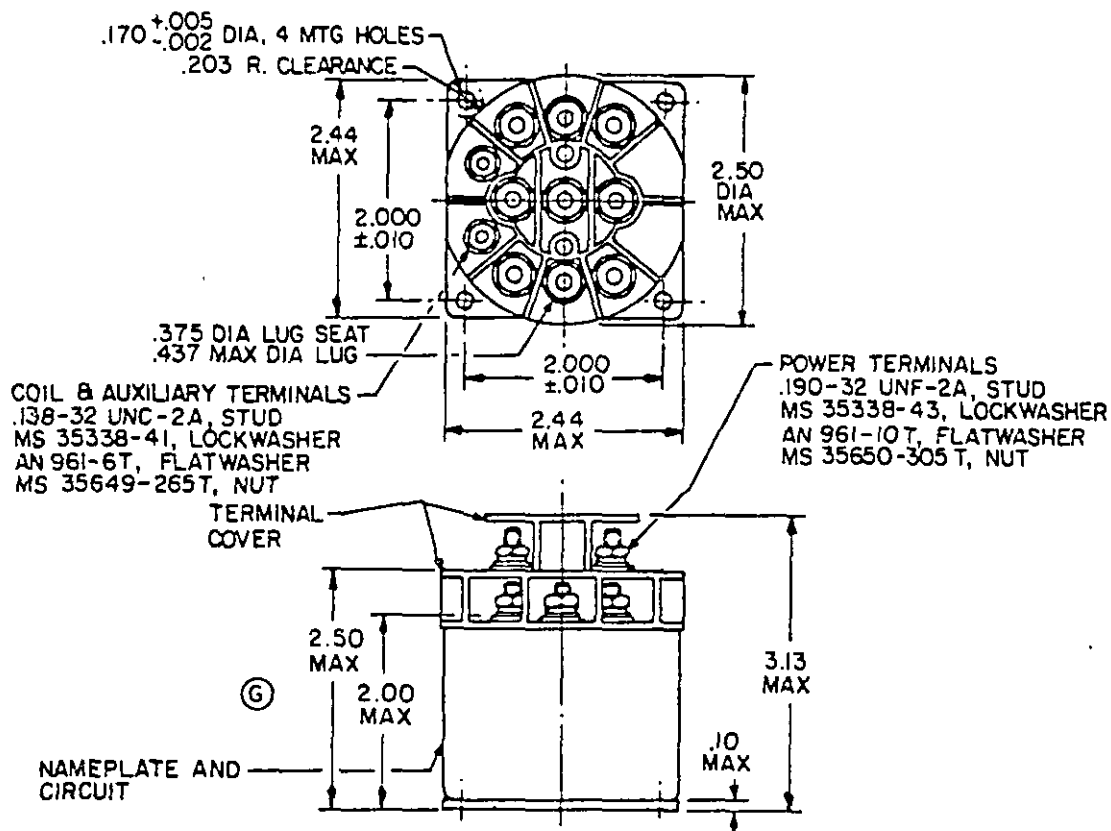


FED. SUP CLASS
5945

| INCHES | MM | INCHES | MM |
|--------|------|--------|-------|
| .002 | 0.05 | .375 | 9.52 |
| .005 | 0.13 | .437 | 11.10 |
| .010 | 0.25 | 1.91 | 48.5 |
| .031 | 0.79 | 2.000 | 50.80 |
| .10 | 2.5 | 2.44 | 62.0 |
| .138 | 3.51 | 2.45 | 62.2 |
| .170 | 4.32 | 2.50 | 63.5 |
| .190 | 4.83 | 3.13 | 79.5 |
| .203 | 5.16 | | |

NOTES:

1. Dimensions are in inches.
2. Unless otherwise specified, tolerance is $\pm .031$ (0.79 mm).
3. Polarity indication applies to dc coils only.
4. In the event of a conflict between the text of this standard and the references cited herein, the text of this standard shall take precedence.
5. Referenced Government documents of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this standard to the extent specified herein.
6. Dc versions of this relay must not operate or be damaged by reverse polarity, semiconductors shall not be used for this purpose.
7. Permanent magnet drive consists of permanent magnet with its flux path switched and combined with the electro-magnetic flux.
8. Metric equivalents are given for general information only.

Ⓒ Denotes change

| | | | |
|---|------------------------|--|-------------------|
| PA AF-85 | International Interest | TITLE RELAYS, ELECTROMAGNETIC, 60 AMPERES, 3 PST OR 3 PDT, HERMETICALLY SEALED, PERMANENT MAGNET DRIVE Ⓒ | MILITARY STANDARD |
| Other Cust | | | MS27751 (85) |
| Procurement Specification MIL-R-6106 | | SUPERSEDES: | PAGE 1 OF 7 |

Review activity: AF-99

This military standard is approved for use within the Department of the Air Force, and is available for use by all Departments and Agencies of the Department of Defense.

APPROVED 17 JAN 72 REVISED Ⓔ 22 APR 83 Ⓒ 29 APR 85

FED. SUP CLASS
5945TABLE I. Relay characteristics.

| MS PART NUMBER | TYPE | COIL | CONTACTS | | TERMINAL TYPE | MAX WEIGHT IN POUNDS <u>1/</u> |
|----------------|------|------|----------|---------|------------------|-----------------------------------|
| | | | MAIN | AUX | | |
| MS 27751-1 | I | DC | 3PDT | NONE | STUD | .85 |
| MS 27751-2 | I | AC | 3PDT | NONE | STUD | .85 |
| MS 27751-3 | I | DC | 3PNO | NONE | STUD | .85 |
| MS 27751-4 | I | AC | 3PNO | NONE | STUD | .85 |
| MS 27751-5 | I | DC | 3PNO | 1NO-1NC | STUD | .85 |
| MS 27751-6 | I | AC | 3PNO | 1NO-1NC | STUD | .85 |
| MS 27751-7 | I | DC | 3PDT | 1NO | STUD | .85 |
| MS 27751-8 | I | AC | 3PDT | 1NO | STUD | .85 |
| MS 27751-9 | I | DC | 3PDT | 1NC | STUD | .85 |
| MS 27751-10 | I | AC | 3PDT | 1NC | STUD | .85 |
| MS 27751-11 | I | DC | 3PDT | NONE | STUD | .85 |
| MS 27751-12 | I | AC | 3PDT | NONE | STUD | .85 |
| MS 27751-13 | I | DC | 3PNO | NONE | STUD | .85 |
| MS 27751-14 | I | AC | 3PNO | NONE | STUD | .85 |
| MS 27751-15 | I | DC | 3PNO | 1NO-1NC | STUD | .85 |
| MS 27751-16 | I | AC | 3PNO | 1NO-1NC | STUD | .85 |
| MS 27751-17 | I | DC | 3PDT | 1NO | STUD | .85 |
| MS 27751-18 | I | AC | 3PDT | 1NO | STUD | .85 |
| MS 27751-19 | I | DC | 3PDT | 1NC | STUD | .85 |
| MS 27751-20 | I | AC | 3PDT | 1NC | STUD | .85 |
| MS 27751-21 | I | DC | 3PDT | NONE | STUD | .85 |

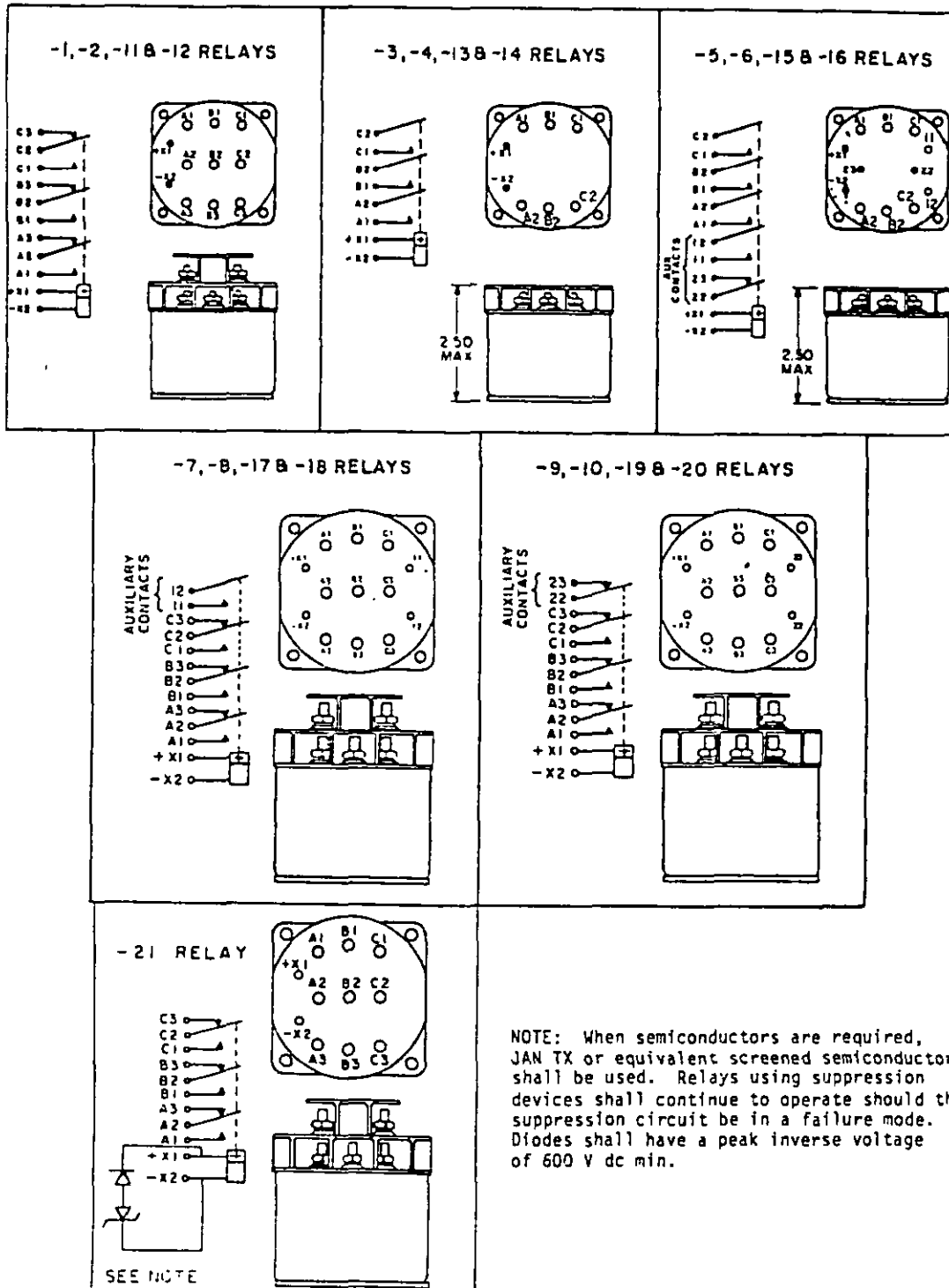
1/ Weight includes terminal barriers.

APPROVED 17 JAN 72 REVISED ⑥ FOR CHANGES SEE PAGES 1, 4 & 6

| | | | |
|---|---------------------------|--|-------------------|
| P A AF-85 | International Interest | TITLE RELAYS, ELECTROMAGNETIC, 60 AMPERES, 3 PST OR 3 PDT, HERMETICALLY SEALED, PERMANENT MAGNET DRIVE | MILITARY STANDARD |
| Other Cust | | | MS27751 (85) |
| Procurement Specification MIL-R-6106 | SUPERSEDES | | PAGE 2 OF 7 |

FED. SUP CLASS
5945

CIRCUIT AND TERMINAL LAYOUT



APPROVED 17 JAN 72 REVISED © FOR CHANGES SEE PAGES 1, 4 & 6

| | | | |
|---|------------------------|--|-------------------|
| P.A AF-85 | International Interest | TITLE RELAYS, ELECTROMAGNETIC, 60 AMPERES, 3 PST OR 3 PDT, HERMETICALLY SEALED, PERMANENT MAGNET DRIVE | MILITARY STANDARD |
| Other Cust | | | MS27751 (85) |
| Procurement Specification MIL-R-6106 | | SUPERSEDES: | PAGE 3 OF 7 |

This military standard is approved for use within the Department of the Air Force, and is available for use by all Departments and Agencies of the Department of Defense.

Review activity: AF-89

This military standard is approved for use within the Department of the Air Force, and is available for use by all Departments and Agencies of the Department of Defense.

Review activity: AF-99

TABLE II. Operating characteristics.

| MS PART NO. MS27751 1/ | COIL DATA | | | | | | | | | | TIME-MILLISECONDS-MAX | | | | | | | |
|--|-----------|---------|------------|-------------------------------|-------|---------------|---------------|----------------------|-------------------------|------------|------------------------|--------------------|---------------|---------------|--------|----|----|--|
| | C | Nominal | | | | Max | | Max. Pick-up Voltage | | | Drop Out Voltage 2/ | Hold Voltage 2/ | Operate 3/ | Release 4/ | Bounce | | | |
| | | Volts | Freq Hz | Res Ω $\pm 10\%$ | Volts | Amp @ 25°C | Nominal 2/ | High Temp test | Cost Current Test | Main NO | | | | | NC | NO | NC | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| -1 -3 -5 -7 -9 -11 -13 -15 -17 -19 -21 | X1X2 | 28 | DC | 200 | 29 | .160 | 18 | 20 | 21 | 1.5 | 7.0 | 50 | 25 | 3 | 3 | 4 | 4 | |
| -2 -4 -6 -8 -10 -12 -14 -16 -18 -20 | X1X2 | 115 | 400 6/ | - | 124 | .100 | 90 | 95 | 100 | 5.0 | 35 | 50 | 80 | 3 | 3 | 4 | 4 | |

- 1/ Contact transfer time @ rated voltage is 1.8 milliseconds minimum for -11 through -20.
 2/ Over temperature range.
 3/ With nominal coil voltage.
 4/ From nominal coil voltage.
 5/ Applicable to -5 through -10 and -15 through -20.
 6/ Will operate on 115 V ac, 60 Hz with slightly higher coil current.
 7/ Applicable to -21 only. Coil suppression (transient voltage back EMF) 42 V dc max.

FED. SUP CLASS
5945

P.A. AF-85

Other Cost

International
interest

TITLE

RELAYS, ELECTROMAGNETIC,
60 AMPERES, 3 PST OR 3 PDT,
HERMETICALLY SEALED,
PERMANENT MAGNET DRIVE

MILITARY STANDARD

MS27751 (85)

Environmental Specification
MIL-R-6106

SUPERSEDES:

PAGE 4 OF 7

This military standard is approved for use within the Department of the Air Force, and is available for use by all Departments and Agencies of the Department of Defense.

Review activity: AF-99

| | | | | | | | |
|---|--|------------------------|--|--|--|-------------------|--|
| P.A. AF-85 | | International Interest | | TITLE RELAYS, ELECTROMAGNETIC, 60 AMPERES, 3 PST OR 3 PDT, HERMETICALLY SEALED, PERMANENT MAGNET DRIVE | | MILITARY STANDARD | |
| Other Cust | | | | | | MS27751 (85) | |
| Procurement Specification MIL-R-6106 | | SUPERSEDES: | | | | PAGE 5 OF 7 | |

| TYPE OF LOAD | LIFE OPERATING CYCLES x 10 ³ | 28 V dc | | | | 115 Vac, 1 Phase | | | | 115/200 Vac, 3 Phase 2/ | | | | See Appropriate Notes |
|------------------------------------|--|---------|----|--------|----|------------------|-------|--------|-------|-------------------------|-------|--------|-------|-----------------------------|
| | | MAIN | | AUX 1/ | | MAIN | | AUX 1/ | | 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 | 3 | 3 | 60 | | 60 | | 400 Hz | 60 Hz | 400 Hz | 60 Hz | |
| INDUCTIVE | 20 | 20 | 20 | 3 | 3 | | | | | | | | | |
| INDUCTIVE | 50 | | | 2 | 2 | 60 | | | | 60 | | | | |
| MOTOR | 50 | 20 | 20 | | | 40 | | | | 40 | | | | |
| LAMP | 50 | 10 | 10 | 1 | 1 | 15 | | | | 15 | | | | |
| TRANSFER, LOAD | 10 | | | | | 12.5/60 | | | | 12.5/60 | | | | 3/ |
| MECHANICAL LIFE REDUCED CURRENT | 200 | 7 | 7 | 1 | 1 | 14 | | | | 14 | | | | |
| MIN CURRENT | 60 | 1 | 1 | | | 5 | | | | 5 | | | | |

1/ Applicable to -5 through -10 and -15 through -20.
 2/ Absence of value indicates relay is not rated for 3 phase application.
 3/ Transfer load indicates relay suitable for transfer between unsynchronized ac power supplies of rating indicated. 12.5 amperes -1 through -10 and -21, 60 amperes -11 through -20.

APPLICATION NOTES:
 1. Examination of product, external parts, shall be performed in accordance with MIL-R-6106, except the case temperature shall be limited to 150°C maximum.
 2. Strength of terminals shall be performed in accordance with MIL-R-6106, except it shall be tested at room ambient temperature only.

FED. SUP CLASS
5945

APPROVED 17 JAN 72 REVISED (G) FOR CHANGES SEE PAGES 1, 4 & 6

FED. SUP CLASS
5045ENVIRONMENTAL CHARACTERISTICS

Temperature range- - - - -55°C to +71°C
 Max altitude rating- - - - -80,000 ft
 Shock G-level- - - - -50 G's
 Duration - - - - -6 ms
 Max duration contact opening - 10 ms
 Vibration-sinusoidal
 G-level- - - - -10 G's
 Frequency range- - - - -10 - 2,000 Hz
 Vibration-random
 Applicable spec- - - - -NA
 Power spectral density - - - NA
 Rms G min - - - - -NA
 Frequency range- - - - -NA
 Curve - - - - -NA
 High shock - - - - -NA

 Acceleration - - - - -15 G's

ELECTRICAL CHARACTERISTICS

Insulation resistance, initial - - - 100 megohms
 After life or environmental tests- - 50 megohms
 Dielectric strength (sea level)
 Initial | After life tests
 Coil to case 1000 V rms | 1000 V rms
 Aux contacts 1000 V rms | 1000 V rms
 All other points 1500 V rms | 1150 V rms
 Dielectric strength (altitude)
 150,000 ft |
 Coil to case 1500 V rms |
 Aux contacts 1500 V dc |
 All other points 1700 V rms |
 Max contact drop initial - - - .150 volt
 After life test - - - .175 volt
 Overload current - - - - -125 A dc,
 115/200 A ac
 400 Hz 400 A
 Rupture current- - - - -150 A dc,
 115/200 V ac,
 400 Hz 500 A
 Duty rating- - - - -Continuous
 RFI spec - - - - -MIL-STD-461
 (Applicable to coil circuits of ac
 operated relays)

APPROVED 17 JAN 72 REVISED ⑥ FOR CHANGES SEE PAGES 1,4 8 6

| | | | |
|---|------------------------|--|-------------------|
| P.A. AF-85 | International Interest | TITLE RELAYS, ELECTROMAGNETIC, 60 AMPERES, 3 PST OR 3 PDT, HERMETICALLY SEALED, PERMANENT MAGNET DRIVE | MILITARY STANDARD |
| Other Cust | | | MS27751 (85) |
| Procurement Specification MIL-R-6106 | SUPERSEDES: | | PAGE 6 OF 7 |

FED. SUP CLASS
5945

TABLE IV. Qualification by similarity. 3/

| MS PART NUMBER | LOADS | | | | DYNAMICS | | | | ENVIRONMENTAL | | | |
|----------------|-------|------|------|--------|----------|------|------|------|---------------|------|------|------|
| | A | 2/ | 3 | 2/ | A | X | | | A | B | | |
| | 3PDT | 3PNO | 3PDT | 3PNO | 3PDT | 3PNO | 3PDT | 3PNO | 3PDT | 3PNO | 3PDT | 3PNO |
| MS27751- 1 | 4 | | | | 2 | | | | 4 | | | |
| MS27751- 2 | | | 2,3 | | | | 1 | | | | 2,3 | |
| MS27751- 3 | | 4 | | | 2 | | | | 4 | | | |
| MS27751- 4 | | | | 2,3 | | | | 1 | | | | 2,3 |
| MS27751- 5 | | 4 1/ | | | 2 | | | | 4 | | | |
| MS27751- 6 | | | | 2,3 1/ | | | | 1 | | | | 2,3 |
| MS27751- 7 | 4 1/ | | | | 2 | | | | 4 | | | |
| MS27751- 8 | | | 2,3 | | | | 1 | | | | 2,3 | |
| MS27751- 9 | 4 1/ | | | | 2 | | | | 4 | | | |
| MS27751- 10 | | | 2,3 | | | | 1 | | | | 2,3 | |
| MS27751- 11 | 4 1/ | | | | 2 | | | | 4 | | | |
| MS27751- 12 | | | 2,3 | | | | 1 | | | | 2,3 | |
| MS27751- 13 | | 4 | | | 2 | | | | 4 | | | |
| MS27751- 14 | | | | 2,3 | | | | 1 | | | | 2,3 |
| MS27751- 15 | | 4 1/ | | | 2 | | | | 4 | | | |
| MS27751- 16 | | | | 2,3 1/ | | | | 1 | | | | 2,3 |
| MS27751- 17 | 4 1/ | | | | 2 | | | | 4 | | | |
| MS27751- 18 | | | 2,3 | | | | 1 | | | | 2,3 | |
| MS27751- 19 | 4 1/ | | | | 2 | | | | 4 | | | |
| MS27751- 20 | | | 2,3 | | | | 1 | | | | 2,3 | |
| MS27751- 21 | 2,3 | | | | 1 | | | | 2,3 | | | |

- 1/ Relays with auxiliary contact: Reference MIL-R-6106, Appendix, Construction Internal.
 2/ Contacts and contact systems: Reference MIL-R-6106, Appendix, Contact and Contact System.
 3/ Similarity exists only between dash numbers within a given column.
 4/ All units must be tested: Reference MIL-R-6106, Appendix, Dynamics.

APPROVED 17 JAN 72 REVISED (G) FOR CHANGES SEE PAGES 1, 4, 8, 6

| | | | |
|--------------------------------------|------------------------|---|-------------------|
| P.A. AF-85 | International interest | TITLE RELAYS, ELECTROMAGNETIC, 60 AMPERES, 3 PST OR 3 PDT HERMETICALLY SEALED, PERMANENT MAGNET DRIVE | MILITARY STANDARD |
| Other Cust | | | MS27751 (85) |
| Purchase Specification MIL-R-6106 | | SUPERSEDES: | PAGE 7 OF 7 |