TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT,

AND GENERAL SUPPORT MAINTENANCE MANUAL

FOR
SWITCHING SET, COMMUNICATIONS AN/MSQ-74(V)1 NSN 5895-00-949-5868)

SWITCHING SET, COMMUNICATIONS AN/ MSQ-74(V)2 (NSN 5895-00-949-5906)

SWITCHING SET, COMMUNICATIONS AN/ MS4-74(V)3 (NSN 5895-00-948-5606)

SWITCHING SET, COMMUNICATIONS AN/ MSQ-74(V)4 (NSN 5895-00-948-5642)

SWITCHING SET, COMMUNICATIONS AN/ MSQ-74(V)5 (NSN 5895-00-949-5900)

SWITCHING SET, COMMUNICATIONS AN/MSQ-74(V)6 (NSN 5895-00-948-6410)

SWITCHING SET, COMMUNICATIONS AN/ MSQ-74(V)7 (NSN 5895-00-948-5689)

SWITCHING SET, COMMUNICATIONS AN/ MSQ74(V)8 (NSN 5895-00-948-5680)

SWITCHING SET, COMMUNICATIONS AN/ MSQ74(V)9 (NSN 5895-00-930-2643)

SWITCHING SET, COMMUNICATIONS AN / MSQ-74(V)10 (NSN 5895-00-949-5902)

AND

SWITCHING SET, COMMUNICATIONS AN / MSQ-74(V)12
(
CONSOLE REMOTE EQUIPMENT) (NUS 7640)

HEADQUARTER S, DEPARTMENT OF THE ARMY
JUNE 1976

PREFACE

1. Introduction

The assigned nomenclature for the equipment covered by this maintenance manual is Communications Switching Set AN/MSQ-74(V)1 through AN/MSQ-74(V)10; the manufacturer's designation for the equipment is Console Remote Equipment ET-A Type NUS 7640. This preface explains the organization and maintenance level of the manual, gives cross-references of manufacturers' designations or common names versus official nomenclature, and lists publications describing related equipment in the ET-A Console System.

2. Organization of the Manual

a. PART ONE contains chapters I through 4. Chapter 1 covers Introduction and Description, and chapter 2 covers Installation. Chapter 3, Functioning of Equipment, is written at discrete block diagram levels, emphasizing the functional interrelations of logic and audio circuitry rather than the circuit details of the modules themselves. Chapter 4, Maintenance, is concerned with localizing trouble to particular modules, rather than with repair of the modules themselves.

b. PART TWO, which consists of chapter 5, contains all oversize diagrams referred to in chapters I through 4, and a complete set of functional logic, schematic, and interconnection diagrams.

c. PART THREE contains the following appendixes:

(1) Appendix I Mnemonics

(2) Appendix II, Checkout Procedures

(3) Appendix III, Difference Data

d. PART FOUR contains descriptions, schematics, and parts location data of all the types of modules employed in the Console Remote Equipment.

e. PART FIVE contains operational and maintenance information for the DC Duplexed Power Systems.

3. Maintenance Level

The Console Remote Equipment conforms to a modular concept and is maintained to the direct support (3rd echelon) level. Maintenance to this level of support is concerned with localizing trouble to a particular module. When the trouble is localized, replace the defective module. Refer to Instruction Manual for Test Facilities Kit MK-884/FRC-81( ), TM 11-6625-647-14/1, -14/2 for maintenance information on the modules.

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EPARTMENT OF THE ARMY

Washington, D.C., 11 June 1976

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT

AND GENERAL SUPPORT MAINTENANCE MANUAL

FOR

SWITCHING SET, COMMUNICATIONS AN/MSQ-74(V)1	(NSN 5895-00-949-5868)
SWITCHING SET, COMMUNICATIONS AN/MSQ-74(V)2	(NSN 5895-00-949-5906)
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SWITCHING SET, COMMUNICATIONS AN/MSQ-74(V)9	(NSN 5895-00-930-2643)
SWITCHING SET, COMMUNICATIONS AN/MSQ-74(V)10	(NSN 5895-00-949-5902)

AND

SWITCHING SET, COMMUNICATIONS AN/MSQ-74(V)12

(CONSOLE REMOTE EQUIPMENT) (NUS 7640)

REPORTING OF ERRORS

You can help improve this manual by calling attention to errors and by recommending improvements and stating your reasons for the recommendations. Your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) should be mailed direct to the Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, New Jersey 07703.

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PART FOUR, MODULES

TRANSMIT CONFERENCE AMPLIFIER NUS 7568 TYPE 122

DESCRIPTION

Transmit conference amplifier NUS 7568 is a three-stage audio amplifier which provides a constant output level with a varying number of inputs (up to 25). The transmit conference amplifier is used in duplex configuration to provide greater reliability. Pertinent characteristics of this conference amplifier are as follows:

Amplifier input:	250 to 3500 cps at 7 dbm through 600 ohms with 5.6 ohms in shunt with the input terminals.
Amplifier output:	7 dbm _+ 1 dbm at 1 kc through 480 ohms across a 600 ohm load. The output level at 250 cps and 3500 cps will be within 3 db of the level measured at 1 kc.

CIRCUIT DESCRIPTION (Schematic D 2351122)

a. Balanced inputs applied to the amplifier are coupled by transformer T1 to the first amplifier stage, Q1. The transformer changes the balanced input to the single-ended input required by Q1 and performs the necessary impedance matching function.

b. The first stage Q1, of the conference amplifier, a common-emitter amplifier, amplifies and transfers the input signal to amplifier Q2. The amplified output of amplifier Q2 is directly coupled to the base of Q3. The output of amplifier Q3 is developed across the primary of transformer T2in the collector circuit. Transformer T2 reconverts the single-ended signal to the balanced output signal.

c. To maintain a relatively constant amplifier gain, various negative feed-back loops are incorporated in the amplifier circuits. The base of amplifier Q1 receives voltage feedback from its collector circuit via resistor R3. Amplifiers Q2 and Q3 both use current feedback developed across unbypassed resistors R8 and R9 in their emitter circuits. The operating points of amplifiers Q2 and Q3 are stabilized by dc feedback which is applied from the emitter circuit of Q3, through a voltage divider comprising resistors R12 and R13, to the base of Q2. The final loop in the transmit conference amplifier, over-all feedback is applied from the collector of Q3 to the base of Q1.

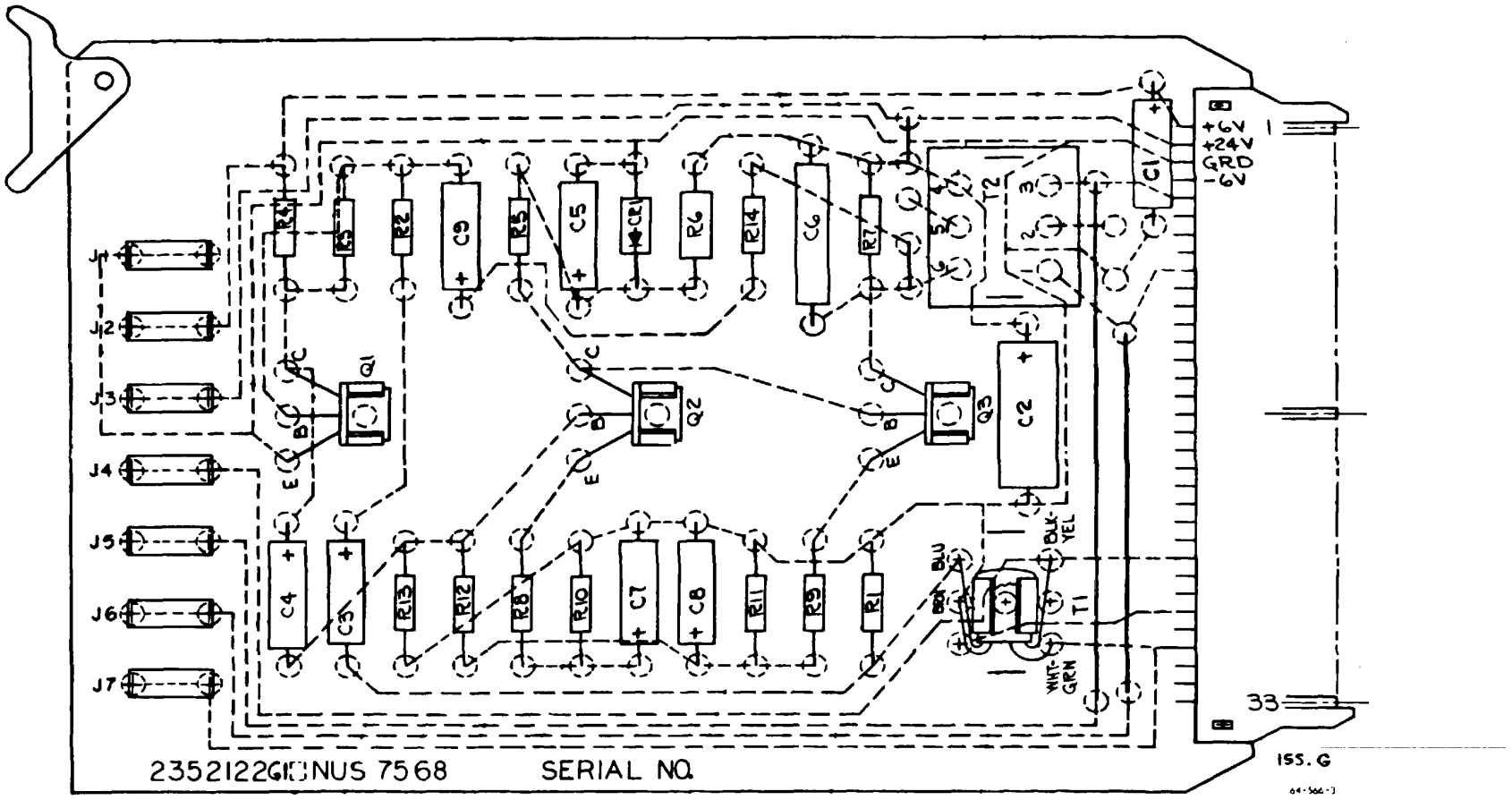

Figure 1. Transmit Conference Amplifier NUS 7568, Parts Location.

RECEIVE CONFERENCE AMPLIFIER NUS 7569 TYPE 116

DESCRIPTION

Receive conference amplifier NUS 7569 is a three-stage audio amplifer, which is used to maintain a constant signal level output when a single input is fed to a varying number of receivers (up to 25). The receive conference amplifier is used in a duplex configuration to provide greater reliability. Pertinent characteristics of this conference amplifier are as follows:

Amplifier input:	250 to 3500 cps at -16 dbm
Amplifier output:	-16 dbm ± 1dbm at 1 kc at a 600 ohm termination with 600 ohms in series with the output connections (duplex pair paralleled) of the amplifier when 48 ohms is or is not connected across the common connections of the amplifiers. The output levels at 250 cps and 3500 cps will be within 3 dbm of the level measured at 1 kc.

CIRCUIT DESCRIPTIONS (Schematic 2351116)

a. Balanced inputs applied to the amplifier are coupled by transformer T1 to the first amplifier stage Q1. The transformer changes the balanced input to the single ended input required by Q1 and performs the necessary impedance matching function. The secondary windings between terminals 5 and 6 of transformer T1 in the receive conference amplifier is used for amplifier input impedance matching. In a dual use, the receive conference amplifiers are duplexed at the inputs and the two amplifiers are connected in parallel. When so connected, pin 28 of connector P1 on both receive conference amplifiers are connected to commonly shared resistors. Because of the sharing, each amplifier supplies only one-half the current through the resistor, so that the resistance seen by each amplifier is twice the true value of the resistor. When one of the duplexed amplifiers is disconnected, the remaining amplifier supplies the entire current through the resistor. The resultant decrease of resistance