
4-WIRE ORDER CIRCUIT
GENERAL PURPOSE (SD-1C245-01)
TESTS

The general purpose 4-wire order circuit provides facility termination, TOUCH-TONE® signaling, and station position arrangements for voice communications on a 4-wire voice-frequency facility. Provisions are also made for multiple appearances of handsets, headset jacks, and telephone sets as required.

Because the circuit is designed to provide a variety of arrangements on a plug-in modular basis, the arrangements provided in a given office must be known in order to determine which tests in this section are applicable. Section 201-646-101 provides a description of the individual units.

This section is reissued to include test information on the Craft Computer Communication (*receiver preempt*) feature. Change arrows indicate significant changes. *Equipment Test Lists are not affected.*

Observe the following before proceeding:

- (a) Consult office records to determine circuit arrangement.
- (b) Schedule tests when they are least likely to interfere with normal usage.
- (c) Complete test as expeditiously as possible.

APPARATUS

Sending test equipment (STE)

Output:

- (a) Frequency: 1 kHz
- (b) Power: Between -16 dBm and +7 dBm
- (c) Impedance: 600 ohms

Receiving test equipment (RTE)

- (a) Frequency: 1 kHz
- (b) Power: Between -40 dBm and +10 dBm

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

APPARATUS

(c) Impedance: 600 ohms

KS-14510 Volt-Ohm-Milliammeter (VOM) equipped with List 2 test leads

Spare 227-type amplifier and associated equalizer and V44-type mounting (set for 20-dB gain).

3-inch H Cabinet Screwdriver

Test Cords and Plugs as required

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CHART 1

J99340A UNIT

The J99340A unit (Fig. 1 and 2) comprises the 4-wire order circuit equipment for use at an auxiliary station (other than L5 carrier stations). The unit features fully selective single-code signaling which can be either 1- or 2-digit plus the **all stations** or **receiver preempt** code for 2-digit signaling only. Patching jacks provide access to the 4-wire 4-way bridge and amplifier circuit for testing and maintenance purposes. Figure 3 shows a typical 4-wire 4-way bridge circuit.

STEP	PROCEDURE
1	Verify circuit arrangement from office records.
2	Prepare the sending test equipment (STE) to deliver 1 kHz. (See Table A.)
3	Prepare the receiving test equipment (RTE) to measure 1 kHz. (See Table A.)

CHART 1 (Cont)

STEP	PROCEDURE
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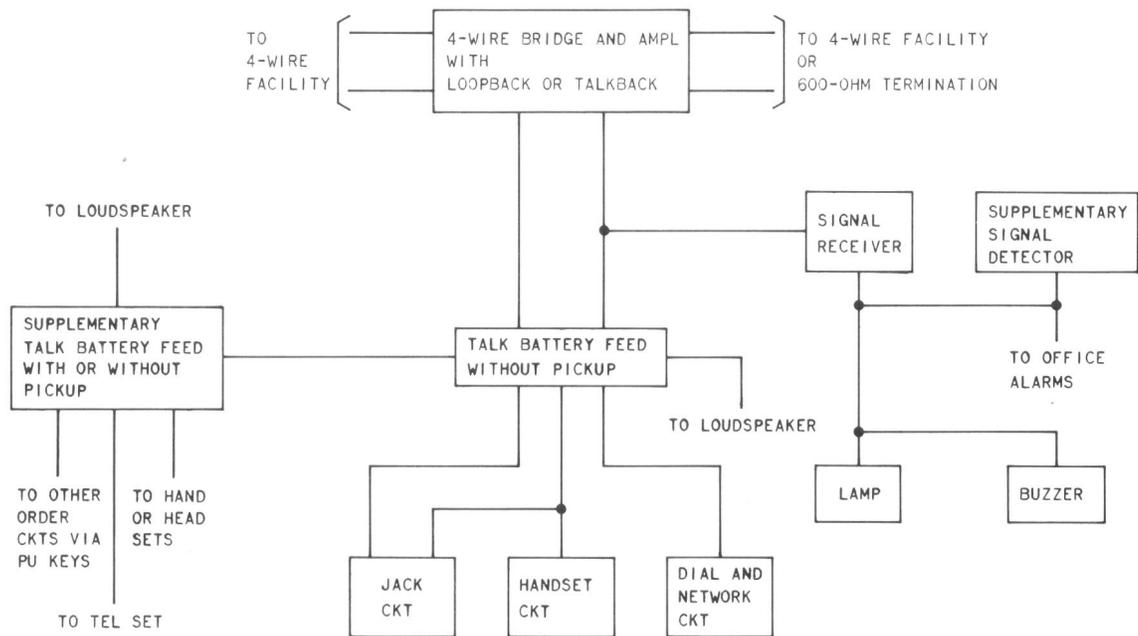


Fig. 1—J99340A Unit—Block Diagram

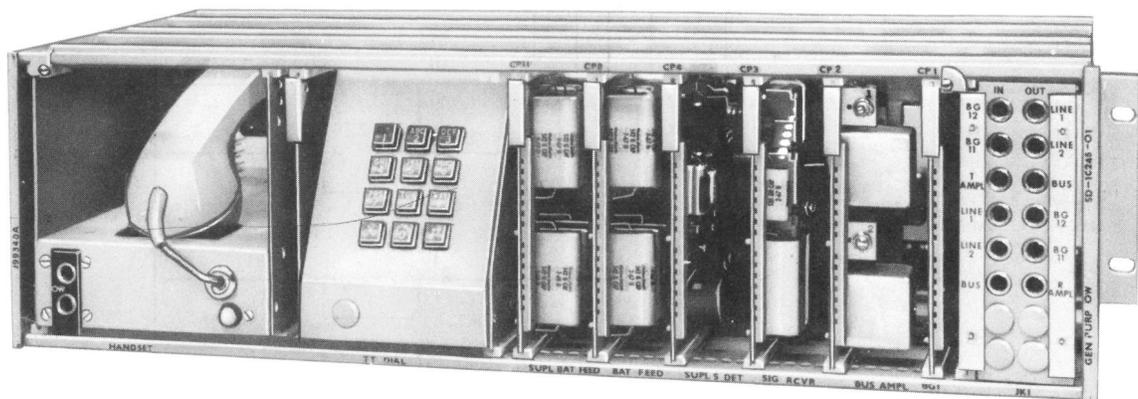


Fig. 2—J99340A Unit

CHART 1 (Cont)

STEP	PROCEDURE
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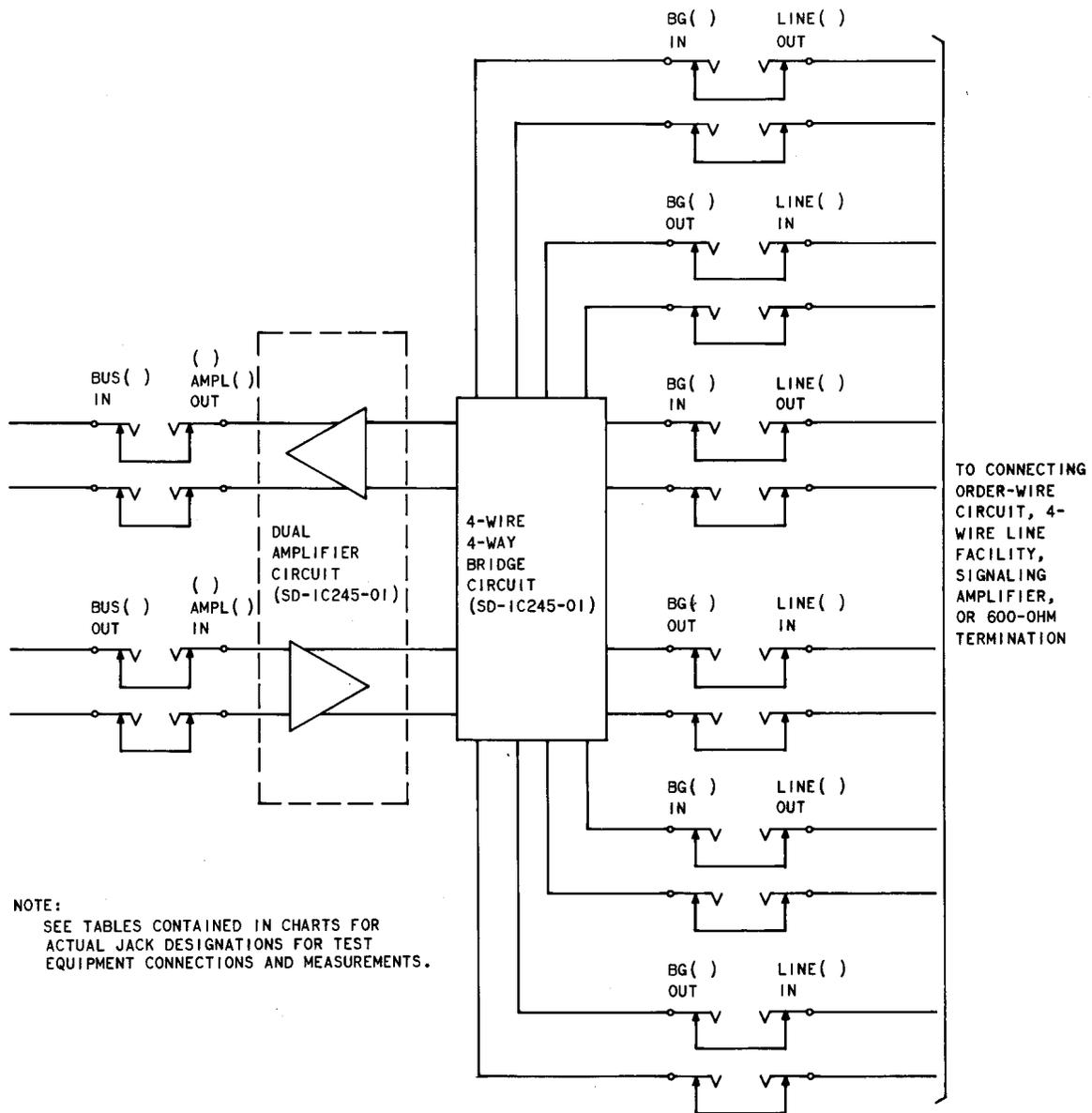


Fig. 3—4-Wire 4-Way Bridge and Amplifier Circuit

CHART 1 (Cont)

STEP	PROCEDURE
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TABLE A
TEST EQUIPMENT CONNECTIONS AND MEASUREMENTS

CIRCUIT ARRANGED FOR TALKBACK						
STEP	CONNECT 262B PLUG (600 OHMS) TO JACK	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIREMENT (DBM)	ADJUST AMPLIFIER
5(a)	BG 12 OUT	BG 12 IN	+7	R AMPL OUT	+7	1
5(b)	BG 12 OUT	BG 12 IN	+7	BG 11 OUT	-11 ±0.5	—
5(c)	BG 12 IN	T AMPL IN	-16	BG 12 OUT	-16	2
5(d)	BG 12 IN	BG 11 IN	+4	BG 12 OUT	-16 ±0.5	—
CIRCUIT ARRANGED FOR LOOPBACK						
5(e)	BG 11 IN	T AMPL IN	-16	BG 12 OUT	-16 ±0.5	2
5(f)	BG12 OUT BG 11 IN	T AMPL IN	-16	BG 13 OUT	-15 ±0.5	—
5(g)	BG 12 OUT	BG 11 IN	+7	R AMPL OUT	+7	1
5(h)	BG 12 OUT BG 11 IN	T AMPL IN	-16	R AMPL OUT	< -37	—
5(i)	BG 12 OUT	BG 11 IN	+7	BG 13 OUT	-15 ±0.5	—
5(j)	BG 11 IN	BG 13 IN	+4	BG 12 OUT	-20 ±0.5	—

- 4 Lift handset, monitor, and (if circuit is idle) challenge on circuit.

Requirement 1: No conversation or signaling tones are heard.

Requirement 2: Sidetone is heard during challenge.

Amplifier Gain (BUS AMPL)

- 5 Adjust the amplifier gain and make level measurements using the steps in Table A as required.
- 6 Upon completion of Step 5,
- Remove test terminations.
 - Disconnect test equipment.

CHART 1 (Cont)

STEP	PROCEDURE
7	Proceed to next step as indicated in Table B. Single-Code 1-Digit Signaling
8	Lift handset; challenge on circuit. Requirement: Sidetone heard during challenge
9	Depress and hold the key for the station code where the test is being made. Requirement 1: Buzzer sounds. Requirement 2: Call lamp lights. Note: Other audible and visual office alarms may be activated.
10	Release key; replace handset. Requirement 1: Buzzer is silenced. Requirement 2: Call lamp is extinguished. Note: Other office alarms activated in Step 9 should be deactivated. Single-Code 2-Digit Signaling
11	Perform the following: (a) Connect the AMPL IN jack of the spare amplifier (20-dB gain) to the BG 12 OUT jack. (b) Connect the AMPL OUT jack of the spare amplifier to the BG 13 IN jack. (c) Connect 262B plug (600 ohms) to jack BG 11.

TABLE B

OPTION	STEP
Single-code 1-digit signaling	8
Single-code 2-digit signaling with loopback	11
Single-code 2-digit signaling with talkback	12

CHART 1 (Cont)

STEP	PROCEDURE
12	Lift handset; challenge on circuit. Requirement: Sidetone heard during challenge.
13	Proceed as follows: (a) Momentarily depress the key for the first digit of the station code where test is being made. (b) Depress and hold the key for the second digit of the station code. Requirement 1: Buzzer sounds. Requirement 2: Call lamp lights. Note: Other audible and visual office alarms may be activated.
14	Release key; replace handset. Requirement 1: Buzzer is silenced. Requirement 2: Call lamp is extinguished. Note: Other office alarms activated in Step 13 should be deactivated.
15	If option for loopback was provided, proceed to Step 16; otherwise, proceed to Step 17.
16	Perform the following: (a) Disconnect the AMPL IN jack of the spare amplifier from the BG 12 OUT jack. (b) Disconnect the AMPL OUT jack of the spare amplifier from the BG 13 IN jack. (c) Remove the 600-ohm termination from the BG 11 IN jack. One-Digit Receiver and Supplementary Detector (2-Digit)—Interdigital Time Out
17	Set KS-14510 VOM range switch to the DC VOLTS 60 position.
18	Connect the VOM negative test lead to TP 13 of signal receiver (CP 3); connect the VOM positive test lead to TP 6 (CP 3). Requirement: VOM indicates 0 volts.
19	Lift handset; challenge on circuit. Requirement: Sidetone is heard.

CHART 1 (Cont)

STEP	PROCEDURE
20	Momentarily depress the key for the first digit of the 2-digit station code where test is being made. Requirement 1: VOM indicates approximately 22 volts dc. Requirement 2: After approximately 2.5 seconds, VOM indicates 0 volts.
21	◆If supplemental detector is CP 4, proceed to Step 24. If supplemental detector is CP 16, proceed to Step 22.
22	Momentarily depress the (*) key.
23	Momentarily depress the key for the first digit of the 2-digit station code where test is being made. Note: Requirements for Step 23 cannot be satisfied for approximately 5 seconds after doing Step 22. Requirement 1: VOM indicates approximately 22 volts dc. Requirement 2: After approximately 2.5 seconds, VOM indicates 0 volts.
24	Disconnect VOM test leads.
25	Replace handset.
26	Restore order-wire circuit to service.◆

CHART 2
J99340B or F UNIT

The J99340B or F unit (Fig. 4) comprises the 4-wire order circuit equipment for use at a main station (other than L5 carrier stations). The units feature fully selective single-code signaling which can be either 1-or 2-digit plus the **all stations** ◆or **receiver preempt**◆ code for 2-digit signaling only. Optional capabilities provide for incoming call lockup, recall, and station alert. Provision is made for connecting to another 4-wire order circuit whose equipment is the J99340C unit and which controls the switched interconnection. Patching jacks provide access to the 4-wire 4-way bridge and amplifier circuits for testing and maintenance purposes (Fig. 3).

The units are almost identical except for size and placement of the jack mounting strip, the B unit being a 23-inch and the F unit a 19-inch unit with the jack mounting at the top of the unit. In

CHART 2 (Cont)

addition, the loopback feature is not provided in the F unit. Figure 5 shows an equipped B unit; Fig. 6 is a front view of the F unit.

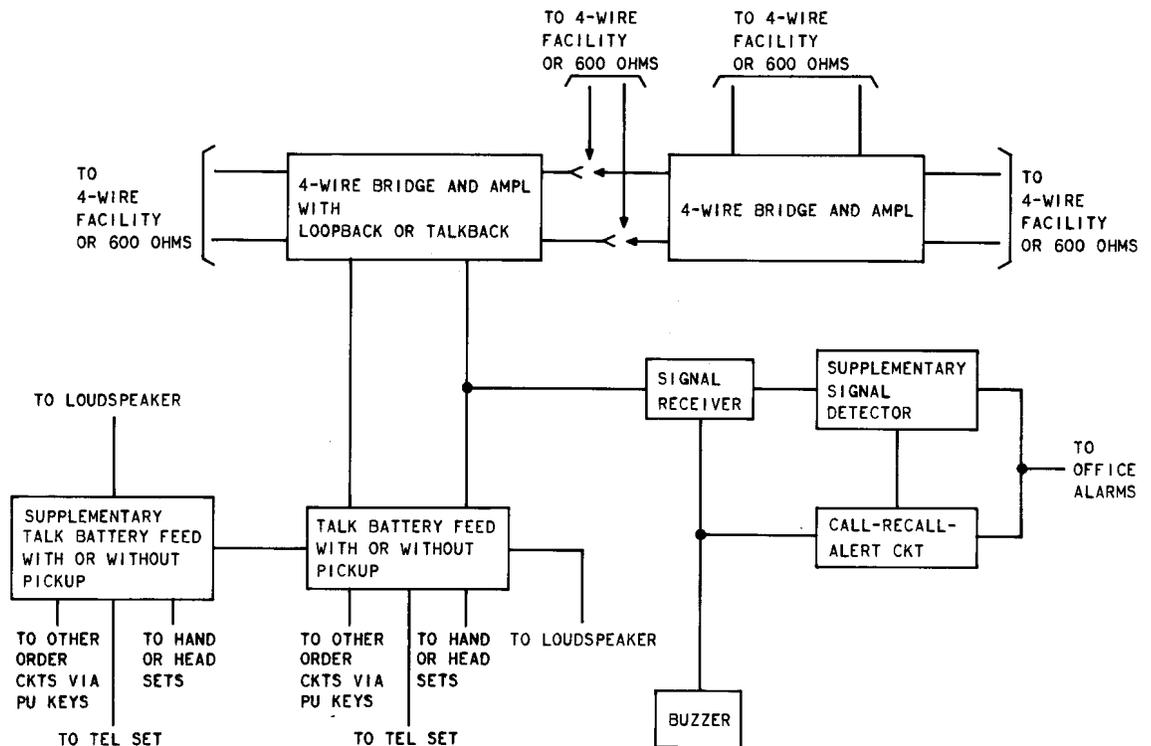


Fig. 4—J99340B or F Unit—Block Diagram

STEP

PROCEDURE

- 1 Verify circuit arrangement from office records.
- 2 Prepare the sending test equipment (STE) to deliver 1 kHz. (See Table C.)
- 3 Prepare the receiving test equipment (RTE) to measure 1 kHz. (See Table C.)
- 4 Lift handset, monitor, and (if circuit is idle) challenge on circuit.

Requirement 1: No conversation or signaling tones are heard.

Requirement 2: Sidetone is heard during challenge.

CHART 2 (Cont)

STEP	PROCEDURE
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TABLE C
TEST EQUIPMENT CONNECTIONS AND MEASUREMENTS

CIRCUIT ARRANGED FOR TALKBACK						
STEP	CONNECT 262B PLUG (600 OHMS) TO JACK	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIREMENT (DBM)	ADJUST AMPLIFIER
5(a)	BG 12 OUT	BG 12 IN	+7	R AMPL OUT	+7	1
5(b)	BG 12 OUT	BG 12 IN	+7	BG 11 OUT	-11 ±0.5	—
5(c)	BG 12 IN	T AMPL IN	-16	BG 12 OUT	-16	2
5(d)	BG 12 IN	BG 11 IN	+4	BG 12 OUT	-16 ±0.5	—
CIRCUIT ARRANGED FOR LOOPBACK						
5(e)	BG 11 IN	T AMPL IN	-16	BG 12 OUT	-16 ±0.5	2
5(f)	BG 12 OUT BG 11 IN	T AMPL IN	-16	BG 13 OUT	-15 ±0.5	—
5(g)	BG 12 OUT	BG 11 IN	+7	R AMPL OUT	+7	1
5(h)	BG 12 OUT BG 11 IN	T AMPL IN	-16	R AMPL OUT	< -37	—
5(i)	BG 12 OUT	BG 11 IN	+7	BG 13 OUT	-15 ±0.5	—
5(j)	BG 11 IN	BG 13 IN	+4	BG 12 OUT	-20 ±0.5	—

Amplifier Gain (BUS AMPL)

- 5 Adjust the amplifier gain and make level measurements using the steps in Table C as required.

Amplifier Gain (LINE 2 AMPL)

- 6 Adjust the amplifier gain and make level measurement using the steps in Table D.
- 7 Upon completion of Step 6,
- (a) Remove test terminations.
 - (b) Disconnect test equipment.

CHART 2 (Cont)

STEP PROCEDURE

TABLE D

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIREMENT (DBM)	ADJUST AMPLIFIER
6(a)	LINE 2 IN	-11	BG 21 OUT	-11	2
6(b)	BG 21 IN	+4	LINE 2 OUT	+4	1

8 Proceed to next step as indicated in Table E.

Single-Code 1-Digit Signaling

9 Lift handset; challenge on circuit.

Requirement: Sidetone is heard during challenge.

10 If station *is not equipped* with call-recall-alert feature, proceed to Step 11. If station *is equipped* with call-recall-alert feature, proceed to Step 13.

11 Depress and hold the key for the station code where test is being made.

Requirement 1: Buzzer sounds.

Requirement 2: Call lamp lights.

Note: Other audible and visual office alarms may be activated.

12 Release key; replace handset.

Requirement 1: Buzzer is silenced.

TABLE E

OPTION	STEP
Single-code 1-digit signaling	9
Single-code 2-digit signaling with lcopback	16
Single-code 2-digit signaling with talkback	17

CHART 2 (Cont)

STEP**PROCEDURE**

Requirement 2: Call lamp is extinguished.

Note: Other office alarms activated in Step 11 should be deactivated.

13 Depress and release key for station code where test is being made.

Requirement 1: Buzzer sounds.

Requirement 2: Call lamp lights.

14 Momentarily operate switchhook.

Requirement 1: Buzzer is silenced.

Requirement 2: Call lamp is extinguished.

15 Replace handset.

Single-Code 2-Digit Signaling

16 Perform the following:

(a) Connect the AMPL IN jack of a spare amplifier (20-dB gain) to the BG 12 OUT jack.

(b) Connect the AMPL OUT jack of the spare amplifier to the BG 13 IN jack.

(c) Connect a 262B plug (600 ohms) to jack BG 11.

17 Lift handset; challenge on circuit.

Requirement: Sidetone is heard during challenge.

18 If station **is not equipped** with call-recall-alert feature, proceed to Step 19. If station **is equipped** with call-recall-alert feature, proceed to Step 21.

Call-Recall-Alert Feature Not Provided

19 Proceed as follows:

(a) Momentarily depress the key for the first digit of the station code where test is being made.

(b) Depress and hold the key for the second digit of the station code.

Requirement 1: Buzzer sounds.

CHART 2 (Cont)

STEP	PROCEDURE
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Requirement 2: Call lamp lights.

Note: Other audible and visual office alarms may be activated.

20 Release key; replace handset.

Requirement 1: Buzzer is silenced.

Requirement 2: Call lamp is extinguished.

Note: Other office alarms activated in Step 19 should be deactivated.

Call-Recall-Alert Feature Provided

21 Depress and release keys for first and second digit of station code where test is being made.

Requirement 1: Buzzer sounds.

Requirement 2: Call lamp lights.

22 Momentarily operate switchhook.

Requirement 1: Buzzer is silenced.

Requirement 2: Call lamp is extinguished.

23 Replace handset.

24 Perform the following:

(a) Disconnect the AMPL IN jack of the spare amplifier from the BG 12 OUT jack.

(b) Disconnect the AMPL OUT jack of the spare amplifier from the BG 13 IN jack.

(c) Remove the 600-ohm termination from the BG 11 IN jack.

One-Digit Signal Receiver and Supplementary Detector (2-Digit)—Interdigital Time Out

25 Set KS-14510 VOM range switch to the DC VOLTS 60 position.

26 Connect the VOM negative (-) lead to TP 13 of the signal receiver (CP 3). Connect the VOM positive (+) lead to TP 6 (CP 3).

Requirement: VOM indicates 0 volts.

CHART 2 (Cont)

STEP	PROCEDURE
27	Lift handset; challenge on circuit. Requirement: Sidetone is heard.
28	Momentarily depress the key for the first digit of the 2-digit station code where test is being made. Requirement 1: VOM indicates approximately 22 volts dc. Requirement 2: After approximately 2.5 seconds, VOM indicates 0 volts.
29	◆If supplementary detector is CP 4, proceed to Step 32. If supplementary detector is CP 16, proceed to Step 30.
30	Momentarily depress the (*) key
31	Momentarily depress the key for the first digit of the 2-digit station code where test is being made. Note: Requirements for Step 31 cannot be satisfied for approximately five seconds after doing Step 30. Requirement 1: VOM indicates approximately 22 volts dc. Requirement 2: After approximately 2.5 seconds, VOM indicates 0 volts.
32	Disconnect VOM test leads.
33	Replace handset.
34	Restore order-wire circuit to service.◆

CHART 3
J99340C OR G UNIT

The J99340C or G unit (Fig. 7) comprises the 4-wire order circuit equipment for use at a main station (including L5 carrier stations). The C unit is a 23-inch unit having five talk battery feeds and two line cut circuits, while the G unit is a 19-inch unit having only four talk battery feeds and one line cut circuit. The units consist of a collection of plug-in units plus a jack mounting equipped with jacks which provide access for test and maintenance purposes. Fully selective multiple code signaling, which can be either 2- or 3-digit, is provided. Incoming call lockup, recall capability, and station alert features are provided for each station. Reception of the 1-digit preempt code is optional.

CHART 3 (Cont)

Provisions are incorporated to allow switchable transmission bridging to one or two other 4-wire order circuits controlled by the line cut keys and/or remotely by the supervisory control and alarm system. Figure 8 shows an equipped C unit; Fig. 9 shows a front view of the G unit.

STEP

PROCEDURE

- 1 Verify circuit arrangement from office records.
- 2 Prepare the sending test equipment (STE) to deliver 1 kHz. (See Table F.)
- 3 Prepare the receiving test equipment (RTE) to measure 1 kHz. (See Table F.)

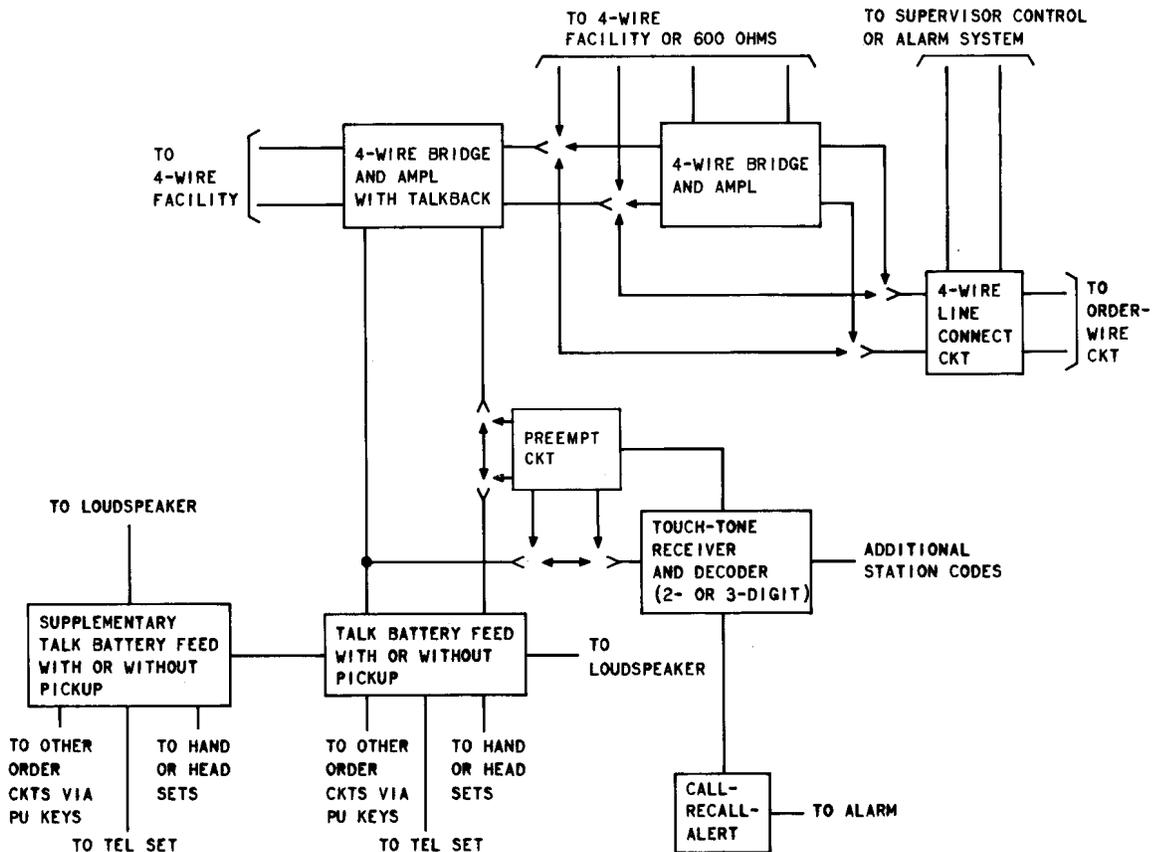


Fig. 7—J99340C or G Unit—Block Diagram

CHART 3 (Cont)

STEP

PROCEDURE

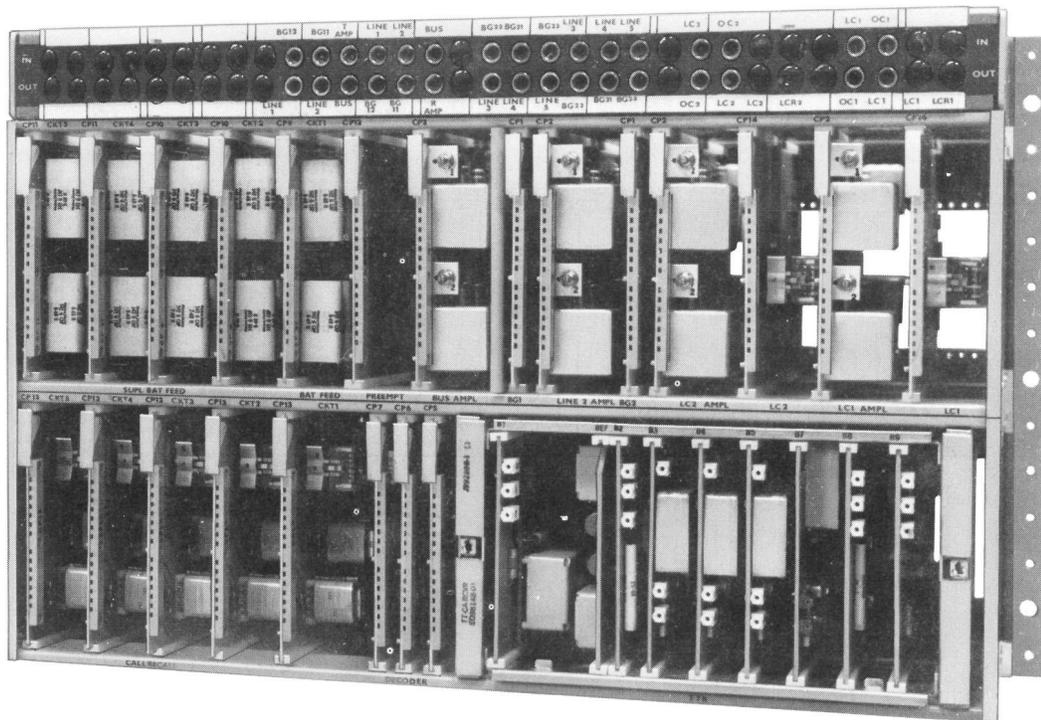


Fig. 8—J99340C Unit

- 4 Lift handset, monitor, and (if circuit is idle) challenge on circuit.

Requirement 1: No conversation or signaling tones heard.

Requirement 2: Sidetone heard during challenge.

Amplifier Gain (BUS AMPL)

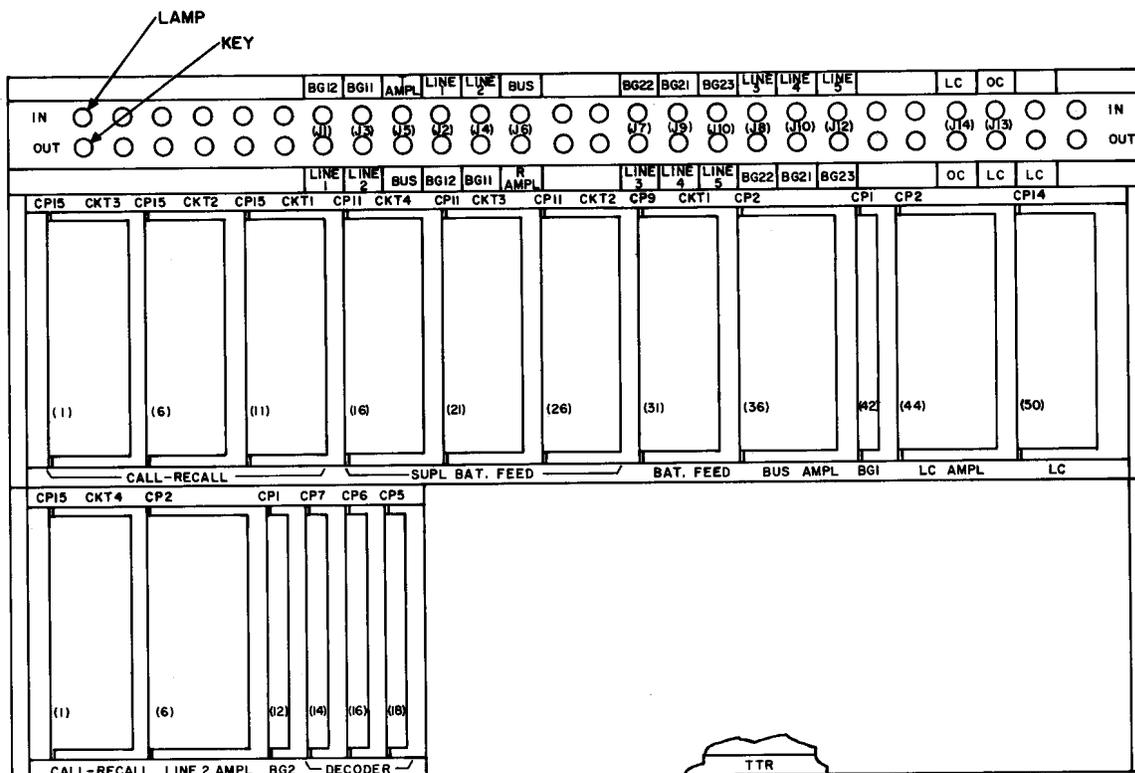
- 5 Adjust the amplifier gain and make level measurements using the steps in Table F.
- 6 Perform the following:

(a) Remove test terminations.

(b) If LINE 2 AMPL is used, proceed to Step 7; otherwise, proceed to Step 8.

CHART 3 (Cont)

STEP	PROCEDURE
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NOTE:
SEE J99340C FOR SIMILAR SHELF.

Fig. 9—Front View of J99340G Unit

Amplifier Gain (LINE 2 AMPL)

- 7 Adjust the amplifier gain and make level measurements using the steps in Table G.
- 8 If LC 1 AMPL is provided, proceed to Step 9; if LC 2 AMPL is provided, proceed to Step 11.

Amplifier Gain (LC 1 AMPL)

- 9 Operate LC 1 key.
Requirement: LC 1 lamp lights.
- 10 Adjust the amplifier gain and make level measurements using the steps in Table H.

CHART 3 (Cont)

STEP	PROCEDURE
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TABLE F

STEP	CONNECT 262B PLUG (600 OHMS) TO JACK	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIREMENT (DBM)	ADJUST AMPLIFIER
5(a)	BG 12 OUT	BG 12 IN	+7	R AMPL OUT	+7	1
5(b)	BG 12 OUT	BG 12 IN	+7	BG 11 OUT	-11 ±0.5	—
5(c)	BG 12 IN	T AMPL IN	-16	BG 12 OUT	-16	2
5(d)	BG 12 IN	BG 11 IN	+4	BG 12 OUT	-16 ±0.5	—

TABLE G

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIREMENT (DBM)	ADJUST AMPLIFIER
7(a)	LINE 2 IN	-11	BG 21 OUT	-11	2
7(b)	BG 21 IN	+4	LINE 2 OUT	+4	1

TABLE H

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIREMENT (DBM)	ADJUST AMPLIFIER
10(a)	LC 1 IN	-16	LINE 2 OUT	+4	1
10(b)	LINE 2 IN	-11	LC 1 OUT	+7	2

Amplifier Gain (LC 2 AMPL)

- 11 Operate the LC 2 key.

Requirement: LC 2 lamp lights.

CHART 3 (Cont)

STEP	PROCEDURE
12	Adjust the amplifier gain and make level measurements using the steps in Table I.
13	Disconnect the test equipment.

Multiple Code Receiver and Decoder (2- or 3-Digit)

14 Lift handset; challenge on circuit.

Requirement: Sidetone is heard during challenge.

15 Perform either (a) or (b) below:

(a) If the circuit is arranged for 2-digit codes, momentarily depress the keys for the 2-digit station code where test is being made.

(b) If the circuit is arranged for 3-digit codes, momentarily depress the keys for the 3-digit station code where test is being made.

Requirement 1: Buzzer sounds.

Requirement 2: Call lamp lights.

Note: Other audible and visual office alarms may be activated.

16 Momentarily operate switchhook.

Requirement 1: Buzzer is silenced.

Requirement 2: Call lamp is extinguished.

Note: Other alarms activated in Step 15 should be deactivated.

17 Replace handset.

TABLE I

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIREMENT (DBM)	ADJUST AMPLIFIER
12(a)	LC 2 IN	-16	LINE 4 OUT	+4	1
12(b)	LINE 4 IN	-11	LC 2 OUT	+7	2

CHART 3 (Cont)

STEP**PROCEDURE**

Call-Recall

- 18 Lift handset; challenge on circuit.
Requirement: Sidetone is heard during challenge.
- 19 Momentarily depress the keys for the station code where test is being made.
Requirement 1: Buzzer sounds.
Requirement 2: Call lamp lights.
Note: Other audible and visual office alarms may be activated.
- 20 Momentarily operate switchhook.
Requirement 1: Buzzer is silenced.
Requirement 2: Call lamp is extinguished.
Note: Other alarms activated in Step 19 should be deactivated.
- 21 Repeat Steps 19 and 20.
- 22 Replace handset.

Alert

- 23 Terminate the BG 12 OUT and BG 11 OUT jacks with 262B plugs (600 ohms).
- 24 Lift handset; challenge on circuit.
Requirement: Sidetone heard during challenge
- 25 Momentarily depress ALERT (#) key.
Requirement 1: Buzzer sounds.
Requirement 2: Call lamp lights.
Note: Other audible and visual office alarms may be activated.
- 26 Momentarily operate switchhook.
Requirement 1: Buzzer is silenced.

CHART 3 (Cont)

STEP

PROCEDURE

Requirement 2: Call lamp is extinguished.

Note: Other alarms activated in Step 25 should be deactivated.

27 Remove the 262B plugs from the BG 12 OUT and BG 11 OUT jacks.

28 Replace handset.

Preempt

29 ♦ For **voice circuit** preempt, perform Steps 30 through 34; for **receiver** preempt, perform Steps 35 through 41.

30 Terminate the BG 12 OUT and BG 11 OUT jacks with 262B plugs (600 ohms).

31 Lift handset; challenge on circuit.

Requirement: Sidetone is heard during challenge.

32 Momentarily depress **preempt** (*) key.

Requirement 1: No sidetone is heard while speaking.

Requirement 2: No audible tones heard when key pulsing (dialing) is attempted.

Requirement 3: Sidetone is heard after approximately 5 seconds.

33 Remove the 262B plugs from the BG 12 OUT and BG 11 OUT jacks.

34 Replace handset.

35 Terminate the BG 12 OUT and BG 11 OUT jacks with 262B plugs (600 ohms).

36 Lift handset; challenge on circuit.

Requirement: Sidetone is heard during challenge.

37 Momentarily depress **preempt** (*) key.

38 Momentarily depress the keys for the station code where test is being made.

Requirement: Buzzer, call lamp, or office alarms are not activated.

39 After approximately five seconds, repeat Step 38.

Requirement: Buzzer, call lamp, and applicable office alarms are activated.

CHART 3 (Cont)

STEP	PROCEDURE
40	Replace the handset.
41	Remove the 262B plugs from the BG 12 OUT and BG 11 OUT jacks.◀
Multiple Code Receiver and Decoder—Interdigital Time Out	
42	Set VOM range switch to DC VOLTS 60 position.
43	Connect VOM position lead to TP 13 of decoder (CP 7); connect VOM negative lead to TP 1 (CP 7).
Requirement: VOM indicates 20 volts dc.	
44	Lift handset; challenge on circuit.
Requirement: Sidetone is heard during challenge.	
45	Momentarily depress the key for the first digit of the station code where test is being made.
Requirement 1: VOM indicates 0 volts.	
Requirement 2: After approximately 5 seconds, VOM indicates 20 volts dc.	
46	Disconnect VOM test leads.
47	Replace handset.
48	Restore order-wire circuit to service.

CHART 4**J99340D UNIT**

The J99340D unit, similar to the J99340C unit, comprises the 4-wire order circuit equipment for use at a main station (including L5 carrier stations) having up to five different station order-wire locations (Fig. 10). It consists of a collection of plug-in modules plus a jack mounting equipped with jacks which provide access for test and maintenance purposes. Fully selective multiple code signaling, which can be either 2- or 3-digit, is provided. Incoming call lockup, recall capability, and station alert features are provided for each station. The optional manually controlled line connect circuits are deleted.

CHART 4 (Cont)

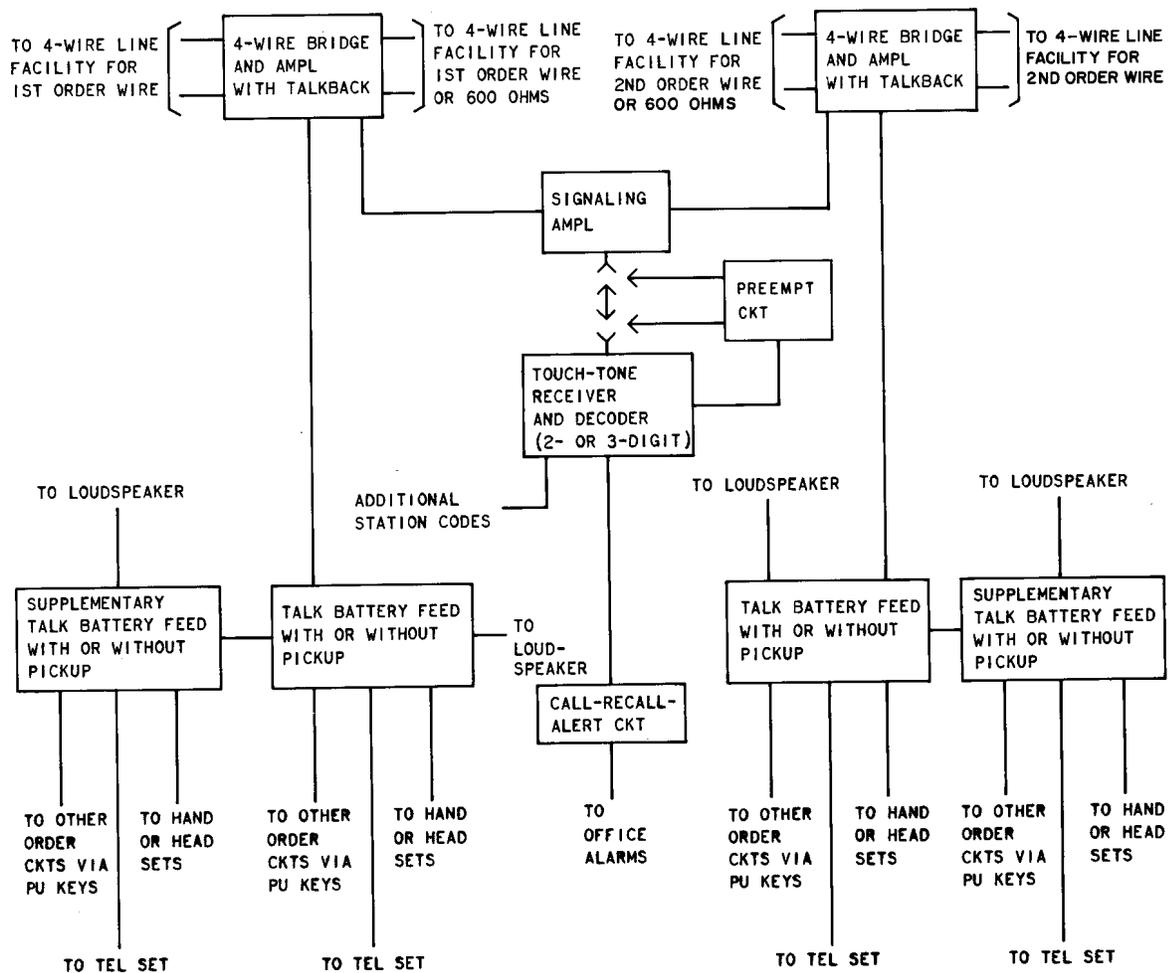


Fig. 10—J99340D Unit—Block Diagram

New features provide the circuits necessary to terminate two separate and individual order wires at a position with both order wires sharing a common TOUCH-TONE receiver and decoder. Up to five talk battery feeds are available for each of the two order-wire circuits. When the receiver preempt feature is provided, the second order wire circuit is limited to a maximum of four talk battery feeds. Figure 11 shows a partially equipped J99340D unit.

STEP

PROCEDURE

- 1 Verify circuit arrangement from office records.

CHART 4 (Cont)

STEP

PROCEDURE

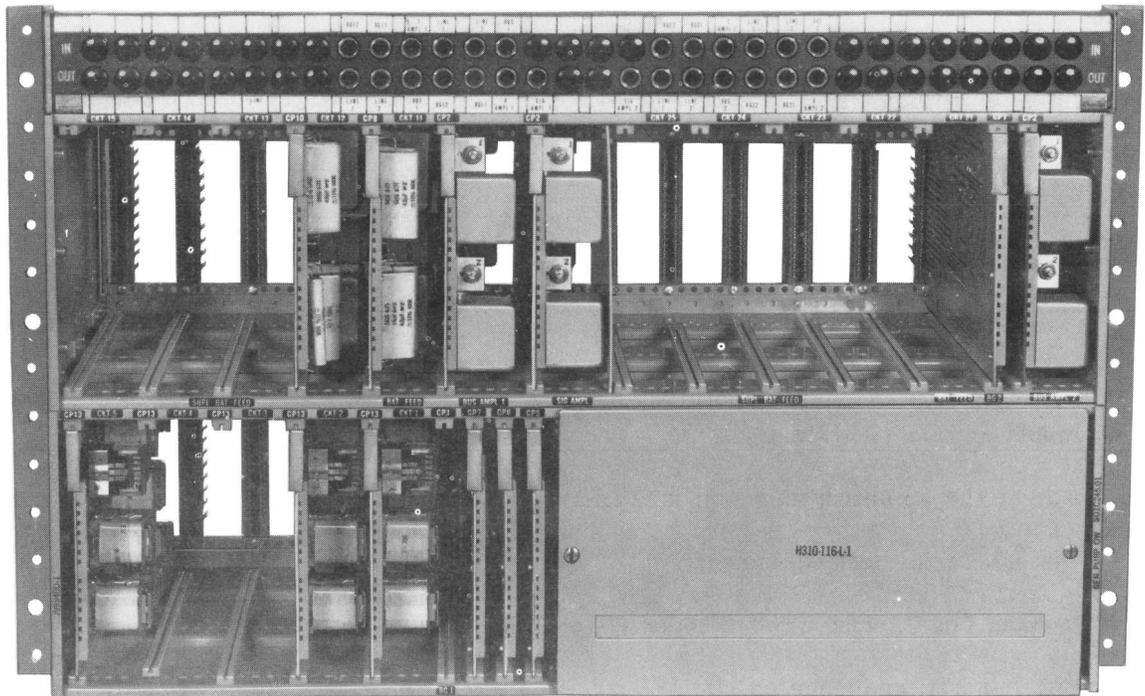


Fig. 11—J99340D Unit

- 2 Prepare the sending test equipment (STE) to deliver 1 kHz. (See Table J.)
- 3 Prepare the receiving test equipment (RTE) to measure 1 kHz. (See Table J.)
- 4 Lift handset, monitor, and (if circuit is idle) challenge.

Requirement 1: No conversation or signaling tones are heard.

Requirement 2: Sidetone is heard during the challenge.

Amplifier Gain (BUS AMPL)

- 5 Adjust the amplifier gain and make level measurements using the steps in Table J.

CHART 4 (Cont)

STEP	PROCEDURE
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TABLE J

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIREMENT (DBM)	ADJUST AMPLIFIER
5(a)	T AMPL 1 IN	-16	BG 11 OUT	-11	1-2
5(b)	T AMPL 1 IN	-16	R AMPL 1 OUT	+7	1-1
5(c)	T AMPL 2 IN	-16	BG 21 OUT	-11	2-2
5(d)	T AMPL 2 IN	-16	R AMPL 2 OUT	+7	2-1

Amplifier Gain (SIG AMPL)

- 6 Adjust the amplifier gain and make level measurements using the steps in Table K.
- 7 Disconnect the test equipment.

Multiple Code Receiver and Decoder (2- or 3-Digit)

- 8 Lift handset; challenge on circuit.

Requirement: Sidetone is heard during challenge.

- 9 Connect the R AMPL 1 OUT jack to the BG 12 IN jack.
- 10 Perform either (a) or (b) below:
- (a) If the circuit is arranged for 2-digit signaling, momentarily depress the keys for the 2-digit station code where test is being made.

TABLE K

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIREMENT (DBM)	ADJUST AMPL
6(a)	BG 12 IN	+7	SIG AMPL 1 OUT	+7	1-1
6(b)	BG 22 IN	+7	SIG AMPL 2 OUT	+7	1-2

 CHART 4 (Cont)

STEP	PROCEDURE
	(b) If the circuit is arranged for 3-digit signaling, momentarily depress the keys for the 3-digit station code where test is being made.
	Requirement 1: Buzzer sounds.
	Requirement 2: Call lamp lights.
	Note: Other audible and visual office alarms may be activated.
11	Momentarily operate switchhook.
	Requirement 1: Buzzer is silenced.
	Requirement 2: Call lamp is extinguished.
	Note: Other alarms activated in Step 10 should be deactivated.
12	Replace handset.
	Call-Recall
13	Lift handset; challenge on circuit.
	Requirement: Sidetone is heard during challenge.
14	Momentarily depress the keys for the station code where test is being made.
	Requirement 1: Buzzer sounds.
	Requirement 2: Call lamp lights.
	Note: Other audible and visual office alarms may be activated.
15	Momentarily operate switchhook.
	Requirement 1: Buzzer is silenced.
	Requirement 2: Call lamp is extinguished.
	Note: Other alarms activated in Step 14 should be deactivated.
16	Repeat Steps 14 and 15.
17	Disconnect the R AMPL 1 OUT jack from the BG 12 OUT jack.
18	Replace handset.

CHART 4 (Cont)

STEP	PROCEDURE
	Alert
19	Terminate BG 12 OUT and BG 11 OUT with 262B plugs (600 ohms).
20	Lift handset; challenge on circuit. Requirement: Sidetone is heard during challenge.
21	Momentarily depress the alert (#) key. Requirement 1: Buzzer sounds. Requirement 2: Call lamp lights. Note: Other audible and visual office alarms may be activated.
22	Momentarily operate switchhook. Requirement 1: Buzzer is silenced. Requirement 2: Call lamp is extinguished. Note: Other alarms activated in Step 21 should be deactivated.
23	Remove the 262B plugs from the BG 12 OUT and BG 11 OUT jacks.
24	Replace handset.
	Multiple Code Receiver and Decoder—Interdigital Time Out
25	Set VOM range switch to DC VOLTS 60 position.
26	Connect VOM positive (+) lead to TP 13 of decoder (CP 7); connect VOM negative (-) lead to TP 1 (CP 7). Requirement: VOM indicates 20 volts dc.
27	Lift handset; challenge on circuit. Requirement: Sidetone heard during challenge.
28	Momentarily depress the key for the first digit of the station code where test is being made. Requirement 1: VOM indicates 0 volts.

CHART 4 (Cont)

STEP	PROCEDURE
	Requirement 2: After approximately 5 seconds, VOM indicates 20 volts dc.
29	Disconnect VOM test leads.
30	Replace handset.
	Receiver Preempt
31	Terminate BG 12 OUT and BG 11 OUT jacks with 262B plugs (600 ohms).
32	Lift handset; challenge on circuit.
	Requirement: Sidetone is heard during challenge.
33	Momentarily depress preempt (*) key.
34	Momentarily depress the keys for the station code where the test is being made.
	Requirement: Buzzer, call lamp, or office alarms are not activated.
35	After approximately five seconds, repeat Step 34.
	Requirement: Buzzer, call lamp, and applicable office alarms are activated.
36	Replace the handset.
37	Remove the 262B plugs from the BG 12 OUT and the BG 11 OUT jacks.
38	Restore order-wire circuit to service.◀

CHART 5
J99340E UNIT

The J99340E unit (Fig. 12), similar to the J99340C unit, provides the 4-wire order circuit equipment for use at a main station (including L5 carrier stations). It consists of a collection of plug-in modules plus a jack mounting equipped with test and maintenance jacks. Fully selective multiple code signaling, which can be either 2- or 3-digit, is provided. Incoming call lockup, recall capability, and station alert features are provided for each station. One of the station codes and one of the optional manually controlled line connect circuits are deleted. New features provide the circuits necessary to terminate two separate and individual order wires at a position with both order wires sharing a common TOUCH-TONE® receiver and decoder. Also provided is a new 4-wire line connect circuit having the capability of connecting or disconnecting the two order-wire circuits by dialing a special

CHART 5 (Cont)

3-digit code. The connection and disconnection may also be controlled by a locking key. Up to three talk battery feeds are available for each of the two order-wire circuits.

STEP	PROCEDURE
1	Verify circuit arrangement from office records.
2	Prepare the sending test equipment (STE) to deliver 1 kHz. (See Table L.)
3	Prepare the receiving test equipment (RTE) to measure 1 kHz. (See Table L.)

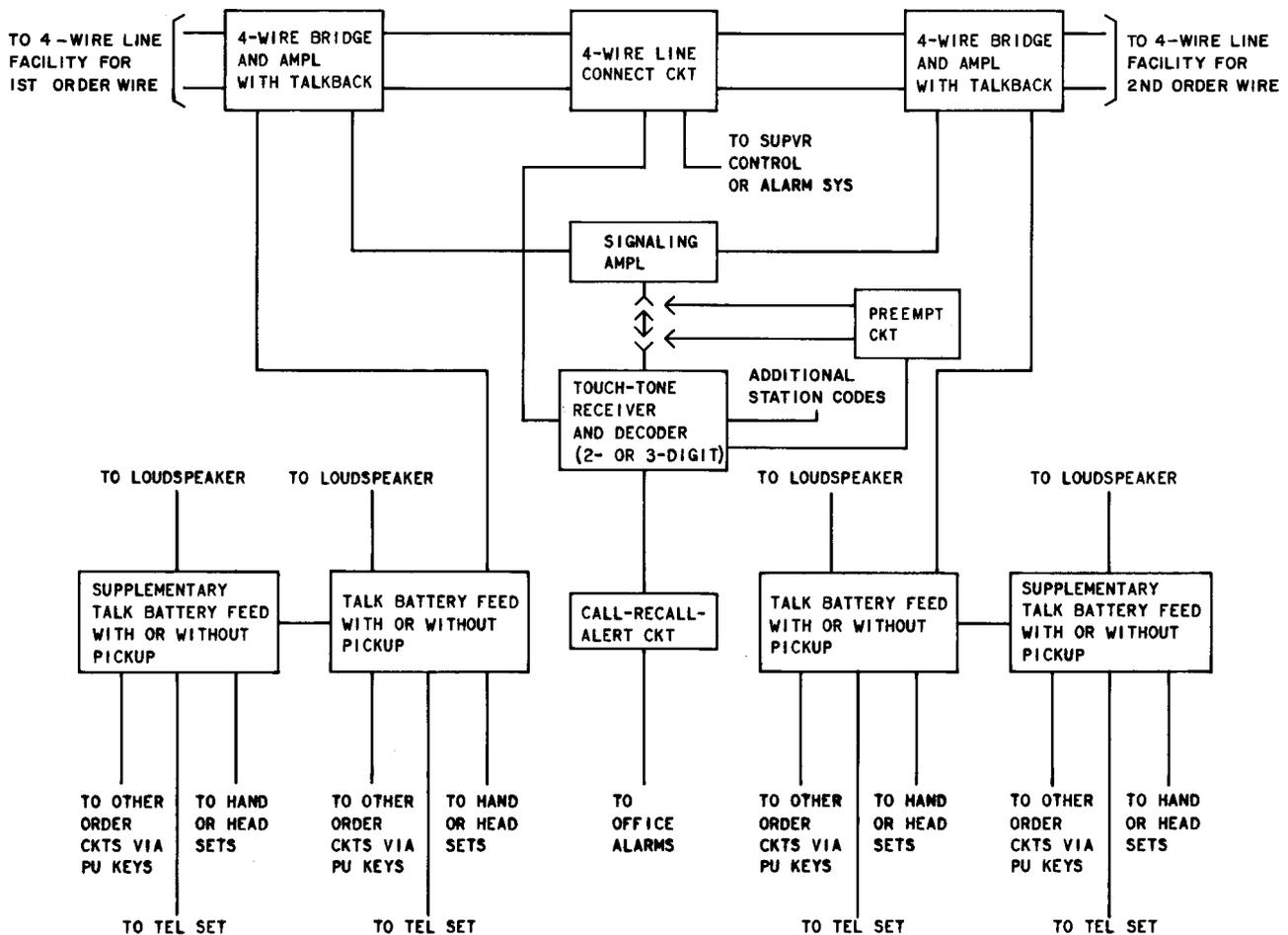


Fig. 12—J99340E Unit—Block Diagram

CHART 5 (Cont)

STEP	PROCEDURE
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TABLE L

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIREMENT (DBM)	ADJUST AMPLIFIER
5(a)	T AMPL 1 IN	-16	BG 11 OUT	-11	BUS AMPL 1-2
5(b)	T AMPL 1 IN	-16	LINE 2 OUT (BG2)	+4	LC 2
5(c)	T AMPL 1 IN	-16	BG 22 OUT	-16	—
5(d)	T AMPL 1 IN	-16	R AMPL 2 OUT	+7	BUS AMPL 2-1
5(e)	T AMPL 1 IN	-16	SIG AMPL 2 OUT	+7	SIG AMPL 2
5(f)	T AMPL 1 IN	-16	R AMPL 1 OUT	+7	BUS AMPL 1-1
5(g)	T AMPL 1 IN	-16	BG 12 OUT	-16	—
5(h)	T AMPL 2 IN	-16	BG 21 OUT	-11	BUS AMPL 2-2
5(i)	T AMPL 2 IN	-16	LINE 2 OUT (BG 1)	+4	LC 1
5(j)	T AMPL 2 IN	-16	BG 12 OUT	-16	—
5(k)	T AMPL 2 IN	-16	SIG AMPL 1 OUT	+7	SIG AMPL 1

4 Operate the LC key.

Requirement: LC lamp lights.

Amplifier Gain (All AMPLs)

5 Adjust the amplifier gains and make level measurements using the steps in Table L.

6 Disconnect the test equipment.

Dialed Cut-Through

7 Lift handset; challenge on circuit.

Requirement: Sidetone is heard during challenge.

8 Momentarily depress the keys for the 3-digit station cut-through code two times.

Requirement: The cut-through (LC) lamp is extinguished.

CHART 5 (Cont)

STEP	PROCEDURE
9	Replace the handset.
10	Connect the R AMPL 1 OUT jack to the BG 12 IN jack.
11	Lift handset; challenge on circuit. Requirement: Sidetone is heard during challenge.
12	Momentarily depress the keys for the 3-digit station cut-through code. Requirement: The LC lamp lights.
13	Replace handset.
Multiple Code Receiver and Decoder (2- or 3-Digit)	
14	Lift handset; challenge on circuit. Requirement: Sidetone is heard during challenge.
15	Perform either (a) or (b): (a) If circuit is arranged for 2-digit signaling, momentarily depress the keys for the 2-digit station code where test is being made. (b) If circuit is arranged for 3-digit signaling, momentarily depress the keys for the 3-digit station code where test is being made. Requirement 1: Buzzer sounds. Requirement 2: Call lamp lights. Note: Other audible and visual office alarms may be activated.
16	Momentarily operate switchhook. Requirement 1: Buzzer is silenced. Requirement 2: Call lamp is extinguished. Note: Other alarms activated in Step 15 should be deactivated.
17	Replace handset.

CHART 5 (Cont)

STEP	PROCEDURE
Call-Recall	
18	Lift handset; challenge on circuit. Requirement: Sidetone is heard during challenge.
19	Momentarily depress the keys for the station code where test is being made. Requirement 1: Buzzer sounds. Requirement 2: Call lamp lights. Note: Other audible and visual office alarms may be activated.
20	Momentarily operate switchhook. Requirement 1: Buzzer is silenced. Requirement 2: Call lamp is extinguished. Note: Other alarms activated in Step 19 should be deactivated.
21	Repeat Steps 18 and 19.
22	Disconnect the R AMPL 1 OUT jack from the BG 12 OUT jack.
23	Replace handset.
Alert	
24	Terminate the BG 12 OUT and BG 11 OUT jacks with 262B plugs (600 ohms).
25	Lift handset; challenge on circuit. Requirement: Sidetone is heard during challenge.
26	Momentarily depress the alert (#) key. Requirement 1: Buzzer sounds. Requirement 2: Call lamp lights. Note: Other audible and visual office alarms may be activated.

CHART 5 (Cont)

STEP	PROCEDURE
27	Momentarily operate switchhook. Requirement 1: Buzzer is silenced. Requirement 2: Call lamp is extinguished. Note: Other alarms activated in Step 26 should be deactivated.
28	Remove the 262B plugs from the BG 12 OUT and BG 11 OUT jacks.
29	Replace handset. Multiple Code Receiver and Decoder—Interdigital Time Out
30	Set VOM range switch to DC VOLTS 60 position.
31	Connect VOM positive (+) lead to TP 13 of decoder (CP 7); connect VOM negative (-) lead to TP 1 (CP 7). Requirement: VOM indicates 20 volts dc.
32	Lift handset; challenge on circuit. Requirement: Sidetone is heard during challenge.
33	Momentarily depress the key for the first digit of the station code where test is being made. Requirement 1: VOM indicates 0 volts. Requirement 2: After approximately 5 seconds, VOM indicates 20 volts dc.
34	Disconnect VOM test leads.
35	Replace handset. Receiver Preempt
36	Terminate BG 12 OUT and BG 11 OUT jacks with 262B plugs (600 ohms).
37	Lift handset; challenge on circuit. Requirement: Sidetone is heard during challenge.
38	Momentarily depress preempt (*) key.

CHART 5 (Cont)

STEP	PROCEDURE
39	Momentarily depress keys for the station code where the test is being made. Requirement: Buzzer, call lamp, or office alarms are not activated.
40	After approximately five seconds, repeat Step 39. Requirement: Buzzer, call lamp, and applicable office alarms are activated.
41	Replace the handset.
42	Remove the 262B plugs from the BG 12 OUT and BG 11 OUT jacks.
43	Restore order-wire circuit to service.◆
