INCH-POUND
MIL-PRF-94/6E
w/Amendment 2
22 September 2015
SUPERSEDING
MIL-PRF-94/6E
w/Amendment 1
17 August 2011

PERFORMANCE SPECIFICATION SHEET

RESISTORS, VARIABLE, COMPOSITION, STYLE 2RV7

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

The requirements for acquiring the product described herein shall
consist of this specification sheet and MIL-PRF-94.

1. SCOPE

1.1 Scope. This specification covers the detail requirements for style 2RV7 composition, variable, dual (2 ganged) resistor.

1.2 Classification.

1.2.1 Part or Identifying Number (PIN). Resistors covered by this specification are identified by a PIN which is in the following form.

2RV7	N	Y	SD	103	102	A
Style (1.2.1.1)	Bushing (1.2.1.2)	Temperature and moisture resistance characteristic (1.2.1.3)	Operating shaft (1.2.1.4)	Resistance panel section (1.2.1.5)	Resistance rear section (1.2.1.5)	Resistance characteristic (1.2.1.6)

1.2.1.1 Style. The type designation is identified by the four digit symbol “2RV7”. The first three digits identify a dual ganged (2 cup) composition, variable resistors and the digit identifies the size and power rating of both cups.

1.2.1.2 Bushing. The type of bushing is identified by a single letter in accordance with MIL-PRF-94.

1.2.1.3 Temperature and moisture-resistance characteristic. The temperature and moisture resistance characteristic is identified by a single letter in accordance MIL-PRF-94

1.2.1.4 Operating shaft. The operating shaft styles and lengths are identified by a two digit symbol. The first letter indicates operating shaft in accordance with MIL-PRF-94, and the second letter indicates operating shaft length, as specified in table I.

1.2.1.5 Resistance. The nominal resistance value expressed in ohms is identified by a three digit number. The first two digits represent significant figures and the last specifies the number of zeros to follow. The first three digits in the PIN indicate the value of the resistor cup nearest the mounting surface and the next three digits indicate the resistance value of the second cup.

Comments, suggestions, or questions on this document should be addressed to DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, OH 43218-3990, or emailed to Resistor@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil.

AMSC N/A

FSC 5905

TABLE I. Shaft length. 1/

Symbol	Length of shafts from mounting surface of resistors, (nominal)		
	Flatted	Slotted	
	Bushings N and S (inches ±0.313)	Bushings N and S (inches ±0.0313)	Bushings L and T (inches ±0.0313)
A			0.625
B		0.500	
D	0.875	0.875	0.875
G		1.250	
N		1.500	
J		2.000	
K		2.500	

1/ For resistors with panel seals, the mounting surface shall be considered the metal face of the panel seal when the seal is firmly seated against the resistor body.

1.2.1.6 Resistance characteristic combinations. The resistance characteristic combination is identified by a single letter which describes a combination of resistance characteristic symbols per MIL-PRF-94, as specified in table II.

TABLE II. Resistance characteristics combination symbol.

Resistance characteristic combination symbol	Resistance characteristic symbol	
	Panel cup	Rear cup
A	A	A
C	C	C
G	A	C
H	C	A

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATION

MIL-PRF-94 - Resistor, Variable, Composition, General Specification for.

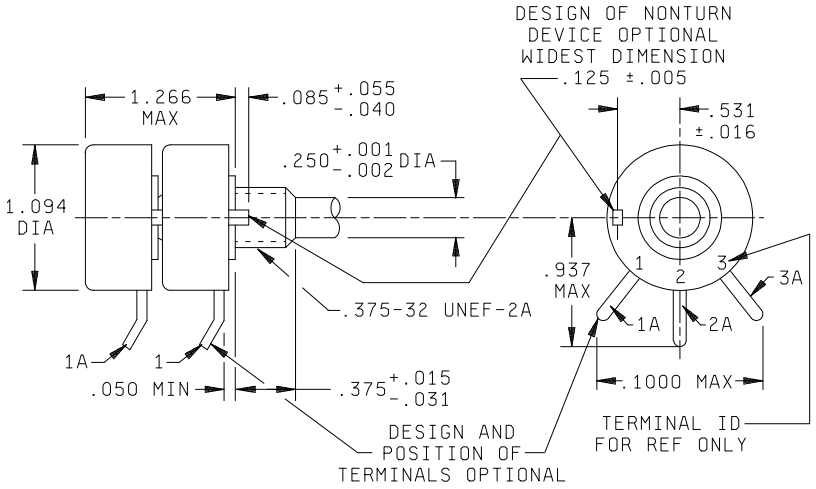
(Copies of these documents are available online at http://quicksearch.dla.mil).

2.3 Order of precedence. In event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

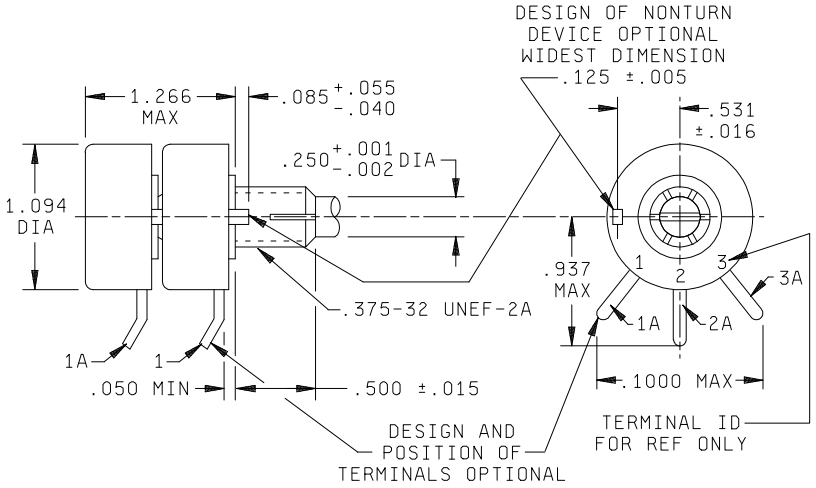
3. REQUIREMENTS

3.1 General. The requirements for acquiring the product described herein shall consist of this document and MIL-PRF-94.

3.2 Interface and physical dimensions. The resistors shall meet the interface and physical dimensions specified in figure 1.

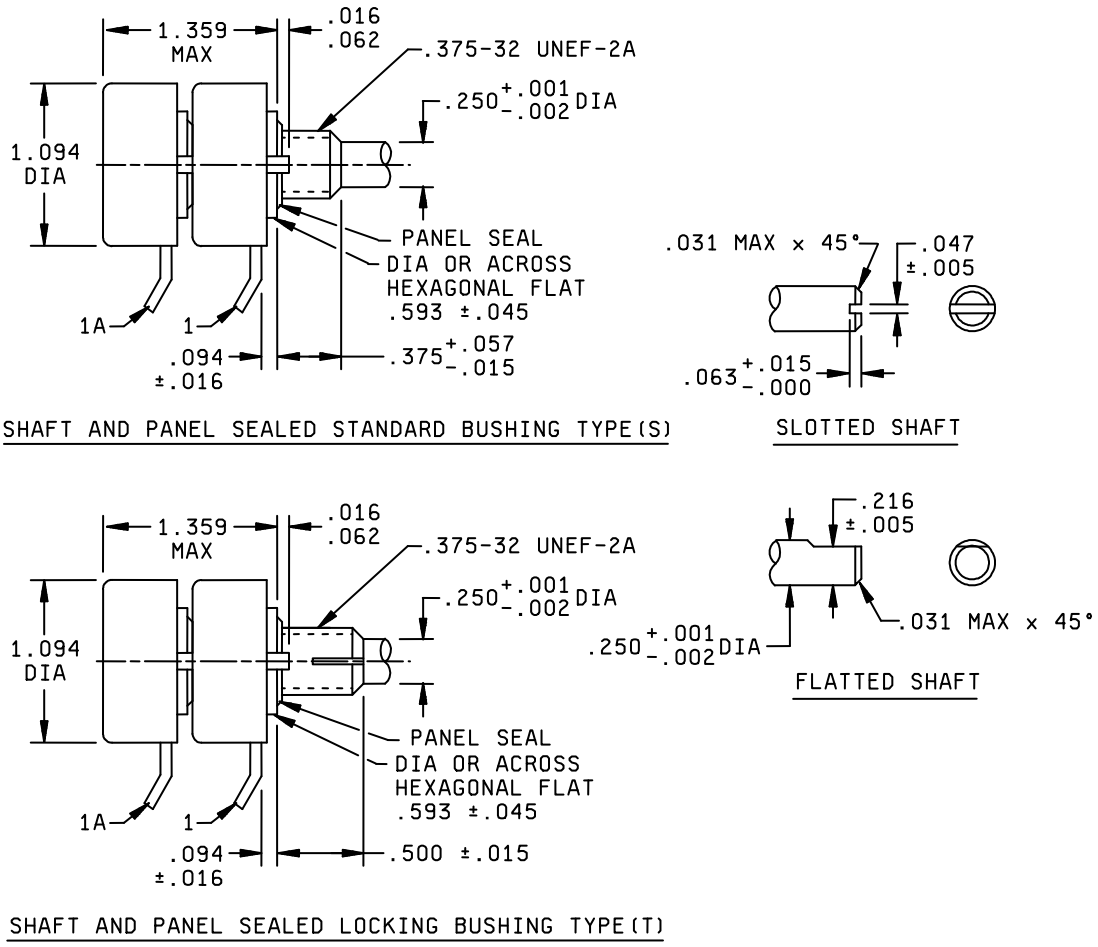


STANDARD BUSHING TYPE(N)



LOCKING BUSHING TYPE(L)

FIGURE 1. Style 2RV7.



Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
0.001	0.03	0.040	1.02	0.062	1.57	0.250	6.35	1.000	25.40
0.002	0.05	0.045	1.14	0.063	1.60	0.375	9.53	1.094	27.79
0.005	0.13	0.047	1.19	0.085	2.16	0.500	12.70	1.266	32.16
0.015	0.38	0.050	1.27	0.094	2.39	0.531	13.49	1.359	34.52
0.016	0.41	0.055	1.40	0.125	3.18	0.593	15.06		
0.031	0.79	0.057	1.45	0.216	5.49	0.937	23.80		

NOTES:

1. Dimensions are in inches. Metric equivalents are given for general information.
2. Unless otherwise specified, tolerance is ±0.062 (1.57mm).

FIGURE 1. Style 2RV7 Continued.

3.3 Nominal total resistance and rated continuous working voltages. The nominal total resistance and rated continuous working voltage (RCWV) shall be as specified in table III. These voltage ratings are based on full power dissipation in the specified section. For other combinations of power ratings listed in 3.5, the applicable working voltage should be calculated from the following formula:

$$E = \sqrt{PR}$$

Where:

E = Rated dc or root mean square (rms) continuous working voltage.
P = Power rating.
R = Nominal total resistance.

TABLE III. Nominal total resistance and rated continuous working voltage.

Nominal total Resistance (in ohms)	RCWV 1/ Resistance characteristic combination							
	A		C		G		H	
	Panel section	Rear section	Panel section	Rear section	Panel section	Rear section	Panel section	Rear section
50	10	9			10			9
100	14	13	10	9	14	9	10	13
150	17	15	12	11	17	11	12	15
200	20	18			20			18
250	22	20	16	14	22	14	16	20
350	26	24	18	17	26	17	18	24
500	32	28	23	20	32	20	23	28
750	39	35	28	24	39	24	28	35
1,000	45	40	32	28	45	28	32	40
1,500	55	49	39	35	55	35	39	49
2,000	63	57	45	40	63.3	40	45	57
2,500	71	63	50	45	71	45	50	63
3,500	84	75	60	53	84	53	60	75
5,000	100	89	71	63	100	63	71	89
7,500	122	110	87	77	122	77	87	110
10,000	141	126	100	89	141	89	100	126
15,000	173	155	123	109	173	109	123	155
20,000	200	179	141	126	200	126	141	179
25,000	224	200	160	141	224	141	160	200
35,000	264	237	187	167	264	167	187	237
50,000	316	283	224	200	316	200	224	283
75,000	387	346	249	245	387	245	249	346
0.10M	445	400	316	283	445	283	316	400
0.15M	500	490	350	346	500	346	350	490
0.20M	500	500	350	350	500	350	350	500
0.25M	500	500	350	350	500	350	350	500
0.35M	500	500	350	350	500	350	350	500
0.50M	500	500	350	350	500	350	350	500
0.75M	500	500	350	350	500	350	350	500
1.00M	500	500	350	350	500	350	350	500
1.50M	500	500	350	350	500	350	350	500
2.00M	500	500	350	350	500	350	350	500
2.50M	500	500	350	350	500	350	350	500
3.50M	500	500	350	350	500	350	350	500
5.00M	500	500	350	350	500	350	350	500

1/ Rated for continuous working voltage at 70°C. These are maximum values that would apply only when the other section has zero wattage dissipated.

3.4 Mounting and locking nuts. The mounting nut shall be 0.094 inches (2.388 mm) thick and measure 0.500 inches (12.70 mm) across the hexagonal flats. The locking nut shall be within the limits 0.151 inches (3.835 mm)and 0.234 inches (5.94 mm) thick and shall measure 0.500 inches (12.70 mm) across the hexagonal flats. The thread size shall be 0.375-32 NEF-2B.

3.4.1 Internal tooth lockwasher. Internal tooth lockwasher of suitable size shall be applied.

3.4.2 Retainer rings. If retainer rings are used, they shall have a maximum thickness of 0.047 inches (1.194 mm).

3.5 Power rating. The maximum continuous power rating in watts with both entire resistor elements in the circuit for the various resistance characteristic combinations are as specified in table IV.

TABLE IV. Maximum continuous power rating (watts).

Resistance characteristic combination							
A		C		G		H	
Panel section	Rear section	Panel section	Rear section	Panel section	Rear section	Panel section	Rear section
0.00	1.60	0.00	0.80	0.00	0.80	0.00	1.60
0.20	1.59	0.10	0.79	0.20	0.79	0.10	1.59
0.40	1.56	0.20	0.78	0.40	0.78	0.20	1.56
0.60	1.52	0.30	0.76	0.60	0.76	0.30	1.52
0.80	1.46	0.40	0.73	0.80	0.73	0.40	1.46
1.00	1.38	0.50	0.69	1.00	0.69	0.50	1.38
1.20	1.28	0.60	0.64	1.20	0.64	0.60	1.28
1.40	1.14	0.70	0.57	1.40	0.57	0.70	1.14
1.60	0.96	0.80	0.48	1.60	0.48	0.80	0.96
1.80	0.70	0.90	0.35	1.80	0.35	0.90	0.70
2.00	0.00	1.00	0.00	2.00	0.00	1.00	0.00

3.6 Torque.

3.6.1 Operating torque. The torque required to effect rotation shall be 1 ounce-inch minimum and 12 ounce-inch maximum.

3.6.2 Stop torque. The torque applied to the operating shaft to the stops shall be 8 pound-inch.

3.6.3 Locking torque (as applicable). For the locking bushing type resistors, the locking nut shall be tightened with a torque of 10 pound-inches. After the locking nut is tightened, the contact arm shall not move when a torque of 30 ounce-inches is applied to the shaft.

3.7 Total mechanical rotation. The total mechanical rotation with a switch shall be within the limits of 309 degrees and 320 degrees.

3.8 Thermal cycling. The resistance shall not change in excess of 4 percent.

3.9 Pure tin. The use of pure tin, as an underplate or final finish, is prohibited both internally and externally. Tin content of resistor components and solder shall not exceed 97 percent, by mass. Tin shall be alloyed with a minimum of 3 percent lead, by mass (see 6.3).

4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with MIL-PRF-94.

4.2 Dielectric withstanding voltage. In the dielectric withstanding voltage test, the applied potential shall be 450 volts rms at reduced barometric pressure.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military services system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The intended use specified in MIL-PRF-94 is applicable to this specification.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification, and the complete PIN (see 1.2).

b. Unless otherwise specified (see 2.1), the versions of the individual documents referenced will be those in effect on the date of release of the solicitation.

c. Packaging instructions (see 5.1).

d. Hardware, whether assembled on resistor (see 3.4.6.1 of MIL-PRF-94).

6.3 Tin whisker growth. The use of alloys with tin content greater than 97 percent, by mass, may exhibit tin whisker growth problems after manufacture. Tin whiskers may occur anytime from a day to years after manufacture and can develop under typical operating conditions, on products that use such materials. Conformal coatings applied over top of a whisker-prone surface will not prevent the formation of tin whiskers. Alloys of 3 percent lead, by mass, have shown to inhibit the growth of tin whiskers. For additional information on this matter, refer to ASTM-B545 (Standard Specification for Electrodeposited Coatings of Tin).

6.4 Amendment notification. The margins of this specification are marked with vertical lines to indicate modification generated by this amendment. 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 and relationship

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

Preparing activity:
DLA - CC

Review activities
Army - AT, AV, CR4, EA
Navy - AS, CG, MC, OS
Air Force - 19, 99

(Project 5905-2015-036)

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