

INCH-POUND

MIL-PRF-39015/2J
w/ Amendment 2
2 September 2022
SUPERSEDING
MIL-PRF-39015/2J
w/ Amendment 1
9 June 2017

PERFORMANCE SPECIFICATION SHEET

RESISTOR, VARIABLE, WIREWOUND
(LEAD-SCREW ACTUATED),
NONESTABLISHED RELIABILITY AND ESTABLISHED RELIABILITY
STYLE RTR22

TERMINATION "L" IS INACTIVE FOR NEW DESIGN (see 6.5)

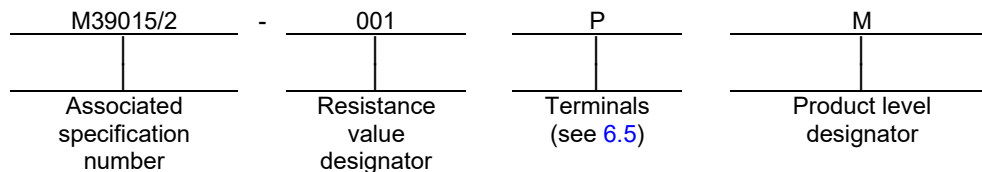
This specification is approved for use by all Departments
and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall
consist of this specification sheet and [MIL-PRF-39015](#).

1. SCOPE

1.1 Scope. This specification covers the associated requirements for style RTR22, lead-screw actuated, wirewound, variable resistors. The resistors are available in a ± 5 percent resistance tolerance and terminal types L (inactive for new design), P, W, and X.

1.2 Part or Identifying Number (PIN). Resistors covered by this specification are identified by a PIN which consists of the document number and slash sheet, resistance value designator, terminal type, and product level. The PIN is derived in accordance with MIL-PRF-39015 and in the following format.



NOTE: The slash "/" and the dash "-" are needed in the procurement of this part.

Comments, suggestions, or questions on this document should be emailed to usarmy.apg.cerdec.mbx.standardization-crx@mail.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

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FSC 5905



MIL-PRF-39015/2J
w/ Amendment 2

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 user 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 cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-39015 - Resistor, Variable, Wirewound, (Lead Screw Actuated), Nonestablished Reliability and Established Reliability, General Specification for

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

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, 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-39015.

3.2 Design and construction. Resistors shall be of the design, construction, and physical dimensions specified on [figure 1](#).

3.3 Power rating. The power rating shall be 3/4 watt, based on full load operation at an ambient temperature of 85°C.

3.4 Nominal resistance value, maximum resolution, and maximum rated ac or dc working voltage. Nominal resistance value, maximum resolution, and maximum rated ac or dc working voltages shall be as specified in [table I](#).

3.5 Actual effective electrical travel. Actual effective electrical travel shall be 20 turns minimum, and 42 turns maximum.

3.6 Operating torque. Operating torque shall be a maximum of 5 ounce-inches.

* 3.7 Weight. The maximum weight shall be 0.00529 pound (2.4 grams).

MIL-PRF-39015/2J
w/ Amendment 2

4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with [MIL-PRF-39015](#).

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TABLE I. Nominal resistance value, and maximum resolution,
and maximum rated ac or dc working voltage.

Type designation <u>1/</u>	Nominal resistance value (in ohms) <u>2/</u>	Maximum resolution <u>3/</u>	Maximum rated ac or dc working voltage	Dash number <u>4/</u>
	<u>Ohms</u>	<u>Percent</u>	<u>Volts</u>	<u>M39015/2-</u>
RTR22D-100-	10	1.3	2.7	009
RTR22D-200-	20	1.0	3.8	010
RTR22D-500-	50	0.80	6.1	011
RTR22D-101-	100	0.51	8.7	001
RTR22D-201-	200	0.42	12.3	002
RTR22D-501-	500	0.42	19.4	003
RTR22D-102-	1,000	0.36	27.4	004
RTR22D-202-	2,000	0.29	38.7	005
RTR22D-502-	5,000	0.26	61.3	006
RTR22D-103-	<u>5/</u> 10,000	0.14	86.7	007
RTR22D-203-	<u>6/</u> 20,000	0.11	122.0	008

1/ Type designation is for information only and will include additional symbols to complete type designations.

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2/ For Navy use, resistance values shall be based on the use of wire having no less than 0.001-inch nominal (0.0009 absolute) diameter.

3/ Maximum resolution shown is theoretical.

4/ Complete dash number will include symbols for terminal type and failure rate level.

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5/ Value based on the use of wire having no less than 0.001-inch nominal (0.0009 absolute) diameter.

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6/ Value based on the use of wire having no less than 0.0008-inch nominal (0.00072 absolute) diameter.

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 activities within the Military Service 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. In addition to the notes specified herein, the notes specified in [MIL-PRF-39015](#) are applicable to this specification.

MIL-PRF-39015/2J
w/ Amendment 2

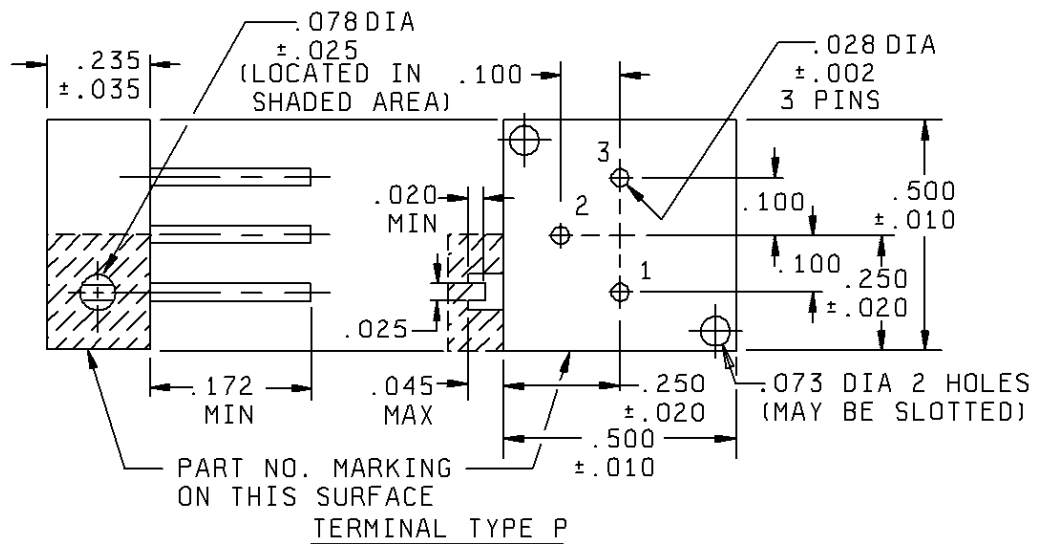
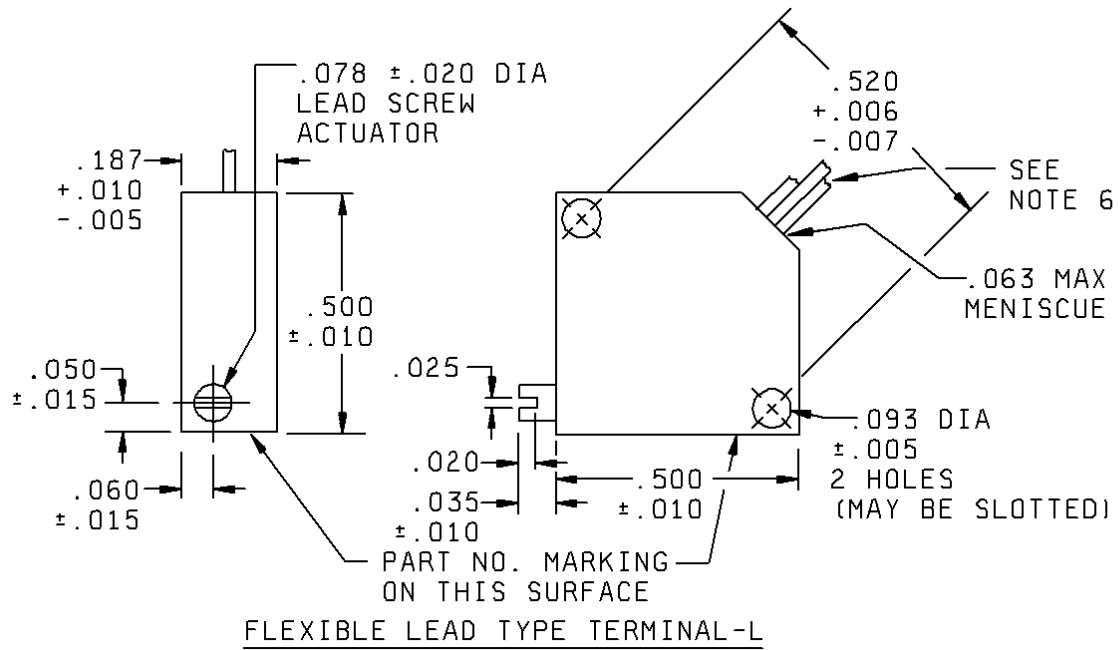


FIGURE 1. Style RTR22 resistors.

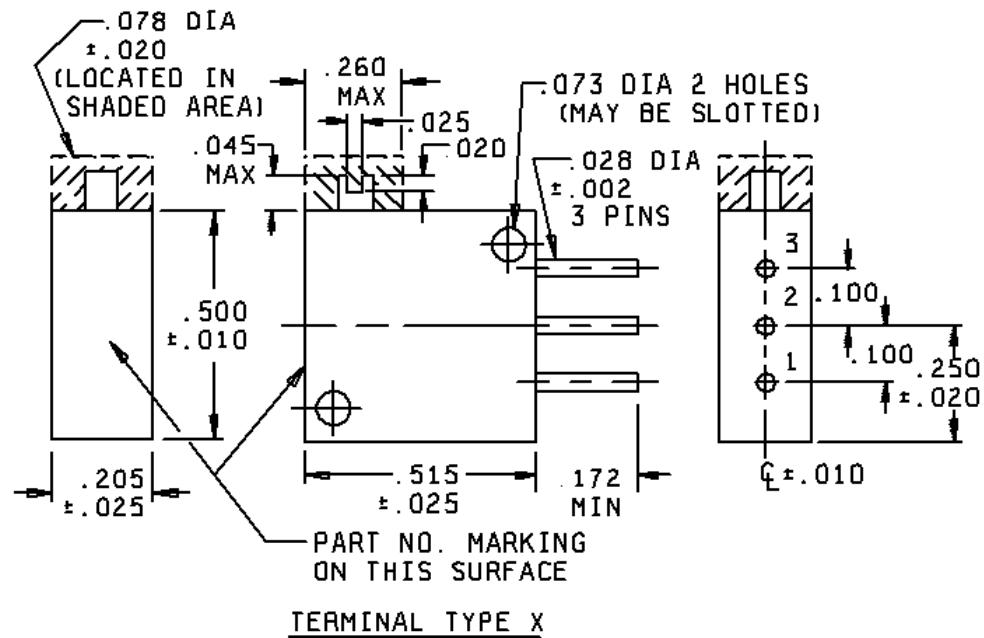
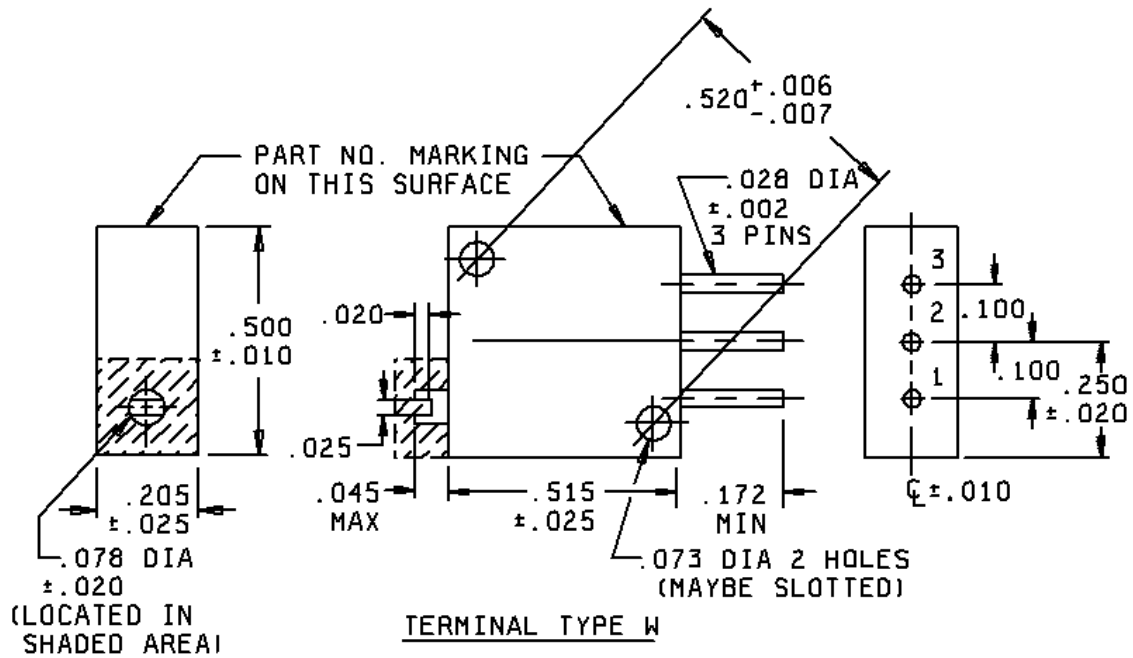


FIGURE 1. Style RTR22 resistors - Continued.

MIL-PRF-39015/2J
w/ Amendment 2

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<u>INCHES</u>	<u>mm</u>	<u>INCHES</u>	<u>mm</u>	<u>INCHES</u>	<u>mm</u>	<u>INCHES</u>	<u>mm</u>	<u>INCHES</u>	<u>mm</u>
0.002	0.05	0.015	0.38	0.045	1.14	0.078	1.98	0.235	5.97
0.005	0.13	0.020	0.51	0.050	1.27	0.093	2.36	0.250	6.35
0.006	0.15	0.025	0.64	0.060	1.52	0.100	2.54	0.260	6.60
0.007	0.18	0.028	0.71	0.063	1.60	0.172	4.37	0.500	12.70
0.010	0.25	0.035	0.89	0.073	1.85	0.187	4.75	0.515	13.08
						0.205	5.21	0.520	13.21

NOTES:

1. Dimensions are in inches.
- * 2. Unless otherwise specified, tolerance is ± 0.005 (0.13 mm).
3. Metric equivalents (to the nearest 0.01 mm) are given for general information only.
4. The entire slot of the actuating screw must be above the surface of the unit.
- * 5. For types P, W, and X, normal mounting means is by use of pins only.
6. The three leads shall be of the stranded wire, AWG size 28 to 30, having a minimum length of 6 (152.4 mm); they shall be insulated with polytetrafluoroethylene, stripped 0.250 ± 0.062 (6.35 $\pm$ 1.57 mm) from the end, and color coded.
7. Dimensions not shown are the same as for type P.
8. The picturization of the styles above are given as representative of the envelope of the item. Slight deviations from the outline shown, which are contained within the envelope, and do not alter the functional aspects of the device are acceptable.
9. Mounting holes and/or slots are optional for terminal styles P, W, and X.

FIGURE 1. Style RTR22 resistors - Continued.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, date of the specification, and 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 MIL-PRF-27208 substitution data. Resistors of MIL-PRF-39015/2 regardless of their failure rate designation are substitutes for resistors of the same resistance value, tolerance, terminal characteristic, and resistance temperature specified in the specification [MIL-PRF-27208/4](#).

6.4 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).

6.5 Caution note. The QPL manufacturer of the "L" termination of this slash sheet has always used 100 percent tin plating on their internal tabs. Termination "L" is inactive for new design, and designers are cautioned on using the "L" termination for replacement purposes (see 6.4).

MIL-PRF-39015/2J
w/ Amendment 2

6.6 Amendment notations. The margins of this specification are marked with asterisks 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.

Custodians:

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

Preparing activity:

Army - CR

Agent:

DLA - CC

Review activities:

Army - AR, AT, AV, CR4, MI
Navy - AS, MC, OS
Air Force - 19

(Project 5905-2022-048)

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