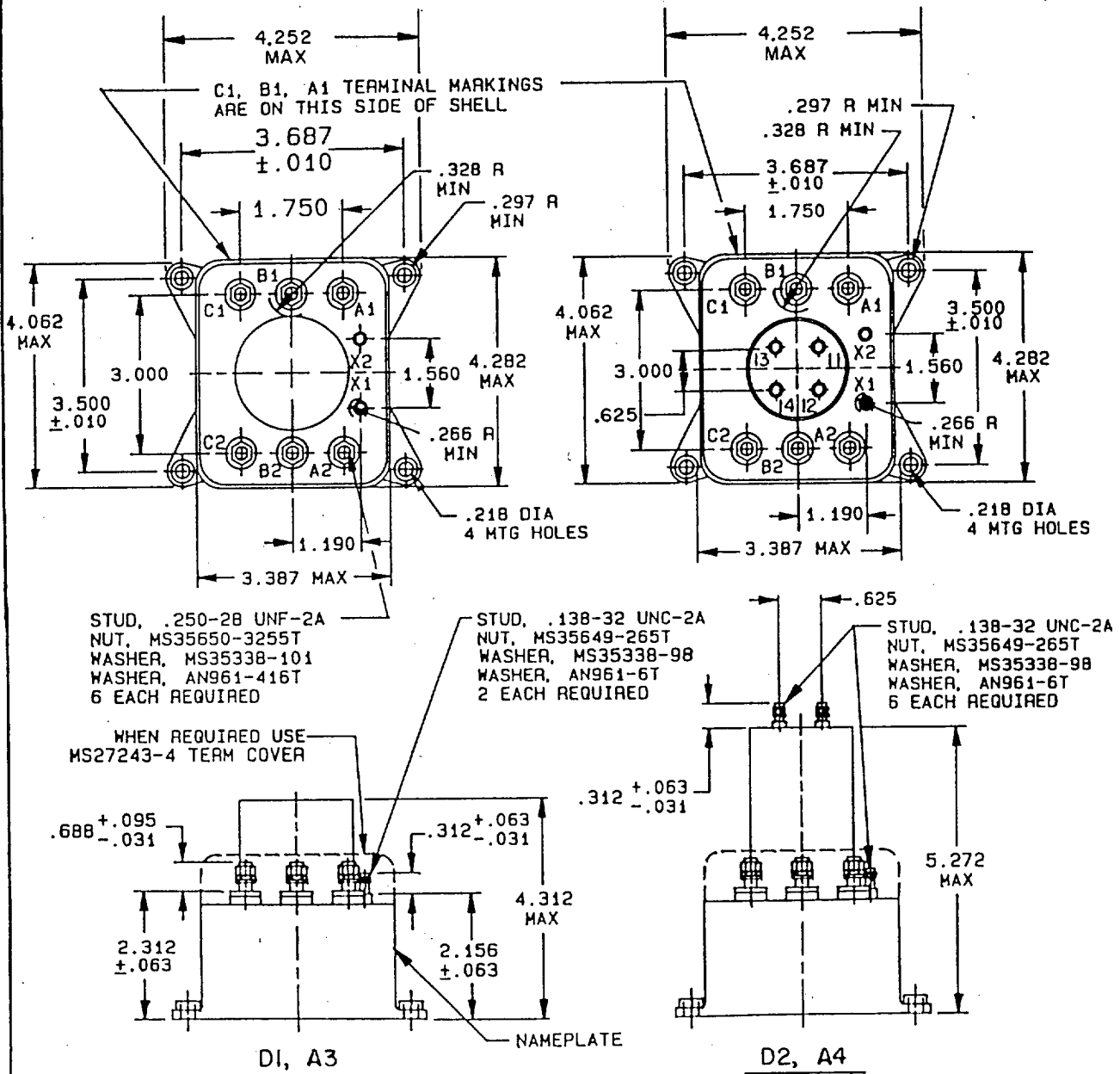


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NOTE: Revision letters are not used to denote changes due to the extensiveness of the changes.

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MILITARY SPECIFICATION SHEET

TITLE
RELAYS, ELECTROMAGNETIC,
100 AMPERES, 3 PST (N.O.),
TYPE I, HERMETICALLY SEALED

SPECIFICATION SHEET NUMBER

MS24168P 25 Apr 90

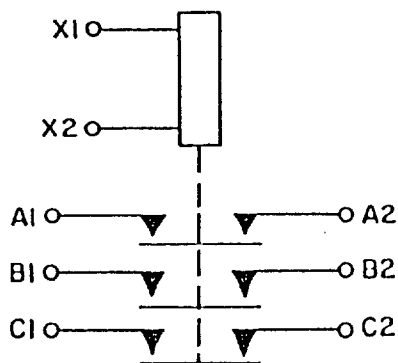
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MS24168N 5 Nov 82

AMSC N/A FSC 5945

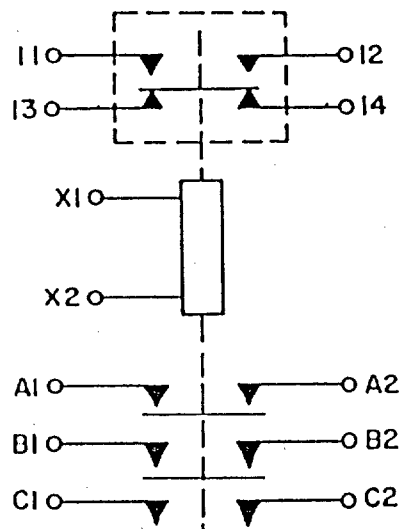
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Previous editions are obsolete.

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CIRCUIT DIAGRAM A
(APPLICABLE TO RELAYS WITHOUT
AUXILIARY CONTACTS)



CIRCUIT DIAGRAM B
(APPLICABLE TO RELAYS WITH
AUXILIARY CONTACTS)

Inches	mm	Inches	mm	Inches	mm
.010	0.25	.312	7.92	2.312	58.72
.031	0.79	.328	8.33	3.000	76.20
.063	1.60	.625	15.88	3.387	86.03
.095	2.41	.688	17.48	3.500	88.90
.138	3.51	1.190	30.23	3.687	93.65
.218	5.54	1.560	39.62	4.062	103.17
.250	6.35	1.718	43.64	4.282	108.76
.266	6.76	1.750	44.45	4.312	109.52
.297	7.54	2.156	54.76	5.272	133.91

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ± 0.031 (0.79 mm).
4. Coil and auxiliary terminals may use additional flat washer for terminal seat.
5. Break all sharp edges and remove all burrs.
6. This specification sheet takes precedence over documents referenced herein.
7. Referenced documents shall be of the issue in effect on date of invitations for bid.

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TABLE I. Dash numbers and characteristics.

Dash number MS24168-	Type	Coil type	Terminal type	Mounting or mating socket	Auxiliary contacts	Maximum weight in pounds $\frac{1}{1}$
D1		dc			None	3.4
D2		dc			Yes	3.6
A3		ac			None	3.8
A4		ac			Yes	3.8

$\frac{1}{1}$ Weights include covers and barriers.

TABLE II. Operating characteristics.

Coil data															Time - milliseconds max				
Dash number	Coil	Nominal		Res +15% -10	Max Volts	Max pick-up voltage			Drop out voltage	Hold voltage	Operate	Release	Contact bounce						
		Volts 1/ 1	Frequency Hz			Normal 2/ test	High Cont test	Main					Aux						
MS24168-																			
D1	X1,X2	28	dc	55	29	0.6	18	21	22.5	1.5	7	60	25	2.5	---				
D2	X1,X2	28	dc	55	29	0.6	18	21	22.5	1.5	7	60	25	2.5	4.5				
A3	X1,X2	115	400/50/60	6/ ---	120	---	90	---	---	10	40	65	80	5	---				
A4	X1,X2	115	400/50/60	6/ ---	120	---	90	---	---	10	40	65	115	5	7				

$\frac{1}{1}$ CAUTION: Use of any coil voltage less than nominal coil voltage will compromise the operation of the relay.

$\frac{2}{2}$ Over the temperature range.

$\frac{3}{3}$ At 50 and 60 Hz, chattering may occur at or near dropout voltage when voltage is slowly decreased.

$\frac{4}{4}$ With nominal coil voltage.

$\frac{5}{5}$ From nominal coil voltage.

$\frac{6}{6}$ Coils will operate at either 50, 60, or 400 Hz when derated to +71°C maximum ambient temperature.

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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		
		Main		Aux	Main		Aux	Main		Aux
		NO	NC	NO	400 Hz	150/60 Hz	1400 Hz	150/60 Hz	400 Hz	150/60 Hz
Resistive	50	100	---	5	100	50	5	2	100	50
Inductive	10	100	---	5	---	---	---	---	---	---
Inductive										
Motor	50	100	---	---	100	20	---	---	100	40
Lamp	50	---	---	.75	---	---	.75	.75	---	---
Transfer load 2/										
Mechanical life reduced current	100	25	---	1.25	1.25	25	12.5	1.25	25	12.5
Intermediate current	50	10	---	Per spec	10	10	---	---	10	10

1/ Absence of value indicates relay is not rated for 3-phase application.
2/ Transfer load indicates relay suitability for transfer between unsynchronized ac power supplies at rating indicated.

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ELECTRICAL CHARACTERISTICS:

Minimum insulation resistance, initial
After life or environmental tests
Dielectric strength (sea level)

Initial 1/ After life tests 1/
28 V dc 115 V ac 28 V dc 115 V ac
1,250 V rms 1,500 1,000 V rms 1,125
1,250 V rms 1,500 1,000 V rms 1,125
1,250 V rms 1,800 1,000 V rms 1,350
All other points

Dielectric strength (altitude)

28 V dc 1/ 115 V ac 1/
500 500
500 V rms 500
700 V rms 700

Max contact drop initial

After life test

Overload current (NO) 2/

Rupture current (NO) 2/

Duty rating

RFI specification

(Applicable to coil circuits of ac operated relays)

1/ For 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/ For 50/60 Hz, rupture and overload current (NO) 200 amperes.

ENVIRONMENTAL CHARACTERISTICS:

Temperature range 1/ -70° to +125°C
Maximum altitude rating 80,000 ft
Shock G-level 25 g's
Duration 6-9 ms

Max duration contact opening 2 ms
Vibration - Sinusoidal (see table IV) G
G-level Hz

Frequency range N/A

Vibration - Random N/A

Applicable specification N/A

Power spectral density N/A

RMS G minimum N/A

Frequency range N/A

Curve N/A

High shock 15 g's

Acceleration

1/ Coils operated at either 50, 60, or 400 Hz, require ambient temperature not to exceed +71°C maximum.

TABLE IV. Vibration levels.

Dash number	5-10 Hz	10-55 Hz	55-250 Hz	250-500 Hz	500-1,500 Hz
MS24168-					
D1				5 g's	3 g's
D2				4 g's	3 g's
A1	.08 DA	.06 DA	10 g's	5 g's	3 g's
A2, A3, A4				4 g's	3 g's

TABLE V. Qualification by similarity.

Dash number MS24168-	Loads			Dynamics 1/		Environmental
	Type I	Type I ER	Type I ER	A	X	A
D1	4			2		4
D2	4			2		4
A3	2/			1		2/
A4	1			1		1

1/ All relays must be tested. Reference MIL-R-6106, appendix I.

2/ Testing of relays with auxiliary contacts. Reference MIL-R-6106, appendix I.

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