

NAVSEA  
STANDARD ITEM

FY-25

ITEM NO: 009-36  
DATE: 01 OCT 2023  
CATEGORY: II

1. SCOPE:

1.1 Title: Controller; repair

2. REFERENCES:

2.1 Equipment Technical Manual

2.2 S9086-KC-STM-010/CH-300, Electric Plant - General

2.3 MIL-STD-2003, Electric Plant Installation Standard Methods for Surface Ships and Submarines

2.4 MIL-STD-1310, Shipboard Bonding, Grounding, and Other Techniques for Electromagnetic Compatibility, Electromagnetic Pulse (EMP) Mitigation, and Safety

3. REQUIREMENTS:

3.1 Disconnect mechanically and remove each controller.

3.1.1 Matchmark, identify, and retain shims and other accessories associated with the equipment.

3.2 Inspect each foundation for cracks, areas of distortion, and deterioration in excess of 25 percent of the thickness of each member of the structure. Record results.

3.3 Cleaning and painting for foundations of equipment removed in 3.1 must be in accordance with NAVSEA Standard Items (See Note 4.2).

3.4 Disassemble each controller and clean components free of foreign matter.

3.5 Inspect each controller enclosure, mounting board, electrical and mechanical component, internal wiring, and hardware for conformance to 2.1 and controller wiring diagram, and determine any missing and defective components and wiring. Record results. Record and retain electrical hook-up data.

3.5.1 Test internal wiring and each coil for open circuits. Test insulation resistance to ground and between conductors, using a 500-volt megger. Record readings. Minimum acceptable resistance to ground must be one megohm.

3.5.1.1 Disconnect solid-state devices prior to measuring insulation resistance.

3.6 Submit one legible copy, in approved transferrable media, of a report listing retained accessories in 3.1.1 and results of the requirements of 3.2, 3.5 and 3.5.1 to the SUPERVISOR.

3.7 Repair each controller, using 2.1 for guidance.

3.7.1 Straighten each enclosure and door. Free-up hinges and align door. Plug and seal unused cable openings. Remove existing enclosure gaskets, molded-rubber switch covers, and ground straps.

3.7.2 Cleaning and painting of the interior and exterior of the enclosure must be in accordance with NAVSEA Standard Items (See Note 4.2).

3.7.3 Install new enclosure gaskets and install new molded-rubber switch covers per equipment specification.

3.7.4 Install ground straps on each door on controllers with door mounted energized components in accordance with MIL-DTL-2036 in place of those identified to be missing or defective.

3.7.5 Remove existing and install new components in place of those identified to be missing, defective or of improper value. Remove existing and install new wiring in place of wiring identified to be defective or frayed. Install new wiring where missing.

3.7.6 Dress, and adjust contacts.

3.7.6.1 Resilver existing contacts in accordance with ASTM B 700.

3.7.7 Remove existing cadmium-plated parts and install new zinc-plated parts in accordance with ASTM A 153.

3.7.8 Wash, dip and bake, tape insulated coils and open transformers. Dipping must be in varnish conforming to MIL-I-24092, Class 155.

3.7.8.1 Dip and bake coils and open transformers in Dolph 1105, Epoxylite Esterlite 605, or Schenectady International Isolite 862M varnish in localities where MIL-I-24092 varnish does not meet state and local Air Pollution Control District (APCD) Standards.

3.7.8.2 Repair and reinsulate coil and transformer leads.

3.7.9 Free-up and lubricate moving parts.

3.7.10 Adjust timing devices, relays, and contactors.

3.7.11 Repair defective connections.

3.7.12 Install a new wiring diagram and new heater table in each controller. The new diagram must reflect actual configuration of the controller in which it is installed. New diagrams must be sealed in transparent plastic and must be mounted on the inside of each controller so as to be conveniently accessible.

3.8 Assemble each controller.

3.8.1 Dress and shape wiring and wire harnesses for neat appearance. Install wire clamps on both ends of wire hinges. Install flexible insulating tubing over wire hinges to prevent chafing.

3.9 Accomplish 500-volt megger insulation resistance test, using Paragraphs 300-3.2.2 through 300-3.2.3, 300-3.4.7, 300-3.4.10, and 300-5.3.7.1 of 2.2 for guidance. Record readings.

3.10 Connect internal wiring and solid-state devices.

3.11 Accomplish an operational test of each controller and adjust to ensure correct operation in accordance with the wiring diagram of 3.7.11, using 2.1 for guidance. Record results.

3.12 Submit one legible copy, in approved transferrable media, of a report listing results of the requirements of 3.9, 3.11, and a list of new components and wiring installed to the SUPERVISOR.

3.13 Install each controller using shims and other accessories retained in 3.1.1.

3.13.1 Remove existing and install new conductor identification sleeving in place of conductor identification sleeving identified to be illegible or missing. New conductor identification sleeving must conform to SAE-AMS-DTL-23053, Class One, white, marked with indelible ink.

3.13.2 Repair and reinsulate cable ends terminating in the controller in accordance with Part One of 2.3. Resleeve conductors over 9,000 circular mils.

3.13.3 Remove defective and install new lugs, using 2.2 for accept or reject criteria. Install new lugs where missing. New lugs must conform to MIL-T-16366 or SAE-AS7928.

3.13.4 Bond and ground equipment in accordance with 2.4.

3.14 Connect each controller with the exception of the motor leads and the brake leads if applicable, using retained data of 3.1.

(V) "PRELIMINARY SEQUENCE TEST"

3.14.1 Accomplish a preliminary sequence test of each controller by cycling the controller through 3 start and stop cycles from each local and remote pushbutton station. Observe controller for proper sequence. Correct deficiencies.

3.14.2 Connect the motor leads and brake leads, if applicable, at completion of preliminary sequence test.

(V)(G) "OPERATIONAL TEST"

3.15 Accomplish an operational test of each controller with its associated motor for designed sequence of operation. Verify correct speed selection, correct motor rotation in each mode, and correct value of overload setting or size of heater coils based on motor nameplate full load running current.

4. NOTES:

4.1 Equipment technical manual and drawings will be listed in the invoking Work Item.

4.2 If cleaning and painting of 3.3 or 3.7.2 is required; the use of Category II Standard Item 009-32 "Cleaning and Painting Requirements; accomplish" of *NAVSEA Standard Items* will be specified in the Work Item.