RECTIFIER
KS-19412 (TEST VOLTAGE SUPPLY)
OPERATING METHODS

1. GENERAL

1.01 The KS-19412 L1 rectifier is designed to supply dc power to the master control center and the local No. 3 test cabinet for testing subscriber lines and trunk facilities in the No. 1 Electronic Switching System.

1.02 This section is reissued to correct technical errors in testing the output voltages and to revise the routine checks and adjustments procedures. This reissue does affect the Equipment Test List.

Caution: Voltages inside the rectifier case may exceed 200 volts to ground. Avoid all contact with terminals as high voltages may be present. Do not allow a test pick to touch two metal parts at the same time as destructive or dangerous short circuits may occur. Disconnect the alternating current supply by removing the ac input fuse before working on the rectifier, except when it is necessary to have the rectifier operating.

1.03 This rectifier provides regulated dc output voltages from an input source of 117-volt, 60-Hz ac power. The rectifier utilizes a ferroresonant regulating transformer and its associated ac capacitor. The isolated secondary windings are connected to full-wave silicon rectifiers followed by capacitance filters and bleeder resistors.

1.04 The rectifier is rated to deliver 0 to 0.1 ampere from any one of the dc voltages at a time. The maximum current from any output is limited by fuses. The output voltages and the associated maximum output current for each voltage are given in the following list.

OUTPUT VOLTAGE	ASSOCIATED CURRENT
+200 volts dc	0.25 ampere
+116 volts dc	0.75 ampere
+100 volts dc	0.25 ampere
+ 20 volts dc	0.75 ampere
−116 volts dc	0.75 ampere

1.05 ▶Since the test voltage supply is not critical and is only used for testing by an attendant who will detect, correct, and report malfunctions, alarm signals for rectifier failure or fuse operation are not required. Therefore, connections to the No. 1 ESS alarm grid, master scanner, or maintenance bus are not furnished.◀

1.06 For more detailed information on the operation and maintenance of individual equipment or apparatus, refer to the appropriate Bell System Practice.

1.07 The instructions in this practice are based on the Power Data, Section 4.35, Sheet 20 for the KS-19412 Rectifier. There are no available circuit description sheets.

2. TEST APPARATUS

CODE OR SPEC NO.	DESCRIPTION
KS-14510	Volt-Ohm-Milliammeter

3. OPERATION

3.01 ▶The rectifier is designed so that the ac input line voltage variations of ±10 percent will not cause the output voltage to vary more than ±1/2 percent. The output voltage regulation due to load variations of 0 to 100 milliamperes should not exceed 3 percent.◀

3.02 The rectifier has no disconnecting switches. It is connected to the ac input power circuit when the ac input fuse is in place. If it is necessary to take the rectifier out of service for checks or adjustments, remove the ac input fuse. To restart, replace the ac fuse. To disconnect any one of the output circuits, remove the associated output fuse.

4. ROUTINE CHECKS AND ADJUSTMENTS

4.01 ▶The availability of the test voltage supplies does not affect customer service. Accordingly, the test voltage supplies are provided by a single rectifier without batteries or alternate rectifier with parallel or transfer arrangement. Also, there is no requirement to provide test voltages under power failure conditions or to meet electrical requirements when primary power is furnished by the emergency engine-alternator.

4.02 The +100 volt dc supply is the only voltage that is adjustable. This is a precise adjustment and arrangements should be coordinated with the attendant at the No. 3 test cabinet to assist in this adjustment of $+100 \pm 0.25$ volts. The adjustment tolerance of 0.25 volt is one-quarter of the smallest division of the 120-volt scale of the S9A meter which is provided in the test cabinet. While the attendant at the test cabinet is observing the +100 volt dc supply, rotate the R1 potentiometer, as required, to achieve an indication of $+100 \pm 0.25$ volts.◀

5. TROUBLES

5.01 Each output voltage may be tested by connecting the KS-14510 volt-ohm-milliammeter to the appropriate test voltage jack and the COM jack provided on the front panel of the rectifier. Before testing any voltage, ensure that the correct meter scale is selected and that the polarity of the meter leads is observed.

Note: The 116- and 200-volt test jacks are provided with current-limiting resistors to limit the current to a maximum of 10 milliamperes; it may be necessary to disconnect the output connector to test these two supplies at no-load.

5.02 Should any of the following troubles develop, it is suggested that the following possible causes be checked. If the trouble is not found, look for loose or open connections or short circuits caused by foreign matter lying across wiring terminals. Any one of the following troubles may be caused by an open or short circuit or by aging or drift in the constants of some components.

TROUBLE	POSSIBLE CAUSE
No output voltage	Failure or disconnection of input power. Blown ac input fuse. Defective transformer, shorted filter capacitors or bleeder resistors.
Low output voltage	Low input power. Excessive load on rectifier. Breakdown of filter capacitors. Defective transformer. Defective rectifying element.
High output voltage	High input power. Defective transformer. Open bleeder resistor.
High ripple voltage	Filter capacitor open. Defective rectifying element.
Erratic output voltage	Fluctuating input power. Intermittent open or short in any component. Defective connections.