

1964



- Automatic Constant Voltage/Constant Current Operation
- 1% Digital Voltage Setting Plus Smooth Control
- Stability Ratio 10,000:1
- 2 Microsecond Transient Loading Response
- Ripple and Noise Less than 200  $\mu$ V rms
- Full remote Programme Facilities
- Temperature Coefficient <0.01% per  $^{\circ}$ C
- 1 milliohm Output Resistance
- Optimised Current Meter Ranging
- Multiple Unit Assembly with Slave Operation
- Modulation facilities

### Power Supplies AS 1410.2 Series

The conventional Laboratory Power Supply provides merely a variable voltage source of low impedance, regulated against mains and load changes and incorporating some form of overload protection.

The AS1410.2 series introduces novel operational techniques combined with superior overall specification, thus creating an entirely new class of power unit far in advance of the conventional type.

For example, the design allows continuous operation in either Constant Voltage or Constant Current output mode. Fast automatic transition from one characteristic to the other may be preset at any point in the current and voltage ranges to give perfect overload protection. A multi-range current meter, whose sensitivity is automatically controlled by the current setting selectors, provides accurate monitoring even at low levels.

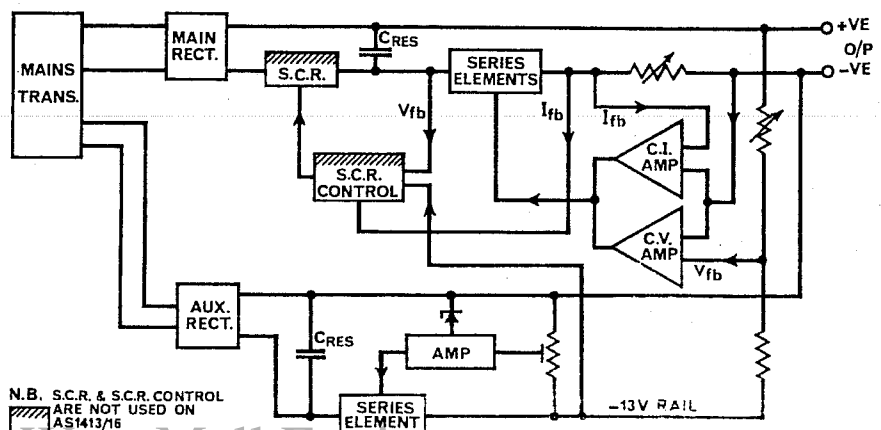
Output voltage is determined either by fingertip digital controls or remote electrical command, with a performance approaching that of calibration standards. Yet these units are rugged and almost indestructible in use and can withstand rigorous temperature and vibration environment.

### Circuit Principles

In operation the secondary series element, a silicon controlled rectifier (S.C.R.) maintains a constant voltage drop across the combination of series transistors and current sensing resistors. The S.C.R. is controlled by a mains synchronised blocking oscillator

triggered by the feedback signal from the secondary control amplifier. This amplifier senses both the load current and the voltage developed across the primary series element comparing their composite signal with a reference voltage to produce the feedback signal. This secondary control regulates the reservoir capacitor charge despite variations in load current and mains input voltage. The primary series control element is driven in the constant voltage mode by a voltage sensing amplifier, or by a current sensing amplifier in the constant current mode. In

the higher powered units an additional series control element is interposed between the reservoir capacitor and the primary control, and acts to absorb transient power surges produced by short circuiting the output. The operational mode adopted by the unit is determined automatically by the resistance  $R_L$  of the applied load, the output voltage setting  $V_o$ , and the output current limit  $I_m$ . The transition from one mode to the other occurs at a critical load resistance value equal to:  $\frac{V_o}{I_m}$

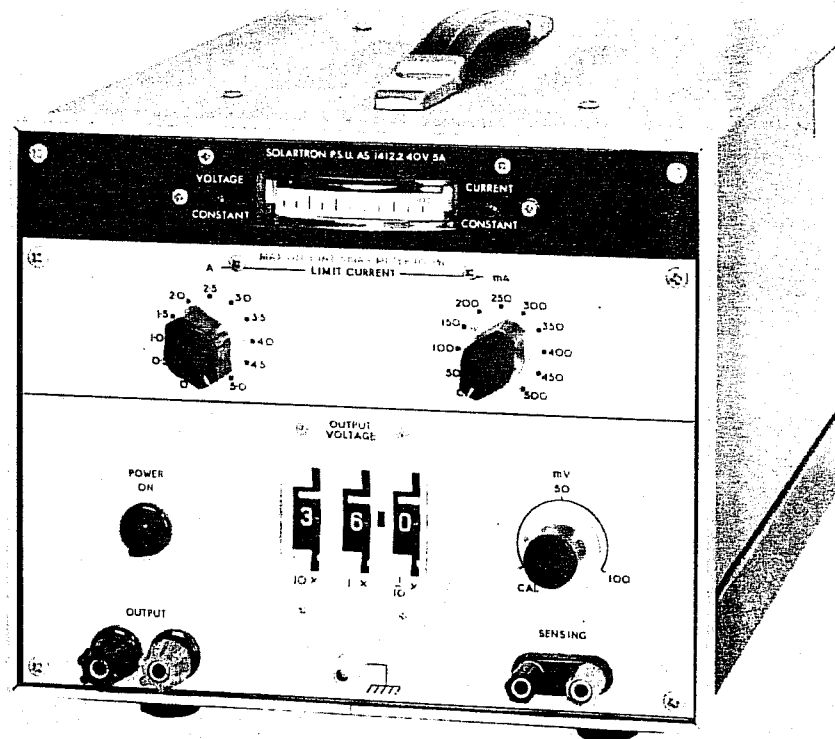


N.B. S.C.R. & S.C.R. CONTROL ARE NOT USED ON AS1413/15

West Mall Engineers

# POWER SUPPLIES AS 1412.2

40V 5A



Part No. 14120063

Issue 1.

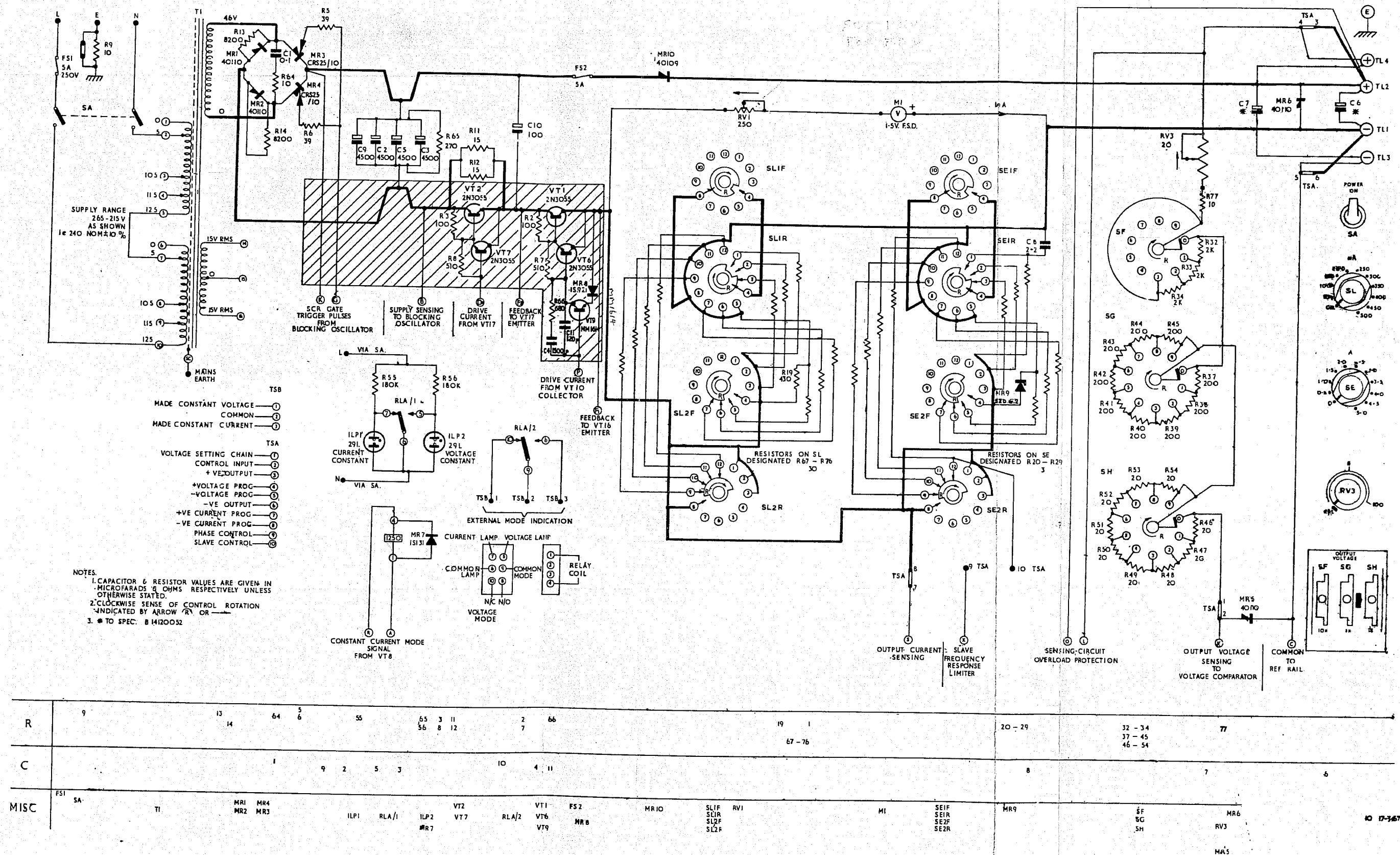


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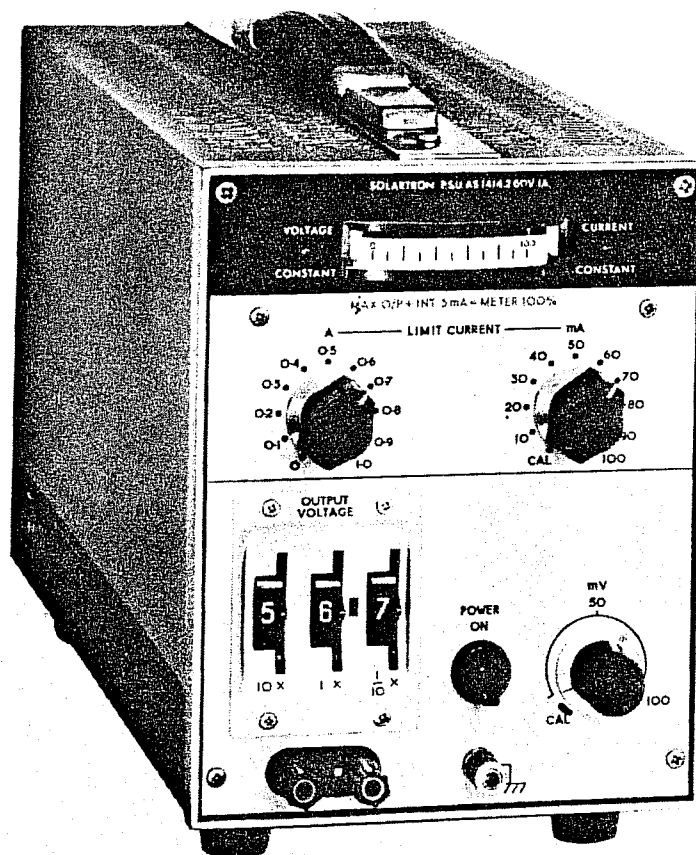


DI4127000  
 THEORETICAL CIRCUIT DIAGRAM  
 POWER & COMMAND SECTIONS  
 AS1412.2  
 40V 5A



# TRANSISTOR POWER SUPPLY AS 1414.2

60V 1A



Part No: 14140030

Date of Issue: July 1967

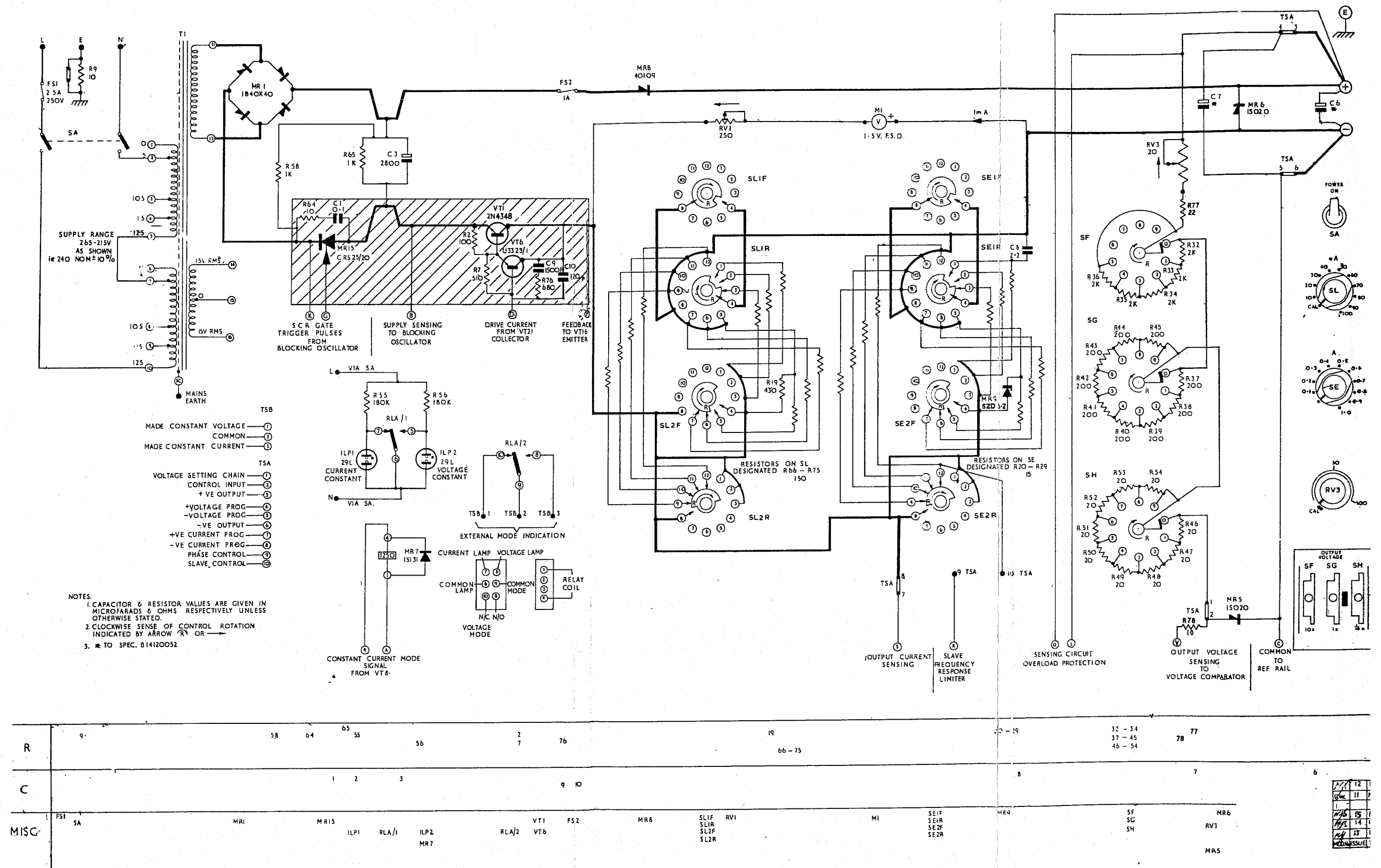


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THEORETICAL CIRCUIT DIAGRAM  
POWER & COMMAND SECTIONS,  
1414.2

D1417000  
A5141 4.2  
(A51410.2 similar)