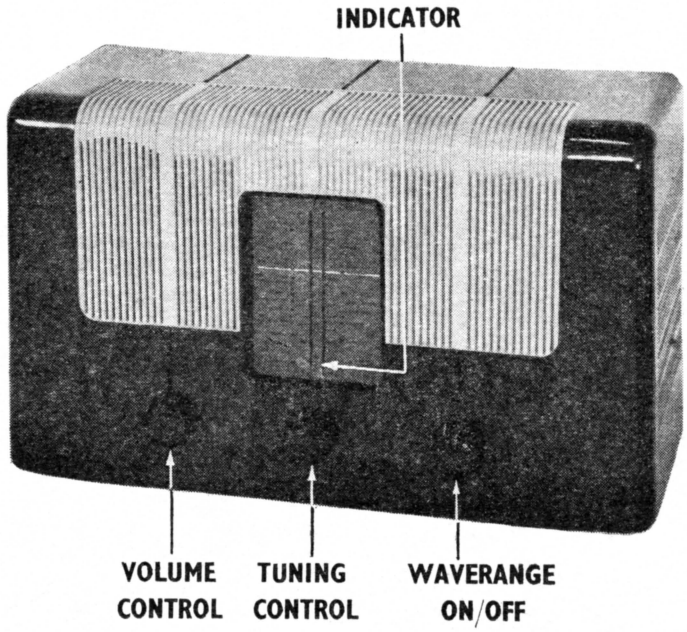
MURPHY RADIO SERVICE INSTRUCTIONS



BATTERY SUPPLY:	120 volt H.T. battery ($8\frac{1}{2}$″ × $6\frac{3}{4}$″ × 3″)
	2 volt accumulator ($5\frac{1}{2}$″ × $3\frac{1}{2}$″ × $8\frac{1}{4}$″ high)
WAVE RANGES:	M.W. 190 to 550 metres
	L.W. 1000 to 2050 metres
INTERMEDIATE FREQUENCY:	465 Kc/s
VALVES:	Mazda TP25, VP23, HL23DD, PEN25
SPEECH COIL IMPEDANCE:	3 ohms
TOTAL WEIGHT:	$10\frac{3}{4}$ lb.
CABINET DIMENSIONS:	17″ × 10″ × 7″
CONSUMPTION:	H.T. 11 M/a.
	L.T. 0·45 Amps.

Issued by

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MECHANICAL NOTES

THE B119 receiver uses a very simple chassis, and it can be easily removed from the cabinet by first removing the control knobs (fixed by grub screws) and the felt washers, and then the three 2 B.A. securing nuts holding the chassis to the front of the cabinet. One of these is at the top of the scale frame, and the others are under the chassis near the chassis supports. A 2 B.A. washer is placed between each nut and the chassis. The loudspeaker leads are long enough to allow most servicing to be carried out without removing them. The chassis is light and easy to handle, and if care is taken it may be stood on end, using the small shield near the aerial coil as a prop.

THE LOUDSPEAKER

The loudspeaker is secured by four 4 B.A. nuts threaded on to inserts in the cabinet. An earth tag is placed under one nut, and a 4 B.A. washer is placed under each of the other three. The loudspeaker lead which is connected to chassis is also connected to the earth tag on the loudspeaker.

THE I.F. TRANSFORMERS

The compact chassis has been achieved by the use of midget I.F. transformers. Their size necessitated the use of small dust iron cores which are moulded with a thread on the outside, and screwdriver slots in the ends. These cores are rather fragile and care must be taken when adjusting them that they are not damaged and it is recommended that a bakelite or similar tool is used. Also great care must be taken that they are not screwed in too far, as it is possible for them to become disengaged from the paxolin plate forming the thread in the former, in which case it is necessary to remove the opposite core so that the loose core can be re-started in its thread. When replacing a component in an I.F. can the leads must be unsoldered and the assembly removed from the chassis before it is possible to remove the can by bending back the two tabs underneath. When replacing the coil into the can, the sheet of insulating material should be wrapped round the coil assembly, with the long secondary connection insulated from the can by the small rubber grommet.

THE TUNING COILS

The aerial coil is adjusted to very close limits at the factory, and no provision is made for adjustments when trimming. It is held in place by a clamp which holds the coil on to a lug bent out from the chassis. To remove this coil, first unsolder all connections and then release the clamp so that the coil is freed. It is then possible to rotate the clamp, so that the coil can be lifted straight out of the chassis. The clamp should be fitted round the replacement coil which should be replaced so that the pip in the chassis lug engages with the hole drilled in to the coil former.

The oscillator coil is mounted below the chassis and it is held in place by a metal strap. This is placed in a slot in the coil and the ends, which are bent and passed through slots in the chassis, are then twisted to secure the coil. A brass 0 B.A. plunger is used to alter the inductance of the long wave portion of the oscillator coil, and a wire anti-backlash spring is clipped on to the ends of this metal strap as shown in the top view of the chassis. The removal of this coil is effected by untwisting the strap after the connections have been removed. When replacing the oscillator coil see that the notch in the former near one of the tags corresponds to test point 17 on the underneath view.

THE WAVE-RANGE SWITCH

The wave-range switch is of the single wafer type and is secured to the chassis by the usual $\frac{3}{8}$" nut. If the complete switch has to be replaced, first remove the split pin holding the indicator operating arm to the switch lever. After unsoldering the wires, and removing the securing nut the switch can be tilted and removed quite easily. Some of the lower tags may be more easily unsoldered if the switch is half removed from the chassis.

If the replacement switch is not fitted with the indicator operating lever, this should be removed from the old switch and fitted to the new one. To do this first remove the wafer, rotate the mechanism to the "off" position, place the lever in position with the long arm towards the rear in the opposite direction to the locating lug on the switch plate: then tighten the bolt and nut so that the rear of the switch plate is between $\frac{1}{2}$" and 17/16" from the front edge of the lever, then replace the wafer. The wafer is secured to the switch plate by two 5 B.A. bolts and nuts, and is held in place by a tubular spacer on each bolt. A paxolin washer and a shakeproof washer is placed between each nut and the switch wafer.

It may sometimes be more convenient to replace the wafer of the wave-range switch, without disturbing the switch mechanism. This can easily be effected as both the securing nuts can be removed with a 5 B.A. box spanner without difficulty although in some cases it may be necessary to move some of the wiring aside, or slacken the switch securing nut at the front of the chassis. It is necessary to hold the heads of the bolts with a small screwdriver when removing the nuts.

THE SCALE

The scale can be easily replaced as it is only necessary to remove the two self-tapping screws holding the small clamps at the bottom. The scale can then be withdrawn. When fitting the new scale, fit the four rubber buffers on to the edge, the scale is marked to show the positions of these, push the top of the scale, with buffers into the top clamps on the dial frame, and refix the two screws and clamps so that the scale is held securely.

THE AERIAL AND EARTH LEADS

The aerial and earth leads are connected to the aerial coil and the chassis, they are then knotted, so that they cannot be pulled through the grommet in the chassis, and as a further safeguard, a bakelite washer is placed between the knot and the grommet. When the knot is pulled towards the chassis, no strain should be applied to either of the joints.

In most cases, a good aerial and earth system is recommended, but if the signal from a local transmitter is too strong, reception may be marred by tunable whistles. As no provision is made for an aerial filter, the remedy, if this occurs, is to reduce the input from the local station by shortening the aerial.

CORD DRIVE

To replace the cord drive first set the ganged capacitor to minimum, with the drive drum as shown in the diagram, and then turn the chassis upside down, or stand it on its end.

Obtain a length of approximately three feet of drive cord (thin plaited and waxed Italian hemp cord, as supplied by Murphy Radio Ltd) and thread it three times round the drive spindle as shown in the diagram (page 5).

Bring both ends together, and see that the cord lies evenly on the drive spindle, then pass them through to the front of the chassis, at the same time loop the cords over the two lower pulleys, using a pair of long-nosed pliers if necessary.

Hold the ends firmly to prevent them coming off the pulleys and place the chassis the right way up, with the ganged capacitor at the right-hand side. Still holding both ends firmly, pass the cord from the lower pulley round the left-hand side of the drive drum and thread it through the slot to the front of the drum. Then pass the other cord over the top pulley and round the drive drum in an anti-clockwise direction until it can also be passed through the slot to the front.

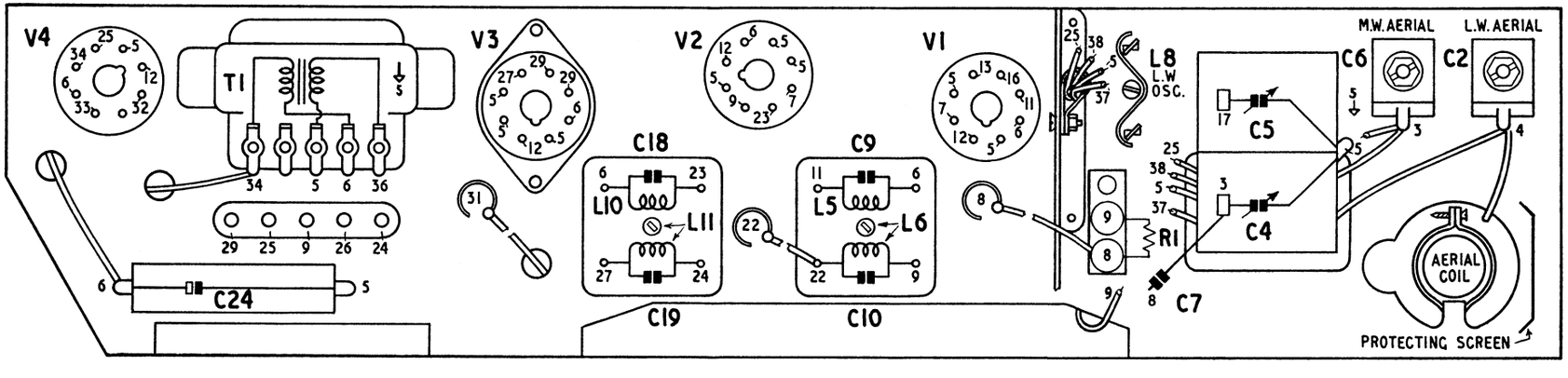
Now turn the gang to maximum, while keeping tension on the cords. This will enable the ends to be tied together more easily, and they should be tied as close to the inside edge of the drum as possible.

Thread one end through the loop in the spring, and again knot the two ends together securely. Now hook the other end of the spring into the hole provided as shown in the diagram; see that the cord is lying evenly in the pulleys and on the drive spindle, and that the operation of the drive is satisfactory. Then cut off the ends of the cord.

THE POINTER

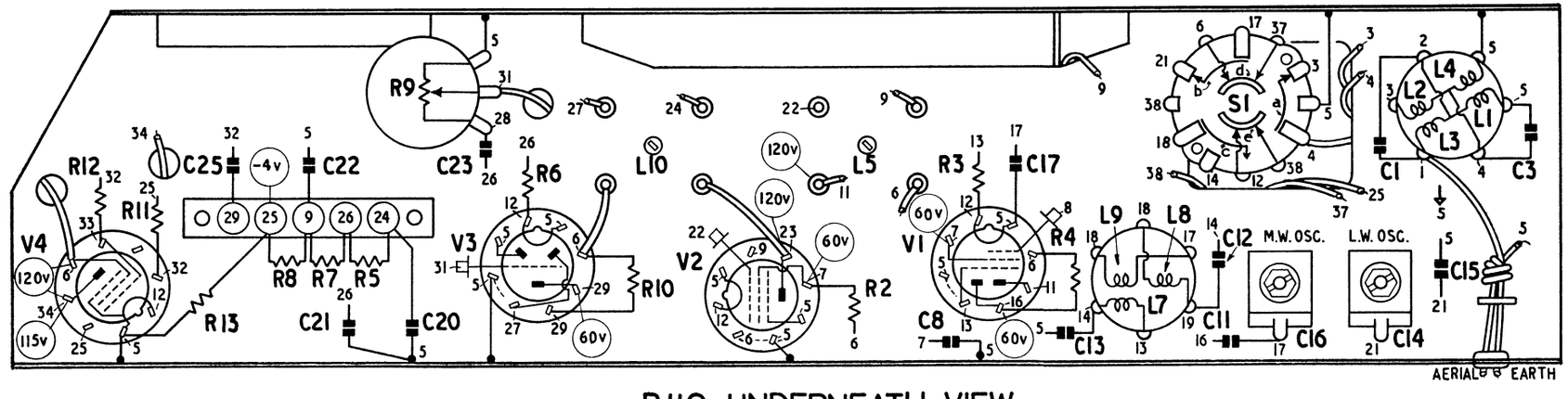
To fix the pointer, first set the ganged capacitor at minimum, and then hold the pointer and carriage in alignment with the top edge of the vertical scale markings. Now hook the cord behind the two small tags on the carriage, and with a small screwdriver, which should not be sharp or it may damage the cord, loop it over the small central projection and push it firmly into position, as shown in the inset on the diagram. Turn the gang to maximum and move the pointer carriage along the cord until the pointer is in alignment with the lowest calibration mark on the M.W. scale.

R														1					
C		24						18 19			9 10				7		5 4	6		2
L								10 11			5 6				8					
MISC	V4			T1			V3			V2			V1							

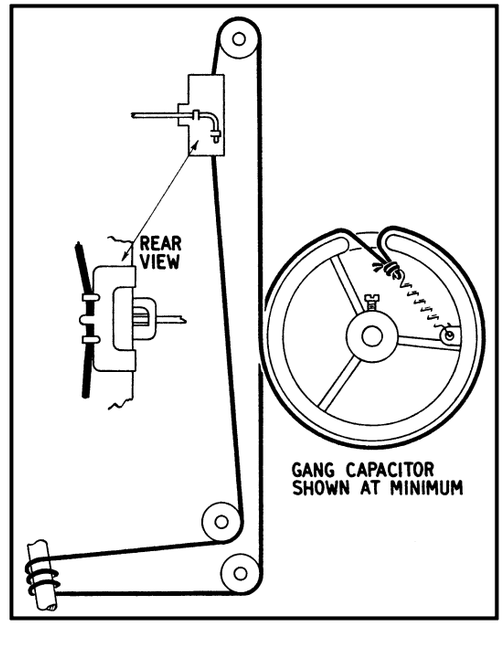


B119 TOP VIEW

R	12	11	13	8 7	9 5		6	10			2		3	4					
C			25	22 21	20	23						8	17	13		12 11	16	1 14	15	3
L								10			5				9 8 7				2 4 3 1	
MISC	V4						V3			V2			V1							



B119 UNDERNEATH VIEW



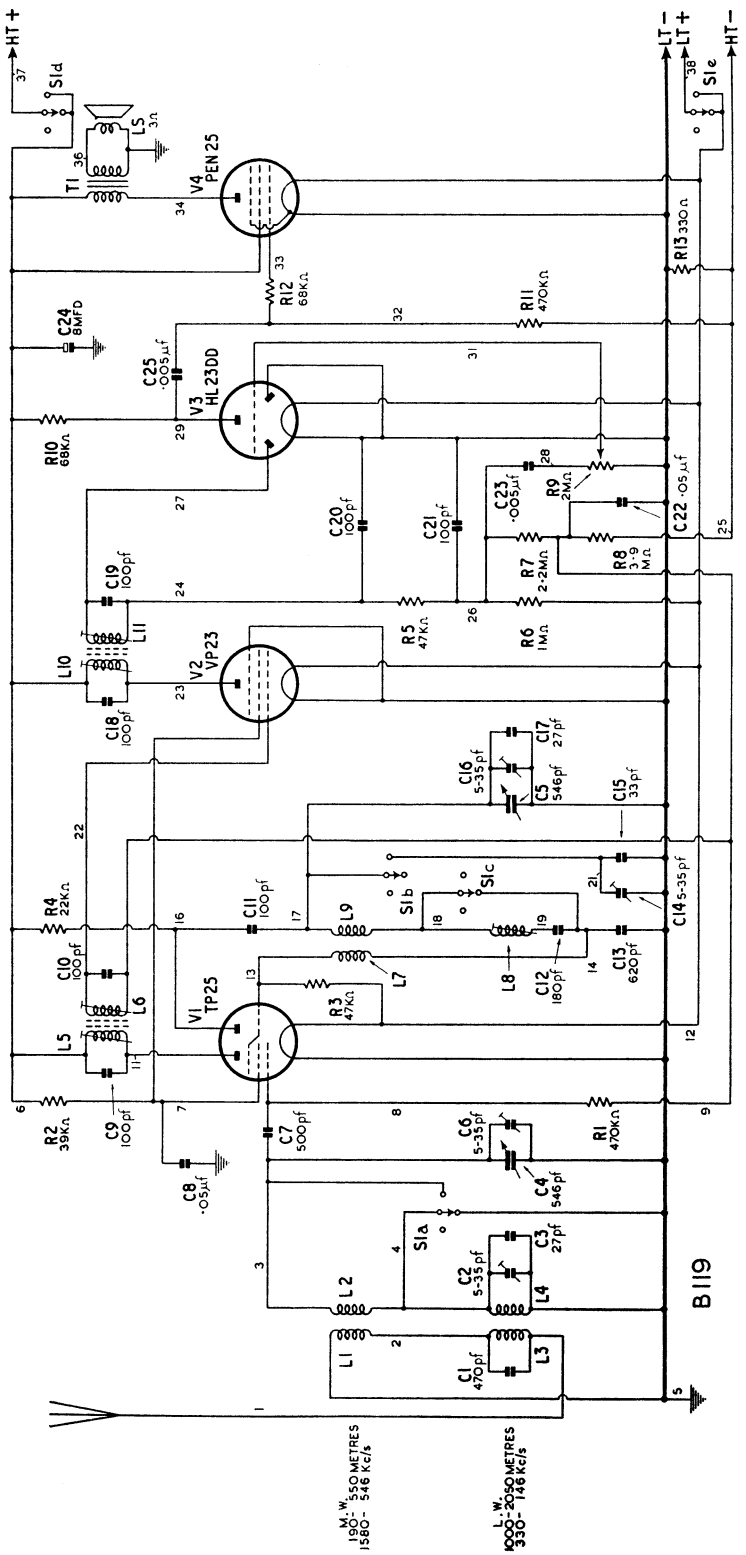
THE CORD DRIVE

Full details of the method of stringing the cord drive will be found in the mechanical notes, and these should be read in conjunction with the above diagram. Note that the pointer is set at the lowest calibration mark when the ganged capacitor is set at maximum.

THE DIAGRAMS

The top and underneath views of the receiver are marked to indicate where wires have been soldered to the chassis. Components and test point numbers are shown in their approximate positions, and the wave range switch is shown as seen from the rear, with the chassis upside down.

The Voltage readings are measured between the test points and chassis, using a 1000 ohms per volt meter, with the receiver switched to M.W. and with a new 120 volt H.T. battery, under no signal conditions.



TYPICAL COIL RESISTANCES

Coil	1	2	3	4	5	6	7	8	9	10	11	T1 Pri.	T1 Sec.
Ohms	1	4	24	24	17	17	·6	2	5	17	17	700	·5

TRIMMING INSTRUCTIONS

All adjustments are made for maximum reading on an output meter connected to the output transformer secondary, with the volume control at maximum and the service signal generator set to produce the lowest readings.

Before starting R.F. adjustments see that the pointer is in alignment with the lowest calibration mark on the M.W. scale when the ganged capacitor is at maximum.

The I.F. dust iron cores are rather fragile and so care must be taken when adjusting them so that they are not damaged. Also great care must be taken that the cores are not screwed in too far as it is possible for them to become disengaged from the thread in the former, in which case it is necessary to remove the opposite core so that the loose core can be restarted in its thread.

It is recommended that a non-metallic screwdriver should be used when adjusting the I.F. transformers.

CIRCUIT	NOTES	SERVICE SIG. GEN. SETTING	SERVICE SIG. GEN. TERMIN'TN	CONNECT SIG. GEN. TO	RECEIVER DIAL SETTING	RECEIVER RANGE	ADJUSTMENTS
2nd I.F.	Unscrew 2nd I.F. Pri. and Sec. cores to fullest extent	465 Kc/s	Through ·1 mfd. capacitor	V2 Control Grid	550 metres	M.W.	2nd I.F. Pri. (L10 under chassis) 2nd I.F. Sec. (L11 top of chassis) DO NOT READJUST
1st I.F.	Unscrew 1st I.F. Pri. and Sec. cores to fullest extent	465 Kc/s	Through ·1 mfd. capacitor	V1 Control Grid	550 metres	M.W.	1st I.F. Pri. (L5 under chassis) 1st I.F. Sec. (L6 top of chassis) DO NOT READJUST
M.W.	The coils are not adjustable	1363 Kc/s 220 metres	Dummy Aerial	Aerial Lead	220 metres	M.W.	M.W. Osc. trimmer (C16 under chassis) M.W. Aerial trimmer (C6 top of chassis)
L.W.	L.W. Osc. coil is adjustable Repeat these adjustments	158 Kc/s 1900 metres	Dummy Aerial	Aerial Lead	1900 metres	L.W.	L.W. Osc. coil (L8 top of chassis)
		300 Kc/s 1000 metres	Dummy Aerial	Aerial Lead	1000 metres	L.W.	L.W. Osc. trimmers (C14 under chassis) L.W. Ae. trimmer (C2 top of chassis)

If the calibration appears to be low at 500 metres check the position of the lead from the wave-range switch to the oscillator coil (test point 14). This lead should pass round the coil in a clockwise direction.