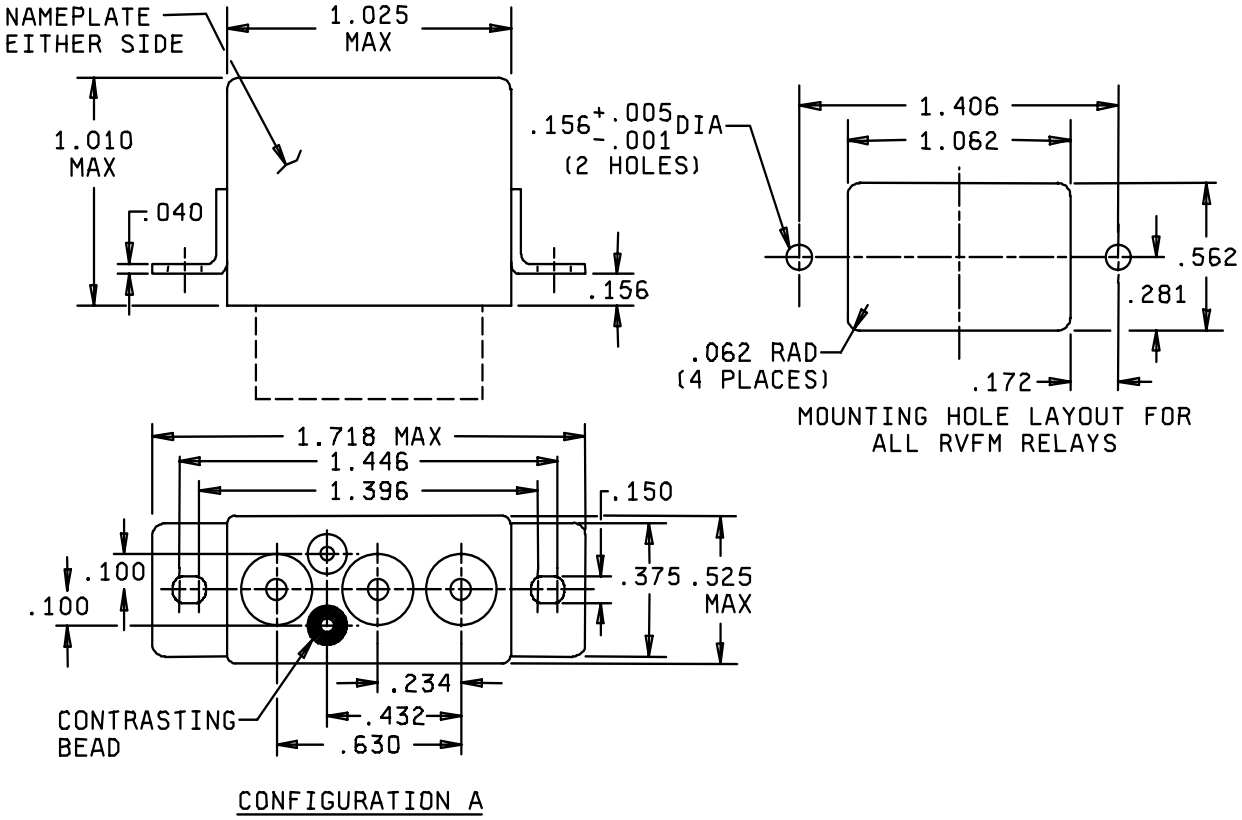
PERFORMANCE SPECIFICATION SHEET

RELAY, ELECTROMAGNETIC, ESTABLISHED RELIABILITY, 1PDT, 25 AMPERES, PERMANENT MAGNET DRIVE, HERMETICALLY SEALED, ALL WELDED, DC COIL

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

The requirements for acquiring the relay described herein shall consist of this specification and the latest issue of MIL-PRF-83536.



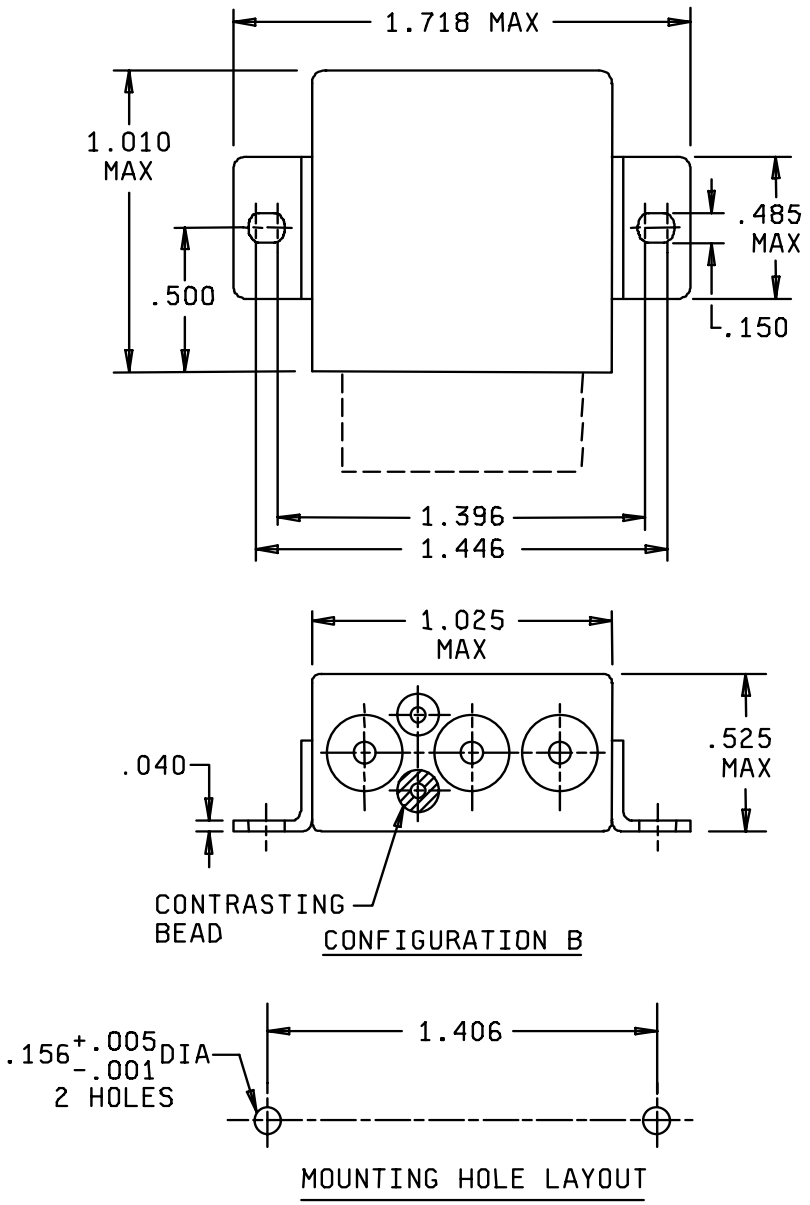
RAISED VERTICAL FLANGE MOUNT - RVFM

FIGURE 1. Dimensions and configurations.

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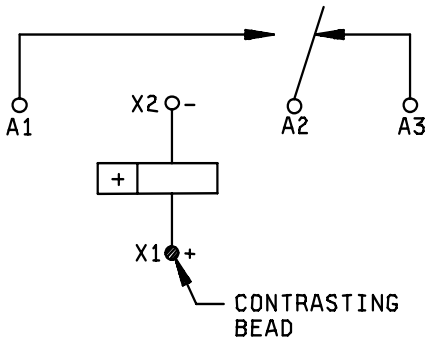


HORIZONTAL FLANGE MOUNT - HFM

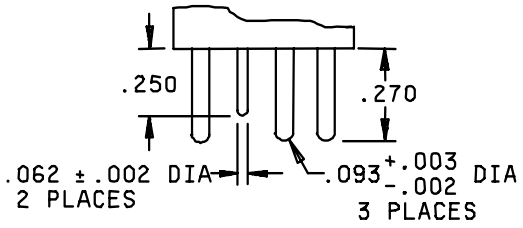
FIGURE 1. Dimensions and configurations - Continued.

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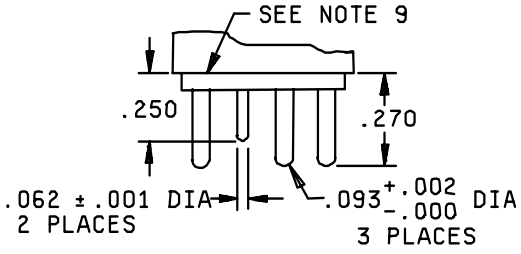


CIRCUIT



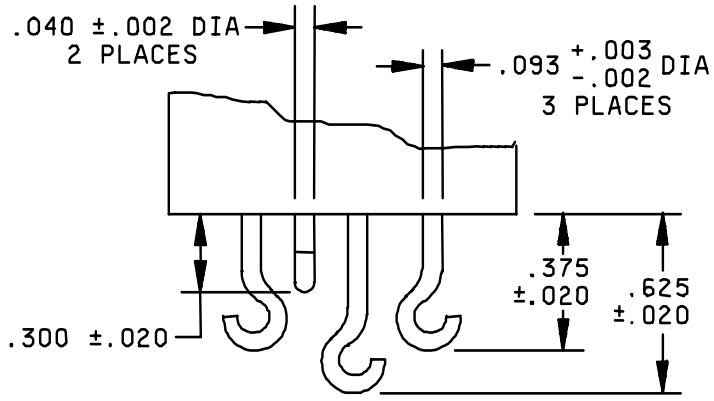
FINISH: TINNED

SOLDER PIN TERMINAL



FINISH:GOLD-SEE NOTE 8

SOCKET PIN TERMINAL



SOLDER HOOK TERMINAL
(ALL HOOKS TIN PLATED)

FIGURE 1. Dimensions and configurations - Continued.

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Inches	mm	Inches	mm	Inches	mm
.001	0.03	.156	3.96	.525	13.34
.002	0.05	.172	4.37	.562	14.27
.003	0.08	.234	5.94	.625	15.88
.005	0.13	.250	6.35	.630	16.00
.020	0.51	.270	6.86	1.010	25.65
.040	1.02	.281	7.14	1.025	26.04
.050	1.27	.300	7.62	1.062	26.97
.062	1.57	.375	9.52	1.396	35.46
.093	2.36	.432	10.97	1.406	35.71
.100	2.54	.485	12.32	1.446	36.73
.150	3.61	.500	12.70	1.718	43.64

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ±.010 (0.25 mm).
4. There shall be affixed to the relay a suitable legible circuit diagram that identifies each terminal location specified.
5. Relay must not operate or become damaged by reverse polarity. Semiconductors shall not be used for this purpose.
6. Hook terminals will accept one no. 12 AWG stranded wire.
7. Permanent magnet drive consists of permanent magnet with its flux path switched and combined with the electromagnetic flux.
8. Socket pin terminals shall provide the operational, environmental, and interface characteristics to provide a reliable interconnect to gold-plated contacts. Terminals shall be gold plated. Gold plating of the polarizing pin is optional. One system for gold plating that may be used is ASTM B488, type 3, class 1.25 with a nickel underplate of 50 to 150 microinches thick. The gold plating system shall enable the product to meet the performance requirements of this specification and shall be approved by the qualifying activity.
9. Gasket shall provide a reliable seal between the relay and mating socket that will meet the environmental, operational, and interface requirements of the relay with the mating socket. The gasket shall have shore hardness 20 ±5, thickness .050 ± .005. Gasket material according to AMS 3332 has been considered acceptable.

FIGURE 1. Dimensions and configurations - Continued.

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TABLE I. Dash numbers and characteristics.

Dash number 1/			Mount	Coil requirements										
Solder hook	Socket pin	Solder pin		At 25°C						Over temperature range			Maximum pickup Voltage	
				Coil voltage (V dc) 2/		Coil resist-ance (ohms) minimum	Spec-ified pickup voltage (V dc) 3/	Spec-ified hold voltage (V dc) 3/	Spec-ified dropout voltage (V dc) 3/	Spec-ified pickup voltage (V dc) 3/	Spec-ified hold voltage (V dc) 3/	Spec-ified dropout voltage (V dc) 3/	High tempera-ture test	Continuous current test
				Rated	Max									
-001 5/	-002 5/	-003	RVFM	28	4/ 29	288	13.5	5.5	2.3	18.0	7.0	1.5	19.8	22.5
-004	-005													
-007		-006	HFM	28	4/ 29	288	13.5	5.5	2.3	18.0	7.0	1.5	19.8	22.5
-008 5/														

1/ The suffix letter L, M, P, or R to designate the applicable failure rate level shall be added to the applicable listed dash number. Failure rate level (percent per 10,000 cycles): L, 3.0; M, 1.0; P, 0.1; R, 0.01. Example 001L, 002R.

2/ CAUTION: Use of any coil voltage less than nominal coil voltage will compromise the operation of the relay.

3/ Pickup, hold, and dropout voltages as shown are for test purposes only and are not to be used for design criteria.

4/ When maximum ambient temperature does not exceed +85°C, the maximum coil voltage shall be 32 V dc.

5/ Time current relay characteristic at 25°C not applicable.

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REQUIREMENTS:

Contact data:

Load ratings: See table II.

Intermediate current: Applicable.

Mixed loads: Applicable.

Low level life: Not applicable.

Life: 50,000 cycles, unless otherwise specified (see table II).

TABLE II. Rated contact load (amperes per pole) (case grounded).

Type of load	Endurance Life Operating cycles X 10^3	28 V dc	115 V ac, 1 phase		115/200 V ac, 3 phase 1/ 400 Hz
			400 Hz	60 Hz	
Resistive 2/	50	25	25		
Inductive	10	12	---		
Inductive	20	---	15		
Motor	50	10	10		
Lamp	50	5	5		
Mechanical life reduced current	200	6	6		
APPLICABLE ONLY TO DASH NOS. -001, -002, AND -008.					
Resistive	25			10	
Inductive	---			---	
Inductive	25			10	
Motor	25			8	
Lamp	---			---	
Mechanical life reduced current	100			2.5	

1/ Absence of value indicates relay is not rated for 3 phase application.
2/ For full rated load maximum temperature and altitude, use no. 12 wire or larger. Solder hook relays to be mounted to limit mounting bracket temperature to 160°C.

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Contact voltage drop or resistance:

Initial contact voltage drop: 0.150 V maximum. Rated resistive current at 6 V dc or peak ac. Relays shall not make or break this load.

Initial contact resistance: Not applicable.

High level life (contact voltage drop):

During life: 10 percent open circuit voltage maximum.

After life: 0.175 V maximum.

Intermediate current (contact resistance):

During intermediate current: 3 ohms maximum.

After intermediate current: 0.150 ohm maximum.

Coil data:

Coil data: See table I.

Duty rating: Continuous.

Operational data:

Contact ratings: See table II.

Operate time: 10 ms maximum from rated coil voltage over the temperature range.

Contact bounce: 1.0 ms maximum.

Overload current: 1/ 50 amperes dc, 80 amperes ac, 400 Hz.

Rupture current: 2/ 60 amperes dc, 100 amperes ac, 400 Hz.

Physical:

Dimensions and configurations: See figure 1.

Weight: 0.09 pound, 41 grams maximum.

Terminal type: See figure 1 and table I.

Terminal solderability: Applicable to solder pin and solder-hook terminals only.

1/ For -001, -002, and -008, 20 amperes ac, 60 Hz.
2/ Not applicable to -001, -002 and -008.

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Solder hook terminals:

Pull force: 10 pounds ±1.0 pound.

Bend: Not applicable to leads .047 diameter (1.19 mm) and larger.

Twist: Not applicable.

Solder pin terminals:

Pull force: For .062 diameter terminals: 10 pounds ±1.0 pound.

Bend: Not applicable to leads .047 diameter (1.19 mm) and larger.

Twist: Not applicable.

Socket pin terminals:

Pull force: For .062 diameter terminals: 10 pounds ±1.0 pound.

Bend: Not applicable to leads .047 diameter (1.19 mm) and larger.

Twist: Not applicable.

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ENVIRONMENTAL DATA:

Temperature range: 1/ -70°C to +125°C.

Altitude rating: 300,000 feet maximum.

Shock (specified pulse): Applicable, MIL-STD 202, Method 213, test condition C, except peak value shall be 200g's for 6 +/-1ms. Contact chatter shall not exceed 10 microseconds maximum for closed contacts and 1 microsecond maximum closure for open contacts.

Vibration - sinusoidal: Applicable: Method 204, MIL-STD-202, 30 g's except frequency range shall be 10 to 3,000 Hz. Contact chatter shall not exceed 10 μs maximum for closed contacts and 1 μs maximum closure for open contacts.

Random vibration: MIL-STD-202, method 214, test condition IG. Applicable to qualification and group C inspection. Test in accordance with method 214 of MIL-STD-202, test condition IG (0.4 g^2/Hz, 50 Hz to 2,000 Hz). Contact chatter shall not exceed 10 μs maximum for closed contacts and 1 μs maximum closure for open contacts.

Duration: 15 minutes each plane.

Acceleration: 15 g's.

Insulation resistance, initial: 100 megohms minimum at 500 V dc.

After life or environmental tests: 50 megohms minimum at 500 V dc.

Dielectric withstanding voltage (sea level):

	Initial	After life test
Coil to case	1,000 V rms	1,000 V rms
All other points	1,250 V rms	1,000 V rms

Dielectric withstanding voltage (altitude): 2/

	80,000 feet	300,000 feet
Coil to case	350 V rms	500 V rms
All other points	350 V rms	500 V rms

1/ For full rated load maximum temperature and altitude, use no. 12 wire or larger, solder hook relays shall be mounted to limit mounting bracket temperature to 160°C. This note is not applicable to -001, -002, and -008.

2/ Dielectric withstanding voltage rating may be improved by suitable insulation of terminals and wiring after installation. Plug in relays with suitable gasket compressed will have dielectric withstanding voltage capabilities at 80,000 feet over 500 V rms.

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TABLE III. Time current relay characteristics at 25°C. 1/ 2/ 3/

Amperes	Duration
30	1 hour
50	5.0 seconds
100	1.2 seconds
250	0.2 second
350	0.1 second

1/ Applicable to dash numbers-003 through -007.
2/ CAUTION: Compare with time current characteristics of the associated circuit protective device.
3/ Dash nos. -003 through -007. Relays shall sustain five applications (make and carry only) of power at each of five different current levels for the time durations in table III. Separate relays shall be tested at 28 V dc and 115 V ac, 400 Hz. Cooling time between successive applications shall be 30 minutes. The test shall be performed on both normally open and normally closed contacts of each relay. There shall be no failures or evidence of welding or sticking and relays shall pass contact voltage drop at conclusion.

Qualification inspection:

Qualification inspection and sample size: See MIL-PRF-83536.

Qualification inspection (reduced testing) (sample size - 2 units each coil voltage and 1 unsealed unit). See table IV.

If the relay produced for MIL-PRF-83536/36 is similar in construction and design except for the suppression network to the relays produced for the MIL-PRF-83536/37, then reduced testing for qualification of MIL-PRF-83536/36 relays may be performed concurrent with or subsequent to successful qualification of MIL-PRF-83536/37 relays. For reduced testing see table IV.

TABLE IV. Qualification inspection (reduced testing).

Inspection
2 units each coil voltage Group Q1 of qualification inspection table 1 unsealed sample unit for internal inspection

Part or Identifying Number (PIN). M83536/36- (dash number from table I and suffix letter designating failure rate level).

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Supersession data. See table V.

TABLE V. Supersession data.

Superseded PIN M6106/19-	Replacement PIN M83536/36-
-003	-001
-004	-002
-005	-003
-006	-004
-007	-005
-008	-006
-009	-007
-010	-003
-011	-004
-012	-005
-013	-006
-014	-007
-025	-008

Custodian:
Air Force - 11
DLA - CC

Review activities:
Air Force - 99

Preparing activity:
DLA - CC

(Project 5945-1212-01)

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