

**METALLIC FACILITY TERMINAL**  
**2-WIRE DUAL REPEATER (J99343PL)**

**SD-1C359-01**

**DESCRIPTION**

	<b>CONTENTS</b>	<b>PAGE</b>
<b>1.</b>	<b>INTRODUCTION . . . . .</b>	<b>1</b>
<b>2.</b>	<b>APPLICATION . . . . .</b>	<b>1</b>
<b>3.</b>	<b>EQUIPMENT ARRANGEMENT . . . . .</b>	<b>3</b>
<b>4.</b>	<b>CIRCUIT DESCRIPTION . . . . .</b>	<b>3</b>
<b>5.</b>	<b>MAINTENANCE . . . . .</b>	<b>3</b>
<b>6.</b>	<b>REFERENCES . . . . .</b>	<b>5</b>

adjustable between approximately 1.0 dB and 7.5 dB. The maximum output available at each 2-wire port is +10.0 dBm.

**1.05** Two gain controls, one per repeater, are mounted on the faceplate of the unit. Each repeater has a gain control that adjusts the gain in both directions of transmission simultaneously.

**2. APPLICATIONS**

**2.01** The major application of the J99343PL dual terminal repeater unit is the termination of message trunk circuits using H88 loaded facilities. Each repeater performs the same functions as an E6 repeater equipped with an 830A or 830J line build out (LBO) network.

**2.02** The advantages of using the J99343PL unit as opposed to comparable E6 equipment include: quicker and easier adjustments, no stockpiling of LBO networks, and high circuit density (one single module MFT mounting shelf will serve 24 individual circuits).

**2.03** The J99343PL repeater units may be used with single gauge or mixed gauge H88 loaded cable facilities. When mixed gauge cables are used, the predominant gauge is used for setting the repeater.

**2.04** Because there are two repeaters on each plug-in unit, administration of the J99343PL units may be simplified if both circuits served by a unit are in the same trunk group.

**2.05** DC signaling is passed through the repeaters and no access is available for companion MFT signaling units. In applications where an MFT signaling unit is required in conjunction with a

**1. INTRODUCTION**

**1.01** This section describes the J99343PL 2-2 wire dual terminal repeater unit which is part of the Metallic Facility Terminal (MFT) family. These units are intended for terminal repeater applications where signaling extension is not required. They may be used with H88 loaded 19-, 22-, 24-, or 26-gauge high capacitance cable and 25-gauge Metropolitan Area Trunk (MAT) cable. The primary use for these repeaters is in message telephone circuits.

**1.02** When this section is reissued, the reason for reissue will be given in this paragraph.

**1.03** The J99343PL repeater unit, Fig. 1, consists of two complete and identical 2-wire repeaters in a single MFT plug-in unit. The unit uses the same lead plan as a 4-4 MFT repeater.

**1.04** Each of the two repeaters contain two amplifiers, one for each direction of transmission. The overall 1000-Hz gain of the two amplifiers in each repeater is continuously

**NOTICE**

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

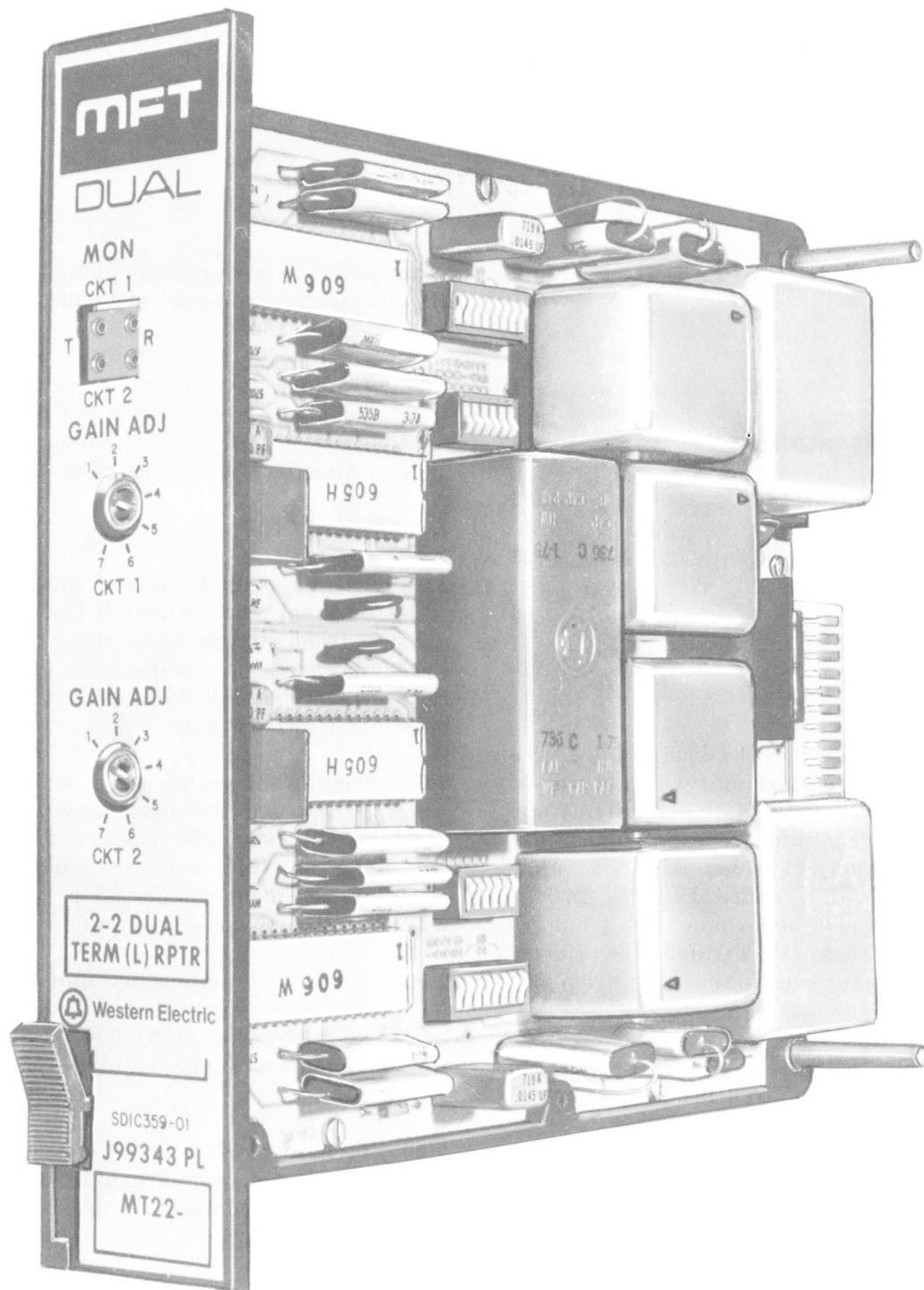


Fig. 1—J99343PL 2-Wire Dual Terminal Repeater Unit

terminal loaded repeater, as in special services, the J99343PG 2-wire repeater should be used with the appropriate signaling unit.

### 3. EQUIPMENT ARRANGEMENT

**3.01** The J99343PL 2-2 wire dual terminal repeater unit is an MFT plug-in unit with dimensions identical to other MFT transmission units.

**3.02** The unit is arranged with the circuit 1 repeater mounted on the top half of the printed circuit board and the circuit 2 repeater on the bottom half of the board.

**3.03** Associated with each repeater are six switches for adjusting the line build-out capacitor (LBOC) and eight switches for selecting the cable gauge. These switches, shown in Fig. 2, are miniature rocker-type switches. Settings for these switches are covered in Section 332-912-241.

**3.04** The 2-wire transmission ports of the repeaters conform to the standard MFT plan. The A side of each repeater is connected toward the switching machine, and the B side of each repeater is connected toward the cable facility.

**3.05** The MFT mounting must have eight transmission leads wired to the distributing frame (eg, the MFT 4-4 repeater) to utilize both repeaters in the J99343PL unit.

### 4. CIRCUIT DESCRIPTION

**4.01** Figure 3 is a block diagram of the J99343PL MFT unit. The unit consists of two complete 2-2 wire repeater circuits. Each repeater consists of two line transformers, one active compromise hybrid, one active loaded cable hybrid, and a LBOC.

**4.02** The repeaters are transformer-coupled on both the A side (office) and B side (facility). The transformers supply line isolation and with the use of midpoint capacitors, derive dc signaling and route it around the voice frequency circuitry by way of SX inductors.

**4.03** The gain, equalization, and active hybrid functions are provided by integrated circuits.

**4.04** Gain-adjust controls, one per repeater, which are accessible from the faceplate of the unit, control the gain of the repeaters. Ganged

potentiometers in each repeater allow the simultaneous adjustment of both directions of transmission.

**4.05** The A-side hybrid of each repeater is designed to balance 900 ohms in series with 2.15  $\mu$ F central office equipment and no adjustments are necessary.

**4.06** The B-side (facility) hybrid of each repeater is designed to balance H88 loaded, various gauge cable which has been built out to an equivalent 6 kft end section. To obtain the proper balance, switches for selecting the gauge of the cable and for adjusting the LBOC section are available.

**4.07** The cable gauge setting for each repeater is accomplished by positioning eight miniature rocker-type switches, one each for 19-, 22-, 24-, and 26-gauge cable and four for the 25-gauge MAT cable.

**4.08** The LBOC is used to build out a partial end section of H88 loaded cable to the electrical equivalent of a full end section of 6 kft.

**4.09** The LBOC setting for each repeater is adjusted by positioning six miniature rocker-type switches labeled 002, 004, 008, 016, 032, and 064. The designation associated with each switch corresponds to the capacitance value placed across the cable pair by operating the switch. Adjustment of the LBOC is covered in Section 332-912-241.

**4.10** The J99343PL repeaters feature fixed equalization; therefore, no equalizer adjustments are necessary. This is possible as these units are designed for H88 loaded facilities only.

**4.11** Power necessary to operate the active components of both repeater circuits is derived from a common transistor regulator circuit. The -48 volt central office battery is converted to the required -24 volt dc, filtered, and connected to the active circuitry.

### 5. MAINTENANCE

**5.01** Due to the proven reliability of MFT equipment, trouble incidence due to defective repeaters should be quite low after equipment has been properly adjusted and tested.

**5.02** When a repeater is suspected of being defective, and all adjustments and

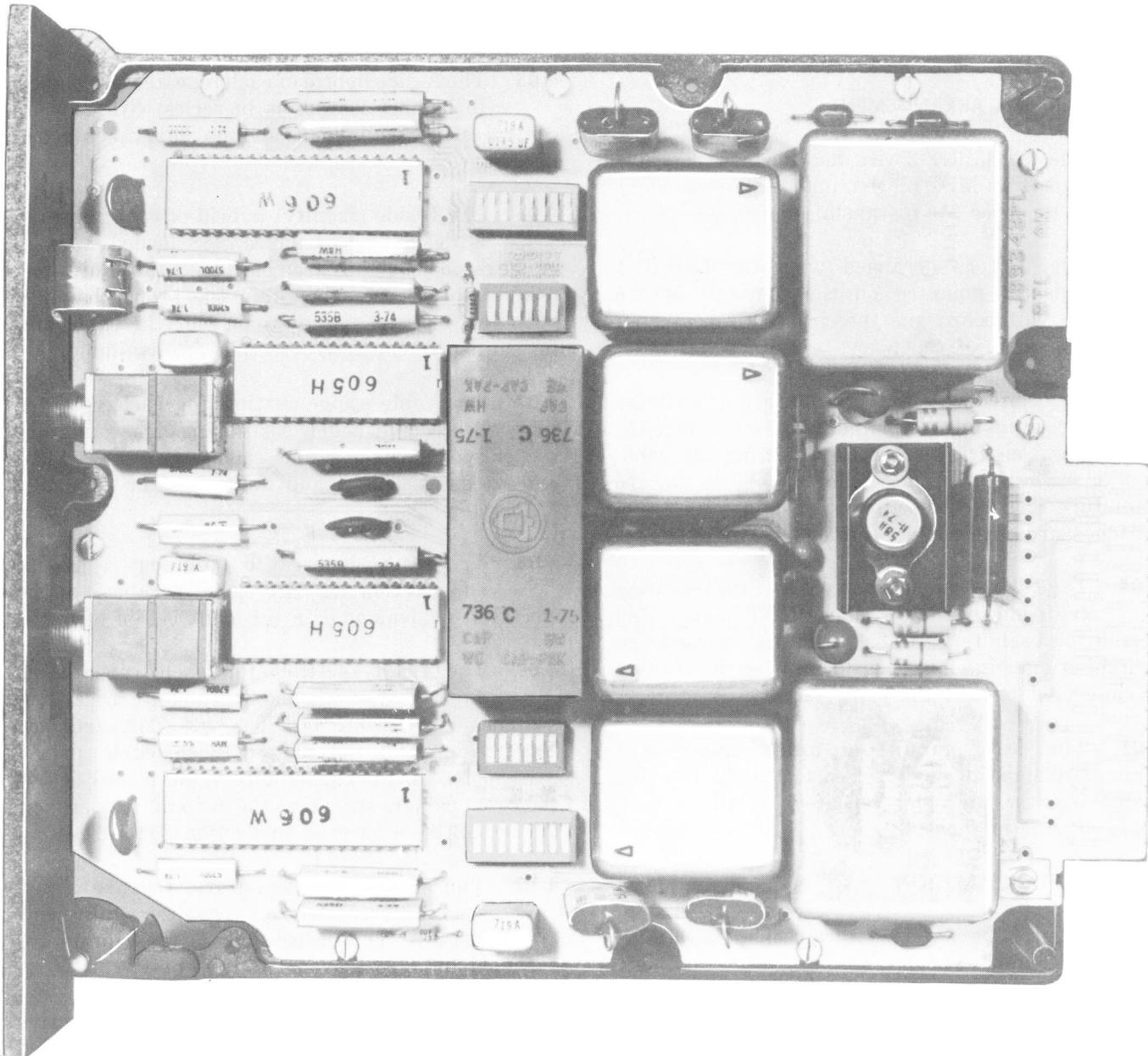


Fig. 2—Side View of J99343PL Repeater Showing LBOC and Gauge Switches

cross-connections are correct, the unit should be replaced with another unit of the same type. Before installing the replacement unit, adjust the rocker switches to the same positions as the original unit.

**Note:** Removing a dual repeater unit that has both repeaters in service will affect two circuits. When replacing a unit, it will be necessary to set the gain on both repeaters.

**5.03** The repeater gains may be adjusted without removing the unit from its mounting when transmission measuring points are available.

**5.04** The J99343TB MFT test extender may be used to gain jack access to both sides of the unit. The MFT test extender description and operation is covered in Section 332-910-102.

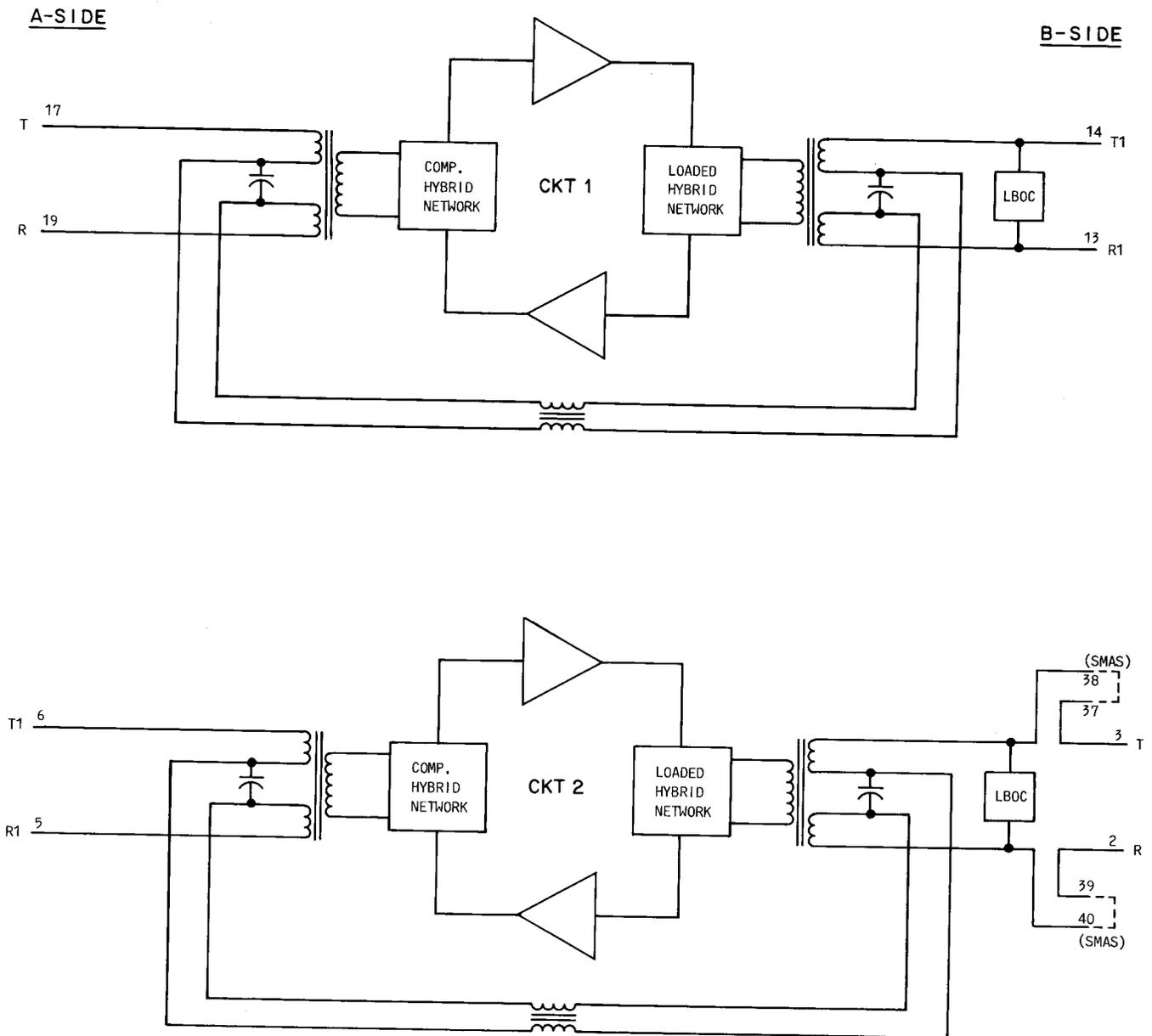


Fig. 3—Block Schematic of J99343PL Repeater Unit

5.05 When a J99343PL unit is found to be defective, it should be returned to Western Electric Company for repairs, as no attempts to repair the unit should be made in the field.

6. REFERENCES

6.01 The following documents should be referred to for additional information as needed.

DOCUMENT	SUBJECT
CD-, SD-1C359-01	MFT Circuit
CD-, SD-1C485-02	MFT Test Extender (J99343TB)
332-910-100	MFT General Description
332-910-101	MFT Shelf, Frame, Power Panel and Distributing Frame Arrangements—Description

**SECTION 332-912-141**

332-910-102

MFT Test Extender Description  
and Operation

332-912-241

MFT Installation and Line-Up  
of J99343PL 2-Wire Dual  
Terminal Repeater Unit

332-910-180

MFT General Application  
Information