

MIL-PRF-27/307A
 25 July 2008
 SUPERSEDING
 MIL-PRF-27/307
 6 February 1981

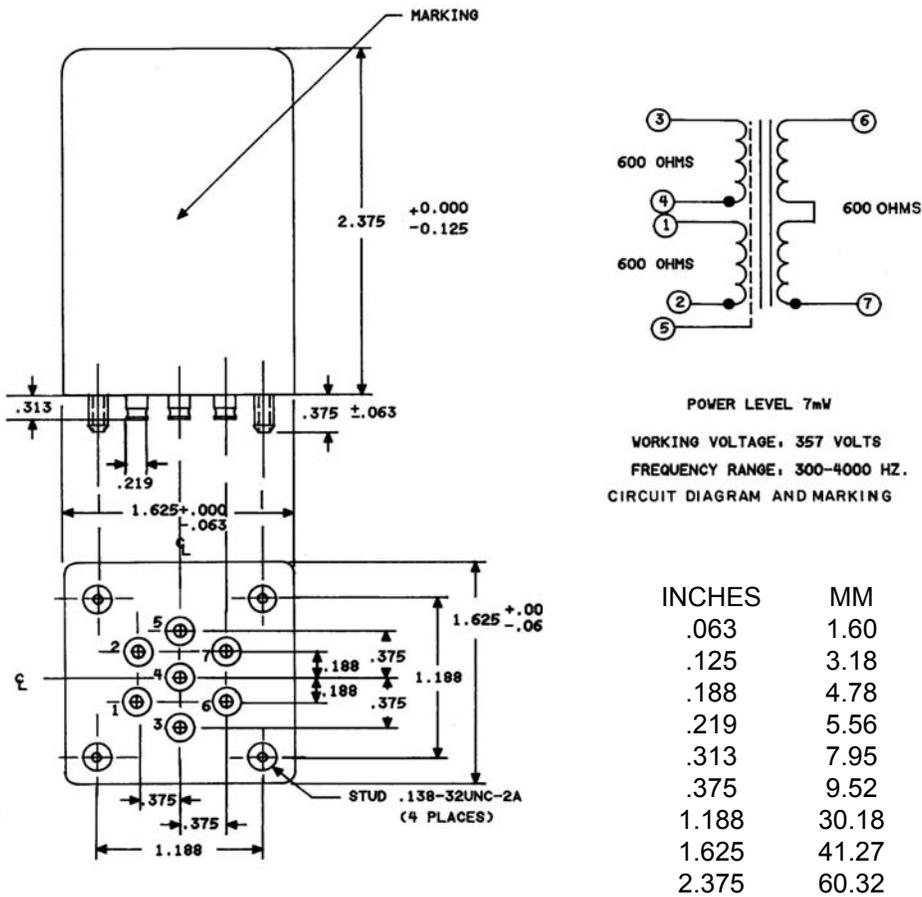
PERFORMANCE SPECIFICATION SHEET

TRANSFORMER, AUDIO FREQUENCY

Inactive for new design
 after 21 February 2003

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

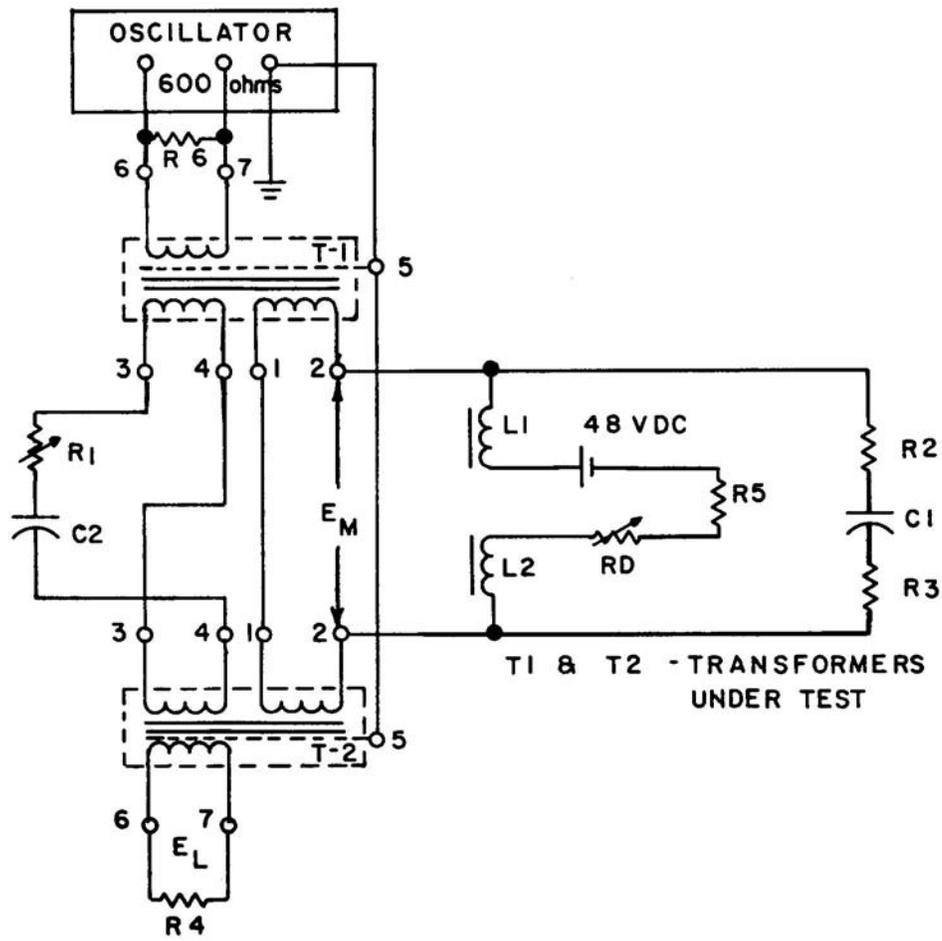
The complete requirements for procuring the transformer described herein shall consist of this document and the latest issue of Specification MIL-PRF-27.



NOTES:

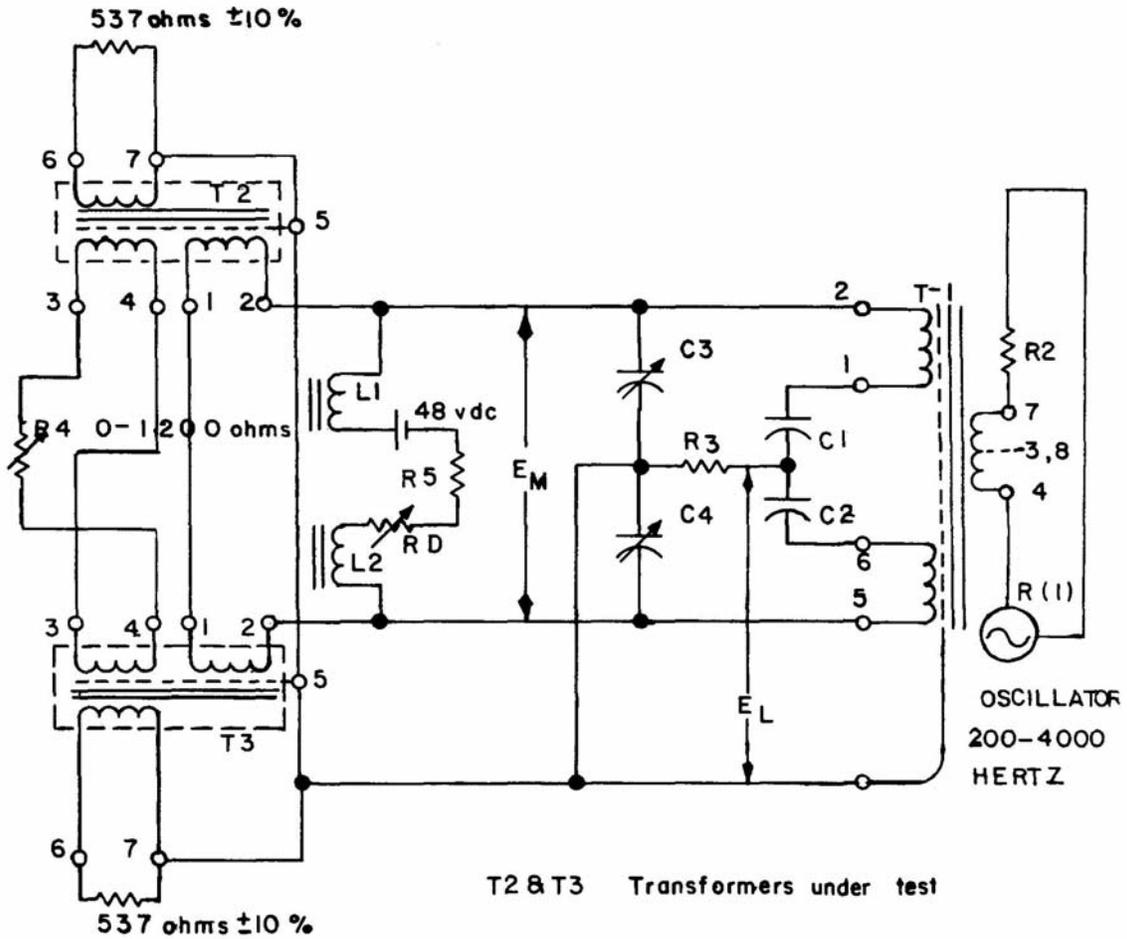
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified the tolerance shall be ± 0.016 inch (0.41 mm).

FIGURE 1. Dimensions and configurations.



Parts List	
C1, C2	- 8 μF $\pm 10\%$ capacitors matched to 0.1%.
L1, L2	- 5H or greater inductors. DCR = 85 Ω maximum Western. Electric Co. part WE149E or equivalent.
R2, R3	- Resistors, such that $R2 + R3 = 600\Omega \pm 1\%$
RD	- Variable resistor 0-1200 Ω .
R1	- Variable resistor 0-1200 Ω .
R4	- Resistor, 537 $\Omega \pm 1\%$
R5	- Resistor, 300 $\Omega \pm 1\%$
R6	- Resistor, 511 $\Omega \pm 1\%$

FIGURE 2. Test circuit for transhybrid loss.



Parts List	
T1	- Transformer, Western Electric Co. part WE111C or WE93A or ADC part 118F or equivalent.
C1, C2	- 8 μF $\pm 10\%$ capacitor matched to 0.1%.
C3, C4	- 100 to 500 pF adjustable trimmer capacitors.
OSC	- Audio oscillator with source resistance $R1 = 600\Omega$.
R2	- Resistor such that $R1 + R2 = 600\Omega$.
R3	- Resistor, $500\Omega \pm 10\%$.
L1, L2	- 5H or greater inductor. DCR = 85Ω maximum Western Electric Co. part WE149E or equivalent.
RD	- Variable resistor, 0-1200 Ω . Adjust for DC loop current of 100 mA.
R4	- Variable resistor, 0-1200 Ω .
R5	- Resistor, $300\Omega \pm 10\%$.

FIGURE 3. Test circuit for longitudinal balance.

REQUIREMENTS: (When numbers in parentheses, i.e., (1-2) are used, they indicate the extreme terminals of the winding.)

Electrical ratings:

Power level: 7 mW.

Working voltage:

(1-2): 357 V maximum.

(3-4): 357 V maximum.

(6-7): 357 V maximum.

Frequency range: 300 Hz to 4,000 Hz.

Line winding current (1-2): 100 mA dc.

Line winding impedance (1-2): 600 ohms.

Four wire winding impedance (6-7): 600 ohms.

Balance winding impedance (3-4): 600 ohms.

DC resistance:

(1-2): 23 ohms \pm 15%.

(3-4): 23 ohms \pm 15%.

(6-7): 47 ohms \pm 15%.

Design and construction:

Dimensions and configuration: See figure 1.

Duty cycle: Continuous.

Case: Metal encased.

Material: Steel.

Terminals: Standoff, solder type.

Height: .313 inch.

Weight: 325 grams maximum.

Operating temperature range: -55°C to +85°C.

Altitude: 10,000 feet maximum.

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

Dielectric withstanding voltage: MIL-STD-202, method 301.

Test voltage: 1,000 Vrms.

Moisture resistance: MIL-STD-202, method 106, 100 Vdc polarizing voltage; subcycles 7A and 7B are not applicable.

Shock (specified pulse): MIL-STD-202, method 213, test condition I.

Electrical characteristics:

Harmonic distortion: Not more than .5% at +7 dBm at 1 kHz.

Line winding impedance (1-2): 600 ohms $\pm 10\%$.

Four wire winding impedance (6-7): 600 ohms $\pm 10\%$.

Balance winding impedance (3-4): 600 ohms $\pm 10\%$.

DC resistance:

(1-2): 23 ohms $\pm 15\%$.

(3-4): 23 ohms $\pm 15\%$.

(6-7): 47 ohms $\pm 15\%$.

Frequency response: 300 Hz to 4000 Hz, flat within ± 0.3 dB, reference frequency 1 kHz using test circuit shown on figure 2.

Insertion loss: 5 ± 1 dB with 1 Vrms at 1 kHz applied across (3-5) with (3-4) and (1-2) connected in series.

Polarity: Additive, with terminals 1 and 4 and 2 and 6 connected together.

Transhybrid loss: 40 dB minimum when tested in accordance with figure 2 and as follows:

(NOTE: Two transformers are required to perform this test.)

- a. Adjust RD for a loop current of 100 mA.
- b. Adjust oscillator for $E_M = .775$ volts at 1000 Hz.
- c. Adjust R1 for E_L minimum.

$$d. \text{ Compute transhybrid loss} = 20 \text{Log} \frac{E_{6-7}(T1)}{E_L(T2)}$$

Longitudinal balance: 40 dB minimum when tested in accordance with figure 3 and as follows:

- a. Replace all equipment to the left of E_M with a 600-ohm resistor.
- b. Adjust oscillator for $E_M = .775$ volts at 1000 Hz.

$$c. \text{ Adjust C3 and C4 for ratio } 20 \text{Log} \frac{E_M}{E_L} \geq 60 \text{dB}$$

- d. Replace 600-ohm resistor with the rest of the test circuit as shown on figure 3.
- e. Readjust oscillator for $E_M = .775$ volts.
- f. Adjust RD for loop current of 100 mA dc.
- g. Adjust R4 to 600 ohms.

$$h. \text{ Compute longitudinal balance} = 20 \text{Log} \frac{E_M}{E_L}$$

Marking location: See figure 1.

Part or Identification Number (PIN): M27/307-01.

VERIFICATION:

Qualification inspection: Transhybrid loss and longitudinal balance tests shall be performed as part of the electrical characteristics tests for group II inspections.

Quality conformance inspection: Transhybrid loss and longitudinal balance tests shall be performed as part of the electrical characteristics tests for group A, subgroup II inspections.

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

Referenced documents.

MIL-PRF-27
MIL-STD-202

Custodians:

Army - CR
Navy - EC
Air Force - 85
DLA - CC

Preparing activity:
DLA - CC

(Project 5950-2008-038)

Review activities:

Army - CR4, MI
Navy - AS, MC, OS, SH
Air Force - 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>.