

HANDBOOK OF PERFORMANCE
AND OPERATION

POWER SUPPLY MODEL 215 & 215R

GENERAL

Models 215 and 215R differ only in the cabinet design, 215 being bench mounting and 215R 19" rack mounting. All other details in the electrical specification are identical.

The output of all supplies is insulated to 500V and any terminal in the instrument may be earthed to provide positive or negative outputs as required. Current overload protection is provided by input and D.C fusing.

Valve selection is not required and replacement of any valve will not affect the performance.

PERFORMANCE

POSITIVE D.C OUTPUT

<u>Voltage</u>	continuously variable from 0 to 400V
<u>Current</u>	continuously variable from 0 to 200mA
<u>Stabilisation</u>	$\pm 100\text{mV}$ for $\pm 10\%$ mains variation.
<u>Regulation</u>	50mV change for 0-200mA load change.
<u>Output Impedance</u>	0.25 Ω
<u>Hum & Noise</u>	less than 5mV p-p.

NEGATIVE D.C OUTPUT

<u>Voltage</u>	-250V fixed
<u>Current</u>	0-30mA max.
<u>Stabilisation</u>	$\pm 50\text{mV}$ for $\pm 10\%$ mains change.
<u>Regulation</u>	50mV for 0-30mA load change.
<u>Output Impedance</u>	1 Ω
<u>Hum & Noise</u>	less than 5mV p-p

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VARIABLE NEGATIVE SUPPLY

Voltage 0 to -250V

Current 1mA max.

Output Impedance varies from 0 to 25K Ω dependent on setting at D.C decreasing to 3 Ω at 100 Kc's max.

UNREGULATED SUPPLIES

6.3V 5 Amps)
6.3V 5 Amps) 1000V insulation
Approx. 540V D.C at 200mA Max.

NOTE: Total current available from both regulated and unregulated supplies when used simultaneously must not exceed 200mA.

METERING 4½" meter with panel switching for + or - voltage or +ve current.

GENERAL Standby/Use switching fitted on both +ve and -ve output rails. All outputs are brought to front panel and are available on universal terminals mounted at ¾" CRS.

2. CONTROLS AND OPERATION

Three variable controls are mounted on the front panel. The left hand control sets the positive output voltage and provides a continuously variable supply from 0 to 400V. The centre control selects the required meter range, the two L.H. positions select positive current and voltage ranges. The R.H. position changes the meter connections to read the variable negative output voltage.

Three panel switches operate as follows -

The top right hand switch applies input A.C. to the power supply. The L.H. switch marked Standby/Use enables the +ve output voltage to be preset before it is connected to the external load. When switching the supply on or off, throw the output switches to Standby to ensure no transient voltages are applied to the load.

The right hand Standby/Use switch connects the variable negative output voltage to the output terminals in the 'Use' position. No isolation switch is fitted to the fixed output voltages on A.C supplies.

3. CIRCUIT DESCRIPTION

Input A.C is applied through S1a input switch to the appropriate tapping selected on the transformer primary. The main 500-0-500V secondary feeds the full wave rectifier V1 to produce between +550 and +700 dependent on load across the input filter capacitors C2 & C3 in series which is then applied to the anodes of the series pass valves V5-8. The screens of V5-8 are supplies from a separate floating winding which is rectified by D1-4 and filtered by C1 to provide a +240V supply referred to the cathodes of V5-8. This operates the valves as pentodes and provides a better control of the output.

The negative reference supply is obtained by half wave rectifying a 300V winding by D5 & 6 and filtering by C4. V2 series pass valve for the negative supply is controlled by V3a & b differential amplifier with V4 providing the reference voltage of -83V referred to common line.

The -250V output is taken from the negative reference source and the variable negative supply is obtained from a potentiometer placed across the -250V supply, and then applied to the output terminals via S4 Standby/Use switch.

The positive rail control amplifier consists of two differential amplifiers in cascade. V9b grid is taken to the -83V reference source and V10b grid to the divider between the positive output rail and the -250V rail. Difference voltages appearing between the two grids are amplified and applied to V9a & 10a grids where after further amplification and inversion the feedback signal is applied to the series pass valve control grids in parallel to the control the output which is fed to the output terminal via S3 standby use terminal.

4. MAINTENANCE AND ADJUSTMENTS

Preset internal controls

RV1 Sets the stabilisation ratio of the 250V reference source by controlling the feedback from the unregulated input to the screen of V3a.

RV2 Sets the -250V rail.

RV3 Sets the stabilisation ratio of the positive output by controlling the feedback from the unregulated supply to the screen of V9a.

~~RV5 Range setting potentiometer adjusted to provide a maximum output of just over +400V.~~

RV7 Meter current range set.
With 200mA load connected across output, set RV7 to obtain a meter reading of 200mA.

RV5 Set zero volts

RV8 Set +400v

Changes of valves will normally make no difference to the performance, however, if desired, the following controls may be adjusted when valves or their alternatives are replaced.

V1	5AR4,	GZ34,		No adjustment
V2	6CW5	EL86		No adjustment
V3	6BL8	ECF80	E80CF	RV1 & RV2
V4	85A2	83A1		RV2
V5-8	EL34	6CA7		No adjustment
V9	6BL8	ECF80	E80CF	RV3
V10	6BL8	ECF80	E80CF	RV3

Every effort is made to keep the handbook and circuit up to date and the Company reserves the right to make amendments and to supply the latest of equipment without notice.

Spares for Model 215 are normally available from the manufacturer - B.W.D. ELECTRONICS PTY. LTD., of 331-333 Burke Road. Gardiner. Victoria, Australia, but commercially available components may be used provided they possess a specification not less than, or physical size not greater than items used in the instrument.

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33K
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SWITCHES.

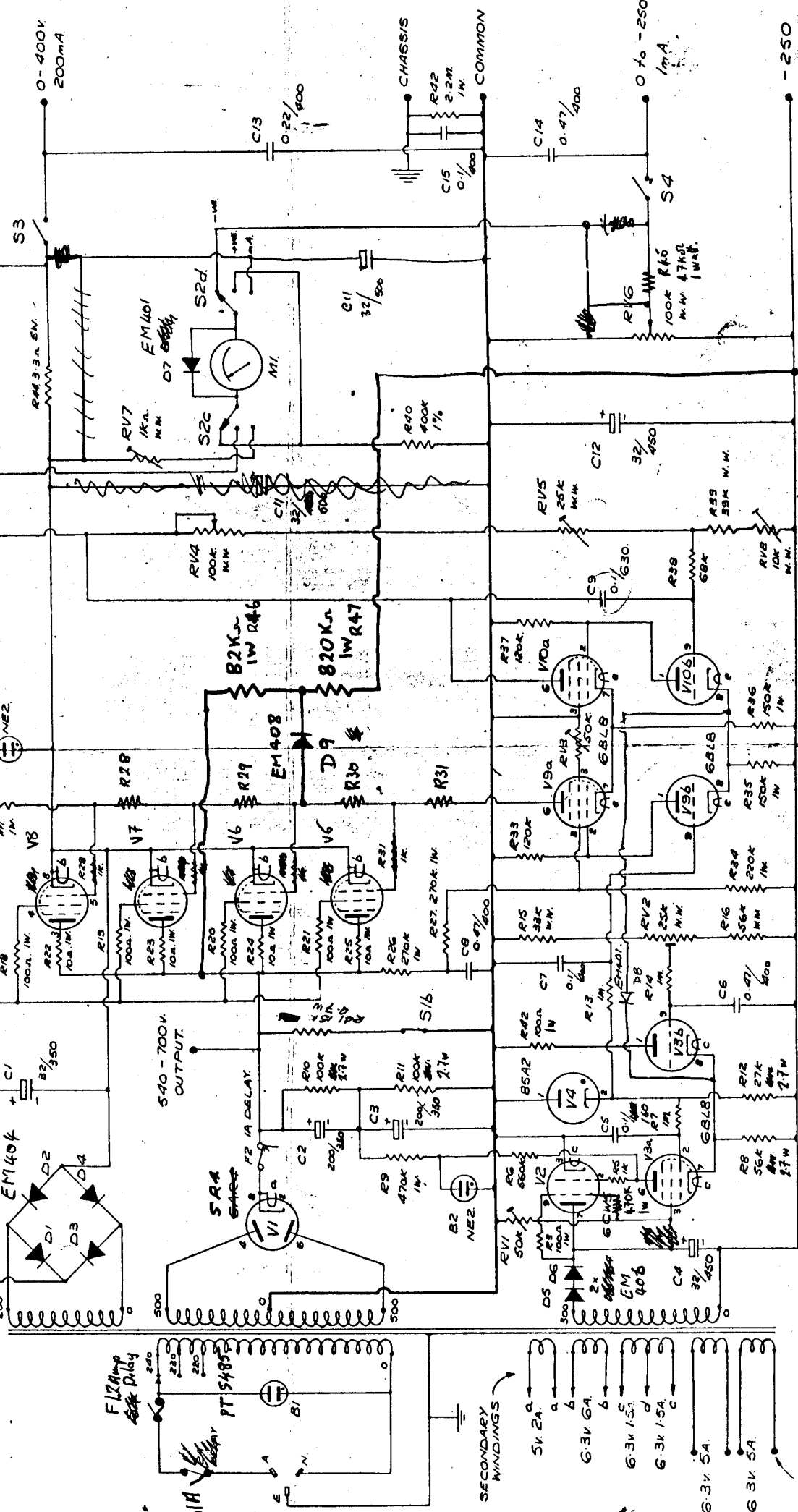
S1a & b. AC & DC POWER.
 S2a to d. METER SELECTOR.
 S3. STANDBY - USE +VE.
 S4. " " -VE.

CONTROLS.

RV1. STABILITY ADJUST -VE.
 RV2. SET -250V.
 RV3. STABILITY ADJUST +VE.
 RV4. +VE OUTPUT VOLTAGE. (0V)
 RV5. set 20V ~~BASE~~
 RV6. -VE ~~output~~ VOLTAGE.
 RV7. CURRENT RANGE SET.
 RV8. +VE OUTPUT RANGE (400V)

* INCORPORATE MODIFICATION IN ISSUE 5 TO ALL REPAIR
 UNITS (D9, R46, R47.)

V5, V6, V7 & V8 6CA7
 V2 6CW5



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ISSUE	ISSUE	ISSUE	ISSUE	ISSUE	ISSUE	ISSUE	ISSUE
5	4	3	2	1	1	1	1
1/68	1/67	1/66	1/65	1/64	1/63	1/62	1/61

B.W.D. ELECTRONICS P/L MELB. AUSTR.

MODEL 215 POWER SUPPLY

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MODIFICATIONS

AS 23K

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IT AMENDMENTS

DED

DED

SAR4

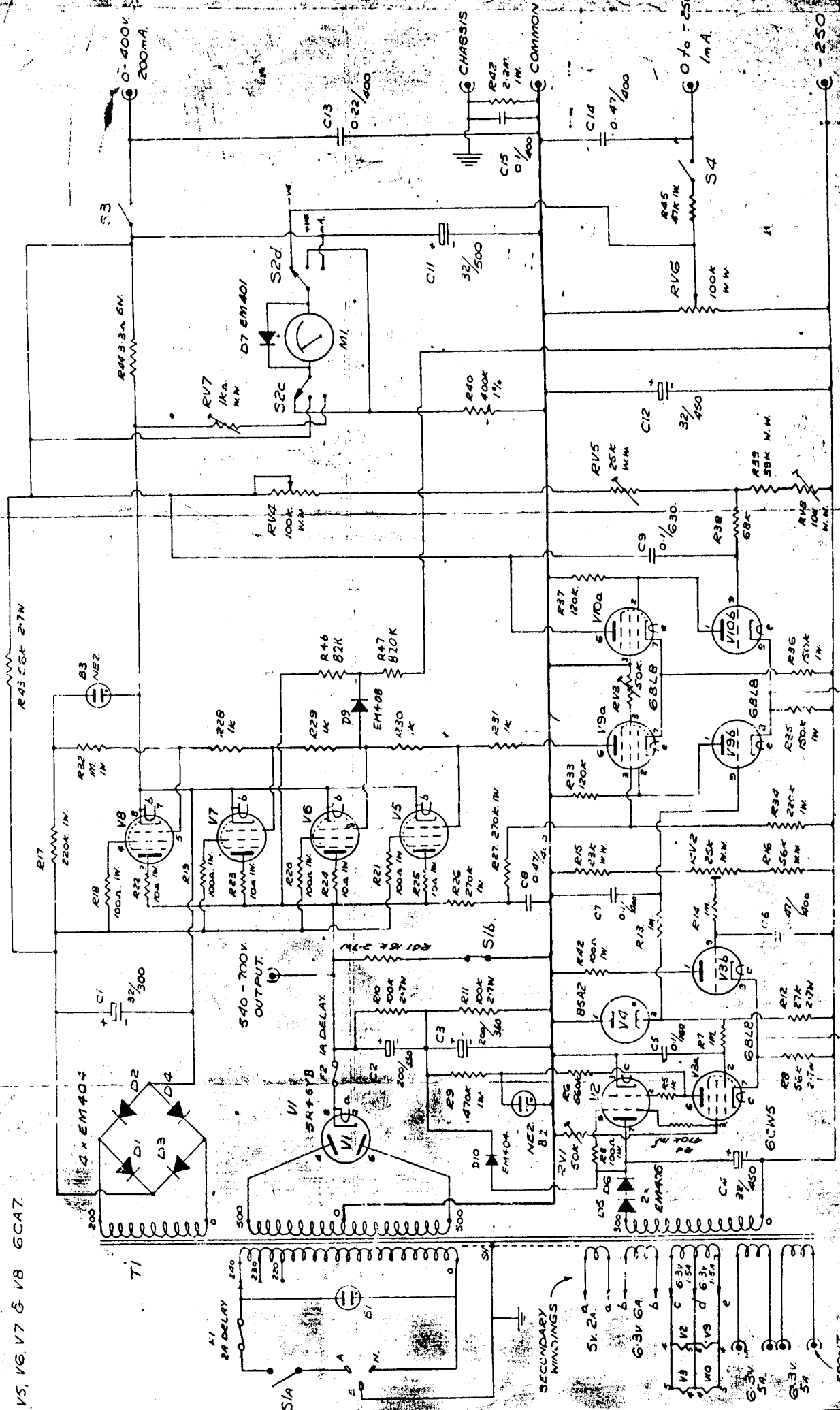
SWITCHES.

- S1a & b. AC & DC POWER.
- S2a to d. METER SELECTOR.
- S3. STANDBY - USE +VE.
- S4. " " -VE.

CONTROLS.

- RV1. STABILITY ADJUST -VE.
- RV2. SET - 250V.
- RV3. STABILITY ADJUST +VE.
- RV4. +VE OUTPUT VOLTAGE.
- RV5. " RANGE (0V)
- RV6. -VE VOLTAGE.
- RV7. CURRENT RANGE SET.
- RV8. +VE OUTPUT RANGE (400V)

V5, V6, V7 & V8 6CA7



W.D. ELECTRONICS P/L MELB AUSTRALIA

MODEL 215 POWER SUPPLY 0-400V 500mA

ISSUE	ISSUE	ISSUE	ISSUE	ISSUE	ISSUE	ISSUE
6	3	2	1	1	1	1
9/62	1/62	1/62	1/62	1/62	1/62	1/62

DRYAN V/S
TEMPERED DC
CHECKED 5/6

FRONT PANEL TERMINALS