GENERAL PURPOSE
4-WIRE ORDER CIRCUIT SD-1C245-01
DESCRIPTION

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1. GENERAL

1.01 The general purpose 4-wire order circuit provides facility termination and station position arrangements for communicating and signaling on a 4-wire voice-frequency facility. Provisions are included to allow multiple appearances of handsets, headset jacks, and telephone sets normally required in a maintenance order circuit. Interconnections required for various office arrangements are shown in Figures 1 through 5.

1.02 Circuit features are provided on a plug-in modular basis to allow a wide range of available functions on an optional basis with few, if any, wiring changes.

1.03 This section is reissued to include information on the new J99340D and E units recommended for use with L5 order wires. Since the changes are extensive, change arrows have been omitted.

2. DESCRIPTION

2.01 The J99340 order wire equipment will operate with any 4-wire voice-frequency facility. Transmission levels are -16 dB transmitting and +7 dB receiving. These levels were chosen to be compatible with the most generally available facilities. If different levels, equalization, or connections to 2-wire facilities are required, the interconnection with the facility can be made via a V4-type telephone repeater.

2.02 Optional provisions are available to allow a switchable transmission interconnection between as many as three 4-wire order circuits. The switch control and status indication are provided at the controlling office and are arranged for interconnnection with supervisory control systems to provide remote control and switch status indication.

2.03 The equipment uses TOUCH-TONE® selective signaling. Station codes are established by local strapping and can be single digit, two digit, or three digit. In addition to selective station code signaling, special purpose single-digit signals and an incoming call signal lockup with recall and station alert capability are available. Loudspeaker signaling is available in all circuit arrangements in addition to full selective TOUCH-TONE.

2.04 Two types of TOUCH-TONE signal receivers are available. The simpler receiver provides for the reception of a single code which can be either single digit or two digit. The two-digit option provides the additional capability of receiving a single-digit ***all-stations*** code. A more elaborate signal receiver, consisting of a central-office type TOUCH-TONE receiver plus a multiple digit, multiple code decoder, provides for the reception of up to five separate codes which can be all two digit or three digit. In addition, provisions are included for the reception of a single-digit ***all-stations*** code and various special signals to be used with a TOUCH-TONE telemetry system.

2.05 Connections to lamps and buzzers associated with the station telephone position provide local indication of incoming signaling. An incoming signal activates a relay, causing station alarms to occur.

3. AVAILABLE SIGNALING FEATURES

A. Single Code Signal Receiver and Supplemental Signal Detector

3.01 The single code signal receiver is a high-input impedance TOUCH-TONE signal receiver which is bridged to the output of the BUS-AMPL. It allows reception of a single TOUCH-TONE digit, one code per office with up to 10 separate office codes. Local indications will persist as long as tones are present. When a supplemental signal detector is employed in conjunction with the single code receiver, a single 2-digit code and an all-stations single-digit code can be received. Up to 90 separate station codes can be provided with a single code per office. Two digit codes are restricted to different first and second digits; ie, codes 00, 11, 22, etc, are not allowed. This circuit provides an interdigital time out of 2.5 seconds. Local indications persist as long as last digit tones are present. The outputs from the single digit signal receiver or the supplemental signal detector are connected to lamps, buzzers, and office alarms. Optional output connections are made to the call-recall-alert circuit to provide lockup of incoming signals.

B. Multiple Code TOUCH-TONE Receiver and Detector

3.02 This circuit provides for the reception and translation of 2-digit or 3-digit codes. With the 2-digit wiring option, up to 5 codes per office provide up to 50 separate station codes with up to 5 stations per office. With the 3-digit wiring option, up to 5 codes per office provide 500 separate station codes with up to 5 stations per office. The first digit (2-digit code) or the first two digits (3-digit code) are associated with the office; the second digit (2-digit code) or the third digit (3-digit code) defines the station location within the office. Codes 1 through 5 are used for station digits; codes 6 through 9 are reserved for future use. Interdigital time out of 5 seconds is provided. The decoder provides translation and counting required to recognize a particular 2-digit or 3-digit code. In addition to these 2- and 3-digit office codes, the decoder provides for recognition of special single-digit codes which provide an all-stations signal and voice circuit pre-empt.

C. Available Signaling Options

3.03 The following signaling options are available:

(a) ***Pre-empt*** —Inhibits voice-frequency transmission from the office upon reception of the single-digit pre-empt code, *, from the controlling office. The pre-emption times out approximately 5 seconds after the end of continuous signaling from the controlling office. (Continuous here implies valid TOUCH-TONE signals spaced no more than 4 seconds apart.)

(b) ***All Stations***—Allows signaling all stations on the same order circuits when the single-digit ***all-stations code,*** #, is received from the controlling office.

(c) ***Call Lockup***—Provides a lockup of incoming signal indication released by the called station going off-hook. The lockup can be inhibited by an external momentary contact closure. ***Recall,*** included with the call lockup feature, permits signaling an off-hook station. ***Alert*** , also included with the call lockup feature, provides a separate closed contact output upon the reception of the station code, twice in succession, which can be connected to operate an external horn or bell.

4-Wire Line Connect Circuit

3.04 This circuit consists of a 4-wire bridge, dual amplifier (LINE 2 AMPL), and 4-wire line connect circuit. Optional arrangements provide for manual switching to additional 4-wire line facilities and/or switched line connections to other 4-wire line circuits. Up to two line connect circuits can be used. Local key control is provided or connection can be made to supervisory control for remote operation and release. The J99340E unit permits connecting and disconnecting two 4-wire order circuits by dialing a special 3-digit code.

4. DESCRIPTION OF J CODED UNITS

4.01 ***The J99340A unit*** comprises the 4-wire order circuit equipment for use at an auxiliary station. It consists of a collection of plug-in units assembled into a 6-inch high rack for 23-inch bay mounting. The unit features full selective single

code signaling, which can be either single digit or two digit, plus the ***all-stations*** code for two-digit signaling only. The reception of the special single-digit pre-empt code is not available. Provision is made for an operator handset and TOUCH-TONE dial with associated talk battery feed and for a supplementary talk battery feed when required. Patching jacks which provide access to the 4-way, 4-wire bridge and amplifier circuit for testing and maintenance are also included. Since this unit is used as an operator position, it should be mounted on a bay at a convenient height from the floor. The operation of this unit requires -24 volt signal battery. A fully equipped unit is shown in Fig. 6.

4.02 ***The J99340B unit*** comprises the 4-wire order circuit equipment for use at a main station. It consists of a collection of plug-in units assembled into a 6-inch high rack for 23-inch bay mounting. The unit features full-selective single-code signaling, which can be either single digit or two digit, plus the ***all-stations*** code for two-digit signaling only. Incoming call lockup, recall capability, and station alert are optional. The reception of the special single-digit pre-empt code is not available. Provision is made for talk battery feeds for serving up to eight operator telephone position appearances. The operator answering and calling apparatus is not included with this unit and is to be provided on a miscellaneous basis. This unit provides means for connecting to another 4-wire order circuit which controls the switched interconnection and whose unit equipment is J99340C. It also includes patching jacks which provide access to the 4-way, 4-wire bridges and amplifiers for testing and maintenance. The operation of this unit requires -24 volt signal battery. A fully equipped unit is shown in Fig. 7.

4.03 ***The J99340C unit*** comprises the 4-wire order circuit for use at a main office with up to five different stations. It consists of a collection of plug-in units assembled into two 6-inch racks plus a jack mounting equipped with test and maintenance jacks and two line-cut keys. It is 14 inches high for mounting on a 23-inch bay. The equipment provides for full selective multiple code signaling which can be either two digit or three digit. It requires incoming call lockup, recall capability, and station alert features for each station. Reception of the special single-digit pre-empt code is on an optional basis. The unit provides means for five talk battery feeds for serving up to ten telephone positions. Since no operator answering and calling apparatus is included with this unit, it must be provided on a miscellaneous basis. Provisions are incorporated to allow switchable transmission bridging to one or two other 4-wire order circuits controlled by the line-cut keys located in the jack mounting and/or remotely by the supervisory control and alarm system. The operation of this unit requires -24 volt and +24 volt signal battery. A fully equipped unit is shown in Fig. 8.

4.04 ***The J99340D unit*** provides most of the same features as the C unit described previously. Deletions include the optional pre-empt feature and the optional manually controlled 4-wire line connect circuits. New features provide the necessary circuitry to terminate two separate and individual order wire facilities at the position, sharing a common TOUCH-TONE receiver and decoder. Up to five talk battery feeds are also provided for each of the two order wire circuits.

4.05 ***The J99340E unit*** also provides most of the same features as the C unit. Deletions include the optional pre-empt feature, one of the station codes, and one of the manually controlled 4-wire line connect circuits. New features provide the circuitry necessary to terminate two separate and individual order wire facilities, sharing a common TOUCH-TONE receiver and decoder. Also provided is a new 4-wire line connect circuit capable of connecting and disconnecting the two order wire circuits by dialing a special 3-digit code. Connecting and disconnecting the order wire circuits can also be controlled locally with a locking-type key. Up to three talk battery feeds can be provided on each of the two order wire circuits.

5. OPERATION

5.01 A call can be originated at a station by lifting the handset, plugging in a head telephone set, or operating a pick-up key. Keys are then depressed on the TOUCH-TONE dial corresponding to the code for the location to be called. If the interdigital time-out period has been exceeded in a code sequence, it is necessary to wait 2.5 or 5 seconds before redialing.

5.02 Upon receipt of a station code by the TOUCH-TONE receiver and signal detector or receiver and decoder, audible and visual signals are activated and connection is made to a loudspeaker. The call is answered by lifting the receiver, plugging in a head telephone set, or operating a pick-up key. When call lockup is accomplished, the audible and visual alarms are then retired.

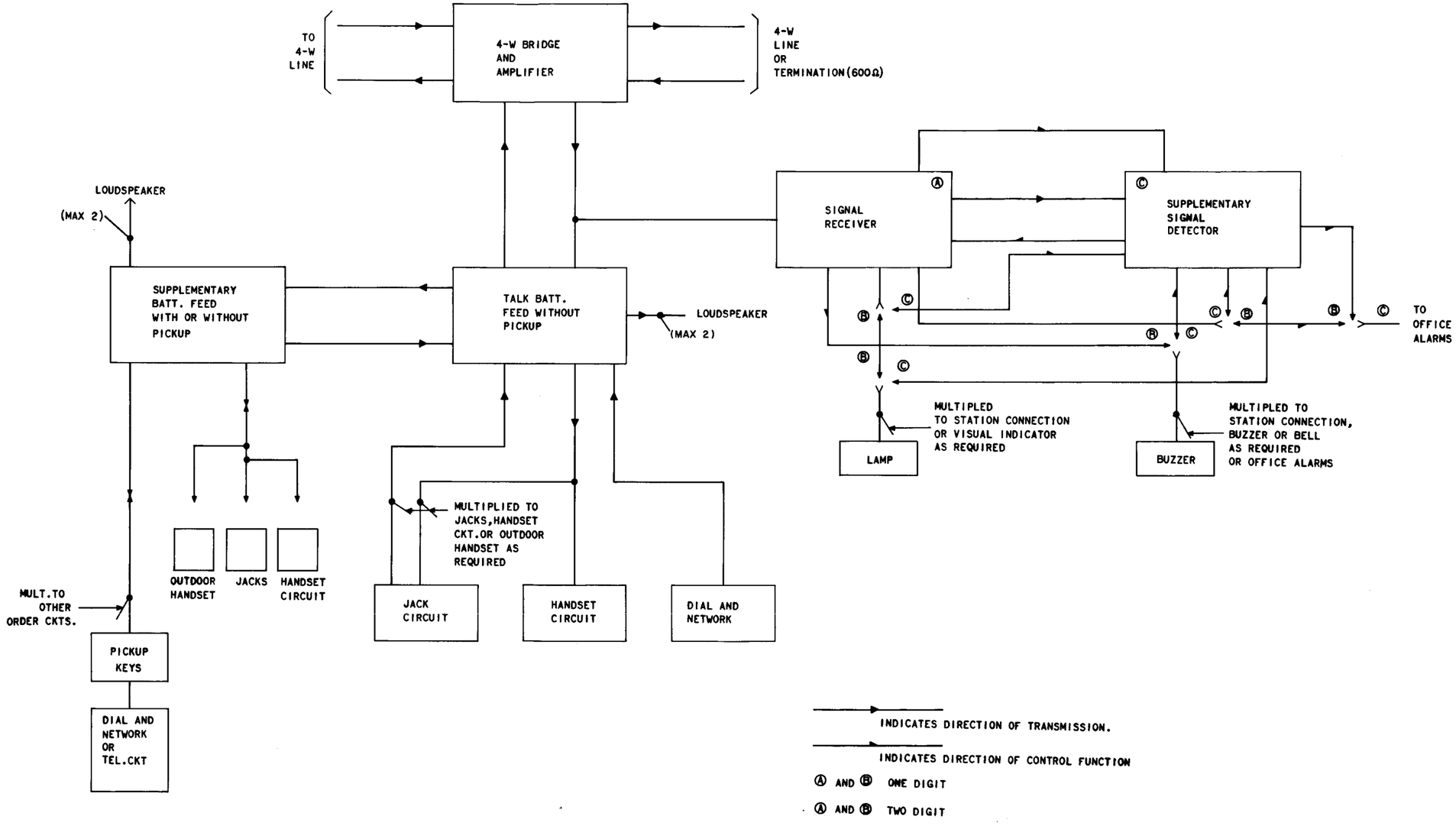

Fig. 1—J99340A 1- or 2-Digit Single Signal Code

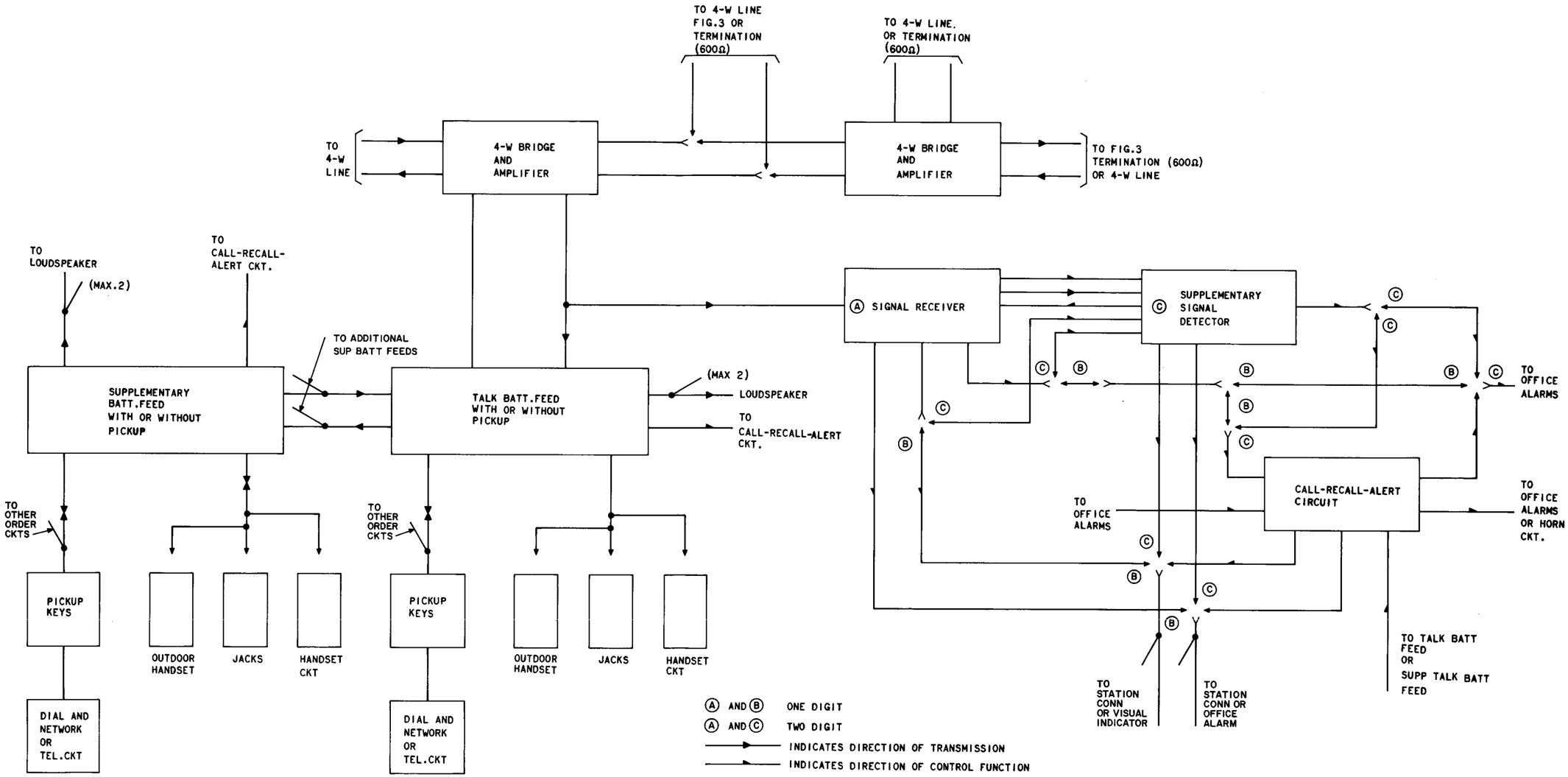

Fig. 2—J99340B 1- or2-Digit Single Signal Code

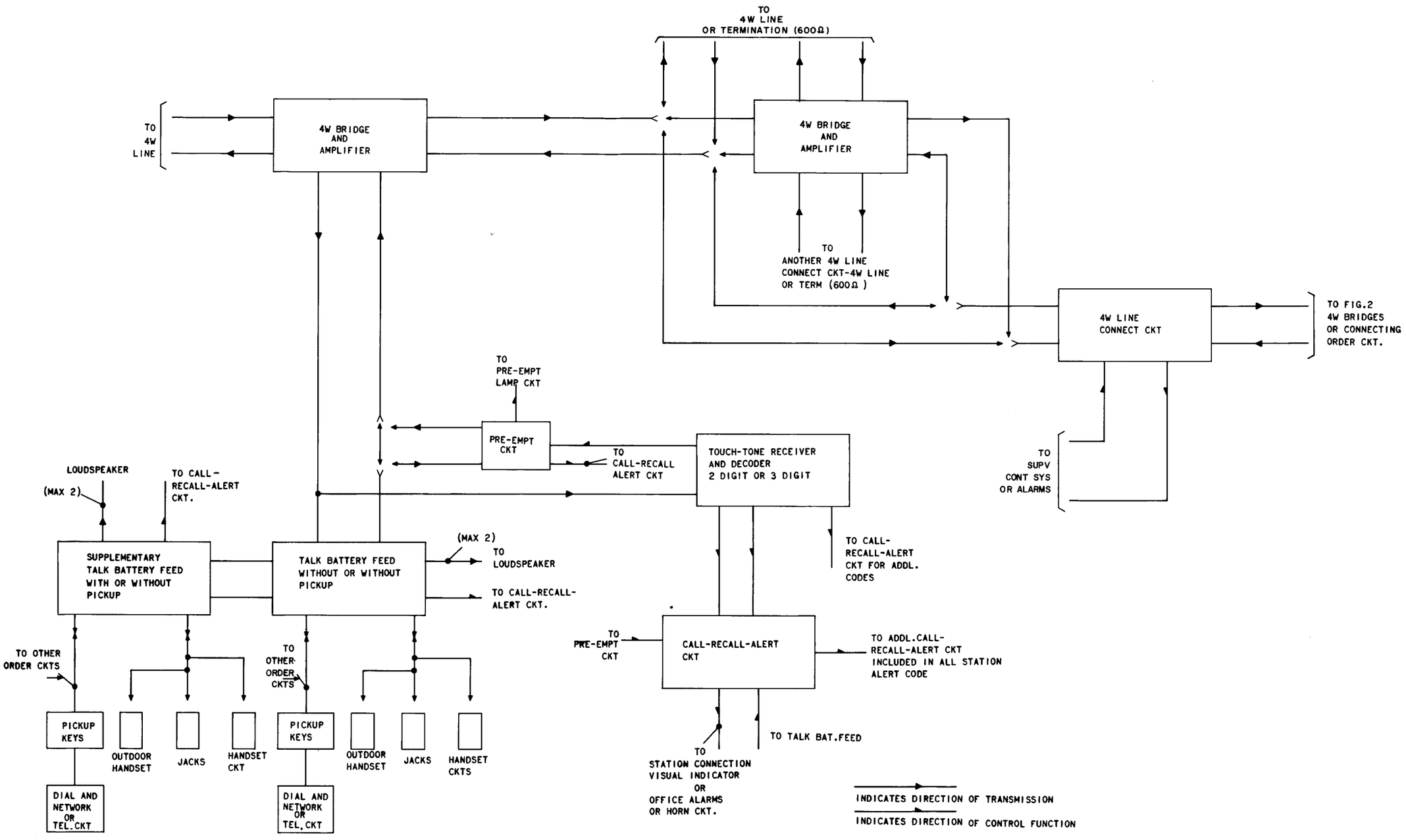

Fig. 3—J99340C 2- or 3-Digit Signal Code—Up to 5 Codes Per Location

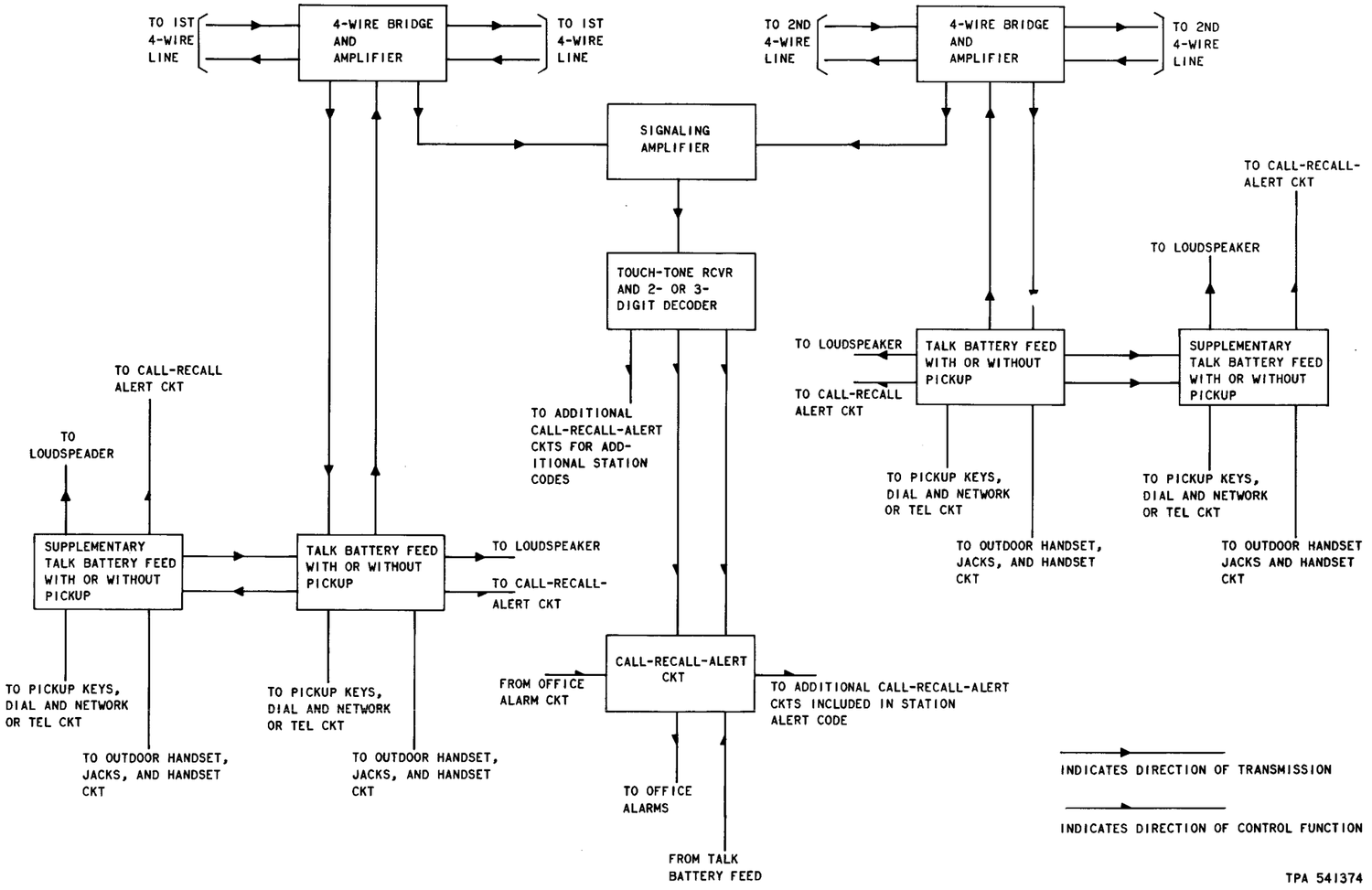

Fig. 4—J99340D Common Touch-Tone Receiver for 2 Order Circuits (2- or 3-Digit Signal Code)

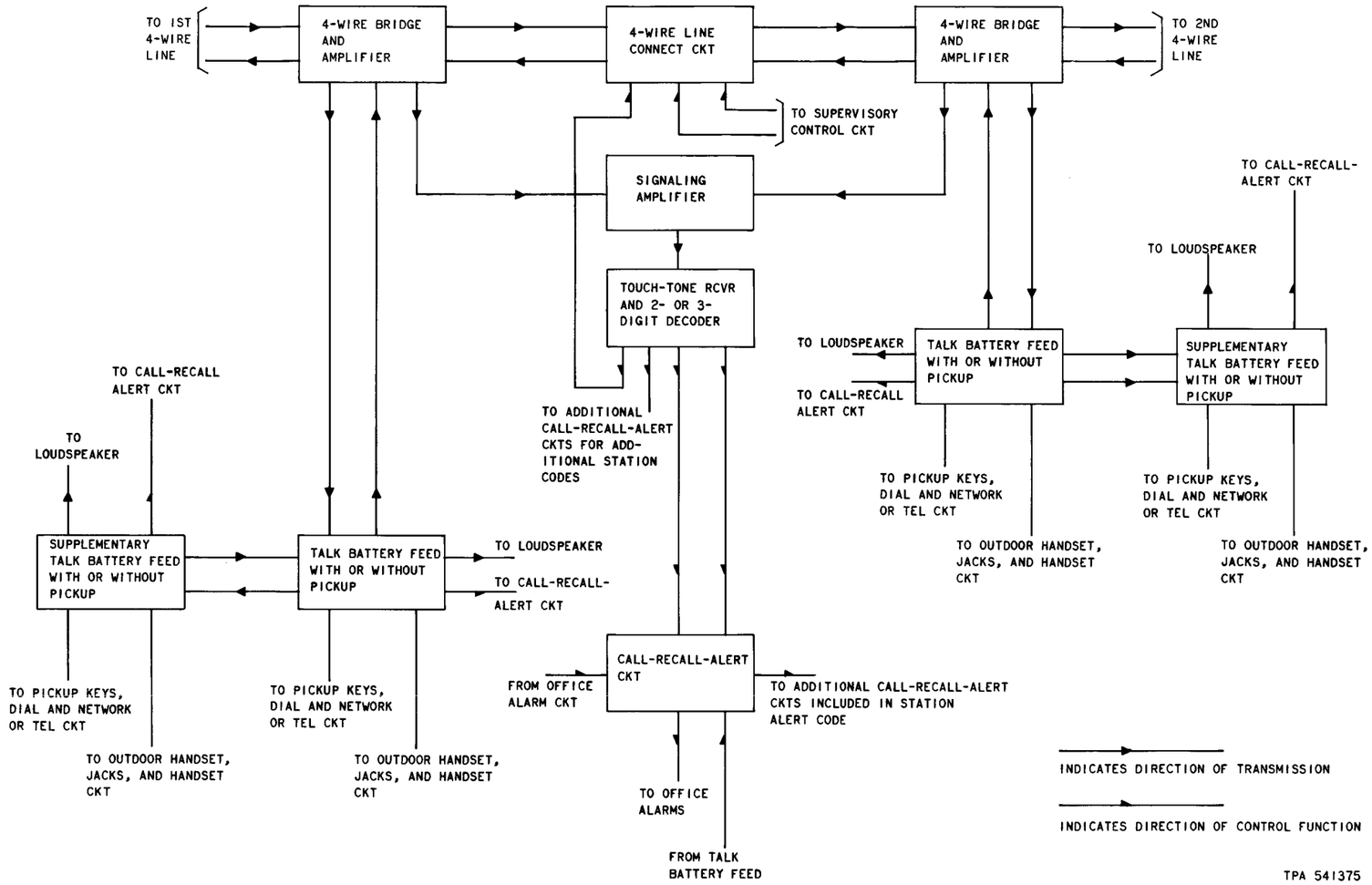

Fig. 5—J99340E Common Touch-Tone Receiver for 2 Order Circuits (2- or 3-Digit Signal Code) W/ Dialed Cut-Through

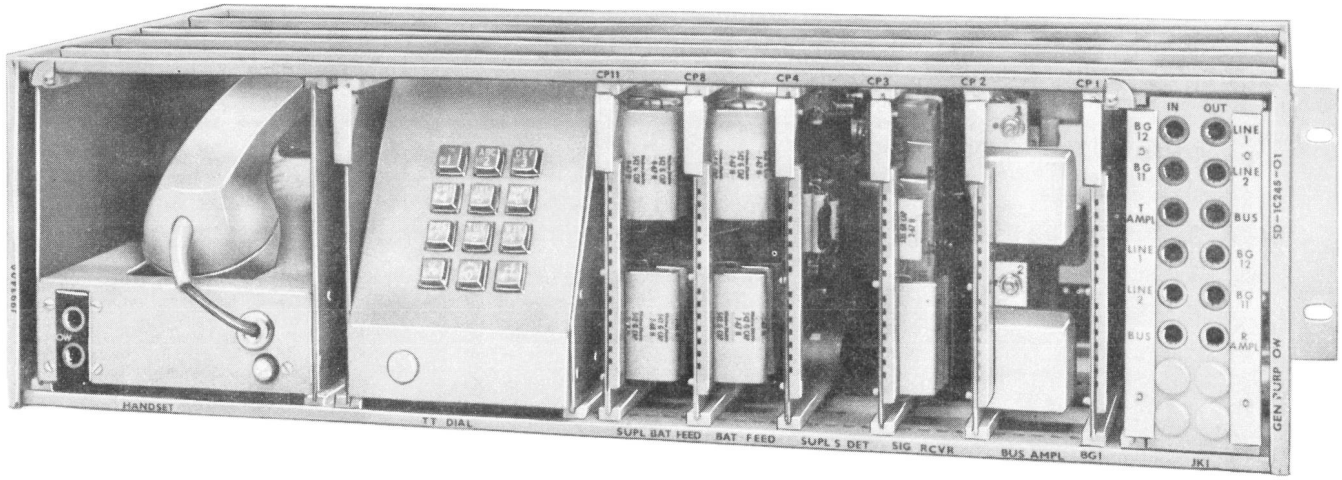

Fig. 6—J99340A W/ Operator Position—Single Code Signaling—Single 4-Way Bridge

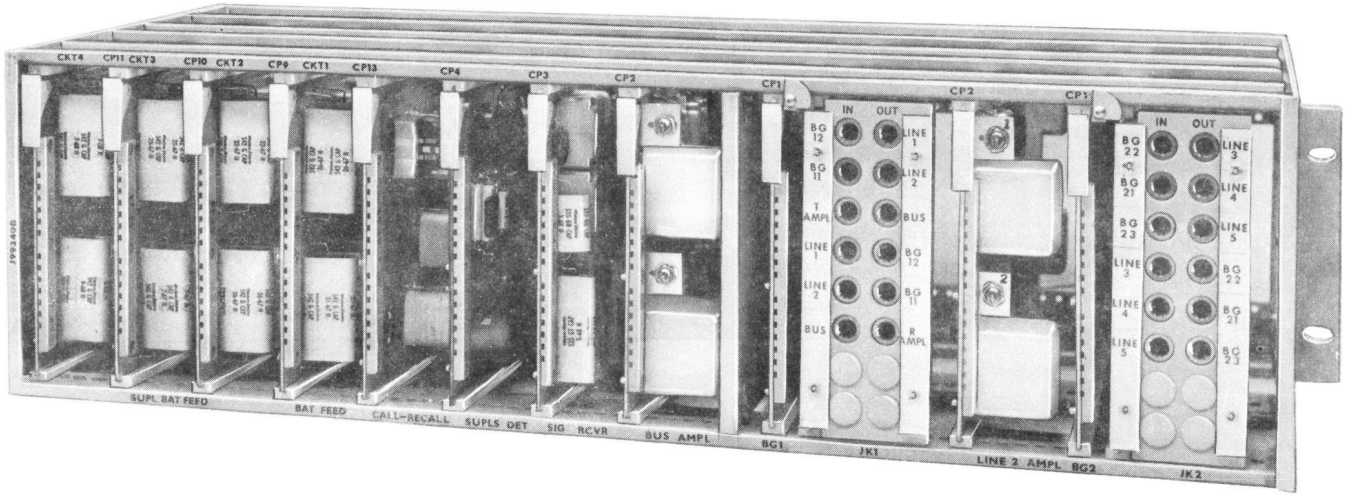

Fig. 7—J99340B Unit—Single Code Signaling—Additional 4-Way Bridge—Call Recall

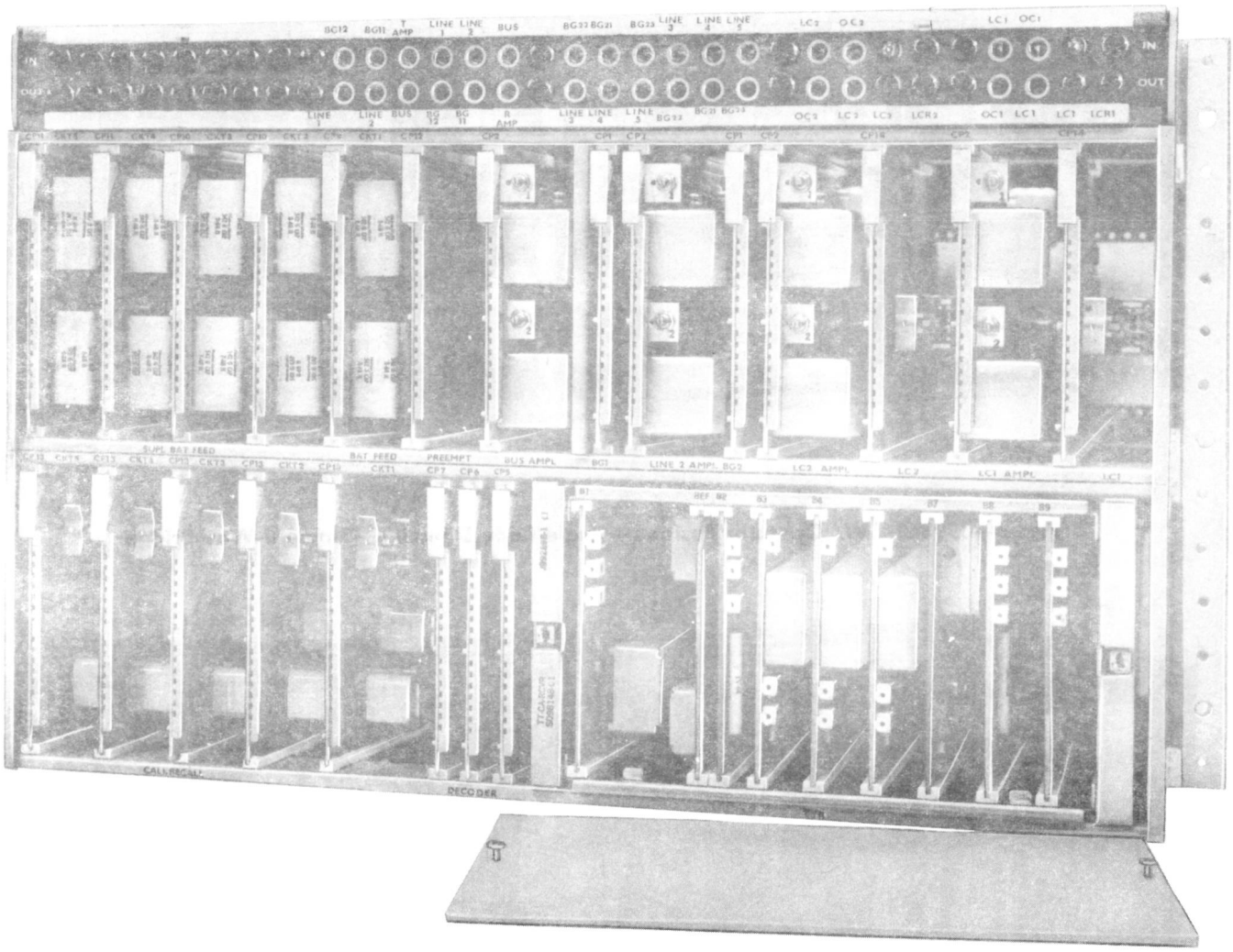

Fig. 8—J99340C Unit—Multiple Code Signaling—Call Recall—Pre-empt