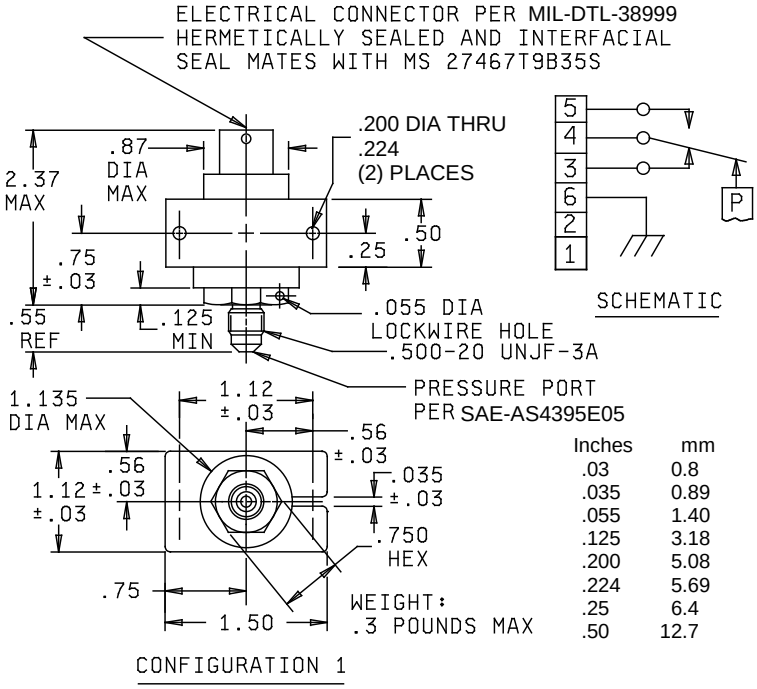
INCH-POUND
MIL-DTL-9395/39D
1 March 2010
SUPERSEDING
MIL-DTL-9395/39C
30 May 2001

DETAIL SPECIFICATION SHEET

# SWITCHES, PRESSURE, (GAUGE) TYPE II, LOW LEVEL TO 5 AMPERES

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the switches described herein shall consist of this specification sheet and MIL-DTL-9395.




| Inches | mm | Inches | mm |
|---|---|---|---|
| .03 | 0.8 | .55 | 14.0 |
| .035 | 0.89 | .56 | 14.2 |
| .055 | 1.40 | .750 | 19.05 |
| .125 | 3.18 | .87 | 22.1 |
| .200 | 5.08 | 1.12 | 28.4 |
| .224 | 5.69 | 1.135 | 28.83 |
| .25 | 6.4 | 1.50 | 38.1 |
| .50 | 12.7 | 2.37 | 60.2 |

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Exact shape of switch optional provided dimensions specified are not exceeded and mounting holes and connector location are as specified.
4. Schematic shown is for switches with pressure ports exposed to zero $lb_f/in^2$.
5. Unless otherwise specified, tolerances are ±.010 (0.25 mm) for three place decimals and ± .02 (.51 mm) for two place decimals.

FIGURE 1. Switches.

REQUIREMENTS:

Dimensions, configuration, and electrical schematic: See figure 1.

Weight: See figure 1.

Calibration: See tables I, II, III, and IV.

System pressure: 180 $lb_f/in^2$.

Proof pressure: 270 $lb_f/in^2$.

Burst pressure: 800 $lb_f/in^2$.

Electrical ratings: See table I.

Minimum current: 25,000 cycles.

Low level: 50,000 cycles.

NOTE: Switches shall be subjected only to low level loads prior to delivery.

Seal:

Electrical chamber: See table I.

Pressure chamber: Hermetic.

Reference chamber: Unsealed.

Electrical connector: See figure 1.

Pressure port: See figure 1.

Media: Dry air; nitrogen gas; fuel in accordance with MIL-DTL-5624; lubricating oil in accordance with MIL-PRF-7808; hydraulic fluid in accordance with MIL-PRF-5606 or MIL-PRF-83282; oxygen; or Coolanol 25R, or equal.

High temperature (operating and nonoperating): B (275°F).

Low temperature (operating and nonoperating): D (-65°F).

Altitude: C (except 80,000 feet).

Shock: C (100 G).

Vibration: S (test condition D, method 204 of MIL-STD-202), except 10 to 2,000 Hz, 20 G).

Supplemental nonoperating sinusoidal vibration:

Sweep time: 15 minutes.

Frequency range and amplitude: 50 through 81 Hz, .036 inch double amplitude; 81 through 210 Hz, ±12 G; 210 through 298 Hz, .0053 inch double amplitude; 298 through 50 Hz, ±24G.

Test duration: 15 minutes in each of three mutually perpendicular planes.

Life (mechanical): A (100,000 cycles).

Life (electrical): C (50, 000 cycles).

Acceleration: C (8 G).

Pulsation amplitude: A (0 percent).

Pulsation frequency: A (0 Hz).

Pressure rise: A (less than 100 $lb_f/in^2$).

Dielectric withstanding voltage (at reduced barometric pressure): Applicable at 350 V rms.

Electrical connector torque: 8 foot-pounds.

Pressure port torque: 15 foot-pounds.

Terminal strength: Applicable when terminals are used.

Flame test: Applicable.

Explosion: Applicable.

QUALIFICATION:

Single submission: Restricted to switch submitted.

Group submission: See table V.

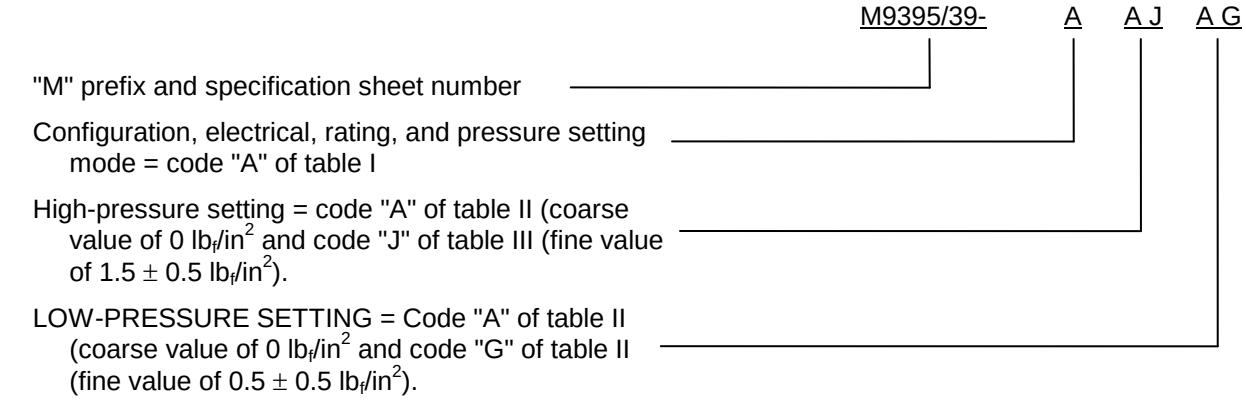
QUALIFICATION:

Single submission: Restricted to switch submitted.

Group submission: See table V.

Part or Identifying Number (PIN): Consists of "M" prefix followed by spec sheet number; a dash (-); and a five-letter code. The five-letter code identifies the configuration, electrical rating, and pressure setting mode (code from table I); high-pressure setting (coarse value code from table II) followed by fine value with applicable tolerance (code from table III); and low-pressure setting (coarse value code from table II) followed by fine value with applicable tolerance (code from table III). The five-letter code used in the following example identifies a switch of configuration 1, low level to 1 ampere resistive at 28 V dc, which actuates on increasing pressure at 1.5 $\pm$0.5 $lb_f/in^2$ and deactuates on decreasing pressure at .5 $\pm$0.5 $lb_f/in^2$.

EXAMPLE:




NOTE: Design limitations (actuation values and tolerances, deadband and actuation values and tolerances) should be coordinated with the manufacturer(s) listed on the QPL for this spec sheet before specifying a particular "M" number. The fact that operating characteristics can be coded does not necessarily mean that it can be manufactured or acquired.

TABLE I. Codes for combinations of configurations, electrical ratings, and pressure settings modes.

| | Low Level to 1 ampere resistive at 28 Vdc | | 1.5 to 5 amperes at 28 Vdc | | Pressure setting mode | |
|---|---|---|---|---|---|---|
| | Configuration 1 | | | | | |
| | Electrical chamber | | | | High pressure | Low pressure |
| | Hermetic | Unsealed | Hermetic | Unsealed | | |
| Code | A | D | G | K | At (or max) 1/ | At (or min) 1/ |
| Code | B | E | H | L | At (or max) 1/ | Differential 2/ |
| Code | C | F | J | M | Differential 2/ | At (or min) 1/ |

1/ Setting values are designated by codes from table II and III.
2/ Setting values are designated by codes from table IV.

TABLE II. Codes for coarse settings.

| Code | Coarse value ($lb_f/in^2$) | Code | Coarse value ($lb_f/in^2$) | Code | Coarse value ($lb_f/in^2$) |
|---|---|---|---|---|---|
| A | 0 | L | 30 | W | 80 |
| B | 2.5 | M | 35 | X | 85 |
| C | 5 | N | 40 | Y | 90 |
| D | 7.5 | P | 45 | Z | 95 |
| E | 10 | Q | 50 | 1 | 100 |
| F | 12.5 | R | 55 | 2 | 105 |
| G | 15 | S | 60 | 3 | 110 |
| H | 17.5 | T | 65 | 4 | 115 |
| J | 20 | U | 70 | 5 | 120 |
| K | 25 | V | 75 | 6 | 125 |

TABLE III. Codes for combinations of fine settings and tolerance values.

| | Fine value ($lb_f/in^2$) for settings below 20 $lb_f/in^2$ | | | | | Tolerance ($lb_f/in^2$) |
|---|---|---|---|---|---|---|
| | 0 | 0.5 | 1 | 1.5 | 2 | |
| Code | A | B | C | D | E | ±0.25 |
| Code | F | G | H | J | K | ±0.5 |
| Code | L | M | N | P | Q | ±1.0 |
| Code | R | S | T | U | V | ±1.5 |
| Code | W | X | Y | Z | 1 | ±2.0 |
| Code | 2 | 3 | 4 | 5 | 6 | ±2.5 |
| Code | 7 | 8 | 9 | 0 | - 4/ | Min or Max |
| | Fine value ($lb_f/in^2$) for settings of 20 $lb_f/in^2$ and above | | | | | Tolerance ($lb_f/in^2$) |
| | 0 | 1 | 2 | 3 | 4 | |
| Code | A | B | C | D | E | ±1.0 1/ |
| Code | F | G | H | J | K | ±2.0 2/ |
| Code | L | M | N | P | Q | ±3.0 3/ |
| Code | R | S | T | U | V | ±4.0 |
| Code | W | X | Y | Z | 1 | ±5.0 |
| Code | 2 | 3 | 4 | 5 | 6 | ±6.0 |
| Code | 7 | 8 | 9 | 0 | - 4/ | Min or Max |

1/ Not applicable for pressure settings above 33 $lb_f/in^2$.
2/ Not applicable for pressure settings above 66 $lb_f/in^2$.
3/ Not applicable for pressure settings above 100 $lb_f/in^2$.
4/ A dash (-) is used as the code character for these fine setting and tolerance values.

TABLE IV. Codes for differential settings. 1/

| Code | Differential value ($lb_f/in^2$) | Code | Differential value ($lb_f/in^2$) |
|---|---|---|---|
| A | 0 | T | 11 |
| B | 0.5 | U | 12 |
| C | 1 | V | 13 |
| D | 1.5 | W | 14 |
| E | 2 | X | 15 |
| F | 2.5 | Y | 16 |
| G | 3 | Z | 18 |
| H | 3.5 | 1 | 20 |
| J | 4 | 2 | 22 |
| K | 4.5 | 3 | 24 |
| L | 5 | 4 | 26 |
| M | 5.5 | 5 | 28 |
| N | 6 | 6 | 30 |
| P | 7 | 7 | 35 |
| Q | 8 | 8 | 40 |
| R | 9 | 9 | 45 |
| S | 10 | 0 | 50 |

1/ Differential settings require two codes, minimum differential and maximum differential.

TABLE V. Extent of qualification.

| PIN | Number of samples required | Tests | Qualifies |
|---|---|---|---|
| Electrical chambers either hermetically sealed or unsealed | | | |
| M9395/39-GAJAG<br>-AAJAG<br><br>-A6R3W<br>-G6R3W | 2 ea. resistive<br>2 ea. intermediate current<br>2 ea. low level<br>2 ea. resistive | Complete in accordance with qualification inspection of MIL-DTL-9395 | All |
| Electrical chambers unsealed | | | |
| M9395/39-KAJAG<br>-DAJAG<br>-D6R3W<br>-K6R3W | 2 ea. resistive<br>2 ea. current<br>2 ea. low level<br>2 ea. resistive | Complete in accordance with qualification inspection of MIL-DTL-9395 | Configuration codes D, E, F, K, L, and M |

The margins of this specification are marked with vertical lines to indicate where modifications from this revision were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Referenced documents:
- MIL-DTL-9395
- MIL-PRF-5606
- MIL-DTL-5624
- MIL-PRF-7808
- MIL-DTL-38999
- MIL-PRF-83282
- MIL-STD-202

Custodians:
- Army - CR
- Navy - EC
- Air Force - 85
- DLA - CC

Preparing activity:
- DLA - CC

(Project 5930-2008-046)

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/ .