

INCH-POUND

MIL-PRF-8805/100G

6 December 2012

SUPERSEDING

MIL-PRF-8805/100F

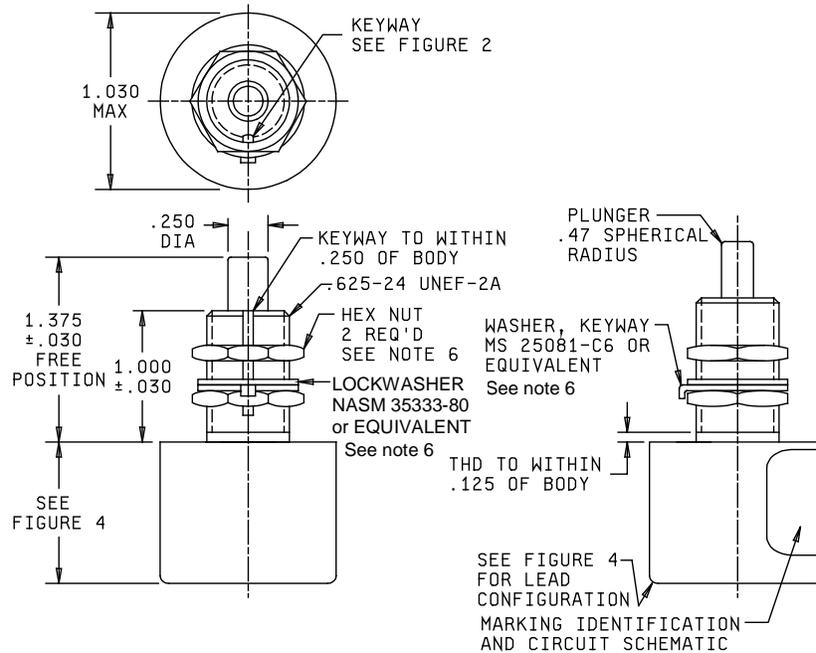
4 October 2004

PERFORMANCE SPECIFICATION SHEET

SWITCHES, SENSITIVE, PLUNGER, 10 AMPERES 2PDT AND
7 AMPERES 4PDT, RESILIENT SEAL

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

The complete requirements for acquiring the switches described herein shall consist of this specification and the latest issue of MIL-PRF-8805.

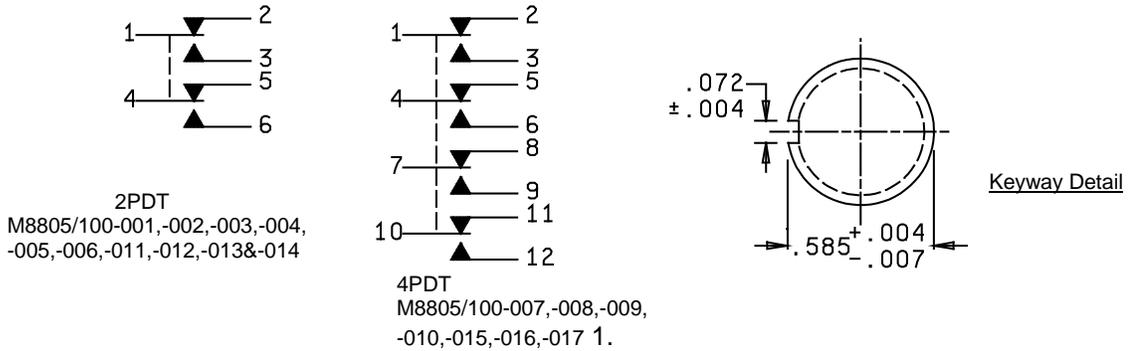


NOTES:

1. Dimensions are in inches.
2. Unless otherwise specified, tolerances are $\pm .010$ (.25 mm) for two place decimals and $\pm .005$ (0.127 mm) for three place decimals.
3. Metric equivalents are given for general information only.
4. Contour optional provided maximum dimensions specified are not exceeded.
5. The marking (identification and circuit schematic) shall be permanently and legibly marked on the switch case in the location shown (on side of body opposite keyway).
6. Hex nut shall be MS21340-05 or equivalent. Alternative base metals and protective finishes, as approved by the qualifying activity, may be utilized for hardware material.

FIGURE 1. Pin plunger switch.

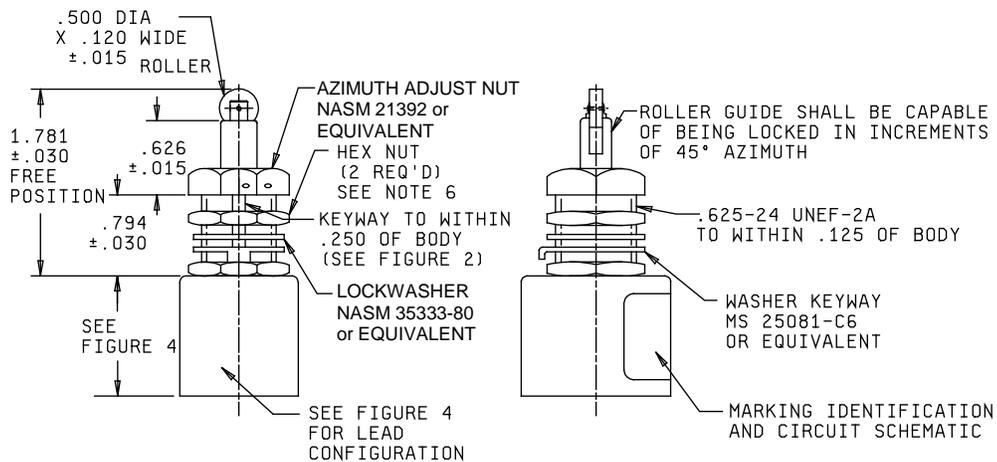
MIL-PRF-8805/100G



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FIGURE 2. Circuit schematic and keyway details.

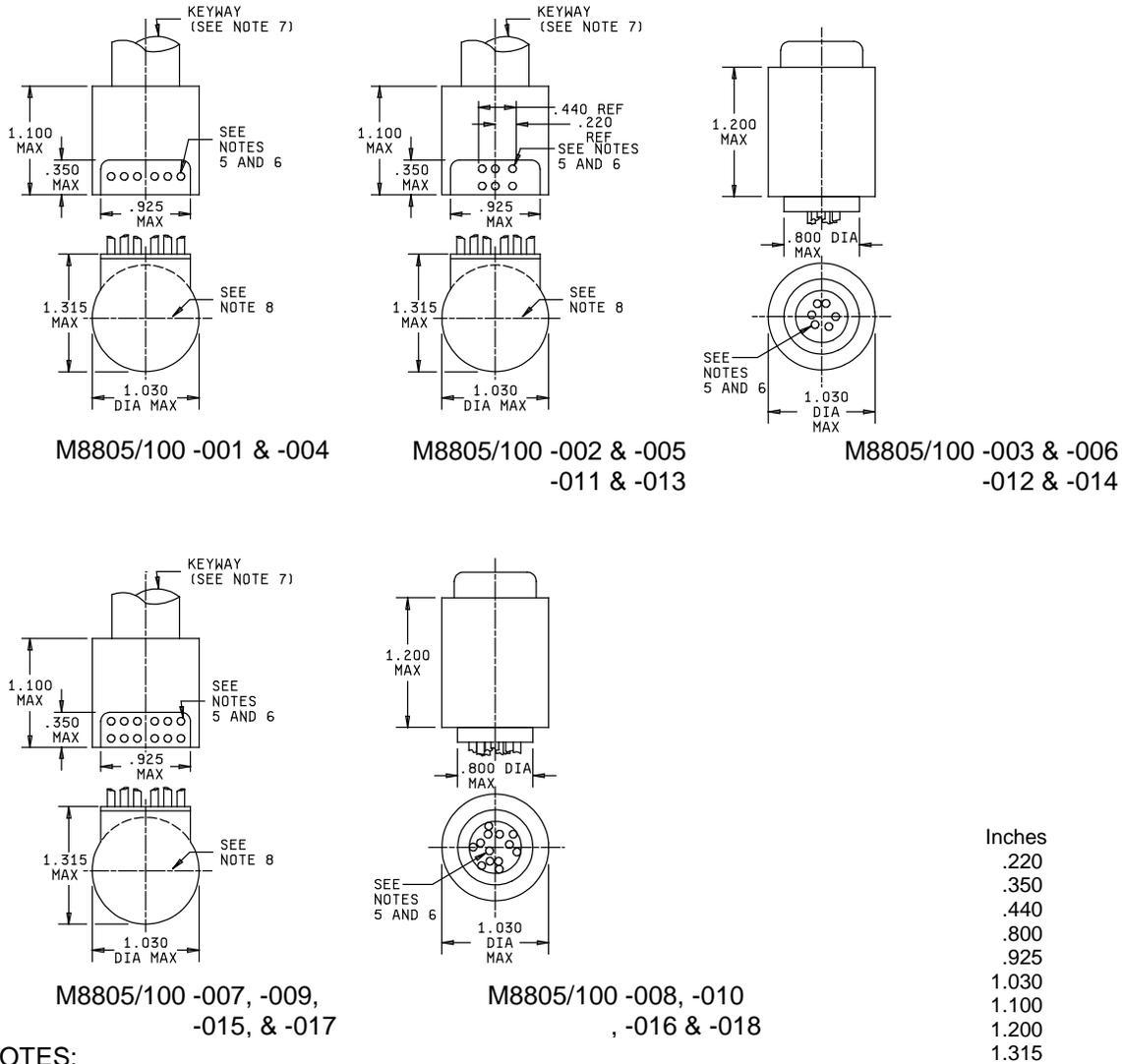


NOTES:

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FIGURE 3. Roller plunger switch.

MIL-PRF-8805/100G



NOTES:

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2. Unless otherwise specified, tolerances are ± 0.010 (.25 mm) for two place decimals and ± 0.005 (.127 mm) for three place decimals.
3. Metric equivalents are given for general information only.
4. Contour optional provided maximum dimensions specified are not exceeded.
5. Lead wire shall be marked at 3.00 inch (76.20 mm) intervals with switch circuit Identification number followed by wire gauge number (1-20, 2-20, etc.). Lead length shall be in accordance with table IV.
6. Wire exit shall minimize lead-dress strain transferred to potting.
7. For switches with side exit wires, keyway and wire exit shall be on the same side of switch.
8. Use of potting holes is optional. If a single hole is used, the largest dimensions of this hole shall not exceed .25 inch (6.35 mm). If multiple holes are used, the largest hole dimensions shall not exceed .13 inch (3.30 mm).

FIGURE 4. Lead configuration.

MIL-PRF-8805/100G

REQUIREMENTS:

Dimensions and configurations: See figure 1, 2, 3, and 4.

Enclosure design: 4 (Resilient) All entrances to the switch cavity, except through the actuator bushing, shall be sealed by fusion of glass to metal, or ceramic to metal, and the lead wires shall be potted to provide stress relief.

Temperature characteristics:

1 (-55°C to +85°C) continuous duty plus switches shall be subjected to 100 cycles of temperature variations. One cycle is defined as the temperature and times, in order shown, in table I. Immediately upon completion of testing of a temperature requirement, the switches shall be inserted into the subsequent test chamber. At the end of the temperature condition of each cycle, the switches shall make, carry, and break rated resistive current at rated voltage (sea level) for the number of operations shown in table I. Test shall begin after oven temperature stabilizes. Prior to each make/carry/break operation involving rated resistive current the switch shall carry without making or breaking 400 percent of rated resistive current for 200 milliseconds. Failures, defined as the inability to make or break rated resistive current, shall not occur throughout those tests.

TABLE I. Temperature cycling.

Temperature	Time	Number of switch operations
(°C)	(Minutes)	
110	30	30
174	10	10
215	1	2

Shock type:

Method 213, test condition B (75G), MIL-STD-202.

Vibration grade: 2 (10 Hz to 2,000 Hz).

Weight: For M8805/100-001 thru -006: .60 pounds maximum.
For M8805/100-007 thru -010: .80 pounds maximum.
For M8805/100-011 thru -014: .74 pounds maximum.
For M8805/100-015 thru -018: 1.09 pounds maximum.

Operating characteristics:

Actuating force: 9 pounds \pm 3 pounds.

Full overtravel force: 30 pounds maximum.

Releasing force: 5 pounds minimum.

Pretravel: .070 inch maximum.

MIL-PRF-8805/100G

Movement differential: .035 inch maximum.

Overtravel: .250 inch minimum.

Coincidence of operating and releasing points: All circuits shall transfer within .010 inch of plunger travel after first circuit transfers.

Strength of actuating means: 100 pounds minimum.

Azimuth adjust nut: No damage to switch or azimuth adjust nut shall result from torquing this nut to 15 pound-inches minimum.

Finish: All external surfaces of switch housing, including threaded bushing and bracket, shall be both corrosion resistant and electrically conductive. Cadmium plating shall not be used.

Contact resistance: Low level circuit requirements apply.

Dielectric withstanding voltage:

Sea level: 1,250 V rms.

Altitude: 600 V rms at 80,000 feet. After electrical endurance, the dielectric withstanding voltage points of application between all unconnected terminals of the same pole is not applicable.

Mechanical endurance: 25,000 cycles.

Electrical endurance: 25,000 cycles.

Low level circuit: 1,000 cycles at 85°C. (Applies provided switch has not made nor broken more than 250 milliamperes at 6 volts dc or peak ac).

Electrical ratings: See table II.

Moisture resistance: When switches are tested wet, the insulation resistance shall not be less than 100 megohms.

Icing: Applicable.

Case and plunger grounding for EMI: All case parts shall be bonded together (such as by staking, soldering, welding, or brazing) either along the entire abutting surfaces or at a minimum of four approximately equally spaced areas along each abutting surface. The electrical resistance between the plunger and the wire exit portion of the switch housing bracket most remote from the threaded bushing shall not exceed 100 milliohms under all the following conditions:

- a. Measurements made in accordance with MIL-STD-202, method 311.
- b. Without polishing or cleaning the areas on the switch to which the test leads are attached.
- c. With the plunger both fully extended and fully depressed.
- d. Throughout the total life of the switch.

MIL-PRF-8805/100G

Marking: Marking shall remain legible after the following test:

- a. Soak for a minimum of 72 hours at room temperature in each of the fluids specified below.
- b. After each soak period the specimen shall be wiped dry and then rubbed with a dry thumb a minimum of 20 times applying moderate pressure. NOTE: Each test specimen shall be subjected to soak periods in all the fluids.
- c. If metal foil identification plates are used, they shall comply with MIL-P-19834. In addition to the legibility requirement defined herein, the identification plate shall not become loosened or partially or completely detached from the switch housing during or after the soak tests.
- d. The test fluids to be used shall include: MIL-DTL-83133, Turbine Fuel; MIL-PRF-5606, Hydraulic Fluid, Petroleum Base, Aircraft, Missile, and Ordnance; MIL-PRF-7808, Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.

Part numbers: M8805/100 - (dash number from table IV).

TABLE II. Electrical ratings.

Load	Sea level 28 V dc		80,000 ft. 28 V dc	
	-001 thru -006 and -011 thru -014	-007 thru -010 and -015 thru -018	-001 thru -006 and -011 thru -014	-007 thru -010 and -015 thru -018
	(amperes)	(amperes)	(amperes)	(amperes)
Resistive	10	7	10	7
Inductive	4	2	4	2
Motor	6	4	6	4
Lamp	3	2	2	1

Qualification and group C retention of qualification:

Group submission: See table III.

Group A inspection:

Seal test: Only watertight test shall be performed in group A.

MIL-PRF-8805/100G

TABLE III. Qualification and group - C tests (group submission).

Examination or test	Samples	Extent of approval
Qualification inspection table of MIL-PRF-8805 <u>1/</u> <u>4/</u>	M8805/100-017 (32 units)	All
Visual and mechanical examination Dielectric withstanding voltage Operating characteristics	M8805/100-016 (2 units)	
Visual and mechanical examination Temperature cycling <u>2/</u> (in accordance with table I)	M8805/100-012 (2 units)	
Marking test <u>3/</u>	M8805/100-017 (2 units)	

- 1/ Case and plunger grounding test to be accomplished before and after mechanical endurance.
2/ Applicable in qualification testing only.
3/ Following immersion, the switch shall also be subjected to terminal strength, insulation resistance, dielectric withstanding voltage, operating characteristics, and seal tests.
4/ Group C: Explosion test not applicable.

TABLE IV. Dash numbers and configuration.

Dash numbers		Actuator	Lead wires
36 +2 inch -0 load wires	<u>1/</u> 72 +2 inch -0 load wires		
-001	---	Pin plunger	Six wire leads brought out in single row.
-002	-011	Pin plunger	Six wire leads brought out in two rows of three leads each.
-003	-012	Pin plunger	Six wire leads brought out from the bottom of the switch.
-004	---	Roller plunger	Six wire leads brought out in single row.
-005	-013	Roller plunger	Six wire leads brought out in two rows of three leads each.
-006	-014	Roller plunger	Six wire leads brought out from the bottom of the switch.
-007	-015	Pin plunger	Twelve wire leads brought out in two rows of six each.
-008	-016	Pin plunger	Twelve wire leads brought out from bottom of switch.
-009	-017	Roller plunger	Twelve wire leads brought out in two rows of six each.
-010	-018	Roller plunger	Twelve wire leads brought out from bottom of switch

- 1/ Inactive for new design. Use dash numbers -011 thru -018.

The margins of this specification are marked with vertical lines to indicate where modifications from this amendment 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-PRF-5606
MIL-PRF-7808
MIL-PRF-8805
MIL-DTL-83133
MIL-P-19834
MS21340
MS25081
MIL-STD-202
NASM 21392
NASM 35333

Custodians:

Air Force - 85
DLA - CC

Preparing activity:

DLA - CC

Review activities:

Air Force – 99

(Project 5930-2011-112)

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/>.