

TEST VOLTAGE POWER SUPPLY

J93016

DESCRIPTION, CONNECTION, AND MAINTENANCE

	CONTENTS	PAGE
1.	GENERAL	1
2.	DESCRIPTION	1
3.	CONNECTIONS	3
4.	MAINTENANCE	8

1. GENERAL

1.01 This section contains descriptive, connection and maintenance information for the J93016DM, J93016DN and J93016DP test voltage power supply units.

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

1.03 The J93016 power supply units provide test voltages for use with the No. 14, modified No. 14, and No. 16 local test desks (LTD) and the No. 3 local test cabinet (LTC). These test voltages were previously supplied by dry-cell batteries.

1.04 This issue of Section 662-100-001 is based on the following drawings:

CD- & SD-2P003-01, Issue 1

If this section is to be used with equipment or apparatus reflecting later issues of the drawings, reference should be made to the CD and SD to determine the extent of the changes and the manner in which the section may be affected.

2. DESCRIPTION

2.01 The test voltage power supply consists of three units. The power supply units may

be used separately or may be combined to supply the different test voltages required by the No. 14, modified No. 14, or No. 16 LTD or the No. 3 LTC. Each one of the power supply units provides for voltage outputs as follows:

(a) One J93016DM, List 1 test voltage power supply unit (Fig. 1) provides the 20-volt, 50-volt, and 100-volt test voltages. Terminations are provided for supplying five test desk or test cabinet positions with the 50-volt and 100-volt power supply required for the testing circuits. The 50-volt and 100-volt power supply is connected independently to each LTD or No. 3 LTC position. The 20-volt output may be shared by eight No. 14 LTD positions or ten No. 16 LTD positions.

(b) One J93016DN, List 1 test voltage power supply unit (Fig. 2) provides an output of +118 volts, -118 volts, and +200 volts. The negative and positive 118 volts is used for making the station ringer and coin relay tests. The 200-volt output is used for the insulation breakdown test. The voltage output from one J93016DN, List 1 unit may be shared by eight No. 14 LTD positions or ten No. 16 LTD positions.

(c) One J93016DN, List 2 unit, when combined with the J93016DN, List 1 unit, provides a voltage boost for the coin relay test. The J93016DN, List 2 unit (Fig. 2) boosts the negative and positive 118 voltage by 45 volts and provides an output of +163 volts and -163 volts. The J93016DN, List 1 and List 2 provide a power supply which may be shared by eight No. 14 LTD positions or ten No. 16 LTD positions.

(d) A J93016DP, List 1 unit (Fig. 3) provides the power supply for one Wheatstone bridge test position. Voltage outputs of 20 volts, 50 volts, 100 volts, and 200 volts are provided by the J93016DP, List 1 unit. The No. 14 LTD

NOTICE

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

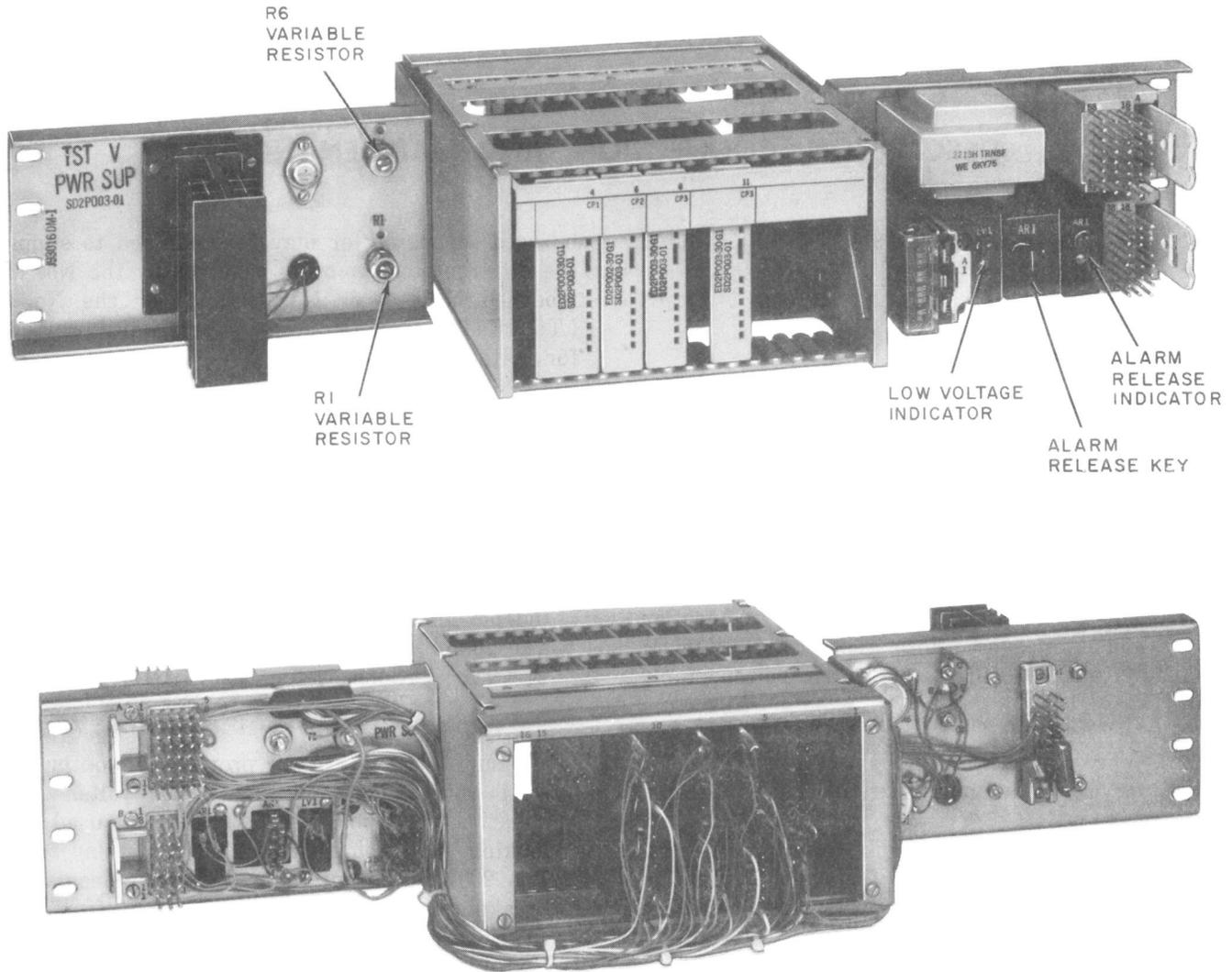


Fig. 1—Front and Rear View of J93016DM Test Voltage Power Supply Unit

position equipped with a Wheatstone bridge would use the J93016DP, List 1 power supply unit.

2.02 Each one of the three types of J93016 units used for supplying the test voltage power supply for LTD and No. 3 LTC positions is mounted on a 4-inch by 23-inch mounting plate. The mounting plates will mount on a standard equipment frame.

2.03 The solid state power supply has a DC to DC converter which operates from the -48 volts of DC central office battery. Central office voltage may vary between -44 volts to -55 volts

and still not affect the output from the DC to DC converter.

2.04 Panel-mounted indicator lamps provide a visual indication of a power supply failure on any one of the test voltage power supply units. The LV1 (low voltage 1) indicator is located on the J93016DM unit. The LV2 indicator is located on the J93016DN unit. The LV3 lamp is located on the J93016DP unit.

2.05 Panel-mounted turn locking keys provide a means of disconnecting both the visual and audible major alarms for the central office. Each

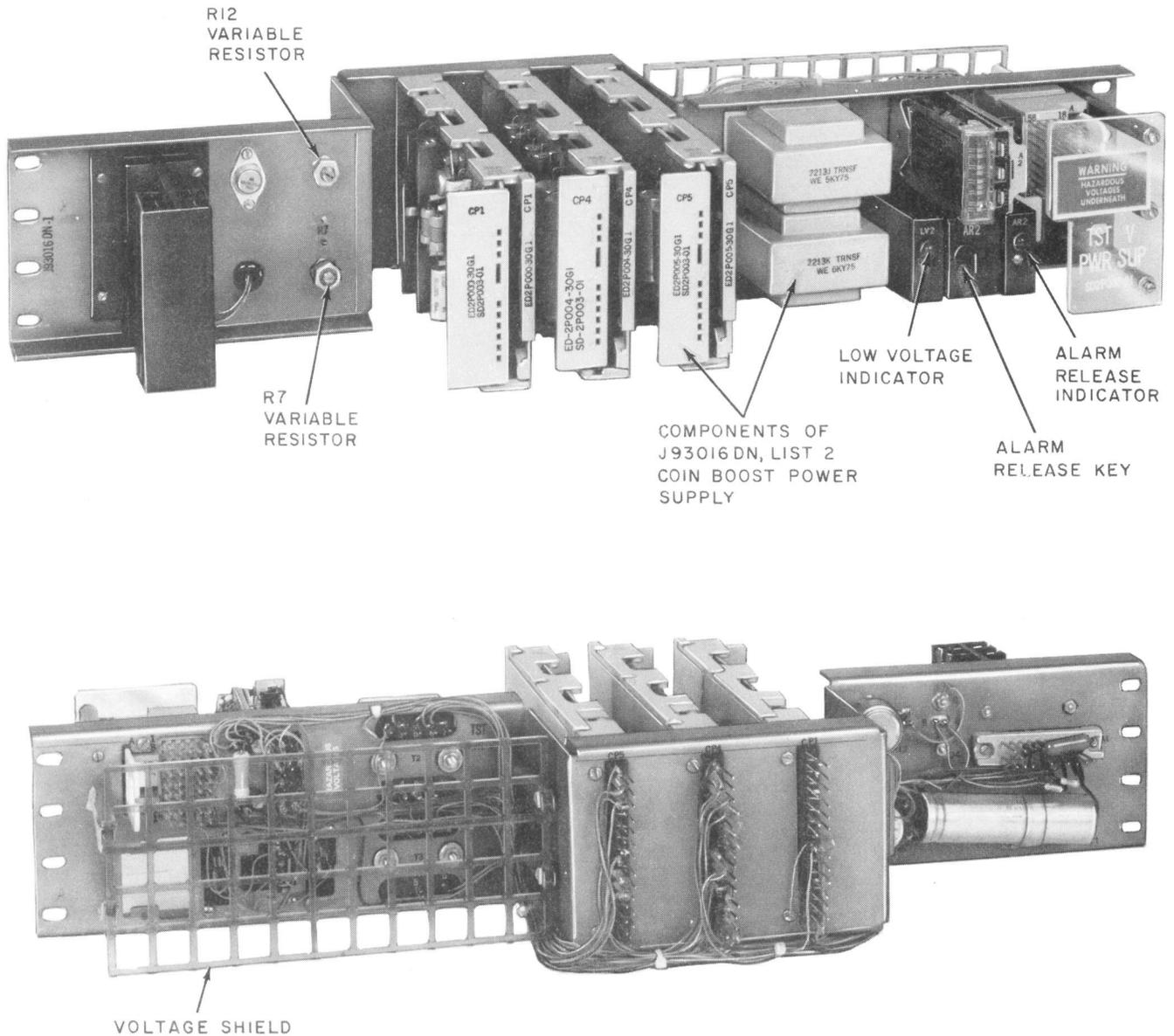


Fig. 2—Front and Rear View of J93016DN Test Voltage Power Supply Unit

alarm retirement key has an associated indicator lamp which illuminates when the key is operated. Operating the AR1 key disconnects the major alarms associated with the J93016DM test voltage power supply unit. The AR2 key provides a means of disconnecting the major alarms associated with the J93016DN power supply unit. The AR3 key provides

a means of disconnecting the major alarm associated with the J93016DP power supply unit.

3. CONNECTIONS

3.01 Figures 4 through 6 provide connection information for each of the J93016 test

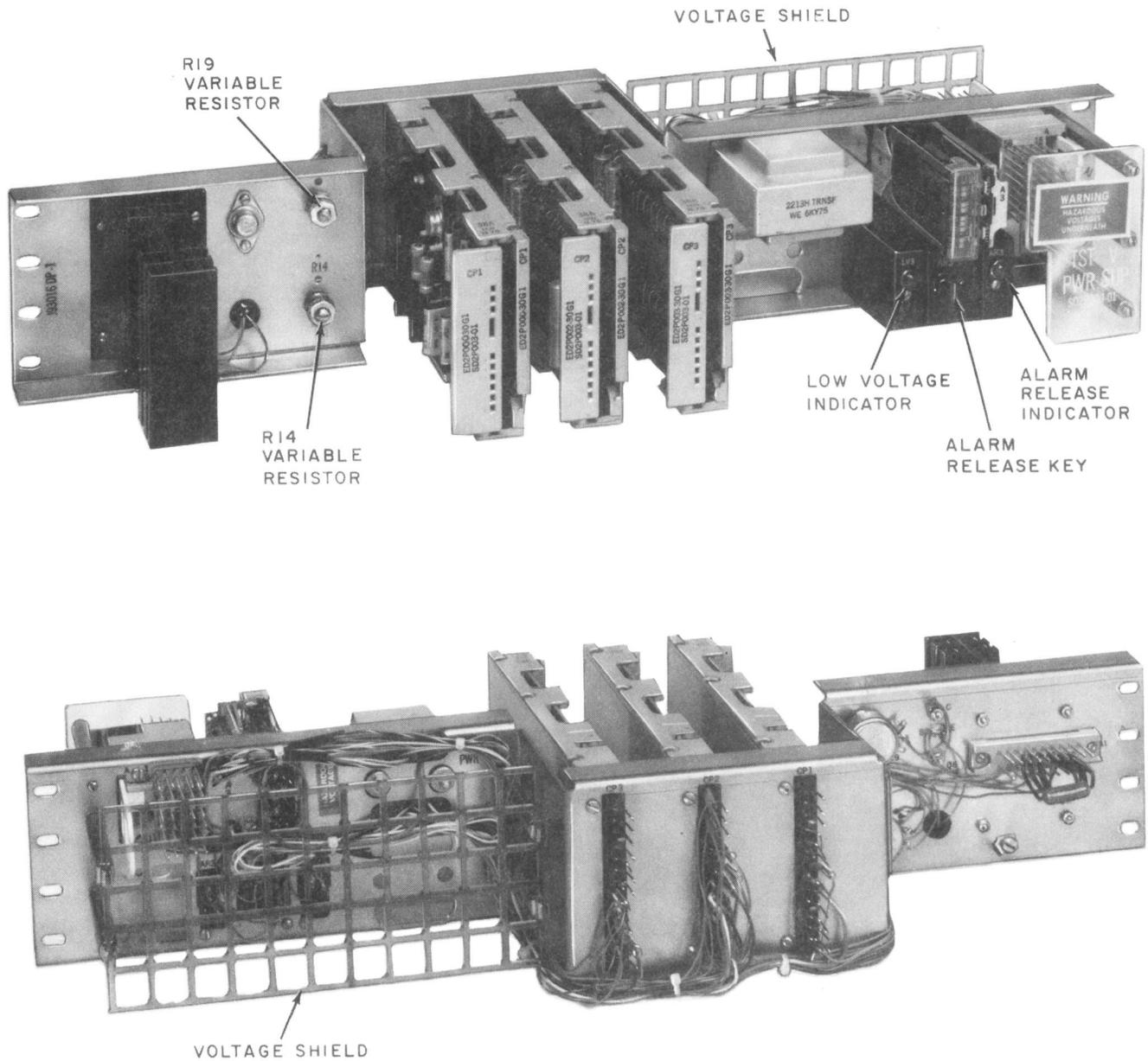


Fig. 3—Front and Rear View of J93016DP Test Voltage Power Supply Unit

voltage power supply units. The proper schematic drawings will be required to make wiring changes to the LTD or LTC circuits. When changing from dry cell batteries to the test voltage power supply, the following circuits will be affected:

Note: Wiring information for the test voltage power supply is included in the following issues or later issues of the schematic drawings.

NO. 14 LOCAL TEST DESK

SD-95612-01 Issue 22B

NO. 16 LOCAL TEST DESK

SD-1C379-01 Issue 6B

SD-1C381-01 Issue 5B

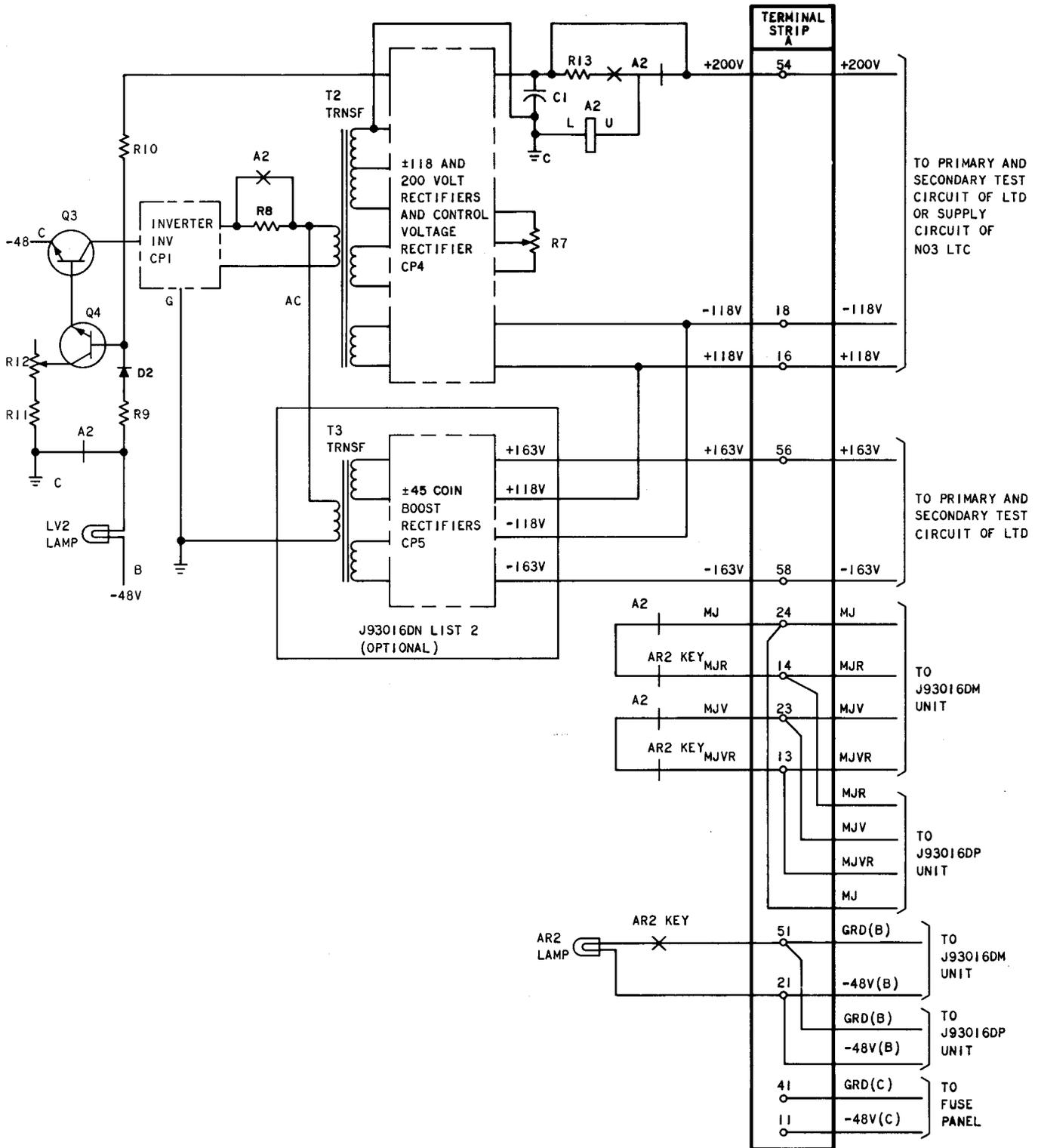


Fig. 5—Connection Arrangement for J93016DN, List 1 and List 2 Unit

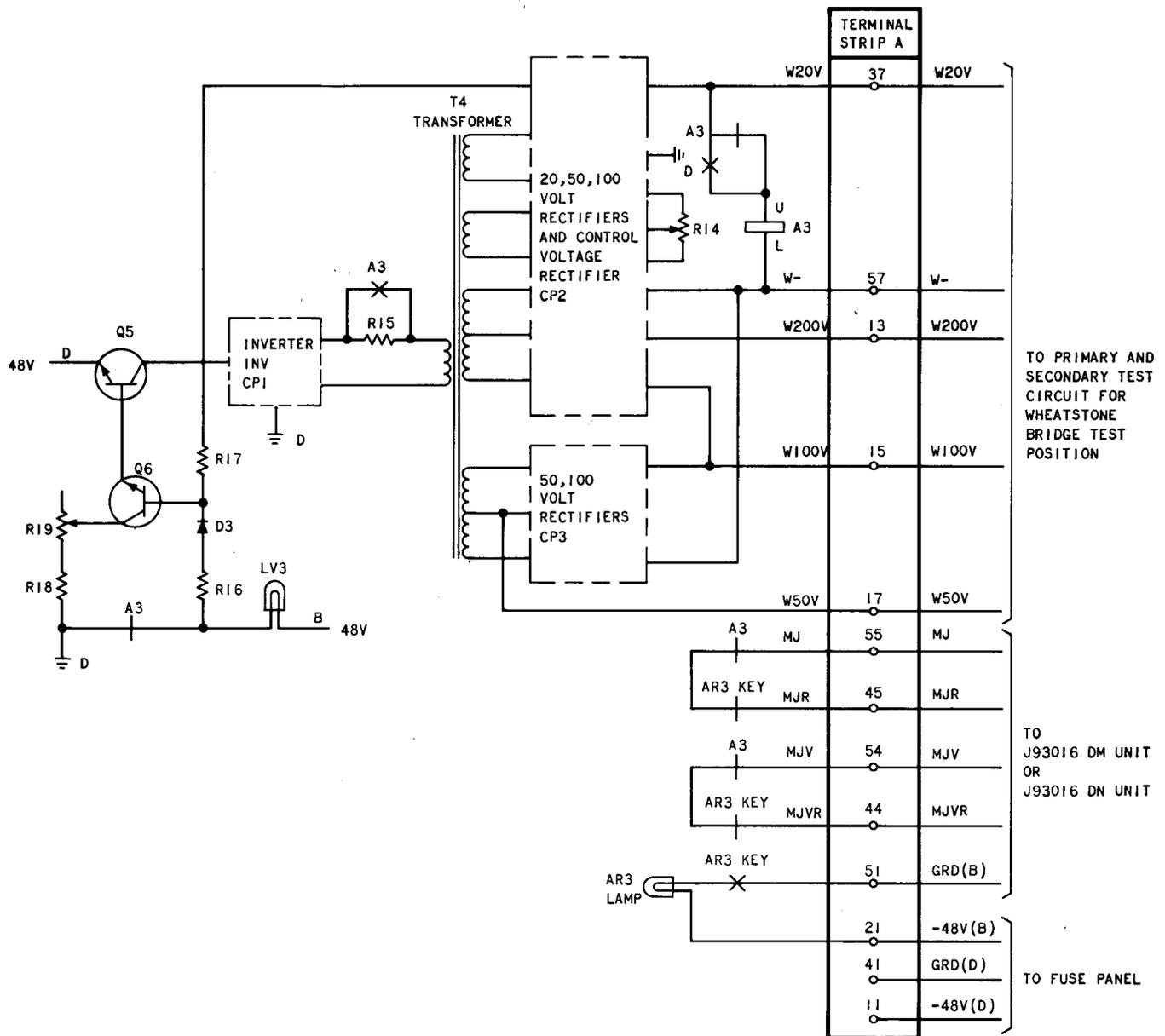


Fig. 6—Connection Arrangement for J93016DP, List 1 Unit

SD-95741-01 Issue 9B

SD-99549-01 Issue 5B

NO. 3 LOCAL TEST CABINET

SD-96205-01 Issue 9B

3.02 When adding the components for the J93016DN, List 2 coin boost voltage power supply (Fig. 2) to the J93016DN, List 1 test voltage

power supply unit (Fig. 2), the connector for the CP5 circuit board and the transformer must be locally wired.

Warning: Remove power from the J93016 test voltage power supply units before attempting any wiring changes.

3.03 The J93016DN and J93016DP test voltage power supply units are equipped with a plastic voltage shield which may be removed, *after*

power has been removed from the units, to make wiring connections. The voltage shield is held in place by four snap-type fasteners. By pulling out on the voltage shield, the snap fasteners will release the shield. The voltage shield may be installed by positioning it properly and applying inward pressure until it snaps into place.

4. MAINTENANCE

Warning: *Hazardous voltages are present on the J93016 units. Exercise care to prevent personal injury or damage to the equipment.*

4.01 If any of the output voltages from the J93016 test voltage power supply units drop below a certain value, the associated low-voltage indicator illuminates, and the major alarm in the central office is activated. Each J93016 unit has a red low-voltage indicator. Refer to 2.04 for information on which low-voltage indicator (LV1, LV2 or LV3) is associated with a particular J93016 unit.

4.02 An operated low-voltage indicator and the associated central office major alarm may be released by operating an alarm release key. An amber alarm release indicator provides a visual indication when an alarm key is operated. Refer to 2.05 for information on which alarm release keys and indicators are associated with a particular J93016 unit.

4.03 Table A provides ordering information on the circuit packs and describes the primary function of each circuit pack.

4.04 Refer to Table B for information on how to verify if the proper input potential from the central office battery is present on the J93016 units.

Note: Before making any adjustments to the output voltage or the input current, verify the DC input voltage is within the working limits of -44V to -55V.

4.05 Table C provides information on the output voltage required from each J93016 unit and what adjustments may be made to establish these voltages. **The required input and output voltages must be provided before making any adjustments to the input current.**

TABLE A

ORDERING INFORMATION FOR
CIRCUIT PACKS USED IN J93016 UNITS
OF TEST VOLTAGE POWER SUPPLY

CIRCUIT PACK FUNCTION	CIRCUIT PACK NUMBER	ORDERING NUMBER
Inverter	CP1	ED-2P000
20-, 50-, 100-Volt Rectifier and Control Voltage Rectifier	CP2	ED-2P002
50-, 100-Volt Rectifier	CP3	ED-2P003
±118 and 200-Volt Rectifier and Control Voltage Rectifier	CP4	ED-2P004
±45 Volt Coin Boost Rectifier	CP5	ED-2P005

TABLE B

REQUIRED INPUT POTENTIAL
FOR J93016 TEST VOLTAGE
POWER SUPPLY UNITS

TEST VOLTAGE POWER SUPPLY UNITS	TERMINAL STRIP	TERMINAL NUMBER	REQUIRED VOLTAGE
J93016DM	B	11	-44 to -55 Volts
J93016DM		21	
J93016DN	A	11	
J93016DP		11	

4.06 The input current required for the J93016DM and J93016DP test voltage power supply units is approximately 1 1/2 amperes. The J93016DN unit requires an input current of approximately 2 amperes. Variable resistors are provided on the units to adjust the input current. Field adjustments to the input current should not be required unless it becomes necessary to replace any of the transistors (Q1 through Q6) on the test voltage power supply

TABLE C

OUTPUT VOLTAGE REQUIREMENTS

TEST VOLTAGE POWER SUPPLY UNITS		VOLTAGE		TERMINAL STRIP	TERMINAL(S)	ADJUSTMENT VARIABLE RESISTOR
		MIN.	MAX.			
J93016DM		+ 99	+101	A	12, 23, 32, 42, 52	R1 (See Notes 1, 2, and 3.)
		+ 19	+ 21		16	
		+ 49	+ 51		14, 24, 34, 44, 54	
J93016DN	L I S T 1	+198	+202	A	54	R7 (See Notes 1, 2, and 3.)
		+116	+120		16	
		-116	-120		18	
	L I S T 2	+160	+166		56	
		-160	-166		58	
J93016DP		+198	+202	A	13	R14 (See Notes 1, 2, and 3.)
		+ 99	+101		15	
		+ 49	+ 51		17	
		+ 19	+ 21		37	

Note 1: Adjust variable resistor clockwise to increase voltage output. Adjust resistor counterclockwise to decrease voltage.

Note 2: All loads must be removed from the test voltage power supply units when attempting to adjust output voltages.

Note 3: Rotate potentiometer R6 (J93016DM unit), R12 (J93016DN unit) or R19 (J93016DP unit) in a fully counterclockwise direction before adjusting output voltages.

units. The procedures for adjusting input currents are as follows:

J93016DM Test Voltage Power Supply Unit

- (1) Connect a 390-ohm 40-watt resistor between terminals 7 and 11 of circuit pack 3.
- (2) Connect voltmeter between terminals 21 and 25 of circuit pack 2.

Note: A voltmeter with a sensitivity of not less than the 20 Kohm/volts is required for making measurements.

- (3) Adjust variable resistor R6 clockwise until voltage reading observed in step (2) begins to decrease.

J93016DN Test Voltage Power Supply Unit

- (1) Connect a 350-ohm, 50-watt resistor between terminals 20 and 27 of circuit pack 4.

(2) Connect a voltmeter between terminals 13 and 27 of circuit pack 4.

Note: A voltmeter with a sensitivity of not less than 20 Kohm/volts is required for making measurements.

(3) Adjust variable resistor R12 clockwise until voltage reading observed in step (2) begins to decrease.

(2) Connect a voltmeter between 21 and 25 of circuit pack 2.

(3) Adjust variable resistor R19 clockwise until voltage reading observed in step (2) begins to decrease.

J93016DP Test Voltage Power Supply Unit

(1) Connect a 390-ohm 40-watt resistor between terminals 7 and 11 of circuit pack 3.

4.07 Table D provides some typical trouble conditions and the possible cause of these troubles.

TABLE D

TYPICAL TROUBLES AND CAUSES

TROUBLE	TYPICAL CAUSE
Low-Voltage Indicator Remains Illuminated	(1) A1 (LV1 Indicator), A2 (LV2 Indicator), A3 (LV3 Indicator) Relay not Operated. (2) D1 (LV1 Indicator), D2 (LV2 Indicator), D3 (LV3 Indicator) Diode Defective. (3) CP1 Circuit Pack Defective. (4) CP2 Circuit Pack Defective (J93016DM and J93016DP Units)
No Output Voltage	(1) CP1 Circuit Pack Defective. (2) Transformer Defective. (3) Transistor Defective Q1 or Q2 (J93016DM Unit) Q3 or Q4 (J93016DN Unit) Q5 or Q6 (J93016DP Unit)
Voltage Levels on Terminals 22, 24, 32, 34 of J93016DM Unit Cannot be Adjusted (See Notes)	CP3 Circuit Pack for 2nd and 3rd Local Test Desk is Defective.
Voltage Levels on Terminals 42, 44, 52, 54 Cannot be Adjusted (See Notes)	CP3 Circuit Pack for 4th and 5th Local Test Desk is Defective.

Note: Before making any adjustments to the output voltage or the input current, verify the DC input voltage is within the working limits of -44V to -55V.