

**J99343BA, BB, AND BC 2-WIRE TRANSMISSION UNITS,
ATP-4 600/900 OHM DC BYPASS UNIT,
AND ATP-5 BYPASS TEST UNIT
DESCRIPTION
METALLIC FACILITY TERMINAL**

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1. GENERAL

1.01 This section describes three nongain 2-wire transmission units (J99343BA, BB, and BC) for the Metallic Facility Terminal (MFT). These units are used in the transmission unit slots of double-module MFT mounting shelves (J99343A) to provide access to the dc signaling path for the associated MFT signaling unit. This section also describes the ATP-4 and ATP-5 units, which are used for special applications.

1.02 The reasons for reissuing this section are listed below. Revision arrows are used to emphasize the more significant changes. The Equipment Test List is not affected.

(1) To change the section title

(2) To add descriptive information on the ATP-4 600/900 Ohm dc Bypass Unit and ATP-5 Bypass Test Unit.

2. TWO-WIRE TRANSMISSION UNIT (J99343BA)

2.01 The J99343BA 2-wire transmission unit (Fig. 1) is now rated manufacture discontinued. It was designed to allow signaling lead access for the loop signaling repeater (LSR) and loop signaling extender (LSE). Fully modified J99343BA units include most features of the replacement unit J99343BC.

2.02 The J99343BA is a passive transformer-coupled device with selectable input and output impedances (600 or 900 ohms). A capacitor in series with the transformer windings provides access to the A and B leads on both sides of the unit. Figure 2 is a schematic diagram of the J99343BA. The A-side impedance is selected by a slide switch on the front panel (SWG Z) while the B-side impedance switch is designated STA Z. Buildout resistance (BOR) is available to limit the current in the signaling path. A switch designated SWG BOR is for the A-side A and B leads, and a switch designated STA BOR controls the B-side A and B leads. A switch on the front panel designated NOR/REV controls the connection of the TR (A-side) and T1R1 (B-side) leads to the transformer windings. In the normal mode, the TR leads are connected to the A-side of the transformer and the associated A and B leads connect to the A-side of the signaling unit. In the reverse mode, the T1R1 leads are connected to the A-side of the transformer and the associated A and B leads are connected to the A-side of the signaling unit. This results in reversing the signaling leads to the signaling unit.

2.03 When the J99343BA is used in a central office to interface a 2-wire switch, impedances of 900

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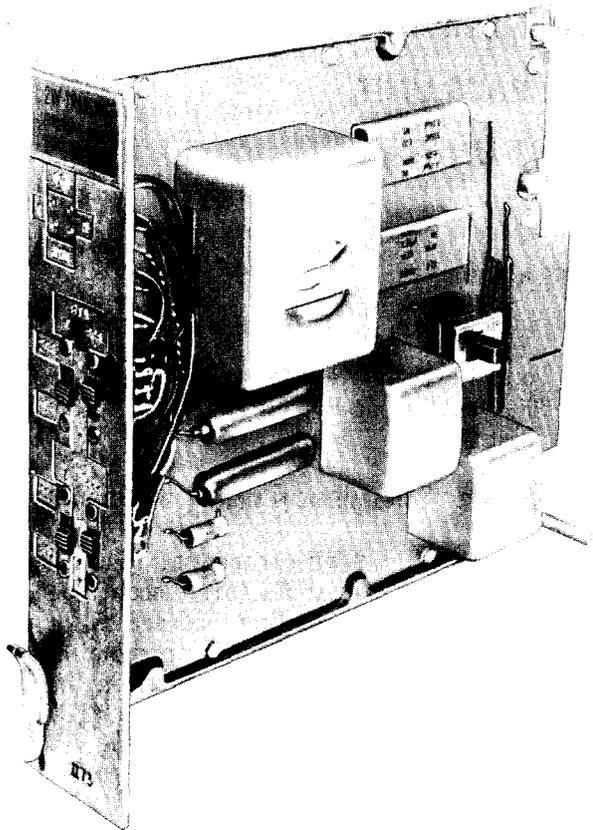


Fig. 1—Two-Wire Transmission Unit J99343BA

ohms should be selected for both sides. If located at a 600-ohm PBX, the side facing the PBX should be set to 600 ohms impedance and the facility side set to 900 ohms.

3. BYPASS TRANSMISSION UNIT (J99343BB)

3.01 The J99343BB bypass transmission unit (Fig. 3), CPS3 of SD-1C359-01, is designed to allow MFT signaling units to be used with 44V4 or 24V4 equipment.

3.02 The J99343BB unit is connected to the SX or A and B leads of the 44V4 or 24V4 equipment and connects these leads to the associated MFT signaling unit. Transmission characteristics are controlled by the V4 equipment since the bypass transmission unit is in the signaling path only.

3.03 Buildout resistors for both the switching (SWG BOR) and station (STA BOR) sides are

available to limit the signaling current in short loops. A switch (NOR/REV) mounted on the printed wiring board allows interchange of A and B signaling unit leads with the A or B side of the transmission unit. Figure 4 is the schematic diagram of the bypass transmission unit.

4. TWO-WIRE TRANSMISSION UNIT (J99343BC)

4.01 The J99343BC 2-wire transmission unit (Fig. 5), CPS7 of SD-1C359-01, replaces the J99343BA unit. The function is the same as the J99343BA unit, and modifications to improve compatibility have been made. The buildout resistors have been removed since their function is now provided by the associated signaling units.

4.02 Other features of the J99343BC unit include the following:

- Increased ringing range when the LSR uses a common ringing source (ringing and regenerated ringing are in phase)
- Compatibility with ground-start circuits (1.62 μ F midpoint capacitors)
- Provision of Switched Maintenance Access System (SMAS) access connections
- Access to AS1 and AS2 leads
- Improved echo return loss (ERL)
- Shorting switches on SX inductors
- Reversing switch in signaling leads instead of reversing transformer connections
- All switches mounted on the printed wiring board to prevent accidental operation.

4.03 The schematic diagram of the J99343BC 2-wire transmission unit is shown in Fig. 6. The operation of screw switch SB1 causes an improvement in the ERL measured through the unit by inserting resistor R1. The insertion of R1 increases the 1-kHz loss measured through the unit by 0.4 dB. In applications which do not have a return loss requirement, the switch may be opened to reduce the loss of the unit as shown in Table A. Table A also shows the electrical characteristics of both the J99343BA and J99343BC units.

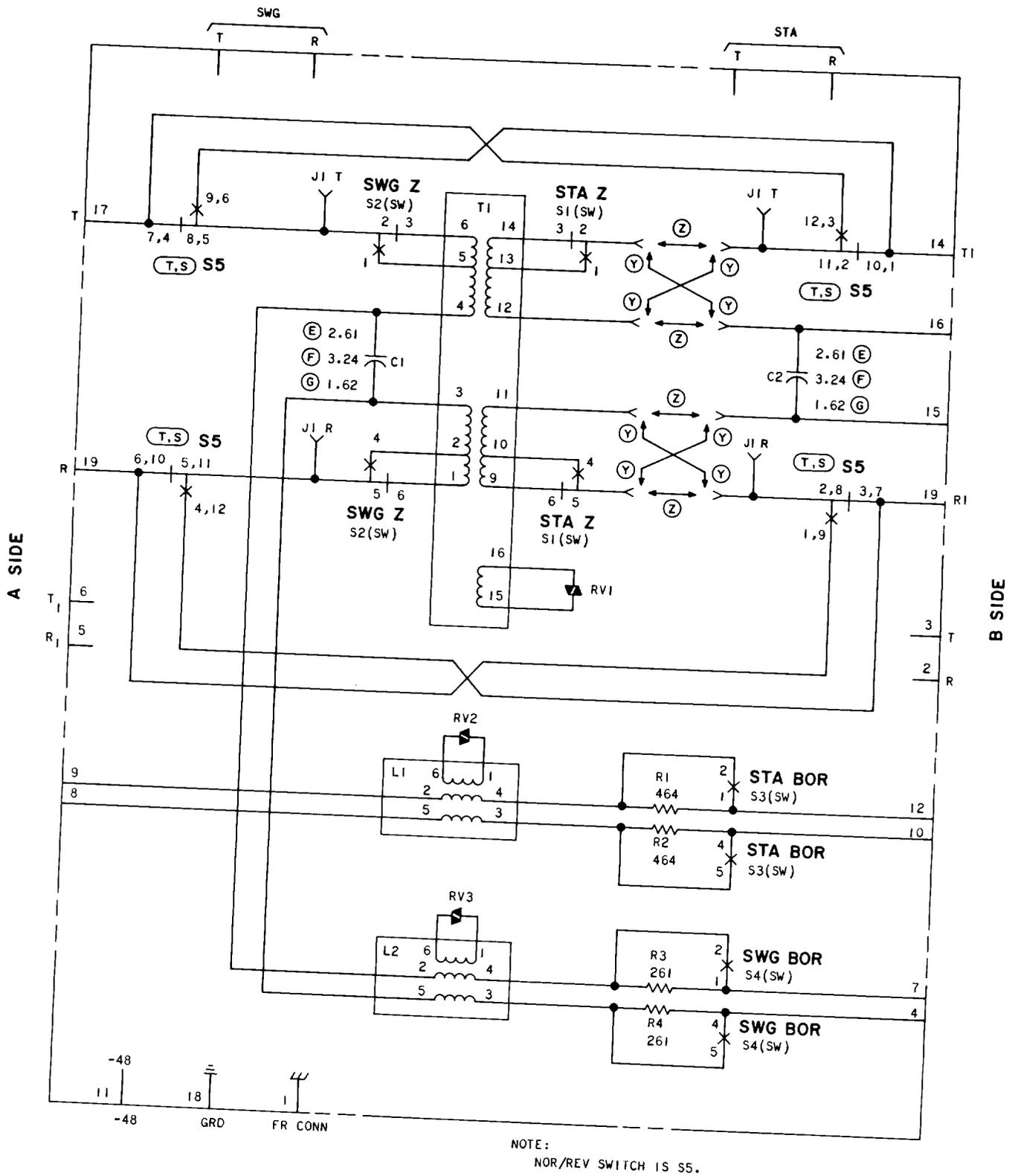


Fig. 2—Schematic of J99343BA 2-Wire Transmission Unit

5. ATP-4 600/900 OHM DC BYPASS UNIT

5.01 The ATP-4 unit (Fig. 7) provides 2-wire passive transmission and 600/900-ohm impedance selection for both the A and B sides of the unit. This unit is electrically similar to the J99343BC unit except that the ATP-4 provides dc bypass (or through) signaling. Signaling lead access is not provided. This unit provides a 600-ohm equipment to 900-ohm equipment impedance match where less than 1 dB of wiring loss separates the two interfaces. Specifically, a 600-ohm PBX can be matched to a SLC* 96 Subscriber Loop Carrier System or D4 900-ohm channel unit where the SLC 96 subscriber loop carrier system or D4 terminal is on customer premises.

5.02 The controls for this unit are as follows:

(a) **A-Side Z and B-Side Z:** 600- or 900-ohm impedance selections are made by slide switches on the component board designated A-side Z and B-side Z.

(b) **NOR/MIN LOSS:** A switch designated NOR/MIN LOSS is provided to change the loss characteristics of the unit. When the switch is in the NOR position, the return loss of the unit is optimized with a small increase in insertion loss. When in the MIN LOSS position, the insertion loss is minimized with a reduction in return loss. See Table A for the J99343BC unit for the insertion loss and echo return loss values for this switch.

6. ATP-5 BYPASS TEST UNIT

6.01 The ATP-5 unit (Fig. 8) may be used by craft as a device for through office continuity testing applications. This unit would be used where through-testing of an MFT transmission slot is required. This will be useful in verifying end-to-end circuit wiring integrity.

6.02 There are no option switches associated with this unit.

7. MAINTENANCE

7.01 Maintenance of all MFT units is by substitution. The J99343TB test extender may be required for access to individual leads for maintenance testing. Defective units should be returned to Western Electric for repair.

8. REFERENCES

8.01 The following references will provide additional information.

REFERENCE	TITLE
332-910-100	General Description of MFT
332-910-102	MFT Test Extender (J99343TB), Description and Operation
332-910-180	General Application Information for MFT
SD-1C359-01	Metallic Facility Terminal Circuit
CD-1C359-01	Common Systems—Metallic Facility Terminal Circuit

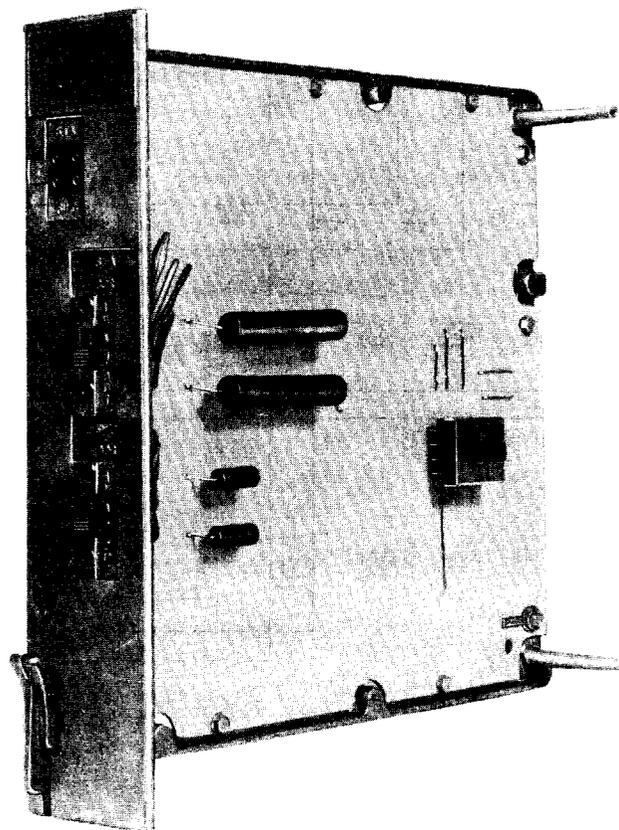
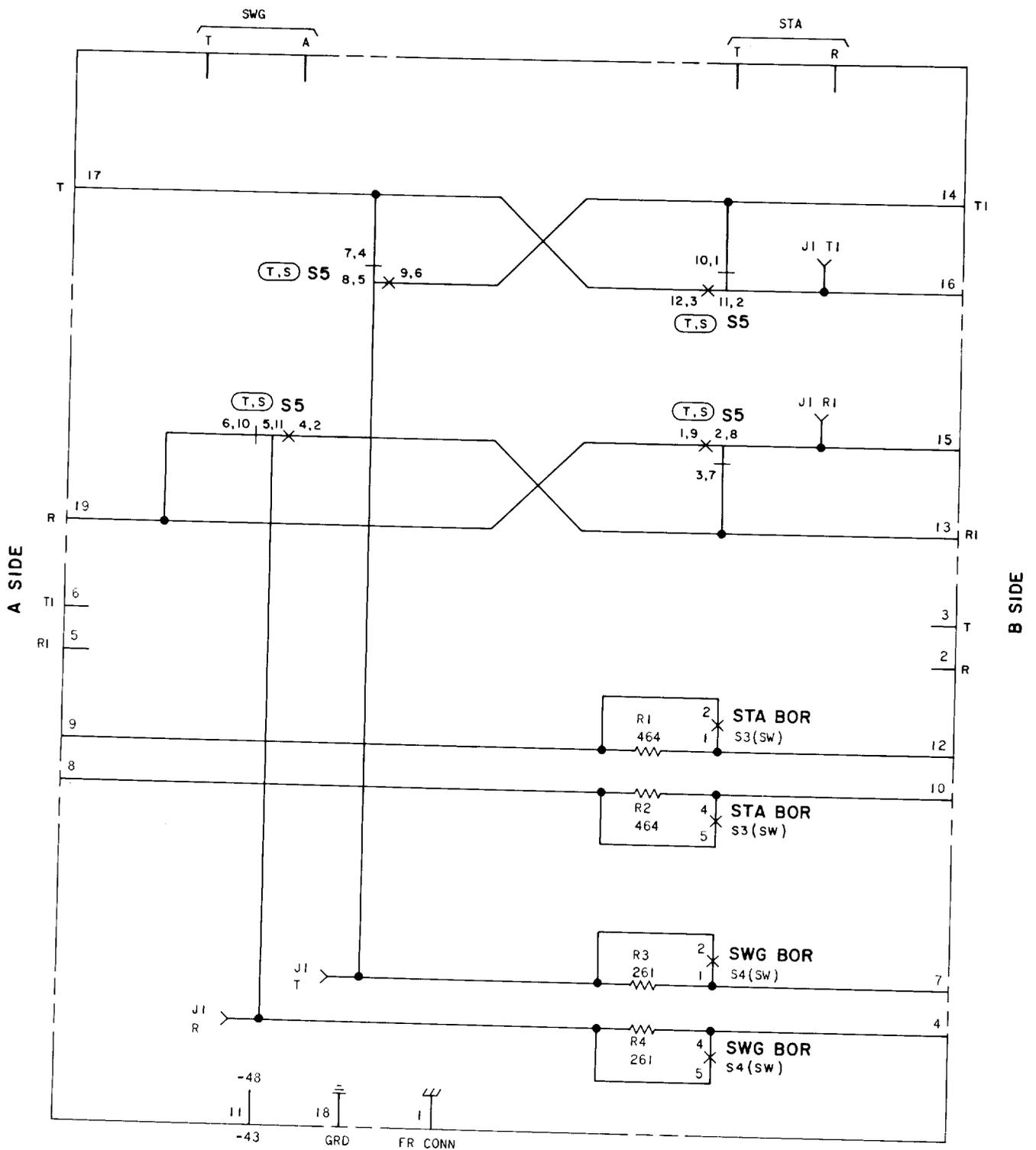


Fig. 3—Bypass Transmission Unit J99343BB

*Trademark



NOTE:
NOR/REV SWITCH IS S5.

Fig. 4—Schematic of J99343BB Bypass Transmission Unit

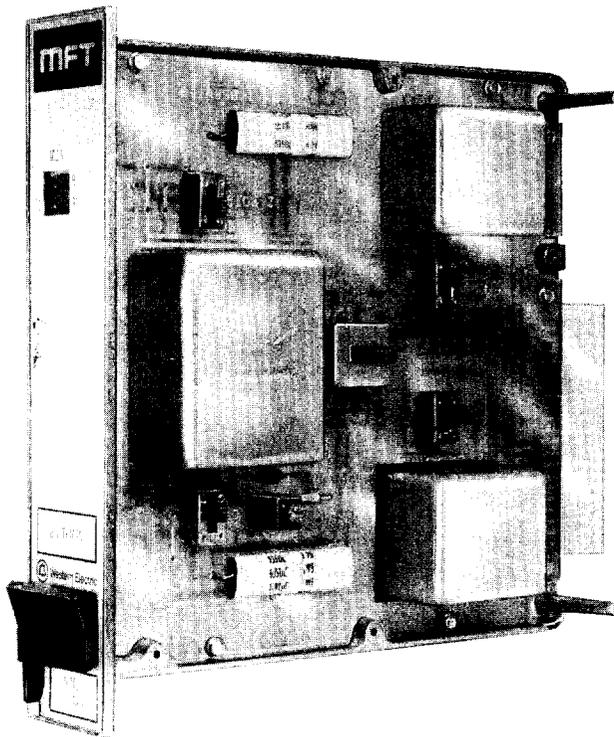


Fig. 5—Two-Wire Transmission Unit J99343BC

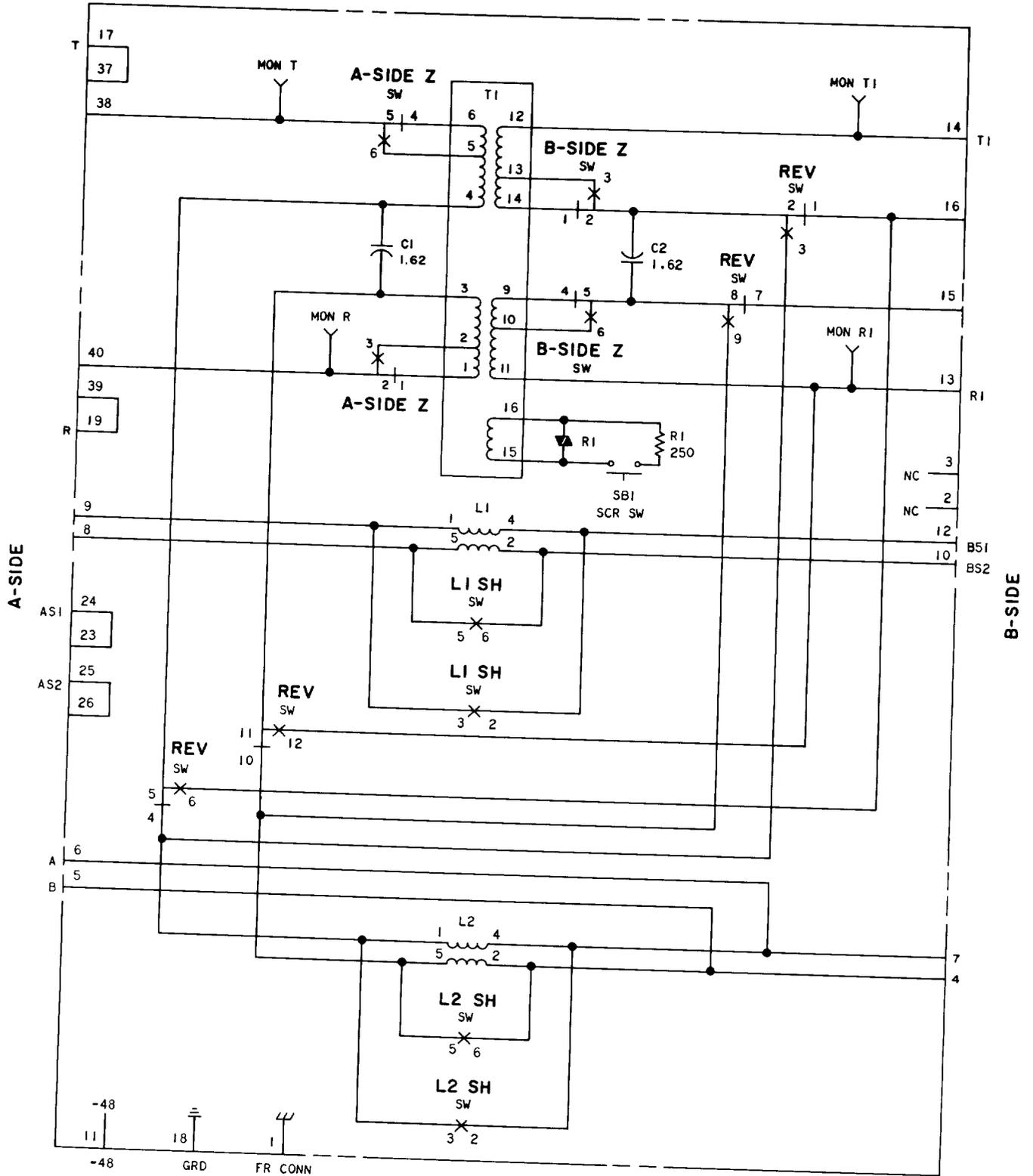
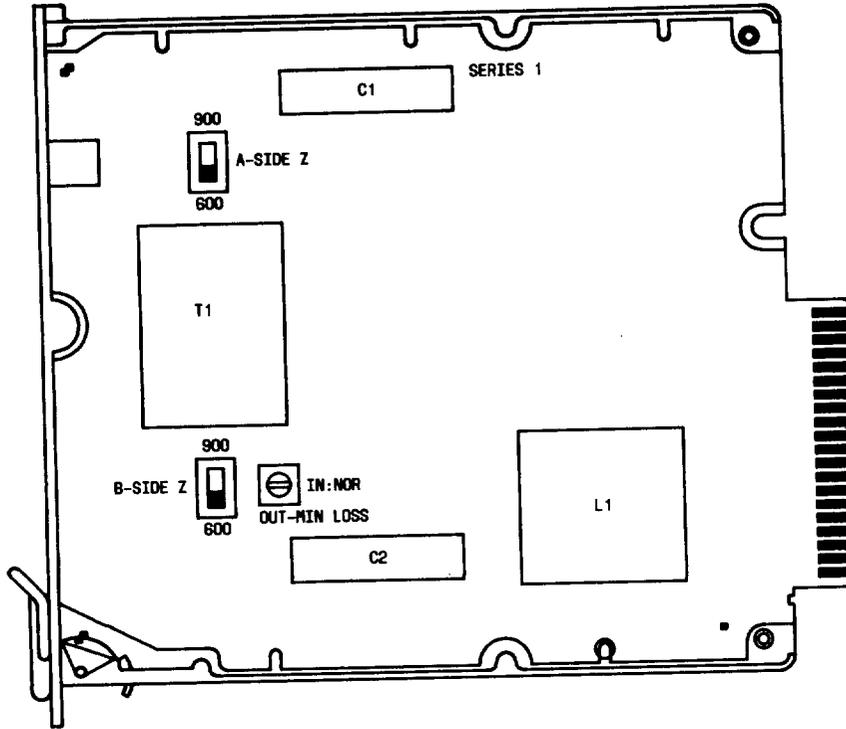
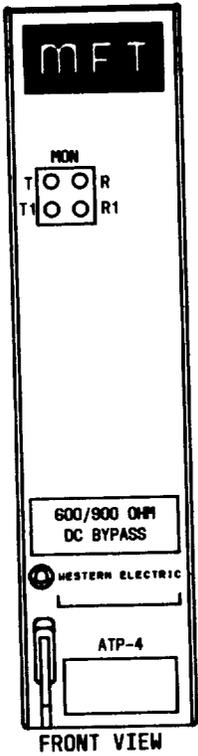
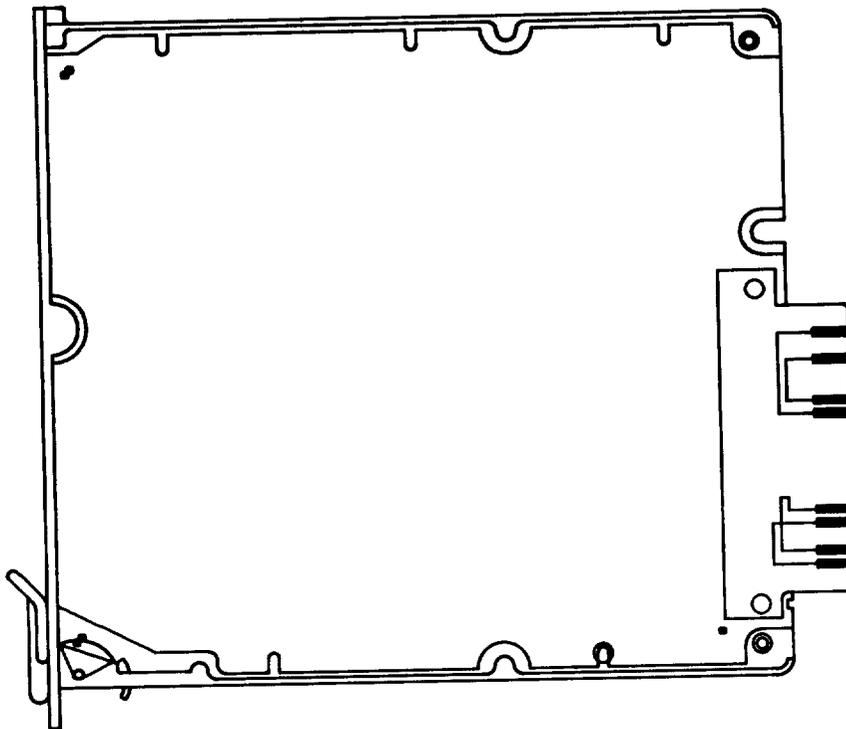
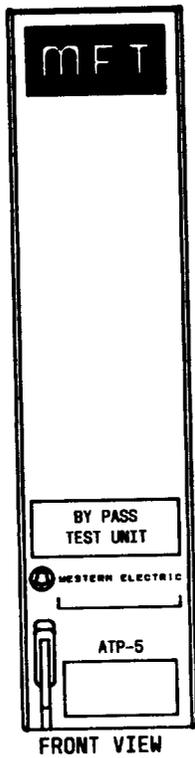


Fig. 6—Schematic of J99343BC 2-Wire Transmission Unit



◆ Fig. 7—ATP-4 600/900 dc Bypass Unit ◆



◆ Fig. 8—ATP-5 Bypass Test Unit ◆

TABLE A

**ELECTRICAL CHARACTERISTICS OF THE J99343BA
AND BC 2-WIRE TRANSMISSION UNITS**

		J99343BA-2,L2A (2.61 μ F CAP)		J99343BA-2,L2,A,C (1.62 μ F CAP)		J99343BC AND ATP-4	
Loss (1000 Hz)	A B					R-IN	R-OUT
	900:900	0.4 dB		0.4 dB		0.8 dB	0.4 dB
	600:600	0.6 dB		0.6 dB		1.0 dB	0.6 dB
	600:900	0.5 dB		0.5 dB		0.9 dB	0.5 dB
A-Side ERL with 600 or 900 +2.16 μ F Termination on the B-Side	A B						
	900:900	27 dB		24 dB		29 dB	24 dB
	600:600	24 dB		20 dB		24 dB	20 dB
	600:900	27 dB		24 dB		29	24 dB
	900:600	24 dB		20 dB		24 dB	20 dB
DC Resistance	(Ω)	BOR IN	BOR OUT	BOR IN	BOR OUT	SX IN*	SX OUT*
	A-Side (SWG)						
	900	682	160	682	160	115	40
	600	677	155	677	155	110	35
B-Side (STA) No SX, BOR	900		44		44		44
	600		37		37		37
With SX, BOR Connected	900	1092	164	1092	164	119	44
	600	1085	157	1085	157	112	37

* J99343BC only.