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.

This section is reissued to include test information on new units. The information is presented in chart form whereby all tests applicable to a single unit are provided. Section 201-646-101 provides a description of the individual units. ***Equipment Test Lists are 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

(c) Impedance: 600 ohms

APPARATUS (Cont):

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

CHART **PAGE**

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" code for 2-digit signaling only. Reception for the special 1-digit preempt code is not provided. 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.

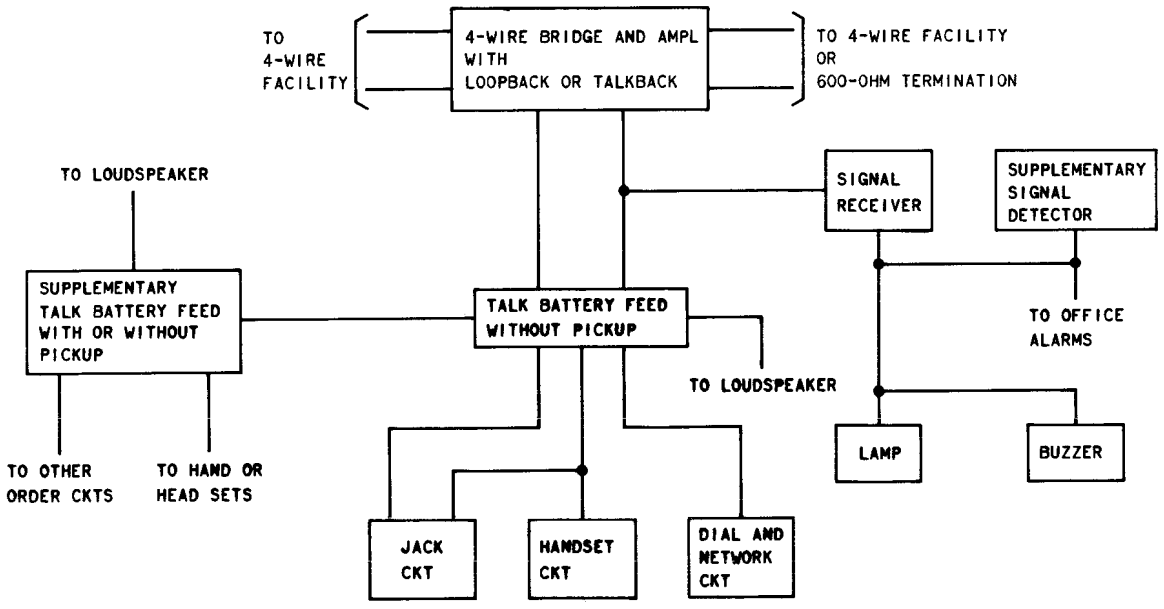


Fig. 1—J99340A Unit—Block Diagram

CHART 1 (Cont)

STEP	PROCEDURE

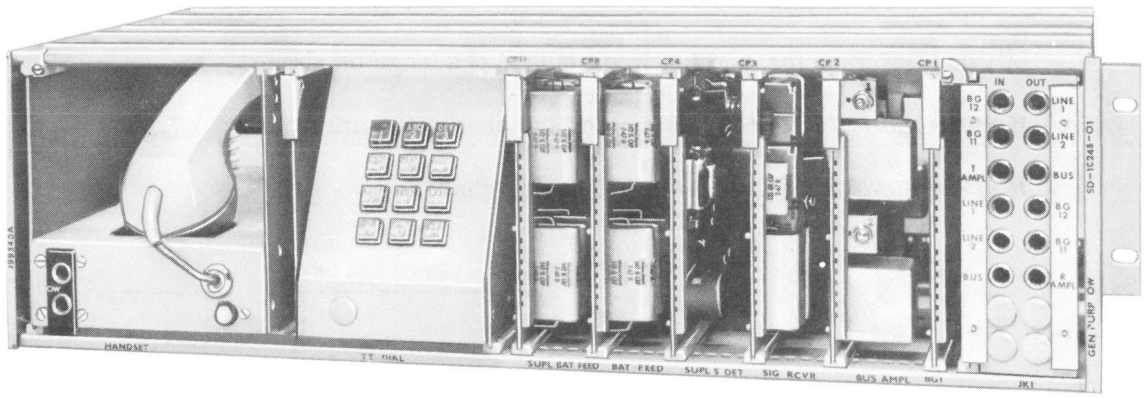


Fig. 2—J99340A Unit

1 Verify circuit arrangement from office records.

2 Prepare the sending test equipment (STE) to deliver 1 kHz (see Table A).

TABLE A

TEST EQUIPMENT CONNECTIONS AND MEASUREMENTS

STEP	CONNECT 262B PLUG (600 OHMS) TO JACK	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIRE-MENT (DBM)	ADJUST AMPLIFIER
CIRCUIT ARRANGED FOR TALKBACK						
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	—

CHART 1 (Cont)

STEP	PROCEDURE
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.

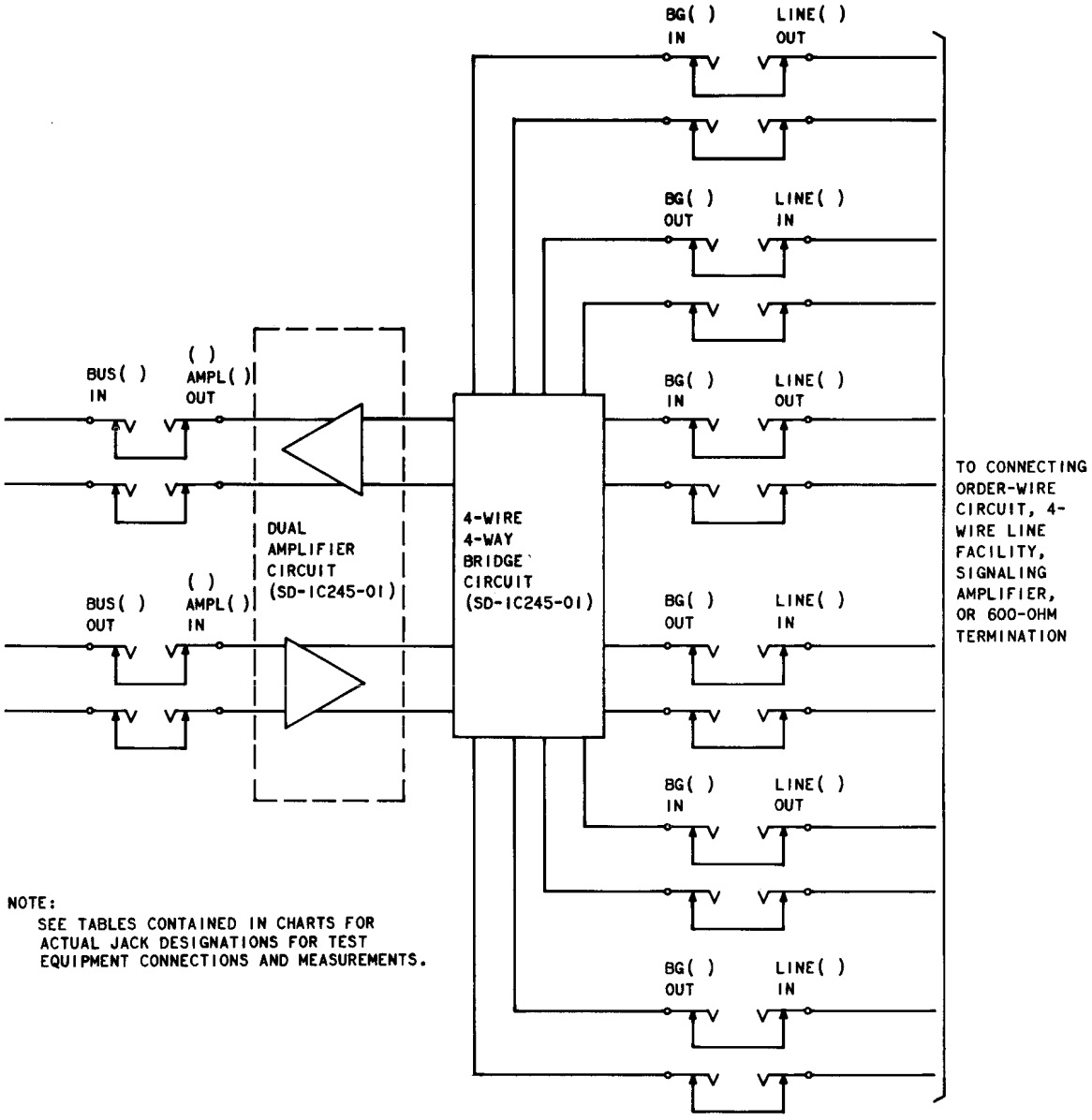


Fig. 3—4-Wire 4-Way Bridge and Amplifier Circuit

CHART 1 (Cont)

STEP	PROCEDURE
	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, (a) Remove test terminations. (b) Disconnect test equipment.
7	Proceed to next step as indicated in Table B.

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

	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.

CHART 1 (Cont)

STEP	PROCEDURE
	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.
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.

CHART 1 (Cont)

STEP	PROCEDURE
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.
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	Disconnect VOM test leads.
22	Replace handset.
23	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" code for 2-digit signaling only. Optional capabilities provide for incoming call lockup, recall, and station alert. Reception for the special 1-digit preempt code is not provided. 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 is a 23-inch unit, and the F a 19-inch unit with the jack mounting at the top. In 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.

STEP	PROCEDURE
1	Verify circuit arrangement from office records.
2	Prepare the sending test equipment (STE) to deliver 1 kHz (see Table C).

CHART 2 (Cont)

STEP	PROCEDURE
3	Prepare the receiving test equipment (RTE) to measure 1 kHz (see Table A).
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.

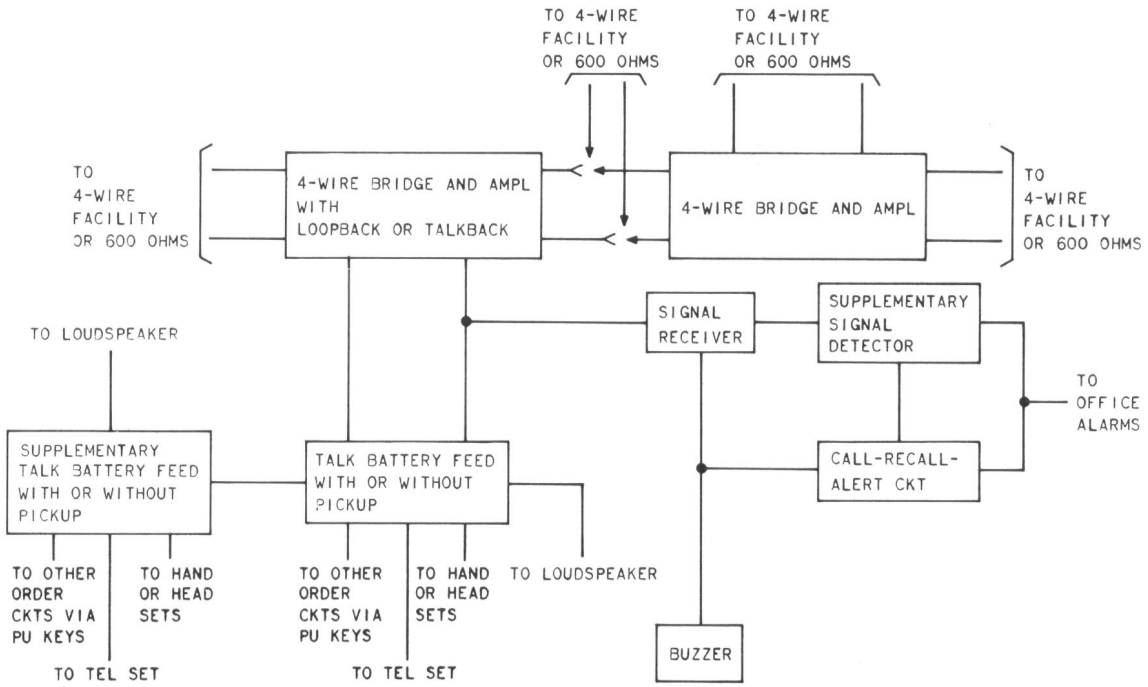


Fig. 4—J99340B or F Unit—Block Diagram

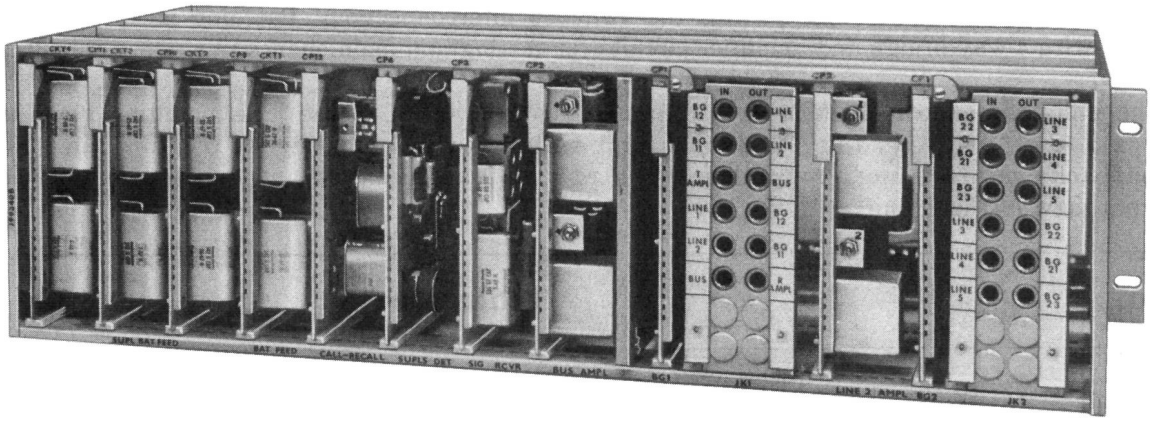
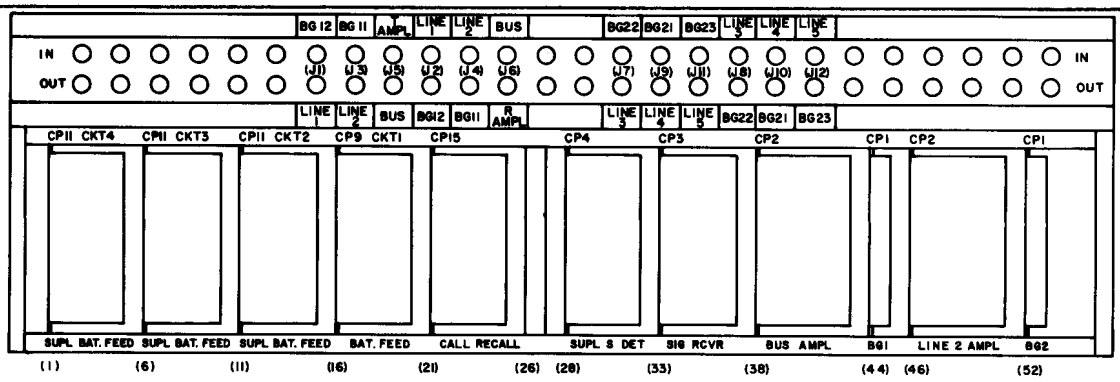


Fig. 5—J99340B Unit

CHART 2 (Cont)

STEP	PROCEDURE



NOTE:
SEE J99340B FOR SIMILAR SHELF.

Fig. 6—Front View of J99340F Unit

Amplifier Gain (BUS AMPL)

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

TABLE C

TEST EQUIPMENT CONNECTIONS AND MEASUREMENTS

STEP	CONNECT 262B PLUG (600 OHMS) TO JACK	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIRE-MENT (DBM)	ADJUST AMPLIFIER
CIRCUIT ARRANGED FOR TALKBACK						
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	—

CHART 2 (Cont)

STEP	PROCEDURE
	Amplifier Gain (LINE 2 AMPL)
6	Adjust the amplifier gain and make level measurement using the steps in Table D.

TABLE D

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIRE-MENT (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

7 Upon completion of Step 6,

(a) Remove test terminations.

(b) Disconnect test equipment.

8 Proceed to next step as indicated in Table E.

TABLE E

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

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.

CHART 2 (Cont)

STEP	PROCEDURE
12	Release key; replace handset. ***Requirement 1:*** Buzzer is silenced. ***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.

CHART 2 (Cont)	
STEP	**PROCEDURE**
	Requirement 1: Buzzer sounds. ***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.
27	Lift handset; challenge on circuit.

CHART 2 (Cont)

STEP	PROCEDURE
	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	Disconnect VOM test leads.
30	Replace handset.
31	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. 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).
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.

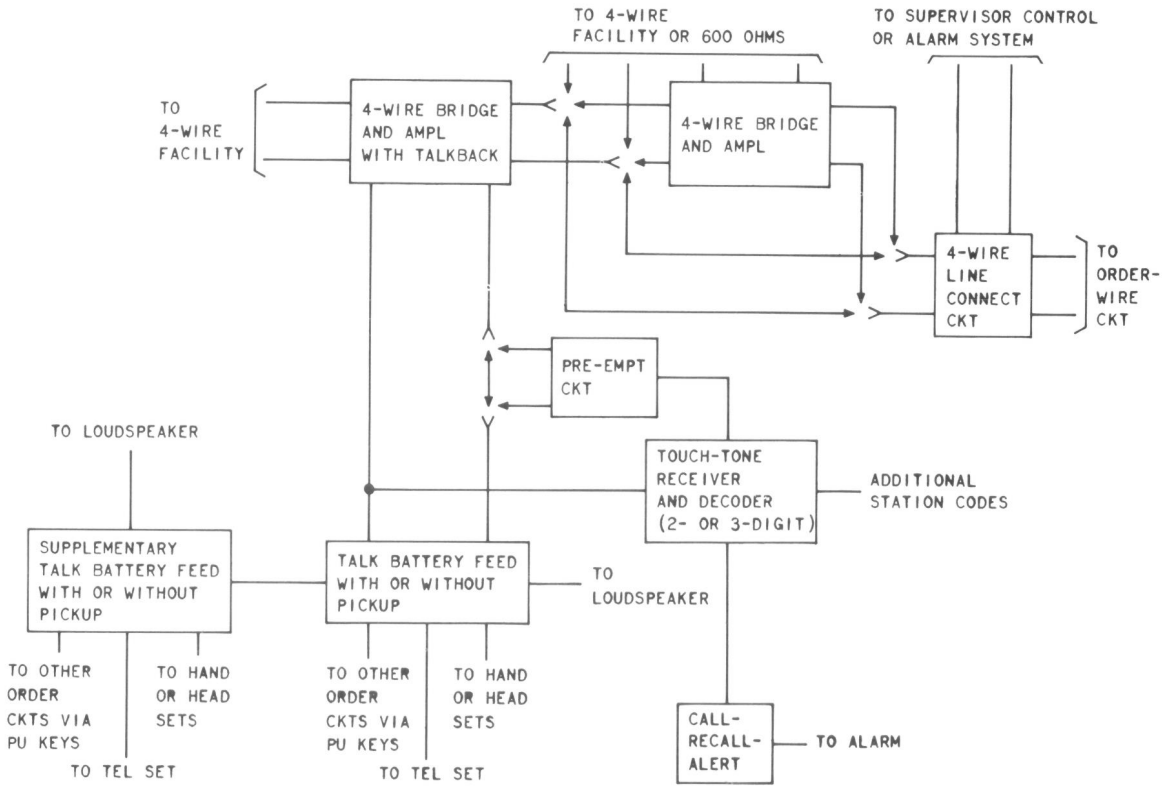


Fig. 7—J99340C or G Unit—Block Diagram

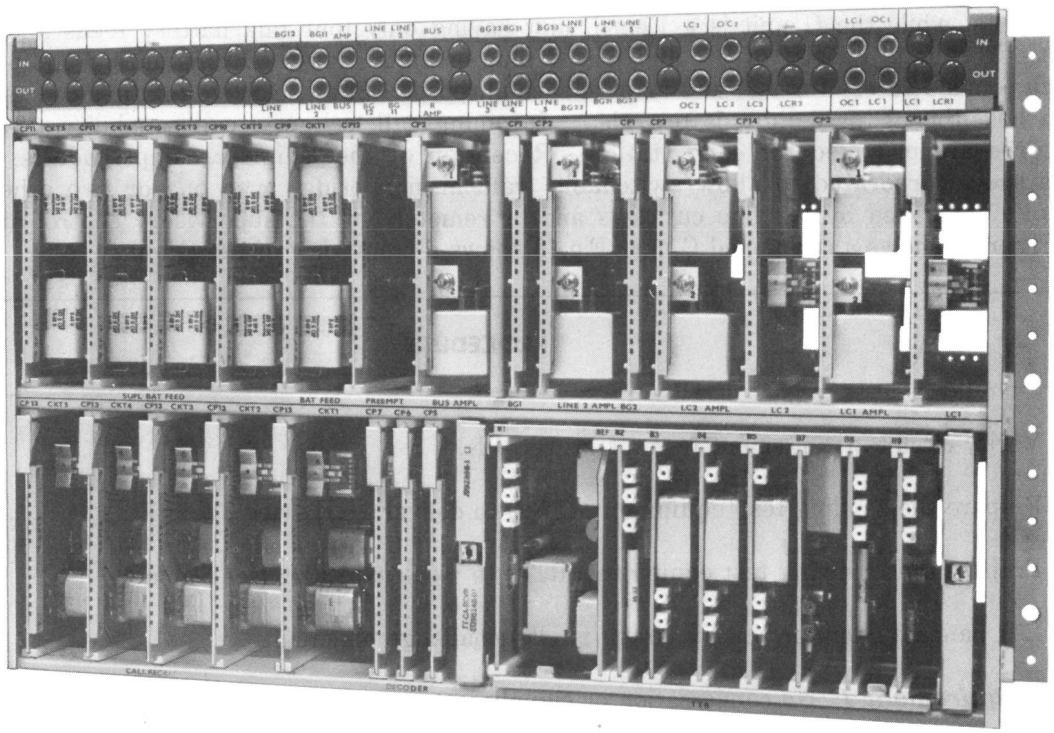
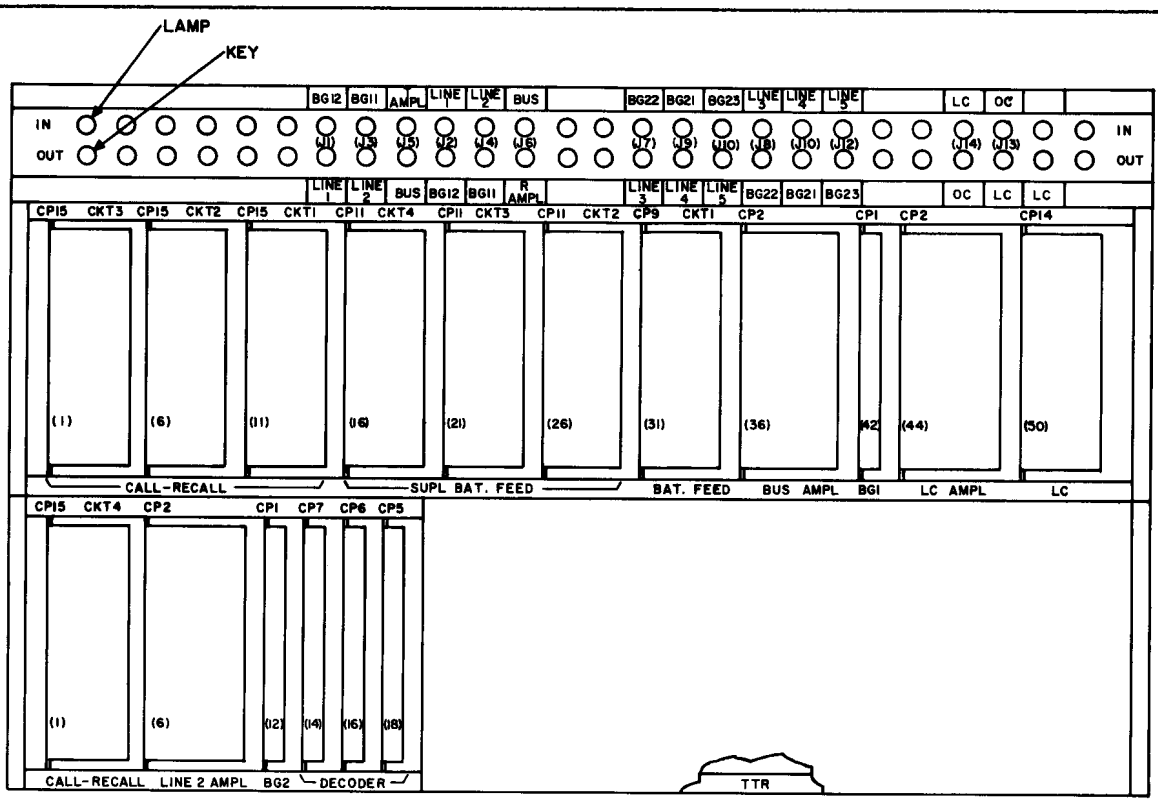


Fig. 8—J99340C Unit

CHART 3 (Cont)

STEP	PROCEDURE



NOTE:
SEE J99340C FOR SIMILAR SHELF.

Fig. 9—Front View of J99340G Unit

Amplifier Gain (BUS AMPL)

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

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 REQUIRE-MENT (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	—

CHART 3 (Cont)

STEP	PROCEDURE
6	Perform the following: (a) Remove test terminations. (b) If LINE 2 AMPL is used, proceed to Step 7; otherwise, proceed to Step 8.
	Amplifier Gain (LINE 2 AMPL)
7	Adjust the amplifier gain and make level measurements using the steps in Table G.

TABLE G

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIRE-MENT (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

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.

TABLE H

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIRE-MENT (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.
12	Adjust the amplifier gain and make level measurements using the steps in Table I.

CHART 3 (Cont)

STEP	PROCEDURE

TABLE I

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIRE-MENT (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

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.

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.

CHART 3 (Cont)	
STEP	**PROCEDURE**
	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.
	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	Terminate the BG 12 OUT and BG 11 OUT jacks with 262B plugs (600 ohms).

CHART 3 (Cont)	
STEP	**PROCEDURE**
30	Lift handset; challenge on circuit.
	Requirement: Sidetone is heard during challenge.
31	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.
32	Remove the 262B plugs from the BG 12 OUT and BG 11 OUT jacks.
33	Replace handset.
	Multiple Code Receiver and Decoder—Interdigital Time Out
34	Set VOM range switch to DC VOLTS 60 position.
35	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.
36	Lift handset; challenge on circuit.
	Requirement: Sidetone is heard during challenge.
37	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.
38	Disconnect VOM test leads.
39	Replace handset.
40	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 preempt feature and 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. Up to five talk battery feeds are available for each of the two order-wire circuits. Figure 11 shows a partially equipped J99340D unit.

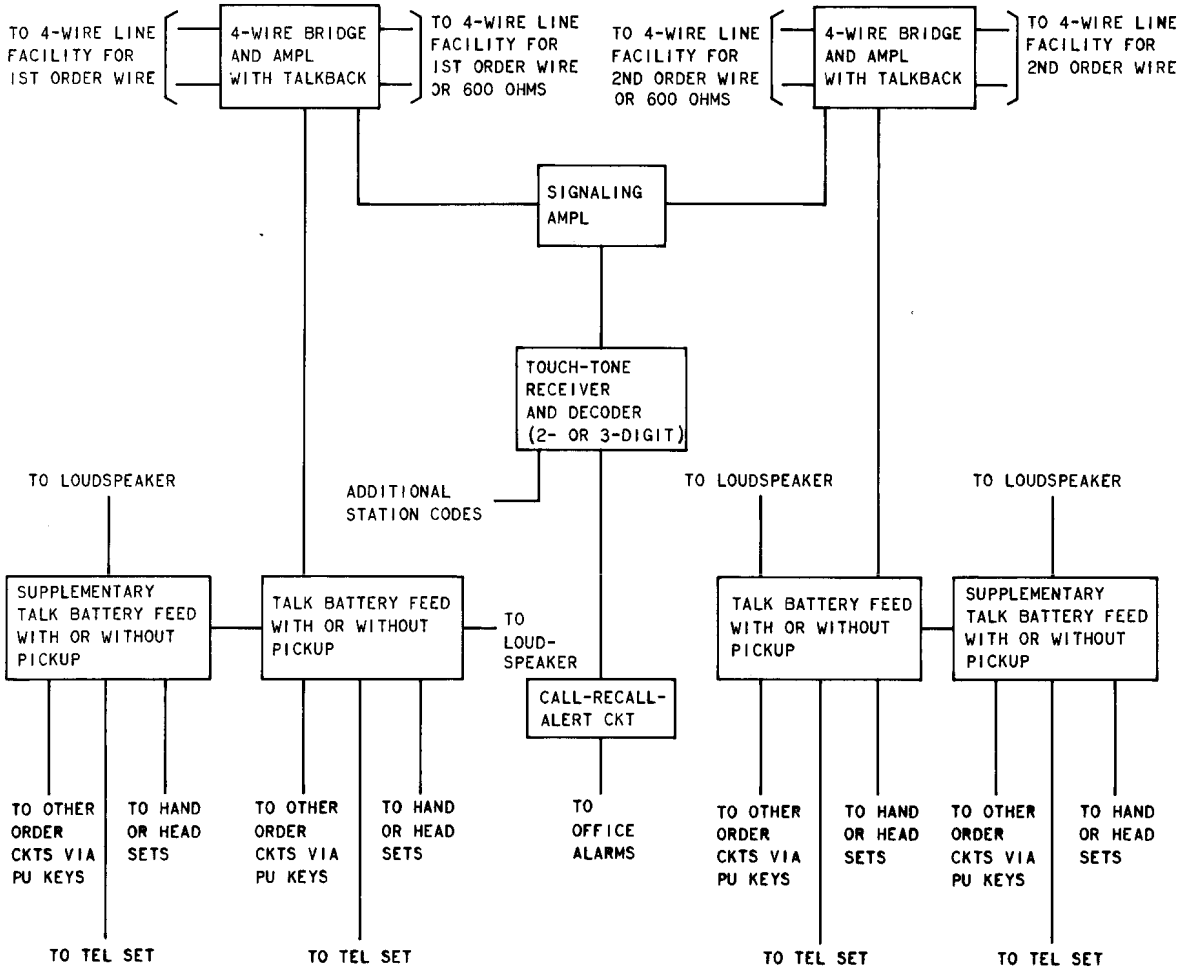


Fig. 10—J99340D Unit—Block Diagram

CHART 4 (Cont)

STEP	PROCEDURE
1	Verify circuit arrangement from office records.
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.

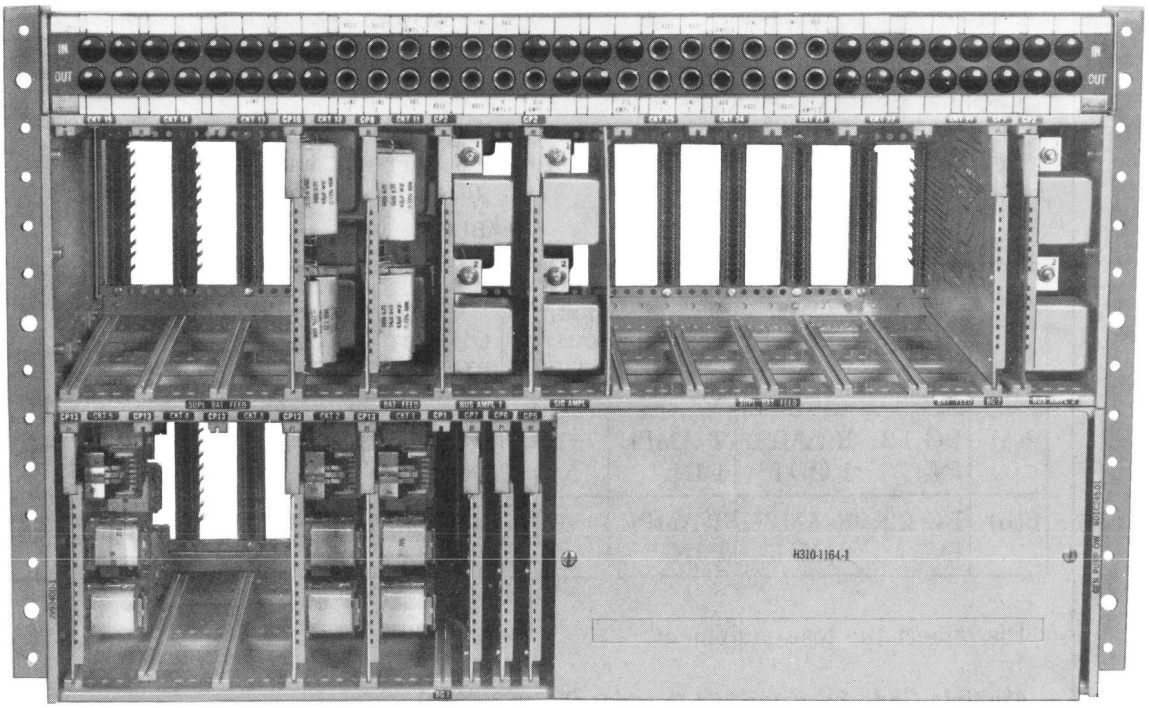


Fig. 11—J99340D Unit

CHART 4 (Cont)

STEP	PROCEDURE
	Amplifier Gain (BUS AMPL)
5	Adjust the amplifier gain and make level measurements using the steps in Table J.

TABLE J

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIRE-MENT (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.

TABLE K

STEP	CONNECT PATCH FROM	CONNECT PATCH TO	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIRE-MENT (DBM)	ADJUST AMPL	REMOVE PATCH FROM	REMOVE PATCH TO
6(a)	BG 12 IN	R AMPL 1 OUT	T AMPL 1 IN	−16	SIG AMPL 1 OUT	+7	1-1	BG 12 IN	R AMPL 1 OUT
6(b)	BG 22 IN	R AMPL 2 OUT	T AMPL 2 IN	−16	SIG AMPL 2 OUT	+7	1-2	BG 22 IN	R AMPL 2 OUT

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.

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.
	Requirement 2: After approximately 5 seconds, VOM indicates 20 volts dc.
29	Disconnect VOM test leads.

CHART 4 (Cont)

STEP	PROCEDURE
30	Replace handset.
31	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. The optional preempt feature, 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 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.

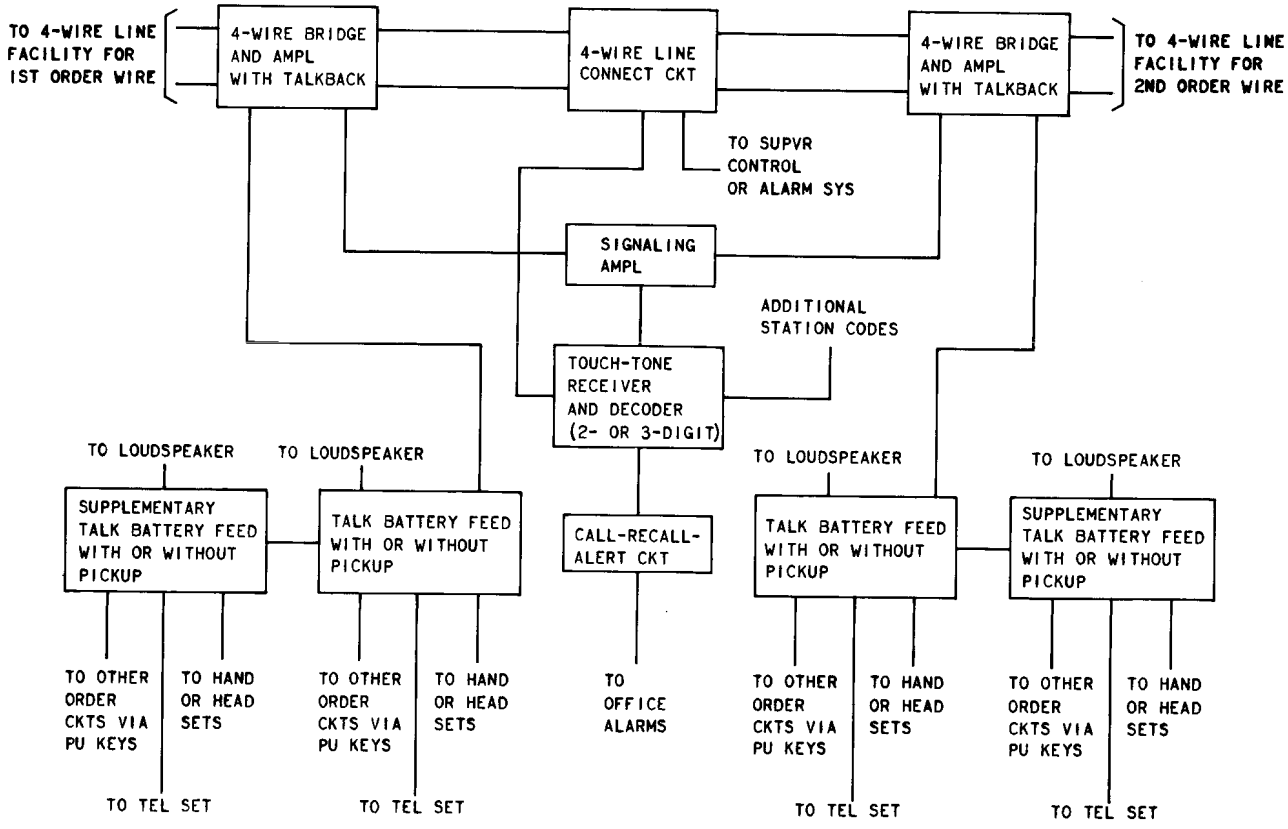


Fig. 12—J99340E Unit—Block Diagram

CHART 5 (Cont)

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).
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.

TABLE L

STEP	CONNECT STE TO JACK	STE 1-KHZ OUTPUT LEVEL (DBM)	CONNECT RTE TO JACK	RTE LEVEL REQUIRE-MENT (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

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.

CHART 5 (Cont)

STEP	PROCEDURE
	Requirement: The cut-through (LC) lamp is extinguished.
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.
	Call-Recall
18	Lift handset; challenge on circuit.

CHART 5 (Cont)	
STEP	**PROCEDURE**
	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.
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.

CHART 5 (Cont)	
STEP	**PROCEDURE**
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.
36	Restore order-wire circuit to service.