

J99347 VF AMPLITUDE AND DELAY EQUALIZING EQUIPMENT INSTALLATION AND CONNECTIONS

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1. GENERAL

1.01 This section provides instructions for installation and connections of the J99347AA VF Amplitude and Delay Equalizer (hereafter referred to as the J-board equalizer) as used in the J99347B-L1 VF Amplitude and Delay Equalizer bay (hereafter referred to as the J-board bay) or the J99347C-L1 VF Amplitude and Delay Equalizer shelf (hereafter referred to as the J-board shelf).

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 The associated 950-type equalizers plug into the J-board equalizer circuit to provide amplification or delay equalization to satisfy system

requirements. Description of the 950A equalizer is provided in Section 314-820-107 and the 950B equalizer in Section 314-820-108. A method for setting the 950B equalizer for certain facilities will be found in Section 314-820-207. A computer program is also available to determine the number of equalizers needed, as well as the switch settings, in order to equalize a given facility. Instructions for using the computer program are detailed in Section 856-200-100.

1.04 The J-board equalizer provides the proper balance, impedance, output power, and surge voltage protection. It provides connectors for mounting up to five 950-type equalizers. Each connector position is provided with special normal-through contacts which open as a 950-type equalizer is added onto the J-board equalizer. The circuitry is arranged so that each added 950-type equalizer is connected in tandem with the other equalizers and the input/output buffers of the J-board equalizer.

1.05 There are two slide switches mounted on the J-board equalizer which must be preset before installation into an operating position. A 2-position slide switch labeled NORM-REV permits cancellation of a phase turnover in the output signal which will be produced only when ODD numbers of 950A equalizers are plugged onto the J-board equalizer. A 3-position slide switch, labeled -16, -2, and +7, conditions the J-board equalizer circuitry to operate at the proper signal level when connected into a data channel facility. This switch is set to approximate the same transmission level point (TLP) as the position of the J-board equalizer in the facility. A variable control labeled GN ADJ is screwdriver adjustable through a hole in the front panel. This control adjusts the gain of the J-board equalizer within a range from -4 dB to +3 dB. During installation and after all switches have been set as required, the GN ADJ control is

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adjusted to make the J-board equalizer a zero-gain device in the data channel.

1.06 The 950-type equalizers provide the required amplitude and/or delay characteristics. With or without the 950-type equalizers, the J-board equalizer position is invisible to the data channel facility equipment at 1 kHz. If the facility requires resistive pad control, the necessary pads must be provided externally to the J-board equalizer.

1.07 Operating voltage is supplied from the central office -48 volt battery to the J-board equalizer. The applied battery voltage is modified by an internal circuit on the J-board equalizer for supplying operating voltages to the active circuits of the J-board equalizer as well as for all 950-type equalizers.

2. TOOLS AND APPARATUS

2.01 No special hand tools are required to install the J-board bay, the J-board shelf, or a J-board equalizer. Test equipment and associated apparatus required to complete an installation will vary with the requirements of the service to be provided.

2.02 A calibrated signal generator and detector arrangement (with 600Ω impedance), such as a 21A transmission measuring set (TMS) or equivalent, is required for the gain adjustment. Other test equipment which may be required to adjust and/or evaluate the facility service may be selected from Table A—Test Equipment List provided in Section 314-410-500.

2.03 Normal-through facility jacks are conveniently located on a factory-wired jack panel which is provided with a 12-position J-board shelf. The jacks provide access connections to the facility and/or J-board equalizer position as required for installation and/or maintenance testing. To acquire similar access jacks to service a J-board equalizer position in a J-board bay, or the logic position of a 4A echo suppressor, it will be necessary to have a J68914TA test extender in addition to other test equipment.

2.04 The J68914TA test extender provides the necessary jacks to gain access to the facility and/or the J-board equalizer. This apparatus was originally designed for testing positions on the 4A echo suppressor bay and instructions for use with

the J-board equalizer equipment are not provided. Use of the J68914TA test extender to test the J-board equalizer is provided in Section 314-820-506.

2.05 Test requirements for end-to-end transmission performance of private line data circuits are provided in Section 314-410-500.

3. CONNECTIONS

3.01 Both the J-board equalizer bay and the shelf are factory prewired with provisions for strapping option Z. The telephone facility, power, and station alarm signal connections are included as supplementary information.

Option Z

3.02 Option Z is available with the J-board equalizer equipment. Option Z, when used, bypasses simplex signals around the equalizer circuitry. Installation of option Z on a 12-position J-board equalizer shelf requires that a strap be installed between the appropriate signal input terminal and signal output terminal as listed in Table A.

3.03 Installation of option Z to a selected position on a J-board equalizer bay requires a strap between pin 17 (SX signal input) and pin 13 (SX1 signal output) of the selected position.

Telephone Facility Connections

3.04 Table B lists the appropriate signal input and signal output terminals for connecting a telephone facility through a J-board equalizer (12-position) shelf. When a telephone facility is connected through a position of the J-board equalizer bay, the signal input tip (T) and ring (R) are connected to terminals 9 and 5, respectively, and the signal output tip (T1) and ring (R1) are connected to terminals 2 and 3, respectively.

Power Connections

3.05 The -48 volt central office talk battery and battery ground are terminated at the fuse block on the fuse and alarm panel of the factory-wired J-board equalizer shelf. The fuse block distributes individually fused battery voltage to each of the 12 provided J-board equalizer positions. See Table C. Odd number circuit positions are powered through a yellow-green wire from the respective

fuse location to the position terminal 11 and battery ground return from position terminal 18 through yellow wire to the fuse block battery ground. Even numbered circuit positions are similarly powered through orange-white wire and battery ground through orange wire. Each position requires a No. 70-type fuse rated at 0.180 ampere.

3.06 The J-board equalizer bay requires two sources of -48 volt central office talk battery. The fuse blocks, on the 2C134 fuse and alarm panel where battery voltage is terminated, are identified for battery A and battery B with their respective grounds. Battery A source is distributed to equalizer shelves 1 through 8 with an individual fuse protecting each 12-position shelf. Battery B source is similarly distributed to equalizer shelves 9 through 15. Each shelf requires a No. 70-type fuse rated at 2.0 amperes. All 12 positions of any one equalizer shelf are parallel connected with -48 volts applied to each terminal 11 and battery ground return from each terminal 18.

Station Alarms

3.07 The 70-type fuses used to protect the J-board equalizers provide battery circuit continuity

until the current exceeds the design limits. The fuse element is spring loaded to open the circuit being protected when necessary and to make a closed contact to the office alarm circuit after opening the battery circuit. Battery voltage through the closed contact then causes the fuse alarm relay to operate. Contacts closed by the operated relay complete circuits which illuminate the FA lamp on the fuse and alarm panel, and complete individual paths for minor audible and visual office alarm circuits monitored at another office location.

4. INSTALLATION AND REMOVAL PROCEDURES FOR 950-TYPE EQUALIZER

4.01 The J-board equalizer is completely factory wired but requires the insertion of 950-type equalizers.

CAUTION: *Extreme care must be exercised when inserting, setting, or removing the 950s from the J-board equalizer to prevent damage to the contact pins and/or connectors.*

STEP	PROCEDURE
INSTALLATION	
1	Determine number of A or B equalizers required from circuit layout record card (CLRC), Section 314-820-207, or ADE 950 Equalizer Program.
2	Place 950A equalizer in lowest numbered positions per Fig. 1, then place 950B equalizers.
3	Select switch setting for each 950A or B equalizer from CLRC, section or program (see Step 1).
4	Select proper setting of level switch to either +7, -2 or -16 according to the determined TLP. If unknown, see procedure for establishing TLP in Section 314-820-506.
5	Operate the NORM/REV switch to NORM for an even number of 950A equalizers or to REV if an odd number of 950A equalizers is used.
6	Perform the gain adjustment procedure according to Section 314-820-506.
REMOVAL	
7	Firmly support the J-board equalizer (in hand or on cushioned surface).
8	On the electrostatic shield side (Fig. 2), depress the two corresponding ejector buttons for the appropriate 950-type equalizer.

TABLE A

**J99347C-L1 SHELF
SIMPLEX SIGNAL INPUT AND OUTPUT TERMINATIONS (OPTION Z)**

CKT POS	SIGNAL INPUT	SIGNAL OUTPUT
	SX (PIN 17)	SX1 (PIN 13)
1	TS3-12	TS3-22
2	-32	-42
3	-13	-23
4	-33	-43
5	-14	-24
6	-34	-44
7	-15	-25
8	-35	-45
9	-16	-26
10	-36	-46
11	-17	-27
12	TS3-37	TS3-47

TABLE B

**J99347C-L1 SHELF
SIGNAL INPUT AND OUTPUT TERMINATIONS**

CKT POS	SIGNAL INPUT		SIGNAL OUTPUT	
	T (PIN 9)	R (PIN 5)	T1(PIN 2)	R1 (PIN 3)
1	TS1-11	TS1-21	TS1-31	TS1-41
2	-12	-22	-32	-42
3	-13	-23	-33	-43
4	-14	-24	-34	-44
5	-15	-25	-35	-45
6	TS1-16	TS1-26	TS1-36	TS1-46
7	TS2-11	TS2-21	TS2-31	TS2-41
8	-12	-22	-32	-42
9	-13	-23	-33	-43
10	-14	-24	-34	-44
11	-15	-25	-35	-45
12	TS2-16	TS2-26	TS2-36	TS2-46

TABLE C

**J99347C-L1 SHELF INPUT BATTERY
VOLTAGE DISTRIBUTION**

CKT POS	BAT. VOLTAGE WIRE COLOR	FUSE DESIG	BAT. GRD WIRE COLOR
1	Y-G	F1	Y
2	O-W	F2	O
3	Y-G	F3	Y
4	O-W	F4	O
5	Y-G	F5	Y
6	O-W	F6	O
7	Y-G	F7	Y
8	O-W	F8	O
9	Y-G	F9	Y
10	O-W	F10	O
11	Y-G	F11	Y
12	O-W	F12	O

5. POST-INSTALLATION TEST REQUIREMENTS

5.01 The gain adjustment procedure must be performed for each J-board equalizer. Procedures are available for bay or shelf mounting. (Refer to Section 314-820-506.)

6. REFERENCES

6.01 The following are provided as supplementary information for equipment referred to in text.

SECTION	TITLE	SECTION	TITLE
		314-820-506	J99347 VF Amplitude and Delay Equalizing Equipment, Test Procedures and Maintenance
		332-414-105	4A Echo Suppressor J68914TA Test Extender, Description
		801-401-153	Equipment Specifications for the J99347 Equalizer Equipments
		856-200-100	ADE 950 Equalizer Program
314-820-106	J99347 VF Amplitude and Delay Equalizing Equipment, Description	NUMBER	TITLE
314-820-107	950A-Type Equalizer, Description	SD-6G069-01	4A Echo Suppressor Test Extender
314-820-108	950B-Type Equalizer, Description		
314-820-207	950B-Type Equalizer, Prescription Settings	SD-99559-01	Common Systems, VF Amplitude and Delay Equalizer Circuit

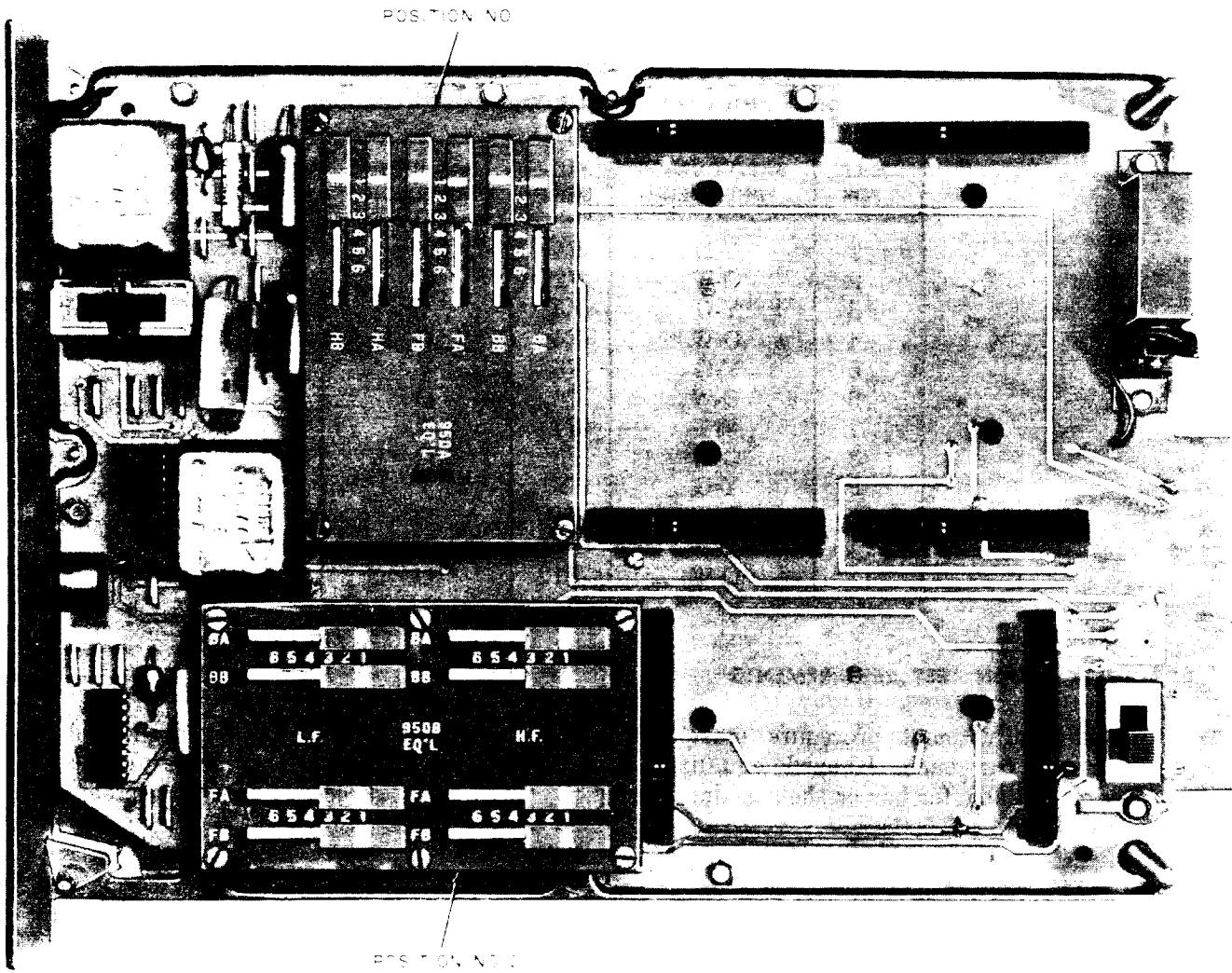


Fig. 1—J99347AA (or J-Board Equalizer) With Two 950-Type Equalizers

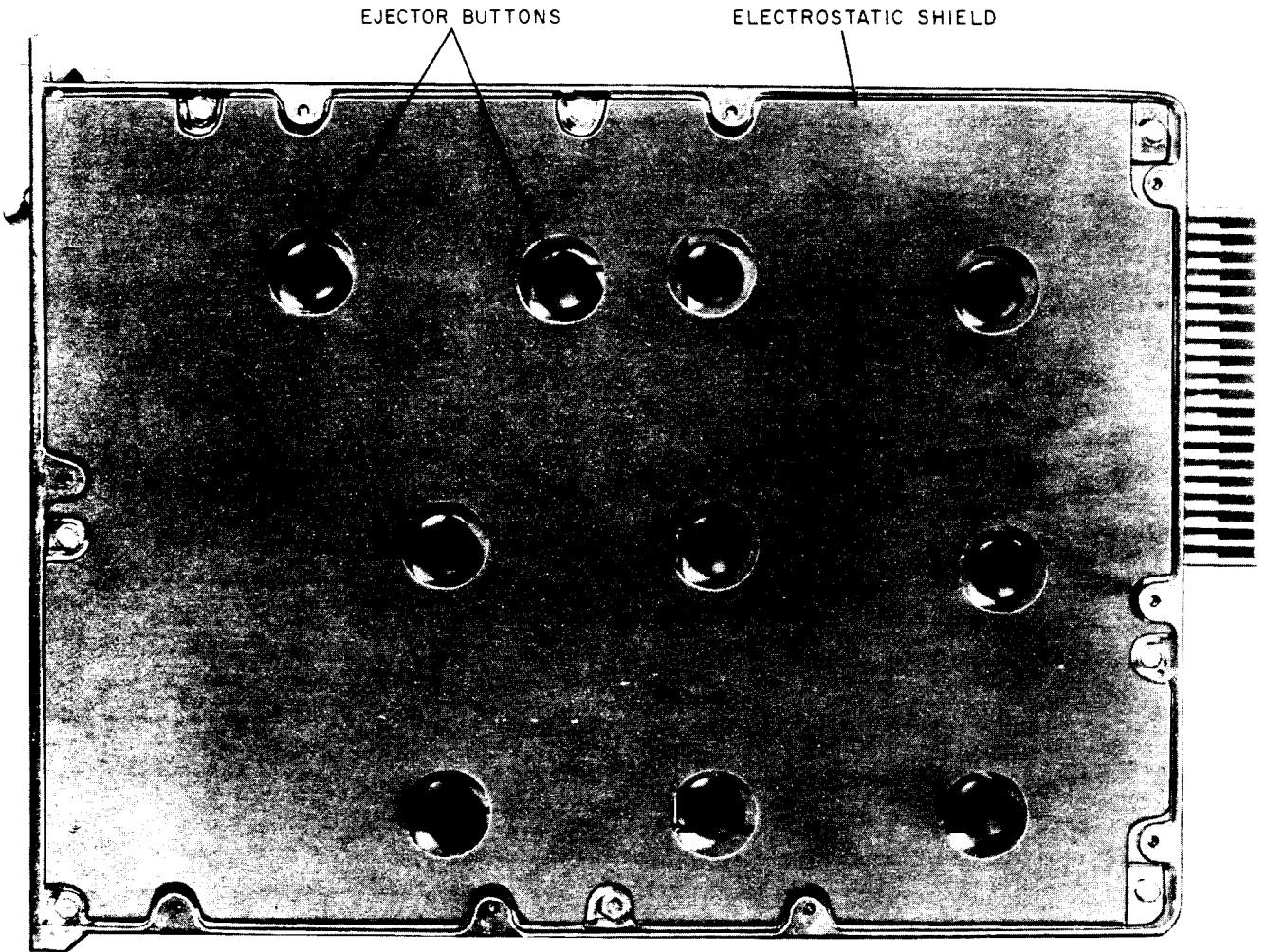


Fig. 2—J99347AA (J-Board Equalizer)—Rear View