

INCH-POUND

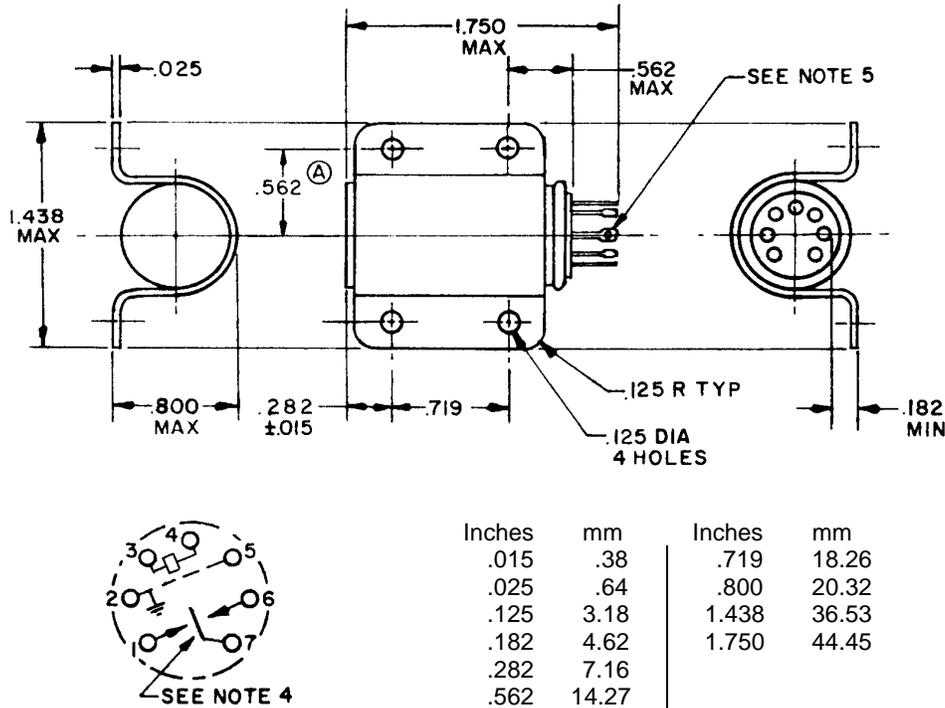
MIL-DTL-83729/3B  
14 June 2002  
SUPERSEDING  
MIL-C-83729/3A(EC)  
7 February 1972

DETAIL SPECIFICATION SHEET

CHOPPERS, ELECTROMECHANICAL,  
HERMETICALLY SEALED, SINGLE POLE, DOUBLE THROW,  
BREAK BEFORE MAKE, BRACKET MOUNT

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

The requirements for acquiring the product described herein shall consist  
of this specification sheet and the latest issue of MIL-DTL-83729.



NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is  $\pm .005$  (.13mm).
4. When the coil is de-energized the center reed may be in any of 3 positions.
5. Pierced pin .043 (1.09 mm) diameter hole typical pin location to match standard 7 pin miniature tube socket.

FIGURE 1. Outline drawing, terminal arrangement and schematic diagram.

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REQUIREMENTS:

Contact data:

Single pole, double throw, break before make.

Polarity: With pins 7 and 6 open apply positive voltage to pin 3 and negative voltage to pin 4. Pins 7 and 6 shall show closed condition.

Voltage and current: 0.1 millivolt to 10 volts direct current, 2 milliamperes resistive, maximum.

Coil data:

Voltage rated: 6.3 Vrms.

Resistance: 155 ohms  $\pm$ 10 percent.

Impedance: 250 ohms  $\pm$ 25 percent at 400 Hz with 6.3 volts applied at 25°C  $\pm$ 5°.

Frequency range: Single phase, 400  $\pm$ 20 Hz sine wave.

Waveform characteristics (at 25°C):

Dwell time: See table I.

Dissymmetry: 15° maximum.

Transfer time: 15° minimum.

Phase angle: See tables I and II.

Noise level: 200 microvolts rms at 1 megohm impedance. See figure 2 for test circuit. Use a model RM122 Tektronix, or equivalent, low level preamplifier 1 - 1,000 gain, bandwidth 0.8 to 1,000 Hz and feed into a Ballantine model 320A vacuum tube voltmeter (VTVM) or equivalent. Drive chopper with center tap grounded source of 6.3 volts, 400 Hz, and switch to connect each of the three contacts, in turn, into the preamplifier. Noise shown on Ballantine meter rms, above system noise, is the chopper noise.

Environmental conditions:

Dielectric withstanding voltage (at sea level): 200 volts rms 60 Hz or 280 Vdc for 1 minute between contacts and coil terminals, coil terminals and case, and contacts and case.

Insulation resistance: Test condition A, 100 megohms minimum between mutually insulated terminals and between terminals and case.

Vibration II (10 - 500 Hz): Method 204, test condition A, MIL-STD-202.

Before test: Dynamic contact resistance (method II) applicable.

After test: The chopper shall be tested for dynamic contact resistance, dwell time, at 25°C only, phase angle, contact bounce, dielectric withstanding voltage, dissymmetry, and transfer time.

Shock: Method 213, test condition H (75 g's), MIL-STD-202.

Electrical load conditions: The chopper coil and contacts shall be energized with rated voltage and load, as applicable, during two of the three shocks in each direction along each of the three mutually perpendicular axes.

Test and measurements: After shock testing, the chopper shall be tested for dynamic contact resistance, dwell time, at 25°C only, phase angle, contact bounce, dielectric withstanding voltage, dissymmetry and transfer time.

Temperature range: -40°C to +125°C.

Life: 2,000 hours.

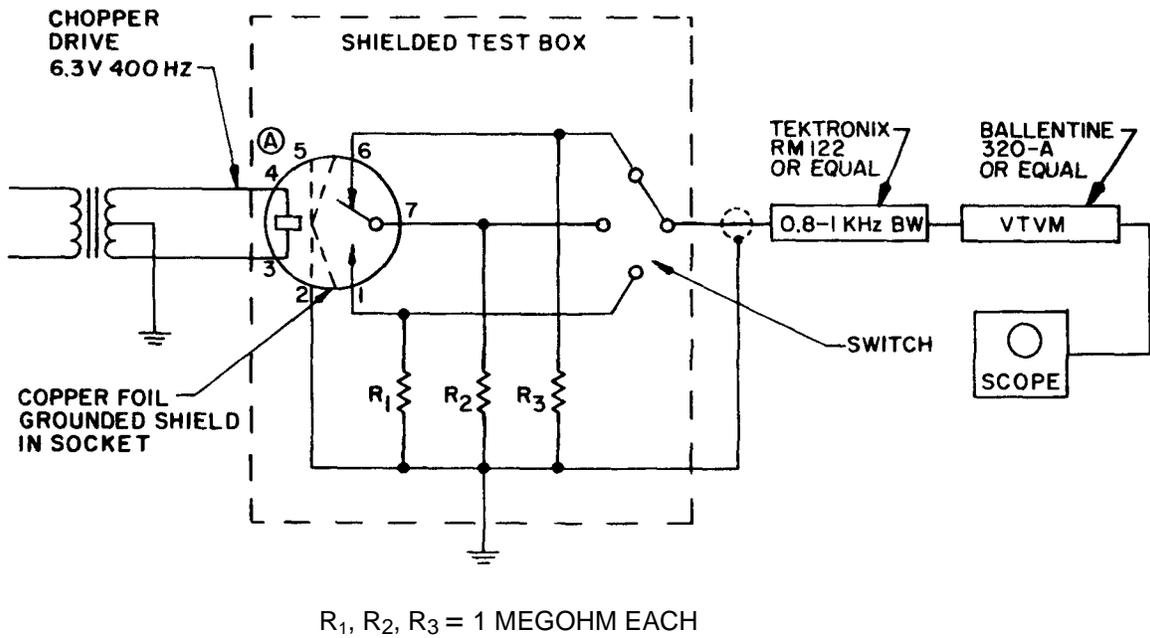


FIGURE 2. Noise test circuit.

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Mechanical:

Weight: .094 pound, maximum.

Dimensions: See figure 1.

Enclosure: Hermetically sealed.

Terminals: Flattened and pierced, solder type.

Finish: Navy gray enamel, capable of withstanding the environmental conditions specified without chipping, peeling or otherwise deteriorating. Before applying finish, the surface must be conditioned as specified in MIL-F-14072.

Table I. High and low temperatures.

|             | Temperature<br>°C | Frequency<br>Hz | Voltage<br>Vrms | Limits        |
|-------------|-------------------|-----------------|-----------------|---------------|
| Dwell time  | -40 to 85         | 400 ±5%         | 6.3             | 115° to 165°  |
|             | -20 to 85         |                 |                 | 65° +10° -15° |
| Phase angle | -40 to 85         | 400             | 6.3             | 65° ±15°      |

Room temperature: The chopper shall be tested at 25°C in accordance with table II.

TABLE II. Room temperature.

| Frequency<br>Hz | Voltage | Phase angle  |
|-----------------|---------|--------------|
| 400             | 6.3     | 65° +5° -10° |
| 420             | 5.86    | 79° maximum  |
| 380             | 6.74    | 51° minimum  |

Part number: M83729/3-001.

Custodians:  
Navy - EC  
DLA - CC

Preparing activity:  
DLA - CC

(Project 5945-1152-03)