

112A KEY EQUIPMENT

GENERAL INFORMATION AND LIST OF SECTIONS

FOR SAGE SYSTEMS

1.00 INTRODUCTION

1.01 This section contains general information pertaining to 112A key equipment, and lists all the C practice sections which provide information for identification, installation, and maintenance. Also, sections are listed which provide information on connected equipment at distant locations.

1.02 The C practice sections covering the 112A key equipment, listed on the following pages, replace the following BTL preliminary notes of July, 1956:

- C71.663 — 112A Key Equipment, Identification
- C71.667 — 112A Key Equipment, Installation
- C71.669 — 112A Key Equipment, Maintenance
- C71.673 — 112A Key Equipment, Maintenance
Line and Station Circuit For Sage Air
Defense.

2.00 GENERAL

2.01 The circuits used in the 112A key equipment maintenance sections have been reduced to simplified sequence charts and operational sketches. The sequence charts cover the sequence of the operation of relays, keys, and other devices comprising this equipment. The operational sketches are compiled from cable diagrams and schematic drawings and use the detached-type contact symbols. Punching identification information for CA1, CA2, and MS relays of 227A key telephone units are not shown on the operational sketches since these assignments are made locally; this information should be obtained from the job installation engineering data.

2.02 A sequence chart shows the function of equipment in its proper sequence. Thus, it serves as a guide in understanding a circuit as a whole, although it may not show all related operations which take place in a circuit. It supplements, but does not replace, the written circuit description (CD) or the schematic drawing (SD).

2.03 A sequence chart graphically represents the operation and release of each relay or other device shown by distinctive symbols. These symbols are arranged on the chart in relative time order from the top downward and are connected by appropriate lines to show the interdependence of the successive operations.

2.04 Because a sequence chart is a simple over-all picture of a circuit operation, it is an aid in locating trouble.

2.05 An operational sketch is a circuit diagram representing a portion of a switching system in simplified form: Boundaries of the conventional SD drawings are completely disregarded; free use is made of the detached-type contact symbols; and the operating paths of all relays and other apparatus are shown completely from battery to ground.

2.06 An operational sketch simplifies the location of a trouble area, which has been pin-pointed on the sequence chart, because the trouble area can be restricted to a specific operating path.

2.07 A description of the operation, supplementing the sequence charts and the operational sketches, is provided to describe the functions of the equipment.

2.08 A block diagram has been provided in this section to show the general layout of 112A key equipment. Included in this block diagram are auxiliary and connecting circuits which are not a part of 112A key equipment, but are shown as aids in developing a more thorough understanding of the way in which this key equipment fits into the SAGE air defense system. Section numbers and SD drawing numbers have been shown as reference information (see Fig. 1).

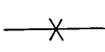
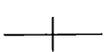
2.09 Wire-spring relays have been used extensively in the 112A key equipment. For the description and general maintenance information on wire-spring relays, refer to the related subsection of the A461 series.

2.10 General maintenance of head telephone sets, hand telephone sets, dials, subscriber sets, keys, relays, jacks, etc., used with the 112A key equipment are not covered in the maintenance sections. Reference should be made to the section pertaining to the specific item.

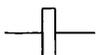
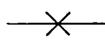
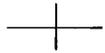
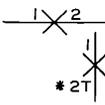
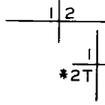
2.11 The following are samples of some of the symbols used in the preparation of the sequence charts and operational sketches contained in the maintenance practices.

SYMBOL DESIGNATIONS

Sequence Chart Symbols

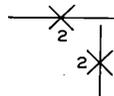
-  Relay or other apparatus in a fully operated position.
-  Relay or other apparatus in an unoperated (normal) position.

Operational Sketch Symbols: The symbols and conventions used on operational sketches are the same as those used on the standard schematic drawings (SD) with the following exceptions:

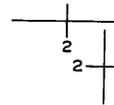
-  Relay core and winding.
-  Other apparatus operated.
-  Other apparatus unoperated (released).
-  Make contacts of a relay having top and bottom spring pile-ups. Opened when relay is unoperated; closed when relay is operated.
-  Break contacts of a relay having top and bottom spring pile-ups. Closed when relay is unoperated; opened when relay is operated.

Bottom contacts of relays having top and bottom spring pile-ups are shown below line or are indicated B instead of T in same manner as make and break contacts shown directly above.

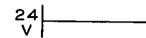
Only the armature spring is designated T or B.



Make contacts of all relays not having top and bottom springs.



Break contacts of all relays not having top and bottom springs.



24-volt battery.

2.12 The above information has been compiled from the A128 series for items covering sequence charts, operational sketches, and associated reference material. Reference to the subsections of this series shall be made when more detailed information is required.

3.00 PRECAUTION

3.01 Access to telephone equipment in consoles should be obtained by having the customer remove the necessary panels or covers, as required.

3.02 On operating consoles, interlock switches are installed for the front and rear panels. When the panels are opened, the switches automatically cut off the commercial power to the corresponding section of the console and remove it from service. The side covers can be removed only when either the front or rear panels are open.

WARNING: *There is high voltage in the console.*

4.00 LIST OF SECTIONS AND CONTENTS

4.01 The C sections which provide information pertaining to identification, installation, and maintenance of 112A key equipment as used in the SAGE air defense system are listed here.

4.02 Figure numbers are listed for sequence charts, operational sketches, composite circuit drawings, and connection charts. As a general rule, sequence charts and operational sketches for a particular operation are shown in the same figure.

4.03 Part headings identify the text and related figures such as charts, sketches, or drawings. Titles of figures not identified by part headings are shown preceding the figure numbers.

Section Number and Title	Part	Figure	Page
C71.667, 112A KEY EQUIPMENT—GENERAL INFORMATION AND LIST OF SECTIONS FOR SAGE SYSTEM			
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General	2.00	.	1
Precaution	3.00	.	2
List of Sections and Contents	4.00	.	3
List of Sections and Contents of Connected Equipment at Distant Locations	5.00	.	9
Block Diagram	1	10
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General	2.00	.	1
Operating Features	3.00	.	2
Power	4.00	.	3
Drawings	5.00	.	3
C71.669, 112A KEY EQUIPMENT — INSTALLATION			
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Surface Mounting of Key Units	7.00	.	10
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C71.670, 112A KEY EQUIPMENT — MAINTENANCE LINE AND STATION CIRCUIT FOR SAGE AIR DEFENSE			
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Identification	2.00	.	1
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Connections	4.00	.	3
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Incoming Call at the Control Station or Jack Station, First Line	8	5
Answering an Incoming Call at the Control Station	9	6

SECTION C71.667

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Incoming Call at Control Station Only, Second Line	13	10
Answering an Incoming Call at the Control Key Telephone Set, Second Line	14	10
Maintenance Line and Station Circuit	15	11
Maintenance Line and Station Circuit Cables to Distributing Frame	16	12
 C71.671, 112A KEY EQUIPMENT, SELECTIVE SIGNALING LINE CIRCUIT – MAINTENANCE			
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Incoming Call, Short Signal	2.00	1	2
Incoming Call, Long Signal	3.00	2	3
Answer by Attendant, Primary User	4.00	3	4
Answer by Secondary User, PBX Switchboard Termination	5.00	4	5
Signaling an Office Extension	6.00	5	6
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Originating a Call from the Primary Position	8.00	7	8
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 C71.672, 112A KEY EQUIPMENT, STATION LINE CIRCUIT, ONE-WAY – MAINTENANCE			
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Line Selection and Signaling	2.00	1	2
Busy Circuit	3.00	2	3
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 C71.673, 112A KEY EQUIPMENT, FLASHING CIRCUIT – MAINTENANCE			
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Automatic Transfer, Flashing Unit No. 1 to Flashing Unit No. 2	3.00	2	3
Automatic Transfer, Flashing Unit No. 2 to Flashing Unit No. 1	4.00	3	4
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C71.673 (Contd)			
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Flashing Circuit, Hold Winking Lamp Circuit, Flashing Unit No. 2	7.00	6	7
Flashing Circuit, Manual Test, Flashing Unit No. 1	8.00	7	8
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Line Selection and Signaling from the Key Equipment Position	2.00	1	2
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Station Line Circuit Talking Path Between Attendant's Telephone and Key Circuit and Distant Station	4.00	3	4
No-Such-Number Circuit	5.00	4	5
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C71.675, 112A KEY EQUIPMENT, TIE LINE CIRCUIT — MAINTENANCE			
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Tie Line Selection from the Second Line Pickup Key	3.00	2	3
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Position Monitoring	4.00	3	5
Monitoring, Listen-Only Jacks	5.00	4	6
Holding	6.00	5	7
Dialing	7.00	6	8

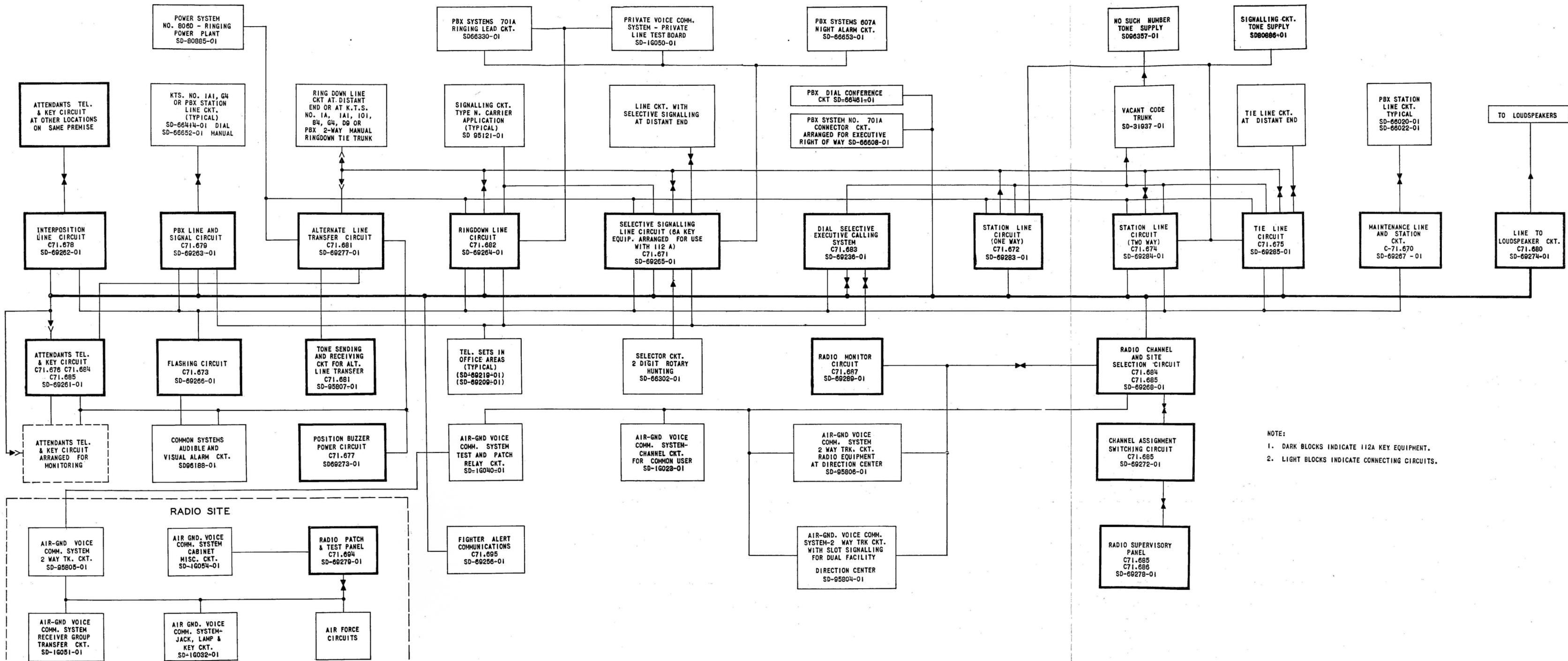
Section Number and Title	Part	Figure	Page
C71.676 (Contd)			
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Attendant's Telephone and Dial Circuit, Cables to Distributing Frame, Dial Mounted in Console or Table, and Handset Used	8	10
Attendant's Telephone and Dial Circuit, Cables to Distributing Frame, Dial Mounted in Apparatus Case	9	10
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Common Channel Selection, Main or Individual Position, ALL SITES Key Operated	4.00 3	4
Common Channel Selection, Assistant Position, Single Site Key Operated	5.00 4	5
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SECTION C71.667

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Assigned Channel Selection, Assistant Position of Team, Single Site Key Operated	8.00	7	8
Assigned Channel Selection, Assistant Position of Team, Two or More Site Keys Operated	9.00	8	9
Assigned Channel Selection, Assistant Position of Team, ALL SITES Key Operated	10.00	9	10
Assigned Channel Selection, Individual Position, Single Site Key Operated	11.00	10	11
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5.00 LIST OF SECTIONS AND CONTENTS OF CONNECTED EQUIPMENT AT DISTANT LOCATIONS			
C71.694, RADIO PATCH AND TEST PANEL			



NOTE:
 1. DARK BLOCKS INDICATE 112A KEY EQUIPMENT.
 2. LIGHT BLOCKS INDICATE CONNECTING CIRCUITS.