NAVSHIPS 0967-000-0030

(Formerly NAVSHIPS 900,000.3)

NON-REGISTERED

ELECTRONICS INSTALLATION AND MAINTENANCE BOOK

SONAR

DEPARTMENT OF THE NAVY

NAVAL SHIP ENGINEERING CENTER

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PREFACE

POLICY AND PURPOSE

The Electronics Installation and Maintenance Book (EIMB) has been established as the means for collecting, publishing, and distributing, in one convenient documentation source, those subordinate maintenance and repair policies, installation practices, and overall electronics equipment and material-handling procedures required to implement the major policies set forth in Chapter 9670 of the Bureau of Ships Technical Manual. All data contained within the EIMB are authoritative, and derive their authority from Chapter 9670 of the Bureau of Ships Technical Manual, as established in accordance with Article 1201, U. S. Navy Regulations.

Since its inception, however, EIMB has been expanded to include selected information items of general interest to electronics installation and maintenance personnel. These items are such as would generally be contained in text books, periodicals, or technical papers, and form (along with the information cited above) a comprehensive, single-source reference document. In application, the EIMB is to be used for information and guidance by all military and civilian personnel involved in the installation, maintenance, or repair of electronic equipment under cognizance, or technical control, of the Naval Ship Systems Command (NAVSHIPS). All information, instructions, and procedures in the EIMB supplement such instructions and data supplied in equipment technical manuals and other approved maintenance publications.

ORGANIZATION

The EIMB is organized into a series of handbooks to afford maximum flexibility and ease in handling. The handbooks are stocked and issued as separate items so that activities requiring extra copies of any handbook may obtain them with relative ease.

The handbooks fall within two categories: general information handbooks and equipment oriented handbooks. The general information handbooks contain data which are of interest to all personnel involved in installation and maintenance, regardless of their equipment specialty. The titles of the various general information handbooks give only an overall idea of their data content; a more complete description of each handbook is provided in the General and Index handbook.

The equipment handbooks are devoted to information on a particular equipment class and provide general test procedures, adjustments, general servicing information, and field change identification data.

The following table lists all handbooks of the series, together with their old and new NAVSHIPS numbers. (The old NAVSHIPS numbers are shown in parentheses in the table).

The new NAVSHIPS numbers, although not presently imprinted on all handbooks of the EIMB series, serve also as the stock numbers which are to be used on any requisitions submitted.

HANDBOOK TITLE	NAVSHIPS NUMBER
(General Information Handbooks)	
General and Index	0967-000-0100 (900,000.100)
Installation Standards	0967-000-0110 (900,000.101)
Electronic Circuits	0967-000-0120 (900,000.102)
Test Methods and Practices	0967-000-0130 (900,000.103)
Reference Data	0967-000-0140 (900,000.104)
RFI Reduction	0967-000-0150 (900,000.105)
General Maintenance	0967-000-0160
(Equipment Oriented Handbooks)	
Communications	0967-000-0010 (900,000.1)
Radar	0967-000-0020 (900,000.2)
Sonar	0967-000-0030 (900,000.3)
Test Equipment	0967-000-0040 (900,000.4)
Radiac	0967-000-0050 (900,000.5)
Countermeasures	0967-000-0070 (900,000.7)

PREFACE

INFORMATION SOURCES

Periodic revisions are made to provide the best current data in the EIMB and keep abreast of new developments. In doing this, many source documents are researched to obtain pertinent information. Some of these sources include the Electronics Information Bulletin (EIB), the Naval Ship Systems Command News, electronics and other text books, industry magazines and periodicals, and various military installation- and maintenance-related publications. In certain cases, NAVSHIPS publications have been incorporated into the EIMB in their entirety and, as a result, have been cancelled. A list of the documents which have been superseded by the EIMB and are no longer available is given in Section 1 of the General and Index handbook.

SUGGESTIONS

NAVSHIPS recognizes that users of the EIMB will have occasion to offer comments or suggestions. To encourage more active participation, a self-addressed comment sheet is provided in the back of each handbook change. Complete information should be given when preparing suggestions. It is most desirable that the suggestor include his name and mailing address on the form to facilitate direct correspondence in the event clarification is required and an immediate reply can be supplied regarding the suggestion. Any communication will be made through a personal letter to the individual concerned.

If a comment sheet is not available or correspondence is lengthy, suggestions should be directed to the following:

Commander; Naval Ship Engineering Center
Department of the Navy
Washington, D. C. 20360
Attn: Fleet Electronics Effectiveness
Branch, Code 6678

CORRECTIONS

Report all inaccuracies and deficiencies noted in all NAVSHIPS technical publications (including this manual, ship information books, equipment manuals, drawings, and such) by a "Planned Maintenance System (PMS) Feedback Report, OPNAV 4700.7 (REV. 5-65)" or superseding form. If PMS is not yet installed in this ship, report technical publication deficiencies by any convenient means.

DISTRIBUTION

The Electronics Installation and Maintenance Book is transmitted to using activities through automatic distribution procedures. Activities not already on the EIMB distribution list and those requiring changes to the list should submit correspondence to the following:

Commander; Naval Ship Engineering Center
Department of the Navy
Washington, D. C. 20360
Attn: Code 6679A2b

Activities desiring extra copies of EIMB handbooks or binders should submit requisitions directly to Naval Supply Depot, Philadelphia, Pennsylvania. Complete instructions for ordering publications are given in the Navy Stock List of Forms and Publications, NAVSANDA Publication 2002.

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NOTES

1. The effective cut-off date for the FCIG in this change is 14 October 1966.

2. Material used for Section 4, Service Notes, was collected from the Electronics Information Bulletin, Numbers 686 through 690 inclusive.

3. Effective with Change 4 and in succeeding changes, a source reference code will be inserted immediately following or directly below the last line or copy of each article used in Section 4, Service Notes. The following examples show the coding method used to identify origin of material used.

Origin	Code
EIB 674	(674)
EIB 13S (Shore Quarterly Supplement)	(13S)
Naval Ship Systems Command Technical News Vol 14, No. 6	(TN14-6)
(Formerly The Bureau of Ships Journal)	(J14-6)
CEIB 7 (Classified EIB)*	(C7)

*Only articles which have been revised to omit classified data but retain information of value and lasting interest.

1-AN-BQR-3A – Ref and pwr circuits, isolate
Correction material: T-3 to NS 91904
2A FA-4 NS98519 None
SERIAL: All
IDENTITY: Connection removed from: T-1001 term 3 and R-1002; TB-119 term 5 and TB-121 term 5. Connection made between: TB-105 term 3 and TB-121 term 9; TB-121 term 9 and R-1002 (where lead was removed): TB-106 term 4 (via TB-121 term 10) to TB-119 term 5.

2-AN/BQR-3A – Same as 2-AN/BQR-3
3-AN/BQR-3A – Improved RLI meter presentation
Correction material: T-5 to NS 91904
2A FA-1 NS98864 None
SERIAL: All
IDENTITY: Replacement of R-940 (on bottom of receiver chassis) having a resistance of 22 K. ohms.

1-AN/BQR-4A – 60-cycle intfer elimination
Correction material: T-1 to NS 91951
3A FA-4 NS98534 F5845-642-7905
SERIAL: All
IDENTITY: Presence of new connectors P-404 and J-404 on audio amp chassis (right-rear).

2-AN/BQR-4A – Noise reduction
B YF-40 NS98896 None
SERIAL: All
IDENTITY:

1-AN/BQR-7A – Alteration of Low-frequency Roll-off Characteristics
Correction material: Change 1 to NS 93685(A), T-2 to NS 93685.42
1-A FA-60 NS 981660
SERIAL: To be assigned by BUSHIPS
IDENTITY: Modification plate attached to units 1, 2, 3, 4, and 6 directly below or adjacent to existing nameplate.

2-AN/BQR-7A – Improve reliability of +285 Volt DC Power Supply (6A1)
Correction material: T-2 to NS93685(A)
2-A FA-1 NS981771 None
IDENTITY: Orange jumper lead between resistor R48 and transistor Q9 (Collector).

3-AN/BQR-7A – Increase Current Capabilities of −20 Volt DC Power Supply to accommodate Equalization Amplifiers.
Correction material: CH-2 to NS93685(A)
1-A FA-1 NS981772
SERIAL: To be assigned by Bureau of Ships
IDENTITY: Primary connections to transformer 6A1T3 are on pins 1 and 2. Presence of new resistor (6A1R29) in parallel with existing 6A1R12. 6A1R4 is a 470-ohm, 2 watt resistor.

4-AN/BQR-7A – Boost the low frequency components of signals feeding AN/BQQ-3
Correction material: CH-1 to NS93685(A)
1-A FA-3 NS981773
SERIAL: To be assigned by Bureau of Ships
IDENTITY: Equalization Amplifiers A3 and A4 plugged in on Chassis 3A4. Primarily connections to transformer 6A1T3 are on pins 1 and 2. Presence of a new resistor (6A1R29) in parallel with existing 6A1R12. 6A1R4 is a 470-ohm, 2 watt resistor.

5-AN/BQR-7A – Decrease Preamplifier Gain and Modify Test Set
Correction material: CH-2 to NS93685(A)
1-A FA-4 NS981774 F5845-757-7624
SERIAL: To be assigned by Bureau of Ships
IDENTITY: Modification plate attached to units 1 and 4 directly below or adjacent to existing nameplate.

6-AN/BQR-7A – E/M Interference Reduction
Correction material: Change 3 to NS
1-A FA-576 NS0967-064-1100
SERIAL: All
IDENTITY: The presence of a metal shield over synchro bearing indicator 4A5A2 in Unit 4 will indicate the accomplishment of this change

1-AN/BQR-7B – Replace four type 1N277M Diodes with four type JAN-1N538 Diodes
Correction material: None
1-A FA-1 NS981763
SERIAL: A1 thru A8. All other sets have been corrected by an identical production.
IDENTITY: If this change has been made, diodes 5A4E4CR1 thru CR4 are type JAN-1N538 and not 1N277M.

2-AN/BQR-7B—Modification to make it compatible for installation of AN/BQA-8 Sonar Performance Computer
Correction material: T- to Interim Tech Man. Report 6234
2-A FA-1 None
SERIAL: All
IDENTITY: Leads from pin 5 and 7 of transformer 4A6T8 to terminals 1A and 2A respectively on terminal board 4RB46 and the removal of the jumpers on the secondary winding of transformer 4A6T8 which is located in the Control Indicator.

3-AN/BQR-7B – Reduction of Electromagnetic Interference
Correction material:
1-A FA-576 NS0967-065-4070
SERIAL: All
IDENTITY: The presence of a metal shield over synchro bearing indicator 4A5A2 in Unit 4 will indicate the accomplishment of this change

1-AN/BQS-2 – Prod chg, add
Correction material: T-5 to NS 92154(B)
1A FA-8 NS98625 None
SERIAL: 1-6
IDENTITY: C-165 installed, tfansducer scanner rack. Jumper removed between R-381 and R-431 on TB E-307.

2-AN/BQS-2 – Prod chg, add
Correction material: T-5 to NS 92154(B)
1A FA-4 NS98626 None
SERIAL: 1-25
IDENTITY: R-458 installed in transmit bearing selector amplifier.

3-AN/BQS-2 – Prod chg, add
Correction material: T-5 to NS 92154(B)
1A FA-16 NS98627 None
SERIAL: 1-25
IDENTITY: C-1155 installed in magnetic recorder (trans-recvr rack). Sweep gen chassis (console), R-1915 located on TB E-1902 changed from 1 to 2 W. Opn sw (S-1707) changed to 3 deck type.

4-AN/BQS-2 – Prod chg, odd
Correction material: T-5 to NS 92154(B)
1A FA-6 NS98628 None
SERIAL: 1 -50
IDENTITY: F-1201 installed in trans. HV. Shielded wires installed in upper trans. Wire from J-1204 to pin 8 of XV-1201 now shielded in upper trans chassis.

5-AN/BQS-2 – Prod chg, add
Correction material: T-5 to NS 92154(B)
1A FA-4 NS98629 None
SERIAL: 1-35
IDENTITY: Modification of keyer chassis in trans rack. Remove V-807, with FC accomplished, pin 3 to ground should be 330 ohms.

6-AN/BQS-2 – Leak det in xducr AT-299/BQS-2, instl
1A YF-3 NS98648 F5845-642-6971
SERIAL: 001, 002, 004-026, 027, 030-056
IDENTITY: Leak detector installed inside transducer. Note: Accomplished only by naval transducer repair facility.

7-AN/BQS-2 – Reduce sensit to ext noise transients,
Correction material: None
rewire
2A FA-2 NS98749 None
SERIAL: 1-87
IDENTITY: A lead has been run between ground (located behind preamp no. 15, bottom chassis, front of door) and TB-123-15. Ends of original lead have been dummied off.

8-AN/BQS-2 – Improve reliability
Correction material: None
A FA-¼ NS98749 None
SERIAL: All
IDENTITY: Captive screw located immediately above blower exhaust louvers on transmitter-receiver RT-210/BQS-2, front panel, has been replaced by fillister head screw.

9-AN/BQS-2 – Reliability kit, install
Correction material: TM for AN/BQS-2, NS 92154(B)
1B YF-200 NS98913 F5845-543-0142
SERIAL: All
IDENTITY: Voltage regulating transformer TF-242/U and standby mode switch have been installed.

10-AN/BQS-2 – Damage to L-912, prevent
Correction material: None
2A FA- NS981063 None
SERIAL: All
IDENTITY: Bracket to protect tuning slug of coil L-912 has been installed.

11-AN/BQS-2 – Pwr supply voltage test points, provide
Correction material: T-1 to NS 92154(A)
2A FA-8 NS98957 None
SERIAL: All
IDENTITY: Test points J-1303 thru J-1305, J-1403 thru J-1409, and J-1502 thru J-1505 have been installed.

12-AN/BQS-2 – Reduce excessive heat and improve equip reliability
1-A FA-250 NS981093 F5845-679-4605
SERIAL: All
IDENTITY: R-1311 installed

1-AN/BQS-4—General improvement.
Correction material:
2-A FA-2 NS981436
SERIAL: 1 thru 6 (AN/BQS-4), 1 thru 45 (OA-1283/BQS-4A).
IDENTITY: 2.2-megohm resistor for R4602 in lieu of 1.0-megohm resistor, 620,000-ohm resistor for R2278 in lieu of 510,000-ohm resistor, 220,000-ohm resistor for R867 in lieu of 470,000-ohm resistor. Lead from transducer is on terminal E5002 and lead from dummy load is on terminal E5001.

2-AN/BQS-4 – Modification of sonar detecting-ranging sets.
Correction material: Change 1 to NS93530; Supplementary Parts List for NS93530; T-1 to NS93530. 32; T-1 to NS93530.42
1-AC FA-250 NS981434 F5845-847-8718
SERIAL: All
IDENTITY: Units which are affected by this field change are identified by a modification nameplate attached near the unit nameplate; changes nomenclature AN/BQS-4 to 4B; AN/BQS-4A to 4C.

3-AN/BQS-4 – Modification to Provide Adjustment of Timing Chassis Regulated Voltages
Correction material: T-3 to NS 93530
2-A FA-1 NS 981673 None
SERIAL: All
IDENTITY: Presence of the additional variable resistor R-2557 on the Regulated Amplifier Chassis

4-AN/BQS-4 – Replace Resistor R-2832
Correction material: T- to NS93530
2-A FA-½ None
SERIAL: All
IDENTITY: Inspection of R2830 to determine if it is 2 watt resistor.

1-AN/BQS-4A – Same as 1-AN/BQS-4

2-AN/BQS-4A – Same as 2-AN/BQS-4

3-AN/BQS-4A – Same as 3-AN/BQS-4

4-AN/BQS-4A – Same as 4-AN/BQS-4

1-AN/BQS-4B – Reliability Improvement
Correction material:
2-A FA-5 None
SERIAL: All AN/BQS-4B's except A1 and up. All AN/BQS-4C's except A4 and up.
IDENTITY: Presence of R-5157 marked "BIAS ADJ" on the exciter chassis, and by measuring the D.C. resistance of the dummy load for 140 ohms with E-5002 disconnected.

2-AN/BQS-4B – Same as 4-AN/BQS-4

3-AN/BQS-4B – Replacement of Resistor R-2364
Correction T- to NS93580
2-A FA-1/2 None
SERIAL: All
IDENTITY: Visually inspecting R-2364 and determining it to be a 2-watt resistor.

4-AN/BQS-4B–Replacement of Scan Switch Drive Coupling
Correction material: CH-2 to NS 93530
1-A FA-5 NS 0967-051-1070
SERIAL: All
IDENTITY: The new coupling is an all-metal, gap-type coupling. The old coupling is a flexible rubber type. Visual identification may be made by inspection after the end bell of the scan switch is removed.

5-AN/BQS-4B–Modification to provide Adjustment of Timing Chassis Regulated Voltages
Correction material: T- to NS 93530
2-A FA-1 None
SERIAL: All
IDENTITY: Presence of additional variable resistor R2557 on regulated amplifier chassis

1-AN/BQS-4C – Same as 1-AN/BQS-4B

2-AN/BQS-4C – Same as 4-AN/BQS-4

3-AN/BQS-4C – Same as 3-AN/BQS-4B

4-AN/BQS-4C–Same as 4-AN/BQS-4B

5-AN/BQS-4C–Same as 5-AN/BQS-4B

1-AN/BQS-4D–Same as 4-AN/BQS-4B except SERIAL A7 of AN/BQS-4D

1-AN/BQS-6,-Sonar Set–Wiring Modification
Correction material: to NS 93663(A)
2-A FA-1 None
SERIAL: All
IDENTITY: Leads connected to pins 4 and 6 of transformer 8A8T7 which is located in the Receiver Cabinet

1-AN/BQS-6A – Wiring Modification
Correction material: See NS93796
2-A FA-2 None
SERIAL: All
IDENTITY: This field change can be identified by leads connected to pin 3 and 6 of transformer 8A8T7, which is located in the Receiver Cabinet.

1 – AN/FQM-1 – Installation of exhaust blowers
2-A FA-12 None
SERIAL: 1-5
IDENTITY: Blower motor assy is mounted in top of panel of consoles A & B.

1-AN/FQQ-1(V) – Pwr plant fan, add
Correction material: None
A FA-3 NS98826 None
SERIAL: 1-9
IDENTITY:

2-AN/FQQ-1(V) – Freq multiplier-recorder oil seal, chg
Correction material: None
2A FA-4 NS98826 None
SERIAL: 1-10
IDENTITY:

8-AN/SQS-26AX - Same as 9-AN/SQS-26

9-AN/SQS-26AX - Incorporates changes for updating the equipment to include contract modifications #58 and 61.
Correction material: Change 1 to NS95943
1-A FA- NS0967-171-2240
SERIAL: A1 through A12
IDENTITY: Refer to identification of accomplishment in each part of this field change bulletin.

10-AN/SQS-26AX - Addition of Transmitter Module Tester Unit 99
Correction material: Change 4 to NS95943
1-A FA-6 NS0967-171-2250
SERIAL: A1 through A12
IDENTITY: Check for presence and operation of Unit 99.

11-AN/SQS-26AX - Replacement of Printed Circuit Board.
Correction Material: Change 1 to NS95943
1-A FA-5 NS0967-171-2260
SERIAL: A1 through A12
IDENTITY: Check for appearance of G.E. part number 77D60160G1 on transmitter module.

1-AN/SQS-26 - Modification Kit #2 - Transducer Element Indicator Kits.
Correction material: None
1-A FA-40 NS981791
SERIAL: No. 1 and 2, Switch Assembly SA-811/SQS-26, (Unit 15)
IDENTITY: Determination of accomplishment of this field change can be identified by visual inspection.

2-AN/SQS-26 - Bondpass Filter and Passive Equalizer Addition
Correction material: None
1-A FA- NS0285-076-3502
SERIAL: AN/SQS-26 (Two furnished on NObsr 81384), AN/SQS-26X (12 furnished-Nobsr 87002
IDENTITY: See Bulletin.

3-AN/SQS-26 - **Provides easy access to indication of** status of fuses
Correction Material:
2-A FA-1 NS None
SERIAL: All
IDENTITY: Presence of plexiglass cover mounted over hole in cabinet.

4-AN/SQS-26-Same as 4-AN/SQS-26(XN-2)

5-AN/SQS-26 - Installation of Range and Bearing Calibration Modification Kit
Correction material: Included in DATOM manuals
1-A FA-23 NS0285-080-0900
SERIAL: All AN/SQS-26AX and AN/SQS-26
IDENTITY: Distribution box (Unit 79) and associated cabling to AN/SQS-26AX or AN/SQS-26 equipment is installed.

6-AN/SQS-26 Sonar Detecting Ranging Set-To eliminate Noise from the dual Beam Receiver
Correction materiol: To be included in final TM NAVSHIPS 94406(A)
2-A FA-16 None
SERIAL: A1 and A2
IDENTITY: Proper recording on Field Change Accomplished plate.

7-AN/SQS-26-Cabinet No. 2 A-Scan Drive Motor Change (To be supplied)

8-AN/SQS-26-Replaces Paper Take-Up Assembly and Adds Helix Motor Protective Fuse NObsr-95241
Correction material: None required
1-A FA-2 NS 0967-059-8210
SERIAL: All
IDENTITY: Part 1-Front panel of the paper take-up assembly contains a switch designated TAKE-UP-MOTOR. Part 2-A fuse holder is located on the bracket holding the input power connector for the helix drive motor. This bracket is located beside the helix drive motor.

9-AN/SQS-26 - Installation of Protective Plastic Covers on Units 18 and 19 Preamplifier
Correction material: to NS95942 and NS95943, Manual 9, Vol. 1
1-A FA-2 None
SERIAL: A1 through A3
IDENTITY:

10-AN/SQS-26 - **Incorporates Changes to Update the equipment to include contract modification No. 44**
Correction material: None
1-C FA-103.7 NS0967-059-8220
SERIAL: A1 and A2
IDENTITY: Refer to identification of accomplishment in Parts 1 through 81 of this field change bulletin.

1-AN/SQS-29 - Repl of shock mounts on cabinet structure of pwr distribution panel SB-947/SQ
Correction material: Change 1 to NS 93229
1-A FA-2 NS981119 F5845-663-8733
SERIAL: Having SB-947/SQ nos 1-20, 38-57, 81-95, 121-135
IDENTITY: Vibration mounts Sangamo #876209 installed in place of Sangamo part #881136

2-AN/SQS-29 - Improve in protection of high voltage motor gen sets
Correction material: T-2 to NS 93229
2-A FA-2 NS981117 None
SERIAL: All
IDENTITY: Cables R-SK117 and R-SK118 installed between HV motor gen and controller.

3-AN/SQS-29 - Improve protection of motor gen sets
Correction material: T-3 to NS 93229
1-A FA-8 NS981120 F5845-663-8742
SERIAL: C-2671/SQ nos 1-20, 38-57, 81-95, 121-135
IDENTITY: F101 changed from 0.5 amp to 0.25 amp.

4-AN/SQS-29 - Current limiting of 1000 volt gen output
Correction material: T-4 to NS 93229
1-A FA-2 NS981121 F5845-663-8743
SERIAL: C2671/SQ nos 1-26, 38-71, 81-111, 121-161
IDENTITY: Resistor assembly mounted between E-17005 and S-17004

5-AN/SQS-29 - Add capacitor assy CB-7/SQ (modified)
Correction material: T-5 to NS 93229
2-A FA-4 NS981118 None
SERIAL: All
IDENTITY: Capacitor assy CB-7/SQ installed

6-AN/SQS-29 - Protection of high voltage supply
Correction material: T-6 to NS 93229
1-A FA-1 NS981122 F5845-663-8844
SERIAL: All w/major units Capacitor Assembly CB-7/SQ (modified) and Control-Power Supply C-2671/SQw/serial 1-170
IDENTITY: Resistor board assembly on sidewall of Capacitor Assembly CB-7/SQ (modified)

7-AN/SQS-29 – Provide greater range of adjustment for proper regulation of 900 volt output of Motor Generator PO-444/SQ
Correction material: T-7 to NS93229
FA- NS981123 None
SERIAL: SB-947/SQ Nos. 1 thru 170
IDENTITY:

8-AN/SQS-29 – Modif. to operate with AN/SQS-T3A.
Correction material: T-8 to NS93229
2-A FA-6 NS981184 None
SERIAL: Equipment installed with AN/SQS-T3A
IDENTITY: S-25002 - Jumper removed between terminals 10 and 12 on wafer B.

9-AN/SQS-29 - Same as 10-AN/SQS-4

10-AN/SQS-29 – Cancelled

11-AN/SQS-29 - Add field keying circuits.
Correction material: Change 4 to NS93229(A)
1-A FA-24 NS981369 F5845-856-5451
SERIAL: OA-2062/SQS-29 (1 through 37); OA-2063/SQS-30 (1 through 43); OA-2064/SQS-31 (1 through 40); OA-2065/SQS-32 (1 through 50)
IDENTITY: Field keying chassis is mounted on the upper left interior wall of the transmitter program control.

12-AN/SQS-29 - Modifies equipment as VDS for use with AN/SQA-10.
Correction material: Complementary TM for AN/SQS-29B, AN/SQS-29C
1-B FA-12 man days NS981389 F5845-856-8089 (29, 29A) F5845-856-8088 (30, 30A)
SERIAL: Equipments selected for modification by BUSHIPS
IDENTITY: Four position XMIT MODE switch is added to the auxiliary control panel.

13-AN/SQS-29 - Provides aspect capability.
Correction material: None
3-C FA-6 NS981390 F5845-856-8090 (AN/SQS-29, -29A) F5845-856-8091 (AN/SQS-30, -30A) F5845-856-8092 (AN/SQS-31, -31A) F5845-856-8093 (AN/SQS-32, -32A)
SERIAL: As specified by BUSHIPS
IDENTITY: Two equipment cabinets have been added to the installation. Programmer-recorder and transmit beam control cabinets

14-AN/SQS-29 – Cancelled, superseded by 25-AN/SQS-29

15-AN/SQS-29 - Replace HV generator terminal boxes
Correction material: Change 5 to NS93229(A)
1-C FA-40 NS981457 F5845-560-7209
SERIAL: Motor-Generators PU-443/SQ
IDENTITY: High-Voltage generator terminal box is large type (7-1/4 x 13 x 5 inches), and has a field center tap connection brought out into the box

16-AN/SQS-29 - Protective Covers for High Voltage Distribution Panel SB-974/SQ
Correction material; None
2-A FA-1 NS981467 None
SERIAL: All
IDENTITY: Location of two paper Base Phenolic protective shields in the power panel 974/SQ used in conjunction with Sonar AN/SQS-29, -29A through 32, -32A

17-AN/SQS-29 - Modification of video scanning switches
Correction material: Change 6 to NS93229(A), Change 8 to NS92283.32, NS92283(A), NS92283.42
3-C FA-8 NS981499 F5845-086-7630 (AN/SQS-29, 29A, 30, 30A) F5845-086-7631 (AN/SQS-31, 31A, 32, 32A)
SERIAL: Equipment selected by BUSHIPS
IDENTITY: Sweep generator nameplate bears number 825805

18-AN/SQS-29 - Cancelled

19-AN/SQS-29 – Same as 13-AN/SQS-4

AN/SQS-29 THRU -32 (INCLUDING A, B, AND C SERIES) AND ALL AN/SQS-23 SERIES SONAR EQUIPMENT
Drive Motor B-11003 Replacement Difficulties

See article in section AN/SQS-29 under the same title.

TR-152/SQS-23, TR-177/SQS-23A, TR-191/SQS-23, TR-197/SQS-23, AND TR-208/SQS-23 SONAR TRANDUCERS
Dummy Loading of Elements

See article in section TR-152/SQS-23 under same title.

as shown in figure 1. Figure 2 shows improper mounting.

2. Commutator Inspection.

a. Check for rough or blackened bars. See if two diametrically opposed bars are more blackened or burned than the other bars, indicating an internal short.

b. Check for rough or uneven commutator.

c. Check for metallic dust between commutator bars.

d. Check for normal commutator wear. (A dull red color should be observed; bright new copper indicates excessive wear.)

If, after making the above checks, no trouble is found, run the H.V.M.G. with the load disconnected in order to determine whether or not the sparking is caused by an overload condition.

If the brush alinement has been altered, excessive sparking may continue after the above checks have been made. This sparking would probably indicate improper brush setting with respect to the coils for proper commutation. The following is a procedure for setting the neutral at H.V.M.G. set. It is not recommended for shipboard sonar maintenance personnel, since armature removal or extensive repair may be required. Realinement of brushes should be accomplished by shipyard or tender personnel only.

SETTING NEUTRAL OF THE H.V.M.G. SET ("KICK-NEUTRAL" METHOD)

The "Kick-Neutral" method of setting the brushes for best commutation is based on measurement of voltages induced in the armature coils as the current in the main field of the machine is interrupted.

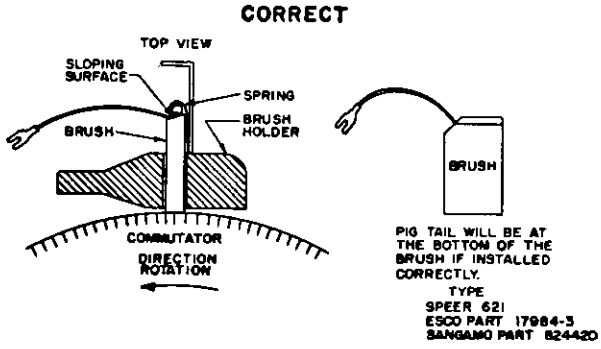

Figure 1.

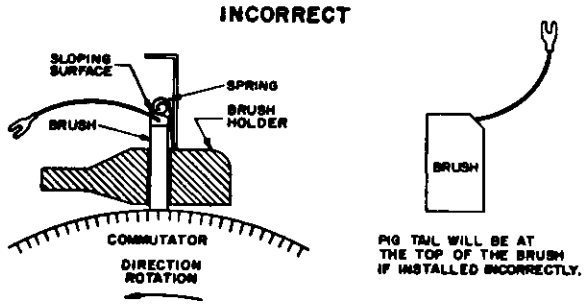

Figure 2.

With the unit at stand-still, connect a DC voltmeter across the brushes, preferably a meter having 0.5, 1.5 and 15-volt scales. Separately excite the shunt field from a dc source through a quick-break switch (a knife switch or the like can be used). Insert 100-ohm, 200-watt variable resistor, set to about 56 ohms resistance, in series with the excitation circuit to keep the field current small (about 45 volts at 1.25 amps). Use the smallest field current that gives a good deflection on the low scale of the meter.

When "kick" voltage is read for the first time, begin with the 15-volt scale and change to lower scales only when it is certain that the voltage is within their respective ranges. Before the switch is opened for each reading, wait long enough for the induced voltage caused by closing the circuit to decay. Loosen bolt (piece 71) on the rocker ring (piece 34) and shift the ring to the point at which the voltage is minimum when the field circuit is opened. Lock the ring in position by tightening the bolt. Check sparking. If sparking is excessive, shut down the M.G. set and tap the rocker ring (not the brush box) in one direction. If the sparking increases, tap slightly in the opposite direction until minimum sparking is obtained.

If the armature has not been changed during the assembly, it will only be necessary to line up the neutral mark on the ring and housing (white line) and tap slightly in one direction or other for best commutation. Normal commutation is obtained when the machine delivers the proper voltage and current with minimum sparking.

AN/SQS-29/32 SERIES AND AN/SQS-23 SERIES SONARS - INSTALLATION OF ADDITIONAL LOCKWASHER TO ENSURE PROPER GROUNDING OF JP TERMINAL POSTS IN KEYING CHASSIS

Several recent instances of "double keying", "short transmission sector", "keying lockout", etc., have been traced to an improper connection between the JP terminal post ground ring and chassis ground in the keying chassis.

Proper equipment operation was restored by the installation of an additional lockwasher (Sangamo part No. 873935) FSN N5310-806-9493 under the head of the JP terminal post mounting screw, as shown in figure 1.

The No. 6-32 X 1/2" mounting screw must be removed while holding the JP terminal post firmly against the chassis so that the "pillar" and "ground ring" lockwasher will not be disturbed. Remove all paint from the area under the screwhead. The added lockwasher is installed directly under the head of the mounting screw and the entire assembly should be firmly secured.

Repair and overhaul activities should be alert to the possibility that equipment malfunctions due to improper grounding of JP terminal posts could occur in other areas of the sonar systems. Similar corrective action will then apply.

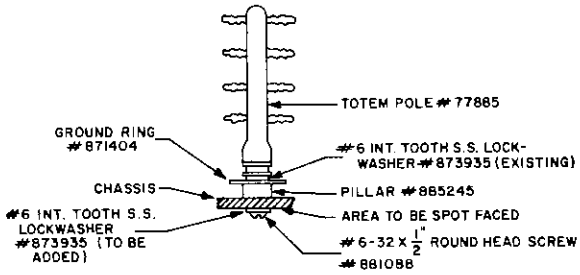

Figure 1

AN/SQS-29 THROUGH -32C SERIES SONAR—MAINTENANCE HINTS FOR TRANSMITTER CABINET KNIFE-TYPE CONTACTS

Repeated reports have been received of poor electrical continuity through the knife-type contacts in the transmitter cabinets. These contacts are used to connect P-10001 and P-10002 to J-10001 and J-10002, respectively. High resistance resulting from poor physical connections and dirt, causes reduced drive level to the power amplifiers.

Investigation revealed that the following are the greatest causes of this condition.

1. Contacts are dirty and have developed a white powdery type of oxidation.
2. Contacts are physically sprung, causing poor connections.
3. The racks in the transmitter cabinets are not fully seated and securely fastened in place.
4. Mounting foundations frequently are not level.

A quick test to determine if the contacts are clean and making proper connection can be performed as follows.

1. Place the equipment in the DEENERGIZED condition.
2. Using multimeter AN/PSM-4( ) on the R x 1 scale, measure terminals 11B-1 through 11B-48 to ground in the control programmer. The resistance should be between 5 and 7 ohms. Any higher resistance reading indicates a need for corrective action.

NOTE: If cleaning or adjusting of the contacts is required, use the procedures listed in BuShips Technical Manual, Chapter 65, paragraph 65-34.

AN/SQS-4, AN/SQS-29 THROUGH -32, AND AN/SQS-23 SERIES SONAR VIDEO SCANNER—PROPER INSTALLATION OF PULLEYS AND BELTS

Refer to article in AN/SQS-4 section under the same title.

AN/SQS-29-32, -29A-32A, -29B and -C, -32B and -C and all AN/SQS-23 Series Sonar Equipment-Drive Motor B-11003 Replacement Difficulties

When replacement of the medium-low speed scanner drive motor (B-11003) is required, it is possible to obtain a replacement drive motor that does not have the identical electrical specifications as the original. The major difference between the original (Doerr manufactured model 40028) and the substitute unit (either Bodine or Northfield Electric manufactured) is the value of capacity required for start/run. To determine the value of required capacity (C-11002) necessary for satisfactory operation, refer to the nameplate data on the replacement motor. The nameplate will specify either a 2 mfd or 4 mfd capacitor. If a 4 mfd capacitor is required, a suitable unit is C-11003 presently in service as the start/run capacitor for the high speed scanner. The capacitor is identical physically to the old 2 mfd previously used and will not present any mechanical mounting problems.

The sonar equipments listed above which have the improper value of start/run capacity will be continually plagued by replacement of B-11003. For this reason, it is recommended that all ships which have recently replaced the medium-low speed scanner drive motor ascertain that when replacement was accomplished the proper value of capacity was used. Comparison of the drive motor nameplate data for the required capacity vice the value of C-11002 installed will produce any discrepancy.(669)

HIGH VOLTAGE MOTOR GENERATORS FOR AN/SQS-23 SERIES AND AN/SQS-29 THRU AN/SQS-32 SERIES SONARS Alignment Marks; Information Concerning

See article in section AN/SQS-23 under the same title.

AN/SQS-29 THROUGH -32C SERIES SONAR–MAINTENANCE HINTS FOR TRANSMITTER CABINET KNIFE-TYPE CONTACTS

Refer to article in AN/SQS-29 section under the same title.

AN/SQS-4, AN/SQS-29 THROUGH -32, AND AN/SQS-23 SERIES SONAR VIDEO SCANNER–PROPER INSTALLATION OF PULLEYS AND BELTS

Refer to article in AN/SQS-4 section under the same title.

HIGH VOLTAGE MOTOR GENERATORS FOR AN/SQS-23 SERIES AND AN/SQS-29 THRU AN/SQS-32 SERIES SONARS
Alignment Marks; Information Concerning

See article in section AN/SQS-23 under the same title.

AN/SQS-29 THRU -32 (INCLUDING A, B AND C SERIES) AND ALL AN/SQS-23 SERIES SONAR EQUIPMENT
Drive Motor B-11003 Replacement Difficulties

See article in section AN/SQS-29 under the same title.

AN/SQS-4, AN/SQS-29 THROUGH -32, AND AN/SQS-23 SERIES SONAR VIDEO SCANNER–PROPER INSTALLATION OF PULLEYS AND BELTS

Refer to article in AN/SQS-4 section under the same title.

AN/SQS-29 THROUGH -32 SERIES SONAR–MAINTENANCE HINTS FOR TRANSMITTER CABINET KNIFE-TYPE CONTACTS

Refer to article in AN/SQS-29 section under the same title.

HIGH VOLTAGE MOTOR GENERATORS FOR AN/SQS-23 SERIES AND AN/SQS-29 THRU AN/SQS-32 SERIES SONARS
Alignment Marks; Information Concerning

See article in section AN/SQS-23 under the same title.

AN/SQS-29 THRU -32 (INCLUDING A, B, AND C SERIES) AND ALL AN/SQS-23 SERIES SONAR EQUIPMENT
Drive Motor B-11003 Replacement Difficulties

See article in section AN/SQS-29 under the same title.

CAUSE OF INTERMITTENT OPERATION NOT CAUSED BY MOTOR GENERATOR PU-485/SQ IN SONAR SETS AN/SQS-29 THROUGH 32A

See article in AN/SQS-29 section under the same title.

400 CYCLE INTERFERENCE IN SONAR SETS AN/SQS-29, -29A THROUGH -32 AND -32A

See article in AN/SQS-29 section under the same title.

REDUCTION OF DIODE FAILURES IN SONAR SETS AN/SQS-29 THROUGH -32

See article in AN/SQS-29 section under the same title.

RESIDUAL VOLTAGE WARNINGS IN SONAR SETS AN/SQS-23 AND AN/SQS-29 THROUGH -32

See article in AN/SQS-23 section under the same title.

CHANGE TO CAPACITOR ASSEMBLY CB-7/SQ IN SONAR SETS AN/SQS-29 THROUGH 32

See article in AN/SQS-29 section under the same title.

TR-183/SQS, TR-184/SQS, TR-185/SQS AND TR-186/SQS TRANSDUCER FOR USE WITH AN/SQS-4, -4A, AND AN/SQS-29, -29A THROUGH AN/SQS-32 AND -32A SONARS

See article in AN/SQS-4 section under the same title.

CHECK OF EQUIPMENT RANGE AND BEARING CIRCUIT CALIBRATION AN/SQS-4, -4A, -29, -29A THROUGH -32 AND -32A

See article in AN/SQS-4 section under the same title.

MAINTENANCE PRECEDURES FOR AN/SQS-4, -4A, -29, -29A THROUGH 32, AND -32A - VIDEO TRANSDUCER SCANNER ASSEMBLY

See article in AN/SQS-4 section under the same title.

NUMBERING OF TRANSMIT CHANNELS IN SONAR SETS AN/SQS-23 AND AN/SQS-29, -29A THROUGH -32, -32A

See article in AN/SQS-23 section under the same title.

AN/SQS-23 SERIES AND AN/SQS-29 THROUGH -32 SERIES SONAR TRANSDUCER PROGRAMMING CHECKS - PRECAUTIONS FOR

Refer to article in AN/SQS-23 section under same title.

AN/SQS-4, -4A, -23, -23A, -23B, -23C, -29A, -29B, -29C THROUGH -32A, -32B, AND -32C SONARS - IMPROVED TYPE VIDEO SCANNING SWITCH (FIBREX) DRIVE BELTS FOR

Refer to article in AN/SQS-4 section under same title.

AN/SQS-29 THROUGH -32 SERIES SONAR--MAINTENANCE HINTS FOR TRANSMITTER CABINET KNIFE-TYPE CONTACTS

Refer to article in AN/SQS-29 section under the same title.

AN/SQS-4, AN/SQS-29 THROUGH -32 AND AN/SQS-23 SERIES SONAR VIDEO SCANNER--PROPER INSTALLATION OF PULLEYS AND BELTS

Refer to article in AN/SQS-4 section under the same title.

HIGH VOLTAGE MOTOR GENERATORS FOR AN/SQS-23 SERIES AND AN/SQS-29 THRU AN/SQS-32 SERIES SONARS
Alignment Marks; Information Concerning

See article in section AN/SQS-23 under the same title.

AN/SQS-29 THRU -32 (INCLUDING A, B AND C SERIES) AND ALL AN/SQS-23 SERIES SONAR EQUIPMENT
Drive Motor B-11003 Replacement Difficulties

See article in section AN/SQS-29 under the same title.

INTERCHANGEABILITY OF AN/UQC-1 TRANSDUCERS AT-186/UQC AND TR-193( )/UQC

See article in AN/UQC-1 section under the same title.

AN/UQC-1 SERIES UNDERWATER COMMUNICATIONS SET

Output Voltage Level Clarification

See article in section AN/UQC-1 under the same title.

DT-282 ( )/BQG-4 (PUFFS)
Hydrophones—Repair and Replacement

See article in section AN/BQG-4 under the same title.

OA-7010-15 AND OA-3658-62 ASPECT-TEST-OPERATE SWITCH; Information on

See article in section OA-7010-15 under the same title.

OA-7010-15 AND OA-3658-62 ASPECT—Maintenance Notes on Recorder Mechanism

See article in section OA-7010-15 under the same title.

TR-152/SQS-23, TR-177/SQS-23A, TR-191/SQS-23, TR-197/SQS-23, AND TR-208/SQS-23 SONAR TRANDUCERS

Dummy Loading of Elements

See article in section TR-152/SQS-23 under Same title.

TR-152/SQS-23, TR-177/SQS-23A, TR-191/SQS-23, TR-197/SQS-23, AND TR-208/SQS-23 SONAR TRANDUCERS
Dummy Loading of Elements

See article in section TR-152/SQS-23 under same Title.

INTERCHANGEABILITY OF AN/UQC-1 TRANSDUCERS AT-186/UQC AND TR-193( )/UQC

See article in AN/UQC-1 section under the same title.

AN/UQC-1 SERIES UNDERWATER COMMUNICATIONS SET

Output Voltage Level Clarification

See article in section AN/UQC-1 under the same title.

TR-152/SQS-23, TR-177/SQS-23A, TR-191/SQS-23, TR-197/SQS-23, AND TR-208/SQS-23 SONAR TRANDUCERS
Dummy Loading of Elements

See article in section TR-152/SQS-23 under same title.

TR-152/SQS-23, TR-177/SQS-23A, TR-191/SQS-23, TR-197/SQS-23 AND TR-208/SQS-23 SONAR TRANDUCERS
Dummy Loading of Elements

See article in section TR-152/SQS-23 under same title.

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