DEFENSE LOGISTICS AGENCY
DEFENSE SUPPLY CENTER, COLUMBUS
POST OFFICE BOX 3990
COLUMBUS, OH 43216-5000

IN REPLY
REFER TO DSCC-VAT 1 July 2004

MEMORANDUM FOR MILITARY/INDUSTRY DISTRIBUTION

SUBJECT: Initial Draft of MIL-PRF-8805 /11J, /14F, /15G, /17G, /18G, /19F, /23G, /25F, /34E, /38G, /40H, /47G, /48H, /49H, /65D, /76H, /84E, /90F, /96E, /100F, /101K, /104C, /107C, /110D, and /114C. Project numbers 5930-1838 through -1863.

The drafts of the above subject documents are being sent to you for review and comments. These drafts consist o the following changes:

Updating of referenced documents.
Incorporation of amendments.

If these documents are of interest to you, please provide your comments electronically. This can be in the form of a return e-mail, with or without an attached text file. A 45-day coordination cycle from the date of this letter has been allotted. Please provide your comments within that time period. If no comments are received in the allotted 45 day coordination cycle, concurrence is assumed and all comments received after will be held to the first amendment. If an electronic response is not possible we will still accept comments via letter, facsimile or phone call but only after you have contacted the project officer listed below. The draft documents can be found at the following DSCC-VA web page:

www.dscc.dla.mil/Programs/MilSpec/initialdrafts.asp

This process still requires military departments to identify their comments as “Essential” or “Suggested”. Essential comments must be justified with supporting data. Military review activities should forward comments to their custodians or this office, as applicable, in sufficient time to allow for consolidating the department reply.

If there are any questions, please contact Mark Rush by the preferred method of E-Mail at Mark.Rush@dla.mil or by telephone at commercial 614-692-0550, DSN 850-0550; or by facsimile at 614-693-1644. Our mailing address as a last resort is Defense Supply Center, Columbus, DSCC-VAT, P.O. Box 3990, Columbus, OH 43216-5000. If you have further questions or concerns you may contact me at Kendall.Cottongim@dla.mil, by telephone at 614-692-0676 or by facsimile at 614-692-6939.

/ SIGNED /
KENDALL A. COTTONGIM
Chief
Electronics Components Team

NOTE: This draft, dated July 1, 2004 prepared by DLA-CC, has not been approved and is subject to modification. DO NOT USE PRIOR TO APPROVAL. (Project 5930-1858)

INCH-POUND
MIL-PRF-8805/100F
DRAFT

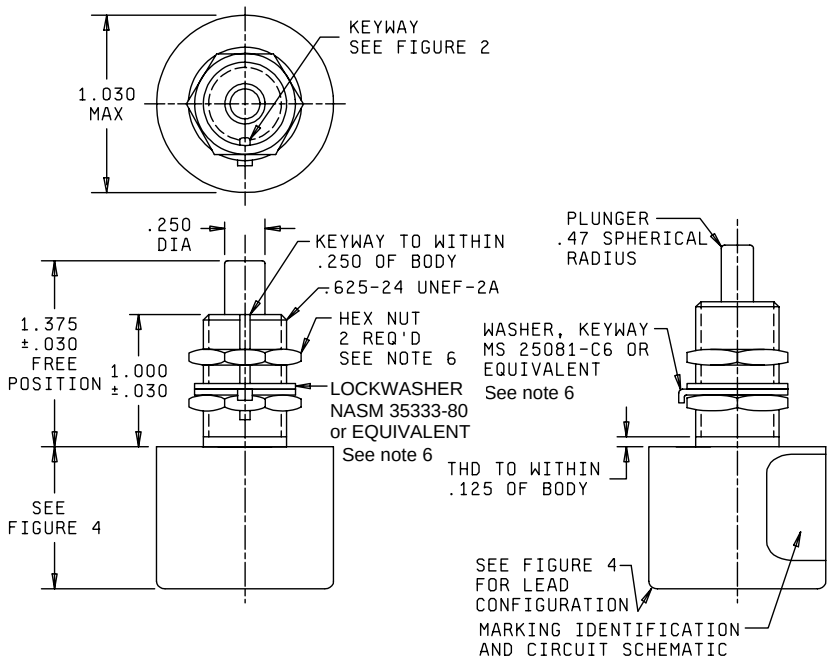
SUPERSEDING
MIL-PRF-8805/100E
3 September 1999

PERFORMANCE SPECIFICATION SHEET

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

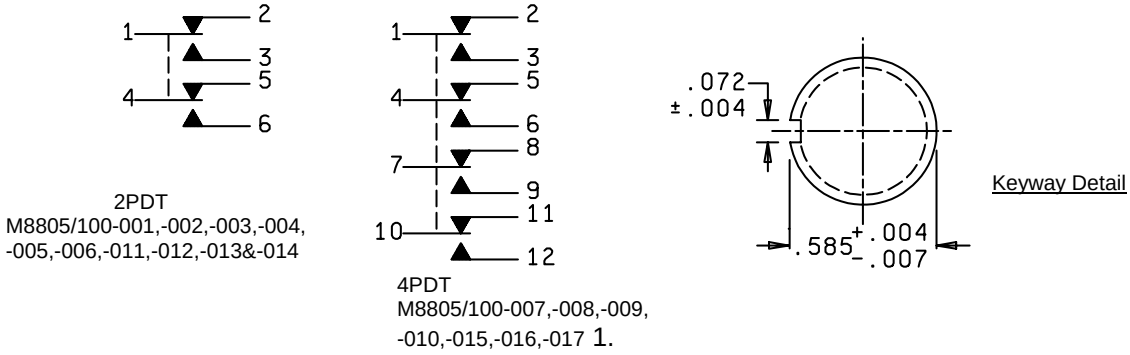
This specification is approved for use by all Departments and Agencies of the Department of Defense.

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 ±.010 (.25 mm) for two place decimals and ±.005 (0.13 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.



NOTES:
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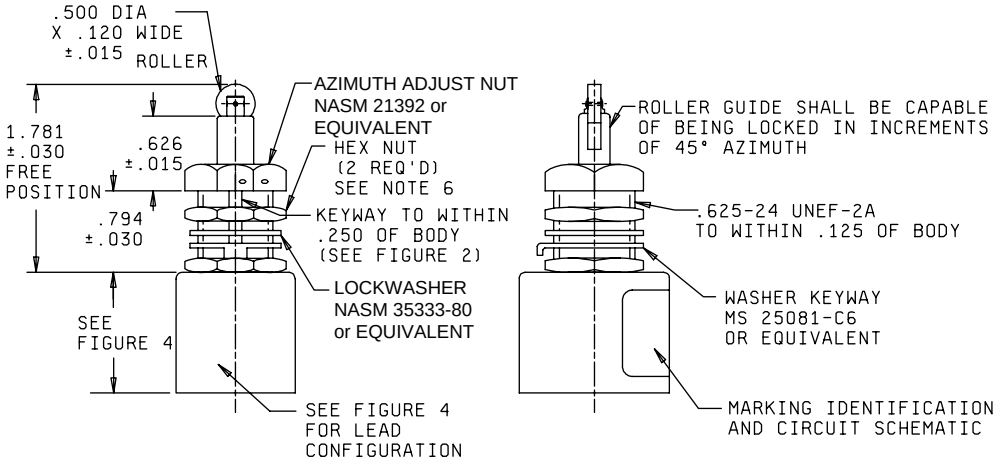
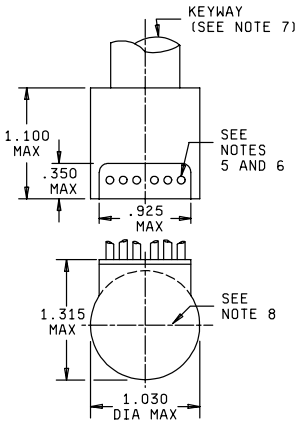
2. Metric equivalents are given for general information only.

FIGURE 2. Circuit schematic and keyway details.

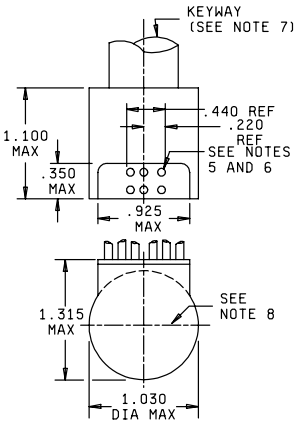


NOTES:
1. Dimensions are in inches.
2. Unless otherwise specified, tolerances are ±.010 (.25 mm) for two place decimals and ±.005 (.13 mm) for three place decimals.
3. Metric equivalents are given for general information only.
4. Contour optional provided maximum dimensions specified are not exceeded.
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.

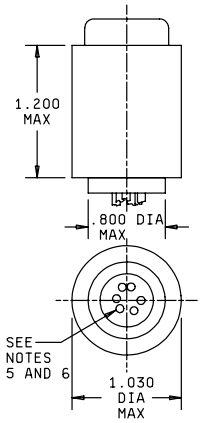
FIGURE 3. Roller plunger switch.



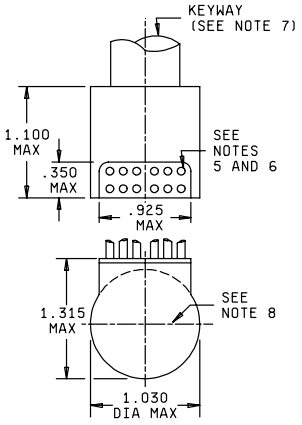
M8805/100 -001 & -004



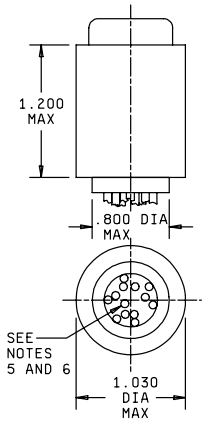
M8805/100 -002 & -005
-011 & -013



M8805/100 -003 & -006
-012 & -014



M8805/100 -007, -009,
-015, & -017



M8805/100 -008, -010
, -016 & -018

NOTES:

1. Dimensions are in inches.
2. Unless otherwise specified, tolerances are ±.010 (.25 mm) for two place decimals and ±.005 (.13 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).

Inches	mm
.220	5.59
.350	8.89
.440	11.18
.800	20.32
.925	23.50
1.030	26.16
1.100	27.94
1.200	30.48
1.315	33.40

FIGURE 4. Lead configuration.

REQUIREMENTS:

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

Enclosure design: 4 (Resilient) 1/.

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 (°C)	Time (Minutes)	Number of switch operations
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 ±3 pounds.
Full overtravel force: 30 pounds maximum.
Releasing force: 5 pounds minimum.
Pretravel: .070 inch maximum.
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.

1/ 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.

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 meghohms.

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.

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.

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

Examination or test	Samples	Extent of approval
Qualification inspection table of MIL-PRF-8805 1/ 4/	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 2/ (in accordance with table I)	M8805/100-012 (2 units)	
Marking test 3/	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 $^{+2}_{-0}$ inch 1/ load wires	72 $^{+2}_{-0}$ inch 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.

Referenced Documents:
- MIL-PRF-5606
- MIL-PRF-7808
- MIL-PRF-8805
- MIL-PRF-83133
- MIL-P-19834
- MS21340
- MS25081
- MIL-STD-202
- NASM 21392
- NASM 35333

Custodians:
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

Review activities:
Air Force – 99

(Project 5930-1858)

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 www.dodssp.daps.mil.