INCH-POUND

MIL-PRF-6106/33E
22 February 2011
SUPERSEDING
MIL-PRF-6106/33D
10 November 2000

PERFORMANCE SPECIFICATION SHEET

RELAY, ELECTROMAGNETIC, TYPE I, 400 AMPERES, WITH 5 AMPERE AUXILIARY 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

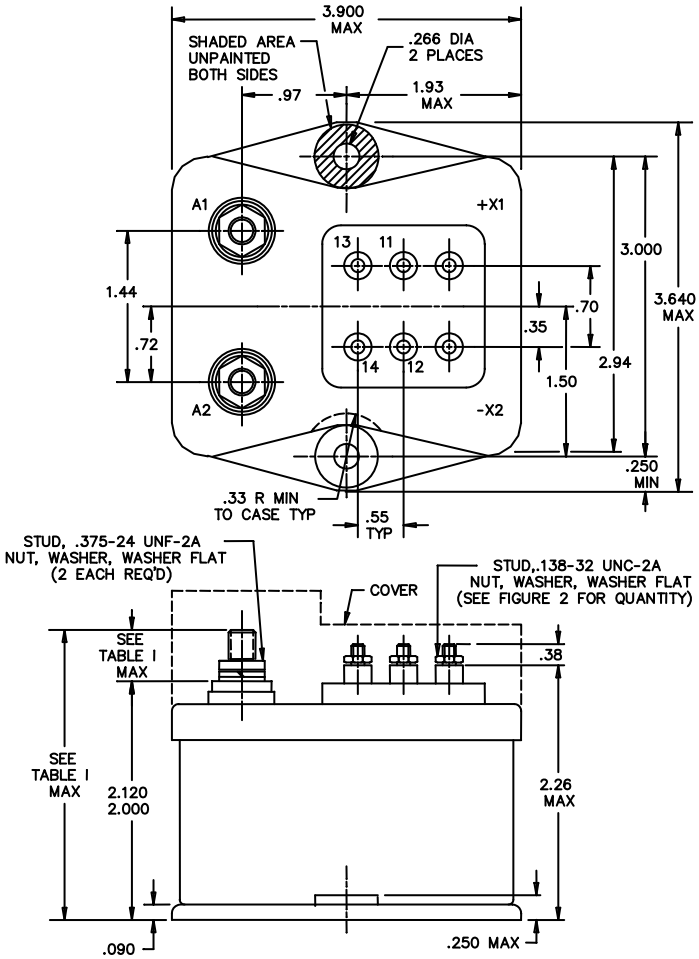
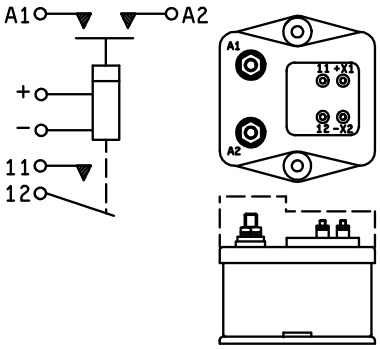


FIGURE 1. Dimensions and configurations.

Inches	mm	Inches	mm
.090	2.29	.970	24.60
.138	3.51	1.440	36.60
.250	6.35	1.500	38.10
.266	6.76	1.930	49.00
.330	8.40	2.000	50.80
.350	8.90	2.120	53.85
.375	9.53	2.260	57.40
.380	9.65	2.940	74.70
.550	14.00	3.000	76.20
.700	17.80	3.640	92.46
.720	18.30	3.900	99.06

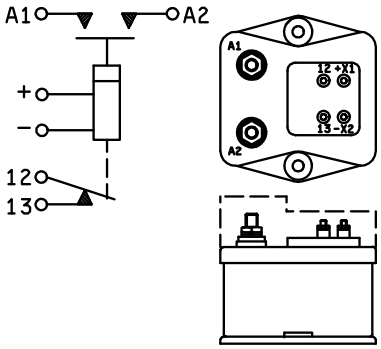
NOTES
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. There shall be affixed to the relay a suitable legible circuit diagram that identifies each terminal location specified.
4. Permanent magnet drive consists of a permanent magnet with its flux path switched and combined with the electro-magnet flux.
5. Unless otherwise specified, tolerance is ±.020 (0.50 mm) for three place decimals and ±.03 (0.8 mm) for two place decimals.

FIGURE 1. Dimensions and configurations - Continued.



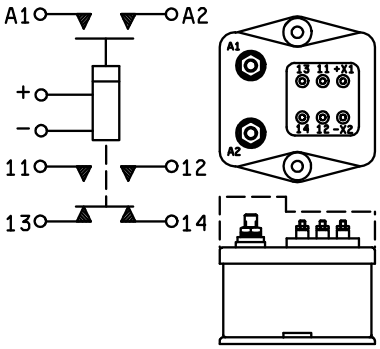
CIRCUIT DIAGRAM A1

SEE COIL DIAGRAMS
AND NOTE 1



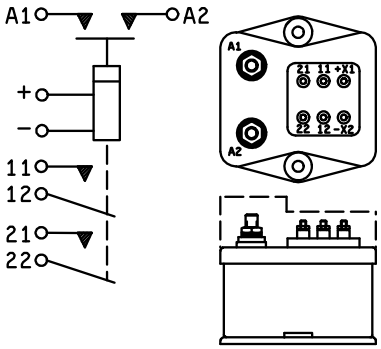
CIRCUIT DIAGRAM A2

SEE COIL DIAGRAMS
AND NOTE 1



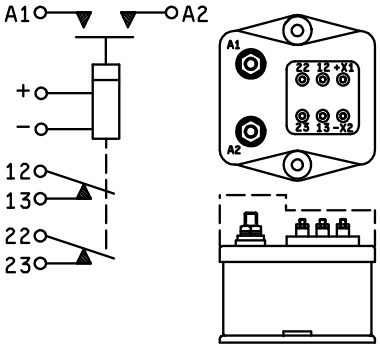
CIRCUIT DIAGRAM B1

SEE COIL DIAGRAMS
AND NOTE 1



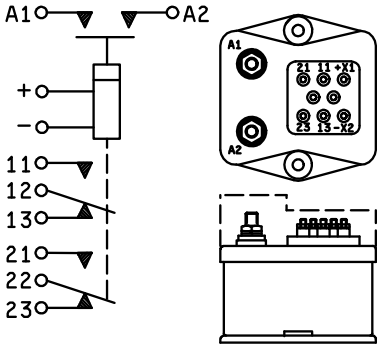
CIRCUIT DIAGRAM B2

SEE COIL DIAGRAMS
AND NOTE 1



CIRCUIT DIAGRAM B3

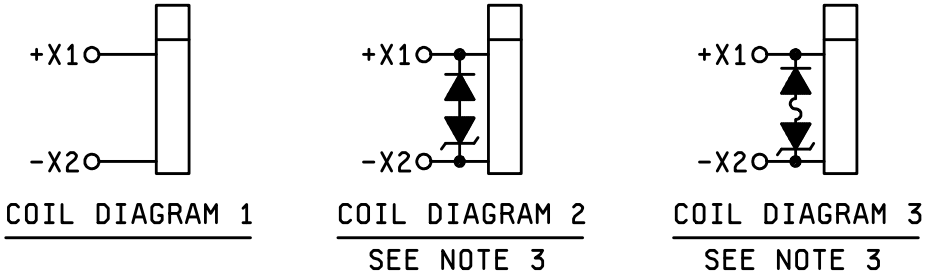
SEE COIL DIAGRAMS
AND NOTE 1



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):

	Initial	After life tests
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):

	50,000 feet
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.

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 dia-gram	Nominal		Maximum		Max pickup voltage			Drop out volt-age 1/ V dc	Hold volt-age 1/ 2/ V dc	Back EMF V dc max	Oper -ate	Rel-lease	Contact Bounce				Break bounce NO only
													Main		Auxiliary		
	Volts dc	Res. ±10% at 25°C	Volts dc	Amp	Nom-inal at 71°C	High temp test	Cont curr-ent test						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) ase grounded.

Type of load	(Endurance) life operating cycles X 10^3	28 V dc		28 V dc/115 400 Hz auxiliary	
		Main			
		NO	NC	D.B.	S.B.
Resistive	50	400	---	5	5
Inductive	20	150	---	5	3
Motor 1/ 2/	50	250	---		
Lamp				1	1
Mechanical life					
Reduced current	100	100			
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.

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 g^2/Hz 15-197 cycles.
4 dB/octave increase.
197-300 cycles.
0.07 g^2/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.

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 logis6tics 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				

Referenced documents. this document references the following:

MIL-PRF-6106

Custodian:
Air Force - 85
DLA - CC

Preparing activity:
DLA - CC

Review activities:
Air Force - 99

(Project 5945-2010-033)

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.daps.dla.mil/.