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MILITARY STANDARD

PROCEDURES FOR THE FUNCTIONAL CATEGORIZATION OF GUIDED MISSILE ELECTRICAL AND ELECTRONIC TEST FUNCTION ITEMS

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DEPARTMENT OF DEFENSE
Washington, D. C. 20301

Guided Missile Test Function Items,
Procedures for the Functional Categorization of

MIL-STD-1249

1. This Military Standard is mandatory for use by all Departments and Agencies of the Department of Defense.

2. Recommended corrections, additions, or deletions should be addressed to Commanding General, U. S. Army Missile Command, AMSMI-IDD, Redstone Arsenal, Alabama 35809.

FOREWORD

Guided missiles and their support equipment draw on the technical resources of the pure and applied sciences for their R & D concepts and their production and maintenance techniques; therefore, the items in the supply classes covering these commodities are subjected to the rapid technological advances being made in these sciences. This situation has presented a serious challenge to the Defense Standardization Program's efforts to reduce the expenditure of engineering talent and defense dollars on duplicate equipment. To meet this challenge, a new approach has been taken wherein the benefits of the Program are to be realized at the point in the life cycle of an item where savings in time and cost factors can be maximized. This point has been defined as the "point of first decision", i.e., the point at which a system's design engineer recognizes a functional requirement and specifies an item to fulfill this requirement. If at this point the engineer had at his fingertips the resources for determining whether or not a functionally suitable item already existed, he could consider his immediate requirement satisfied and devote his time to those design problems which exhibit characteristics which are unique to the tactical mission of the overall system.

The resources which are necessary to effect standardization at the "point of first decision" are accurate and uniform documents containing engineering design data on presently available equipment and a vehicle for making these documents readily available to the engineer. A further restriction on this latter resources is that the retrieval language be such that the item need only be identified in technical terms, thus precluding the need for any prior knowledge of its part number, Federal Stock Number, present application, or any other logistics data which are foreign to the surroundings in which the design engineer functions.

MIL-HDBK-142 provides the means to categorize technical data on items in a missile support class in a medium which can be interrogated in engineering terms based on the item's inherent functional capability. It is the purpose of this Military Standard to maintain and facilitate the expansion of this functional categorization system.

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MILITARY STANDARD

PROCEDURES FOR THE FUNCTIONAL CATEGORIZATION

OF

GUIDED MISSILE ELECTRICAL AND ELECTRONIC TEST FUNCTION ITEMS

1. GENERAL

1.1 Scope. The scope of the categorization procedures contained in this military standard covers the functional classification of the inherent electrical or electronic test function capabilities of an item and the delineation of its pertinent characteristics. The technical data resulting from these categorization procedures will provide the Government with the documentation necessary to revise MIL-HDBK-142 to reflect technological advances and changes in military requirements for this type of equipment.

1.1.1 Application. MIL-HDBK-142 shall be used by Government and contractor personnel to select test function items for use in guided missile support applications. In those cases when a search of the categorization document does not result in the location of an item with the capability to meet a specific application, the procedures set forth in this military standard shall be used to provide the Government with categorized technical data on the item proposed for use in fulfilling the requirement.

2. APPLICABLE DOCUMENTS

2.1 The issues of the following documents in effect on the date of invitation for bids form a part of this standard to the extent specified herein.

SPECIFICATIONS

Military

MIL-D-5480	Data, Engineering and Technical: Reproduction Requirements For

STANDARDS

Military

MIL-STD-12	Abbreviations for Use on Drawings and Technical Type Publications

HANDBOOK

MIL-HDBK-142	Guided Missile Test Equipment Functional Categorization System
Cataloging Handbook H6-1	Federal Item Identification Guides for Supply Cataloging, Section A - Alphabetic Index of Names
Cataloging Handbook H4-1	Federal Supply Code for Manufacturers, Part I, Name to Code

3. DEFINITIONS

3.1 Categorization. For the purpose of this military standard, categorization is defined as the process of classifying an item of guided missile test equipment according to its inherent functional capability or capabilities.

3.2 Classification structure. The classification structure is the major technical tool used in categorizing complex test equipment. It defines the absolute criterion for the systematic division of the test equipment items into functionally similar groups. The four classification structures contained in this military standard are based on the fact that guided missile test equipment is required to have the inherent functional capability to perform one or more of the basic test functions defined in paragraphs 3.3.1, 3.3.2, 3.3.3 and 3.3.4. In MIL-HDBK-142 these classification structures provide the medium for the systematic arrangement of technical data in a format that can be interrogated in engineering terminology.

3.3 Test function categories.

3.3.1 Electrical power source category. The electrical power source category includes those items which possess the inherent functional capability of being able to provide the unit under test, or associated equipment, with the electrical power necessary for it to function in its normal mode of operation.

3.3.1.1 Static power conversion. Within the power source category, static power conversion is the method of converting the input power to the desired output power utilizing components which are essentially stationary in their operation such as thermionic or solid-state rectifiers. Static power conversion shall be identified on an input-output basis as follows:

(a) AC to DC: This group contains those items which utilize the unilateral conduction property of thermionic or solid-state rectifiers to transform AC power and are commonly called DC power supplies.

(b) AC to AC: This group contains those items which transform AC power at one frequency to AC power at a different frequency(s) or at a voltage level which is controlled to correct for line

and load variations. Items commonly called frequency changers, AC power supplies, AC line regulators, auto-transformers, voltage or current regulating transformers, etc., are applicable to this group.

(c) DC to DC: This group contains those items which transform DC power at low-level voltages to DC power at high-level voltages and are commonly called "solid state" or "static" converters.

(d) DC to AC: This group contains those items which transform DC power at low-level voltage to AC power at a higher level voltage and are commonly called "solid state" or "static" inverters. Inverters using interrupter type vibrators in the conversion circuit are also applicable to this group.

3.3.1.2 Dynamic power conversion. Within the power source category, dynamic power conversion is the method of converting the input power to the desired output power utilizing rotating electrical machinery. Dynamic conversion shall be identified on an input-output power basis as follows:

(a) AC to DC: This group contains the rotating machinery type items which transform AC power to DC power. The most common type is the common-armature synchronous converter which is essentially a synchronous motor with a commutator and brush arrangement connected to its rotating armature. A motor-generator set consisting of an AC motor with its rotor shaft mechanically coupled to the armature shaft of a DC generator is also applicable to this group.

(b) AC to AC: This group contains the rotating machinery type items which transform AC power at one frequency to AC power at another frequency or voltage and phase depending upon the armature poles and winding design. The motor-alternator which has a double armature on a common shaft and the motor-generator set consisting of an AC motor with its rotor shaft mechanically coupled to the armature shaft of an alternator are items which are applicable to this group.

(c) DC to DC: This group contains the rotating machinery type items which transform DC power at a low-level voltage to DC power at a high-level voltage. The most common type is the dynamotor which has a double armature on a common shaft. A motor-generator set consisting of a DC motor with its rotor shaft mechanically coupled to the armature shaft of a DC generator is also applicable to this group.

(d) DC to AC: This group contains the rotating machinery type items which transform DC power to AC power. The machines are commonly called "inverters" as opposed to the AC to DC "converters". Inverters with the DC motor armature and alternator armature wound on a common shaft and motor-generator sets, which consist of a DC motor with its rotor shaft mechanically coupled to the armature shaft of an alternator, are items which are applicable to this group.

3.3.1.3 Mechanical input, dynamic power conversion. Within the power source category, mechanical input dynamic power conversion is that method of producing electrical power through the use of alternators and DC generators which derive their mechanical input from the operation of a reciprocating or turbine-type engine.

3.3.1.4 Electrochemical power conversion. Within the power source category, electrochemical power conversion is that method of producing electrical power through a chemical reaction which may be reversible or irreversible. Electrochemical conversion shall be more specifically identified as follows:

(a) Primary cells: Items contained in this group are those which produce electrical power from a chemical reaction which is irreversible (non-rechargeable). Both wet cells and dry cells ("B", "C", "D" batteries, etc) are applicable to this group; also applicable are those batteries which are activated at time of use and deliver high currents at a relatively constant voltage for a very limited period of time (one-shot operation).

(b) Secondary cells: Items contained in this group are those which provide electrical power from a chemical reaction which is reversible (rechargeable). All storage batteries (lead-acid, nickel-cadmium, etc.) are applicable to this group.

3.3.2 Electrical stimulus source category. The electrical stimulus source category includes those items which possess the inherent functional capability of being able to provide the unit under test, or associated equipment, with a stimulus, the nature of which either simulates the normal system of operation of the unit or is of some arbitrary value or values which are meaningful to the unit under test from a general operation standpoint.

3.3.2.1 Intrinsic circuit activation. Within the stimulus source category, intrinsic circuit activation refers to that type of signal generating circuitry which requires no input other than operating power, relay energizing voltages, or external switching connections for the item to produce its output stimulus. This group contains items such as signal generators including sine wave, square wave, and pulse type which can produce a stimulus upon application of operating power. Also included in this group are items containing the free-running type of relaxation oscillators such as multivibrators, blocking oscillators, and other varieties of self-sustained oscillators.

3.3.2.2 Input trigger or gate activation. Within the stimulus source category, input trigger or gate activation refers to that type of signal generating circuitry which requires or receives triggering or gating signals in its intended operation. However, this does not include circuitry which amplifies, clips, differentiates, or performs other operations on an input signal. This group contains items such as pulse generators and items that contain the driven type of relaxation oscillators such as bistable multivibrators, phantastrons, and driven blocking oscillators which derive their operation from an external trigger or gate signal in addition to the normal operating voltages.

3.3.2.3 Stimulus source output waveforms.

3.3.2.3.1 Direct current stimulus. Direct current stimulus source outputs are identified or described on the basis of the following two criteria: (a) DC outputs available at source impedances too high for normal power supply applications; and (b) DC outputs at voltage levels other than the actual power supply operating voltages of the stimulus source.

3.3.2.3.2 Sinusoidal. A sinusoidal output is identified as a continuous sinewave output of constant amplitude and frequency.

3.3.2.3.3 Modulated sinusoidal. A modulated sinusoidal output is identified as a sinewave output whose amplidtude, frequency, or time (or a combination thereof) is continuously varying at some predetermined rate set up by circuit constants within the item.

3.3.2.3.4 Rectangular. The rectangular stimulus source output is indicative of a continuous square wave output that may be modulated or unmodulated.

3.3.3 Electrical measuring equipment category. The electrical measuring equipment category includes those items which possess the inherent functional capability of accepting a physical quantity and converting it through comparison with an accepted standard into a form which may be interpreted and communicated by man or by machine.

3.3.3.1 Energy source measuring equipment. Energy source measuring equipment refers to those items that must accept electrical energy as a physical entity and measure its characteristic quantities of amplitude and time. Examples of energy source measuring equipment are voltmeters, ammeters, power meters, oscilloscopes, recorders, and counters.

3.3.3.1.1 Amplitude. Amplitude measuring equipment categories apply to those items which measure the magnitude of the voltage, current, or power of electrical energy. The items included in these categories shall be categorized according to the type of electrical energy which they measure, that is, direct current, sinusoidal, and non-sinusoidal.

3.3.3.1.2 Time. The time measuring equipment category applies to those items which measure the periodic or non-periodic amplitude variations of electrical energy as a function of time. The items included in this category shall be categorized according to the following five characteristic factors of time measurements:

3.3.3.1.2.1 Duration. The duration category shall include those items which measure the periodic or non-periodic time duration of electrical energy in seconds or a multiple or submultiple thereof.

3.3.3.1.2.2 Frequency. The frequency category shall include those items which directly measure the frequency of periodically varying electrical energy in cycles per second. The category shall also include those items which measure the ratio of two frequencies. The readout of this type measurement is dimensionless.

3.3.3.1.2.3 Phase. The phase category shall include those items which measure the phase relationship or time difference between two periodically varying signals in angular degrees or in seconds.

3.3.3.1.2.4 Waveform. The waveform category shall include those items which yield simultaneous information regarding the amplitude and time characteristics of electrical energy.

3.3.3.1.2.5 Count. The count category shall include those items capable of totalizing a series of electrical impulses over a given time period.

3.3.3.2 Non-energy source measuring equipment. Non-energy source measuring equipment refers to those items that must transfer electrical energy as a physical entity and measure the effect upon its characteristic quantities in order to determine the sought quantities of the unit under test. These items, therefore, are required to contain or perform in conjunction with sources of electrical energy.

3.3.4 Electrical adaptive and supplementary devices category. The electrical adaptive and supplementary devices category includes those items which possess the inherent functional capability of adapting power, stimulus, or measuring equipment to a unit under test in order to achieve a desired result or to supplement the test equipment by providing certain special functional capabilities which are not normally built into generic type, guided missile test equipment.

3.3.4.1 Signal transfer with change of basic waveform. This signal transfer with change of basic waveform category includes those items which receive a signal, alter its basic waveshape or signal characteristic by operating on one or more but not all parameters, and then transfer it to output terminals.

The types of devices within this category are those which integrate, differentiate, detect, modulate, frequency multiply or divide, or perform other such operations which change the basic waveform in either shape or frequency. Examples of items are: frequency converters, coincidence amplifiers, mixer amplifiers, digital and analog converters, and pulse shapers.

3.3.4.2 Signal transfer without change of basic waveform. The signal transfer without change of basic waveform category includes those items which receive a signal, do not alter its basic waveshape or signal characteristics, but can operate on all of its parameters if the ratios of the magnitudes are not disturbed, and then transfer it to output terminals. The types of devices within this category are amplifiers of all types (video, audio, radio frequency and direct current), impedance transducers, attenuators, phase inverters, and time delay circuits.

3.3.4.3 Signal dissipation. The signal dissipation category includes those items which receive a signal and transform it into another form of energy, usually heat. The types of devices within this category are dummy loads and other power dissipating devices.

3.4 Inherent functional capability. Inherent functional capability is defined as the characteristic performance that can be expected from an item of test equipment as a result of proper functioning of the electrical circuitry and mechanical parts which form its prescribed physical composition.

3.5 Test function. The test function of an item is the first level of classification, and it defines the inherent functional capability of the item to perform one or more of the four basic test functions encountered in guided missile maintenance and checkout equipment. These test functions are identified as power source, stimulus source, measuring equipment, and adaptive or supplementary devices. These terms are defined in paragraphs 3.3.1, 3.3.2, 3.3.3, and 3.3.4 respectively.

3.6 Performance factor. The performance factor of an item is the second level of classification, and it defines certain basic differentiating characteristics pertaining to the manner in which the item performs its test function capabilities.

3.7 Controlled parameter. Controlled parameter is the third level of classification, and it defines the characteristic of the input or output signal which is being controlled by the test function item.

3.8 Measurable parameter. Measurable parameter is the third level of classification for the measuring equipment category, and it defines the fundamental physical quantity which is being measured by the energy source or non-energy source measurement item.

3.9 Characteristic factor. The characteristic factor is the fourth level of classification, and it defines the most fundamental qualitative delineating characteristic of the item's controlled or measurable parameter.

3.10 Delineation form. The delineation form specifies a fixed set of pertinent characteristics which identify a particular test function and provides space for recording the appropriate quantitative or qualitative expression of these characteristics.

3.10.1 Delineation data.

3.10.1.1 Item identification characteristics. Item identification is that part of the delineation form (see Figure 1) which identifies the item in terms of its administrative characteristics which are represented by such information as Federal nomenclature, Federal stock number, part number, manufacturer's name and code number, status, missile system, and next assembly.

3.10.1.1.1 Federal nomenclature. The Federal nomenclature is a name or phrase describing the item being categorized. The name is expressed in accordance with nomenclature listing in the Federal Cataloging Handbook H6-1.

3.10.1.1.2 Federal stock number. The Federal stock number consists of the applicable four-digit class code number from the Federal Supply Classification (FSC) plus the applicable seven-digit Federal Item Identification Number (FIIN). The Federal stock number is assigned by a Government cataloging activity.

3.10.1.1.3 Part number (P/N). The part number is the primary number assigned to an item by the initiating agency and is used to identify the item in technical data applicable to the item.

3.10.1.1.4 Manufacturer name and code number. The manufacturer name represents the facility that controls the design and production of the item, or produces the item from crude or fabricated materials, or assembles materials or components (with or without modification) into a more complex item. The manufacturer code number represents the associated Federal Supply Code as listed in Federal Cataloging Handbook H4-1.

3.10.1.1.5 Status. Status is a descriptive word or phrase which most closely identifies the item in the overall process of design, development, production and operational.

3.10.1.1.6 Missile system. The missile system is a noun name or phrase which identifies the intended application of the item being categorized.

3.10.1.1.7 Next assembly. The next assembly is a name, part number, or a combination of name and part number which identifies the equipment of which the item being categorized is a subunit.

3.10.1.1.8 Type designation. Type designation, as applicable, shall be in accordance with established procedures.

3.10.1.2 Power source characteristics. In the power source characteristics section of the delineation form (see Figure 1), the voltage, frequency, and phase characteristics of the input; the voltage, current, and frequency characteristics of the output; and the capability of programming the output of the power source are described. This section also describes the functional operation of the item and identifies the additional functional capabilities of the power source that may be applicable.

3.10.1.3 Programmable output. Programmable output refers to a type of power source output characteristic which denotes whether or not a power source has provisions for the remote selection of output voltages or currents through the use of external programming networks.

3.10.1.4 Mechanical characteristics. The mechanical characteristics describe an item on the basis of its overall dimensions, physical configuration and weight.

3.10.1.5 Reference sources. Reference sources is a part of the delineation form (see Figure 1) which is the means for providing the user with reference data as to where more information is available if it is desired.

3.10.1.6 Stimulus characteristics. In the stimulus characteristics section of the delineation form (see Figure 2), the waveform and time function data associated with the output of the stimulus source under consideration are described. This section also describes the functional operation of the item and identifies the additional capabilities that may be applicable.

3.10.1.7 Input signal characteristics. The input signal characteristics define the type of external trigger, gate, or modulation voltage that must be properly applied to activate the stimulus source item under consideration.

3.10.1.8 Operating voltages. The operating voltages are representative values of AC and DC electric potentials which define the magnitude of the input power required by the test equipment item to perform its regular testing function.

3.10.1.9 Measurement characteristics. In the measurement characteristics section of the delineation form (see Figure 3), the capabilities of the equipment are described in terms of measurement range, units of measurement, and supporting parameters of performance and circuit characteristics such as input impendance, accuracy, and frequency response. This section also describes the functional operation of the item and identifies the additional capabilities that may be applicable.

3.10.1.10 Readout characteristics. Readout characteristics define the provisions which the test equipment item possesses in presenting the measurement results to the operator.

3.10.1.11 Adaptive and supplementary characteristics. In the adaptive and supplementary characteristics section of the delineation form (see Figure 4), the principal functions, input signal and output signal of the device, are described. This section also describes the functional operation of the item and identifies the additional capabilities that may be applicable.

4. GENERAL REQUIREMENTS

4.1 Categorization criterion. The criterion for the selection of an item to be categorized is that it possesses the inherent functional capability to perform one or more of the four basic test functions defined for guided missile maintenance, repair and checkout equipment. In this functional categorization system, an item shall be classified as a power source, stimulus source, measuring equipment, adaptive or supplementary device or a combination thereof. The definitions for these test function categories are contained in paragraphs 3.3.1, 3.3.2, 3.3.3, and 3.3.4 respectively. An item containing multiple test function capabilities shall be classified in each applicable category and delineated accordingly. In addition, each of the test function capabilities of the item that are contained in separately identifiable subunits that have a re-use potential in the build-up of other end items shall also be functionally classified and delineated. The categorization of applicable items shall be conducted in accordance with the classification criteria set forth in the following paragraphs:

4.1.1 Electrical power source classification.

4.1.1.1 Test function. The fundamental classification of the test function of an item as being applicable to the electrical power source category shall be based on its inherent capability to provide the unit under test, or associated equipment, with the electrical power necessary for it to function in its normal mode of operation. The restrictive characteristics associated with this general performance criteria must be recognized to simplify the use of the categorization system and to facilitate the further classification of the items applicable to the electrical power source category. The classification structure shown in Table I shall be used to functionally classify an electrical power source item. The definitions in Section 3 of this Military Standard shall be referred to for a detailed description of the significant characteristics of electrical power source items.

4.1.1.2 Performance factor. To classify the power source item at the performance factor level of classification, the six forms of the electrical power sources tabulated on the classification chart (see Table I) shall be studied to determine which is applicable to the power source item being categorized. More than one of the listed performance factor categories may

be applicable. Note that the first four types of electrical power sources transform readily available primary power into the form required by the testing application. When the classification of an item fits into this grouping of power sources, two sets of differentiating characteristics shall be applied to the item being classified. The first set shall indicate whether the primary electrical input is in the form of alternating current or direct current. The second set of characteristics must identify the method of power conversion being utilized as dynamic or static. Note that the last two types of power sources (5 and 6 of Table I) represent forms of electrical power generation not motivated by electricity. When the classification of an item fits this grouping of power sources, apply a differentiating characteristic based on the type of power conversion applicable, i.e., mechanical input-dynamic conversion and electrochemical conversion. See paragraphs 3.3.1 through 3.3.1.4 for a detailed description of electrical power conversion methods.

4.1.1.3 Controlled parameter. The major differentiating characteristic of a power source item at the controlled parameter level of classification shall be its power output. A study of the item shall be conducted to determine whether the output is voltage regulated, current regulated, or unregulated. For classifying power source items with electrochemical power conversion, determine the applicability of the item to the primary or secondary cell category in accordance with the differentiating characteristics defined in paragraph 3.3.1.4 of this Military Standard.

4.1.1.4 Characteristic factor. When categorizing an item at the characteristic factor level of classification, determine whether or not the input power to the power source item is transformed into either AC or DC output power.

4.1.2 Electrical stimulus source classification.

4.1.2.1 Test function. The fundamental classification of the test function of an item as being applicable to the electrical stimulus source category shall be based on its inherent capability to provide the unit under test, or associated equipment, with a stimulus, the nature of which either simulates the normal system of operation of the unit, or it is of some arbitrary value or values that are meaningful to the unit from a general operational standpoint. The restrictive characteristics associated with this general performance criteria must be recognized to simplify the use of the categorization system and to facilitate the further classification of items applicable to the electrical stimulus source category. The classification structure shown in Table II shall be used to functionally classify an electrical stimulus source item. The definitions in Section 3 of this Military Standard shall be referred to for a detailed description of the significant characteristics of stimulus source items.

4.1.2.2 Performance factor. To classify a stimulus source item at the performance factor level of classification, the two methods of signal source activation tabulated on the classification chart (see Table II) shall be studied to determine which is applicable to the stimulus source item being

TABLE I. FUNCTIONAL CLASSIFICATION STRUCTURE FOR ELECTRICAL POWER SOURCES

Levels of Classification			
Test Function	Performance Factor	Controlled Parameter	Characteristic Factor
Electrical Power Source Category	1. Static Conversion, AC Input	1. Regulated Output Voltage Controlled	1. DC Output 2. AC Output
		2. Regulated Output Current Controlled	1. DC Output 2. AC Output
		3. Unregulated	1. DC Output 2. AC Output
	2. Static Conversion, DC Input	1. Regulated Output Voltage Controlled	1. DC Output 2. AC Output
		2. Regulated Output Current Controlled	1. DC Output 2. AC Output
		3. Unregulated	1. DC Output 2. AC Output
	3. Dynamic Conversion, AC Input	1. Regulated Output Voltage Controlled	1. DC Output 2. AC Output
		2. Regulated Output Current Controlled	1. DC Output 2. AC Output
		3. Unregulated	1. DC Output 2. AC Output
	4. Dynamic Conversion, DC Input	1. Regulated Output Voltage Controlled	1. DC Output 2. AC Output
		2. Regulated Output Current Controlled	1. DC Output 2. AC Output
		3. Unregulated	1. DC Output 2. AC Output
	5. Dynamic Conversion, Mechanical Input	1. Regulated Output Voltage Controlled	1. DC Output 2. AC Output
		2. Regulated Output Current Controlled	1. DC Output 2. AC Output
		3. Unregulated	1. DC Output 2. AC Output
	6. Electro-chemical Conversion	4. Primary Cells Irreversible Chemical Reaction	1. DC Output
		5. Secondary Cells Reversible Chemical Reaction	1. DC Output

categorized. Both activation systems may be applicable to a stimulus source item. In categorizing at this level of classification, apply differentiating characteristics based on the method of signal source activation, i.e., by intrinsic circuit characteristics or by input trigger, gate, or modulation. See paragraphs 3.3.2.1 and 3.3.2.2 for a detailed description of the two methods of signal source activation.

4.1.2.3 Controlled parameter. Classify the stimulus source item at the controlled parameter level of classification utilizing the functions of amplitude and time as the differentiating characteristics. Select the applicable amplitude-time parameter on the basis of its relative significance in controlling the output stimulus. Both parameters may be applicable to the stimulus source item being categorized. In classifying a stimulus source item as amplitude controlled, the signal amplitude of the item shall be considered as adjustable or fixed at values whose accuracy provides the principal precision in the signal. The time function shall be considered in terms of frequency, pulse repetition rate, or time delay.

4.1.2.4 Characteristic factor. Classify the stimulus source item at the characteristic factor level of classification utilizing the output signal waveshape as the differentiating characteristic. The waveforms listed below shall be considered typical examples of waveforms generally produced by variable function stimulus sources:

(a) Direct Current
(b) Sinusoidal
(c) Modulated Sinusoidal
(d) Rectangular
(e) Pulse or Pulse Group

See paragraph 3.3.2.3 for additional details on the waveform descriptions.

4.1.3 Electrical measuring equipment classification.

4.1.3.1 Test function. The fundamental classification of the test function of an item as being applicable to the electrical measuring equipment category shall be based on its inherent capability to accept an electrical quantity and convert it through comparison with an accepted standard into a form which may be interpreted and communicated by man or by machine. The restrictive characteristics associated with this general measurement criteria must be recognized to simplify the use of the categorization system and to facilitate the further classification of measuring equipment items. The classification structure shown in Table III shall be used to functionally classify electrical measurement equipment. The definitions in Section 3 of this Military Standard shall be referred to for detailed descriptions of the significant characteristics of electrical measuring equipment items.

TABLE II. FUNCTIONAL CLASSIFICATION STRUCTURE FOR ELECTRICAL STIMULUS SOURCES

Levels of Classification			
Test Function	Performance Factor	Controlled Parameter	Characteristic Factor
Electrical Stimulus Source Category	1. Signal Source Activation by Intrinsic Circuit Characteristics	1. Amplitude	1. Direct Current 2. Sinusoidal 3. Modulated Sinusoidal 4. Rectangular Waveform 5. Pulse or Pulse Group 6. Other
		2. Time	2. Sinusoidal 3. Modulated Sinusoidal 4. Rectangular Waveform 5. Pulse or Pulse Group 6. Other
	2. Signal Source Activation by Input Trigger, Gate, or Modulation	1. Amplitude	1. Direct Current 2. Sinusoidal 3. Modulated Sinusoidal 4. Rectangular Waveform 5. Pulse or Pulse Group 6. Other
		2. Time	2. Sinusoidal 3. Modulated Dinusoidal 4. Rectangular Waveform 5. Pulse or Pulse Group 6. Other

4.1.3.2 Performance factor. To classify electrical measuring equipment at the performance factor level of classification, the two fundamental types of measuring equipment on the classification chart (see Table III) shall be studied to determine which is applicable to the measuring equipment item being categorized, that is, (a) measurement of those quantities which result as characteristics of electrical energy, or (b) measurement of those quantities which affect the characteristics of electrical energy by conversion or consumption. Apply differentiating characteristics based on a functional requirement for measuring energy source type quantities or non-energy source type quantities. See paragraph 3.3.3.1 through 3.3.3.2 for a detailed description of the energy source and non-energy source type measuring equipment.

4.1.3.3 Measurable parameter. Classify the energy source measuring equipment item at the measurable parameter level of classification on the basis of an amplitude and time domain variation. Use voltage, current, and power as differentiating factors for classifying an item relative to amplitude variations. Note that only one fundamental parameter exists for classifying an item relative to the time domain. Classify the non-energy source measuring equipment at this level of classification on the basis that a unique measurement technique shall be required for each measurable parameter listed. In addition to the classification of equipments that measure quantitative value (e.g., resistance, reactance, and transmission line characteristics), establish and recognize criteria for classifying equipments which measure qualities of components as a degree of their performance capability. Utilize the integrated system testing category for classification of items that measure the qualitative performance of integrated circuitry and specific electrical components such as relays, squibs, timers, amplifiers, generators, etc., not covered by the other non-energy measurable parameter categories listed in Table III.

4.1.3.4 Characteristic factor. Use the characteristic factor level of classification as the final step in the categorization of amplitude and time measuring equipment. This level of classification shall be applicable to the energy source measuring type equipment only. Classify the voltage, current, and power amplitude measuring equipment according to the type of electrical energy which they measure (see Table III). Electrical energy is basically either unidirectional or bidirectional. The bidirectional type shall be classified as sinusoidal or non-sinusoidal, while the unidirectional type shall be classified as direct current. The differentiating characteristic for classifying time measuring equipment shall be the method of measurement, that is, duration, frequency, phase, waveform, or count. See paragraph 3.3.3.1.2 for an interpretation and description of each method.

4.1.4 Electrical adaptive and supplementary devices classification.

4.1.4.1 Test function. The fundamental classification of the test function of an item as being applicable to the adaptive and supplementary devices category shall be based on its inherent capability to adapt power, stimulus, or measuring equipment to the unit under test in order to achieve a desired

TABLE III. FUNCTIONAL CLASSIFICATION STRUCTURE
FOR
ELECTRICAL MEASURING EQUIPMENT

Levels of Classification			
Test Function	Performance Factor	Measurable Parameter	Characteristic Factor
Electrical Measuring Equipment Category	1. Energy Source Measurement	1. Voltage Amplitude	1. Direct Current 2. Sinusoidal 3. Non-Sinusoidal
		2. Current Amplitude	1. Direct Current 2. Sinusoidal 3. Non-Sinusoidal
		3. Power Amplitude	1. Direct Current 2. Sinusoidal 3. Non-Sinusoidal
		4. Time	1. Duration 2. Frequency 3. Phase 4. Waveform 5. Count
	2. Non-Energy Source Measurement	1. Resistance	
		2. Inductance	
		3. Capacitance	
		4. Transmission Line Characteristics	
		5. Electron Tube Device	
		6. Solid State Devices	
		7. Integrated System Testing	

result or to supplement the test equipment by providing certain special functional capabilities which are not normally built into generic type, guided missile test equipment. The restrictive characteristics associated with this general performance criteria must be recognized to simplify the use of the categorization system and to facilitiate the further classification of the adaptive and supplementary devices. The classification structure shown in Table IV shall be used to functionally classify adaptive and supplementary devices. The definitions in Section 3 of this Military Standard shall be referred to for descriptions of the significant characteristics of the adaptive and supplementary devices.

4.1.4.2 Performance factor. To classify an adaptive and supplementary device at the performance factor level of classification, the three classifications of input signal processing capabilities tabulated on the classification chart (see Table IV) shall be studied to determine which is applicable to the adaptive and supplementary device being categorized, that is, (a) input signal transfer to output terminals or (b) input signal dissipation within the item. Note that the first two classifications represent input signal transfer to the output terminals. When the classification of an item fits into this grouping, apply differentiating characteristics which indicate whether the operation or processing performed on the input signal changes or does not change its basic waveform. Note also that the third classification represents input signal dissipation within the item and shall require no further categorization. See paragraphs 3.3.4 through 3.3.4.3 for a detailed description of the signal processing capabilities.

4.1.4.3 Controlled parameter. Classify the adaptive or supplementary device at the controlled parameter level of classification utilizing the functions of amplitude and time as the differentiating characteristics. Select the applicable amplitude or time signal parameter on the basis of its relative significance in being controlled by the adaptive or supplementary device being categorized.

4.1.4.4 Characteristic factor. When categorizing an adaptive or supplementary device item at the characteristic factor level of classification, determine which characteristic of the output signal is most significant in its relation to the applicable amplitude or time parameter.

5. DETAILED REQUIREMENTS

5.1 General categorization procedure.

5.1.1 Select the test function category or categories applicable to the test equipment item under consideration by determining its inherent functional capability or capabilities in relation to the following categories of the test equipment items:

TABLE IV. FUNCTIONAL CLASSIFICATION STRUCTURE
FOR
ADAPTIVE AND SUPPLEMENTARY DEVICES

Levels of Classification			
Test Function	Performance Factor	Controlled Parameter	Characteristic Factor
Electrical Adaptive and Supplementary Devices Category	1. Signal Transfer with change of Basic Waveform	1. Amplitude	1. Voltage 2. Current 3. Concurrent or Series Pulse Group
		2. Time	1. Voltage 3. Concurrent or Series Pulse Group 4. Duration 5. Frequency
	2. Signal Transfer without change of Basic Waveform	1. Amplitude	1. Voltage 2. Current
		2. Time	4. Duration 6. Delay
	3. Signal Dissipation	———	———

(a) Electrical power source
(b) Electrical stimulus source
(c) Electrical measuring equipment
(d) Electrical adaptive and supplementary devices

5.1.2 Functionally classify the test equipment item with a three-digit functional code number. Each digit shall be significant in identifying the categories at a specific level of classification. The digits shall be assigned as follows:

Functional Code Number		Levels of Classification
First Digit	=	Performance Factor
Second Digit	=	Controlled Parameter
Third Digit	=	Characteristic Factor

The numeric value of each digit shall designate the functional capability provided by the item at each level of classification. Refer to the simplified diagrams in Tables V, VI, VII, and VIII which list the functional capabilities for each category and illustrate the above procedures of selecting the functional code number digits.

5.1.3 Delineate the test equipment item in accordance with the delineation format described in subparagraphs 5.2.2, 5.3.2, 5.4.2, and 5.5.2 for each respective test function category.

5.1.4 Delineation forms prepared by military agencies shall be forwarded to Headquarters, MICOM, AMSMI-IDD, Redstone Arsenal, Alabama 35809. Delineation forms prepared by industry as a result of contract effort shall be forwarded by the contractor to the responsible procuring agency who, in turn, will forward the form to MICOM.

5.2 Categorization procedure - electrical power source.

5.2.1 Functional coding. Obtain technical data applicable to the test equipment item being categorized and extract the information required by the categorization process as outlined in Section 4, paragraph 4.1.1. Follow the functional coding procedure given in paragraph 5.1.2 above and utilize the data in Table V for selection of the proper code number digits. The functional code number thus determined shall be inserted in the designated space provided on the power source delineation form. A sample delineation form is shown in Figure 1.

TABLE V. DIGIT SELECTIONS FOR FUNCTIONAL CODE NUMBERS - ELECTRICAL POWER SOURCE TEST FUNCTION

Levels of Classification		
Performance Factor Functional Capabilities	Controlled Parameter Functional Capabilities	Characteristic Factor Functional Capabilities
First Digit	Second Digit	Third Digit
Select:	Select:	Select:
1. AC Input Static Conversion	1. Regulated Output Voltage Controlled	1. DC Output
2. DC Input Static Conversion	2. Regulated Output Current Controlled	2. AC Output
3. AC Input Dynamic Conversion	3. Unregulated Output	
4. DC Input Dynamic Conversion	4. Primary Cells (First Digit always = 6. Third Digit always = 1.)	
5. Mechanical Input Dynamic Conversion	5. Secondary Cells (First Digit always = 6. Third Digit always = 1.)	
6. Electrochemical Conversion		

5.2.2 Delineation. Delineate the power source item in accordance with the technical data format of the completed sample delineation form shown in Figure 1. See paragraph 5.6 for the general specifications and physical requirements of the delineation form.

5.2.2.1 Method of expression - item identification. The administrative characteristics used for item identification purposes are listed in Section I of the delineation form shown in Figure 1. The numbers, words, and phrases which make up the administrative data shall be expressed in accordance with the governing directives and procedures of the Federal Cataloging Program, where applicable, and as specified in paragraphs 3.10.1.1 through 3.10.1.1.7.

5.2.2.2 Method of expression - power source characteristics. Determine the power source characteristics of the item and describe it in terms of its input requirements and output capabilities. Express and record the input

characteristics as a quantitative indication of voltage, frequency, and phase. Voltage and frequency tabulations should include a range of deviation from the mean as shown on the sample delineation form, Section II.A. For multiple output, static conversion type power sources which contain more than one power transformer, record the input characteristics for each transformer. In applications where the power source is not a completely selfcontained unit, additional input requirements such as control or reference voltages shall also be recorded. The output characteristics shall be expressed in quantitative values of voltage, current, and frequency applicable as shown under Section II.B. of the sample delineation form. Express and record the state of regulation and programming characteristics of the power source as an affirmative (yes) or negative (no) response. For voltage regulated and unregulated output applications, list the output voltage under the prime parameter column and the output current under the supporting parameter column (the converse shall be true for current regulated power source applications). For inverter and frequency changer applications, record output frequency with a range of deviation from the mean. Write a functional description of the power source item in the format shown under Section II.C. on the sample delineation form, briefly explaining the power conversion and control circuits within the power source. The space under Section II.D. of the delineation form shall be used to indicate the additional functional capabilities when the power source is part of an item possessing multiple test function capabilities. In this case, list the name of the applicable measurement equipment, stimulus source, or adaptive and supplementary devices categories and give the appropirate functional code numbers for those categories.

5.2.2.3 Method of expression - mechanical characteristics. Express and record the mechanical characteristics in terms of the item's relation to being portable, rack mounted, or built into the next assembly. Record the overall dimensions of the item in inches and fractional parts of an inch. Record the weight in pounds.

5.2.2.4 Method of expression - reference sources. Reference sources shall be expressed in terms of both government and industry documentation including such items as technical manuals, instruction books, drawings, and various specifications which are applicable to the item being delineated. The reference sources listed shall be identified as either government or industry sources. In cases where additional design data is required beyond that given in the delineation form, it must be possible to obtain it from these sources. When the item being delineated is in the design or developmental stage of its life cycle, the government or industry R & D activity shall be identified by name, address, and contract or project number.

5.2.2.5 Method of expression - overall configuration. The overall configuration. The overall configuration of the item shall be expressed in an isometric drawing. The isometric drawing shall reference, at a minimum, the dimensions recorded in the mechanical characteristics section of the delineation form, and also depict the salient features of the item such as controls, indicators,

GUIDED MISSILE TEST EQUIPMENT FUNCTIONAL CATEGORIZATION SYSTEM 100024
POWER SOURCE DELINEATION

I. Item Identification

A. Federal Nomenclature Power Supply
B. FSN 4935-787-7343
C. P/N 9188060
D. Mfr. Name and Code Number 00000
E. Status
F. Missile System Hawk
G. Next Assembly P/N's 9188165 and 9188233
H. Type Designation

II. Power Source Characteristics

A. INPUT CHARACTERISTICS			B. OUTPUT CHARACTERISTICS				
Input Voltage	Frequency (cps)	Phase	Prime Parameter	Supporting Parameter	Regulated Output	Frequency (cps)	Programmable Output
240±24 Vac	400±20	1 ϕ	247 to 315Vdc	250 ma	Yes		Yes

C. Functional Description

This power supply contains a full wave bridge, semiconductor rectifier circuit which provides the d-c output. The output voltage is controlled by a series-type, vacuum-tube, regulating circuit and can be programmed to any value between 247 and 315 Vdc through the use of external programming resistors. The supply's output terminals are floating with respect to ground.

Figure 1. (Sheet 1 of 3) Sample Electrical Power Source Delineation

Figure 1 - continued

D. Additional Functional Capabilities

Note:

III. Mechanical Characteristics

(Includes Handles)

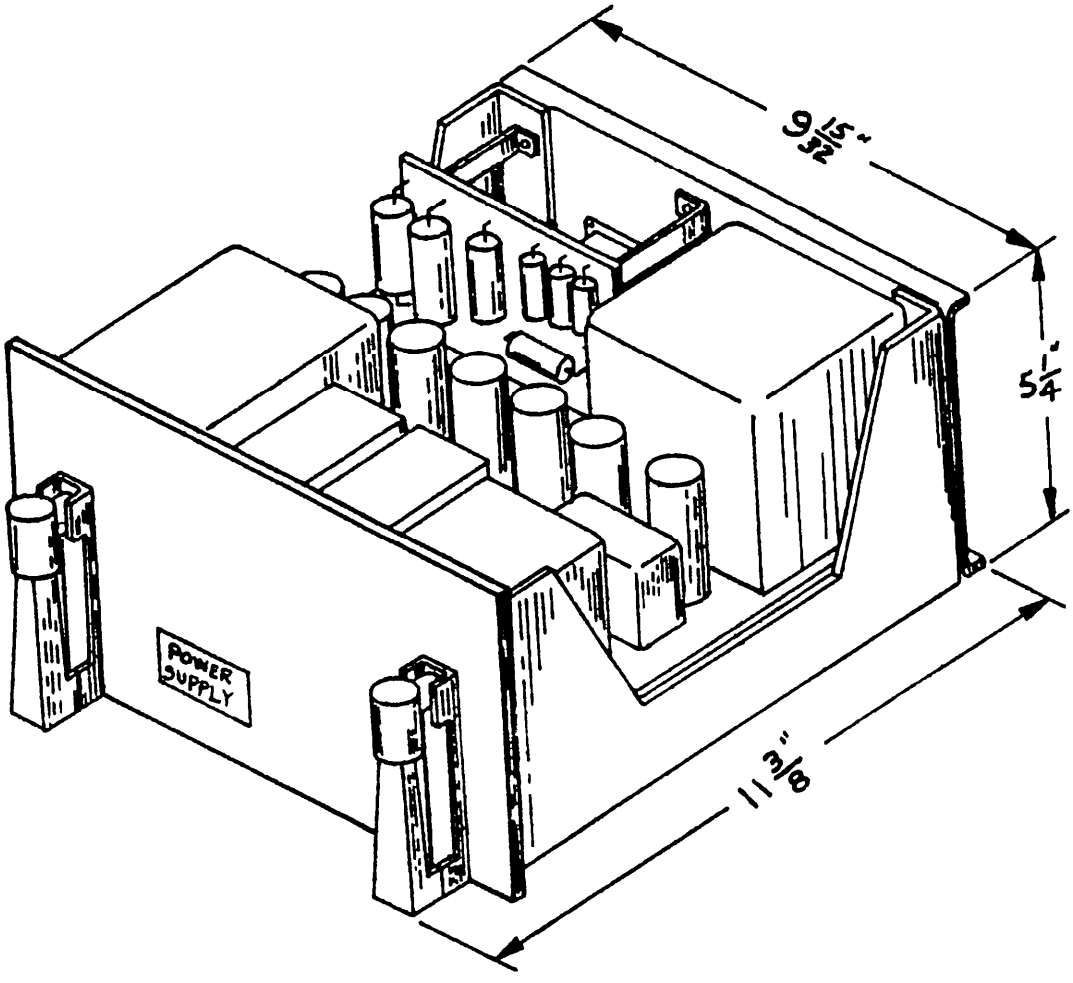
A. Dimensions (inches): Height 5-1/4 ; Width 9-15/32; Depth 11-3/8
B. Configuration: Portable ___; Rack Mounted X ; Built into Next Assembly ___.
C. Weight: 20.0 lbs.

IV. Reference Sources

Department of the Army Technical Manuals TM 9-4935-506-35/1, -35/4 and MICOM Dwg. No. 9188060.

Functional Code Numbers: 111

Figure 1. (Sheet 2 of 3) Sample Electrical Power Source Delineation



Power Supply, P/N 9188060

Figure 1. (Sheet 3 of 3) Sample Electrical Power Source Delineation

connections, etc. The drawing shall be prepared on a second sheet of paper in accordance with the delineation form specifications given in paragraph 5.6.

5.3 Categorization procedure - electrical stimulus source.

5.3.1 Functional coding. Obtain technical data applicable to the test equipment item being categorized and extract the information required by the categorization process as outlined in Section 4, paragraph 4.1.2. Follow the functional coding procedure given in paragraph 5.1.2 and utilize the data in Table VI for selection of the proper code number digits. The functional code number thus determined shall be inserted in the designated space provided on the stimulus source delineation form. A sample delineation form is shown in Figure 2.

TABLE VI. DIGIT SELECTIONS FOR FUNCTIONAL CODE NUMBERS - STIMULUS SOURCE TEST FUNCTION

Levels of Classification		
Performance Factor Functional Capabilities	Controlled Parameter Functional Capabilities	Characteristic Factor Functional Capabilities
First Digit	Second Digit	Third Digit
Select:	Select:	Select:
1. Signal source activation by intrinsic circuit characteristics.	1. Amplitude controlled	1. Direct current output.
2. Signal source activation by input trigger, gate, or modulation	2. Time controlled.	2. Sinusoidal output
		3. Modulated sinusoidal output.
		4. Rectangular waveform output.
		5. Pulse or pulse group output.
		6. Other output.

GUIDED MISSILE TEST EQUIPMENT FUNCTIONAL CATEGORIZATION SYSTEM
STIMULUS SOURCE DELINEATION 200132

I. Item Identification

A. Federal Nomenclature Sweep Generator and Comparator
B. FSN 4935-589-8288
C. P/N 9155237
D. Mfr. Name and Code Number 00000
E. Status
F. Missile System Nike-Ajax, -Hercules, and -Hercules (Imp.)
G. Next Assembly SNL's J029-4B, J752, & J783: P/N 8514680
H. Type Designation

II. Stimulus Characteristics

A.	Waveform	Time Function		Waveform	Time Function
1.	Pulse, +25V	.3 to .5 used	5.		
2.	Sawtooth, 2V	slope & linearity	6.		
3.		controlled	7.		
4.			8.		

B. Functional Description

This sweep generator and comparator unit achieves signal source stimulation by application of input trigger pulses and utilized two modes of operation to develop three output pulses. In the comparator mode, a sawtooth waveform is applied to differential amplifiers whose relative output determines the state of a bistable multivibrator. The selected positive or negative output pulse from the multivibrator feeds through a pulse amplifier and triggers a blocking oscillator which provides the output pulse to the connector jack as a function of the input sawtooth wave. In the sweep generator mode, a positive input pulse triggers a monostable multivibrator whose output positive pulse drives a sawtooth generating switch tube into conduction. The slope and linearity of the sawtooth wave are controlled by a regenerative feedback and bootstrap circuit in the switch tube plate circuit. Operating voltages are supplied externally.

Figure 2. (Sheet 1 of 3) Sample Electrical Stimulus Source Delineation

Figure 2 - continued

C. Additional Functional Capabilities

Note:

III. Input Signal Characteristics Sawtooth waveform; positive trigger pulse.

IV. Operating Voltage(s)

A. AC 120V, 400 cps
B. DC +300V; +250V; +150V; and -250V.

V. Mechanical Characteristics

A. Dimensions (inches): Height 5-23/32; Width 20-21/64; Depth 20-7/8 (includes cover)
B. Configuration: Portable X; Rack Mounted ___; Built into Next Assembly ___.
C. Weight:

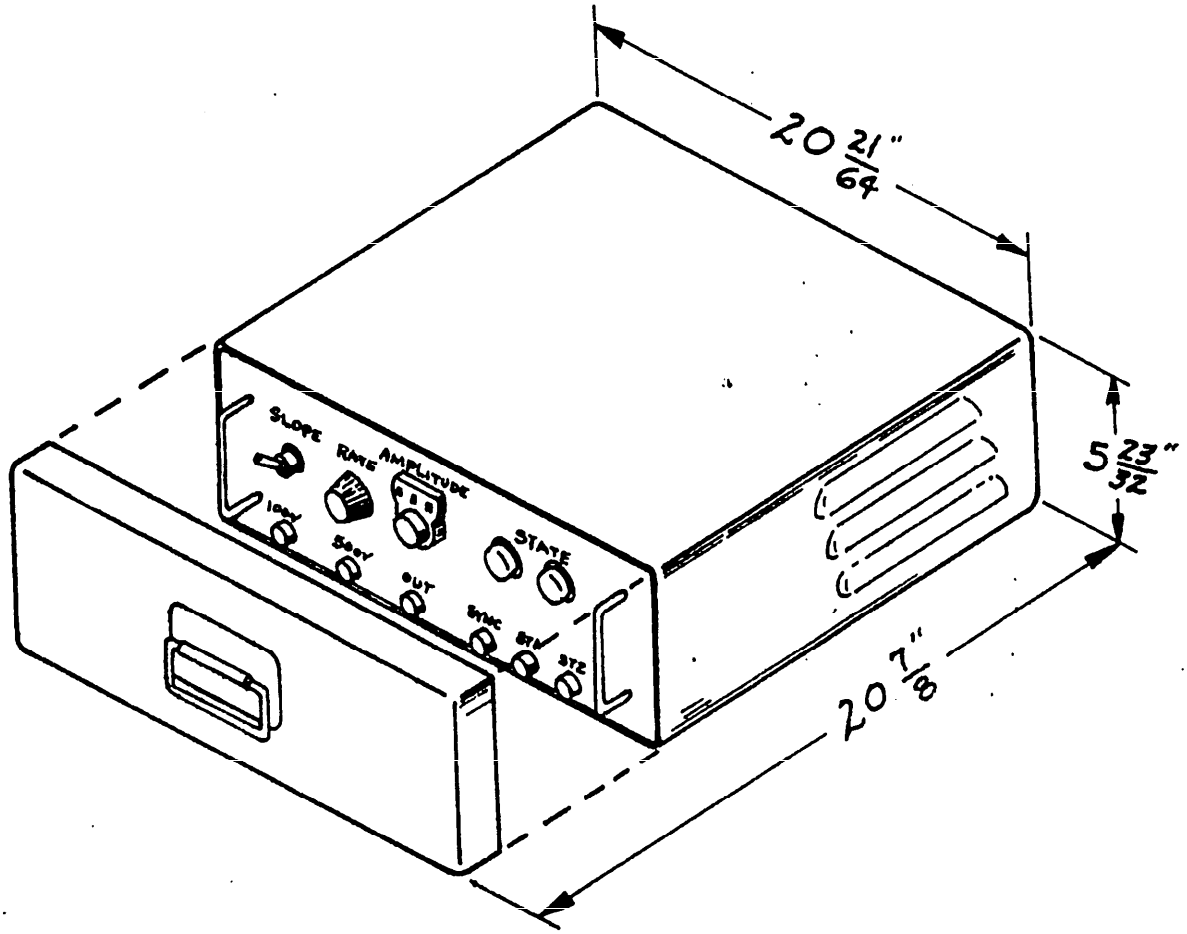
VI. Reference Sources

Department of the Army Technical Manuals TM 9-4940-251-34 & -35

Functional Code Numbers: 215 216 225 226

Figure 2. (Sheet 2 of 3) Sample Electrical Stimulus Source Delineation

(FSAIAIZ) This adapter shall have a receptacle to



Sweep Generator and Comparator, P/N 9155237

FIGURE 2. (Sheet 3 of 3) Sample Electrical Stimulus Source Delineation

5.3.2 Delineation. Delineate the stimulus source item in accordance with technical data format of the completed sample delineation form shown in Figure 2. See paragraph 5.6 for the general specifications and physical outline requirements of the delineation form.

5.3.2.1 Method of expression - item identification. The item identification characteristics shall be expressed in accordance with paragraph 5.2.2.1.

5.3.2.2 Method of expression - stimulus source characteristics. Determine the stimulus source characteristics of the item and list the type of waveform and quantitative indication of frequency, pulse repetition rate, pulse width, and time delay as applicable. Write a functional description of the item in the format shown in Section II.B. of the sample delineation form, briefly describing the performance factor, operating modes, output waveform, variable circuit parameters, and the operating voltage source. The space under Section II.C. of the delineation form shall be used to indicate additional functional capabilities when the stimulus source is part of an item possessing multiple test function capabilities. In this case, list the name of the applicable measurement equipment, power sources, or adaptive and supplementary devices categories and give the appropriate functional code numbers for the respective category.

5.3.2.3 Method of expression - input signal characteristics. Express the input signal characteristics in terms of descriptive names or phrases indicating the waveform and type of signal voltage including its polarity. Also indicate the amplitude, frequency or pulse width of the input signal voltage. Note that this characteristic does not apply to stimulus source items that generate a stimulus through intrinsic circuit characteristics.

5.3.2.4 Method of expression - operating voltage. The AC operating voltage shall be expressed and recorded as a quantitative value indicating the magnitude of line voltage or filament voltage at a given frequency. Record the DC operating voltage as a positive or negative quantity indicating the magnitude of the externally applied voltages.

5.3.2.5 Method of expression - mechanical characteristics. The mechanical characteristics shall be expressed in accordance with paragraph 5.2.2.3.

5.3.2.6 Method of expression - reference sources. The reference sources shall be expressed in accordance with paragraph 5.2.2.4.

5.3.2.7 Method of expression - overall configuration. The overall configuration shall be expressed in accordance with paragraph 5.2.2.5.

5.4 Categorization procedure - electrical measuring equipment.

5.4.1 Functional coding. Obtain technical data applicable to the measuring equipment item being categorized and extract the information required by the categorization process as outlined in Section 4, paragraph 4.1.3. Follow the functional coding procedures in paragraph 5.1.2 and utilize the data in Table VII for selection of the proper code number digits. The functional code number thus determined shall be inserted in the designated space provided on the measuring equipment delineation form. A sample form is shown in Figure 3.

TABLE VII. DIGIT SELECTIONS FOR FUNCTIONAL CODE NUMBERS - ELECTRICAL MEASURING EQUIPMENT TEST FUNCTION

Levels of Classification		
Performance Factor Functional Capabilities	Measurable Parameter Functional Capabilities	Characteristic Factor Functional Capabilities
First Digit Select:	Second Digit Select:	Third Digit Select:
1. Energy Source Measurement	1. Voltage Amplitude 2. Current Amplitude 3. Power Amplitude	1. Direct Current 2. Sinusoidal 3. Non-sinusoidal
	4. Time	1. Duration 2. Frequency 3. Phase 4. Waveform 5. Count
2. Non-Energy Source Measurement	1. Resistance 2. Inductance 3. Capacitance 4. Transmission Line Characteristics 5. Electron Tube Devices 6. Solid State Devices 7. Integrated Systems Testing	Third Digit Always = 0

5.4.2 Delineation. Delineate the measuring equipment item in accordance with the technical data format of the completed sample delineation form shown in Figure 3. See paragraph 5.6 for the general specifications and physical outline requirements of the delineation form.

5.4.2.1 Method of expression - item identification. The item identification characteristics shall be expressed in accordance with paragraph 5.2.2.1.

5.4.2.2 Method of expression - measurement characteristics. Under the measurement characteristics section of the delineation form (Figure 3), record the measurable parameter information in terms of data expressing the range, associated units, and supporting characteristics of the particular measurable parameter being considered. The following criteria should be used in conjunction with Figure 3 as a guide to achieve proper delineation of the item with respect to this section of the delineation form:

(a) Range - As implied, this column shall contain the range (ranges for multiple-range items) for the parameter(s) which the item is capable of measuring. An ammeter, for example, shall have its current range listed (e.g., 0-1), whereas an oscilloscope shall have its sensitivity listed (e.g., .029-20).

(b) Units - This column shall contain the associated measurement units for the parameter whose range has been listed. For the ammeter consideration above, this column shall list the units "ma dc". For the oscilloscope, the units shall be listed as "(Vertical) V/cm".

(c) Supporting Parameters - This column shall list information attainable from reference sources which describes circuit and performance characteristics relative to input impedance (resistance), accuracy, frequency response, and other similar characteristics.

Continue the delineation of the measurement characteristics with a functional description which shall provide a concise functional analysis of the basic measuring circuitry within the measuring equipment item. The space under Section II.C. of the delineation form shall be used to indicate additional functional capabilities when the measuring equipment is part of an item possessing multiple test function capabilites. In this case, list the name of the applicable power source, stimulus source or adaptive and supplementary devices categories and give the appropriate functional code numbers for the respective category.

5.4.2.3 Method of expression - readout characteristics. Readout characteristics shall be expressed as information regarding the indicating medium. An ammeter should have listed information relative to its scale, and an oscilloscope should have listed information relative to its cathode ray tube display area.

GUIDED MISSILE TEST EQUIPMENT FUNCTIONAL CATEGORIZATION SYSTEM
MEASURING EQUIPMENT DELINEATION 300025

I. Item Identification

A. Federal Nomenclature Oscilloscope
B. FSN 4935-328-5932
C. P/N 10105119
D. Mfr. Name and Code Number 00000
E. Status
F. Missile System Hawk
G. Next Assembly SNL J756-23: P/N 10046510
H. Type Designation

II. Measurement Characteristics

A. Measurable Parameters

	Range	Units	Supporting Parameters
1.	.029-20	(Vertical) V/cm	dc to 2.5 mc
2.	1.75-20	(Horizontal) V/cm	dc to 800 kc
3.	0-360	degrees (phase angle)	
4.			

B. Functional Description

Oscilloscope, P/N 10105119, is a special-purpose monitor oscilloscope. Only horizontal and vertical axis deflection amplifiers and associated input attenuators are provided. The vertical input attenuator switch is automatic and can be programmed externally.

C. Additional Functional Capabilities

Note:

Figure 3. (Sheet 1 of 3) Sample Electrical Measuring Equipment Delineation

Figure 3 - continued

III. Readout Characteristics A square 3.5 inch single beam cathode ray tube is the readout facility.

IV. Operating Voltage(s) Required

A. AC 240V, 400 cps; 6.3V, 400 cps.

B. DC +150V, -150V, +300V, +28V.

V. Mechanical Characteristics

A. Dimensions (inches): Height 5-1/4 ; Width 9-1/2 ; Depth 11-3/8

B. Configuration: Portable ___; Rack Mounted X ; Built into Next Assembly ___.

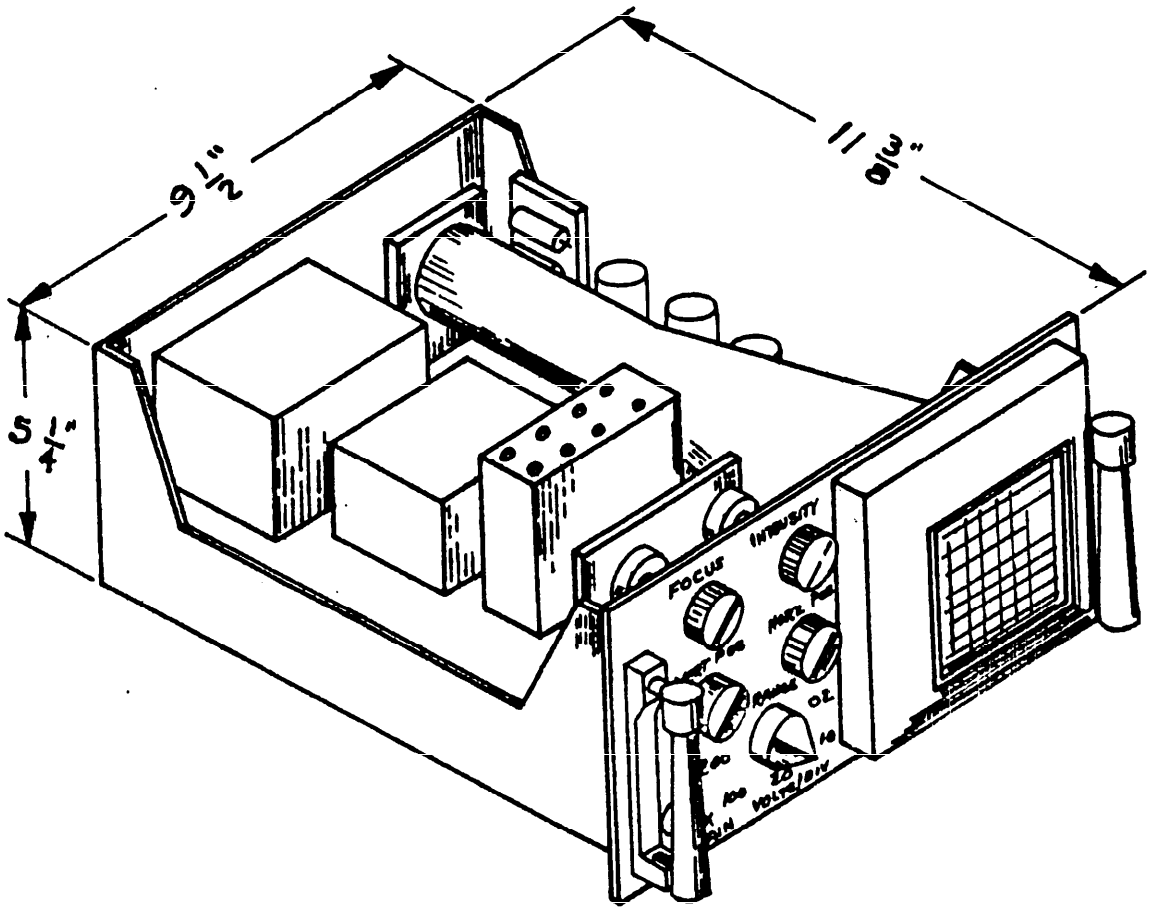
C. Weight: 10.0 lbs.

VI. Reference Sources

Department of the Army Technical Manuals TM 9-4935-506-35/3 & -35/4; MICOM Dwg. No. 10105119.

Functional Code Numbers: 111 112 113 143

Figure 3. (Sheet 2 of 3) Sample Electrical Measuring Equipment Delineation



Oscilloscope, P/N 10105119

Figure 3. (Sheet 3 of 3) Sample Electrical Measuring Equipment Delineation

5.4.2.4 Method of expression - operating voltage(s) required. The operating voltages required shall be expressed in accordance with paragraph 5.3.2.4.

5.4.2.5 Method of expression - mechanical characteristics. The mechanical characteristics shall be expressed in accordance with paragraph 5.2.2.3.

5.4.2.6 Method of expression - reference sources. The reference sources shall be expressed in accordance with paragraph 5.2.2.4.

5.4.2.7 Method of expression - overall configuration. The overall configuration shall be expressed in accordance with paragraph 5.2.2.5.

5.5 Categorization procedure - electrical adaptive and supplementary devices.

5.5.1 Functional coding. Obtain data applicable to the adaptive or supplementary device being categorized and extract information required by the categorization process as outlined in Section 4, paragraph 4.1.4. Follow the functional coding procedure given in paragraph 5.1.2 and utilize the data in Table VIII for selection of the proper code number digits. The functional code number thus determined shall be inserted in the designated space provided on the adaptive or supplementary device delineation form. A sample form is shown in Figure 4.

TABLE VIII. DIGIT SELECTIONS FOR FUNCTIONAL CODE NUMBERS - ELECTRICAL ADAPTIVE AND SUPPLEMENTARY DEVICES
TEST FUNCTION

Levels of Classification		
Performance Factor Functional Capabilities	Controlled Parameter Functional Capabilities	Characteristic Factor Functional Capabilities
First Digit Select:	Second Digit Select:	Third Digit Select:
1. Signal Transfer with change of basic waveform. 2. Signal Transfer without change of basic waveform.	1. Amplitude 2. Time	1. Voltage 2. Current 3. Concurrent or Series Pulse Group 4. Duration 5. Frequency 6. Delay
3. Signal Dissipation	0	0

GUIDED MISSILE TEST EQUIPMENT FUNCTIONAL CATEGORIZATION SYSTEM
ADAPTIVE AND SUPPLEMENTARY DEVICE DELINEATION 400034

I. Item Identification

A. Federal Nomenclature Amplifier, Intermediate Frequency
B. FSN 4935-522-0841
C. P/N 9137795
D. Mfr. Name and Code Number 00000
E. Status
F. Missile System Nike-Ajax, -Hercules, and -Hercules (Imp.)
G. Next Assembly P/N 91377920
H. Type Designation

II. Functional Characteristics

A. Principal Function Amplify 60 mc signals

B. Input Signal 60 mc signal

C. Output Signal amplified input

D. Functional Description

This unit has a gain of 70 db with a band width of 10 mc. It consists of six transformer-coupled amplifiers and a phase-shifting network capable of shifting the i-f signal by 120 degrees. The phase-shifting network is adjustable.

E. Additional Functional Characteristics

Note:

Figure 4. (Sheet 1 of 3) Sample Electrical Adaptive and Supplementary Devices Delineation

Figure 4 - continued

III. Operating Voltage(s)

A. AC 6.3V ac

B. DC +150V

IV. Mechanical Characterisitcs

A. Dimensions (inches): Height 3-29/32 ; Width 12-17/32 ; Depth 2-27/64

B. Configuration: Portable ___; Rack Mounted ___; Built into Next Assembly X

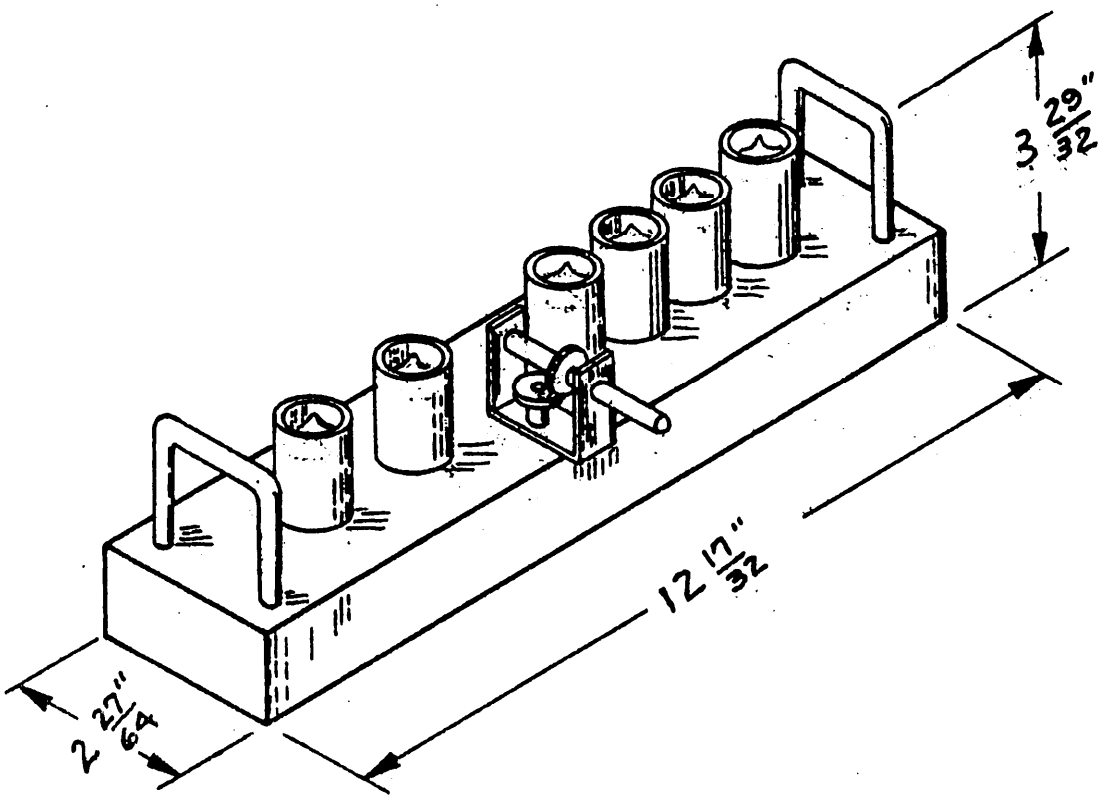
C. Weight:

V. Reference Sources

Department of the Army Technical Manual TM 9-4940-251-34 & -35; MICOM Dwg No. 9137795

Functional Code Numbers: 211

Figure 4. (Sheet 2 of 3) Sample Electrical Adaptive and Supplementary Devices Delineation



IF Amplifier, P/N 9137795

Figure 4 (Sheet 3 of 3) Sample Electrical Adaptive and Supplementary Devices Delineation

5.5.2 Delineation. Delineation the adaptive or supplementary device in accordance with the technical data format of the completed sample delineation form shown in Figure 4. See paragraph 5.6 for the general specifications and physical outline requirements of the delineation form.

5.5.2.1 Method of expression - item identification. The item identification characteristics shall be expressed in accordance with paragraph 5.2.2.1.

5.5.2.2 Method of expression - functional characteristics. Under the functional characteristics section of the delineation form (Figure 4), record the applicable information in terms of data expressing the principal function of the device in relation to its input and output signal. Use the following criteria in conjunction with Figure 4 as a guide to achieve proper delineation of the item with respect to this section of the delineation form. The principal function shall be expressed as data which shall describe the fundamental nature of the device in terms of its functional capabilities. Record information which tells what the device does (e.g., amplifies radio frequency signals, converts a 50 mc signal to a 20 mc signal). Record the input signal data as descriptive or quantitative expressions of the input for which the device is designed to receive. Data expressed in terms of frequency or voltage may be listed. The output signal data shall be expressed as a descriptive phrase denoting the type of signal conversion in terms of amplitude, frequency, or polarity. Write a functional description of the adaptive or supplementary device in the format shown under Section II.D. of the delineation form, briefly describing the signal conversion circuitry and control circuits within the adaptive or supplementary device. The space under Section II.F. of the delineation form shall be used to indicate additional functional capabilities when the adaptive or supplementary device is part of an item possessing multiple test function capabilities. In this case, list the name of the applicable power source, stimulus source, or measurement equipment categories and give the appropriate functional code numbers for the respective category.

5.5.2.3 Method of expression - operating voltage(s). The operating voltages shall be expressed in accordance with paragraph 5.3.2.4.

5.5.2.4 Method of expression - mechanical characteristics. The mechanical characteristics shall be expressed in accordance with paragraph 5.2.2.3.

5.5.2.5 Method of expression - reference sources. The reference sources shall be expressed in accordance with paragraph 5.2.2.4.

5.5.2.6 Method of expression - overall configuration. The overall configuration shall be expressed in accordance with paragraph 5.2.2.5.

5.6 Delineation form specifications. The delineation form and isometric figures shall be prepared on separate sheets of paper in accordance with the following criteria:

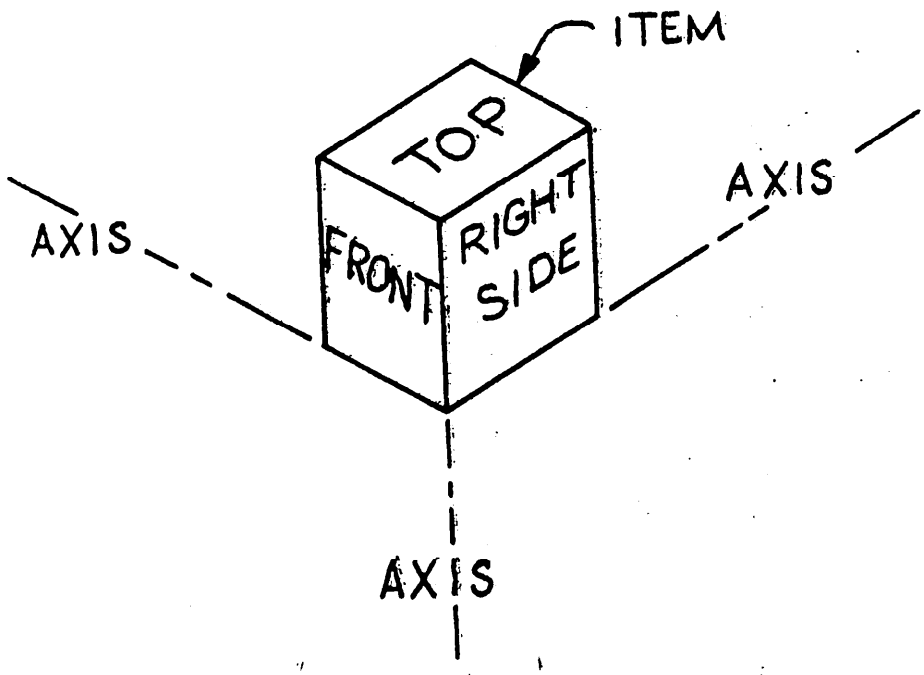


Figure 5. Isometric Axes Orientation

5.6.1 Paper. The copies of the form and figures are for technical data repositories and data exchange programs and shall be on white opaque paper. The text and isometric figures shall be clear and sharp, of consistent high contrast, and preferably black on white. The type of paper to be used and legibility requirements shall be in accordance with MIL-D-5480.

5.6.2 Paper size. The size of each finished sheet shall be 8-1/2 inches X 11 inches.

5.6.3 Margins. The following minimum requirements shall be met:

(a) The left-hand margin shall have a minimum width of 3/4 inches.

(b) The right-hand margin shall have a minimum width of 1/4 inches.

(c) The top and bottom margins shall have a minimum width of 3/8 inches.

5.6.4 Figure size and orientation. The paper size and margins shall be as specified in paragraphs 5.6.2 and 5.6.3. The drawing of the item shall be in proportion and shall fill to the extent practical the upper one-half of the page as viewed with the 8-1/2 inches side horizontal. The lower right front corner of the item shall be placed at the intersection of the isometric axes. The lower left from corner of the item may be placed at the intersection of the isometric axes in those cases where this orientation would provide a better illustration of the item's features and configuration. The isometric axes shall be 120° apart with one axis vertical as shown in Figure 5.

5.6.5 Abbreviations. Abbreviations shall be in accordance with MIL-STD-12, as applicable. Any abbreviation not covered by MIL-STD-12 shall be subject to approval of the procuring activity.

6. NOTICES.

6.1 Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring agency or as directed by the contracting officer.

Custodians:
Air Force - 83
Navy - WEPS
Army - MI

Review Activities:
Army - EL
Air Force - 67, 70, 83
Navy - WEPS

Preparing Activity:
Army - MI

Project No. 4935-0027

User Activities:
Army - MO, MU
Navy - None
Air Force - 19

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a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

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