

INCH-POUND

MS24376P  
w/AMENDMENT 2  
8 February 2006  
SUPERSEDING  
MS24376P  
w/AMENDMENT 1  
14 February 2001

## DETAIL 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-PRF-6106.

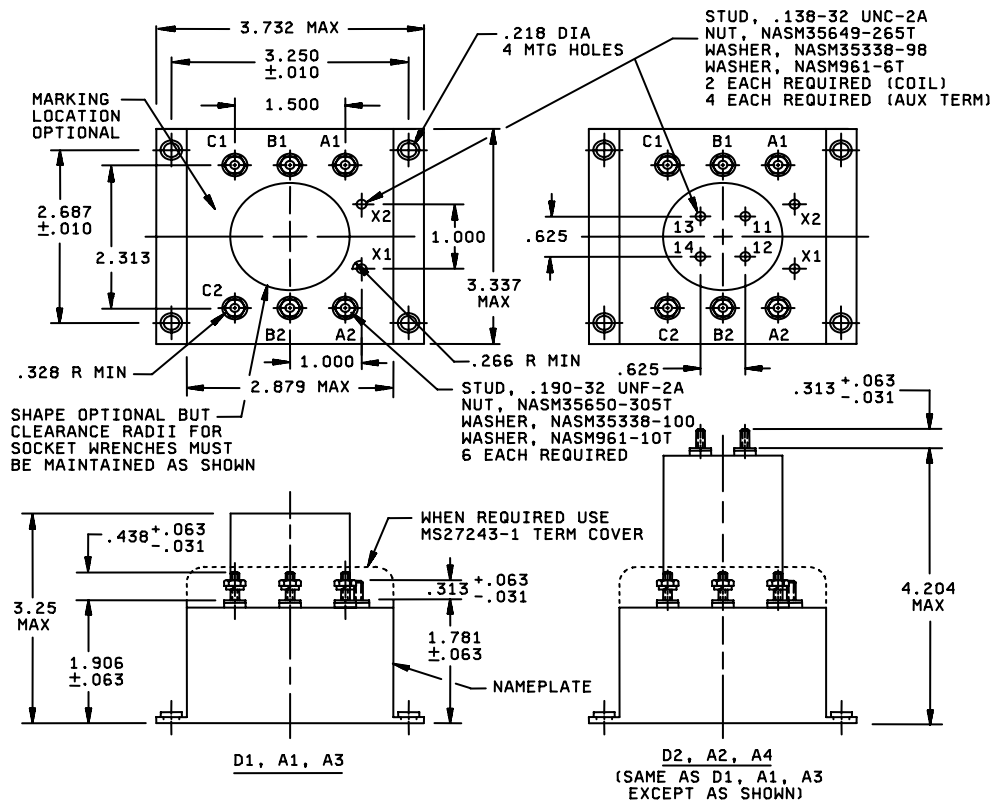
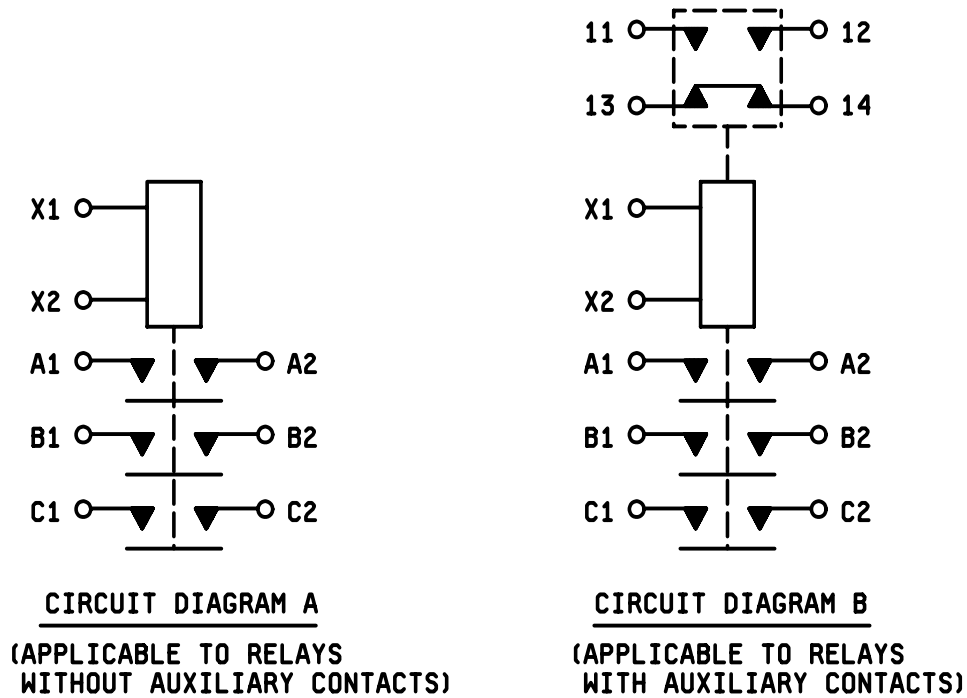


FIGURE 1. Dimensions and configurations.

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Inches	mm	Inches	mm
.010	0.25	1.000	25.40
.031	0.79	1.500	38.10
.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  $\pm 0.031$  (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.

	Initial <sup>1/</sup>		After life tests <sup>1/</sup>	
	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. <sup>2/</sup>

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

<sup>1/</sup> 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.

<sup>2/</sup> 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 MIL-PRF-6106.

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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 volt- age 2/ 3/	Drop out volt- age 2/ 3/	Oper- ate 4/	Re- lease 5/	Contact bounce			
		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	7/ 400/60	---	124	.225	90	100	104	40	10	30	65	2	---	---	---
A2	X1, X2	115	7/ 400/60	---	124	.225	90	100	104	40	10	30	65	2	---	4	4
A3	X1, X2	115	7/ 400/50/60	---	124	.225	90	100	104	40	10	30	65	5	---	---	---
A4	X1, X2	115	7/ 400/50/60	---	124	.225	90	100	104	40	10	30	65	5	---	6	6

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1/ CAUTION: The use of any coil voltage less than rated coil voltage will compromise the operation of the relay.2/ Over the temperature range.3/ At 50/60 Hz, chattering may occur at or near dropout voltage when voltage is slowly decreased.4/ With rated coil voltage.5/ From rated coil voltage.6/ Duration of auxiliary contact bounce is the maximum cumulative open time of the auxiliary contacts.7/ Coils will operate on 50 Hz, 60 Hz, and 400 Hz, except that relay ambient temperature must be derated to +71°C maximum.MS24376P  
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TABLE III. Rated contact load (amperes per pole) case grounded.

Type of load	Life operating cycles x 10 <sup>3</sup>	28 V dc				115 V ac, 1-phase				115/200 V ac, 3-phase			
		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	<sup>2/</sup> 20	---	---
Inductive	10	50	---	5	5	50	---	5	---	50	<sup>2/</sup> 15	---	---
Motor	50	50	---	---	---	50	20	---	---	50	<sup>2/</sup> 15	---	---
Lamp	50	---	---	.75	.75	---	---	.75	.75	---	---	---	---
<sup>4/</sup> Transfer load		---	---	---	---	---	---	---	---	---	---	---	---
Mechanical life (reduced current)	100	12.8	---	1.25	1.25	12.5	10	1.25	1.25	12.5	10	---	---
Mixed loads	50	5	---	Applicable in accordance with MIL-PRF-6106		5	5	---	---	5	5	---	---

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

<sup>2/</sup> 25 amperes for A3. 33 amperes for A4.

<sup>3/</sup> 20 amperes for A3 and A4.

<sup>4/</sup> 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	II	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.

NOTES:

Referenced documents. In addition to MIL-PRF-6106, this document references the following:

NASM961  
MS27243  
NASM35338  
NASM35649  
NASM35650  
MIL-STD-461

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.

Custodians:  
Air Force - 11  
Navy - AS  
DLA - CC

Preparing activity:  
DLA - CC

(Project 5945-2006-007)

Review activities:  
Navy - EC

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