

Kingshill

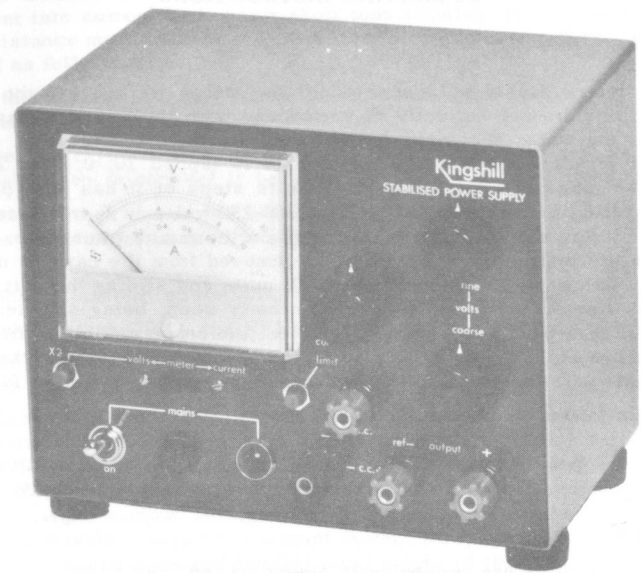
Q 50

POWER SUPPLIES

TECHNICAL DATA

'V' SERIES - MODEL 'C'

'V' SERIES



OPERATING INSTRUCTIONS

INSTALLATION

Before the power supply is connected to the mains it is important that the mains transformer tappings are set correctly to correspond with the user's mains voltage. When despatched from the works the instrument is ready for use at 240 volts. In the standard instruments, the primary of the mains transformer is tapped 10, 0, 200, 220, 240, volts, thus covering the range 200-250 volts in 10 volts steps or it has twin primaries of 5-0-100-110-120, covering the ranges 100-125 and 200-250 volts in 5 volts steps. Adjustment is obtained by altering the soldered connections on the mains transformer panel. To alter the primary taps the instrument should first be removed from the case by undoing the four feet and the two screws on the underside of the V units and sliding the unit out, front panel first. The mains transformer tappings can be clearly seen, being situated along the one side of the transformer panel. It remains to connect the brown and blue wires to the correct lugs so that the sum of the voltages marked on the two tags is equal to the mains voltage. Twin primaries are paralleled for 100-125 volts and connected in series for 200-250 volts.

IMPORTANT

Always ensure free passage to the cooling air flow under the instrument and out of the top vents, or overheating may occur under certain loading conditions.

THE CONTROLS

All operating controls are conveniently placed on the front panel.

- (1) MAINS SWITCH. Self-explanatory.
- (2) VOLTAGE CONTROLS. Coarse and fine controls allow easy setting at any required voltage between zero and maximum. The fine control is used to set the current for true constant current use.
- (3) METER SWITCHES. In the 'Current' position of this switch the current scale on the meter is brought into use. In the 'volts' position the higher of the two voltage scales applies, and when the X2 button is pressed the sensitivity is doubled for easy setting of low voltages, and the lower voltage scale should be read.
- (4) CURRENT LIMIT. The protection is of the 'Constant Current' form of limiter which is adjusted by means of the potentiometer on the front panel. The associated push button places a low resistance across the output of the unit, and when this is pressed a virtual short-circuit exists allowing the limiter control to set up the desired limit current read on the A scale of the meter. The push button should be operated only long enough to set up the desired limit value to avoid unnecessary heating. At output voltages below 3 volts it may be necessary to use an external short-circuit for this purpose as the internal 'shorting' resistance may not be of sufficiently low value. It is always advisable to set the current limiter up at a low output voltage, say, 10 volts if possible to minimise the discharge pulse of current from the output capacitor that flows through the push button when it is operated.
- (5) OUTPUT TERMINALS. Units having 4-terminal output are wired internally as such, but shorting links are included on the unit across each OUTPUT and REF pair of terminals to convert the output to 2-terminal since this is usually required for bench use. The OUTPUT and REF terminals are thus strapped and either one or both may be used for external connection. If 4-terminal output is desired, the shorting link should be removed from each pair of terminals and the load connected in the usual way. This facility is limited to the negative output on the 'Compact' (18V1C-15A01C) series.

- (6) CONSTANT CURRENT APPLICATION. The constant current provided when the Unit crosses over into current limit has a short term stability of <1% which is satisfactory for low resistance measurement etc. However, a true constant current of high stability is obtained as follows:-

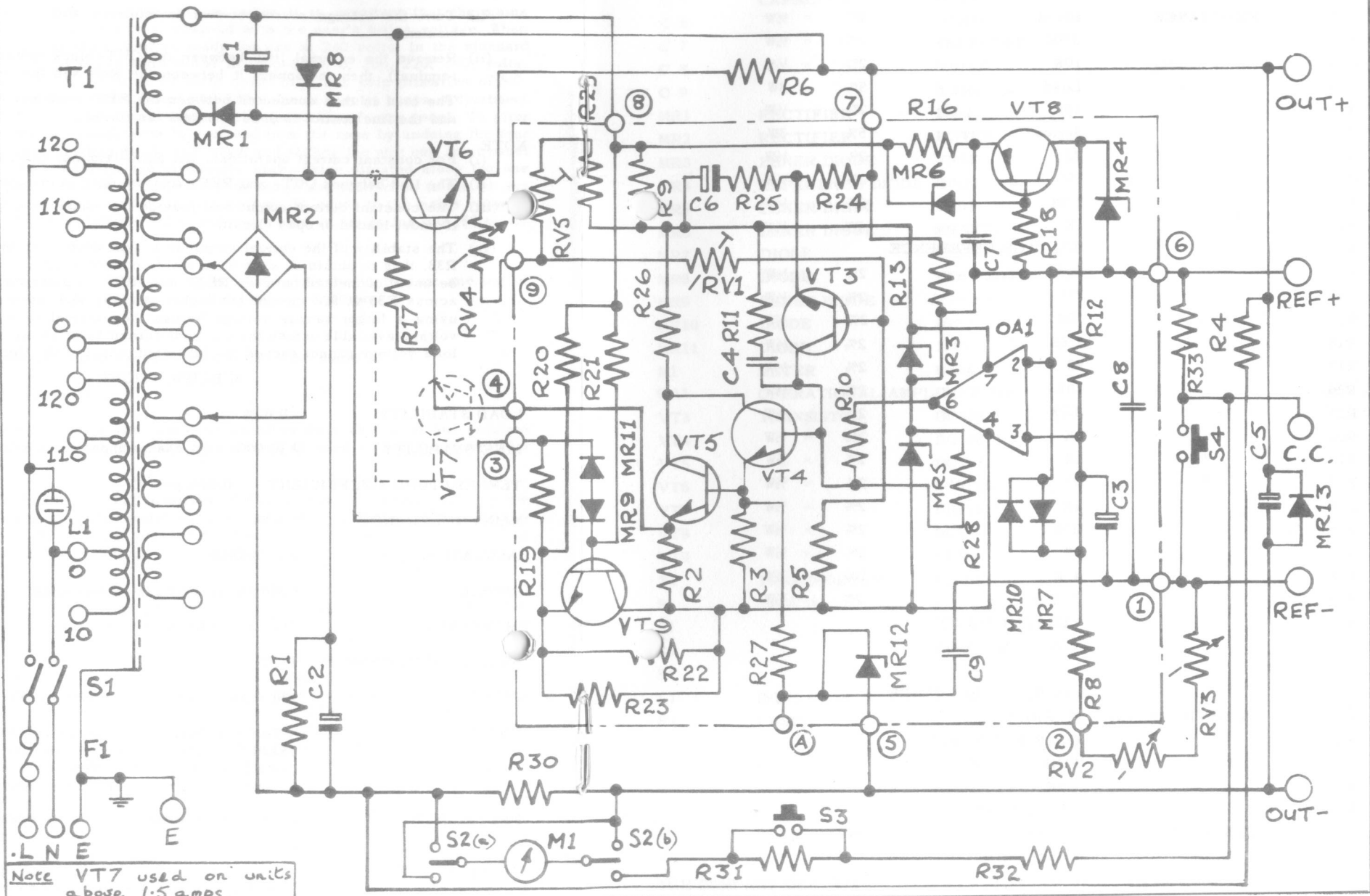
- (i) Turn the voltage coarse control to minimum and the current limit control to maximum.
- (ii) Remove the external link between the OUT-(black terminal) and the REF-(blue terminal), then re-connect it between the Ref- and the red terminal marked c.c.
The load is then connected between the REF-(positive) and the OUT-(Negative) and the fine control is used to adjust the current.

NOTE

- (i) For constant current operations, the REF-terminal becomes the positive output.
- (ii) The link between OUT+ and REF+ must be used in constant current applications.
- (iii) The constant current output will provide the maximum output voltage of the Unit if under-loaded or open circuit.
- (iv) The stability of the current output is in part dependant on the reference resistor R33, thus to obtain an even more stable current, a precision external resistor can be used, connected between REF+ and REF-. Approximately 2 volts is dropped across R33 at full current but higher stability and lower ripple is obtainable by using a larger sample voltage across the external resistor. This restricts the voltage available across the constant current load, as the sample voltage plus the load voltage cannot exceed the full rated output of the Unit.

SPECIFICATIONS

LOAD STABILITY	<0.02%
LINE STABILITY	>10,000: 1 (% change input voltage/%change output voltage).
TEMPERATURE COEFFICIENT	0.01% per °C
MAINS TOLERANCE	± 10%
INSULATION	> 30 M OHMS
RIPPLE	<300 μV or 0.03% in current mode.
IMPEDENCE	<0.2 Ω 100 Kc/s
MAX. AMBIENT TEMP.	45°C
INPUT	200 – 250V in 10V steps, 100 – 125V to order.
OUTPUT	4 Terminal fully floating output [3 terminal on units 18V1C to 15A01C]. Output voltage is adjustable by coarse and fine control in single sweep. Meter accuracy to BS 89 (1954). The meter has two voltage and one current range.
PROTECTION	Electronic constant current overload protection down to short circuit.
FINISH	Standard two tone grey stove enamel. Hard wearing scratch resistant washable Acrylic enamel on case.



Note VT7 used on units above 1.5 amps.

ISSUE	
MOD	
KINGSHILL ELECTRONIC PRODUCTS LTD. TORRENS WORKS, TORRENS STREET LONDON E.C.1.	
DRAWN	TITLE
DATE	CIRCUIT DIAGRAM
APPROVED	V SERIES
	DRG No
	ASMG1590

R.D.O.

PARTS LIST 'V' SERIES

ITEM	DESCRIPTION	
R 1	RESISTANCE	Bleed 2% 1/2W
R 2	"	3.9K 2% 1/2W
R 3	"	10K 2% 1/2W
R 4	"	Load 5% 3W
R 5	"	15K 2% 1/2W
R 6	"	Series 5% 3W
R 8	"	22 2% 1/2W
R 9	"	150 2% 1/2W
R10	"	2.2K 2% 1/2W
R11	"	1K 2% 1/2W
R12	"	VOLTAGE REFERENCE
R13	"	100 2% 1/2W
R16	"	270 2% 1/2W
R17	"	100 2% 1/2W
R18	"	1.8K 2% 1/2W
R19	"	82 2% 1/2W
R20	"	10K 2% 1/2W
R21	"	8.2K 2% 1/2W
R22	"	1K 2% 1/2W
R23	"	1K 2% 1/2W
R24	"	47 2% 1/2W
R25	"	1K 2% 1/2W
R26	"	220 2% 1/2W
R27	"	47 2% 1/2W
R28	"	47K 2% 1/2W
R29	"	3.9K 2% 1/2W
R30	"	CURRENT SHUNT
R31	"	VOLTAGE SERIES
R32	"	" "
R33	"	CURRENT REFERENCE
RV1	POTENTIOMETER	1K PRE-SET
RV2	"	COARSE CONTROL
RV3	"	FINE CONTROL
RV4	"	2.5K
RV5	"	10K PRE-SET
C 1	CAPACITOR	100uF 64V
C 2	"	RESERVOIR
C 3	"	4.7uF 160V
C 4	"	0.1uF 250V

PARTS LIST 'V' SERIES

ITEM	DESCRIPTION	
C 5	CAPACITOR	OUTPUT
C 6	"	100uF 10V
C 7	"	SELECTED
C 8	"	0.01uF 250V
C 9	"	0.01uF 250V
MR1	RECTIFIER	10D2
MR2	RECTIFIER	POWER
MR3	ZENER DIODE	VR9F
MR4	REFERENCE DIODE	IN823
MR5	ZENER DIODE	VR9F
MR6	ZENER DIODE	MR30CH
MR7	DIODE	10D2
MR8	DIODE	VT6 PROTECTION
MR9	ZENER DIODE	MR51CH
MR10	DIODE	10D2
MR11	DIODE	10D2
M1	METER	M32A
OA1	OPERATIONAL AMPLIFIER	741
VT3	TRANSISTOR	BC108
VT4	"	BC108
VT5	"	BC108
VT6	"	SERIES
VT7	"	DRIVER
VT8	"	BCY70
VT9	"	BFY51
T1	TRANSFORMER	MAINS
S1	SWITCH	D.P.S.T. MAINS
S2	"	D.P.D.T. SLIDER
S3	"	PUSH ON
S4	"	PUSH ON
L1	INDICATOR	NEON
F1	FUSE	MAINS

THE COMPANY RESERVES THE RIGHT TO AMEND SPECIFICATIONS WITHOUT PRIOR NOTICE.