MILITARY SPECIFICATION

THERMOCOUPLE AND RESISTANCE TEMPERATURE ELEMENT ASSEMBLIES,

TYPE RTE (TW 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, designed for installation into thermowells.

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 - 12UN-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).
MIL-T-55164 - Terminal Boards, Molded, Barrier, Screw and Stud Types, and Associated Accessories, General Specification for.

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 of 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) Extension between a well and connection head.
(d) Connection head containing a terminal block and provided with threaded openings for the extension nipple and for attachment of a conduit.

3.3 Leads. Wires emerging from the hermetic seal shall be 18 to 22 American Wire Gage (AWG).

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).

3.5 Enclosure. Assembly shall have a metal connection head similar to that shown on figure 1. Head extension connection shall be 1/2-14 NPSM thread and the conduit connection shall be 3/4 inch NPT. Connection head and extension shall be watertight as defined in MIL-STD-108. Head shall be provided with a screw-on type cap with a link chain provided to connect it to the head. Head shall be capable of satisfactory performance when continuously subjected to the connection head temperature listed in table I. Assembly shall show no evidence of leakage following the enclosure test (see 4.8.3 of MIL-T-24388).

3.5.1 Connection head extension. Connection head extension shall be corrosion-resistant steel minimum wall thickness 0.109 inch nominal, the length of which shall be in accordance with table I.

TABLE I. Application.

Type	Designation number	Insertion length	Size (see figure 1) (inches) L	Size (see figure 1) (inches) A	Temperature range (°F)	Maximum connection head temperature (°F)	Thermowell MIL-W-24270 specification sheet no.
RTD	4	2-11/16	4- 7/16	1- 3/4	-40 to 200	300	19, 20, 21
	6	2-11/16	6-11/16	4	-40 to 400	300	
	9	2-11/16	9-11/16	7	-40 to 1500	500	
	6	4-11/16	6- 7/16	1- 3/4	-40 to 200	300	
	8	4-11/16	8-11/16	4	-40 to 400	300	
	11	4-11/16	11-11/16	7	-40 to 1500	500	
	10	4-19/32	10- 3/16	5-19/32	-40 to 1500	500	24

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

3.7 Terminal block. Terminal block shall be in accordance with MIL-T-55164. Terminal block shall be secured to the head by two or more machine screws.

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

3.8.1 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	3.8.1 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
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:
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(Project 6685-N607-2)

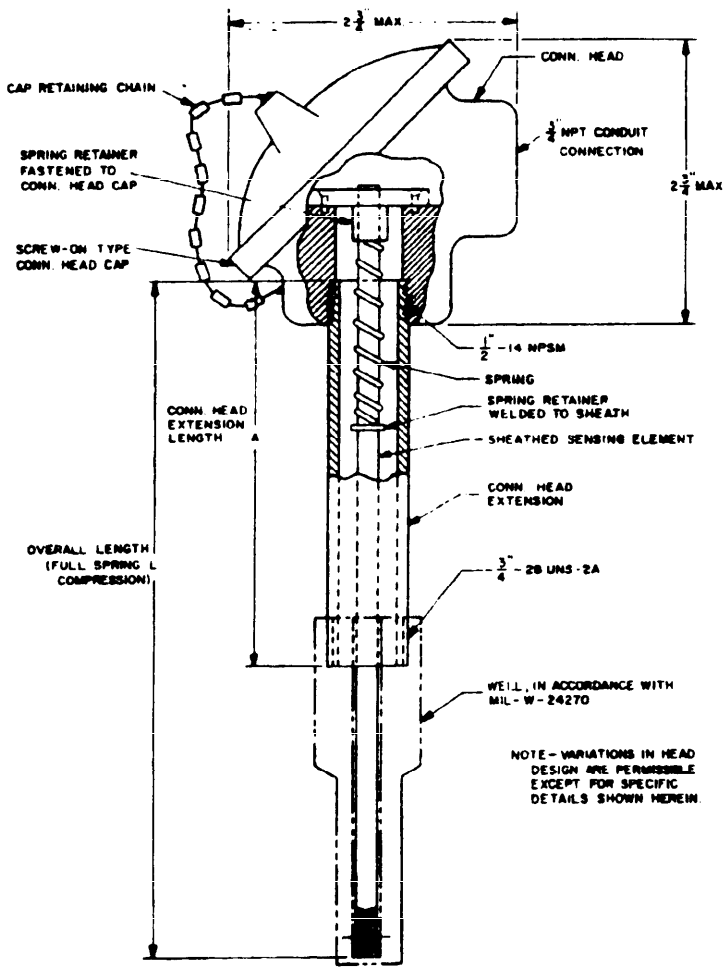

FIGURE 1. Thermowell type resistance temperature assembly.

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MIL-T-24388/2

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