Cossor 1035 - Mk I

(1949)

SPECIFICATION

POWER RATING

A.C. mains voltage	105 to 115, 120 to 130, 200 to 215. 216 to 234, 235 to 255 volts.
A.C. mains frequency	50 to 100 c/s.
Power consumption	180 watts (approx.).

Tube H.T. supply, 2,000 volts; amplifiers, 450 volts; time base, 370 volts.

DIMENSIONS

Height, including feet	16½ in.	419 mm.
Width	11½ in.	292 mm.
Length	19¾ in.	501 mm.
Front handle and knobs extra	2 in.	50 mm.
Weight	59 lb.	27 kg.

CATHODE RAY TUBE

Y sensitivity direct to tube 675/Volts ±8 % 3.0 volts per mm. D.C.

X sensitivity direct to tube 800/Volts ±8 % 2.5 volts per mm. D.C.

Output of both amplifiers, time base and direct connections to tube plates and modulator circuits are available at the side of the instrument.

TIME BASE

Repetitive or triggered operation.

Positive or negative Sync. or Trigger by switch control.

Directly calibrated time scale with nine ranges as follows (±10 %):

150 milli-seconds	1,500 micro-seconds.
50 mS.	50 µS.
15 mS.	150 µS.
5 mS.	50 µS.
	15 µS.

Time base volts available at high impedance at X1 terminal. Switch positions for **Ext. T.B.** and time base **Off.** Flyback suppressed.

SYNCHRONISATION AND TRIGGER

Switch selection for positive or negative Sync. and Trigger from external source or internally from A1 amplifier.

A1 AMPLIFIER

Three valves.

Directly calibrated voltage scale with seven ranges.

L.F. response down to 20 c/s.

Maximum input volts, 500 D.C.

Input impedance, 2 megohms, input capacity, 20 pF.

A2 AMPLIFIER

Single valve.

Directly calibrated voltages scale with seven ranges (±15 %): 500, 150, 50, 15 and 5 volts.

Frequency response: 20 c/s. to 100 Kc/s.

Output available at terminal on front panel.

TEST WAVEFORM (Cal.)

50 volts peak–peak (nominal).

NOTE:

A1 and A2 amplifier characteristics are shown in Figs 4 and 7 respectively, but are summarised below :

A1 AMPLIFIER

Volts Range	*Gain*	*Response 15% down at*
50V	3	7 Mc/s
15V	10	3 Mc/s
5V	30	2.2 Mc/s
1500mV	100	1.6 Mc/s
500	300	1.0 Mc/s
150	1000	150 Kc/s
50	3000	60 Kc/s

A2 AMPLIFIER

Volts Range	*Gain*	*Response 15% down at*
500V	.3	100 Kc/s
150V	1	100 Kc/s
50V	3	100 Kc/s
15V	10	100 Kc/s
5V	30	100 Kc/s

A2 may also be used as a cathode follower.

Input impedance of A2 amplifier, 0.2 megohms in parallel with 30 pF

Maximum input volts to A2, 1000 DC.

Minimum trigger signal required to operate time base, 12V RMS.

COSSOR 1035 Mk III 1958

SPECIFICATION

Cathode-ray Tube .. .. Cossor 4 in. (10 cm), double-beam, Type 93D with green fluorescence, operating at 2 kV (a3) and +ve 350 V p.d.a. with provision for increasing p.d.a. to 2 kV.
X sensitivity direct to plates 2·6 V/mm (0·38 mm/V).
Y sensitivity direct to plates 2·5 V/mm (0.4 mm/V).
Direct connections from X and Y plates and modulator are accessible on side terminal panels.

A1 Amplifier .. .. .. Maximum gain: 3000.
Frequency response: better than 5 c/s to 5 Mc/s (−30%) on all sensitivity ranges except on the 50 mV range which has a frequency limit of 1·5 Mc/s.
Directly calibrated voltage scale with separate zero adjustment (*measurement* accuracy is better than 10 per cent).
Seven ranges:

Volts Range	Gain (nominal)	Frequency Response 30% down	Frequency Response 50% down	Sensitivity	
50 V	x 3	5 Mc/s	7 Mc/s	10 V/cm	(1 mm/V)
15 V	x 10	5 Mc/s	7 Mc/s	3 V/cm	(3·33 mm/V)
5 V	x 30	5 Mc/s	7 Mc/s	1 V/cm	(1 cm/V)
1·5 V	x 100	5 Mc/s	7 Mc/s	0·3 V/cm	(3·33 cm/V)
500 mV	x 300	5 Mc/s	7 Mc/s	0·1 V/cm	(10 cm/V)
150 mV	x 1000	5 Mc/s	7 Mc/s	30 mV/cm	(33·3 cm/V)
50 mV	x 3000	1·5 Mc/s	2·5 Mc/s	10 mV/cm	(1 mm/mV)

Maximum input: 500 V d.c. Compensated input attenuator. Input impedance: 0·43 MΩ, 25 pF to 1 MΩ, 25 pF depending on the gain setting. Rise-time on 50 V to 150 mV range is better than 0·1 μsec with less than 5 per cent overshoot, on the 50 mV range better than 0·2 μsec. An additional attenuator, 1 : 30, is available via a terminal on the front panel. Maximum input 1500 V. Input impedance: 27 MΩ, 5 pF.

A2 Amplifier .. .. .. Maximum gain: 30.
Frequency response: better than 5 c/s to 250 kc/s (−30%).
Directly calibrated voltage scale with separate zero adjustment (*measurement* accuracy is better than 10 per cent).
Five ranges: 500 V, 150 V, 50 V, 15 V, 5V.
Phase reversal on all ranges without change in gain.
Input impedance: 1·5 MΩ, 50 pF to 0·5 MΩ, 60 pF.
Rise-time: 1 μsec, negligible overshoot.

1035 III specification (cont)

Time-base .. .. ..

Repetitive or triggered operation.

Repetitive frequency of free-running time-base continuously variable over 3·3:1 on each range by variation of the time-base amplitude.

Positive or negative Trigger or Sync.

Directly calibrated time scale with separate zero adjustment (*measurement* accuracy is better than 10 per cent).

Nine ranges:

100 msec	1000 μsec
30 msec	300 μsec
10 msec	100 μsec
3 msec	30 μsec
	10 μsec

Sweep expansion, continuously variable to better than 5 times on all ranges, giving a maximum spot velocity of 4 cm/μsec.

Time-base delay up to 10 times, at least, of the range in use except on the 100 msec and 30 msec ranges where the maximum delay is 100 msec.

Time-base output (on slower ranges) is available at high impedance at the X1 terminal.

Maximum time-base start time, 0·5 μsec.
Fly-back blacked out on all ranges.

Pulse bright-up facilities for single-stroke working, 10 msec and faster.

Trigger and Synchronization

Selected by switch for positive or negative, direct or delayed, trigger or sync from external source or, internally, from Y1 amplifier.

External trigger: 1 V r.m.s. to 5 Mc/s or 0·5 V peak-to-peak pulse and will sync from 10 Mc/s sine waves.

Internal trigger: 2 mm at 1 kc/s rising to 1 cm at 5 Mc/s or 2 mm pulse.

Test Waveform Voltage ..

10 V peak-to-peak (nominal).

Power Supply .. .. ..

Mains: 105 V to 115 V, 120 V to 130 V, 200 V to 215 V, 216 V to 234 V, 235 V to 255 V.

Frequency: 50 c/s to 100 c/s.

Consumption: 140 W.

Size and Weight .. ..

Height	16½ in.	(41·9 cm).
Width	11½ in.	(29·2 cm).
Depth	19¾ in.	(50·2 cm).
Weight	50 lb	(22·7 kg).

COSSOR DOUBLE BEAM OSCILLOGRAPH MODEL 1035 SCHEMATIC CIRCUIT DIAGRAM

Mk I

1949
1954

NOTES

SWITCHES:

S1 & S2 GANGED	A1 VOLTS RANGE
S5, S6, S7 & S8 GANGED	A2 VOLTS RANGE
S9, S10 & S11 GANGED	TIME RANGE
S12, S13, S14, S16 & S17 GANGED	SYNC. SELECTOR
S15	MAINS SWITCH

V6 — OUTER CASE OF VALVE MUST NOT BE EARTHED

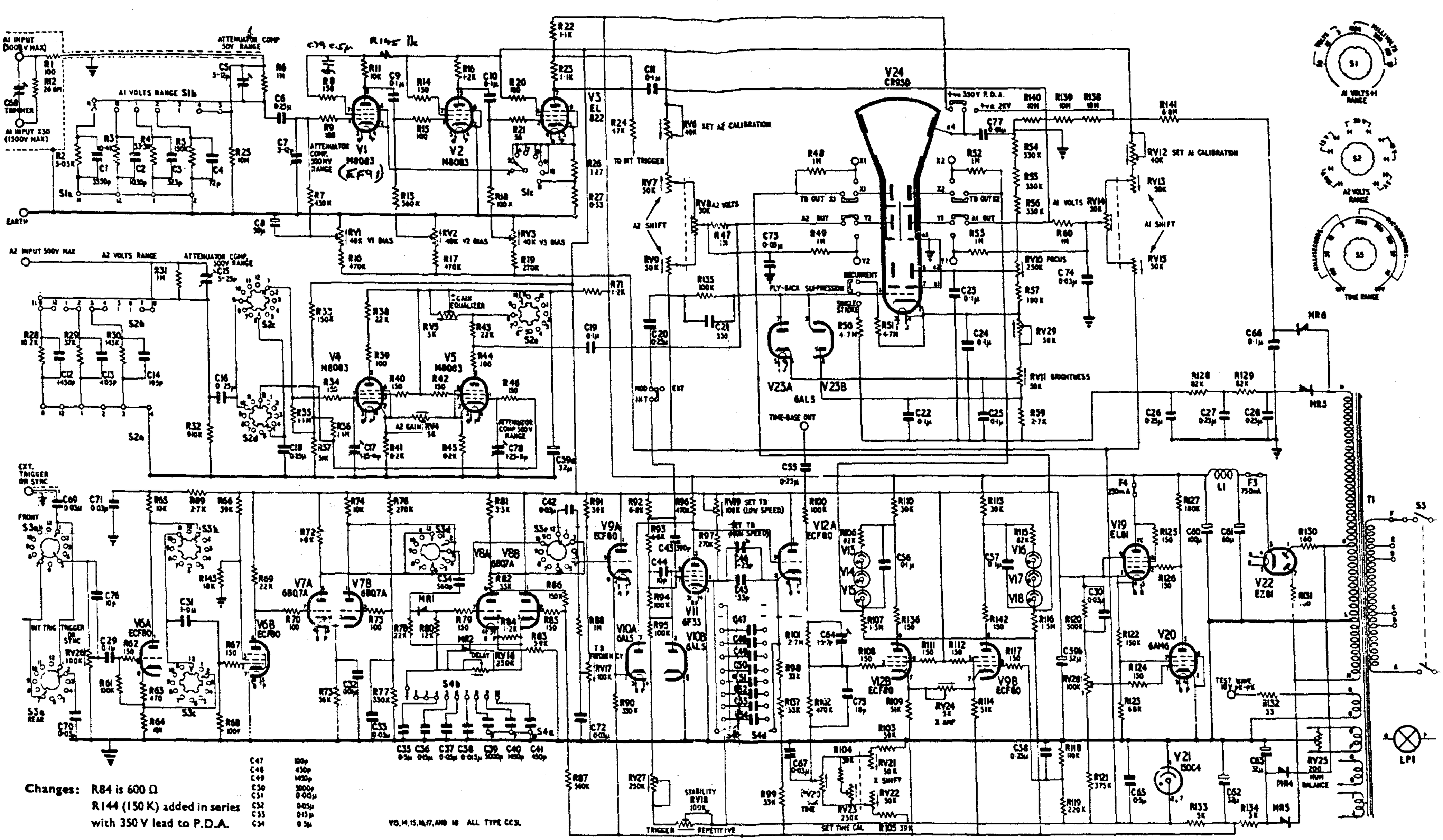
INTERNAL SHIELDS ON ALL 63SPT VALVES ARE EARTHED

ALL SWITCHES SHOWN IN COUNTER-CLOCKWISE POSITION VIEWED FROM CONTROL KNOB

INTERCHANGE OF TUBE PLATE IS NECESSARY DUE TO MECHANICAL ASSEMBLY

ADD R133 BETWEEN WIPER OF S2 AND EARTH

1957 COSSOR MODEL 1035 Mk IIA OSCILLOGRAPH CIRCUIT DIAGRAM



Changes: R84 is 600 Ω
R144 (150 K) added in series with 350 V lead to P.D.A.

CIRCUIT DIAGRAM 1035 mk III 1958