	Filling Assembly
35M6-5	Control Assembly
35M6-6	Cable Mast
35M7	PROPELLANT SERVICING UNITS
35M7-2	Nitrogen
35M7-3	Liquid Oxygen
35M7-4	Solvent
35M7-5	Gas
35M7-6	Ammonia
35M7-7	Adapter
35M7-8	Hydraulic
35M7-9	Freon
35M8	RECHARGING UNITS
35M8-2	Nitrogen
35M8-3	Oxygen
35M8-4	Refrigerant



35M9 PRESSURIZING UNITS  
35M9-2 Nitrogen  
35M9-3 Canister

35M10 CONTROL UNITS  
35M10-2 Nitrogen  
35M10-3 Pressurization  
35M10-4 Propellant  
35M10-5 Temperature  
35M10-6 Hydraulic, Pneumatic  
35M10-7 Silo

35M11 PANELS (PROPELLANT)  
35M11-2 Nitrogen  
35M11-3 Liquid Oxygen  
35M11-4 Ammonia

35M12 INDICATORS  
35M12-2 Dew Point

35M13 REGULATORS  
35M13-2 Pressure

35M14 VALVES  
35M14-2 Shutoff  
35M14-3 Vent, Relief  
35M14-4 Regulator  
35M14-5 Control  
35M14-6 Selector  
35M14-7 Check  
35M14-8 Shuttle  
35M14-9 Relay

35M15 FILTERS AND STRAINERS  
35M15-2 Hydraulic  
35M15-3 Pneumatic  
35M15-4 Pressure  
35M15-5 Liquid Oxygen

35M16 SENSORS  
35M16-2 Liquid  
35M16-3 Overspeed

35M17 CYLINDERS  
35M17-2 Hydraulic  
35M17-3 Actuating  
35M17-4 Pneumatic  
35M17-5 Mechanical

35M18 MOTORS  
35M18-2 Electric  
35M18-3 Hydraulic  
35M18-4 Pneumatic

35M19 PUMPS  
35M19-2 Electric  
35M19-3 Hydraulic  
35M19-4 Hand  
35M19-5 Pneumatic

35M20 METERS AND MEASURING EQUIPMENT  
35M20-2 Meter  
35M20-3 Indicator

35M21	ACCUMULATORS
35M21-2	Hydraulic
35M21-3	Pneumatic
35M21-4	Propulsion
35M22	BEARINGS
35M22-2	Flanged
35M22-3	Spherical Roller
35M22-4	Floating
35M23	BRAKES
35M23-2	Hydraulic
35M24	GAUGES
35M24-2	Pressure
35M25	SURGE AND DESURGE EQUIPMENT
35M25-2	Hydraulic
35M25-3	Pneumatic
35M26	LOCK AND RELEASE ASSEMBLIES
35M27	ACTUATORS
35M27-2	Electro-Mechanical
35M27-3	Hydraulic
35M27-4	Ballistic
35M28	DRIVES
35M29	SWITCHES
35M30	MANIFOLD ASSEMBLIES
35M31	SPEED REDUCERS (GOVERNORS)
35M32	TRANSMISSIONS
35M33	CONNECTORS
35M34	TENSION DEVICES
35M35	ADAPTERS AND CLAMPS
35M36	TUBES
35M37	DOORS
35M38	SWIVEL AND GIMBAL ASSEMBLIES
35M39	VAPORIZERS THERMOCOUPLES
35MA	ASSOCIATED EQUIPMENT
35MA1	HYDRAULIC SYSTEMS COMPONENTS
35MA1-2	Valve
35MA2	ERECTION EQUIPMENT
35MA2-2	(Not used)
35MA2-3	Hydraulic Cylinder, Accumulator
35MA3	LAUNCHING EQUIPMENT
35MA3-2	Valve (See 35M14)
35MA3-3	Hydraulic Cylinder (See 35M17)
35MA3-4	Hydraulic Accumulator (See 35M21)
35MA3-5	Motor (See 35M18)
35MA3-6	Indicator (See 35M12)
35MA3-7	Pump (See 35M19)
35MA3-8	Coupling

35MA3-9 Control (See 35M10)  
35MA3-10 Brake (See 35M23)  
35MA3-11 Joint Assembly

35MA4 PROPELLANT LOADING AND PRESSURIZATION  
35MA4-2 Regulator (See 35M13)  
35MA4-3 Valve (See 35M14)  
35MA4-4 Breaker Assembly  
35MA4-5 Switch (See 35M29)  
35MA4-6 Indicator (See 35M12)  
35MA4-7 Pressure Unit  
35MA4-8 Relay  
35MA4-9 Pump (See 35M19)  
35MA4-10 Starter  
35MA4-11 Liquid Level  
35MA4-12 Gauge (See 35M24)  
35MA4-13 Meter (See 35M20)



## CHAPTER 27

### CATEGORY 36 - VEHICLES, CONSTRUCTION AND MATERIAL-HANDLING EQUIPMENT

#### 27-1 GENERAL.

27-1.1 Category 36 contains six systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore, TO numbers in Category 36 use both three and four basic groups for data identification. Numbering patterns for both forms are discussed in paragraph 27-2.

27-1.2 TO data pertaining to more than one system is numbered in the category general series.

27-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 27-2 NUMBERING PATTERNS.

27-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within a system.

27-2.1.1 Part one is always the numeric 36 identifying Category 36.

27-2.1.2 Part two is an alpha character identifying one of six systems; i.e., A - vehicles; C - construction equipment; G - gas generating equipment; M - materials handling equipment; R - ordnance equipment; and Y - vehicle, construction and material-handling equipment. Associated equipment for these systems are identified by adding the alpha A immediately following the system identifier, e.g., MA.

27-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series are outlined in paragraph 27-4.

27-2.2 **GROUP TWO.** TO numbering patterns in Category 36 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns.

27-2.2.1 If the TO number uses only three basic groups, group two will have one or more numeric characters representing the model, type or PN assigned to specific components.

27-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

#### 27-2.3 **GROUP THREE.**

27-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 36:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 5 DCSC Technical Maintenance Standards
- 6 Inspection Requirements
- 7 Installation Instructions

27-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 36:

- CL - Checklists
- LC - Lubrication Charts
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

27-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PN assigned to specific components.

27-2.4 GROUP FOUR. When the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 27-2.3.1, above.

**27-3 EXAMPLES OF CATEGORY 36 NUMBERING PATTERNS.**

27-3.1 A service manual for a low bed semi-trailer, 25 ton, type T25L-232:

36A9-2-32-2

- 36 Category 36
- A Vehicles
- 9 Semi-Trailer Series
- 2 Cargo Type Subseries
- 32 Represents Type T25L-232
- 2 Number Reserved for Service Manuals

27-3.2 A field maintenance manual for a portable floor crane, model HLU-145A/E:

36C3-6-4-2

- 36 Category 36
- C Construction Equipment
- 3 Crane Series
- 6 Portable Type Subseries
- 4 Represents Model HLU-145A/E
- 2 Number Reserved for Field Maintenance Manuals

27-3.3 Operating instructions for a fork lift, model FK-7-1:

36M2-2-82-1

- 36 Category 36
- M Material Handling Equipment
- 2 Lift Series
- 2 Fork Lift Subseries
- 82 Represents Model FK-7-1
- 1 Number Reserved for Operating Instructions

**27-4 CATEGORY 36 NUMBERING PATTERNS.**

- 36 VEHICLES, CONSTRUCTION, AND MATERIAL-HANDLING EQUIPMENT
- 36A VEHICLES
- 36A1 AMBULANCES
- 36A2 COMMERCIAL FLEET
- 36A2-2 International
- 36A2-3 Ford
- 36A2-4 General Motors

36A2-5 Chrysler  
 36A2-6 American Motors  
 36A2-7 White Motors  
 36A2-8 Mack Truck, Inc.  
 36A2-9 VW  
 36A2-10 Kenworthy  
 36A3 BUSES  
 36A4 DOLLIES, TRAILERS  
 36A5 JEEPS  
 36A6 MOTORCYCLES  
 36A7 PASSENGER CARS  
 36A8 SCOOTERS  
 36A9 SEMITRAILERS  
 36A9-2 Cargo  
 36A9-3 Fuel Servicing  
 36A9-4 Laundry  
 36A9-5 Refrigerating  
 36A9-6 Shower  
 36A9-7 Stake and Platform  
 36A9-8 Van  
 36A9-9 Wrecking  
 36A9-10 Pilotless Aircraft Transport  
 36A9-11 Translauncher  
 36A9-12 Chemical Handling  
 36A9-13 Water Handling  
 36A9-14 Support Trailer  
 36A9-15 Mobile Personal Support Trailer  
 36A10 TRACTORS  
 36A10-2 Tracklaying  
 36A10-3 Wheeled  
 36A11 TRAILERS  
 36A11-2 Ammunition  
 36A11-3 Antenna Mount  
 36A11-4 Bomb  
 36A11-5 Cargo  
 36A11-6 Chemical Handling  
 36A11-7 Clothing Repair  
 36A11-8 Firefighting  
 36A11-9 (Not used)  
 36A11-10 Fuel Servicing  
 36A11-11 Gas Plant  
 36A11-12 Laundry  
 36A11-13 Lubrication  
 36A11-14 Shoe Repair  
 36A11-15 Shower  
 36A11-16 Telephone Maintenance  
 36A11-17 Textile Repair  
 36A11-18 Utility  
 36A11-19 Van  
 36A11-20 Water Tank  
 36A11-21 Electronic Equipment, Enclosure Trailer  
 36A11-22 Photographic Equipment  
 36A11-23 Bolster  
 36A11-24 Pilotless Aircraft  
 36A11-25 Test Equipment  
 36A11-26 Water-Alcohol Tank

36A11-27	Radar Equipment, Radio Equipment
36A11-28	Heater
36A11-29	Housetrailer
36A12	TRUCKS
36A12-1A	1/4-Ton - 2-Ton
36A12-1B	2 1/2-Ton
36A12-1C	4-Ton and Over
36A12-2	Amphibian
36A12-3	Bomb Service
36A12-4	Bridge Erecting
36A12-5	Cargo
36A12-6	Carryall
36A12-7	Chemical Service
36A12-8	Crash, Fire and Rescue
36A12-9	Decontaminating
36A12-10	Dump
36A12-11	Field Lighting
36A12-12	Firefighting
36A12-13	Fuel, Oil Servicing
36A12-14	Pickup
36A12-15	Prime Mover
36A12-16	Refuse Collection
36A12-17	Shop
36A12-18	Stake and Platform
36A12-19	Telephone Maintenance
36A12-20	Weapon Carrier
36A12-21	Wrecking
36A12-22	Crane
36A12-23	Waste, Water
36A12-24	Multipurpose
36A12-25	Marker, Traffic Line
36A12-26	Liquid Nitrogen
36A12-27	Refrigerating
36A13	TRUCK TRACTORS
36A14	ARMORED
36C	CONSTRUCTION EQUIPMENT
36C1	AUGERS
36C1-2	Skid Mounted
36C1-3	Tractor Mounted
36C1-4	Trailer Mounted
36C1-5	Truck Mounted
36C2	CONVEYORS
36C2-2	Crawler Mounted
36C2-3	Self-Propelled
36C2-4	Skid Mounted
36C2-5	Wheel Mounted
36C3	CRANES
36C3-2	Crawler Mounted
36C3-3	Tractor Mounted
36C3-4	Truck Mounted
36C3-5	Wheel Mounted
36C3-6	Portable
36C3-7	Floating (Use 39B)
36C4	DERRICKS (Used on Diesel Engine)



36C5        DISTRIBUTORS  
36C5-2     Bituminous Material  
36C5-3     Water

36C6        DITCHERS

36C7        DRILLS

36C8        DRYERS AND DEHYDRATORS

36C9        GRADERS  
36C9-2     Self-Propelled  
36C9-3     Towed

36C10       HEATERS

36C11       KETTLES

36C12       LOADERS  
36C12-2    Crawler Mounted  
36C12-3    Wheel Mounted

36C13       CABLE LAYING EQUIPMENT  
36C13-2    Lashing Machine  
36C13-3    Reeling Machine  
36C13-4    Cable Transporter

36C14       MIXERS  
36C14-2    Bituminous Material  
36C14-3    Concrete  
36C14-4    Soil

36C15       PAVERS AND FINISHERS  
36C15-2    Bituminous Material  
36C15-3    Concrete

36C16       PIPE LAYERS

36C17       PLANTS  
36C17-2    Asphalt Mixing  
36C17-3    Batching  
36C17-4    Concrete Mixing  
36C17-5    Crushing, Screening and Washing  
36C17-6    Steam Construction

36C18       PLOWS, SNOW PLOWS

36C19       PUMPS

36C20       ROLLERS  
36C20-2    Self-Propelled  
36C20-3    Towed

36C21       ROOTERS

36C22       SCRAPERS  
36C22-2    Self-Propelled  
36C22-3    Towed

36C23       SHOVELS  
36C23-2    Crawler Mounted  
36C23-3    Truck Mounted  
36C23-4    Wheeled

36C24       SPREADERS

36C25       SWEEPERS  
36C25-2    Self-Propelled

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36C25-3	Towed
36C25-4	Magnetic
36C25-5	Manually Propelled
36C26	TRACTORS
36C26-2	Crawler
36C26-3	Wheeled
36C27	TRAILERS
36C28	WAGONS
36C29	WELL DRILLERS
36C30	PILE DRIVERS
36C30-2	Telescoping
36C31	MOTORIZED COMPRESSORS
36C31-2	Wheeled
36C32	CARRIERS
36C32-2	Snow Plow
36C32-3	Crane-Shovel
36C33	COLLECTORS
36C33-2	Dust
36C34	COMPACTORS AND VIBRATORS
36C34-2	Pneumatic, Gasoline Engine Driven
36C35	CLEANING MACHINES
36C36	RIPPERS AND PAVING BREAKERS, JACK-HAMMERS
36C37	EXCAVATORS
36C37-2	Multipurpose
36G	GAS GENERATING EQUIPMENT
36G1	GENERATING AND CHARGING PLANTS
36G1-2	Generating Plant, Oxygen or Nitrogen
36G1-3	Hydrogen Generator
36G2	FILTER ASSEMBLIES
36M	MATERIAL-HANDLING EQUIPMENT
36M1	CRANES
36M1-2	Electrically Driven
36M1-3	Engine Driven
36M2	LIFTS
36M2-2	Fork
36M2-3	Platform
36M2-4	Scoop
36M3	TRACTORS
36M3-2	Electrically Driven
36M3-3	Engine Driven
36M4	TRAILERS
36M5	TRUCKS
36M5-2	Straddle
36M5-3	Wheel Type
36M5-4	Liftainer
36M5-5	Fixed Platform

36M6	POSITIONERS
36M6-2	Pallet
36M7	WHEELBARROWS
36MA	ASSOCIATED EQUIPMENT
36MA1	STACKERS (FORK LIFT)
36MA2	ELEVATORS
36R	ORDNANCE EQUIPMENT
36R1	(Not used)
36R2	ARMORED CARS
36R3	CARRIAGES
36R4	CARRIERS
36R4-2	Cargo
36Y	COMPONENTS - VEHICLES, CONSTRUCTION, AND MATERIAL HANDLING EQUIPMENT
36Y1	ANGLEDOZERS
36Y2	ATTACHMENTS
36Y2-2	Auger
36Y2-3	Magnet
36Y2-4	Shovel
36Y2-5	Snow Plow
36Y2-6	Sweeper
36Y3	AXLES, WHEEL ASSEMBLIES, BRAKE ASSEMBLIES
36Y4	BATTERIES AND BATTERY CABLES
36Y5	BINS
36Y6	BODIES
36Y6-2	Bus
36Y6-3	Dump
36Y6-4	Fire Truck
36Y6-5	Lift
36Y6-6	Passenger Car
36Y6-7	Refuse Collection
36Y6-8	Conveyor Delivery
36Y6-9	Ambulance
36Y6-10	Van
36Y7	BRAKES
36Y8	BUCKETS
36Y9	BULLDOZERS
36Y10	CHASSIS
36Y11	CLUTCHES
36Y12	FEEDERS
36Y13	GAUGES AND INSTRUMENTS
36Y14	GRADATION UNIT
36Y15	HEATERS
36Y16	HOISTS

36Y17	KITS
36Y17-2	Cold Starting
36Y17-3	Follow-me
36Y17-4	Hard Top Closure
36Y17-5	Personnel Heater
36Y17-6	Power Plant
36Y17-7	Winterization
36Y17-8	Brake Control
36Y17-9	Fire Protection
36Y17-10	Conveyor
36Y18	LIGHTS
36Y18-2	Flood
36Y18-3	Instrument
36Y18-4	Clearance
36Y18-5	Vehicle
36Y19	MOTORS
36Y20	METERS
36Y21	MOWERS
36Y22	POWER CONTROL UNITS
36Y23	POWER TRAINS
36Y24	PROPORTIONERS (VARIABLE FLOW)
36Y25	PUMPS
36Y26	RADIATORS
36Y27	SAWS
36Y28	SEGREGATORS
36Y29	SHOCK ABSORBERS
36Y30	SPRINGS
36Y31	TANKS
36Y31-2	Asphalt
36Y31-3	Fuel
36Y31-4	Vehicular
36Y31-5	Water
36Y32	TIRES AND TUBES
36Y32-2	Safety Guard
36Y33	TRANSMISSIONS
36Y34	WHEELS
36Y35	WINCHES
36Y36	WINDSHIELDS
36Y37	ROPES
36Y37-2	Wire Rope
36Y38	CUBICLES
36Y38-2	Power Distribution
36Y39	TRACKS
36Y39-2	Rubber
36Y40	FILTERS
36Y40-2	Fluid

36Y41	PACKS
36Y42	BELTS AND PULLEYS
36Y43	SPACERS
36Y44	CARRIAGES
36Y45	REELS
36Y46	ACTUATORS
36Y47	CONTROLS
36Y48	BOGIES
36Y49	CYLINDER ASSEMBLIES
36Y50	VALVES
36Y51	PIPELINES (Use 37C)
36Y52	BLADES
36Y53	BLOWERS
36Y54	SEPARATORS
36Y55	COMPRESSORS
36Y56	SHOCKS (Use 36Y29)
36Y57	LANDING JACKS
36Y58	AIR COMPRESSORS
36Y59	VEHICLE ONLOADING EQUIPMENT
36Y60	STEERING GEARS
36Y61	CARBURETORS



## CHAPTER 28

### CATEGORY 37 - FUEL-, OIL- AND PROPELLANT-HANDLING EQUIPMENT

#### 28-1 GENERAL.

28-1.1 Category 37 contains three fuel-, oil-, and propellant-handling systems. These systems are divided into equipment series and most of the systems are further divided into equipment subseries within each equipment series. Therefore TO numbers in Category 37 use both three and four basic groups for data identification. Numbering patterns for both forms are discussed in paragraph 28-2.

28-1.2 TO data pertaining to more than one system is numbered in the category general series.

28-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 28-2 NUMBERING PATTERNS.

28-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series within the system.

28-2.1.1 Part one is always the numeric 37 identifying Category 37.

28-2.1.2 Part two is an alpha character identifying the oil-, fuel-, and propellant-handling systems, i.e., A - fuel and oil handling equipment; B - aircraft propellant systems; and C - propellant storage and handling equipment. Associated equipment for these systems is identified by adding the alpha A immediately following the system identifier, e.g., CA.

28-2.1.3 Part three contains one or more numeric characters identifying an equipment series within a system. The TO numbering series are outlined in paragraph 28-4.

28-2.2 **GROUP TWO.** TO numbering patterns in Category 37 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

28-2.2.1 If the TO number uses only three basic groups, group two uses one or more numeric characters representing the model, type or PN assigned to specific components.

28-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, group two identifies the equipment subseries with one or more numeric characters and the model, type or PN is identified in group three.

28-2.3 **GROUP THREE.**

28-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 37:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions

28-2.3.2 In some instances the reserved numbers in group three are followed by one or more alpha characters indicating a series of checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 37:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

28-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing model, type or PN assigned to specific components.

28-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 28-2.3.1, above.

**28-3 EXAMPLES OF CATEGORY 37 NUMBERING PATTERNS.**

28-3.1 Overhaul instructions for a fuel hose four-wheel trailer type MH-1:

37A2-2-2-3  
37           Category 37  
  A           Fuel- and Oil- Handling Equipment  
    2           Cart Series  
      2           Hose Cart Subseries  
        2           Represents Type MH-1  
          3           Number Reserved for Overhaul Instructions

28-3.2 An illustrated parts breakdown for a fuel and oil servicing nozzle, PN 9035:

37A6-2-24  
37           Category 37  
  A           Fuel- and Oil- Handling Equipment  
    6           Nozzle Series  
      2           Represents PN 9035  
        24          Number Reserved for Illustrated Parts Breakdown

28-3.3 An illustrated parts breakdown for a fuel storage tank, model TMU-4/E:

37C2-2-2-4  
37           Category 37  
  C           Propellant Storage and Handling  
    2           Storage Facility Series  
      2           Fuel Storage Subseries  
        2           Represents Model TMU-4/E  
          4           Number Reserved for Illustrated Parts Breakdown

**28-4 CATEGORY 37 NUMBERING SERIES.**

37           FUEL-, OIL- AND PROPELLANT-HANDLING EQUIPMENT  
37A          FUEL- AND OIL- HANDLING EQUIPMENT  
37A1         ADAPTERS  
37A2         CARTS  
37A2-2       Hose  
37A3         CONTAINERS  
37A3-2       Collapsible  
37A3-3       Skid Mounted  
37A4         COUPLINGS  
37A5         HOSES  
37A6         NOZZLES  
37A6-2       Single Point  
37A6-3       Automatic Shutoff  
37A6-4       Over-the-Wing (Gravity)  
37A7         PUMPS  
37A8         SEPARATORS



37A8-2 Gasoline-Water

37A9 FUEL STORAGE, DISTRIBUTING AND DISPENSING SYSTEMS

37A9-2 Gravity Flow

37A9-3 Hydrant Fueling

37A9-4 Hydraulically Operated

37A9-5 Mechanical (Other than hydrant)

37A9-6 Fuel Dispensing Line

37A9-7 Fuel Distributing Unit

37A10 OIL STORAGE, DISTRIBUTING, AND DISPENSING SYSTEMS

37A11 REFUELING UNITS

37A12 TANKS

37A13 TRANSFER UNITS

37A14 VEHICLE FUEL AND OIL DISTRIBUTING AND DISPENSING SYSTEMS

37A15 OIL PURIFIERS

37A16 FUEL RETURN LINE ASSEMBLIES

37A17 SERVICING UNITS

37A17-2 Oil Servicing

37A17-3 Coolant Servicing

37A18 VALVES (Use 37A1)

37A18-2 Fuel Servicing

37A19 REELS

37B AIRCRAFT PROPELLANT SYSTEMS

37B1 NITRIC ACID HANDLING EQUIPMENT

37C PROPELLANT STORAGE AND HANDLING SYSTEMS

37C1 SYSTEMS

37C1-2 Acid

37C1-3 Fuel

37C2 STORAGE FACILITIES

37C2-2 Fuel

37C2-3 High Pressure Gas

37C2-4 Liquid Oxygen

37C2-5 Diesel Fuel

37C2-6 Nitrogen

37C2-7 Liquid Solvent Recovery

37C2-8 Liquid Oxygen, Nitrogen, Argon, and Air

37C3 MISSILE PROPELLANT PILE LINES

37C4 MISSILE PROPELLANT HOSE ASSEMBLIES

37C5 PUMPS

37C6 FILTERING UNITS

37C7 HEATERS

37C8 COMPRESSORS, PROPELLANT-TRANSFER

37C9 CLEANING AND PURGING EQUIPMENT

37C10 CONNECTORS

37C11 GAUGES

TO 00-5-18

37CA ASSOCIATED EQUIPMENT

37CA1 PROPELLANT TRANSFER

37CA1-2 Valve

37CA1-3 Breather Set

## CHAPTER 29

### CATEGORY 38 - NONAERONAUTICAL ENGINES

#### 29-1 GENERAL.

29-1.1 Category 38 contains four systems. These systems are divided into equipment series and the equipment series are further divided into equipment subseries. TO numbers in Category 38 use both three and four basic groups in the numbering patterns discussed in paragraph 29-2, below.

29-1.2 TO data pertaining to more than one system in this category is numbered in the category general series.

29-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 29-2 NUMBERING PATTERNS.

29-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series.

29-2.1.1 Part one is always the numeric 38 identifying Category 38.

29-2.1.2 Part two is an alpha character identifying the nonaeronautical engine, i.e., G - powered ground equipment engines; M - marine engines; V - vehicle engines; and X - nonaeronautical engine components and accessories.

29-2.1.3 Part three contains one or more numeric characters identifying the equipment series within a system. The equipment series numbers for this category are outlined in paragraph 29-4.

29-2.2 **GROUP TWO.** TO numbering patterns in Category 38 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

29-2.2.1 If the TO number uses only three basic groups, group two will contain one or more numeric characters representing the model, type or PN assigned to specific equipment.

29-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, the equipment subseries is identified with one or more numeric characters in group two, and the model, type or PN is identified in group three.

29-2.3 **GROUP THREE.**

29-2.3.1 If a TO number has only three basic groups, the third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 38:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements

29-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 38:

- CL - Checklists
- LC - Lubrication Charts
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

29-2.3.3 If the TO number has four basic groups, the third group contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

29-2.4 GROUP FOUR. If the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 29-2.3.1, above.

**29-3 EXAMPLES OF CATEGORY 38 NUMBERING PATTERNS.**

29-3.1 Illustrated parts breakdown for a diesel engine, model D-318.

38G1-24-24

38           Category 38  
  G           Powered Ground Equipment Engines  
    1          Diesel Series  
      24       Represents Model D-318  
       24       Number Reserved for Illustrated Parts Breakdown

29-3.2 Operating instructions for a Diesel marine engine, model 6DCMR-1879.

38M1-24-1

38           Category 38  
  M           Marine Engines  
    1          Diesel Series  
      24       Represents Model 6DCMR-1879  
       1        Number Reserved for Operating Instructions

29-3.3 Overhaul manual for a fuel pump, PN 1539900 series:

38X11-2-4-3

38           Category 38  
  X           Accessories  
    11         Pump Series  
      2         Fuel Pump Subseries  
       4         Represents PN 1539900 Series  
       3         Number Reserved for Overhaul Instructions

**29-4 CATEGORY 38 NUMBERING SERIES.**

38           NONAERONAUTICAL ENGINES  
38G          POWERED GROUND EQUIPMENT ENGINES  
38G1         DIESEL  
38G2         GASOLINE  
38G3         JET FUEL  
38M          MARINE ENGINES  
38M1         DIESEL  
38M2         GASOLINE  
38M3         STEAM  
38V          VEHICLE ENGINES  
38V1         DIESEL  
38V2         GASOLINE  
38X          NONAERONAUTICAL ENGINE COMPONENTS AND ACCESSORIES  
38X1         BEARINGS  
38X2         CARBURETORS

38X3	DISTRIBUTORS
38X4	FILTERS
38X4-2	Fuel
38X4-3	Oil
38X5	GEARS
38X6	GENERATORS
38X7	GOVERNORS
38X8	HOUSINGS
38X8-2	Clutch
38X9	MAGNETOS
38X10	PULLEYS
38X11	PUMPS
38X11-2	Fuel
38X11-3	Oil
38X11-4	Water
38X12	RADIATORS
38X13	SPARK PLUGS
38X14	STARTERS
38X15	THERMOSTATS
38X16	VALVES
38X17	SHIPPING CASES
38X18	SHAFTS
38X19	BUSHINGS
38X19-2	Bronze
38X20	IGNITION SYSTEMS
38X21	REGULATORS, CURRENT AND VOLTAGE
38X22	HEATERS
38X23	SWITCHES
38X24	INJECTORS
38X25	AIR EQUIPMENT
38X26	TURBOCHARGERS
38X27	FAN DRIVES



## CHAPTER 30

### CATEGORY 39 - WATERCRAFT EQUIPMENT

#### 30-1 GENERAL.

30-1.1 Category 39 contains five watercraft systems. The TO numbers in this category use three basic groups for data identification. The numbering pattern is discussed in paragraph 30-2, below.

30-1.2 TO data pertinent to more than one system in this category is numbered in the category general series.

30-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 30-2 NUMBERING PATTERNS.

30-2.1 **GROUP ONE.** The five systems that identify types of watercraft use only two parts in group one to identify the category and type of watercraft.

30-2.1.1 Part one is always the numeric 39 identifying Category 39.

30-2.1.2 Part two is a single alpha character identifying the various systems of watercraft, i.e., C - cargo boats; P - personnel boats; R - range patrol boats; and V - vessels. The one exception is the tugboat system identified with the two alpha characters TG.

30-2.2 **GROUP TWO.** TO numbering pattern in Category 39 uses three basic groups. Group two has one or more numeric characters representing the model, type or PN assigned to specific components.

30-2.3 **GROUP THREE.**

30-2.3.1 The third group of the numbering pattern identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in this category.

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 5 Equipment Allowance Lists
- 6 Inspection Requirements

30-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in this category.

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

#### 30-3 EXAMPLES OF NUMBERING PATTERNS USED IN CATEGORY 39.

30-3.1 An operating and maintenance instruction for a mechanized landing craft, type LCM 8:

39C-47-1  
 39 Category 39  
 C Cargo Boats  
 47 Represents Type LCM 8  
 1 Number Reserved for Operating Instructions

30-3.2 Maintenance instructions for a 21-foot aluminum tow-rescue boat, type P-21:

39P-21-2

39           Category 39  
  P           Personnel Boats  
    21        Represents Type P-21  
      2        Number Reserved for Maintenance Instructions

30-3.3 Equipment allowance list for a 24-foot USAF rescue boat, type R-4:

39R-4-5

39           Category 39  
  R           Range Patrol Boats  
    4        Represents Type R-4  
      5        Number Reserved for Equipment Allowance List

**30-4   CATEGORY 39 NUMBERING SERIES.**

39           WATERCRAFT EQUIPMENT  
39C         CARGO BOATS  
39P         PERSONNEL BOATS  
39R         RANGE PATROL BOATS  
39TG        TUGBOATS  
39V         VESSELS



## CHAPTER 31

### CATEGORY 40 - COMMERCIAL AIR-CONDITIONING, HEATING, PLUMBING, REFRIGERATING, VENTILATING AND WATER TREATING EQUIPMENT

#### 31-1 GENERAL.

31-1.1 Category 40 contains six systems. These systems are divided into equipment series and most of the equipment series are further divided into equipment subseries. Therefore TO numbers in this category use both three and four basic groups for data identification. The numbering patterns for both forms are discussed in paragraph 31-2.

31-1.2 TO data pertaining to more than one system in this category is numbered in the category general series.

31-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 31-2 NUMBERING PATTERNS.

31-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series.

31-2.1.1 Part one is always the numeric 40 identifying Category 40.

31-2.1.2 Part two is an alpha character identifying the various systems, i.e., A - air-conditioners; H - heating equipment; P - plumbing equipment; R - refrigeration equipment; V - ventilating equipment; and W - water treating equipment.

31-2.1.3 Part three contains one or more numeric characters identifying the equipment series within a system. The numbering series for this category are outlined in paragraph 31-4.

31-2.2 **GROUP TWO.** TO numbering patterns in Category 40 use both three and four groups; therefore, the identifiers in group two are not constant. The following describes both numbering patterns:

31-2.2.1 If only three basic groups are used in a numbering pattern, group two contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

31-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, the equipment subseries is identified with one or more numeric characters in group two, and the model, type or PN is identified in group three.

31-2.3 **GROUP THREE.**

31-2.3.1 If a TO number has only three basic groups, the third group of the numbering pattern identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in this category:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions

31-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 40:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

31-2.3.3 If the TO number contains four basic groups, the third group has one or more numeric characters representing the model, type or PN assigned to specific equipment.

31-2.4 GROUP FOUR. In those cases where the TO number contains four basic groups, the fourth group identifies specific types of TOs described in paragraph 31-2.3.1, above.

**31-3 EXAMPLES OF CATEGORY 40 NUMBERING PATTERNS.**

31-3.1 Operating instructions with illustrated parts breakdown for air-conditioner, type MA-5:

40A1-6-10-1

40	Category 40
A	Air-Conditioning Equipment
1	Air-Conditioner Series
6	Trailer Mounted Subseries
10	Represents Type MA-5
1	Number Reserved for Operating Instructions

31-3.2 A maintenance manual for a portable shower, model M1958:

40P1-2-2-2

40	Category 40
P	Plumbing Equipment
1	Bath and Shower Unit Series
2	Eight Shower Head Subseries
2	Represents Model M1958
2	Number Reserved for Maintenance Manuals

**31-4 CATEGORY 40 NUMBERING SERIES.**

40 COMMERCIAL AIR-CONDITIONING, HEATING, PLUMBING, REFRIGERATING, VENTILATING, AND WATER TREATING EQUIPMENT

40A AIR-CONDITIONING EQUIPMENT

40A1 AIR-CONDITIONERS

40A1-2 Aircraft, Ground

40A1-3 Base Mounted

40A1-4 Self-Contained

40A1-5 Skid Mounted

40A1-6 Trailer Mounted

40A1-7 Pack

40A2 DEHUMIDIFIERS

40A2-2 Chemical

40A2-3 Mechanical

40A2-4 Electrical

40A3 COLLECTORS

40A3-2 Dust

40H HEATING EQUIPMENT

40H1 BOILERS

40H2 FURNACES

40H3 HEATERS

40H3-2 (Not used)

40H3-3 (Not used)

40H3-4 Immersion

40H3-5 Space

40H3-6 (Not used)

40H3-7 Water

40P	PLUMBING EQUIPMENT
40P1	BATH AND SHOWER UNITS
40P1-2	8-Shower Head
40P1-3	12-Shower Head
40P1-4	24-Shower Head
40P1-5	32-Shower Head
40P1-6	Multi Shower Head
40P2	PUMPS
40P2-2	Centrifugal
40P2-3	Diaphragm
40P2-4	Helical Rotor
40P2-5	Pneumatic
40P2-6	Reciprocating
40P2-7	Rotary
40P2-8	Turbine
40P2-9	Steam Driven
40R	REFRIGERATING EQUIPMENT
40R1	COMPRESSORS
40R2	CONDENSING UNITS
40R3	COOLERS
40R3-2	Aircraft, Ground
40R3-3	Rivet
40R3-4	Unit
40R3-5	Water
40R3-6	Semi-Trailer Mounted
40R4	DISPLAY CASES
40R5	ICE CREAM PLANTS
40R6	ICE MAKERS
40R7	REFRIGERATORS
40R7-2	Film Processing
40R7-3	Household
40R7-4	Industrial
40R7-5	Reach-In
40R7-6	Walk-In
40R8	SODA FOUNTAIN EQUIPMENT
40V	VENTILATING EQUIPMENT
40V1	BLOWERS
40V2	FANS
40V2-2	Pedestal
40V2-3	Centrifugal
40V2-4	Axial
40V2-5	Propeller
40V3	VENTILATORS
40W	WATER TREATING EQUIPMENT
40W1	DEMINERALIZERS
40W2	DISTILLATION EQUIPMENT
40W3	HYPOCHLORINATION EQUIPMENT
40W4	PURIFICATION EQUIPMENT

TO 00-5-18

40W5      SOFTENING EQUIPMENT

40W6      FILTERING EQUIPMENT

## CHAPTER 32

### CATEGORY 41 - SUBSISTENCE AND FOOD SERVICE EQUIPMENT

#### 32-1 GENERAL.

32-1.1 Category 41 contains two subsistence and food service systems. These systems are divided into equipment series and the equipment series are further divided into equipment subseries. TO numbers in category 41 use both three and four basic groups for data identification. The numbering patterns for both forms are discussed in paragraph 32-2, below.

32-1.2 TO data pertaining to more than one system in this category is numbered in the category general series.

32-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 32-2 NUMBERING PATTERNS.

32-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series.

32-2.1.1 Part one is always the numeric 41 identifying Category 41.

32-2.1.2 Part two is an alpha character identifying the two systems in the category, i.e., A - subsistence; and B - food service equipment.

32-2.1.3 Part three contains one or more numeric characters identifying the equipment series within a system. The series for this category are outlined in paragraph 32-4.

32-2.2 **GROUP TWO.** TO numbering patterns in Category 41 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes the numbering pattern for both forms:

32-2.2.1 If only three basic groups are used in a numbering pattern, group two will contain one or more numeric characters representing the model, type or PN assigned to specific equipment.

32-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, the equipment subseries is identified with one or more numeric characters in group two, and the model, type or PN is identified in group three.

32-2.3 **GROUP THREE.**

32-2.3.1 If a TO number has only three groups, the third group of the numbering pattern identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in this category:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown

32-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 41:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

32-2.3.3 If the TO number contains four basic groups, the third group will have one or more numeric characters representing the model, type or PN assigned to specific equipment.

32-2.4 GROUP FOUR. In those cases where the TO number contains four basic groups, the fourth group identifies specific types of TOs described in paragraph 32-2.3.1, above.

**32-3 EXAMPLES OF CATEGORY 41 NUMBERING PATTERNS.**

32-3.1 Illustrated parts breakdown for a food warming oven, type II, applicable to KC-135:

41B1-7-5-4

41	Category 41
B	Food Service Equipment
1	Baking Equipment Series
7	Oven Subseries
5	Represents Type II
4	Number Reserved for Illustrated Parts Breakdown

32-3.2 Operating instructions for Peters-Dalton dishwashing machine, model HWC-80:

41B2-2-2-1

41	Category 41
B	Food Service Equipment
2	Cleaning and Sanitation Equipment Series
2	Dishwashing Machine Subseries
2	Represents Model HWC-80
1	Number Reserved for Operating Instructions

**32-4 CATEGORY 41 NUMBERING SERIES.**

41	SUBSISTENCE AND FOOD SERVICE EQUIPMENT
41A	SUBSISTENCE
41A1	BEVERAGES
41A2	DAIRY PRODUCTS
41A3	DRIED FOODS
41A4	FIELD AND COMBAT RATIONS
41A5	FROZEN FOODS
41A6	MEAT AND MEAT PRODUCTS
41A7	PROCESSED FOODS
41A8	TROPICAL PLANTS
41B	FOOD SERVICE EQUIPMENT
41B1	BAKING EQUIPMENT
41B1-2	Doughnut Machine
41B1-3	Dough Divider
41B1-4	Dough Mixer
41B1-5	Dough Proofer
41B1-6	Fermentation Cabinet
41B1-7	Oven
41B1-8	Sifter
41B2	CLEANING AND SANITATION EQUIPMENT
41B2-2	Dishwasher
41B3	COOKING EQUIPMENT
41B3-2	Broiler
41B3-3	Cooker
41B3-4	Fryer

41B3-5 Griddle  
41B3-6 Range  
41B3-7 Stove  
41B3-8 Toaster  
41B3-9 Warmer  
41B3-10 Urn

41B4 PREPARATION EQUIPMENT

41B4-2 Grinder  
41B4-3 Meat Cutter  
41B4-4 Mixer  
41B4-5 Peeler

41B5 TESTING AND SCREENING EQUIPMENT





## CHAPTER 33

### CATEGORY 42 - COATING, CLEANING AND SEALING COMPOUNDS AND FUELS, GASES, LUBRICANTS, CHEMICALS AND MATERIALS

#### **33-1 GENERAL.**

33-1.1 Category 42 contains seven systems divided into equipment or material series. The series, in some instances, are further divided into material types. TO numbers in Category 42 use both three and four basic groups for data identification. The numbering patterns for both forms are discussed in paragraph 33-2, below.

33-1.2 TO data pertinent to more than one system in this category is numbered in the category general series.

33-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### **33-2 NUMBERING PATTERNS.**

33-2.1 **GROUP ONE.** This group has three parts identifying the category, system and material series.

33-2.1.1 Part one is always the numeric 42 identifying Category 42.

33-2.1.2 Part two is an alpha character identifying the various systems, i.e., A - dopes, paints, and cleaning compounds; B - fuels, lubricants, oxygen, and gases; C - chemicals; D - metals, plastics, and composition materials; E - rubber materials; F - cordage, leather, and miscellaneous fabric; and L -lumber.

33-2.1.3 Part three contains one or more numeric characters identifying the material series within a system. The material series numbers for this category are outlined in paragraph 33-4.

33-2.2 **GROUP TWO.** Since TO numbering patterns in Category 42 use both three and four basic groups, the identifiers in group two are not constant. The following describes both numbering patterns:

33-2.2.1 If the TO number uses only three basic groups, group two will have a numeric character identifying all TOs as being in a single, general Model-Type-Part Number series. This is due to the general or comprehensive nature of TO data in this category.

33-2.2.2 If the TO number contains four basic groups, the equipment or material series identified in part three of group one has been further divided into subseries. In this case, group two identifies the specific material subseries with one or more numeric characters.

33-2.3 **GROUP THREE.**

33-2.3.1 If the TO number has only three groups, the third group of the numbering pattern is made up of numeric characters identifying individual TOs. Specific numbers are not reserved to identify specific types of TOs as in other categories. In some instances the numeric characters are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 42.

CL - Checklists

S - Operational Supplements

SS - Safety Supplements

WC - Workcards

33-2.3.2 If the TO number has four basic groups, the third group contains a numeric character identifying all TOs as being in a single general Model-Type-Part Number series. This is due to the general or comprehensive nature of TO data in this category.

33-2.4 GROUP FOUR. When the TO number has four basic groups, the fourth group is made up of numeric characters identifying individual TOs. Specific numbers are not reserved to identify specific types of TOs as in other categories. In some instances the numeric characters may be followed by one or more alpha characters described in paragraph 33-2.3.1, above.

**33-3 EXAMPLES OF CATEGORY 42 NUMBERING PATTERNS.**

33-3.1 Manual on fluids for hydraulic equipment:

42B2-1-3

42           Category 42  
  B           Fuels, Lubricants, Oxygen and Gases  
    2           Oil Series  
      1          General Model-Type-Part Number Series  
      3          Third Manual in a Series

33-3.2 Manual on aircraft hoses:

42E1-1-1

42           Category 42  
  E           Rubber Materials  
    1           Aircraft Hose Series  
      1          General Model-Type-Part Number Series  
      1          First Manual in a Series

33-3.3 Manual on quality control of nitrogen propellant pressurizing agent:

42B7-3-1-1

42           Category 42  
  B           Fuels, Lubricants, Oxygen, and Gases  
    7           High Energy Liquid Propellants  
      3           Propellant Pressurization  
      1          General Model-Type-Part Number Series  
      1          First Manual in a Series

**33-4 CATEGORY 42 NUMBERING SERIES.**

42           COATING, CLEANING, AND SEALING COMPOUNDS AND FUELS, GASES,  
              LUBRICANTS, CHEMICALS, AND MATERIALS

42A          DOPES, PAINTS, AND CLEANING COMPOUNDS

42A1         CLEANING COMPOUNDS

42A2         DOPES AND PAINTS

42A3         GLUES AND CEMENTS

42B          FUELS, LUBRICANTS, OXYGEN, AND GASES

42B1         FUELS

42B2         OILS

42B3         GREASES

42B4         COMPRESSED GASES

42B5         GAS STORAGE AND SERVICING CYLINDERS

42B6         LIQUID OXYGEN

42B7         HIGH ENERGY LIQUID PROPELLANTS

42B7-2       JP-4 - General

42B7-3 Propellant Pressurization - General  
42C CHEMICALS  
42C1 ENGINE  
42C2 METAL TREATMENT  
42D METALS, PLASTICS, AND COMPOSITION MATERIALS  
42D1 ALUMINUM ALLOYS  
42D2 COMPOSITION MATERIALS  
42D3 MAGNESIUM ALLOYS  
42D4 PLASTICS  
42D5 STEEL  
42E RUBBER MATERIALS  
42E1 AIRCRAFT HOSE  
42E2 RUBBER SEALS AND PACKING  
42F CORDAGE, LEATHER, AND MISCELLANEOUS FABRIC  
42L LUMBER



## CHAPTER 34

### CATEGORY 43 - SIMULATOR AND TRAINING DEVICES

#### 34-1 GENERAL.

34-1.1 Category 43 contains three simulator and training systems. These systems are divided into equipment series and most of the equipment series are further divided into equipment subseries. TO numbers in Category 43 use both three and four basic groups in the numbering pattern for data identification. The numbering patterns for both forms are discussed in paragraph 34-2, below.

34-1.2 TO data pertaining to more than one system in this category is numbered in the category general series.

34-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 34-2 NUMBERING PATTERNS.

34-2.1 GROUP ONE. This group has three parts identifying the category, system and equipment series.

34-2.1.1 Part one is always the numeric 43 identifying Category 43.

34-2.1.2 Part two is an alpha character identifying the simulator and training systems, i.e., D - training devices; E - training equipment; and X -components. Associated equipment for these systems are identified by adding the alpha A immediately following the system identifier, e.g., DA, EA.

34-2.1.3 Part three contains one or more numeric characters identifying the equipment series within a system. The numbering series for this category is outlined in paragraph 34-4.

34-2.2 GROUP TWO. TO numbering patterns in Category 43 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes the numbering pattern for both forms:

34-2.2.1 If only three basic groups are used in the numbering pattern, group two contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

34-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, the equipment subseries is identified with one or more numeric characters in group two, and the model, type or PN is identified in group three.

34-2.3 GROUP THREE.

34-2.3.1 If a TO number has only three groups, the third group of the numbering pattern identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in this category.

- 01 List of Applicable Publications (LOAP)
- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests
- 9 Alignment Manuals

34-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 43:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

34-2.3.3 If the TO number contains four basic groups, the third group has one or more numeric characters representing the model, type or PN assigned to specific equipment.

34-2.4 GROUP FOUR. In those cases where the TO number has four basic groups, the fourth group identifies specific types of TOs described in paragraph 34-2.3.1, above.

**34-3 EXAMPLES OF CATEGORY 43 NUMBERING PATTERNS.**

34-3.1 Operating instructions for a mission simulator system, F-111 aircraft:

- 43D3-4-11-11
- 43                   Category 43
- D                 Training Devices
- 3               Flight Simulator Series
- 4             Fighter Aircraft Simulator Subseries
- 11          Represents Model F-111 Aircraft
- 11        Number Reserved for Operating Instructions

34-3.2 Operating instructions for a resident trainer and mobile training set, C-5A aircraft:

- 43E24-2-7-1
- 43                   Category 43
- E                 Training Equipment
- 24              Mobile Trainer Series
- 2             Cargo Aircraft Simulator Subseries
- 7            Represents Model C-5 Aircraft
- 1         Number Reserved for Operating Instructions

34-3.3 Overhaul instructions with illustrated parts breakdown for a turbine outlet temperature indicator, PN D06G0015-1:

- 43X5-23-2-3
- 43                   Category 43
- X                 Simulator Components
- 5               Indicator Series
- 23            Temperature Indicator Subseries
- 2            Represents PN D06G0015-1
- 3         Number Reserved for Overhaul Instructions

**34-4 CATEGORY 43 NUMBERING SERIES.**

- 43                   SIMULATOR AND TRAINING DEVICES
- 43D                 TRAINING DEVICES
- 43D1                BOMBING
- 43D2                MISSILE
- 43D2-2             GAM-87A (Skybolts)
- 43D2-3             LGM-30 (Minuteman)
- 43D2-4             SM-68 (Titan)
- 43D2-5             SM-65 (Atlas)

43D2-6	GAM-83 (AGM-12 Bullpup)
43D2-7	AGM-69A (SRAM)
43D2-8	AGM-86B
43D2-9	BGM-109G (Tomahawk)
43D2-10	LGM-118A (Peacekeeper)
43D2-11	AGM-129
43D2-12	AGM-131A (SRAM 2)
43D2-13	RESERVED
43D2-14	AGM-65A/B (Maverick)
43D3	FLIGHT SIMULATORS
43D3-2	Bomber
43D3-2-5	B-52
43D3-2-7	B-52 (Use 43D3-2-5)
43D3-2-8	B-57
43D3-3	Cargo
43D3-3-2	C-97
43D3-3-3	C-119
43D3-3-4	C-124
43D3-3-5	C-130
43D3-3-6	C-131
43D3-3-7	C-121
43D3-3-8	C-135
43D3-3-9	C-118
43D3-3-10	C-123
43D3-3-11	C-133
43D3-3-12	C-130B (Use 43D3-3-5)
43D3-3-13	C-130E (Use 43D3-3-5)
43D3-3-14	C-141
43D3-3-15	C-5A
43D3-4	Fighter
43D3-4-2	F-84
43D3-4-3	F-86
43D3-4-4	F-89
43D3-4-5	F-100
43D3-4-6	F-101
43D3-4-7	F-102
43D3-4-8	F-106A
43D3-4-9	F-105D
43D3-4-10	F-4
43D3-4-11	F-111
43D3-4-12	F-15
43D3-4-13	F117A
43D3-5	Cockpit
43D3-5-2	F-84
43D3-5-3	RB-66
43D3-5-4	T-33
43D3-5-5	F-104
43D3-5-6	F-86
43D3-5-7	F-100
43D3-5-8	F-105
43D3-5-9	T-29C
43D3-5-10	F-102
43D3-5-11	A-7D
43D3-5-12	C-5
43D3-5-13	C-130
43D3-5-14	C-141

43D3-5-15 F-16  
 43D3-6 Missile  
 43D3-6-2 TM-61  
 43D3-6-3 SM-62  
 43D3-7 VISUAL  
 43D3-7-2 SMK-23/F37A-T  
 43D3-7-3 SMK-87/F37A-T  
 43D3-7-4 Virtual Image  
 43D3-7-5 SMK-92/F37A  
 43D3-7-6 117/WST  
 43D3-8 Attack Aircraft  
 43D3-8-2 A-7D  
 43D3-8-3 A-10A  
 43D3-9 Helicopter  
 43D3-9-2 CH-3E, HH-53C  
 43D3-10 Electronic Aircraft  
 43D3-10-2 E-3  
 43D3-11 Trainer  
 43D3-11-2 T-46A  
 43D4 GUNNERY TRAINING  
 43D4-2 Fixed  
 43D4-3 Flexible  
 43D5 INSTRUMENT FLYING  
 43D6 NAVIGATION  
 43D7 RADIO AND RADAR  
 43D7-2 AN/APG  
 43D7-3 AN/APN  
 43D7-4 AN/APQ; AN/GJW  
 43D7-5 AN/APS  
 43D7-6 AN/GJW (See 43D7-4 also)  
 43D7-7 AN/GPN  
 43D7-8 AN/GPQ  
 43D7-9 Control  
 43D7-10 Telemetry  
 43D7-11 Countermeasures  
 43D7-12 AN/ASQ and AN/GSQ  
 43D7-13 Associated Equipment

NOTE

During about 1960, eight TO numbers, using five groups in the numbering pattern, were assigned in the 43D7-13 series. This was contrary to the standard practice and constitutes an exception. In the event that new TO numbers are added to extend this series, the character "2" used as the fourth group in all above mentioned eight TO numbers should be eliminated. This will change the series pattern to the standard four-group format.

43D7-14 Fire Control  
 43D7-15 Beacon Set  
 43D7-16 Search Radar and Detecting  
 43D7-17 AN/FRC  
 43D7-18 AN/APY  
 43D7-19 AN/MST  
 43D8 INDOCTRINATION TRAINERS AND CHAMBERS



43D8-2 Egress System  
 43D8-3 Indoctrination Chamber  
 43D8-3-2 20-Man  
 43D8-3-3 16-Man  
 43D8-3-4 Test Chamber  
 43D8-3-5 6-Man  
 43D8-3-6 Recompression  
 43D8-4 High Altitude Helmet and Suit Training Aid  
 43D8-5 Night Vision  
 43D8-6 Missiles  
 43D8-7 Centrifuge  
  
 43D9 MOCK-UP AIRSPEED TRAINERS  
  
 43D10 DRIVER TRAINING  
  
 43D11 WEAPON SIMULATORS  
  
 43D12 ENGINES  
  
 43D13 TRAINERS  
 43D13-2 A/E-37A-T2, -T3, -T4, -T5, -T7  
 43D13-3 TAU Series  
 43D13-4 Operator (Do not use)  
 43D13-5 AF 37A-T18 (Use 43D2-6)  
  
 43D14 (Do not use)  
 43D15 (Do not use)  
  
 43D16 LAUNCH CONTROL AND CHECKOUT  
 43D16-2 Control System  
 43D16-3 Launch Complex System  
 43D16-4 Launch Operator Trainer  
 43D16-5 Checkout Trainer  
 43D16-6 Umbilical Tower Trainer  
 43D16-7 Launch Enable System  
  
 43D17 GUIDANCE SYSTEM TRAINERS  
 43D17-2 Airborne  
 43D17-3 Ground  
 43D17-4 Computer  
 43D17-5 Subsystem  
  
 43D18 PROPULSION TRAINERS  
 43D18-2 System Trainer  
  
 43D19 FLIGHT CONTROL TRAINERS  
 43D19-2 System  
 43D19-3 Ground Support Equipment  
  
 43D20 HYDRAULIC AND PNEUMATIC SYSTEMS  
 43D20-2 System  
  
 43D21 STORAGE, TRANSFER AND PRESSURIZATION  
 43D21-2 Liquid Oxygen  
 43D21-3 Helium  
 43D21-4 Propellant  
  
 43D22 ELECTRICAL SYSTEMS  
 43D22-2 System  
 43D22-3 Power Conversion and Distribution  
 43D22-4 Trouble Analysis  
 43D22-5 Missile Safety and Arming

43D23           INSTALLATION AND TRANSPORTATION  
43D23-2       Rocket and Explosive Bolt  
43D23-3       Ordnance Installation  
43D23-4       Engine  
43D23-5       Missile Handling  
43D23-6       Pylon/Installation/Missile Loading  
43D23-7       Thermo-Conditioner  
43D23-8       Hydraulic System  
  
43D24           PROGRAMMERS  
43D24-2       Propellant Loading  
43D24-3       Propulsion Signal  
  
43D25           TEST SET (Do not use)  
  
43D26           PROCEDURES  
  
43D27           ALIGNMENT TRAINERS  
  
43D28           ANTENNA SYSTEM TRAINERS  
  
43D29           SILO TRAINERS  
  
43D30           AIR-CONDITIONING  
  
43D31           LAUNCHER TRAINERS  
  
43D32           LAUNCH SITE TRAINERS  
43D32-2       Equipment  
43D32-3       Operation and Maintenance  
  
43D33           MAINTENANCE  
43D33-2       Security Support Bench  
43D33-3       Thermo-Conditioner  
  
43D34           NETWORKS  
43D34-2       Sequene and Monitor  
  
43D35           INSPECTION  
  
43D36           SAFETY  
  
43D37           COMMUNICATIONS  
43D37-2       System  
  
43D38           ATMOSPHERIC RESEARCH EQUIPMENT  
  
43D39           GROUND ELECTRONIC SYSTEMS  
  
43DA           ASSOCIATED EQUIPMENT  
43DA1          PRINTER MECHANISM  
43DA2          RECORDERS  
43DA3          ANNOUNCERS  
43DA4          MAGAZINES  
43DA5          DECODERS  
43DA6          TOOLS  
43DA7          DESICCATORS  
43DA8          CYLINDERS AND NITROGEN CYLINDERS  
43DA9          CARDS  
43DA10         PATCHBOARDS

43DA11      AMPLIFIERS  
 43DA12      DRIVERS  
 43DA13      VISUAL SYSTEMS  
 43DA13-2     Monitor and Components  
 43DA13-3     Projector and Components  
 43DA13-4     Camera and Components  
 43DA14      AUTOMATED FLIGHT TRAINING SYSTEMS  
 43DA14-2     Training Set, Mission - Simulator  
 43E          TRAINING EQUIPMENT  
 43E1          CARRIERS  
 43E1-2        Target  
 43E1-3        Radar  
 43E1-4        Electricity Demonstration  
 43E2          CONTROLS  
 43E2-2        Auto-Pilot  
 43E2-3        Pneumatic  
 43E3          KITS  
 43E3-2        Film Assessing  
 43E3-3        Radar Set Adapter  
 43E3-4        Radar Set Dolly  
 43E4          GENERATORS  
 43E4-2        Signal  
 43E5          PANELS  
 43E6          POWER SYSTEMS  
 43E6-2        Windlass  
 43E6-3        Power Supply  
 43E6-4        Rectifier  
 43E6-5        Engine  
 43E6-6        Motor Generator  
 43E7          RADIO AND RADAR  
 43E7-2        Accessory  
 43E7-3        Interphone System  
 43E7-4        Radio Range  
 43E7-5        Training Set  
 43E7-6        Signal  
 43E7-7        Scorer  
 43E7-8        Receiver  
 43E7-9        Amplifier  
 43E7-10       Converter  
 43E8          RECORDERS - REPRODUCERS (See 43X16 also)  
 43E8-2        Sound  
 43E9          READERS AND VISICORDERS  
 43E10         SIMULATORS  
 43E10-2       Bombsight  
 43E10-3       Radio, Radar  
 43E10-4       Line Store  
 43E10-5       Small Arms Fire  
 43E10-6       Circuit Analysis  
 43E10-7       Signal  
 43E10-8       Switch  
 43E10-9       Mortar

43E10-10 Antenna Assembly  
43E10-11 Motion System  
43E10-12 Control Tower  
43E11 TARGETS  
43E12 TRANSPONDER GROUPS (Interconnector)  
43E14 WINDLASSES  
43E15 CATAPULTS  
43E16 LAUNCHERS  
43E17 TOW TARGETS  
43E17-2 Actuator  
43E17-3 Cart  
43E18 LOADING  
43E19 TELEGRAPHIC  
43E19-2 Code Training  
43E20 REGULATORS  
43E20-2 Oxygen  
43E20-3 Pressure  
43E21 LIQUID  
43E21-2 Oxygen  
43E22 CHEMICALS  
43E22-2 Biological and Radiological  
43E23 RESIDENT TRAINERS  
43E23-2 Cargo Aircraft  
43E23-2-2 C-141A  
43E23-2-3 C-5A  
43E23-3 FIGHTER ACFT  
43E23-3-2 F-5A  
43E23-3-3 F-4  
43E23-3-4 F-15  
43E23-3-5 F117A  
43E23-4 Helicopters  
43E23-4-2 HH-43  
43E23-4-3 HH-53B  
43E23-4-4 TF-1F  
43E23-4-5 UN-1N  
43E23-5 Bomber Aircraft  
43E23-5-2 B-52  
43E24 MOBILE TRAINERS  
43E24-2 Cargo Aircraft  
43E24-2-2 C-141  
43E24-2-3 C-135  
43E24-2-4 C-133  
43E24-2-5 EC-121  
43E24-2-6 C-123  
43E24-2-7 C-5A  
43E24-2-8 C-10  
43E24-2-9 C-130  
43E24-2-10 C-17  
43E24-3 Fighter Aircraft

43E24-3-2	F-5
43E24-3-3	F-105
43E24-3-4	F-111
43E24-3-5	F-4
43E24-3-6	F-106
43E24-3-7	F-100
43E24-3-8	F-101/RF-101
43E24-3-9	F-15
43E24-3-10	F-16
43E24-4	Helicopter Aircraft
43E24-4-2	UH-1
43E24-4-3	HH-53C
43E24-5	Bomber Aircraft
43E24-5-2	B-52
43E24-5-4	B-1B
43E24-5-5	B-2A
43E24-6	Attack Aircraft
43E24-6-2	A-7
43E24-6-3	A-37
43E24-6-4	A-10
43E24-7	Observation Aircraft
43E24-7-2	OV-10A
43E24-8	Trainer Aircraft
43E24-8-2	T-38
43E24-8-3	T-46
43E24-8-11	T-38A
43E24-9	Electronic Aircraft
43E24-9-2	E-3
43E25	PROJECTORS
43E26	DIGITAL COMPUTERS (Use 31S5)
43E27	WIND TUNNELS
43E28	EXPLOSIVE DISPOSAL
43E29	BOMBING SYSTEMS TRAINER
43E30	GUNSHIP SYSTEMS TRAINERS
43E30-2	C-130
43EA	ASSOCIATED EQUIPMENT (Use 43X)
43X	COMPONENTS
43X1	AUTOSYNS
43X2	CABLES
43X3	DISPLAYS
43X3-2	Radar Data
43X3-3	Graphic
43X3-4	Control
43X3-5	System
43X4	FLARES
43X5	INDICATORS
43X5-2	Altimeter
43X5-3	Artificial Horizon

43X5-4	Cross Pointer
43X5-5	Directional Gyroscope
43X5-6	Landing
43X5-7	Standard Beam Approach
43X5-8	Turn and Bank
43X5-9	Single Autosyn
43X5-10	Photo Firing
43X5-11	Accelerometer
43X5-12	Attitude
43X5-13	Doppler
43X5-14	Compass
43X5-15	Altitude
43X5-16	Oxygen
43X5-17	Tachometer
43X5-18	Airspeed
43X5-19	Flap
43X5-20	Landing Gear
43X5-21	Fuel
43X5-22	Velocity
43X5-23	Temperature
43X5-24	Oil Pressure
43X5-25	Digital Angle
43X5-26	Radar Navigator
43X5-27	Groundspeed
43X5-28	Rudder Trim
43X5-29	Hydraulic Pressure
43X5-30	Torque
43X5-31	Hover
43X5-32	Engine
43X5-33	Horizontal Situation
43X5-34	Course
43X6	MAPS
43X6-2	Supersonic Radar
43X7	METERS AND MEASURING EQUIPMENT
43X8	COUNTERS AND TIMERS
43X9	PROTECTIVE BAGS
43X10	ADAPTERS
43X10-2	Universal Delivery
43X10-3	Monitor
43X10-4	Electrical
43X10-5	Installation
43X11	THERMOSTATS
43X12	REELS
43X12-2	Tow Target
43X13	LOAD SENSOR
43X14	VALVES
43X15	AMPLIFIERS
43X16	RECORDERS (See 43E8 also)
43X17	PUMPS
43X17-2	Vacuum
43X17-3	Hydraulic

43X18        SETTING DEVICES  
43X19        DISCONNECT UNITS  
43X20        TRAINER ATTACHMENTS  
43X21        MECHANISMS AND DRIVES, DISK DRIVES  
43X22        STANDS  
43X23        COMPRESSORS  
43X24        CYLINDERS  
43X25        ACTUATORS  
43X26        ACCUMULATORS  
43X27        TANK ASSEMBLIES  
43X28        POWER UNITS  
43X29        NAVIGATION  
43X30        SERVOS  
43X31        PANELS  
43X32        GEAR BOXES  
43X33        SERVOMOTORS  
43X34        LIGHT ASSEMBLIES  
43X35        COMPUTERS  
43X36        CONVERTERS  
43X37        ALTIMETERS  
43X38        UNITS  
43X39        PLOTTERS  
43X40        GENERATORS  
43X40-2      Target  
43X40-3      Sweep  
43X40-4      Pulse  
43X40-5      Function  
43X40-6      Vector  
43X41        POWER SUPPLIES  
43X42        KITS  
43X43        CONTROLS  
43X44        DATA TERMINALS  
43X45        TAPE TRANSPORTS  
43X46        MONITORS  
43X47        PRINTERS  
43X48        READOUT UNITS  
43X49        ANALYZERS  
43X50        MODULES  
43X51        TRANSLATORS  
43X52        CARD ASSEMBLIES

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43X53	VOLTAGE, CURRENT, AND RESISTANCE UNITS
43X54	TAPES AND DRUM ASSEMBLIES AND COMPONENTS
43X55	GAUGES
43X56	SYSTEMS
43X57	HUMIDIFIERS
43X58	PROJECTORS
43X59	PALLET ASSEMBLIES



## CHAPTER 35

### CATEGORY 44 - COMMON HARDWARE EQUIPMENT

#### 35-1 GENERAL.

35-1.1 Category 44 contains two common hardware equipment systems. These systems are divided into equipment series and the equipment series are further divided into equipment subseries. TO numbers in Category 44 use both three and four basic groups for data identification. The numbering patterns for both forms are discussed in paragraph 35-2, below.

35-1.2 TO data pertaining to more than one system in this category is numbered in the category general series.

35-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 35-2 NUMBERING PATTERNS.

35-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series.

35-2.1.1 Part one is always the numeric 44 identifying Category 44.

35-2.1.2 Part two is an alpha character identifying the various hardware systems, i.e., B - bearings; and H - hardware.

35-2.1.3 Part three contains one or more numeric characters that identify the equipment series within a system. The numbering series for this category is outlined in paragraph 35-4.

35-2.2 **GROUP TWO.** TO numbering patterns in Category 44 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes the numbering pattern for both forms:

35-2.2.1 If the TO number uses only three basic groups, group two contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

35-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, the equipment subseries is identified with one or more numeric characters in group two, and the model, type or PN is identified in group three.

35-2.3 **GROUP THREE.**

35-2.3.1 If a TO number has only three basic groups, the third group of the numbering pattern identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in this category:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions

35-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 44:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

35-2.3.3 If the TO number contains four basic groups, the third group will have one or more numeric characters representing the model, type or PN assigned to specific equipment.

35-2.4 GROUP FOUR. In those cases where the TO number contains four basic groups, the fourth group identifies specific types of TOs defined in paragraph 35-2.3.1, above.

**35-3 EXAMPLES OF CATEGORY 44 NUMBERING PATTERNS.**

35-3.1 A maintenance manual for anti-friction bearings:

44B-1-102

44	Category 44
B	Bearings
1	System General Series
102	Number Reserved for General Series Maintenance Instructions

35-3.2 Overhaul instructions for an air starter coupling assembly, PN 3127-10:

44H1-2-3-3

44	Category 44
H	Hardware
1	Aircraft Common Hardware Series
2	Coupling Subseries
3	Represents PN 3127-10
3	Number Reserved for Overhaul Instructions

**35-4 CATEGORY 44 NUMBERING SERIES.**

44	COMMON HARDWARE EQUIPMENT
44B	BEARINGS
44H	HARDWARE
44H1	AIRCRAFT COMMON HARDWARE
44H1-2	Coupling
44H1-3	Valve
44H2	UTILITY HARDWARE
44H2-2	Washer
44H2-3	Security Hardware
44H3	AIRCRAFT HOSE CLAMPS

## CHAPTER 36

### CATEGORY 45 - RAILROAD EQUIPMENT

#### 36-1 GENERAL.

36-1.1 Category 45 contains two railroad equipment systems. These systems are divided into equipment series and the equipment series are further divided into equipment subseries. TO numbers in this category use both three and four basic groups for data identification. The numbering pattern for both forms are discussed in paragraph 36-2, below.

36-1.2 TO data pertinent to more than one system in this category is numbered in the category general series.

36-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 36-2 NUMBERING PATTERNS.

36-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series.

36-2.1.1 Part one is always the numeric 45 identifying Category 45.

36-2.1.2 Part two is an alpha character identifying the railroad equipment systems, i.e., A - rolling stock; and E - right-of-way maintenance equipment. Associated equipment for these systems is identified by adding the alpha A immediately following the system identifier, i.e., AA or EA.

36-2.1.3 Part three contains one or more numeric characters identifying the equipment series within a system. The numbering series for this category is outlined in paragraph 36-4.

36-2.2 **GROUP TWO.** TO numbering patterns in Category 45 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes the numbering pattern for both forms:

36-2.2.1 If only three basic groups are used in a numbering pattern, group two contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

36-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, the equipment subseries will be identified with one or more numeric characters in group two, and the model, type or PN is identified in group three.

36-2.3 **GROUP THREE.**

36-2.3.1 If a TO number has only three basic groups, the third group of the numbering pattern identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in this category:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements

36-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards, supplements or other media. The following alpha characters are authorized for use in Category 45:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

36-2.3.3 If the TO number contains four basic groups, the third group will have one or more numeric characters representing the model, type or PN assigned to specific equipment.

36-2.4 GROUP FOUR. In those cases where the TO number contains four basic groups, the fourth group identifies specific types of TOs defined in paragraph 36-2.3.1, above.

**36-3 EXAMPLES OF CATEGORY 45 NUMBERING PATTERNS.**

36-3.1 Operating instruction for diesel electric locomotive, model 539-S:

45A2-2-13-1

45	Category 45
A	Rolling Stock
2	Locomotive Series
2	Diesel Electric Subseries
13	Represents Model 539-S
1	Number Reserved for Operating Instructions

36-3.2 Illustrated parts breakdown for a railway diesel crane, model 825D:

45E4-2-5-4

45	Category 45
E	Right-of-Way Maintenance Equipment
4	Crane Series
2	Diesel Crane Subseries
5	Represents Model 825D
4	Number Reserved for Illustrated Parts Breakdown

**36-4 CATEGORY 45 NUMBERING SERIES.**

45	RAILROAD EQUIPMENT
45A	ROLLING STOCK
45A1	CARS
45A1-2	Box
45A1-3	Flat
45A1-4	Hospital Unit
45A1-5	Maintenance
45A1-6	Tank
45A2	LOCOMOTIVES
45A2-2	Diesel, Electric
45A2-3	Gasoline
45AA	ASSOCIATED EQUIPMENT
45AA2	BRAKE EQUIPMENT
45E	RIGHT-OF-WAY MAINTENANCE EQUIPMENT
45E1	BRAKES
45E2	BRIDGES
45E3	COMPRESSORS
45E4	CRANES
45E4-2	Diesel
45E4-3	Gasoline
45E4-4	Steam
45E5	DERRICKS
45E6	HAMMERS

45E7	SIGNAL DEVICES
45E8	TRACKS
45E9	TRACK SHIFTERS
45E10	JACKS
45E11	WINCHES
45E12	HEATERS
45E13	TAMPERS



## CHAPTER 37

### CATEGORY 46 - OFFICE, DUPLICATING, PRINTING AND BINDING EQUIPMENT

#### 37-1 GENERAL.

37-1.1 Category 46 contains three systems. These systems are divided into equipment series and the equipment series are further divided into equipment subseries. TO numbers in this category use both three and four basic groups for data identification. The numbering pattern for both forms are discussed in paragraph 37-2 below.

37-1.2 TO data pertinent to more than one system in this category is numbered in the category general series.

37-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 37-2 NUMBERING PATTERNS.

37-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series.

37-2.1.1 Part one is always the numeric 46 identifying Category 46.

37-2.1.2 Part two is an alpha character identifying the various systems, i.e., A - office equipment; D - duplicating equipment; and P - printing and binding equipment.

37-2.1.3 Part three contains one or more numeric characters identifying equipment series within a system. The numbering series for this category is outlined in paragraph 37-4.

37-2.2 **GROUP TWO.** TO numbering patterns in Category 46 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes the numbering patterns for both forms:

37-2.2.1 If only three basic groups are used in a numbering pattern, group two contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

37-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, the equipment subseries is identified with one or more numeric characters in group two, and the model, type or PN is identified in group three.

37-2.3 **GROUP THREE.**

37-2.3.1 If a TO number has only three basic groups, the third group of the numbering pattern identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in this category:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements

37-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 46:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

37-2.3.3 If the TO number contains four basic groups, the third group will have one or more numeric characters representing the model, type or PN assigned to specific equipment.

37-2.4 GROUP FOUR. In those cases where the TO number contains four basic groups, the fourth group identifies specific types of TOs defined in paragraph 37-2.3.1, above.

**37-3 EXAMPLES OF CATEGORY 46 NUMBERING PATTERNS.**

37-3.1 A maintenance manual for a calculator, model 9820A:

46A1-4-5-2

46	Category 46
A	Office Equipment
1	Machine Series
4	Calculator Subseries
5	Represents Model 9820A
2	Number Reserved for Maintenance Manuals

37-3.2 An operating instruction for a mimeograph duplicator, model 92:

46D1-9-2-1

46	Category 46
D	Duplicating Equipment
1	Machine Series
9	Stencil Subseries
2	Represents Model 92
1	Number Reserved for Operating Instructions

**37-4 CATEGORY 46 NUMBERING SERIES.**

46	OFFICE, DUPLICATING, PRINTING, AND BINDING EQUIPMENT
46A	OFFICE EQUIPMENT
46A1	MACHINES
46A1-2	Accounting
46A1-3	Adding
46A1-4	Calculating
46A1-5	Card Recording
46A2	PANTOGRAPHES
46A3	SAFES AND LOCKERS
46A4	TYPEWRITERS
46A5	READERS
46D	DUPLICATING EQUIPMENT
46D1	MACHINES
46D1-2	Addressing
46D1-3	Blue Printing
46D1-4	Embossing
46D1-5	Gelatin
46D1-6	Photographic
46D1-7	Plate
46D1-8	Spirit
46D1-9	Stencil
46D1-10	White Print
46P	PRINTING AND BINDING EQUIPMENT
46P1	CUTTERS



46P2 DRILLS  
46P3 FRAMES  
46P4 GRAINING MACHINES  
46P5 PRESSES  
46P6 WHIRLERS



## CHAPTER 38

### CATEGORY 47 - AGRICULTURE EQUIPMENT

#### 38-1 GENERAL.

38-1.1 Category 47 contains four agriculture systems which are divided into equipment series. This category does not have a division of its equipment series into equipment subseries. Therefore the TO numbering pattern for this category will only contain three basic groups.

38-1.2 TO data pertinent to more than one system in this category is numbered in the category general series.

38-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 38-2 NUMBERING PATTERNS.

38-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series.

38-2.1.1 Part one is always the numeric 47 identifying the Category 47.

38-2.1.2 Part two is an alpha character identifying the agriculture systems, i.e., A - cultivation and soil preparation equipment; B - harvesting equipment; C - mowing equipment; D - weed and pest control. Associated equipment is identified by adding an alpha A immediately following the system identifier, e.g., AA.

38-2.1.3 Part three contains one or more numeric characters identifying equipment series within a system. The numbering series for this category is outlined in paragraph 38-4.

38-2.2 **GROUP TWO.** Inasmuch as the numbering pattern for this category has only three basic groups, group two contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

38-2.3 **GROUP THREE.**

38-2.3.1 The third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 47:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Broakdown
- 6 Inspection Requirements

38-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 47:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

**38-3 EXAMPLE OF CATEGORY 47 NUMBERING PATTERNS.**

38-3.1 An operating instruction for a sprayer, PN 44-10000-1:

47D1-5-1

47	Category 47
D	Weed and Pest Control Equipment
1	Sprayer Series
5	Represents PN 44-10000-1
1	Number Reserved for Operating Instructions

**38-4 CATEGORY 47 NUMBERING SERIES.**

47	AGRICULTURE EQUIPMENT
47A	CULTIVATION AND SOIL PREPARATION
47A1	CULTIVATORS
47A2	HARROWS
47A3	PLOWS
47A4	SOIL MIXERS
47B	HARVESTING EQUIPMENT
47C	MOWING EQUIPMENT
47C1	LAWN MOWERS
47C2	TURF MOWERS
47C3	LAWN EDGERS
47D	WEED AND PEST CONTROL EQUIPMENT
47D1	SPRAYERS
47D2	WEED BURNERS

## CHAPTER 39

### CATEGORY 49 - OPTICAL INSTRUMENTS, TIMEKEEPING AND NAVIGATION EQUIPMENT

#### 39-1 GENERAL.

39-1.1 Category 49 contains three systems that are divided into three equipment series. This category does not have a division of its equipment series into equipment subseries. Therefore the TO numbering pattern for this category will only contain three basic groups.

39-1.2 TO data pertinent to more than one system in this category is numbered in the category general series.

39-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 39-2 NUMBERING PATTERNS.

39-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series.

39-2.1.1 Part one is always the numeric 49 identifying Category 49.

39-2.1.2 Part two is an alpha character identifying the various systems, i.e., A - optical instruments; B - timekeeping equipment; and C - navigation equipment. Associated equipment for these systems are identified by adding the alpha A immediately following the system identifier, e.g., AA.

39-2.1.3 Part three contains one or more numeric characters identifying equipment series within a system. The numbering series for this category is outlined in paragraph 39-4.

39-2.2 **GROUP TWO.** Since the numbering pattern for this category uses only three basic groups, group two contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

39-2.3 **GROUP THREE.**

39-2.3.1 The third group identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in Category 49:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 5 Test Procedures
- 6 Inspection Requirements

39-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 49:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

**39-3 EXAMPLES OF CATEGORY 49 NUMBERING PATTERNS.**

39-3.1 An operating instruction for a navigation watch, type AN5740:

49B2-3-1  
49           Category 49  
  B           Timekeeping Equipment  
    2           Watch Series  
      3           Represents Type AN5740  
      1           Number Reserved for Operating Instructions

39-3.2 Test procedures for a surveying compass, type N5334:

49C1-4-5  
49           Category 49  
  C           Navigation Equipment  
    1           Compass Series  
      4           Represents Type N5334  
      5           Number Reserved for Test Procedures

**39-4 CATEGORY 49 NUMBERING SERIES.**

49           OPTICAL INSTRUMENTS, TIMEKEEPING, AND NAVIGATION EQUIPMENT  
49A          OPTICAL INSTRUMENTS  
49A1         BINOCULARS  
49A2         MOUNTS  
49A3         QUADRANTS  
49A4         TELESCOPES  
49A5         TRANSITS  
49A6         PERISCOPES  
49A7         AIMING CIRCLES  
49A8         THEODOLITES  
49A9         COLLIMATORS  
49A10        MISSILE LAYING EQUIPMENT  
49A11        CALIBRATION AND ALIGNMENT EQUIPMENT  
49A12        SPOTTING SETS  
49A13        MICROSCOPES  
49A14        CATHEOMETER  
49A15        CLINOMETERS  
49A16        RANGE FINDERS  
49A17        SPECTROPHOTOMETERS  
49AA         ASSOCIATED EQUIPMENT  
49AA1        ALIDADES  
49B          TIMEKEEPING EQUIPMENT  
49B1         CLOCKS  
49B2         WATCHES  
49B3         TIMERS  
49C          NAVIGATION EQUIPMENT  
49C1         COMPASSES  
49C2         INDICATORS

## CHAPTER 40

### CATEGORY 50 - SPECIAL SERVICES EQUIPMENT

#### 40-1 GENERAL.

40-1.1 Category 50 contains four systems. These systems are divided into equipment series and the equipment series are further divided into equipment subseries. TO numbers in this category use both three and four basic groups for data identification. The numbering pattern for both forms are discussed in paragraph 40-2 below.

40-1.2 TO data pertinent to more than one system in this category is numbered in the category general series.

40-1.3 Information relating to more than one equipment series within a system is numbered in the system general series.

#### 40-2 NUMBERING PATTERNS.

40-2.1 **GROUP ONE.** This group has three parts identifying the category, system and equipment series.

40-2.1.1 Part one is always the numeric 50 identifying Category 50.

40-2.1.2 Part two is an alpha character identifying the special services equipment systems, i.e., A - musical instruments; B - athletic equipment; C - sanctuary equipment; and D - laundry equipment.

40-2.1.3 Part three contains one or more numeric characters identifying the equipment series within a system. The numbering series for this category is outlined in paragraph 40-4.

40-2.2 **GROUP TWO.** TO numbering patterns in Category 50 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes the numbering pattern for both forms:

40-2.2.1 If only three groups are used in a numbering pattern, group two contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

40-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, the equipment series is identified with one or more numeric characters in group two, and the model, type or PN is identified in group three.

40-2.3 **GROUP THREE.**

40-2.3.1 If a TO number has only three basic groups, the third group of the numbering pattern identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in this category:

- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 3 Depot Maintenance or Overhaul Instructions
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements

40-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 50:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

40-2.3.3 If the TO number contains four basic groups, the third group has one or more numeric characters representing the model, type or PN assigned to specific equipment.

40-2.4 GROUP FOUR. In those cases where the TO number contains four basic groups, the fourth group identifies specific types of TOs defined in paragraph 40-2.3.1, above.

**40-3 EXAMPLES OF CATEGORY 50 NUMBERING PATTERNS.**

40-3.1 Operating instructions for an electric organ, model C-2G:

50A1-3-3-1  
50                   Category 50  
  A                 Musical Instruments  
    1               Organ Series  
      3             Electronic Organ Subseries  
       3            Represents Model C-2G  
        1           Number Reserved for Operating Instructions

40-3.2 Illustrated parts breakdown for laundry unit, model ELT9T:

50D1-2-14  
50                   Category 50  
  D                 Laundry Equipment  
    1               Laundry Unit Series  
      2             Represents Model ELT9T  
       14           Number Reserved for Illustrated Parts Breakdown

**40-4 CATEGORY 50 NUMBERING SERIES.**

50           SPECIAL SERVICES EQUIPMENT  
50A         MUSICAL INSTRUMENTS  
50B         ATHLETIC EQUIPMENT  
50C         SANCTUARY EQUIPMENT  
50D         LAUNDRY EQUIPMENT  
50D1        LAUNDRY UNITS



## CHAPTER 41

### CATEGORY 51 - AUTOMATIC TEST SYSTEMS

#### 41-1 GENERAL.

41-1.1 Normally test procedures, test control or programmed test TOs are numbered with related equipment in the various airborne and ground component categories. However, TOs pertaining to depot level, automatic test equipment software and software instruction manuals are numbered in Category 51. Three types of automatic test equipment numbered in this category can be defined as Computer Operated Multifunction Electronic Test Stations (COMETS); General Purpose Automatic Test Systems (GPATS); and Versatile Automatic Test Equipment Systems (VATES). GPATS and VATES TOs relate test modules to Line Replaceable Units (LRUs) and Shop Replaceable Units (SRUs) of an airborne or ground system. COMETS TOs identify LRUs and SRUs with a test system. Another basic difference between these automatic systems is GPATS and VATES test software do not require computer memory banks for test operations and can only test singular Units Under Test (UUTs). COMETS test software operates with computer memory banks and has the capability to test components of several systems on one test station.

41-1.2 Automatic Test Equipment in Category 51 contains seven systems. These systems are divided into equipment series and some of the equipment series are further divided into equipment subseries. TO numbers in this category use both three and four basic groups for data identification. The numbering pattern for both forms are discussed in paragraph 41-2, below.

41-1.3 TO data pertinent to more than one system in this category is numbered in the category general series.

41-1.4 Information relating to more than one equipment series within a system is numbered in the category general series.

#### 41-2 NUMBERING PATTERNS.

41-2.1 GROUP ONE. This group has three parts identifying the category, system and equipment series.

41-2.1.1 Part one is always the numeric 51 identifying Category 51.

41-2.1.2 Part two is an alpha character identifying the various systems, i.e., C - computer operated multifunction electronic test stations; E - aircraft engines; N - navigation instruments; P - radar equipment; T - master hardware; and V - versatile automatic test equipment.

41-2.1.3 Part three contains one or more numeric characters identifying the equipment series within a system. The numbering series for this category is outlined in paragraph 41-4.

41-2.2 GROUP TWO. TO numbering patterns in Category 51 use both three and four basic groups; therefore, the identifiers in group two are not constant. The following describes the numbering pattern for both forms:

41-2.2.1 If only three basic groups are used in a numbering pattern, group two contains one or more numeric characters representing the model, type or PN assigned to specific equipment.

41-2.2.2 If the TO number contains four basic groups, the equipment series identified in part three of group one has been further divided into equipment subseries. In this case, the equipment subseries is identified with one or more numeric characters in group two, and the model, type or PN is identified in group three.

41-2.3 GROUP THREE.

41-2.3.1 If a TO number has only three basic groups, the third group of the numbering pattern identifies the type of TO. The following is a list of numbers reserved to identify specific types of TOs in this category:

- 06 Work Unit Code Manuals
- 07 thru -09 Reserved
- 1 Operating Instructions
- 2 Service or Maintenance Manuals
- 4 Illustrated Parts Breakdown
- 6 Inspection Requirements
- 7 Installation Instructions and Installation Test Procedures
- 8 Test Procedures, Checkout Manuals, or Programmed Tests

41-2.3.2 In some instances the reserved numbers listed above are followed by one or more alpha characters indicating a series of checklists, workcards or supplements. The following alpha characters are authorized for use in Category 51:

- CL - Checklists
- S - Operational Supplements
- SS - Safety Supplements
- WC - Workcards

41-2.3.3 If the TO number contains four basic groups, the third group has one or more numeric characters representing the model, type or PN assigned to specific equipment.

41-2.4 GROUP FOUR. In those cases where the TO number contains four basic groups, the fourth group identifies specific types of TOs defined in paragraph 41-2.3.1, above.

41-3 EXAMPLES OF CATEGORY 51 NUMBERING PATTERNS.

41-3.1 Operating and maintenance instructions with parts list for a microwave shop repair unit test adapter, PN 12A11786-1:

- 51C1-7-1
- 51 Category 51
- C Computer Operated Test Station
- 1 Microwave SRU Test Station Series
- 7 Represents PN 12A11786-1
- 1 Number Reserved for Operating Instructions

41-3.2 Checkout manual for TF-39-GE-1A gas turbine engine:

- 51E1-3-18-1
- 51 Category 51
- E Aircraft Engine
- 1 Jet Engine Series
- 3 Represents TF-39 Model Engine
- 18 Number Reserved for Checkout Manuals
- 1 First Manual in a Series

41-3.3 Operating and service instruction for a ratio transformer, PN 588618-401:

- 51T21-2-1
- 51 Category 51
- T Master Hardware
- 21 Transformer Series
- 2 Represents PN 588618-401
- 1 Number Reserved for Operating Instructions

## 41-3.4 Checkout manual for type SN-38011/APQ-113 fire control radar:

51P2-2-7-8-1

51	Category 51
P	Radar Equipment
2	Fire Control Radar Series
2	AN/APQ Subseries
7	Represents SN-38011/APQ-113
8	Number Reserved for Checkout Manuals
1	First Manual in a Series

41-4 CATEGORY 51 NUMBERING SERIES.

51	AUTOMATIC TEST EQUIPMENT
51C	COMPUTER OPERATED TEST STATIONS (COMETS)
51C1	MICROWAVE SHOP REPAIR UNIT TEST STATIONS
51C2	HIGH VOLTAGE VIDEO ANALOG MODULE TEST STATIONS
51C3	MULTIFUNCTION ANALOG/DIGITAL MODULE TEST STATIONS
51C4	PRECISION AC/DC ANALOG MODULE TEST STATIONS
51C5	DIGITAL LOGIC MODULE TEST STATIONS
51C6	AEROSPACE GROUND EQUIPMENT MODULE TEST STATIONS
51C7	LOGIC CIRCUIT CARD ANALYZER TEST STATIONS
51C8	HEADS UP DISPLAY CATHODE RAY TUBE ELECTRONICS TEST STATIONS
51C9	SYSTEM TIMING UNIT SCAN CONVERTER TUBE TEST STATIONS
51C10	DOPPLER RADAR ANTENNA CALIBRATION SYSTEM TEST STATIONS
51C11	GENERAL RADIO GR1792D SYSTEM
51E	AIRCRAFT ENGINES
51E1	JET ENGINES
51E1-2	J-79
51E1-3	TF-39
51E1-5	J-57
51E1-7	TF-30
51E1-8	TF-33
51E1-9	TF-41
51E1-10	T-56
51N	NAVIGATION INSTRUMENTS
51N1	NAVIGATION SYSTEMS
51N2	INERTIAL REFERENCE UNITS
51N3	COMPUTER DISPLAY UNITS
51N4	ALL WEATHER LANDING SYSTEMS
51P	RADAR EQUIPMENT
51P1	TERRAIN FOLLOWING RADAR
51P1-2	Type AN/APQ

51P2 FIRE CONTROL RADAR  
51P2-2 Type AN/APQ  
51P2-3 Type AN/APA  
51P2-4 Type AN/GJQ  
51P2-5 Type AN/AWG

51P3 IDENTIFICATION FRIEND-OR-FOE RADIO SETS  
51P3-2 Type AN/APX

51P4 ULTRA HIGH FREQUENCY COMMUNICATION SETS  
51P4-2 Type AN/APS

51P5 COUNTERMEASURES SETS  
51P5-2 Type AN/ALR  
51P5-3 Type AN/ALE

51P6 ALTIMETERS  
51P6-2 Type AN/APN

51P7 INTERFERENCE BLANKER  
51P7-2 Type AN/U

51R RADIO EQUIPMENT

51R1 AUTOMATIC DIRECTION FINDER  
51R1-2 Type AN/ARA

51R2 TACTICAL AIR NAVIGATION  
51R2-2 Type AN/ARN  
51R2-3 Type AN/ARN-21C

51R3 INSTRUMENT LANDING SYSTEM RADIO RECEIVING  
51R3-2 Type AN/ARN

51R4 INTERCOMMUNICATION SET  
51R4-2 Type AN/AIC

51T MASTER HARDWARE

51T1 MASTER HARDWARE SYSTEMS

51T2 AMPLIFIERS

51T3 ANALYZER

51T4 CONTROLLERS

51T5 CONVERTERS

51T6 GENERATORS

51T7 INDICATORS

51T8 LOAD ASSEMBLIES

51T9 MEMORY UNITS

51T10 METERS

51T11 MONITORS

51T12 OSCILLATORS

51T13 POWER SUPPLIES

51T14 PRINTERS

51T15	READERS
51T16	READOUTS
51T17	SIMULATORS
51T18	SWITCHING UNITS
51T19	RESISTANCE UNITS
51T20	TAPE PREPARATION UNITS
51T21	TRANSFORMERS
51T22	SYNTHESIZERS
51T23	AVIONICS INTERFACE UNITS
51T24	PUNCHES
51T25	SUBSCRIBERS
51T26	ADAPTERS
51T27	ELECTRONIC CIRCUIT PLUG-IN UNITS
51T28	FLIGHT CONTROL COMPUTERS
51T29	PHOTOGRAPHY
51V	VERSATILE AUTOMATIC TEST EQUIPMENT
51V1	GUIDANCE EQUIPMENT
51V2	ADAPTERS
51V3	ANALYZERS
51V4	CONVERTERS
51V5	FREQUENCY MEASURING
51V6	MULTIMETERS
51V7	POWER SUPPLIES
51V8	VOLTMETERS



CHAPTER 42  
RESERVED







## CHAPTER 43

## ALPHABETICAL LIST OF EQUIPMENT NAMES TO TECHNICAL ORDER NUMBER GROUPS

## ABSORBERS

Air-Conditioning and Pressurizing..... 15A17

## ACCELEROMETERS

Automatic Flight Control System..... 5A24

Bombing System ..... 11B63

Fire Control System ..... 11F2

Flight Instrument ..... 5F2

Guidance and Control System ..... 11G14-4

Navigation Instrument..... 5N9

Training Component Indicator ..... 43X5-11

## ACCELEROMETERS AND GYROS, COMBINED

Automatic Flight Control System..... 5A32-2

## ACCUMULATORS

Aircraft or Missile Engine Fuel  
System..... 6J25

Hydraulic System, Aircraft and  
Missile ..... 9H1

Missile Support ..... 35M21

Pneumatic System, Aircraft and  
Missile ..... 9P1

Training Component..... 43X26

## ACTUATORS

Air Refueling System..... 6A1

Airborne Mechanical..... 16A1

Alternating- and Direct-Current,  
Airborne ..... 8C1

Alternating-Current, Airborne..... 8A1

Automatic Flight Control System..... 5A44

Direct-Current, Airborne..... 8D1

Egress System..... 11P9

Engine Fuel System ..... 6J29

Guidance System ..... 11G12

Hydraulic System, Aircraft and  
Missile ..... 9H2

Loading and Servicing, Associated..... 35DA6

Missile Support ..... 35M27

Pneumatic System, Aircraft and  
Missile ..... 9P2

Rocket Engine Fuel System..... 6K12

Supercharger Control, Airborne-  
Engine ..... 2RA5-3

Training Component..... 43X25

## ACTUATORS AND MOTORS

Airborne Electrical System ..... 8

Alternating- and Direct-Current ..... 8C1

Alternating-Current..... 8A1

Direct-Current..... 8D1

ADAPTER ASSEMBLIES

Structural Component, Airframe..... 16W35

ADAPTER KITS

Photographic ..... 10G17

ADAPTER UNITS

Bombing System ..... 11B95

Checkout, Missile..... 31X2-56

Supercharger Control System..... 2RA5-13

ADAPTERS

Air Refueling System..... 6A17

Automatic Flight Control System..... 5A2

Camera Control System ..... 10A6-20

Cluster Bomb ..... 11A12

Electric Power Supply ..... 35CA28

Engine and Temperature Instrument..... 5E2

Fire Control System ..... 11F3

Fuel- and Oil-Handling ..... 37A1

Launcher..... 11LA8

Loading and Servicing..... 35DA3-6

Missile Support ..... 35M35

Navigation Instrument..... 5N19

Rocket Engine Fuel System..... 6K11

Shop Support..... 34Y21

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Jet Engine ..... 2JA1

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Mowing ..... 47C

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Optical Instrument .....	49A7
AIR COMPRESSORS	
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Observation .....	1L
Special Electronic .....	1E
Trainer.....	1T
Utility .....	1U
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