

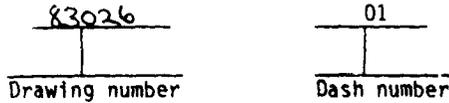
<b>NOTICE OF REVISION (NOR)</b>			1. DATE (YYMMDD) 021010		Form Approved OMB No. 0704-0188	
THIS REVISION DESCRIBED BELOW HAS BEEN AUTHORIZED FOR THE DOCUMENT LISTED.					2. PROCURING ACTIVITY NO.	
Public reporting burden for this collection is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. <b>PLEASE DO NOT RETURN YOUR COMPLETED FORM TO EITHER OF THESE ADDRESSED; RETURN COMPLETED FORM TO THE GOVERNMENT ISSUING CONTRACTING OFFICER FOR THE CONTRACT/ PROCURING ACTIVITY NUMBER LISTED IN ITEM 2 OF THIS FORM.</b>					3. DODAAC	
			4. ORIGINATOR		b. ADDRESS (Street, City, State, Zip Code)	
a. TYPED NAME (First, Middle Initial, Last) Gene Ebert		Defense Supply Center, Columbus P. O. Box 3990 Columbus, OH 43216-5000		7. CAGE CODE 14933		6. NOR NO. 5950-R003-02
9. TITLE OF DOCUMENT  TRANSFORMER, POWER, 3 – Phase, TYPE TF5Y03ZZ			10. REVISION LETTER		11. ECP NO.	
			a. CURRENT -	b. NEW A	No users listed.	
12. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES  All						
13. DESCRIPTION OF REVISION  Page 1: Revisions LTR column; add "A". Revisions description column; add "Inactivate drawing in accordance with NOR 5950-R003-02". Revisions date column; add "17 October 2002". Revision level block; add "A". Rev status of sheets; for sheet 1 change to "A". Add Notes: "Previous CAGE 14933 Superseded by 037Z3." "Inactive for New Design after 17 October 2002. For Replacement Purposes Only."						
14. THIS SECTION FOR GOVERNMENT USE ONLY						
a. (X one)	X	(1) Existing document supplemented by the NOR may be used in manufacture.				
		(2) Revised document must be received before manufacturer may incorporate this change.				
		(3) Custodian of master document shall make above revision and furnish revised document.				
b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT  DSCC-VAT				c. TYPED NAME (First, Middle Initial, Last)  Kendall Cottongim		
d. TITLE  CHIEF, ELECTRONICS COMPONENTS TEAM		e. SIGNATURE  Kendall Cottongim			f. DATE SIGNED (YYMMDD) 021010	
15a. ACTIVITY ACCOMPLISHING REVISION  DSCC-VAT		b. REVISION COMPLETED (Signature)  Gene Ebert			c. DATE SIGNED (YYMMDD) 021010	



1. SCOPE

1.1 Scope. This drawing describes the requirements for a power transformer. This drawing provides for a level of transformer quality and reliability assurance for procurement of type TF5V03Z2 power transformer in accordance with MIL-T-27.

1.2 Part number. The complete part number shall be as shown in the following example:



2. APPLICABLE DOCUMENTS

2.1 Issues of document. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this drawing to the extent specified herein.

SPECIFICATION

MILITARY

- MIL-T-27 - Transformer and Inductors (Audio, Power, and High Power Pulse), General Specification For.
- MIL-E-5400 - Electronic Equipment, Airborne, General Specification For.

STANDARD

MILITARY

- MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.

3. REQUIREMENTS

3.1 Item requirements. The item requirements shall be in accordance with MIL-T-27, and the individual item requirements of MIL-E-5400 as specified herein.

- a. Finishes.
- b. Locking devices and lockwashers.
- c. Transformers and inductors.
- d. Washers for ceramic and vitreous surfaces.
- e. Welding.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified for a Grade 5 transformer in MIL-T-27, and MIL-E-5400 as specified herein.

3.2.1 Design documentation. The design documentation shall be in accordance with MIL-T-27 and, unless otherwise specified in the contract or purchase order, shall be retained by the manufacturer but be available for review by the procuring activity or contractor upon request.

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3.3 Electrical ratings.

3.3.1 Primary voltage. The primary voltage shall be 115 ±7 volts, rms, line-to-neutral (200 volts rms line-to-line 400 ±20 hertz).

3.3.2 Secondary voltage: 115 Vrms ±5 percent line-to-line delta connected.

3.3.3 Secondary current: With additional currents from taps as itemized:

TAPS

Δ115 volts ±5%, 0.60 amps, 200 working volts as shown in table IV and figure 1.

Δ35 volts ±5%, 0.160 amps, 200 working volts as shown in table IV and figure 1.

\*15 volts ±5%, 0.02 amps, 200 working volts as shown in table IV and figure 1.

\*30 volts ±5%, 0.02 amps, 200 working volts as shown in table IV and figure 1.

\*Current is drawn from these taps one at a time with terminal 5 in addition to the leg currents shown in table I.

ΔCurrent is drawn from these taps one at a time with terminal 5 in addition to the leg currents shown in table I.

3.3.4 Working voltage: 200 working volts with current considerations as shown in table IV.

3.4 Design and construction.

3.4.1 Dimensions and configuration: See figure 1.

3.4.2 Duty cycle: Continuous.

3.4.3 Case: Silastic encapsulate.

3.4.3.1 Plate: Metal.

3.4.4 Terminals: Type: Solder lug.

3.4.4.1 Mounting surfaces and terminals shall be free from finish.

3.4.5 Weight: 23 ozs maximum.

3.4.6 Operating temperature range: -55°C to +140°C.

3.4.7 Altitude: 35,000 feet, maximum.

3.5 Terminal strength: MIL-STD-202, method 211, test condition A, 5 pounds.

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3.6 Dielectric strength: Apply the following 60 cycles per second rms test voltage for 15 seconds from each winding to ground with all other windings grounded (see 4.2.3).

TABLE I. Working voltage.

Winding	Voltage
1, 2, 3, 4	500
5, 6, 7, 8, 9, 10	500

3.7 Electrical characteristics:

No load: See table II and 4.2.3.

DC resistance: See table III.

TABLE II. No load test.

No load test (see figure 2)	Test points	Test voltage	
		Min	Max
Place 200 V rms L-L (115 V L-N) 400 Hz 3 phase on Primary of unit (1, 2, 3) Three phase core loss to Be 1.6 watts max	5-6	114.0	119.0
	6-7	114.0	119.0
	5-7	114.0	119.0
	5-9	15.0	15.6
	5-10	30.0	31.2
	5-8	34.7	36.0

TABLE III. DC resistance.

Terminals	Resistance (max)
1-4, 2-4, 3-4	20.0
10-9, 9-5	6.3
6-5, 6-7	10.9
7-5	15.0
8-5	4.35

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Table showing current (in amps) being drawn from terminals.

Time in seconds	0	30	45	0
Current per leg in amps	0.5	0.275	0.120	0.110

TABLE IV. Secondary Amp measurement test.

TERMINALS	TIME								
	0 Sec	30 Sec	60 Sec	90 Sec	120 Sec	150 Sec	180 Sec	210 Sec	
5	0.5	0.275	0.120	0.110	0.110	0.110	0.110	0.110	0.110
6	0.5	0.275	0.120	0.110	0.110	0.110	0.110	0.110	0.110
7	1.1	0.875	0.720	0.710	0.710	0.710	0.110	0.110	0.110
8	0	0	0	0	0	0	0.160	0.160	0.160
9	0	0	0	0	0	0	0.02	0.02	0.02
10	0.02	0.02	0.02	0.02	0.02	0.02	0	0	0
TOTAL	2.12	1.445	0.980	0.950	0.95	0.95	0.51	0.51	0.51
CURRENT BEING DRAWN FROM SECONDARY IN AMPS									

3.7.1 Insulation resistance. The insulation resistance shall be 10,000 megohms minimum at 500 V dc between windings and from each winding to core.

3.8 Environmental tests.

3.8.1 Shock. This unit shall be capable of withstanding 5 impact shocks of 15G for a time duration of  $11 \pm 1$  milliseconds in poim directions along each of the three principal axis.

3.8.2 Vibration. The vibration shall be 0.06 inch double amplitude from 5 -55 CPS and 10G from 55 - 500 CPS. The equipment in which this component is to be used has the following environmental conditions:

Altitude: 35,000 feet maximum.

Operating temperature: -54°C to +55°C.

3.8.3 Seal: The seal shall be as specified and in accordance with 4.2.2.

3.9 Marking. Marking shall be in accordance with MIL-T-27 except the part number shall be in accordance with 1.2 herein. The similar vendor part number may also be marked in accordance with 6.4 herein.

4. QUALITY ASSURANCE PROVISIONS

4.1 Qualification inspection. Qualification inspection for this part is not required.

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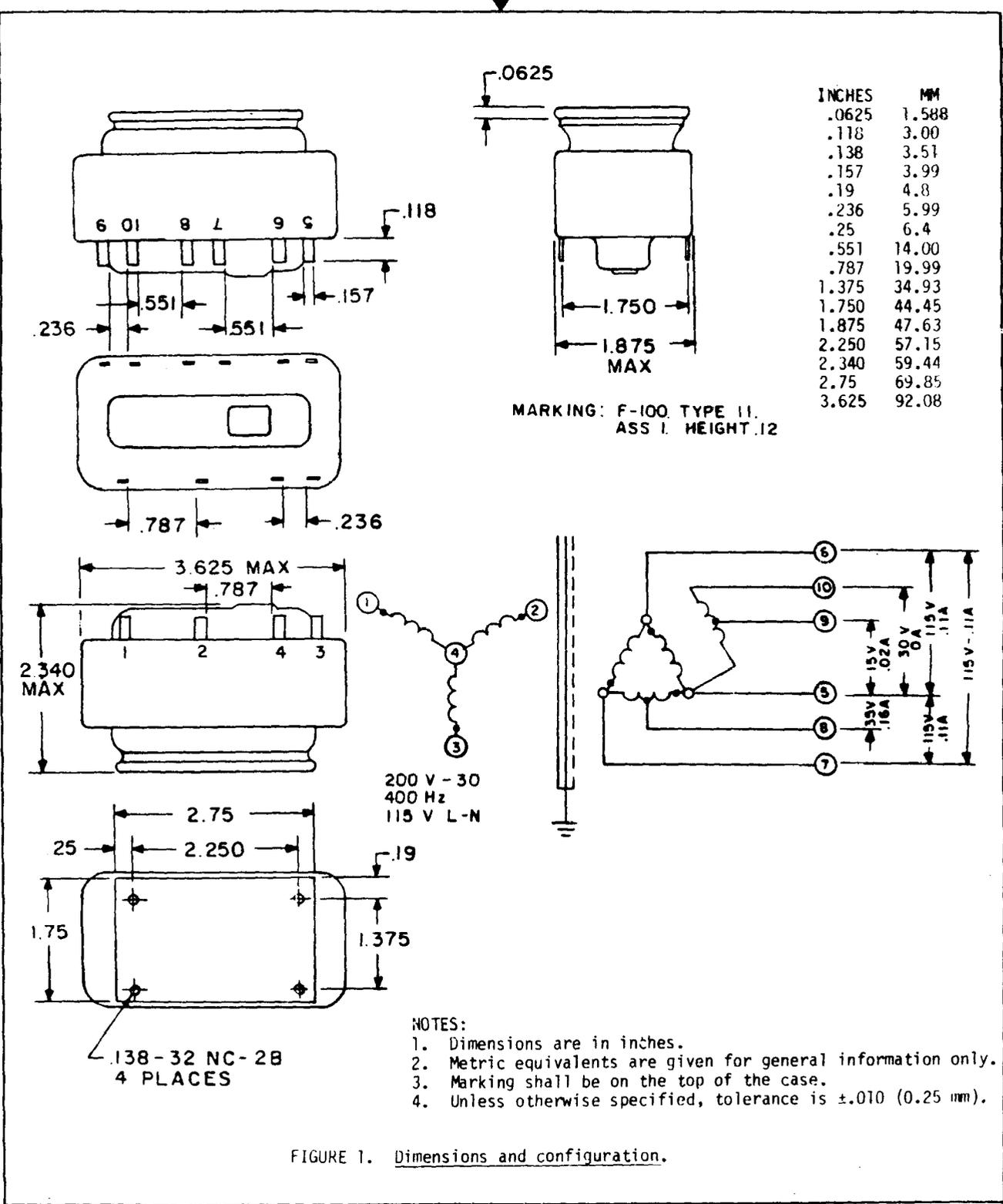


FIGURE 1. Dimensions and configuration.

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4.2 Quality conformance inspection.

4.2.1 Inspection of product for delivery. Inspection of product for delivery shall consist of groups A and B inspections of MIL-T-27 and 4.2.2, 4.2.3 and 4.2.4 herein.

4.2.2 Seal tests.

4.2.2.1 Hermetic seal test for cased and encapsulated transformers and inductors. The hermetic seal test for cased and encapsulated transformers and inductors shall be as specified. The following details shall apply:

- a. Units shall be immersed for three (3) minutes in a water bath maintained at a temperature of at least 85°C +5°C, -0°C. The temperature of the transformer or inductor shall not exceed 40°C at the time of immersion. The unit is considered to have failed if a continuous stream of bubbles comes from any portion of the unit.
- b. Measure insulation resistance of units between each winding and case/mounting with all windings not under test grounded to case/mounting. The test potential is 500 V dc ± 10 percent (unless otherwise specified) and shall be applied for not more than one minute. The minimum insulation resistance shall be 10,000 megohms.
- c. Encapsulated units with mounting inserts only, shall be tested to all inserts. If core and bracket are inaccessible, the unit shall be placed on a conducting surface and the measurement made between the outermost winding and the conductive surface.

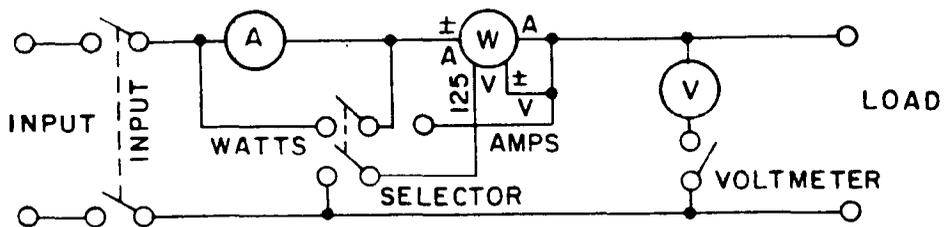
4.2.2.2 Hermetic seal test for cased filters. The hermetic seal test for cased filters shall be as specified. The following details shall apply:

- a. Units shall be immersed for three (3) minutes in a water bath maintained at a temperature of at least 85°C +5°C, -0°C, (unless otherwise specified). The temperature of the filter shall not exceed 40°C at the time of immersion. The unit is considered to have failed if a continuous stream of bubbles comes from any portion of the unit.
- b. Measure insulation resistance of units between each terminal and case ground (unless otherwise specified). The test potential is 100 V dc ± 10 percent (unless otherwise specified) and shall not be applied for more than one (1) minute. The minimum insulation resistance shall be 1000 megohms.

4.2.2.3 Hermetic seal test for encapsulated transformers and inductors. The hermetic seal test for encapsulated transformers and inductors shall be as specified. The following details shall apply:

- a. Place units in oven heated to a temperature of 60°C-70°C for a period of one hour.
- b. Remove units and immediately place in water bath maintained at a temperature of 0°C - 25°C for 30 minutes.
- c. Remove from water bath and dry surface of units with rag and/or moving air. Allow units to remain at room temperature for three to seven hours.
- d. Measure insulation resistance between each winding and core with all windings not under test grounded to normal mounting means and to core, if accessible. If core and bracket are inaccessible on a reactor (one winding only), the unit should be placed on a conducting metal surface and the measurement shall be made between the winding and the conducting metal surface. The test potential is 500 V dc ± 10 percent unless otherwise specified and shall be applied for not more than one minute. The minimum insulation resistance shall be 10,000 megohms.

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SUGGESTED APPARATUS

- A - Weston model 433 milliammeter (0-50-100 mA)
- W - Weston model 432 low power factor wattmeter (0-10-20-40 Watts)
- V - Weston model 433 voltmeter (0-150 V)

NOTES:

1. All meters shall be frequency compensated 25 to 2500 Hz.
2. Caution: When raising voltage watch meter scales closely and do not allow them to go off scale.

DIRECTIONS FOR MEASURING EXCITING CURRENT

- A. Set selector switch to exciting current.
- B. Set source switch to desired frequency (00 Hz-400 Hz external).
- C. Connect coil to load terminals.
- D. Set remaining switches to operate In. and No load.
- E. Adjust powerstat to raise voltage to required level.
- F. Read ammeter.
- G. Switch load switch from No load to load.
- H. Read ammeter.
- I. Subtract reading 1.7 from 1.9 to obtain exciting current.
- J. Reduce power to zero.

FIGURE 2. No load test.

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DIRECTIONS FOR MEASURING CORE LOSS

- A. Set up unit to be tested per 1.2 and 1.3 of this drawing.
- B. Set selector switch to core loss.
- C. Set remaining switches to operate, In and No load.
- D. Adjust powerstat to raise voltage to required level.
- E. Read wattmeter.
- F. Switch load switch from No load to load.
- G. Read wattmeter.
- H. Subtract reading 2.6 from 2.8 to obtain core loss.
- I. Reduce power to zero.

FIGURE 2. No load test - Continued.

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4.2.3 Dielectric strength. The dielectric strength tests may be made with the following test equipment or their equivalents. The instructions below apply only to the listed models:

Associated Research Model 4300 Hypot  
 Associated Research Series 400 Hypot Junior  
 Associated Research Series 570 Hypot  
 Beta Electric Model 2060 - IP - A-CH-F-V3 Power Supply (60 KV)

- a. With the "Hypot" turned off and the voltage control turned to zero. Connect the output leads of the "Hypot" between the terminals indicated on the test specification and the core or bracket with all windings not being tested tied to the core or bracket, unless otherwise specified. If core or bracket is inaccessible, connect the output leads between the terminals indicated on the test specification and between all windings not being tested tied together (unless otherwise specified). If core and bracket are inaccessible on a reactor (one winding only), the unit should be placed on a conducting metal surface and the output leads connected between the windings and the conducting metal surface.
- b. Turn the equipment on and gradually increase the voltage to the value given on the test specification. Leave the unit connected to the high voltage for the time interval specified. Unless otherwise specified the electrification time shall be 15 seconds ±5 seconds.

NOTE: A unit shall not receive a hypot test until it has been impregnated and/or encapsulated (including potting and oil filling) unless otherwise noted on the assembly drawing.

- c. Failure of the unit will be indicated one or more of the following ways:
  - (1) Continuous lighting of the breakdown indicator light.
  - (2) Continuous visible arcing.
  - (3) Failure of the voltmeter to read as high a voltage as required even when the voltage control is turned to the maximum setting.
  - (4) Sudden decrease in the voltmeter reading after the voltage has been set at the proper value.

NOTE: The leakage indicator light should not be used as an indication of failure of the unit because it will sometimes light with a good unit. However, under conditions "C" and "D" above the leakage light will light brightly.

- d. After the proper time interval has elapsed, return all controls to zero and remove the unit.

4.2.4 Group A inspection. Group A inspection shall be in accordance with MIL-T-27.

4.2.5 Group B inspection. Group B inspection shall be in accordance with MIL-T-27.

4.2.6 Certification. The procuring activity, at its discretion, may accept a certificate of compliance with Group A and B requirements in lieu of performing Group A and B tests (see 6.2C).

4.2.7 Inspection of preparation for delivery. Inspection of preparation for delivery shall be in accordance with MIL-T-27.

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5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-T-27.

6. NOTES

6.1 Intended use. Transformers conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for OEM application. This drawing is intended exclusively to prevent the proliferation of unnecessary duplicate specifications, drawings and stock catalog listings. When a military specification exists and the product covered by this drawing has been qualified for listing on QPL-27, this drawing becomes obsolete and will not be used for new design. The QPL-27 product shall be the preferred item for all applications.

6.2 Ordering data. The contract or order should specify the following:

- a. Complete part number (see 1.2).
- b. Requirements for delivery of one copy of the quality conformance inspection data with each shipment of parts by the manufacturer.
- c. Whether the manufacturer performs the Group A and B tests or provides certification of compliance with Group A and B requirements.
- d. Requirements for notification of change of product to procuring activity, if applicable.
- e. Requirements for packaging and packing.

6.3 Replaceability. Replaceability is determined as follows:

Transformers covered by this drawing will replace the same commercial device covered by contractor prepared specification or drawing.

6.4 Suggested source(s) of supply. 2/

DESC DRAWING	VENDOR FSCM NUMBER	SIMILAR VENDOR TYPE	1/
83026-01	96214	442403-1	
83026-01	51181	K-5877	

1/ CAUTION. DO NOT USE THIS NUMBER FOR ITEM PROCUREMENT AND MARKING. THE SIMILAR VENDOR TYPE MAY NOT SATISFY THE PERFORMANCE REQUIREMENTS OF THIS DRAWING.

2/ Additional suggested sources of supply will be added as they become available. For assistance in the use of this drawing, contact DESC-E, 1507 Wilmington Pike, Dayton, OH 45444, or telephone (513) 296-6149.

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DAYTON, OHIO**

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<u>Vendor FSCM number</u>	<u>Vendor name and address</u>
96214	Texas Instruments 13500 N. Central Expy P.O. Box 226015 Dallas, Texas 75266
51181	Keystronics Inc. 707 North Street Endicott, N.Y. 13760

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