American Telephone and Telegraph Company

PRIVATE LINE SERVICE - TELEGRAPH

DEPARTMENT OF COMMERCE - CIVIL AERONAUTICS ADMINISTRATION

DESCRIPTION OF PUSH KEY SWITCHING

UNITS EMPLOYED AT CAA STATIONS

1. GENERAL

1.01 The CAA provides a "Push Key Cabinet" instead of the
usual loop jack switchboard at most of their stations,
for switching teletypewriters between different loops.
Although owned, operated and maintained by the customer,
trouble in the board may affect our circuits; therefore,
knowledge of the board's characteristics and operation is of
value to the testroom.

The U.S. Army also provides these "Push Key Cabinets" at cer-
tain of their stations, and at some locations the Telephone
Company is requested to connect loops to these cabinets.

1.02 This section contains a description and wiring diagram of
the cabinet, together with instructions covering the
procedure if trouble occurs in the board and affects our
circuits.

1.03 This section is reissued to include the complete wiring
diagram and to give a more detailed description.

2. DESCRIPTION

2.01 Each unit consists of a number of key strips mounted
across the face of the board, one above the other. Two
general types are provided; a twenty key cabinet with twenty
keys per strip arranged for relay rack mounting, and a six

APPENDIX 8
P30.908
Page 1

PUSH KEY
SWITCHING UNITS
AT CAA STATIONS

key cabinet with six strips of six keys each mounted in a
metal cabinet. The six key cabinet is used at all stations
except the large centers.

2.02 All keys are arranged with a "make before break" contact
arrangement to maintain circuit continuity. All keys in
a strip have a mechanical interlocking arrangement so that only
one key at a time may be in an operated position. This is so
arranged that if one key is pushed (to operate), any other
key in the strip which may already be in the operated position
is automatically released. The mechanical transfer action
takes place prior to the actuation of the contact assembly of
the key being operated.

2.03 Small knife switches are provided for each strip to
short out the strip and permit removal of the strip for
inspection and maintenance without interrupting the service.
Other knife switches are provided to permit the following
tests:

(a) Open any loop.
(b) Ground either or both sides of any loop.
(c) Short circuit any line.

2.04 Each teletypewriter unit (transmitter-distributor, 15
KSR, etc.) is connected to the "Equipment" terminal
strip, which is wired to an individual key strip and connected
to the key swingers. All the swingers on each strip are con-
nected in parallel.

2.05 Each teletypewriter loop is connected to the "Lines"
terminal strip for a single vertical row of keys.
These are wired to the normally made contacts which are con-
nected in series in much the same manner as the 63-C-1 Tele-
graph Loop Switchboard.

2.06 Figure 2 shows the wiring diagram of the "Six Push Key
Cabinet." Although not shown in the drawing, any unused
equipment strip should be strapped to insure continuity in
the event a key in the unused equipment strip is accidentally
operated.

3. OPERATION

3.01 This arrangement gives a completely flexible control of all equipment and all loops. Any set may be connected to any loop merely by operating a single push button.

3.02 _Examples._ Using Figure 2, the operation may be traced in detail.

Note: Figure 2 shows the wiring and push key arrangements as viewed from the rear of the cabinet, and examples (a) and (b) are worded accordingly to avoid confusion. Actually the push buttons are operated from the front of the cabinet so that the left-hand button viewed from the front in Figure 1 is the same as the right hand button in Figure 2.

(a) Assume Set #2 is being used on Loop #2 and it is desired to connect it to Loop #1 in series with Set #1 which is already connected to Loop #1. Push the first button on the right-hand end of Strip #2. This disconnects the set from the Loop #2 and connects it to Loop #1.

(b) Assume Set #1, connected to Loop #1 develops trouble and it is desired to remove it from the loop and substitute Set #2 which is spare. Push the first button on the right-hand end of Strip #2 to connect Set #2 to Loop #1. Remove Set #1 from Loop #1 by pushing one of the remaining keys in equipment Strip #1.

Loop	1	2	3	4	5	6
Set						
1	O	O	O	O	O	O
2	O	O	O	O	O	O
3	O	O	O	O	O	O
4	O	O	O	O	O	O
5	O	O	O	O	O	O
6	O	O	O	O	O	O

FIG. 1

PUSH KEY
SWITCHING UNITS
AT CAA STATIONS

4. TROUBLE PROCEDURE

4.01 It is possible, due to breakage, faulty manufacture or improper maintenance, for the unit to develop trouble, such as opens, shorts or crossed loops.

4.02 If trouble on the circuit is caused by this unit, notify the station operator and request him to make whatever changes are necessary to restore service. If satisfactory corrective action is not taken, follow the normal procedure for such cases and that outlined in Appendix 3 of this section.

4.03 As described in Paragraph 1.01, the Telephone Company normally has no responsibility in connection with these boards. In the event we are required to install the unit at a particular location, the following may be of assistance:

(a) A complete description of the board and its operation is included in the packing box with each board and is supposed to be retained at the station.

(b) If an individual key should stick in the down position, this condition can usually be remedied by rubbing wax on the black rubber cone that moves the two inner springs. The most convenient method is to take a small piece of heavily waxed paper and place it under the two heavy springs, twirling the shaft so that a portion of the wax is applied to the entire surface of the cone. Oil should not be used on any part of the key strip assembly.
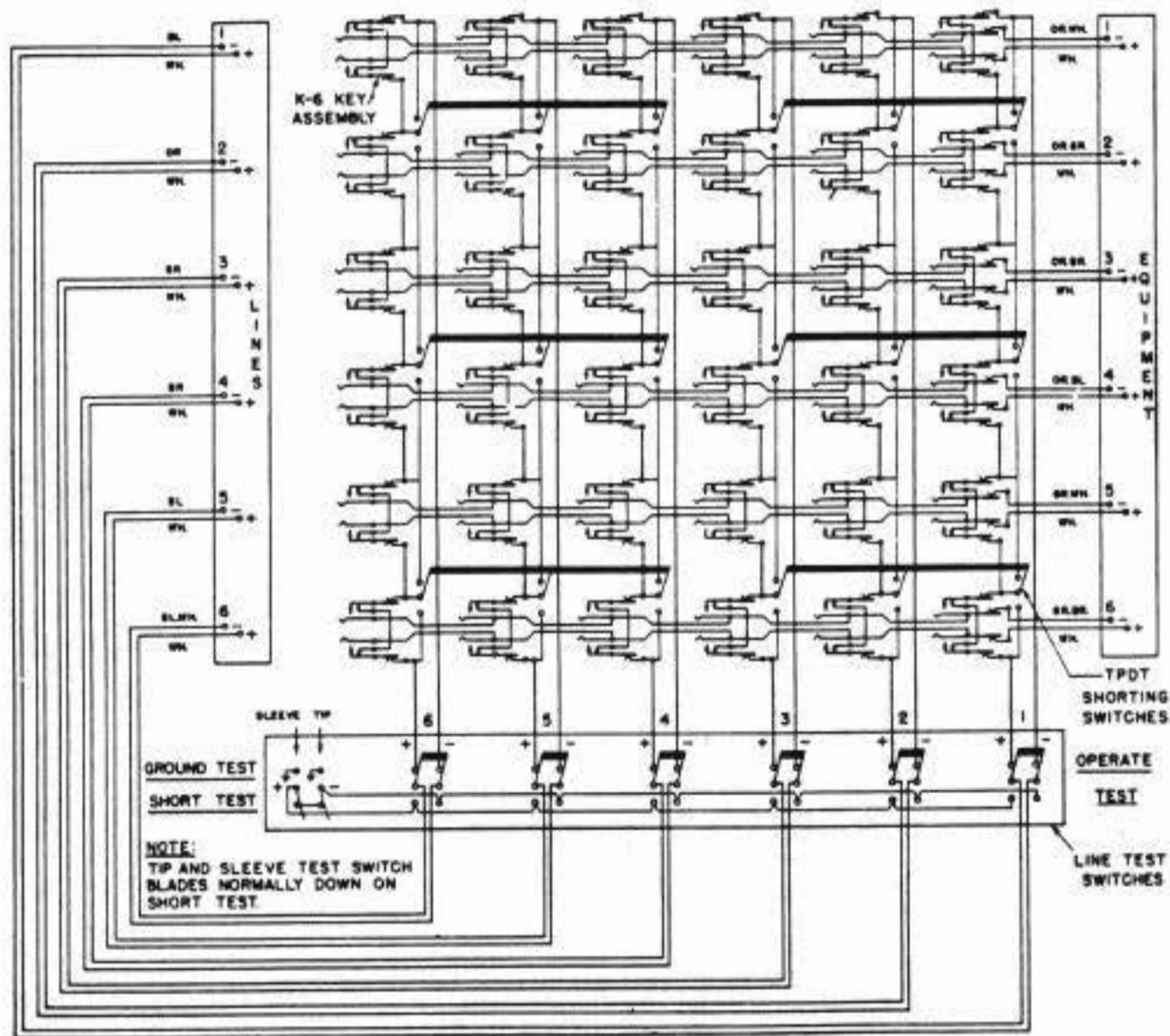
FIG. 2

PUSH KEY
SWITCHING UNITS
AT CAA STATIONS