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"TRADER" SERVICE SHEET

1036

VIDOR "REGATTA"

Battery Portable, Type CN420

THE Vidor "Regatta" portable, model CN420, is a 4-valve, 2-band all-dry battery superhet covering 180-550 m and 1,150-1,900 m. The receiver is housed in an attache-case type of carrying case whose lid-stay operates the on-off switch, switching off the receiver when the lid is closed.

Release date and original price: January, 1952; £9 12s. 7d. without batteries. Purchase tax extra.

CIRCUIT DESCRIPTION

Tuned frame aerial input on L.W. by **L2** and **C19** to heptode valve **(V1, Mullard DK91)** which operates as frequency changer with electron coupling. For M.W. operation, **S1** closes and shunts **L1** across **L2.**

A single oscillator tuning coil **L3,** tuned by **C20,** is used for both M.W. and L.W. bands. **C21** is the M.W. trimmer, and for L.W. operation **C7** is shunted across the circuit by the closing of **S3.** The series tracker **C6** is in the high potential side of the circuit. Reaction coupling from anode by **L4.**

Second valve **(V2, Mullard DF91)** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C3, L5, L6, C4** and **C9, L7, L8, C10.**

Intermediate frequency 475 kc/s.

Diode signal detector is part of diode pentode valve **(V3, Mullard DAF91).** Audio frequency component in rectified output is developed across volume control **R6,** which acts as diode load, and passed via **C13** to control grid of pentode section, which operates as A.F. amplifier. I.F. filtering by **C11, R5** and the capacitance of the screened leads to the volume control.

D.C. potential developed across **R5, R6** is fed back as bias via decoupling circuit

(Continued col. 1 overleaf)

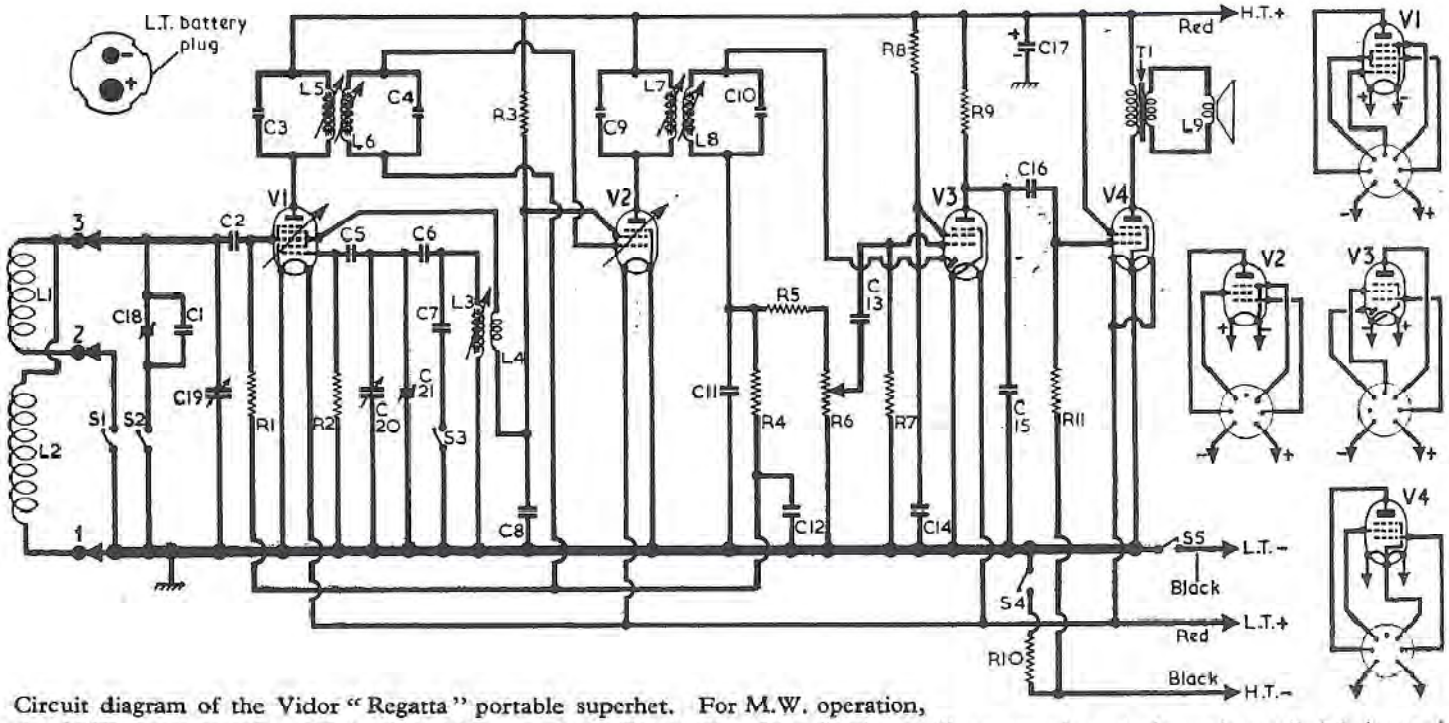
Appearance of the receiver with its lid open.

COMPONENTS AND VALUES

	CAPACITORS	Values	Locations
C1	L.W. aerial trim.	150pF	F2
C2	V1 C.G.	100pF	F2
C3	1st I.F. trans. tuning	65pF	B1
C4	1st I.F. trans. tuning	65pF	B1
C5	V1 osc. C.G. ...	100pF	F2
C6	Osc. tracker ...	635pF	F2
C7	L.W. osc. trim. ...	515pF	F2
C8	S.G. decoupling ...	0·1μF	B1
C9	2nd I.F. trans. tuning	65pF	C1
C10	2nd I.F. trans. tuning	65pF	C1
C11	I.F. by pass ...	100pF	E2
C12	A.G.C. decoupling	0·05μF	E2
C13	A.F. coupling ...	0·001μF	E2
C14	V3 S.G. decoup. ...	0·05μF	D2
C15	I.F. by-pass ...	200pF	D2
C16	A.F. coupling ...	0·01μF	D2
C17*	H.T. by-pass ...	2μF	B1
C18‡	L.W. aerial trim. ...	70pF	A1
C19†	Aerial tuning ...	§523pF	A1
C20†	Oscillator tuning ...	§523pF	A1
C21‡	M.W. osc. trim. ...	70pF	A1

	RESISTORS	Values	Locations
R1	V1 C.G.	470kΩ	E2
R2	V1 osc. C.G. ...	100kΩ	F2
R3	S.G. feed	12kΩ	E2
R4	A.G.C. decoupling	2·2MΩ	E2
R5	I.F. stopper ...	100kΩ	E2
R6	Volume control ...	1MΩ	—
R7	V3 C.G.	4·7MΩ	D2
R8	V3 S.G. feed ...	4·7MΩ	D2
R9	V3 anode load ...	1MΩ	D2
R10	V4 G.B.	560Ω	E2
R11	V4 C.G.	2·2MΩ	D2

* Electrolytic. † Variable. ‡ Pre-set.
§ "Swing" value, min. to max.



Circuit diagram of the Vidor "Regatta" portable superhet. For M.W. operation, the M.W. frame winding **L1** is shunted across the L.W. winding **L2.** In the oscillator circuit a single tuning coil **L3** is used for both wavebands. The two sections of V4 filament are connected in parallel for 1.4V operation. Its G.B. is obtained from **R10.**

	OTHER COMPONENTS		Approx. Values (ohms)	Location
L1	M.W. frame aerial ...		2·0	—
L2	L.W. frame aerial ...		15·0	—
L3	Osc. tuning coil ...		1·4	E2
L4	Osc. reaction coil ...		1·0	E2
L5	1st I.F. trans.	Pri.	22·0	B1
L6		Sec.	22·0	B1
L7	2nd I.F. trans.	Pri.	22·0	C1
L8		Sec.	22·0	C1
L9	Speech coil ...		3·0	—
T1	O.P. trans.	Pri.	530·0	—
		Sec.	0·2	
S1-S3	Waveband switches		—	F2
S4, S5	Battery switches ...		—	—

Circuit Description—*continued*

R4, C12 to F.C. aand I.F stages, giving automatic gain control.

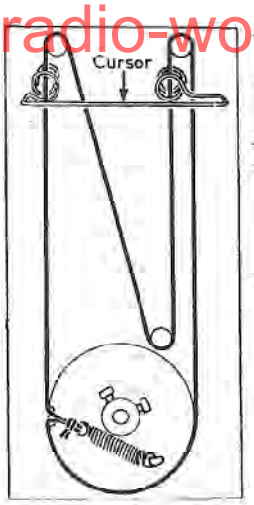
Resistance-capacitance coupling by **R9, C16 and R11** between **V3** pentode anode and control grid of pentode output valve **(V4, Mullard DL94).** Further I.F. filtering by **C15.** Grid bias for **V4** is obtained from the voltage drop across **R10** in the H.T. negative lead to chassis, and as this resistor is not by-passed, a degree of negative feed-back is developed across it and applied to the valve, giving tone correction. The two halves of **V4** filament are connected in parallel for 1.4 V operation. **C17** by-passes the H.T battery.

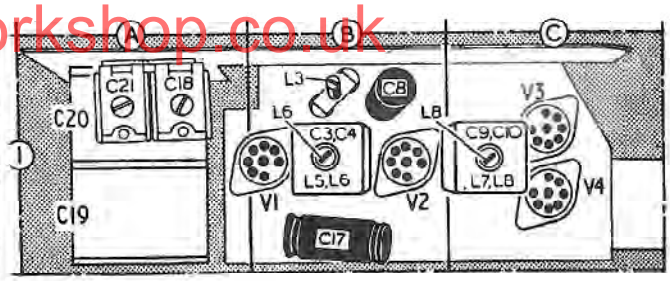
CIRCUIT ALIGNMENT

All the core and trimmer adjustments are made accessible by unscrewing the two captive bolts in the front corners of the receiver escutcheon and raising the escutcheon. The chassis need not be removed.

I.F Stages.—Switch receiver to M.W, tune to 200 m and turn volume control to maximum. Connect signal generator leads to junction of **C18** and **C2,** and to chassis, feed in a 475 kc/s (631.6 m) signal and adjust the cores of **L8** (location reference C1), **L7** (E2), **L6** (B1) and **L5** (E2) for maximum output, reducing the input as the circuits come into line to avoid A.G.C. action. Repeat these adjustments.

RF and Oscillator Stages.—Check that with the gang at maximum capacitance, the cursor is in the centre of the 550 m mark on the tuning scale. The signal generator should be coupled to the frame aerials by laying the leads near the lid of the receiver. If insufficient coupling is obtained in this way, the "live" signal generator lead may be connected to the chassis frame.





Above: Plan view of the chassis. *Left*: Drive cord system, as seen from the front.

M.W.—Switch receiver to M.W., tune to 200 m, feed in a 200 m (1,500 kc/s) signal and adjust **C21** (A1) for maximum output. Tune receiver to 500 m, feed in a 500 m (600 kc/s) signal and adjust the core of **L3** (B1) for maximum output, rocking the gang slightly to obtain maximum output. Repeat these adjustments until the calibration is correct at both ends of the band.

L.W.—Switch receiver to L.W., tune to 1,200 m, feed in a 1,200 m (250kc/s) signal and adjust **C18** (A1) for maximum output. If the calibration at the high wavelength end of the band is badly out, **C6** should be checked and replaced if its value is outside the stated ±1 per cent tolerance.

DISMANTLING

The majority of the chassis components can be made accessible by unscrewing the two captive bolts in the front corners of the receiver escutcheon and raising the escutcheon.

Removing Chassis.—Remove tuning control knob (recessed grub screw) and disconnect battery plugs;
unsolder three leads from volume control tags and two from speaker transformer tags;
remove two wood screws with spacers from inside corners of lid and carefully prise out the felt-covered board from the lid, carrying the frame windings;
remove three leads from frame aerial tags on back of felt-covered board;
remove two wood screws securing battery switch unit to side of carrying case below lid stay;
release battery switch leads from clamp on rear edge of carrying case;
remove three 4BA nuts with shakeproof washers securing chassis and spacing pillars to escutcheon, and withdraw chassis.

When replacing, check that the spacers are in position on the chassis fixing bolts. Viewing the volume control from the rear, with the tags at the top, the yellow lead should go to the left-hand side tag, the red lead to the centre tag and the black lead to the right-hand tag.

The tags on the battery switch should point downwards. Make sure that the waveband switch lug on the escutcheon engages in the switch unit by placing them both in the M.W. position (towards tuning spindle) before replacing the chassis.

Connect the frame aerial lead numbered 2 in the under-chassis view (location reference D2) to the centre tag on the felt-covered board, the lead numbered 1 to the tag nearest the lid stay and the lead numbered 3 to the remaining tag.

GENERAL NOTES

Switches.—S1-S3 are the waveband switches, ganged in a simple slide-type unit. In the M.W. position (slider towards the tuning spindle) **S1** closes; on L.W., **S2** and **S3** close.

S4 and **S5** are the battery circuit switches, mounted in a special spring-loaded unit on the side of the carrying case. It is so positioned that the lid-stay depresses the spring loaded bar when the lid is closed, switching off the receiver. When the lid is raised, the spring brings the bar into contact with the two isolated tags, closing the switches.

Batteries.—The L.T. unit is a Vidor type L.5041, rated at 1.5 V. It is fitted with a 2-pin socket, whose plug diagram, as seen from the free ends of the pins, is inset in the top left-hand corner of the circuit diagram. The H.T. battery is a Vidor type L.5039, rated at 90 V.

Cursor Drive Cord Replacement.—About 30 inches of high-grade fishing line, plaited and waxed, is required for a new drive cord. It is run as shown in the sketch in col 2, where it is drawn as seen from the front when the gang is at maximum capacitance.

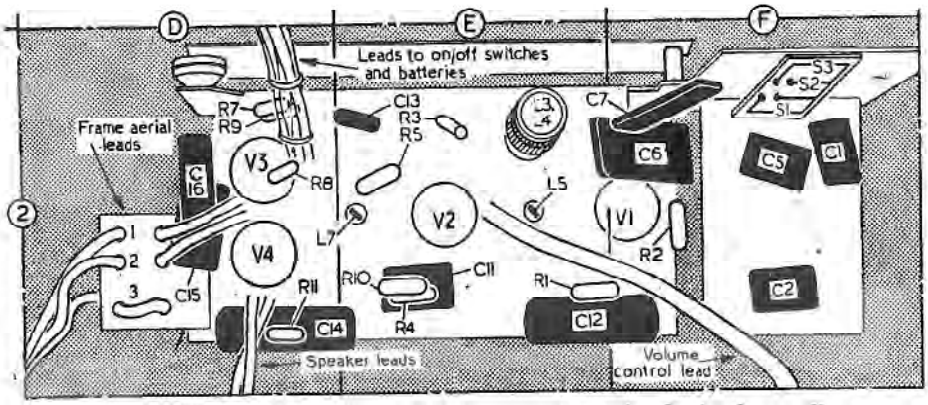
To fit the cord it is necessary to remove the chassis from its mounting, although it may not be necessary to unsolder all the leads. The work is facilitated by the removal of the metal tuning scale panel, which is held by three 8BA round-head screws, with lock-washers. The cursor can be fitted afterwards.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from a new set of batteries. The volume control was turned to maximum, and the receiver was tuned to the highest wavelength end of M.W., but there was no signal input.

Voltage readings were measured with an Avo Electronic TestMeter, which draws no appreciable current, and allowance should be made for the current drawn by other types of meter. Chassis was the negative connection.

Valve		Anode V	Anode mA	Screen V	Screen mA
V1	DK91 ...	87	1·1	56	1·8
V2	DF91 ...	87	2·1	56	0·8
V3	DAF91 ...	19	0·08	19	0·07
V4	DL94 ...	84	5·0	87	1·0



Underside drawing of the chassis. The switch unit **S1-S3** is shown diagrammatically. The volume control **R6** is mounted on the battery cover.

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VIDOR "REGATTA" Model CN420

Four-valve, two-waveband all-dry battery portable superhet with self-contained frame aerials. Grey and blue fabric covered attaché case fitted with cream plastic carrying handle. Weight, complete with batteries, 13lbs. Made by Vidor Limited, West Street, Erith, Kent.

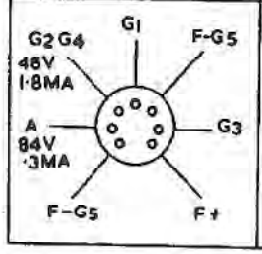
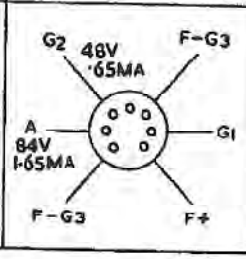
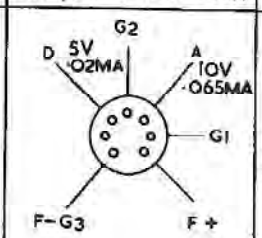
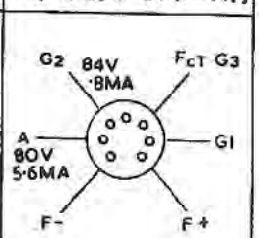
AERIAL.—The receiver is fitted with frame aerials attached to rear of removable panel on inside of case lid. On LW band LW aerial L2, which is permanently connected in circuit, is tuned by VC1 and trimmed by T1 C1 switched in by S1. On MW band S1 disconnects LW trimmers and connects MW aerial L1 across L2 VC1. No MW band aerial trimmer is provided.

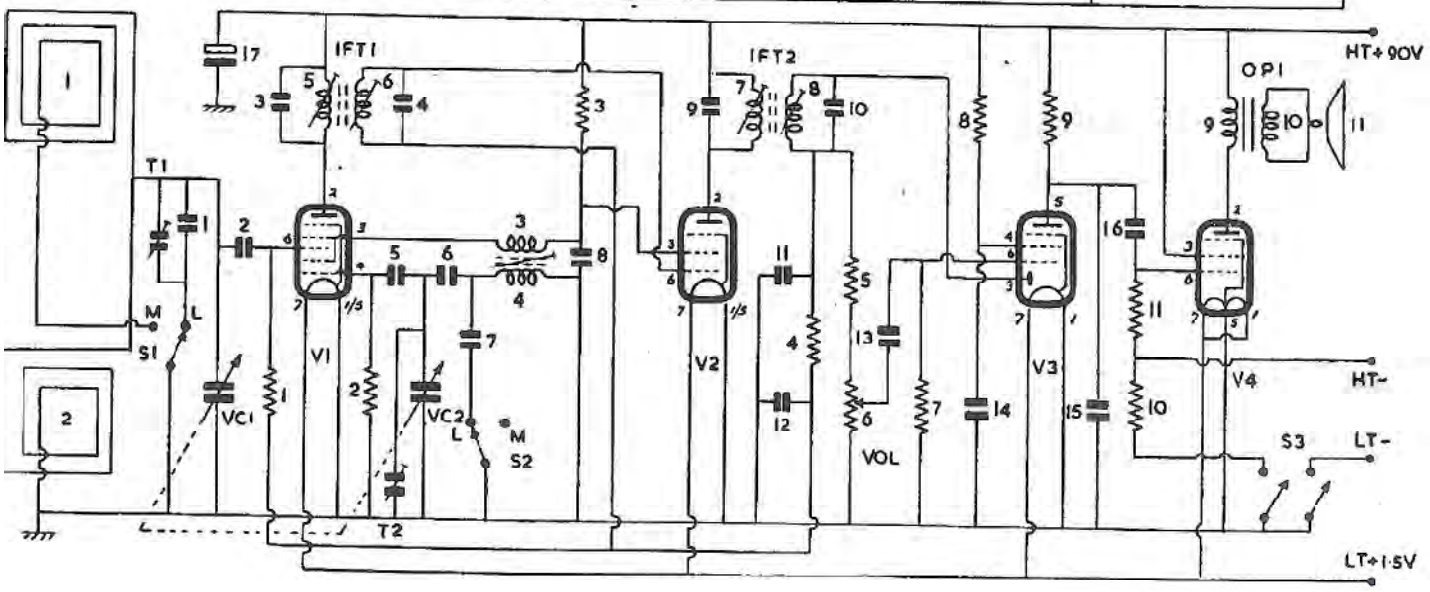
Aerial tuned circuits are coupled by C2 to g3 of heptode frequency-changer V1. AVC decoupled by R4 C12, is applied through R1 to g3. Primary L5 C3 of IFT1 is in the anode circuit.

Oscillator is connected in a tuned-grid series-fed circuit. A single inductance covers both MW and LW, the appropriate ranges being obtained by use of capacity trimmers. On MW band grid coil L4, padded by C7, is tuned by VC2 and trimmed by T2. On LW S2 merely brings into circuit across L4 an additional fixed trimming capacity C7. Tuned circuit is coupled by C5 to oscillator grid (g1) of V1, automatic bias being developed on C5 with R2 as leak.

Anode reaction voltages are developed across L3 connected in series with oscillator anode (g2, g4) of V1, the HT for which is obtained from V2 screen dropper R3 decoupled by C8.

IF amplifier operates at 475kc/s. Secondary L6 C4 of IFT1 feeds signal and AVC voltages decoupled by R4 C12 to g1 of IF amplifier V2. Screen voltage is obtained from R3 decoupled by C8. Suppressor grid is internally strapped to negative

V1 — DK91-1R5-X17	V2-DF91-1T4-W17	V3-DAF91-1S5-ZD17	V4-DL94-3V4-N19	
				TOTAL HT CURRENT = 10·8MA TOTAL FILAMENT CURRENT = 250MA BIAS VOLTAGE ACROSS R10 = 5·6V



side of filament. Primary L7 C9 of IFT2 is in the anode circuit.

Signal rectifier. Secondary L8 C10 of IFT2 feeds signal to diode anode of V3. R6 the volume control is the diode load and R5 C11 form an IF filter.

AVC. The DC component of the rectified signal across R5 R6 is decoupled by R4 C12 and fed to g3 of V1 and g1 of V2.

AF amplifier. Audio signal across volume control R6 is fed by C13 to pentode AF amplifier section of V3. Automatic bias for grid is developed on C13 with R7 as leak. Screen voltage is obtained from R8 decoupled by C14. Suppressor is internally strapped to negative side of filament. R9 is anode load and C15 anode RF bypass capacitor.

Output stage. Signal at anode V3 is fed by C16 to pentode output amplifier V4. Negative bias is obtained by connecting earthy end of grid load R11 to chassis through HT negative biasing resistor R10. Screen voltage is obtained direct from HT line decoupling being provided by C17. Output signal at anode is transformer coupled by OP1 to a 5in. PM speaker L11.

HT of 90V is obtained from a Vidor L5039 heavy duty type battery, decoupling being by C17.

LT of 1.5V for the parallel connected filaments of V1 to V4 is obtained from a Vidor L5041 battery. S3 the on/off switch, which is mounted on side of case and automatically operated by lid stay, breaks HT and LT negative connections to chassis.

Servicing. If the two large screws at front corners of hinged escutcheon plate are unscrewed, the plate, with chassis attached, can be opened up to give access to batteries and chassis. To renew dial drive cord it is necessary to remove chassis from escutcheon to give access to pulleys and drive wheel. Chassis is held by three hexagon nuts marked "A" on layout.

CAPACITORS

C	Capacity	Type
1	150pF	Silver Mica
2	100pF	Silver Mica
3	65pF	Silver Mica
4	65pF	Silver Mica
5	100pF	Silver Mica
6	635pF	Silver Mica
7	515pF	Silver Mica
8	.1	Tubular 350V
9	65pF	Silver Mica
10	65pF	Silver Mica
11	100pF	Silver Mica
12	.05	Tubular 200V
13	.001	Tubular 500V
14	.05	Tubular 200V
15	200pF	Silver Mica
16	.01	Tubular 350V
17	2	Electrolytic 200V

RESISTORS

R	Ohms	Watts
1	470K	½
2	100K	½
3	12K	½
4	2.2M	½
5	100K	½
6	1M Log Law	Potr.
7	4.7M	½
8	4.7M	½
9	1M	½
10	560	½
11	2.2M	½

INDUCTORS

L	Ohms
1	1.5
2	15
3	1
4	1.5
5	20
6	20
7	20
8	20
9	450
10	.5
11	3

TRIMMING INSTRUCTIONS

Apply signal as stated below	Tune Receiver to	Trim in order stated for maximum output
(1) 475 kc/s to VC1 via .01 mF	200 metres	Cores L5, L6, L7, L8
(2) Check to see that with gang fully meshed dial pointer coincides with 550 metre calibration		
(3) 1.5 mc/s to frame via lead placed in close proximity	200 metres	T2
(4) 600 kc/s as above	500 metres	Core L3/4 and repeat operation (3) and (4)
(5) 250 kc/s as above	1200 metres	T1

No LW oscillator trimmer is provided therefore if LW calibration is out, the capacity of C7 should be checked.