DETAIL SPECIFICATION SHEET

RELAYS, REED (MERCURY WETTED), SOLDER SEAL, 0 TO 7.5 VOLT AMPERES

Inactive for new design and is no longer used except for replacement purposes.

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

The requirements for procuring the relays described herein shall consist of this specification sheet and MIL-R-83407.

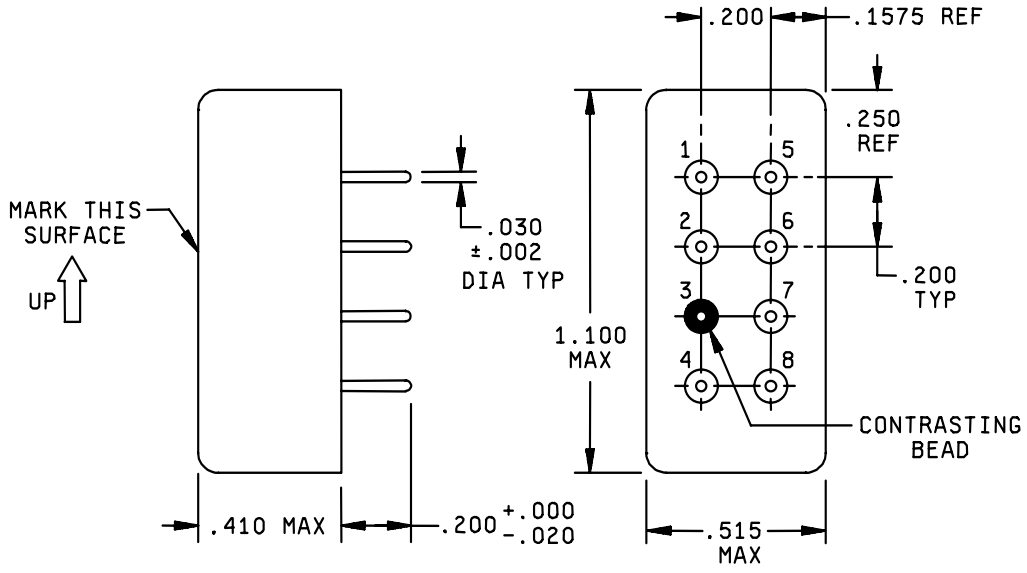
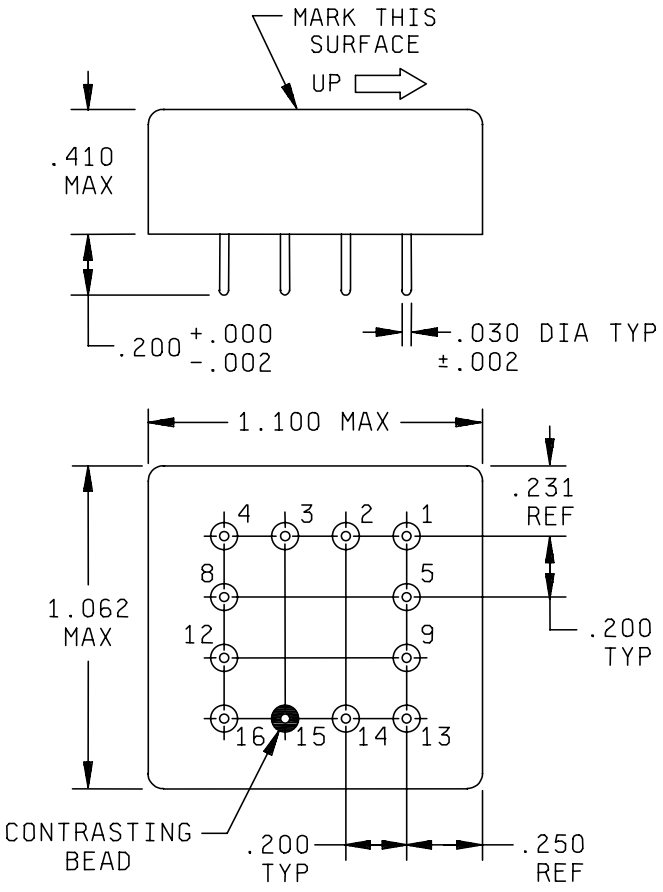


FIGURE 1. Outline drawing (dash numbers 001 through 004 and 011 through 014).



Inches	mm	Inches	mm
.002	.05	.250	6.35
.020	.51	.410	10.41
.030	.76	.515	13.08
.1575	4.00	1.062	26.97
.200	5.08	1.100	27.94
.231	5.87		

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified tolerance is ±.010 (.25 mm) for three place decimals and ±.03 (.8 mm) for two place decimals.
4. Terminal numbers need not appear on the relay header, provided there is a legible circuit diagram on the relay that identifies each terminal location specified.
5. Electrostatic shielding is provided at pins 6 or 14 as applicable.

FIGURE 1. Outline drawing (dash numbers 005 through 010 and 015 through 020) - Continued.

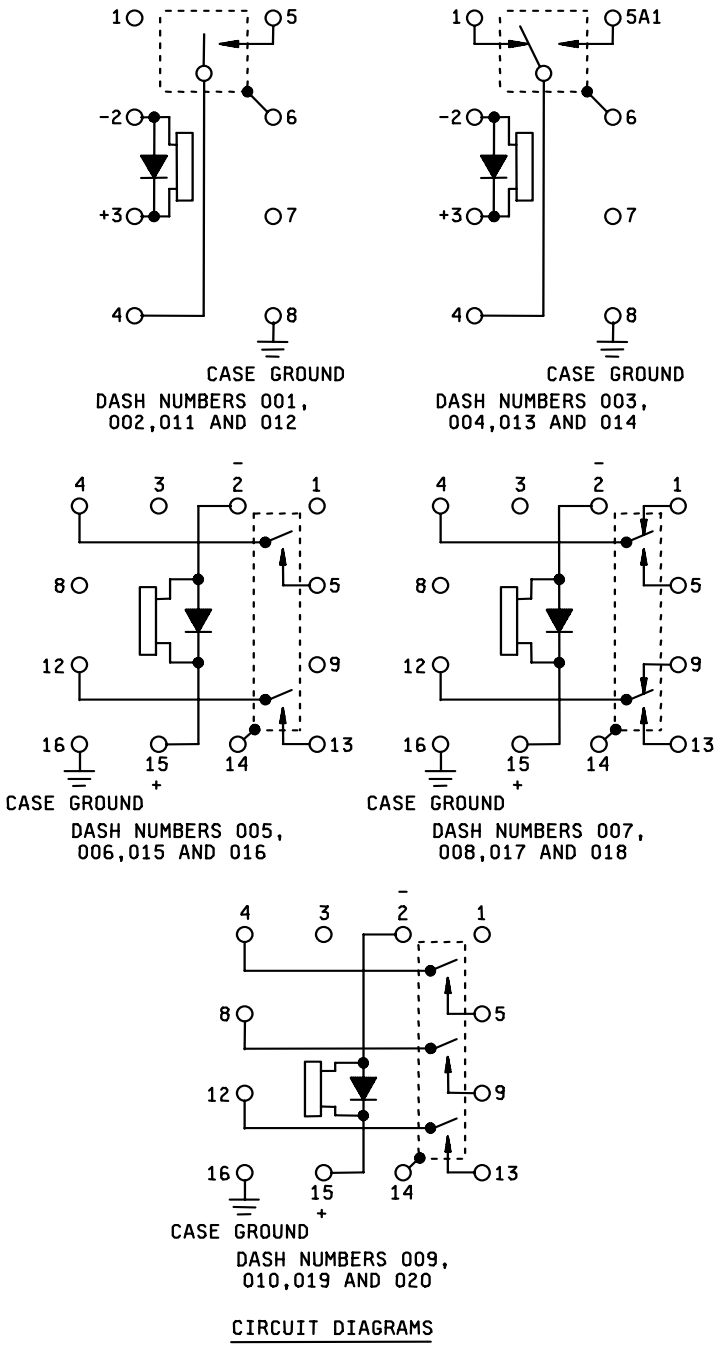


FIGURE 1. Outline drawing - Continued.

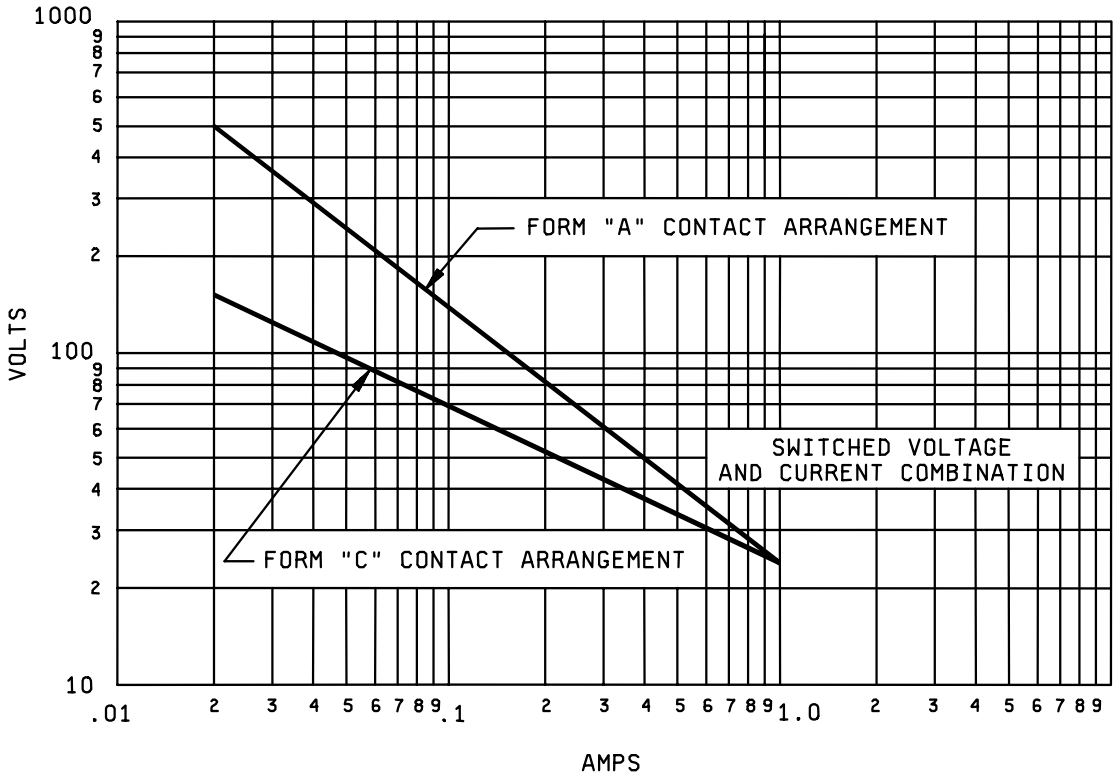


FIGURE 2. Contact voltage and current combinations.

REQUIREMENTS:

Design and construction:

Dimensions and configuration: See figure 1.

Enclosure: Metal, tin finish.

Terminals: Solder pin.

Contact data: 1/

Screening: Applicable.

Arrangement: See table I.

Load ratings:

Switching (dc or peak ac): See figure 2.

Carry: From A, 0 to 2 amperes. Form C, 0 to 1 ampere.

Contact resistance (both initial and after life): 60 milliohms, maximum.

Contact noise: Not applicable.

Contact bounce: Contact bounce shall be measured on each contact set using an oscilloscope or other acceptable means approved by the qualifying activity. The trace shall show contact switching at operate and release and appropriate timing markers. Rated voltage shall be applied to the coil. Contact bounce shall be measured at a contact load of 100 mA at 6 V dc. A contact bounce shall be considered any occurrence equal to or greater than 90 percent of the open circuit voltage with a pulse width of 10 microseconds or greater. The circuit shown on figure 1 of military specification MIL-R-83407, or equivalent, shall be used. Contact bounce shall not exceed 2.5 milliseconds (operate time not included).

Switch capsule screening procedure (applicable to dash numbers -011 through -020): 2/

Gross leak screening procedure: All switch capsules shall be subjected to an external air pressure of 100 psi for 12 $+\infty$, -0 hours followed by a temperature bake at 150°C for 0.5 $+\infty$, -0 hours. Switch capsules that pass the dynamic switching characteristics test of this specification shall be acceptable.

Fine leak screening procedure: All switch capsules shall be subjected to fine leak test per MIL-STD-202, method 112, test condition C, procedure IIIb. The maximum leak rate shall be 1×10^{-12} atm cm^3/s.

Coil data: See table I.

Duty rating: Continuous.

Coil inductance: Not applicable.

Coil power dissipation: Not applicable.

Operate and release time: 3.0 milliseconds, maximum over temperature range.

1/ The minimum hold-off voltage shall be 1,000 V dc.
2/ The switch shall be magnetically actuated with mercury-wetted contacts. The switch shall not utilize an evacuation of back-fill hollow tubing as a terminal.

TABLE I. Dash number and applicable characteristics.

Dash number 1/		Rated coil voltage 2/ V dc	DC coil resistance ±10% Ohms	Pickup voltage maximum V dc	Dropout voltage minimum V dc	Contact arrangement form
001	011	4.5	100	4.0	0.4	1A
002	012	12	500	9.6	0.9	1A
003	013	12	500	9.6	0.9	1C
004	014	4.5	87	4.0	0.4	1C
005	015	4.5	50	4.0	0.4	2A
006	016	12	300	9.6	0.9	2A
007	017	4.5	44	4.0	0.4	2C
008	018	12	250	9.6	0.9	2C
009	019	4.5	44	4.0	0.4	3A
010	020	12	250	9.6	0.9	3A

1/ Dash numbers -011 through -020 have gross leak and fine leak tests performed on the switch capsule.
2/ CAUTION: The use of any coil voltage less than the rated coil voltage will compromise the operation of the relay.

Electrical data:

Dielectric withstanding voltage (sea level): MIL-STD-202, method 301.

Test potential: 500 V rms, 60 Hz.

Test points:

Between case and all contacts connected.
Between all contacts connected and coil.
Between case and all other components.
Between electrostatic shield and all other components connected.

Insulation resistance: 10,000 megohms minimum.

Test potential: 90 V dc.

Test points: between contacts (switch open).

Capacitance (switch open):

Between contacts: 1 pF, maximum, measured at 1 kHz with shield guarded.

Between contacts and coil: 2 pF maximum.

Environmental data:

Shock (specified pulse) (nonoperating): MIL-STD-202, method 213, test condition A, except peak value shall be 20 g's.

Vibration, high frequency: MIL-STD-202, method 204.

Nonoperating: Test condition D.

Operating: Test condition A, except 4 g's rms and number of sweeps with the relay mounted in the normal operating position only, shall be limited to two (one sweep normally open and one sweep normally closed).

Temperature range (operating): 0°C to +105°C.

Salt spray: Not applicable.

Moisture resistance: Applicable.

Thermal shock (high and low temperature operation) (-40° to +100°C): Applicable.

Magnetic interference: Applicable.

Resistance to soldering heat: Applicable.

Seal: Solder sealed, MIL-STD-202, method 112, test condition B except the material shall be water.

Physical data:

Encapsulation: Not applicable.

Mounting (position sensitive): Mounting may deviate 30° from normal vertical position.

Terminal strength: 3 ±.3 pounds pull.

Solderability: Applicable.

Weight: Dash numbers 001 through 004 and 011 through 014: 12 grams; 005 through 010 and 015 through 020: 20 grams.

Life: Applicable.

Marking: Applicable except for -001, -002, -003, -004, -011, -012, -013, and -014. These parts shall be marked as follows:

Top of relay: Schematic (circuit) diagram, position arrow, and dash number.

Side of relay: Complete military part number, vendor FSCM, date code, and rated coil voltage.

Part number: M83407/3-(dash number from table I).

Referenced documents. In addition to MIL-R-83407, this document references the following:

MIL-STD-202

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.

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DLA - CC

(Project 5945-2005-007)

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