

PERFORMANCE SPECIFICATION
RESISTOR, VARIABLE, WIREWOUND,
SEMI-PRECISION, STYLE RK11

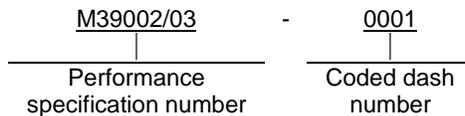
This specification is approved for use by all Departments
And Agencies of the Departments of Defense.

The requirements for acquiring the product described herein shall consist
of this specification sheet and [MIL-PRF-39002](#).

1. SCOPE

1.1 Scope. This specification covers the associated requirements for a variable, wirewound, semi-precision resistors. These resistors are capable of full load operation at a maximum ambient temperature of 85°C, and suitable for continuous operation. These resistors have a tolerance of ±5 percent.

1.2 Part or Identifying Number (PIN). Resistors covered by this specification are identified by a PIN which consists of the basic number of this specification and a coded dash number taken from [table I](#). The PIN is in the following form:



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 are 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 of 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 cited in the solicitation (see [6.2](#)).

DEPARTMENT OF DEFENSE SPECIFICATIONS

[MIL-PRF-39002](#) - Resistor, Variable, Wire-Wound, Semi-Precision, General Specification for.

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

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@dlam.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>.



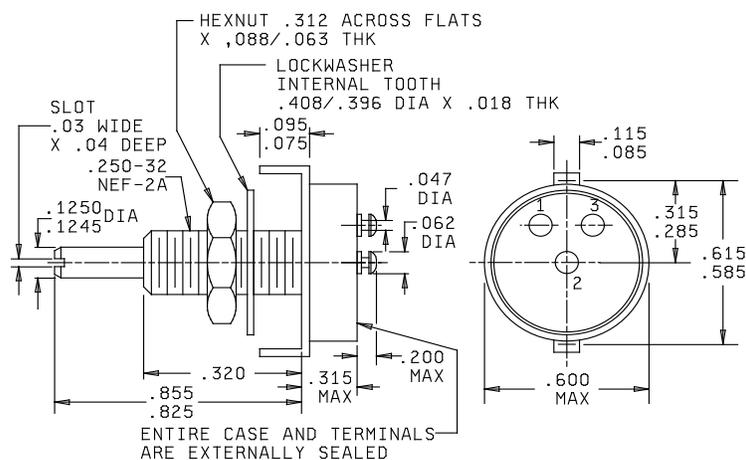
MIL-PRF-39002/3C
w/Amendment 1

2.3 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence unless otherwise noted. 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-39002.

3.2 Interface and physical dimensions. Resistors shall meet the interface and physical dimensions specified on figure 1, as applicable.



<u>Inches</u>	<u>mm</u>	<u>Inches</u>	<u>mm</u>	<u>Inches</u>	<u>mm</u>	<u>Inches</u>	<u>mm</u>
.018	0.46	.085	2.16	.285	7.24	.600	15.24
.03	0.8	.088	2.24	.312	7.92	.615	15.62
.04	1.0	.095	2.41	.315	8.00	.825	20.96
.047	1.19	.115	2.92	.320	8.13	.855	21.72
.062	1.57	.1245	3.162	.396	10.06	4.00	101.60
.063	1.60	.1250	3.175	.408	10.36		
.075	1.90	.250	6.35	.585	14.86		

NOTES:

1. Dimension are in inches.
2. Metric equivalentents are given for general information only.

FIGURE 1. Style RK11 resistor.

3.3 Power rating. The power rating shall be 1.5 watts based on full load operation at an ambient temperature of 85°C.

3.4 Resistance value. Resistance value shall be in accordance with [table I](#).

MIL-PRF-39002/3C
w/Amendment 1

TABLE I. Style RK11 resistor.

Dash number	Type designation <u>1/</u>	Shaft length (slotted shaft style) in inches ± 0.015	Nominal total resistance value (ohms) ± 5 percent	Nominal resolution (percent) <u>2/</u>	Rated ac and dc working voltage (volts)	Terminal
0001	RK11SLCS502	.850	5,000	0.17	122	S

1/ For reference purposes only.

2/ Percent of resolution = $1/N \times 100$. N = number of turns.

3.5 Shaft length. Shaft length shall be in accordance with table I.

3.6 Shaft style. Shaft style shall be in accordance with table I.

3.7 Bushing. The bushing shall be locking.

3.8 Nominal resolution. Nominal resolution shall be in accordance with table I.

3.9 Rated working voltage. Rated working voltage shall be in accordance with table I.

3.10 Mechanical travel. The mechanical travel shall be 360° .

3.11 Actual effective electrical travel. The actual effective electrical travel shall be $300^\circ \pm 3^\circ$.

3.13 Electrical output. The electrical output (in terms of percent of applied voltage) is linear with respect to the angular position of the contact arm.

3.12 Hardware. Hardware shall be as specified in [figure 1](#) and shall be corrosion resistant. (Hardware optional between supplier and prime contractor.)

3.14 Rotational life. The rotational life cycle angle shall be not less than 98 percent of the effective electrical travel angle. Electrical continuity shall be maintained throughout the cycle.

3.15 Mounting bushing. The mounting bushing shall withstand, without damage, a torque of from 15.5 inch-pounds to 16.5 inch-pounds applied to tighten the mounting nut for five second.

3.16 Shaft to bushing seal (O-ring shaft seal) (see [4.2.1](#)). Shaft to bushing seal shall have no evidence of a continuous stream of bubbles emanating from the shaft to the bushing seal.

3.17 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 [6.5](#)).

3.17 Marking. Due to size limitations, marking of the schematic diagram is optional.

MIL-PRF-39002/3C
w/Amendment 1

4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with MIL-PRF-39002.

4.2 Group A inspection. Group A inspection shall include the shaft to bushing seal test.

4.2.1 Shaft to bushing seal. Resistors shall be tested in accordance with following:

- a. Mounting shall be in accordance with figure 2. the mounting nut shall be torque to 15.5 inch-pounds to 16.5 inch-pounds.
- b. Condition the sample at -62°C and $+71^{\circ}\text{C}$ for 15 minutes at each temperature extreme with five minutes maximum between temperature extremes and return to room temperatures.
- c. Immerse the test chamber in water as shown in figure 2. Pressurize the sealed test chamber with dry air or nitrogen to 5 psig ± 0.5 psig for 60 seconds ± 10 seconds.
- d. No failures allowed.

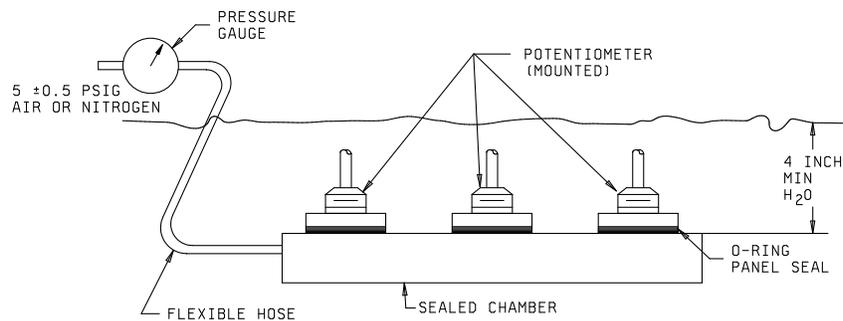


FIGURE 2. Shaft to bushing seal test.

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 Department or Defense Agency, or within the military service's 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

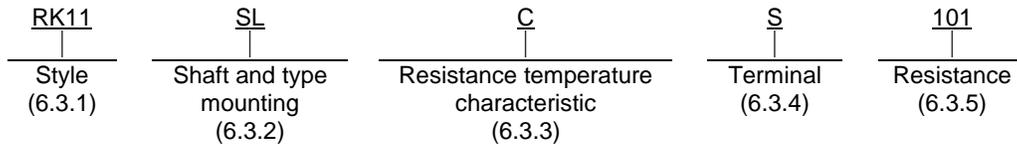
(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Notes. The notes specified in [MIL-PRF-39002](#) are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this date of this specification, the applicable associated specification, and the complete PIN.
- 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 requirements (see [5.1](#)).

6.3 Type designation. The type designation for identifying these parts is as follows:



NOTE: This is for information only. For the correct PIN, see [1.2](#).

6.3.1 Style. The style is identified by the two letter symbol "RK" followed by a two digit number; the letters identify semi-precision wirewound, variable resistors, and the number identified the physical size.

6.3.2 Shaft and type mounting. The style of shaft, type of mounting, and length of shaft is identified by a two letter symbol. The first letter indicates the style of shaft and type of mounting and the second letter indicates the length of shaft, see [MIL-PRF-39002](#).

6.3.3 Resistance temperature characteristic. The resistance temperature characteristic of the completed resistor is identified by a single letter, see [MIL-PRF-39002](#).

6.3.4 Terminals. The terminals are identified by a single letter, see [MIL-PRF-39002](#).

6.3.5 Resistance. The nominal total resistance value expressed in ohms is identified by a three digit number; the first two digits represent significant figures and the last digit specified the number of zeros to follow, see [MIL-PRF-39002](#).

6.4 Extension of qualification. The manufacturers qualified to style RK09 ([MIL-PRF-39002/1](#)) can extend qualifications to style RK11 by submitting and passing the following additional test:

- a. 13 units tested to the strength of mounting bushing test.
- b. 13 units tested to the shaft to bushing seal test.
- c. No failures are allowed.

MIL-PRF-39002/3C
w/Amendment 1

6.5 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).

6.6 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

Custodian:
Army - CR
DLA - CC

Preparing activity:
DLA - CC

Review activity:
Army - AR

(Project 5905-2015-047)

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