

INCH-POUND

MS24376P
23 May 1996
SUPERSEDING
MS24376N
13 July 1992

MILITARY SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, 50 AMPERES,
3PST (NO), TYPE I, 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 MIL-R-6106.

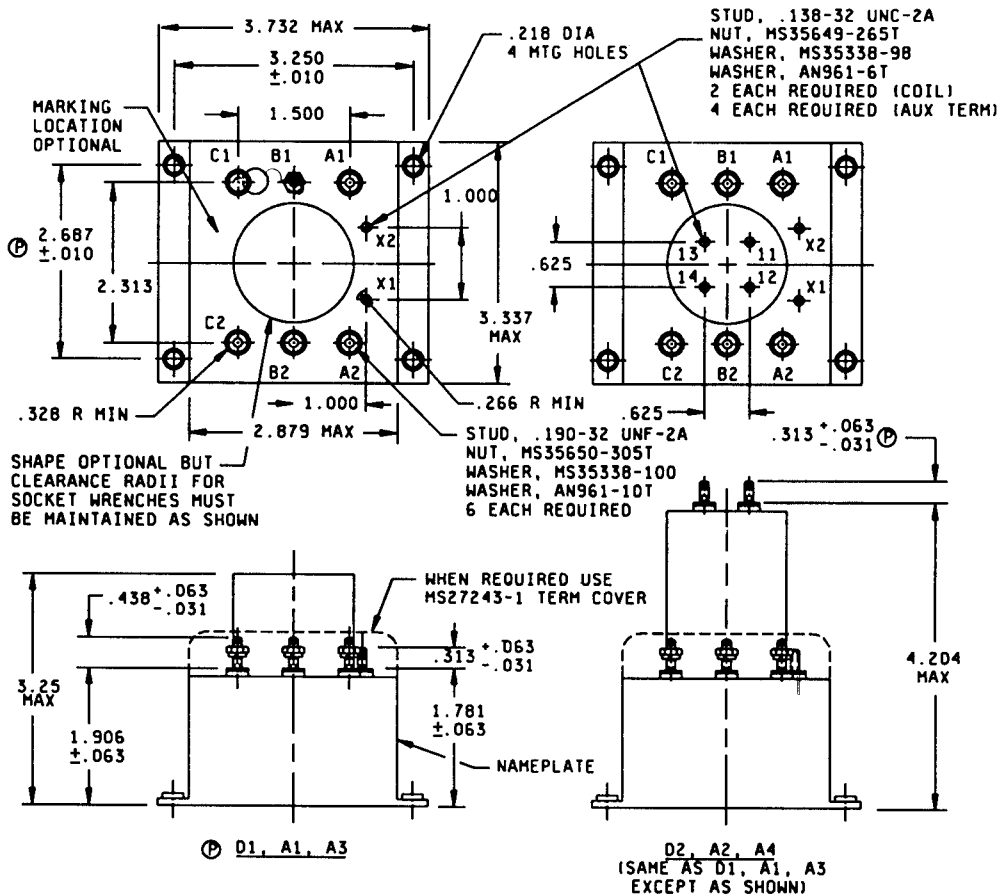
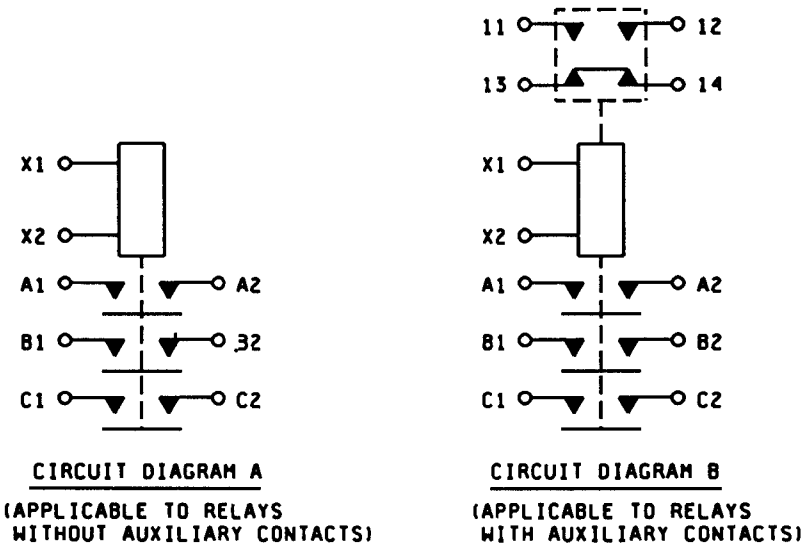


FIGURE 1. Dimensions and configurations.

Ⓟ denotes changes

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Inches	mm	Inches	mm
.010	0.25	1.000	25.40
.031	0.79	1.500	36.10
.063	1.60	1.781	45.24
.138	3.51	1.906	48.41
.190	4.83	2.313	58.75
.218	5.54	2.687	68.25
.266	6.76	2.897	73.58
.313	7.95	3.250	82.55
.328	8.33	3.337	84.76
.438	11.13	3.732	94.79
.625	15.88	4.204	106.78

NOTES:

- 1. Dimensions are in inches.
- 2. Metric equivalents are given for general information only.
- 3. Unless otherwise specified, tolerance is $\pm .031$ (0.79 mm).
- 4. This specification sheet takes precedence over documents referenced herein.
- 5. Referenced documents shall be of the issue in effect on the date of invitation for bid.
- 6. Coil and auxiliary terminals may use an additional flat washer for terminal seating.

FIGURE 1. Dimensions and configurations - Continued.

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REQUIREMENTS:

Dimensions and configurations: See figure 1.

ENVIRONMENTAL CHARACTERISTICS:

- Ⓟ Temperature range: -70°C to +125°C for dc operated relays; -70°C to +71°C for ac operated relays.

Maximum altitude rating: 80,000 feet.

Shock g-level: 25 g's.

Duration: 6 ms to 9 ms.

Maximum duration contact opening: 2 ms.

Vibration, sinusoidal: See table I.

Vibration, random: Not applicable.

High shock: Not applicable.

Acceleration: 15 g's.

ELECTRICAL CHARACTERISTICS (see table II, table III, and table IV):

Insulation resistance, initial: 100 megohms.

After life or environmental tests: 50 megohms.

Dielectric strength (sea level): 2 seconds to 5 seconds.

	<u>Initial</u> 1/		<u>After life tests</u> 1/	
	28 V dc	115 V ac	28 V dc	115 V ac
Coil to case	1,250 V rms	1,500	1,000 V rms	1,125
Aux contacts	1,250 V rms	1,500	1,000 V rms	1,125
All other points	1,250 V rms	1,800	1,000 V rms	1,350

- Ⓟ Dielectric strength (altitude) (80,000 feet): 1 minute. 2/

	<u>28 V dc</u> 1/	<u>115 V ac</u> 1/
Coil to case	500 V rms	500
Aux contacts	500 V rms	500
All other points	700 V rms	500

1/ For A1, A2, A3, and A4, coil terminals X1 and X2 must be shorted together for all dielectric testing between coil to case, coil to main or auxiliary contacts, and coil to all other points.

- Ⓟ 2/ Use MS27243-1 terminal cover during dielectric testing at altitude.

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Ⓟ TABLE I. Vibration levels.

Dash number	5 Hz to 10 Hz	10 Hz to 55 Hz	55 Hz to 250 Hz	250 Hz to 500 Hz	500 Hz to 1,500 Hz
D1	.08 DA	.06 DA	10 g's	6 g's	4 g's
D2	.08 DA	.06 DA	10 g's	4 g's	3 g's
A1	.08 DA	.06 DA	10 g's	6 g's	4 g's
A2, A3, A4	.08 DA	.06 DA	10 g's	4 g's	3 g's

Maximum contact drop initial: .150 volt.

After life test: .175 volt.

Overload current (NO): 400 amperes. 3/

Rupture current (NO): 500 amperes. 3/

Duty rating: Continuous.

RFI specification: MIL-STD-461.

(Applicable to coil circuits of ac operated relays.)

Part or Identifying Number (PIN): MS24376 (plus dash number from table IV).

General characteristics: See table IV.

Qualification by similarity: See table V.

3/ Rupture and overload current (NO): 100 amperes for A3 and A4. For A1, A2, D1, and D2: 60 amperes.

TABLE II. Operating characteristics.

Dash number MS24376-	Coil data											Time - milliseconds max						
	Coil	Rated		Max		Max pick-up voltage				Hold voltage 2/ 3/	Drop out voltage 2/ 3/	Oper-ate 4/ 5/	Contact bounce 6/					
		Volts 1/	Frequency Hz	Res +15% -10	Volts	Ampere	Nor-mal 2/	High temp test	Cont current test				Main	Aux	NO	NC	NO	NC
D1	X1,X2	28	dc	52	29	0.6	18	21	22.5	7	1.5	25	10	2				
D2	X1,X2	28	dc	52	29	0.6	18	21	22.5	7	1.5	25	10	2		4	4	
A1	X1,X2	115	400/60 Z/		124	.225	90	100	104	40	10	30	65	2				
A2	X1,X2	115	400/60 Z/		124	.225	90	100	104	40	10	30	65	2		4	4	
A3	X1,X2	115	400/50/60 Z/		124	.225	90	100	104	40	10	30	65	5				
A4	X1,X2	115	400/50/60 Z/		124	.225	90	100	104	40	10	30	65	5		6	6	

CAUTION: The use of any coil voltage less than rated coil voltage will compromise the operation of the relay.

1/ Over the temperature range.

2/ A1 50/60 Hz, chattering may occur at or near dropout voltage when voltage is slowly decreased.

3/ With rated coil voltage.

4/ From rated coil voltage.

5/ Duration of auxiliary contact bounce is the maximum cumulative open time of the auxiliary contacts.

6/ Coils will operate on 50 Hz, 60 Hz, and 400 Hz, except that relay ambient temperature must be derated to +71° C maximum.

TABLE III. Rated contact load (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/
		Main		Aux		Main		Aux		Main		Aux		
		NO	NC	NO	NC	400 Hz	50/60 Hz	400 Hz	50/60 Hz	400 Hz	50/60 Hz	400 Hz	50/60 Hz	
Resistive	50	50		5	5	50	25	5	2	50	2/20			
Inductive	10	50		5	5	50		5		50	2/15			
Motor	50	50				50	20			50	3/15			
Lamp	50			.75	.75			.75	.75					
Transfer load														
Mechanical life (reduced current)	100	12.5		1.25	1.25	12.5	10	1.25	1.25	12.5	10			
Intermediate current	50	5		Applicable in accordance with MIL-R-6106		5	5			5	5			

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

2/ 25 amperes for A3. 33 amperes for A4.

3/ 20 amperes for A3 and A4.

4/ Transfer load indicates that the relay is suitable for transfer between unsynchronized ac power supplies at the rating indicated.

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TABLE IV. Dash numbers and general characteristics.

PIN MS24376-	Type	Coil type	Terminal type	Mounting or mating socket	Auxiliary contacts	Maximum weight (pounds) <u>1/</u>
D1	I	dc	Stud	Flange	None	1.6
D2	I	dc	Stud	Flange	Yes	1.7
A1	I	ac	Stud	Flange	None	1.7
A2	I	ac	Stud	Flange	Yes	1.9
A3	I	ac	Stud	Flange	None	1.8
A4	I	ac	Stud	Flange	Yes	2.0

1/ Weights include covers and barriers.TABLE V. Qualification by similarity.

PIN MS24376-	Loads						Dynamics <u>1/</u>			Environmental <u>2/</u>		
	Type			Type I ER								
	A	B	C	D	E	F	A	X	Y	A	B	C
D1	4						2			4		
D2	<u>2/</u> 4						2			<u>2/</u> 4		
A1		1						1			1	
A2		<u>2/</u> 1						1			<u>2/</u> 1	
A3			1						1			1
A4			<u>2/</u> 1						1			<u>2/</u> 1

1/ Testing of relays with auxiliary contacts. Reference MIL-R-6106 appendix.2/ All relays must be tested. Reference MIL-R-6106 appendix.

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CONCLUDING MATERIAL

Custodians:

Air Force - 85

Navy - AS

Review activities:

Air Force - 99

Navy - EC

Preparing activity:

Air Force - 85

Agent:

DLA - ES

(Project 5945-0985)