

NO. 23 AUTOMATIC CALL DISTRIBUTING (ACD) SYSTEM
NO. 23 CONCENTRATOR
THROUGH AND TERMINAL BALANCE
NETWORK BUILD-OUT CAPACITOR (NBOC) SELECTION

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1. GENERAL

1.01 This section provides the procedures for determining the value of the network build-out capacitor (NBOC). This value is to be applied across the balance network in the 4-wire terminating sets (4WTS) that are associated with the incoming and outgoing circuits of the No. 23 Automatic Call Distributing (ACD) system or No. 23 Concentrator.

1.02 This section does not affect the Equipment Test Lists.

1.03 All measurement results should be recorded and retained. Section 660-462-010 describes the forms required and the suggested method of record retention.

1.04 To adjust the ACD system initially for through balance, the longest cross-office path, ie, that path with the greatest capacitance, must be found as a first step in establishing the

NBOC. This path consists of a connection from the longest incoming trunk to the longest outgoing trunk. This is determined by visual inspection, office records, or bridge-type capacitance measurements.

1.05 In ACD systems requiring terminal balance only, the average cross-office path is determined and is used to determine the value of the NBOC.

1.06 A general discussion on office balance is contained in Section 660-462-100.

1.07 Before the procedures of this section are performed, the trunks being tested must meet the noise limits and the 1000-Hz trunk loss requirements.

Caution: Balance testing must be performed on an out-of-service basis. The proper out-of-service procedures should be made on any working trunk prior to performing any balance tests.

2. CAPACITANCE MEASUREMENTS FOR DETERMINING NBOC VALUE

2.01 The measurement of cable capacitance used to determine NBOC values in a No. 23 ACD system or No. 23 Concentrator is made with an incoming trunk connected to an outgoing trunk. This connection will represent the longest 2-wire path through the system for through-balance requirements. If terminal balance is required, another connection representing the shortest path through the system is established. An average will be determined from these measurements.

NOTICE

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STEP	PROCEDURE										
1	<p>Select the longest incoming trunk and outgoing circuit from office records and drawings if through balance is required. Also, select the shortest incoming trunk and outgoing circuit if terminal balance is required.</p> <p>Caution: The Path Selection Circuit should be used only under light traffic conditions, since the average delay to service calls is 500 milliseconds if the selected outgoing circuit is idle. If the selected outgoing or position circuit is busy at the time a test call is attempted, all or part of the conversation time may be added to the delay.</p>										
2	<p>Verify that the selected incoming trunk is made busy at the originating end.</p>										
3	<p>Connect a P3E cord with 310-type plugs from the TEST jack of the Path Selection Circuit to the M-jack of the selected incoming trunk.</p>										
4	<p>If the selected incoming trunk uses E&M signaling, connect a cord between the TST EM jack of the Path Selection Circuits and the SIG- of the incoming trunk.</p>										
5	<p>Operate the key appropriate to the selected incoming trunk:</p> <table data-bbox="565 1010 1068 1224"> <thead> <tr> <th data-bbox="711 1010 792 1031">TRUNK</th> <th data-bbox="1019 1010 1068 1031">KEY</th> </tr> </thead> <tbody> <tr> <td data-bbox="565 1037 951 1129">SD-95513-01 — Fig. C, D, or E Fig. F Fig. G or H</td> <td data-bbox="1019 1037 1068 1129">RI GBI BSI</td> </tr> <tr> <td data-bbox="565 1136 732 1157">SD-95850-01</td> <td data-bbox="1019 1136 1068 1157">EGI</td> </tr> <tr> <td data-bbox="565 1163 732 1184">SD-95846-01</td> <td data-bbox="1019 1163 1068 1184">EPI</td> </tr> <tr> <td data-bbox="565 1190 732 1211">SD-95740-01</td> <td data-bbox="1019 1190 1068 1211">BGI</td> </tr> </tbody> </table>	TRUNK	KEY	SD-95513-01 — Fig. C, D, or E Fig. F Fig. G or H	RI GBI BSI	SD-95850-01	EGI	SD-95846-01	EPI	SD-95740-01	BGI
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6	<p>If the selected outgoing circuit is a position, operate the POS- key for the selected position.</p>										
7	<p>If the selected outgoing circuit is a trunk, connect a P3E cord from the TST A jack to the TST- jack of the selected circuit.</p>										
8	<p>Operate the key appropriate to the selected outgoing trunk:</p> <table data-bbox="565 1566 1068 1686"> <thead> <tr> <th data-bbox="760 1566 841 1587">TRUNK</th> <th data-bbox="1019 1566 1068 1587">KEY</th> </tr> </thead> <tbody> <tr> <td data-bbox="565 1593 951 1686">SD-95560-01 — Fig. 5 Fig. 6 Opt. ZR Fig. 6 Opt. ZS</td> <td data-bbox="1019 1593 1068 1686">RO GBO BGO</td> </tr> </tbody> </table>	TRUNK	KEY	SD-95560-01 — Fig. 5 Fig. 6 Opt. ZR Fig. 6 Opt. ZS	RO GBO BGO						
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9	<p>Operate STG key.</p>										
10	<p>Open the transmission path of the 4WTS of the outgoing trunk and terminate with 600-ohm terminations as indicated in Fig. 1.</p>										

STEP	PROCEDURE
11	Set up the test equipment as shown in Fig. 1. Connect the RLMS to the incoming circuit 4WTS transmit and receive ports.
12	Connect a 7A capacitor box (or equivalent) across the NBOC of the incoming trunk. See Fig. 1.
13	Verify that no straps are connected on any NBOC or drop build-out capacitor (DBOC) of the connected circuits.
14	Set the RLMS to: <ul style="list-style-type: none"> <li data-bbox="407 695 792 716">(a) NETWORK: EXTERNAL <li data-bbox="407 758 911 779">(b) TEST LOCATION: TEST HYBRID <li data-bbox="407 821 704 842">(c) TEST TYPE: ERL <li data-bbox="407 884 1122 905">(d) Short the 2-wire port on the incoming trunk 4WTS <li data-bbox="407 947 792 968">(e) Adjust THL to read 0 dB <li data-bbox="407 1010 691 1031">(f) Remove the short.
15	Adjust the capacitor box to the value giving the greatest SRL-HI measurement. Note the value of capacitance. (If a capacitor box is not used, adjust the NBOC by screw settings or straps.)
16	Repeat Steps 2 through 15 for the shortest connection if terminal balance is required. Additional connections may also be measured to insure getting the longest and shortest connections.

3. DETERMINING NBOC VALUE

A. Through Balance

3.01 The highest capacitance measurement in Part 2 will be used in those No. 23 ACD systems or No. 23 Concentrators that require through balance. That value is increased by 10 percent and will be the NBOC ($1.1 \times$ longest path capacitance).

3.02 Strap or screw down the NBOC adjustments on the 4WTS to the value selected above.

B. Terminal Balance

3.03 In those No. 23 ACD systems or No. 23 Concentrators that require only terminal balance, an average NBOC will be used. No drop building out is required if the difference between the highest measurement and lowest measurement is less than $0.025 \mu\text{F}$. The NBOC value will be the average of the greatest measurement in Part 2 plus 10 percent and the least measurement [$(1.1 \times$ longest path + shortest path) \div 2].

3.04 If the difference between the highest measurement and lowest measurement is greater than $0.025 \mu\text{F}$, the NBOC value will be

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0.0125 μF less than the greatest measurement plus 10 percent ($1.1 \times$ longest path - 0.0125 μF). Circuits representing the shorter circuits will need to be built out. Generally these will be the position or outgoing circuit. Section 660-462-502 contains procedures for drop building out.

3.05 Strap or screw down the NBOC adjustments on the 4WTS to the value selected above.

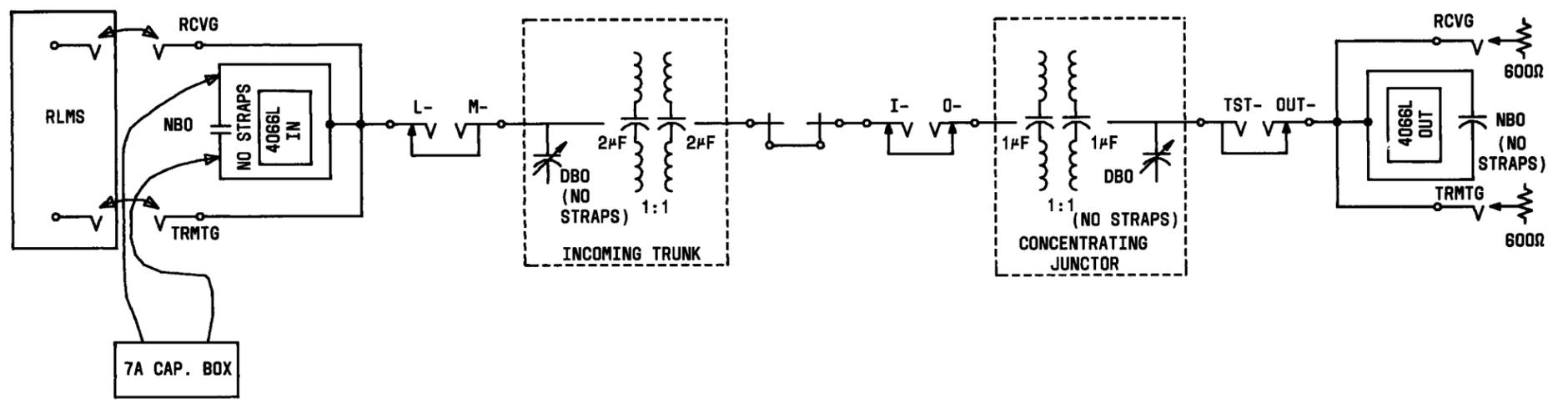


Fig. 1—Cable Path Capacitance Test