

| INCH-POUND |

MS27742D(USAF)

31 Jan 1992

SUPERSEDING

MS27742C(USAF)

29 December 1989

MILITARY SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, TYPE 1, MAGNETIC LATCH, 25 AMPERES,
3 PDT, ALL WELDED, HERMETICALLY SEALED

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 issue of the following specification listed
in that issue of the DODISS specified in the solicitation: MIL-R-6106.

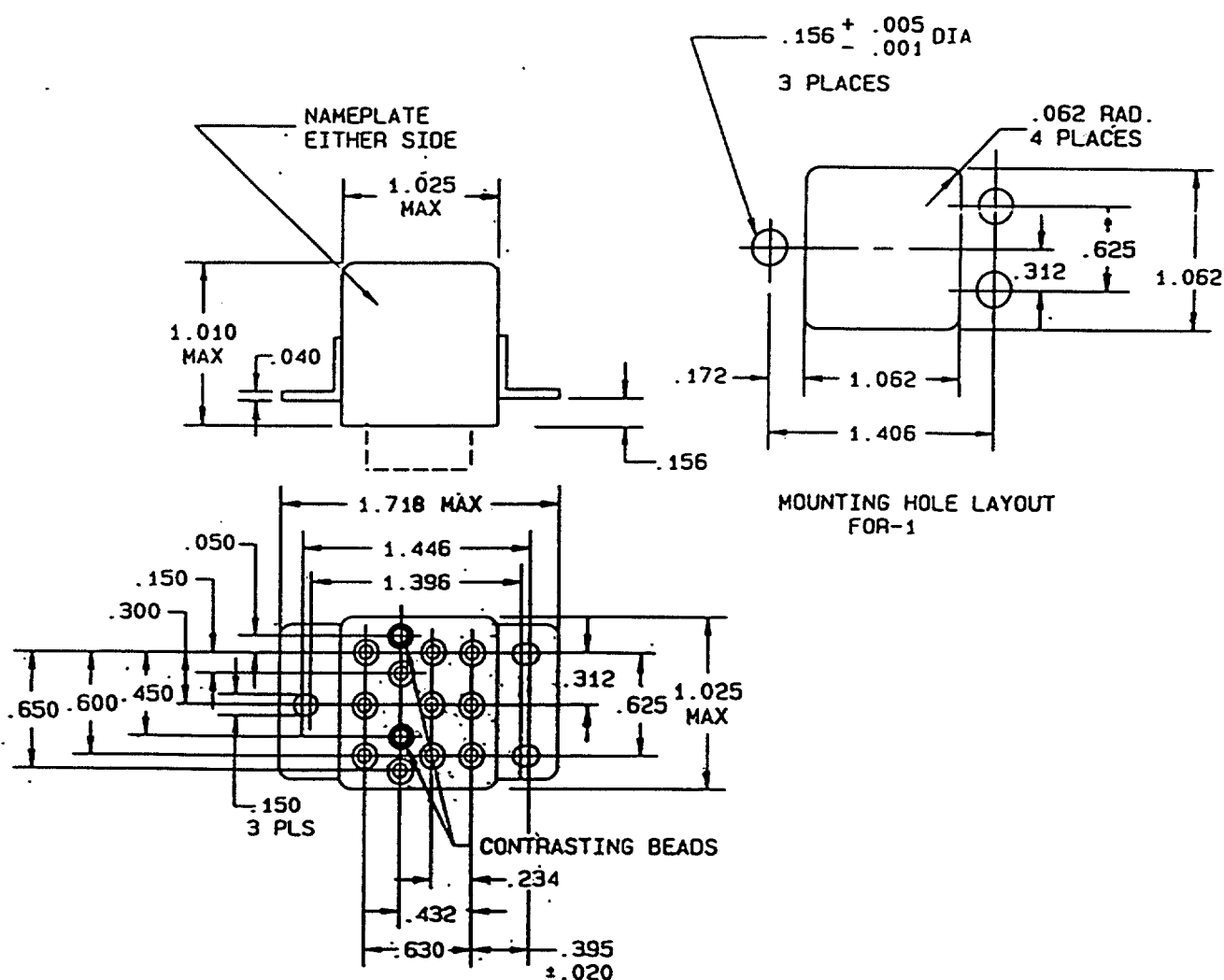
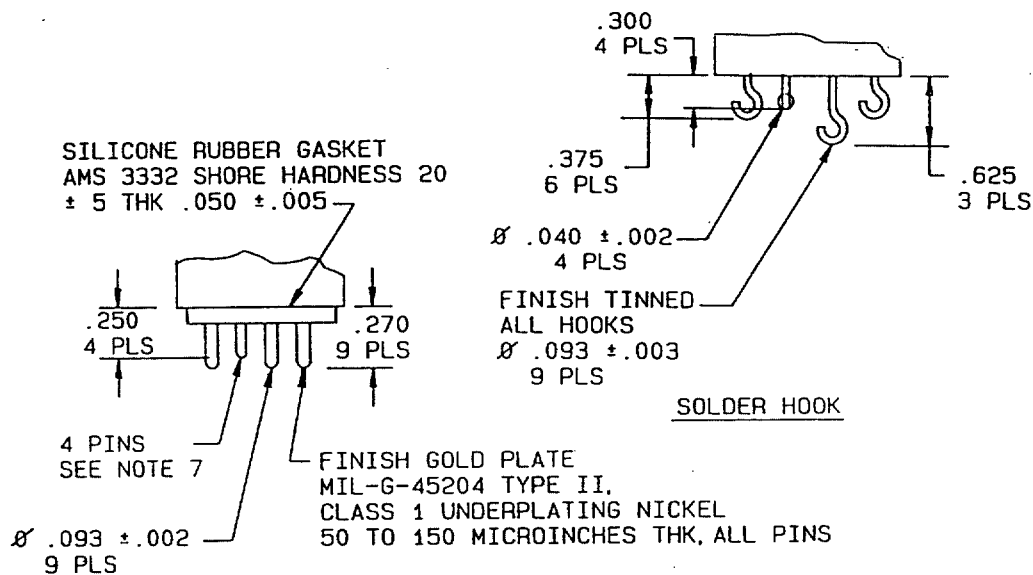
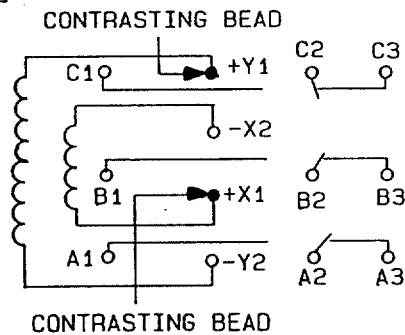


FIGURE 1. Dimensions and configurations.

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TERMINALSSOCKET PIN

TO CLOSE NO. 1 CONTACTS (OPERATE)
ENERGIZE X1 AND X2
TO CLOSE NO. 3 CONTACTS (RESET)
ENERGIZE Y1 AND Y2.

CIRCUIT DIAGRAM
(POLARIZED BISTABLE)

FIGURE 1. Dimensions and configurations - Continued.

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Inches	mm	Inches	mm
.001	0.02	.300	7.62
.002	0.05	.312	7.92
.003	0.07	.375	9.52
.005	0.12	.395	10.03
.020	0.50	.432	10.97
.040	1.01	.450	11.43
.050	1.27	.600	15.24
.062	1.57	.625	15.87
.093	2.36	.630	16.00
.150	3.81	.650	16.51
.156	3.96	1.010	25.65
.172	4.36	1.025	26.03
.218	5.53	1.062	26.97
.234	5.94	1.396	35.45
.250	6.35	1.446	36.72
.270	6.85	1.718	43.63

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is $\pm .010$ (0.25 mm).
4. There shall be affixed to the relay a suitable legible circuit diagram that identifies each terminal location specified.
5. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.
6. Referenced documents shall be of the issue in effect on date of invitation for bid.
7. Relay is magnetically latched in both positions.
8. Note to observe polarity must appear on relays.
9. X1 and X2 diameter .062 \pm .001. Y1 and Y2 diameter .040 \pm .001.
10. Coils are not to be energized simultaneously.

FIGURE 1. Dimension and configurations - Continued.

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REQUIREMENTS:

Contact data:

Load ratings: See table I.

Initial contact voltage drop: 0.150 volt.

After life: 0.175 volt.

Overload current: 50 amperes dc, 80 amperes ac.

Rupture current: 60 amperes dc, 100 amperes ac.

Coil data: See table II.

Duty rating: Continuous.

Electrical data:

Insulation resistance:

Initial: 100 megohms.

After life or environmental tests: 50 megohms.

Dielectric withstanding voltage:

Sea level:	Coil to case	Aux contacts	All other points
Initial:	1000	---	1250
After life:	1000	---	1000
Altitude:			
At 80,000 feet	350	---	350
At 300,000 feet	500	---	500

Environmental characteristics:

Temperature range: -70°C to +125°C.

Maximum altitude rating: 300,000 feet.

Shock G-level: 200 g's.

Duration: 6 ms.

Maximum duration contact opening: 10 μ s.

Vibration - sinsoudial:

G-level: 30 g's.

Frequency range: 10 - 3000 Hz.

Vibration - random:

Applicable specification: MIL-STD-202, method 214.

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TABLE 1. Rated contact load and cycles (amperes per pole) case grounded.

Type of load	Life operating cycles x 10 ³	28 V dc				115 V ac, 1-phase				115/200 V ac, 3-phase 1/				See appropriate notes	
		Main		Aux		Main		Aux		Main		Aux			
		NO	NC	NO	NC	400 Hz	60 Hz	400 Hz	60 Hz	400 Hz	60 Hz	400 Hz	60 Hz		
Resistive 2/	50	25	25	---	---	25	---	---	---	---	25	---	---	---	---
Inductive	10	12	12	---	---	---	---	---	---	---	---	---	---	---	---
Inductive	20	---	---	---	---	15	---	---	---	---	15	---	---	---	---
Motor	50	10	10	---	---	10	---	---	---	---	10	---	---	---	---
Lamp	50	5	5	---	---	5	---	---	---	---	5	---	---	---	---
Transfer load	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3/
Mechanical life reduced current	200	6	6	---	---	6	---	---	---	---	6	---	---	---	---
Intermediate current	---	Applicable per specification													---

1/ Absence of value indicates relay is not rated for 3-phase applications.

2/ For full rated load, temperature, and altitude, use number 12 wire or larger. Relays shall be mounted so that mounting bracket temperature is limited to +135°C maximum.

3/ Transfer load indicates that relay is suitable for transfer between unsynchronized ac power supplied at rating indicated.

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TABLE II. Dash number and characteristics.

MS PIN	Coil data										Time-milliseconds maximum						
	Terminal type	Rated			Maximum at +25°C		Maximum pick-up voltage			' Drop out voltage 2/	Operate 3/	Release 4/	Contact bounce				
		Volts 1/	Freq Hz	Res Ω	Volts	Amp	Normal 2/	High temp test	Cont current test				Main			AUX	
													NO	NC	NO	NC	NO
1	Solder hook	28	dc	---	29	.075	18	19.8	22.5	N/A	15	---	1.0	1.0	---	---	
2	Socket pin	28	dc	---	29	.075	18	19.8	22.5	N/A	15	---	1.0	1.0	---	---	

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

2/ Over the temperature range.

3/ With rated coil voltage.

4/ From rated coil voltage.

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Test condition: 1G.

Duration: 15 minutes each plane.

Acceleration 15 g's.

Physical data:

Dimensions and configurations: See figure 1.

Weight: 0.18 pound maximum.

Part or Identifying Number (PIN): MS27742- (dash number from table II).

Qualification by similarity: If the relays produced in accordance with this specification sheet are similar in design and construction to those covered by MS27743 (except for the coils, which shall be similar to MS27745), then reduced qualification by similarity is authorized. Manufacturers shall be qualified to MS27443 and MS27445. Inspection requirements are listed in table III.

TABLE III. Qualification by similarity.

Inspection	Number of units
Group A acceptance tests	6 <u>1/</u>
Vibration	} 2 <u>2/</u>
Resistive load, ac	
Group A acceptance tests	
Shock	} 2 <u>2/</u>
Inductive load, dc	
Group A acceptance tests	
Acceleration	} 2 <u>2/</u>
Intermediate current	
Group A acceptance tests	

1/ Three units of each dash number. All six relays shall receive group A acceptance testing in accordance with MIL-R-6106. The six relays shall then be subdivided into three groups of two for the remaining inspections shown.

2/ One unit of each dash number.

Revision letters are not used due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:
Air Force - 85

Review activities:
Air Force - 99
DLA - ES

Preparing activity:
Air Force - 85

Agent:
DLA - ES

(Project 5945-F731)