

INCH-POUND

MIL-R-6106/14C  
10 November 2000  
SUPERSEDING  
MIL-R-6106/14B  
10 March 1989

MILITARY SPECIFICATION SHEET

RELAY, ELECTRIC, PERMANENT DRIVE, 50 AMP, SPDT (DB)  
DOUBLE MAKE DOUBLE BREAK AUXILIARY CONTACTS (5 AMP), HERMETICALLY SEALED

Inactive for new design after 10 March 1989. No superseding specification sheet.

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.

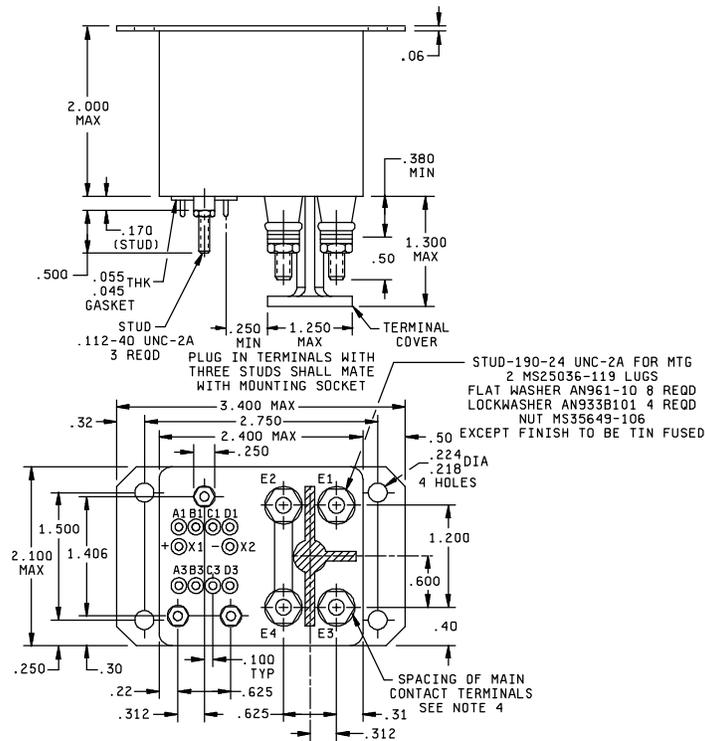
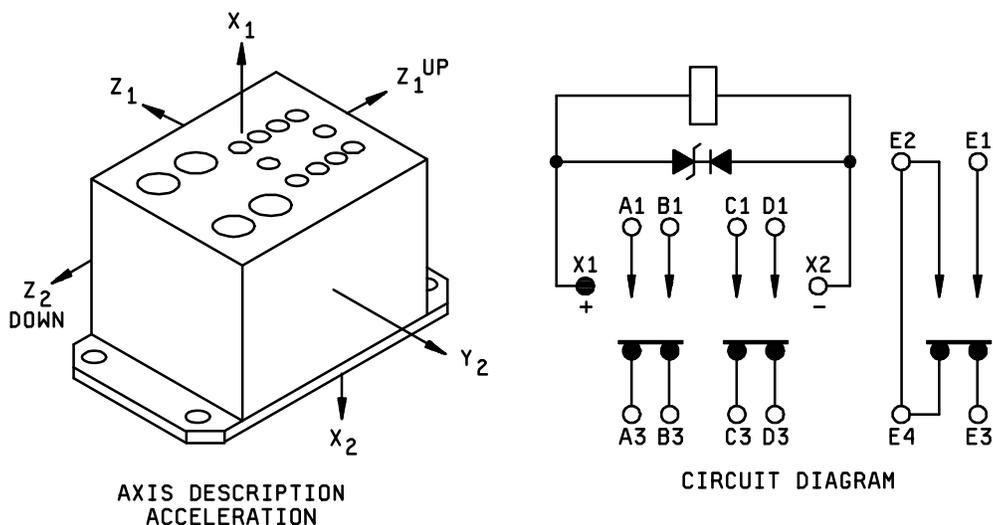


FIGURE 1. Relay, outline drawing.



Inches	mm	Inches	mm	Inches	mm
.045	1.14	.30	7.62	1.250	31.75
.055	1.40	.31	7.87	1.300	33.02
.06	1.52	.312	7.92	1.406	35.71
.100	2.54	.32	8.13	1.500	38.10
.170	4.32	.380	9.65	2.000	50.80
.218	5.54	.40	10.16	2.100	53.34
.22	5.59	.500	12.70	2.400	60.96
.224	5.69	.600	15.24	2.750	69.85
.250	6.35	.625	15.88	3.400	86.36
		1.200	30.48		

**NOTES:**

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance are  $\pm 0.010$  (0.25 mm) for three place decimals and  $\pm 0.03$  (0.8 mm) for two place decimals.
4. The main contact terminals shall be designed so that two number 6 MS25036 terminal lugs may be attached back to back on each terminal without contacting the relay case.
5. Terminal protection: The relay shall have a terminal cover with integral barriers.
6. Repairability: All functional parts shall be capable of being removed and replaced.
7. Shelf life: The unit shall have a shelf life of 5 years, providing that the unit is cycled 25 times at rated inductive load in accordance with MIL-PRF-6106 before use in the aircraft.
8. Terminal numbers need not appear on relay headers, provided a legible circuit diagram is affixed to the relay that positively and permanently identifies each terminal.
9. Coil and auxiliary contact pins shall have equivalent positions to those of MS27400-2.

FIGURE 1. Relay, outline drawing - Continued.

REQUIREMENTS

Coil data:

Coil data: See table I.

Duty rating: Continuous.

Operational data:

Rated contact load: See table II.

Operate time: See table I.

Release time: See table I.

Physical:

Dimensions and configuration: See figure 1.

Weight (maximum): 1.25 pounds, 567 grams.

Terminal type: See figure 1.

Strength of terminals and mounting studs: Applicable.

ENVIRONMENTAL CHARACTERISTICS:

Temperature rating: -54°C to +74°C.

Maximum altitude: 30,000 feet.

Shock g-level: 6 g.

Duration: 11 ±1 milliseconds.

Crash safety g-level: 15 g, one impact in each direction.

Duration: 11 ±1 milliseconds.

Vibration-sinusoidal:

G-level: .036 inch double amplitude to 50 Hz, thereafter 4.5 g.

Frequency range: 5 Hz to 2,000 Hz.

Vibration-random: Not applicable.

Acceleration: See figure 1.

X plane: +1.3 g.

Y plane: ±2.5 g.

Z plane: 7.1 g down, 3.7 g up.

Duration: 15 seconds.

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ELECTRICAL CHARACTERISTICS:

Magnetic effect: A magnetic compass with a horizontal intensity of  $0.18 \pm 0.1$  gauss shall have its needle deflected  $5^\circ$  or less when the relay is energized or deenergized.

Voltage transient:

Generation: No greater than 70 volts, decreasing to 50 volts within 20 milliseconds and to 10 volts within 40 milliseconds.

Insulation resistance, initial: 100 megohms.

After life or environmental tests: 50 megohms.

Dielectric withstanding voltage (sea level):

	Initial	After life tests
Coil to case	1250 V rms, 60 Hz	1250 V rms, 60 Hz
Auxiliary contacts	1500 V rms, 60 Hz	1250 V rms, 60 Hz
All other points	1500 V rms, 60 Hz	1250 V rms, 60 Hz

Dielectric withstanding voltage (altitude): Not applicable.

Maximum contact drop, initial: 0.150 volt.

After life tests: 0.175 volt.

Overload current: Not applicable.

Rupture current: 400 amperes dc (3 V dc maximum voltage drop).

RFI specification (applicable to coil circuits of ac operated relays): Not applicable.

Part or identifying number (PIN): M6106/14-001.

Qualification testing: Qualification testing shall be in accordance with MIL-PRF-6106, table VIII. No qualification testing is required for sample numbers 1, 2, 4, 9, or 12. Sample 7 shall have humidity test added between steps 4 and 5. Sample 11 shall have the magnetic effect and voltage transient generation tests, specified by this specification sheet performed between steps 4 and 5. Sample 6 shall not require sand and dust, vibration, or minimum current testing.

Retention of qualification: To retain qualification, the manufacturer shall submit group A acceptance reports on a yearly basis to the qualifying activity.

Quality conformance inspection: Performance of groups B and C tests are not applicable.

TABLE I. Operating characteristics.

Dash No	Type	Coil data											Time (milliseconds-maximum)					
		Coil	Nominal			Max		Max pick-up voltage			Hold voltage <u>2/</u>	Drop out voltage <u>2/</u>	Operate	Re-release	Bounce			
			Volts <u>1/</u>	Freq. Hz	Res. Ω	Volts	Amperes	Norm <u>2/</u>	High temp test	Cont. current test					Main		Aux	
															NO	NC	NO	NC
-001	I	X1, X2	28	dc		30	0.6	18	19.8	22.5	7.0	1.5	25	10				

1/ CAUTION: Use of any coil voltage less than nominal coil voltage will compromise the operation of the relay.

2/ Over the temperature range.

3/ With nominal coil voltage.

4/ From nominal coil voltage.

TABLE II. Rated contact load (amperes per pole) case grounded.

Type of load	Life operating cycles $\times 10^3$	28 V dc				115 V ac, 1 phase				115/200 V ac, 3 phase <u>1/</u>				See appropriate notes	
		Main		Aux		Main		Aux		Main		Aux			
		NO	NC	NO	NC	400 Hz	60 Hz	400 Hz	60 Hz	400 Hz	60 Hz	400 Hz	60 Hz		
Resistive	50	50	50	5	5										
Inductive	30	25	25	5	5										
Motor															
Lamp	50	10	10	.5	.5										
Transfer load															<u>2/</u>
Mechanical life reduced current	100	12.5	12.5												
Mixed loads															

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

2/ Transfer load indicates relay suitable for transfer between unsynchronized ac power supplies at rating indicated.

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Custodian:  
Air Force - 11  
DLA - CC

Preparing activity:  
DLA - CC

Review activities:  
Air Force - 99

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