MILITARY SPECIFICATION

THERMOCOUPLE AND RESISTANCE TEMPERATURE ELEMENT ASSEMBLIES, TYPE RTE (BY INSTALLATION)

This specification is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 This specification covers the requirements for resistance temperature elements, nickel and platinum type, designed for bayonet mounting.

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-W-24270 - Wells for Indicators or Thermal Elements, General Specification.
MIL-W-24270/19 - Well (For Temperature Indicators or Thermal Elements); Insertion Length - 2 Inches, Bore - 1/4 Inch, Connection - Socket Weld or Socket Brazed, 3/4 Inch IPS.
MIL-W-24270/20 - Well (For Temperature Indicators or Thermal Elements); Insertion Length - 2 Inches, Bore - 1/4 Inch, Connection - Butt Weld or Butt Brazed.
MIL-W-24270/21 - Well (For Temperature Indicators or Thermal Elements); Insertion Length - 2 Inches, Bore - 1/4 Inch, Connection - "O" Ring Seal 1-5/16 - 12UA-2A.
MIL-W-24270/24 - Well (For Temperature Indicators or Thermal Elements); Insertion Lengths - 3-1/2 Inches, Bore - 1/4 Inch, Connection - Butt Weld.
MIL-T-24388 - Thermocouples and Resistance Temperature Element Assemblies, General Specification For (Naval Shipboard).

STANDARDS

MILITARY

MIL-STD-108 - Definitions and Basic Requirements for Enclosures for Electric and Electronic Equipment.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 Assemblies shall conform to the requirements or MIL-T-24388 except as specified herein.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Ship Engineering Center, SEC 6124, Department of the Navy, Washington, DC 20362 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

3.2 Description. Assemblies shall be designed for insertion into a thermowell which has been fabricated to conform to MIL-W-24270. Assemblies shall consist of the following parts (see figure 1).

(a) Sheathed sensing element.
(b) Spring to maintain sheath in contact with the bottom of a well.
(c) Bayonet adapter.

3.3 Leads. Wires emerging from the sheath shall be 18 to 22 American Wire Gage (AWG). Insulation of individual connection leads shall be tetrafluoroethylene or glass braid (as required to meet temperature requirements) (see table I). Connection leads shall have an outer jacket of braided stainless steel over glass braid.

3.4 Spring loading. Resistance temperature element shall be spring loaded similar to that shown on figure 1. Spring material shall be suitable for the temperature range (see table I). Minimum spring compression shall be 3/16 inch. A minimum force of 5 pounds shall be exerted by the spring each time under compression (see 4.8.6 of MIL-T-24388).

TABLE I. Application.

Type	Designation number	Size (see figure 1) (inches) L	Size (see figure 1) (inches) A	Temperature range (°F)	Maximum connection temperature (°F)	Thermowell MIL-W-24270 specification sheet no.	Insertion length (inches)
RTE	4	4- 7/16	1-3/4	-40 to 200			
	6	6-11/16	4	-40 to 400	300	19, 20, 21	1-7/8
	9	9-11/16	7	-40 to 700	500	24	3-3/8

3.5 Enclosure. Assembly shall be watertight as defined in MIL-STD-108.

3.6 Sheath diameter. Sheath diameter shall be 0.250 plus or minus 0.005 inch.

3.7 Performance. General assembly performance shall be as specified in MIL-T-24388 and as specified herein.

3.7.1 Response time. Response time of the assembly shall be 8 seconds or less when tested in accordance with MIL-T-24388.

4. QUALITY ASSURANCE PROVISIONS

4.1 Quality assurance provisions shall be in accordance with MIL-T-24388 except as specified herein.

4.2 Qualification inspection. Qualification inspection shall be as specified in MIL-T-24388 and table II herein.

TABLE II. Qualification inspection.

Examination and tests	Requirement paragraph (MIL-T-24388)	Inspection paragraph (MIL-T-24388)
General examination	3.5	4.6
Calibration	3.9.1.2 and 3.9.1.3	4.9.1.1
Response time	3.7.1 herein	4.8.1
Self heating	3.9.1.1	4.9.1.2
Thermal cycling	3.8.2	4.8.2
Hermetic seal	3.7.6	4.8.4
Salt spray	3.8.1	4.8.5
Insulation resistance	3.8.8	4.8.9
Vibration	3.8.5	4.8.7
Shock	3.8.6	4.8.8
Terminal strength	3.8.3	4.8.10
Spring loading	3.4 herein	4.8.6
Enclosure	3.5 herein	4.8.3

5. PREPARATION FOR DELIVERY

5.1 Preservation-packaging, packing, and marking shall be in accordance with MIL-T-24388.

6. NOTES

6.1 Notes shall be in accordance with MIL-T-24388.

Preparing activity:
Navy-SH
(Project 6685-N607-6)

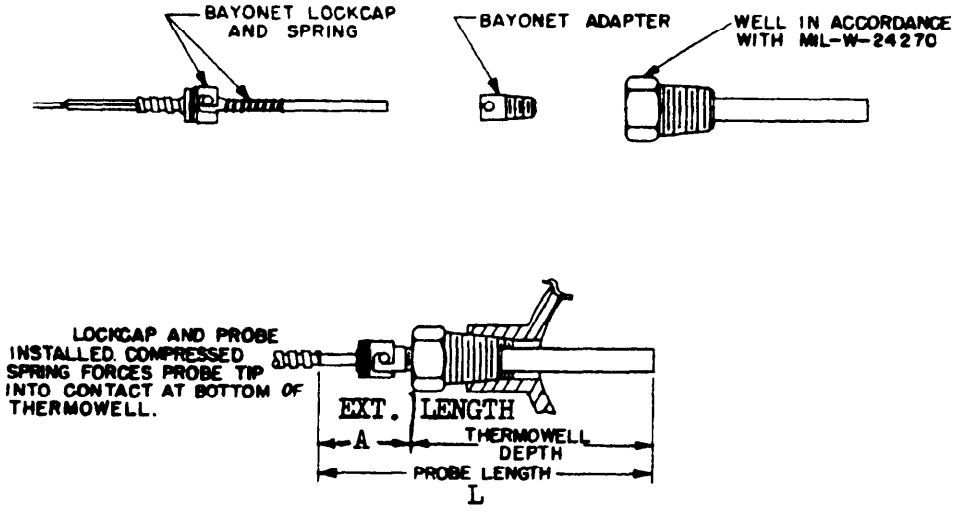

FIGURE 1. Resistance temperature sensor assembly with well without connection head.

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

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NOTE: This form shall not be used to submit requests for waivers, deviations or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

DOCUMENT IDENTIFIER *(Number)* AND TITLE

MIL-T-2431B/6

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