

INCH-POUND

MIL-PRF-6106/33F
12 December 2022
SUPERSEDING
MIL-PRF-6106/33E
22 February 2011

PERFORMANCE SPECIFICATION SHEET

RELAY, ELECTROMAGNETIC, TYPE I, 400 AMPERES, WITH 5 AMPERE AUXILLIARY
CONTACTS, PERMANENT MAGNET DRIVE, HERMETICALLY SEALED

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-6106](#).

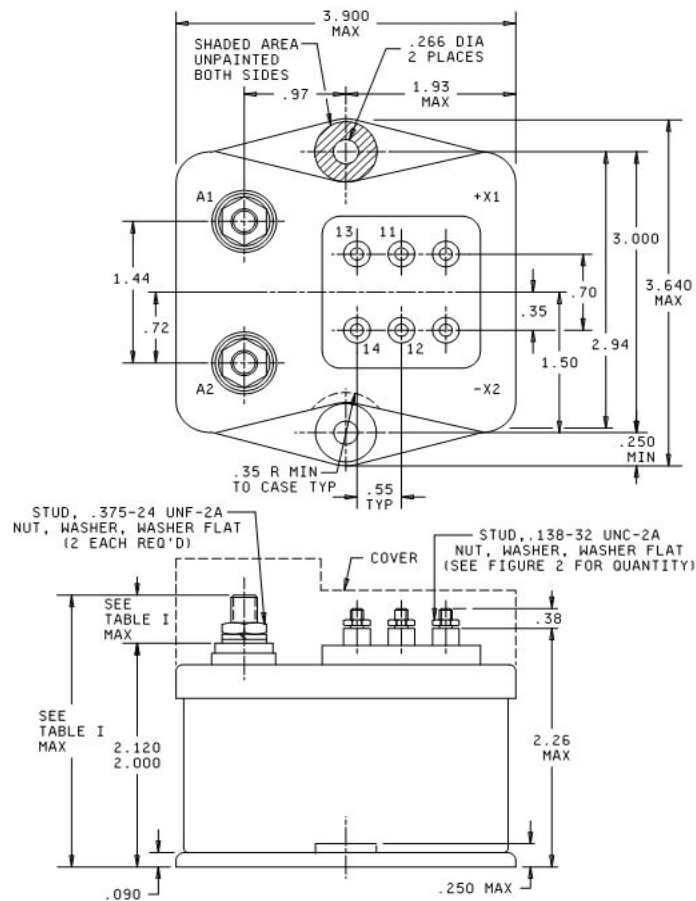


FIGURE 1. Dimensions and configurations.

AMSC N/A

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FSC 5945



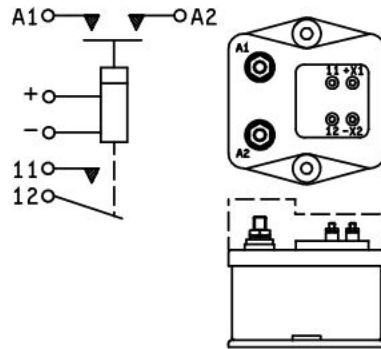
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Inches	mm	Inches	mm
.090	2.29	.97	24.6
.138	3.51	1.44	36.6
.250	6.35	1.5	38.1
.266	6.76	1.93	49.0
.33	8.4	2.000	50.80
.35	8.9	2.120	53.85
.375	9.53	2.26	57.4
.38	9.65	2.94	74.7
.55	14.0	3.000	76.20
.70	17.8	3.640	92.46
.72	18.3	3.900	99.06

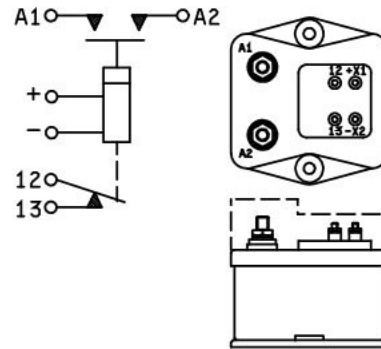
NOTES

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. There shall be affixed to the relay a suitable legible circuit diagram that identifies each terminal location specified.
4. Permanent magnet drive consists of a permanent magnet with its flux path switched and combined with the electro-magnet flux.
5. Unless otherwise specified, tolerance is ± 0.020 (0.51 mm) for three place decimals and ± 0.03 (0.76 mm) for two place decimals.

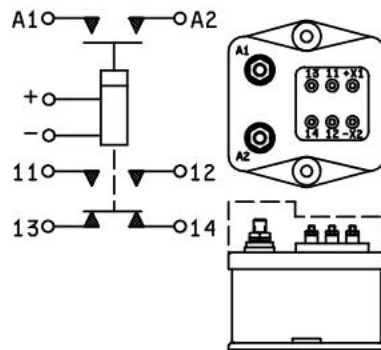
FIGURE 1. Dimensions and configurations - Continued.



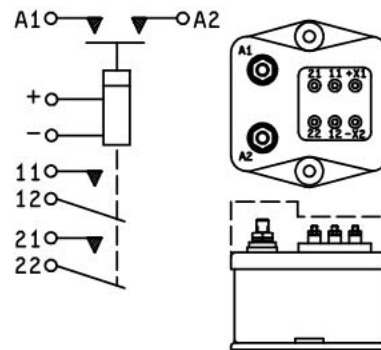
CIRCUIT DIAGRAM A1
SEE COIL DIAGRAMS
AND NOTE 1



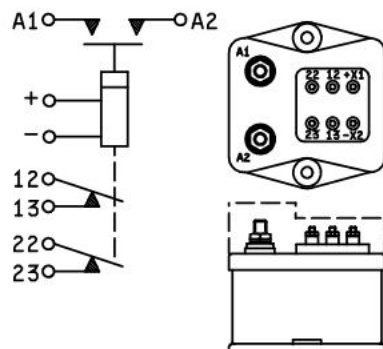
CIRCUIT DIAGRAM A2
SEE COIL DIAGRAMS
AND NOTE 1



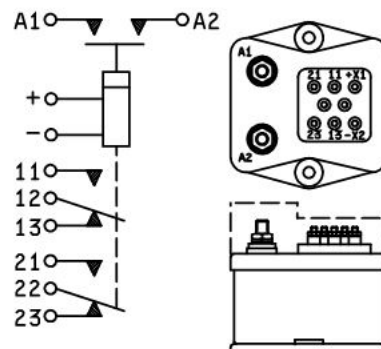
CIRCUIT DIAGRAM B1
SEE COIL DIAGRAMS
AND NOTE 1



CIRCUIT DIAGRAM B2
SEE COIL DIAGRAMS
AND NOTE 1

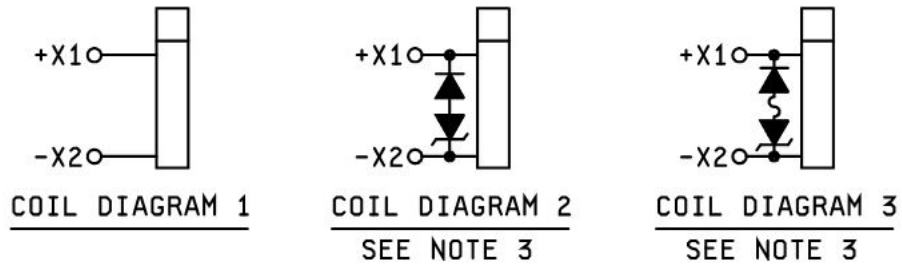


CIRCUIT DIAGRAM B3
SEE COIL DIAGRAMS
AND NOTE 1



CIRCUIT DIAGRAM C1
SEE COIL DIAGRAMS
AND NOTE 1

FIGURE 2. Circuit diagrams and terminal configurations.



NOTES:

1. To identify circuit diagrams, coil diagrams, and terminal configurations, see [table I](#).
2. Number of terminals varies dependent upon number of auxiliary contacts.
3. Semiconductors shall be JANTX or JANTX screened. Coil diagram 3 shall continue to operate should the suppression circuit be in a failure mode (not applicable to coil diagram 2). Diodes shall have a peak inverse voltage rating of 600 V dc minimum.

FIGURE 2. Circuit diagrams and terminal configurations - Continued.

REQUIREMENTS:

Dash numbers and physical characteristics: See [table I](#).

Duty rating: Continuous.

Coil data: See [table II](#).

Operational data: See [table II](#).

Contact data: See [tables III](#) and [IV](#).

Contact voltage drop:

Initial: 0.150 volt.

After life: 0.175 volt.

Overload current: 3,200 amperes dc.

Rupture current: 4,000 amperes dc.

Interrupt current: Carry 2,000 amperes for 7 seconds and break five times (30 minutes off per cycle).

ELECTRICAL CHARACTERISTICS:

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

After life or environmental tests: 50 megohms.

Dielectric withstanding voltage (sea level):

	<u>Initial</u>	<u>After life tests</u>
Coil to case	1,250 V rms	1,000 V rms
Auxiliary contacts	1,250 V rms	1,000 V rms
All other points	1,500 V rms	1,250 V rms

Dielectric withstanding voltage (altitude):

	<u>50,000 feet</u>
Coil to case	500 V rms
Auxiliary contacts	500 V rms
All other points	700 V rms

Physical:

Dimensions and configuration: See [figure 1](#).

Weight (maximum): 1.75 pounds.

Terminal type: See [figure 1](#), [figure 2](#), and [table II](#).

Strength of terminals and mounting studs: Applicable.

Seal: Hermetic.

Finish: Painted.

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TABLE I. Mechanical and physical characteristics.

Dash numbers	Coil suppression (back EMF)	Circuit diagram	Coil diagram	Cover height dimensions	Terminal lengths
040	Not applicable	B1	1	3.38	0.75
041	Applicable	B1	3	3.38	0.75
042	Applicable	B1	3	3.38	0.75
043	Not applicable	B1	1	3.38	0.75
044	Applicable	B2	3	3.38	1.13
045	Not applicable	B2	1	3.38	1.13
046	Applicable	A1	3	3.38	0.75
047	Applicable	A2	3	3.38	0.75
048	Not applicable	A1	1	3.38	0.75
049	Not applicable	A2	1	3.38	0.75
050	Applicable	B2	3	3.38	0.75
051	Not applicable	B2	1	3.38	0.75
052	Applicable	B3	3	3.38	1.13
053	Not applicable	B3	1	3.38	1.13
054	Applicable	B3	3	3.38	0.75
055	Not applicable	B3	1	3.38	0.75
056	Applicable	C1	3	Not applicable	1.13
057	Not applicable	C1	1	Not applicable	1.13
058	Applicable	C1	3	Not applicable	0.75
059	Not applicable	C1	1	Not applicable	0.75
060	Applicable	B2	2	3.38	1.13
061	Applicable	B3	2	3.38	1.13
062	Applicable	C1	2	Not applicable	1.13
063	Applicable	B1	2	3.38	0.75
064	Applicable	B1	2	3.38	0.75
065	Not applicable	B1	1	3.38	1.13
066	Applicable	B1	3	3.38	1.13
067	Applicable	B1	2	3.38	1.13
068	Applicable	B2	2	3.38	0.75
069	Applicable	A1	2	3.38	0.75
070	Not applicable	A1	1	3.38	1.13
071	Applicable	A1	3	3.38	1.13
072	Applicable	A1	2	3.38	1.13
073	Applicable	A2	2	3.38	0.75
074	Not applicable	A2	1	3.38	1.13
075	Applicable	A2	3	3.38	1.13
076	Applicable	A2	2	3.38	1.13
077	Applicable	B3	2	3.38	0.75
078	Applicable	C1	2	Not applicable	0.75

TABLE II. Operating characteristics.

Coil data											Time (milliseconds maximum)						
Coil diagram	Nominal		Maximum		Max pickup voltage			Drop out voltage <u>1/</u> V dc	Hold voltage <u>1/ 2/</u> V dc	Back EMF (V dc max)	Operate	Release	Contact Bounce				Break bounce NO only
	Volts dc	Res. ±10% at 25°C	Volts dc	Amp-ere	Nominal at 71°C	High temp test	Cont. current test						Main		Auxiliary		
													NO	NC	NO	NC	
1	28	60	32	.6	18	19	21	1.5	9.0	NA	35	15	4	NA	4	4	NA
2 and 3	28	60	32	.6	18	19	21	1.5	9.0	42	35	15	4	NA	4	4	0.1

1/ Over temperature range.2/ Must pass random vibration test using a 9 V dc hold voltage 25°C.TABLE III. Rated contact load endurance (ampere per pole) case grounded.

Type of load	(Endurance) life operating cycles X 10 ³	28 V dc		28 V dc/115 400 Hz auxiliary	
		Main		D.B.	S.B.
		NO	NC		
Resistive	50	400	---	5	5
Inductive	20	150	---	5	3
Motor <u>1/ 2/</u>	50	250	---	1	1
Lamp					
Mechanical life	100	100			
Reduced current					
Mixed loads	Not applicable				

1/ Off time for motor load test shall be 6 seconds maximum.2/ Shall also meet 20,000 cycles of special motor load as specified in [table IV](#).

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TABLE IV. Motor load (special). [1/](#) [2/](#)

Elapsed time seconds	Starter current amperes
0 (initial)	1,200
1	1,000
2	1,000
3	900
4	800
5	700
6	600
7 to 60	400

1/ Must be able to meet the requirements specified for three cycles with only 10 seconds off between cycles. At the end of three cycles, off time will be 5 minutes, minimum.

2/ The start cycle may be aborted any time during this period, requiring a contact interrupt capability of at least 1,000 amperes.

ENVIRONMENTAL CHARACTERISTICS:

Temperature rating: -55°C to +71°C.

Maximum altitude rating: 50,000 feet.

Shock g level: 25 g's.

Duration: 9 ms.

Maximum duration contact opening: 10 μs.

Vibration, sinusoidal:

G level:	10 g's	5 g's
Frequency range:	70-500 Hz	500-2,000 Hz.

Random: 1 hr/plane.
0.4 g²/Hz 15-197 cycles.
4 dB/octave increase.
197-300 cycles.
0.07 g²/Hz 300-1,000 cycles.
6 dB/octave decrease.
1,000-2,000 cycles.

Acceleration: 15 g's.

PART NUMBER: M6106/33- (dash number from [table I](#)).

Qualification by similarity: See [MIL-PRF-6106](#).

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TABLE V. Supersession data.

Superseded part number M6106/33	New part number M6106/33	Superseded part number M6106/33-	New part number M6106/33-
001	040	021	060
002	041	022	061
003	042	023	062
004	043	024	063
005	044	025	064
006	045	026	065
007	046	027	066
008	047	028	067
009	048	029	068
010	049	030	069
011	050	031	070
012	051	032	071
013	052	033	072
014	053	034	073
015	054	035	074
016	055	036	075
017	056	037	076
018	057	038	077
019	058	039	078
020	059		

Cross reference for Government logistics support: See [table VI](#).

TABLE VI. Cross reference for Government logistics support.

Superseded part number M6106/33-	New part number M6106/33-	Support part number M6106/33-	Superseded part number M6106/33-	New part number M6106/33-	Support part number M6106/33-
001	040	040	021	060	060
002	041	041	022	061	061
003	042	042	023	062	062
004	043	043	024	063	063
005	044	044	025	064	064
006	045	045	026	065	065
007	046	046	027	066	066
008	047	047	028	067	067
009	048	048	029	068	068
010	049	049	030	069	069
011	050	050	031	070	070
012	051	051	032	071	071
013	052	052	033	072	072
014	053	053	034	073	073
015	054	054	035	074	074
016	055	055	036	075	075
017	056	056	037	076	076
018	057	057	038	077	077
019	058	058	039	078	078
020	059	059			

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Referenced documents. This document references [MIL-PRF-6106](#).

Custodians:

Air Force - 85
DLA - CC

Preparing activity:

DLA - CC

(Project 5945-2022-061)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil/>.