NAVSEA
STANDARD ITEM

FY-19

ITEM NO: 009-33
DATE: ***01 OCT 2017***
CATEGORY: II

1. SCOPE:

1.1 Title: Rotating Electrical Equipment; rewind

2. REFERENCES:

2.1 Standard Items

2.2 Equipment Technical Manual

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

2.4 S9086-KE-STM-010/CH-302, Electric Motors and Controllers

2.5 S9086-KN-STM-010/CH-310, Electric Power Generators and Conversion Equipment

2.6 S9086-HN-STM-010/CH-244, Propulsion Bearings and Seals

2.7 S6260-BJ-GTP-010, Electrical Machinery Repair, Electric Motor, Shop Procedures Manual

2.8 S9310-AC-HBK-010, Commutator/Slip Ring Maintenance Handbook

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

2.10 S9086-DA-STM-010/CH-100, Hull Structures

2.11 MIL-DTL-17060, MOTORS, ALTERNATING CURRENT, INTEGRAL-HORSEPOWER, SHIPBOARD USE

3. REQUIREMENTS:

3.1 Accomplish preliminary repair preparations as follows:

3.1.1 Prior to disconnecting equipment:

3.1.1.1 Record and retain electrical hook-up data.

3.1.1.2 Inspect couplings for cracks, broken segments, wear, and misalignment in excess of tolerances specified in 2.2. Record and retain air gap readings. Record and retain bearing clearances for sleeve bearing equipment only.

3.1.2 Identify associated cables and wiring. Disconnect equipment mechanically, using 2.2 for guidance.

3.1.2.1 Matchmark, identify, and retain chocks, shims, shock mounts, sound damping pads, and other accessories associated with equipment.

3.1.2.2 Record shaft thrust and run out readings.

3.2 Remove equipment including rotating components connected directly to the shaft.

3.2.1 Remove entire vaneaxial and tubeaxial fan assemblies from the duct system and transport to the shop for repair.

3.3 ***Accomplish a structural inspection of each foundation in accordance with 2.10.***

3.4 Submit one legible copy, in approved transferrable media, of a report for electrical hook up data recorded in 3.1.1.1, mechanical inspection required by 3.1.1.2 through 3.1.2.2, and structural inspection required in 3.3 to the SUPERVISOR ***upon request***.

3.5 Matchmark, disassemble and inspect the equipment removed in 3.2, using 2.2 through 2.7 for guidance.

3.5.1 Accomplish a core loss test prior to winding removal in accordance with Paragraphs 300-4.5.6 and 300-4.5.6.1 of 2.3. Record data.

3.5.1.1 Inspect for hot spots in accordance with the Core Loss Tester Instruction Manual.

3.5.1.2 Conduct a loop test in accordance with Paragraph 300-4.5.6.1.2 of 2.3 when core indicates a marginal satisfactory reading or when test equipment does not directly support equipment being subjected to testing.

3.5.2 Remove each winding, using Paragraph 300-4.5.7.2 of 2.3 for guidance for winding removal and 2.7 for core inspection.

3.5.2.1 Verify the temperature limitations of the core material prior to exercising the burnout oven option.

3.5.2.2 Record winding data. Verify conformance of recorded data to the manufacturer's winding data.

3.5.2.3 Accomplish a core loss test after winding removal in accordance with Paragraph 300-4.5.6 and 300-4.5.6.1 of 2.3. Record data.

3.5.2.4 Inspect for hot spots in accordance with the Core Loss Tester Instruction Manual.

3.5.2.5 Conduct a loop test in accordance with Paragraph 300-4.5.6.1.2 of 2.3 when core indicates a marginal satisfactory reading or when test equipment does not directly support equipment being subjected to testing.

3.5.2.6 Dip core in a 20 percent solution of varnish MIL-I-24092 and dry. In localities where MIL-I-24092 does not meet state and local Air Pollution Control District (APCD) standards, spray the iron core with a clear air-drying varnish.

3.5.3 Protect machined surfaces. Accomplishment of cleaning and painting for equipment housing exterior, fan(s), core and interior and exterior of each end bell shall be in accordance with NAVSEA Standard Items (See Note 4.7).

3.6 Inspect non-wound rotors for loose or cracked bars, localized overheating, and rubbing. Inspect wound rotors, slip ring leads, and armatures for insulation damage and burns/hot spots. Inspect for loose coils and slot wedges. Inspect slip rings and commutators for damage and for wear limits, using 2.2 for criteria. Record data.

3.7 Inspect and dimensionally measure end bells, frame, rabbet fits, shaft, sleeve and pedestal bearings, keyways, fan and running surfaces for wear, eccentricity, and other defects, using 2.2 for accept or reject criteria, and 2.6 for location and type of measurements to be taken. Record data.

3.8 Inspect brush rigging for cracks, chips, worn areas, distortion, spring condition, and insulating material for cracks and arc paths. Record data.

3.9 Accomplish commutator pre-installation and post-installation test, using Table 300-3-9 of 2.3 for guidance. Record data.

3.10 Submit one legible copy, in approved transferrable media, of a report listing results of the requirements of 3.5 through 3.9 to the SUPERVISOR ***upon request***.

3.11 Rewind the equipment in accordance with Original Equipment Manufacturer's (OEM) "for Navy use" winding data.

3.11.1 Do not permanently connect winding until after successful completion of testing of 3.11.3 through 3.11.6.

3.11.2 Material shall conform to:

3.11.2.1 Magnet wire, National Electrical Manufacturers Association (NEMA) MW-1000, Table MW 16 (round wire), or NEMA MW-1000, Table MW 20 (rectangular wire), or equivalent to OEM original

3.11.2.2 Slot and phase insulation, NEMA FI-3-2004

3.11.2.3 Slot wedge-spacers and fillers, MIL-I-24768/17

3.11.2.4 Lead wire, stranded, MIL-DTL-16878 except for type EPDM, which may be commercial grade

3.11.2.5 Glass banding, MIL-I-24178

3.11.2.6 New temperature detectors in accordance with 2.2

(V) "INSULATION RESISTANCE TEST"

3.11.3 Accomplish 500-volt megger insulation resistance test, using Paragraphs 300-3.2.2 through 300-3.2.3, 300-3.4.8, 300-3.4.11, and 300-5.3.7.1 of 2.3 for guidance.

(V) "DC RESISTANCE TEST"

3.11.4 Accomplish a DC resistance test of windings, using a Wheatstone or Kelvin bridge, or with an ohmmeter capable of resolving one milliohm (0.001 ohm). Record phase balance for multi-phase equipment, using Paragraph 5.21 of 2.7 and ***3.6.1 of 2.11*** for guidance.

(V) "VOLTAGE SURGE TEST"

3.11.5 Accomplish a voltage surge test in accordance with Paragraphs 300-3.5.4 through 300-3.5.5 of 2.3.

(V) "DC HI POT TEST"

3.11.6 Accomplish a DC HI POT test in accordance with Paragraph 300-3.5.2 through 300-3.5.2.3.4 of 2.3.

3.12 Permanently connect the windings.

3.12.1 Repeat tests described in 3.11.3 through 3.11.6.

(V) "BAR-TO-BAR TEST"

3.12.2 Accomplish DC bar-to-bar test on commutators after making coil connections to the risers in accordance with Paragraph 300-4.7.11.3 of 2.3.

(V) "VARNISH TEMPERATURE, VISCOSITY, AND GEL TIME TESTS"

3.13 Select the insulation process based on winding insulation classifications and to meet state or local air pollution standards. Windings of a sealed insulation system by vacuum pressure impregnation shall be by a NAVSEA-certified repair facility. Accomplishment of work on windings for sealed insulation systems shall be in accordance with NAVSEA Standard Items (See Note 4.8).

3.13.1 Select varnish methods and material, using Paragraphs 300-4.5.8 through 300-4.5.8.9 of 2.3 for guidance.

3.13.1.1 Maintain the varnish in accordance with Paragraphs 300-4.5.8.3 through 300-4.5.8.3.3 of 2.3 and the varnish manufacturer's instructions.

3.13.1.2 Maintain a current revision of the varnish manufacturer's instructions on storage, maintenance, and use of the type of varnish to be applied.

3.13.1.3 Maintain a record of varnish temperature, viscosity, and, for solventless varnish, gel time tests. Tests must show varnish is within varnish manufacturer's recommendations and have been accomplished in the intervals specified by the varnish manufacturer. The record must also show the varnish is being stored as recommended by the varnish manufacturer.

3.14 Varnish windings in accordance with Paragraphs 300-4.5.8.2 of 2.3 and the varnish manufacturer's instructions.

3.14.1 Do not immerse the leads.

3.14.2 Wipe surfaces that affect assembly such as rabbet fits and mounting flanges with a cloth moistened with a solvent after draining and before baking.

3.15 Remove excess varnish runoff from the component locations described in 3.14.2 after final baking. Apply a thin coat of air-dry varnish to metal surfaces exposed by the removal process in accordance with Paragraphs 300-4.5.8.5 and 300-4.5.8.6 of 2.3.

3.16 Repeat tests described in 3.11.3 through 3.11.6. Record data.

3.17 Accomplish an AC HI POT test in accordance with Paragraphs 300-3.5.3 through 300-3.5.3.2.9 of 2.3. Record data.

3.18 Accomplish a 500-volt megger insulation resistance test, using Paragraphs 300-3.2.2 through 300-3.2.3, 300-3.4.8, 300-3.4.11, and 300-5.3.7.1 of 2.3 for guidance. Record data.

3.19 Measure resistance value of each winding temperature detector, using a low voltage ohmmeter. Record data.

3.20 Submit one legible copy, in approved transferrable media, of a report listing results of the requirements of 3.16 through 3.19 to the SUPERVISOR ***upon request***.

3.21 True the commutator or collector rings. Eccentricity shall not exceed the requirements of 2.8. Resurface or machine each individual collector ring to the same exact diameter to allow symmetrical brush holder to ring clearance spacing. Ensure metal shavings are not permitted to contaminate the rotor or stator assembly.

3.21.1 Each cut shall not exceed 0.010 inch. Finish thickness shall not be less than design wear tolerance as shown in 2.2.

3.21.2 Undercut the mica between the commutator bars with the edge of the mica not exceeding a depth of 5/64-inch below the bars.

3.21.3 Chamfer the bar edges and remove rough surfaces in accordance with Paragraph 7-4 of 2.8.

3.21.4 Burnish the commutator with a very fine commercial burnishing stone conforming to A-A-58052. Polish collector rings to a mirror finish.

3.22 Accomplishment of the balancing requirement for each rotating assembly shall be in accordance with NAVSEA Standard Items (See Note 4.9).

3.23 Accomplish the following for the brush rigging:

3.23.1 Disassemble the brush rigging.

3.23.2 Remove foreign matter.

3.23.3 Replace existing cadmium-plated parts with zinc in accordance with ASTM A 153.

3.23.4 Recondition threads of plated parts.

3.23.5 Assemble brush rigging.

3.24 Install identification markers on wiring in the external connection box.

3.24.1 Markers shall be aluminum wrap-around type with metal stamped or embossed markings.

3.25 Repair lightly scored areas of frame, end bells, and shaft by manual methods. Recondition threads and fit key to keyway. Visually inspect keyway for deformed, cracked or chipped edges or high spots. Verify that fit between key and key-seat sides has a minimum clearance of 0.002 inch or maximum interference of 0.0005 inch. High spots in keyway may be removed by machining or grinding. Do not unnecessarily repair any keyway; instead, use a step key up to a maximum of 0.010 inch oversize and, where possible,

include a radius in step. If key tightness cannot be corrected with a step key, re-machine worn/damaged keyways to recommended over-sizes as follows: Maximum of 0.015 inch oversize for a 1/8-inch key and increasing oversize allowance of 0.010 inch for each 1/8-inch increase in key size up to a maximum of 0.075 inch. If key tightness cannot be corrected by keyway repair, replace part involved.

3.25.1 Apply a thin coat of petrolatum to unpainted mating surfaces except for explosion-proof motors that shall have clean, dry mating surfaces.

3.26 Prepare and refinish equipment. Protect machine surfaces, windings, and nameplates from being painted or otherwise damaged.

3.26.1 Accomplishment of cleaning and painting for housing, fan, and interior and exterior of each end bell shall be in accordance with NAVSEA Standard Items (See Note 4.7).

3.27 Accomplishment of cleaning and painting for foundations of the equipment removed in 3.2 shall be in accordance with NAVSEA Standard items (See Note 4.7).

3.28 Accomplish the following on equipment having other than sleeve-type bearings unless otherwise specified in the invoking Work Item, using 2.7 for guidance.

3.28.1 Except as indicated in 3.28.1.1 (utilizing Attachment A for guidance), install new bearings, seals, fittings, lock washers, and locknuts conforming to 2.2, using 2.6 and Chapter 6 of 2.7 for guidance.

3.28.1.1 Install Type 111, Class 8 (double seal) bearings in motors meeting the criteria identified in Chapter 6 of 2.7. Only double seal bearings identified in Chapter 6 of 2.7 are acceptable for this use.

3.28.1.2 For vaneaxial and tubeaxial fan motors not meeting the criteria of Chapter 6 of 2.7, if not originally furnished or already accomplished during previous repair, install Type 111, Class 8 (double seal) bearings with a C3 (greater than normal) radial internal clearance in place of the Type 111 bearing originally furnished. Install Type 120 bearings in vaneaxial and tubeaxial fan motors originally furnished with Type 120 bearings.

3.28.1.3 Install new label plates with the inscription "DO NOT LUBRICATE" on equipment using double seal bearings (Type 111, Class 8 or Type 120).

3.28.1.4 For equipment converted from re-lubricable bearings to double seal bearings, install pipe plugs on all grease fills and drains.

3.28.1.5 For equipment converted from lubricated bearings to double seal bearings, submit one legible copy, in approved transferrable

media, of a report that reflects the change in the maintenance requirements for the converted motor.

3.28.2 For equipment not using double seal bearings, lubricate bearings with grease conforming to DOD-G-24508 as required in Paragraphs 244-1.7.7.2 and 244-1.7.7.3 of 2.6.

3.29 Assemble the equipment disassembled in 3.5, using 2.2 through 2.7 for guidance.

3.29.1 Do not use materials containing silicone in the repair and reassembly of equipment with commutator or collector rings.

3.29.***2*** Install new gaskets on covers, inspection plates, and between the external connection box and the frame. Gaskets shall conform to MIL-PRF-1149 unless otherwise specified in 2.2.

3.29.***3*** Set brush holders not less than 1/16-inch or more than 1/8-inch from commutator or collector rings unless otherwise specified in 2.2.

3.29.***4*** Set brush holders in electrical neutral plane and stagger brushes for maximum coverage of the commutator, in accordance with Paragraph 300-4.7.7.1.10 of 2.3.

3.29.***5*** Center the brush holder over the collector rings.

3.29.***5***.1 Ensure the brushes do not extend beyond the edge of the collector rings.

3.29.***6*** Install new brushes in accordance with 2.2. Sand new brushes to fit curvature of the commutator or collector rings, using Paragraphs 6-3.5 through 6-3.5.4 of 2.8 for guidance.

3.29.***6***.1 Brushes shall have a surface contact of 100 percent and shall not be chipped, cracked, or broken.

3.29.***6***.2 Remove sand, carbon, and other foreign matter resulting from fitting new brushes.

3.29.***7*** Adjust spring tension of brushes in accordance with 2.2.

3.29.***8*** Adjust air gap as specified in 2.2, plus or minus 10 percent.

3.29.***9*** Rotate shaft by hand a minimum of 3 revolutions. Rubbing or binding of rotating assembly shall not be allowed.

3.29.***10*** Install label plates conforming to MIL-DTL-15024 for those identified to be missing or damaged.

(V) "NO-LOAD SHOP TEST"

3.30 Accomplish a no-load shop test of the motor for a minimum of one-half hour.

3.30.1 Verify proper direction of rotation.

3.30.2 After one-half hour, record current and voltage in each phase, speed and bearing temperature rise measured on the equipment's exterior near each bearing.

3.30.3 Submit one legible copy, in approved transferrable media, of the recorded data to the SUPERVISOR ***upon request***.

(V) "OPERATIONAL SHOP TEST (FOR VANEAXIAL/TUBEAXIAL FANS - ASSEMBLY COMPLETELY REASSEMBLED)"

3.31 With the vaneaxial/tubeaxial fan reassembled, accomplish an operational test for one hour after bearing and stator temperatures stabilize within one degree Celsius for 3 consecutive 15-minute intervals.

3.31.1 Verify proper direction of rotation.

3.31.2 Record current, voltage, frame and bearing temperature rise and speed at 15-minute intervals.

3.31.2.1 Bearing temperatures shall not exceed 180 degrees Fahrenheit, unless otherwise specified in the invoking Work Item or equipment technical manual.

3.31.3 Measure and record hot insulation resistances of winding to ground immediately upon completion of the operational shop test, using a 500-volt megger.

3.32 Install equipment removed in 3.2.

3.32.1 Install new gaskets conforming to MIL-PRF-900 on disturbed ventilation.

3.32.2 Align equipment in accordance with 2.2. Measure and record facial and peripheral coupling data.

3.32.2.1 Install chocks, shims, shock mounts, and sound damping pads.

3.32.2.2 Accomplishment of pump and driver shaft alignment shall be in accordance with NAVSEA Standard Items (See Note 4.10).

3.32.3 Connect electrical cables to equipment, using data retained in 3.1.1.1.

3.32.4 Bond and ground equipment in accordance with 2.9, using new ground straps.

3.32.5 Rotate shaft by hand a minimum of 3 revolutions. Rubbing or binding of rotating assembly shall not be allowed.

3.32.6 Measure and record the air gap and bearing clearance (sleeve bearing equipment only), insulation resistance (at 500 volts DC), and thrust.

3.33 Submit one legible copy, in approved transferrable media, of a report listing results of the requirements of 3.1.1.1, 3.1.1.2, 3.1.2.2, 3.3, 3.5 through 3.9 and 3.16 through 3.19 to the SUPERVISOR.

(V)(G) "OPERATIONAL TEST"

3.3***4*** ***(For continuous duty motors)*** Accomplish an operational test of the assembled equipment at full system capacity for one hour after bearing and stator temperatures stabilize within one degree Celsius for 3 consecutive 15-minute intervals, unless otherwise specified in the invoking Work Item.

3.3***4***.1 Verify proper direction of rotation.

3.3***4***.2 Verify/establish oxide film coating of the commutator/ collector rings, using 2.8 for guidance.

3.3***4***.3 Record current, voltage, frame and bearing temperature rise, and speed at 15-minute intervals. Frame and bearing temperature rise and speed is not required for vaneaxial and tubeaxial fan assemblies.

3.3***4***.3.1 Bearing temperatures shall not exceed 180 degrees Fahrenheit unless otherwise specified in the invoking Work Item/equipment technical manual.

3.3***4***.4 Measure and record hot insulation resistances of windings to ground immediately upon completion of test, using a 500-volt megger.

3.35 (For two speed motors) Accomplish an operational test at low speed in accordance with 3.34. Repeat 3.34 for high speed.

3.35.1 Accomplish the requirements of 3.34.1 through 3.34.4.

3.36 (For limited duty motors) Accomplish the requirements of 3.34 for a period of time equal to the duty cycle of the motor.

3.36.1 Accomplish the requirements of 3.34.1 through 3.34.4. For motors with a duty cycle equal to or less than 30 minutes, record data every 10 minutes.

3.37 Submit one legible copy, in hard copy or approved transferrable media, of a report listing data recorded in 3.31.2, 3.31.3, 3.32.2, 3.32.6, 3.3***4***.3, and 3.3***4***.4 to the SUPERVISOR.

4. NOTES:

4.1 Equipment technical manual, Allowance Parts List (APL) (if applicable) and drawings will be listed in the invoking Work Item.

4.2 Shop test of generator will be addressed in the invoking Work Item.

4.3 The use of silicone is not allowed on any rotating electrical machinery containing brushes.

4.4 Utilize Attachment A for determination if the Navy's motor bearing conversion program for Extended Life Double Seal (ELDS) ball bearings is permissible.

4.5 MIL-B-17931 (Bearings, Ball, Annular, For Quiet Operation) bearings are considered to be Long Lead Time (LLT) material. It is recommended these bearings be provided as Government Furnished Material (GFM).

4.6 Data received in 3.28.1.5 shall be forwarded to the SUPERVISOR for the purpose of initiating action ensuring shipboard databases such as the Equipment Guidance List (EGL) are updated to reflect the change in maintenance requirements for converted motors. Additionally, where APL changes are initiated to convert to ELDS bearings, a COSAL feedback report will be submitted, providing the NSN and part number for the ELDS bearing. The following website to initiate changes to Technical Manuals, APLs, etc.: http://www.navy311.navy.mil.

4.7 If cleaning and painting of 3.5.3, 3.26.1, or 3.27 is required; the use of Category II Standard Item 009-32 "Cleaning and Painting Requirements; accomplish" of 2.1 will be specified in the Work Item.

4.8 If work on windings for sealed insulation systems of 3.13 is required; the use of Category II Standard Item 009-113 "Rotating Electrical Equipment with Sealed Insulation Systems (SIS); rewind" of 2.1 will be specified in the Work Item.

4.9 If balancing of rotating equipment of 3.22 is required; the use of Category II Standard Item 009-15 "Rotating Machinery; balance" of 2.1 will be specified in the Work Item.

4.10 If pump and driver shaft alignment of 3.32.2.2 is required; the use of Category II Standard Item 009-58 "Pump and Driver Shaft Alignment; accomplish" of 2.1 will be specified in the Work Item.

ATTACHMENT A

1. To reduce motor maintenance and repair costs, the NAVY has implemented a program that allows for the use of Extended Life Double Seal (ELDS) bearings.

2. LIMITATIONS: The ELDS program does NOT apply to motors that are under the cognizance of NAVSEA 08.

3. APLs for motors meeting the conversion criteria requirements have been modified to identify ELDS bearings. In these cases, the APL bearing criteria will override any specifications delineated in the equipment technical manual or the motor "Original Equipment Manufacturer (OEM)" drawings. If ELDS bearings are not indicated in an APL, the following motor criteria must meet the applicability specifications for motors to undergo conversion to ELDS bearings:

3.a Motor must be installed on a surface ship and must NOT be under the cognizance of NAVSEA 08.

3.b Commercial motors are not eligible. Motors must have been furnished to the NAVY in accordance with MIL-DTL-17060 (Motors, Alternating Current, Integral Horsepower, Shipboard use), MIL-M-17413 (Motors, Direct Current, Integral H.P., Naval Shipboard [NAVY]) or MIL-M-17059 (Motors, 60 Cycle, Alternating Current Fractional H.P. [Shipboard Use]).

3.c Motors using one or more noise-quiet bearings per MIL-B-17931 (Bearings, Ball, Annular, For Quiet Operation) are NOT eligible for ELDS conversion.

3.d Bearings originally furnished with the motor must be type 111 bearings per FF-B-171. Motors are NOT to be considered as candidates for ELDS conversion in situations where the equipment technical manual and/or the OEM motor drawings originally specified FF-B-171 bearings but have notes indicating that replacement bearings are to be in accordance with MIL-B-17931 (Bearings, Ball, Annular, For Quiet Operation).

3.e The use of ELDS bearings is limited to motors where the full load speed and the size of both bearings are as follows:

1. Maximum bearing size 306 or 206 and full load rpm between 1,801 and 3,600 rpm.

2. Maximum bearing size 313 or 213 and full load rpm between 1,201 and 1,800 rpm.

3. Maximum bearing size 318 or 218 and full load rpm less than 1200 rpm.

4. The repair process using ELDS bearings includes the following requirements:

4.a Only ELDS bearings, in accordance with the following table (Attachment A / Table 1), can be used. Other double seal bearings will not provide an acceptable bearing life.

Attachment A / Table 1

ELDS Bearings NSNs and Part Numbers

SIZE	P/N	NSN
201	6201-2RS1C3/GHY	3110-01-492-0221
202	6202-2RS1C3/GHY	3110-01-491-0233
203	6203-2RS1C3/GHY	3110-01-491-0234
204	6204-2RS1C3/GHY	3110-01-491-6636
205	6205-2RS1C3/GHY	3110-01-451-9166
206	6206-2RS1C3/GHY	3110-01-451-9165
207	6207-2RS1C3/GHY	3110-01-451-9164
208	6208-2RS1C3/GHY	3110-01-451-9170
209	6209-2RS1C3/GHY	3110-01-451-9252
210	6210-2RS1C3/GHY	3110-01-492-1831
211	6211-2RS1C3/GHY	3110-01-518-0937
303	6303-2RS1C3/GHY	3110-01-493-3750
304	6304-2RS1C3/GHY	3110-01-451-9153
305	6305-2RS1C3/GHY	3110-01-451-9158
306	6306-2RS1C3/GHY	3110-01-451-9159
607	6307-2RS1C3/GHY	3110-01-451-9161
308	6308-2RS1C3/GHY	3110-01-451-9167
309	6309-2RS1C3/GHY	3110-01-451-9168
310	6310-2RS1C3/GHY	3110-01-490-6683
311	6311-2RS1C3/GHY	3110-01-492-0223
312	6312-2RS1C3/GHY	3110-01-490-6848
313	6313-2RS1C3/GHY	3110-01-492-0191

314	6314-2RS1C3GHY	3110-01-492-0226
315	6315-2RS1C3/GHY	3110-01-494-0993
316	6316-2RS1C3/GHY	3110-01-492-0188
317	6317-2RS1C3/GHY	3110-01-492-0219
318	6318-2RS1C3/GHY	3110-01-493-3749

4.b Both bearings of each converted motor must be ELDS bearings.

4.c A label plate must be permanently attached to the motor indicating "Do Not Lubricate".

4.d Grease fills and drains, if present, must be fitted with a pipe plug, securely fastened. Fittings to accommodate grease guns must be replaced with pipe plugs."

ATTACHMENT B

SECTION 1. NAME PLATE DATA

EQUIPMENT _____ **USS** _____

MFGR _____ **TYPE** _____ **FRAME** _____

HP _____ **INSULATION CLASS** _____ **TEMP. RISE** _____ ***C/*F** _____

VOLTS _____ **AMPS** _____ **CYO** _____ **R/M** _____ _____
PHASE

SERIAL NO. _____ **ADDITOINAL DATA** _____

SECTION 2. INPLACE INSPECTION

CAUTION: OBSERVE APLICABLE SAFETY PROCEDURES

SATISFACTORY
UNSATISFACTORY

_____INSULATION RESISTANCE IN MEGOHMS (REFER TO TABLE 3-2)_____

POLARIZATION INDEX TEST 1 MIN _____ 10 MIN_____ RATIO _____

_____ MECHANICAL CONDITION (REFER TO PARAGRAPH 3-6) _____

_____ CONTINUITY OF WINDINGS (REFER TO PARAGRAPH 3-5.1) _____

_____ CURRENT BACLANCE (USE LIMITS PRESCRIBED IN PARAGRAPH 3-10) _____

_____ CONDITION OF BRUSHED AND COMMUTATOR _____

_____ CONDITION OF CABLES AND CONTROLLER TO MOTOR _____

_____ CONDITION OF CONTROLLER _____

SECTION 3. INCOMING INSPECTION (GENERAL)

SURGE TEST	1-2 SAT/UNSAT	
	2-3	SAT/UNSAT
	1-3	SAT/UNSAT
INSULATION RESISTANCE TO GROUND		MEGOHMS
RESISTANCE BALANCE	1-2	OHMS
WITH DIGITAL OHMETER	2-3	OHMS
	1-3	OHMS

ACTION **REWIND**
RECONDITION

ITEM NO: 009-33
FY-19

SECTION 4. RECONDITIONING

	AFTER STEPS OF:	
	CLEANING	**DRYING**
INSULATION RESISTANCE (MEGOHMS)		
PHASE RESISTANCE BALANCE TEST		
SURGE TEST (SAT/UNSAT)		
DC HIGH-POTENTIAL TEST		

ACTION **REWIND**
VARNISH

SECTION 5. AFTER RECONDITIONAING OR REWINDING AND VARNISHING

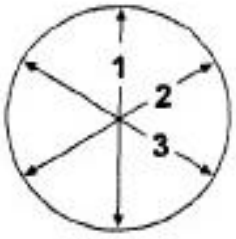
INSULATION RESISTANCE			**MEGOHMS**		
POLARIZATION INDEX TEST	**1 MIN**	_____	**10 MIN**	_____	**RATIO**
RESISTANCE BALANCE WITH DIGITAL OHMMETER			**1-2**	_____	**OHMS**
			2-3	_____	**OHMS**
			1-3	_____	**OHMS**
SURGE TEST				_____	**SAT/UNSAT**
AC HIGH-POTENTIAL TEST				_____	**SAT/UNSAT**
INSULATION RESISTANCE AFTER AC HIGH-POTENTIAL TEST				_____	**MEGOHMS**
NO-LOAD TEST			**PHASE A**	_____	**AMPERES**
			PHASE B	_____	**AMPERES**
			PHASE C	_____	**AMPERES**

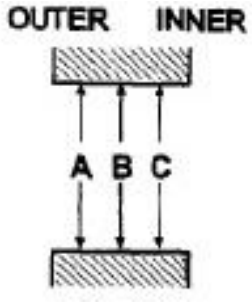
SHIPNAME & HULL NUMBER DATE MONTH/DAY/YEAR

MOTOR LOCATION (I.E., NO.2 MAIN FEED PUMP, ETC.)

HOUSING DIAMETERS

DRIVE END			
	A	B	C
1			
2			
3			

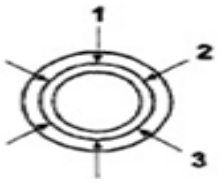


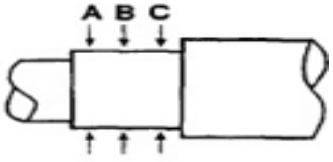


OUTER END			
	A	B	C
1			
2			
3			

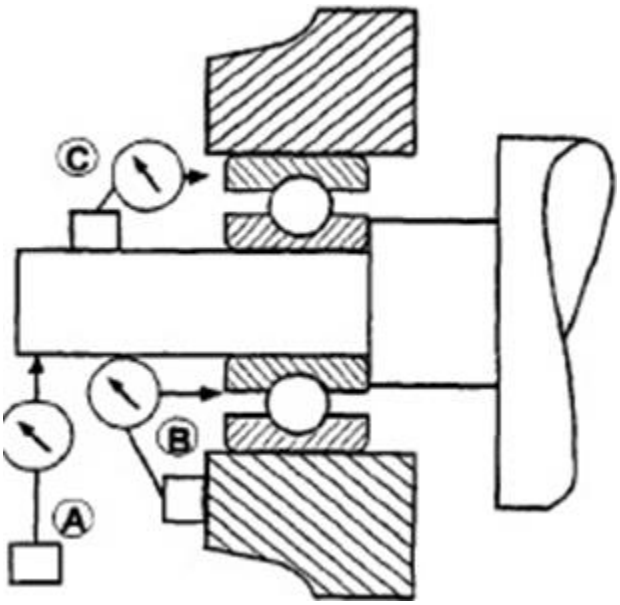
SHAFT DIAMETERS*

	DRIVE END			OUTER END		
	A	B	C	A	B	C
1						
2						
3						





FOR BEARING JOURNAL WIDTH LESS THAN 1 INCH ONLY SIX READINGS ARE REQUIRED.



A SHAFT RADIAL RUNOUT _____

B FACE RUNOUT, BEARING INNER RING
DRIVE END _____
OUTER END _____

C FACE RUNOUT, BEARING OUTER RING
DRIVE END _____
OUTER END _____

MECHANICAL CONDITION
(LOSS OF LUBE, BURNED ETC.)

_____
_____
_____
_____