

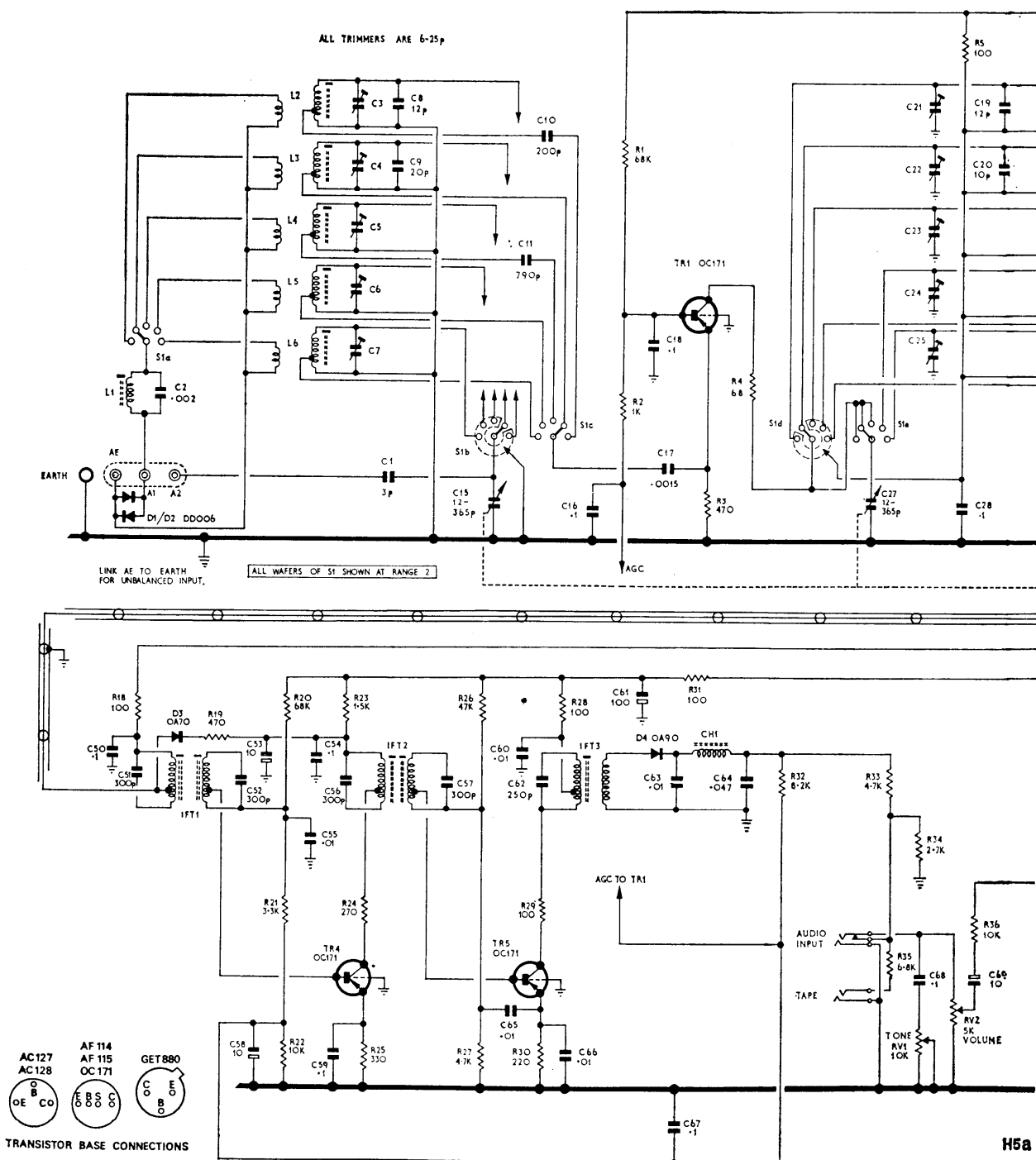
EDDYSTONE

Model EB36

General Description: Fully transistorised receiver based on the EC10 receiver (see 1967-68 volume), and similar in some respects to the EB35 receiver described in the 1968-69 volume.

Frequency Coverage: Ranges 1-5, same as EB35.

Alignment: Sensitivity figures quoted in the instructions that follow are based on the assumption that the battery pack is delivering 9 V. All dust cores and trimmers are self-locking.



(H5a) CIRCUIT DIAGRAM—MODEL EB36 (PART)

Re-alignment of the I.F. Stages: First locate and remove the four screws holding the two angle strips on which the I.F. printed wiring board is mounted. Rotate the board through 90 degrees and temporarily secure in this position using two of the screws just removed. Access to both ends of the I.F. transformers is now possible and the receiver can be placed on its left-hand side-plate to permit connection of the generator output lead to the range 5 mixer coil L_{11} (see underside view of receiver). Generator output impedance should be arranged to match 50Ω , the earthy lead being clipped to the screen adjacent to the coil. Short out the forward section of the tuning gang (C_{48}) to disable the local oscillator and connect the output meter to the telephone socket on the panel. The speaker circuit is interrupted by insertion of the plug and the meter will therefore indicate true output power. Switch on the generator, allow it adequate time to stabilise against drift and set the receiver controls as follows: range switch, range 5; volume, maximum; tuning, 350kc/s; tone, fully c/wise. Tune the signal generator to 465kc/s (with modulation 30 per cent at 400c/s) and then set the attenuator to give a reading of approximately 50mW on the output meter. Peak the cores in IFT_1 , IFT_2 and IFT_3 for maximum output remembering that the first two transformers are double-tuned and the final transformer has a single core only. All cores should be set to the "outer" peak, each adjustment being repeated several times to ensure accurate alignment.

On completion of the adjustments detailed above, re-set the attenuator for an output reading of 50mW and check that the overall I.F. sensitivity is of the order $4\mu V$. If the gain appears to be on the low side, commence investigation by taking sensitivity readings from the bases of TR_4 and TR_5 . The live generator lead must be blocked with a capacitor of some $0.05\mu F$ while making this check which should reveal sensitivities of the order $35\mu V$ and 1mV respectively for an output of 50mW.

A low reading from the base of TR_5 almost certainly indicates a fault in the audio section of the receiver. The appropriate stages can be tested by introducing a 100-c/s signal via the audio input socket at the rear. An input of approximately 5mV should produce 50mW output.

Once the I.F. alignment has been completed, disconnect the generator(s) and output meter, remove the shorting link from C_{48} and refit the I.F. board in its normal position.

R.F. Alignment: The first step in this part of the alignment procedure is a check on the overall calibration accuracy. Proceed as follows:

Connect the output of the harmonic generator to the "A1" and "AE" sockets with the shorting link in place between the "AE" socket and the earth terminal. Set the generator to provide modulated 1Mc/s markers and then tune across the whole of Range 1, checking the scale accuracy at each mc/s point. Accuracy should be within 1 per cent (i.e. 200kc/s at 20Mc/s, 100kc/s at 10Mc/s, 20kc/s at 2Mc/s, etc.). Re-alignment of the local oscillator circuits should be considered necessary only if the error observed is greater than this.

Repeat the check on Range 2 and then select Range 3. The 100kc/s markers can be introduced on this range to permit checking at 500kc/s intervals. On Ranges 4 and 5, check each 100kc/s point.

Errors in excess of 1 per cent on any range should be rectified by carrying out normal tracking procedure, taking care to repeat all adjustments several times to nullify interaction between the appropriate trimmer and core. Alignment frequencies and adjustments are given in Table 1.

(H6) PLAN VIEW—
MODEL EB36

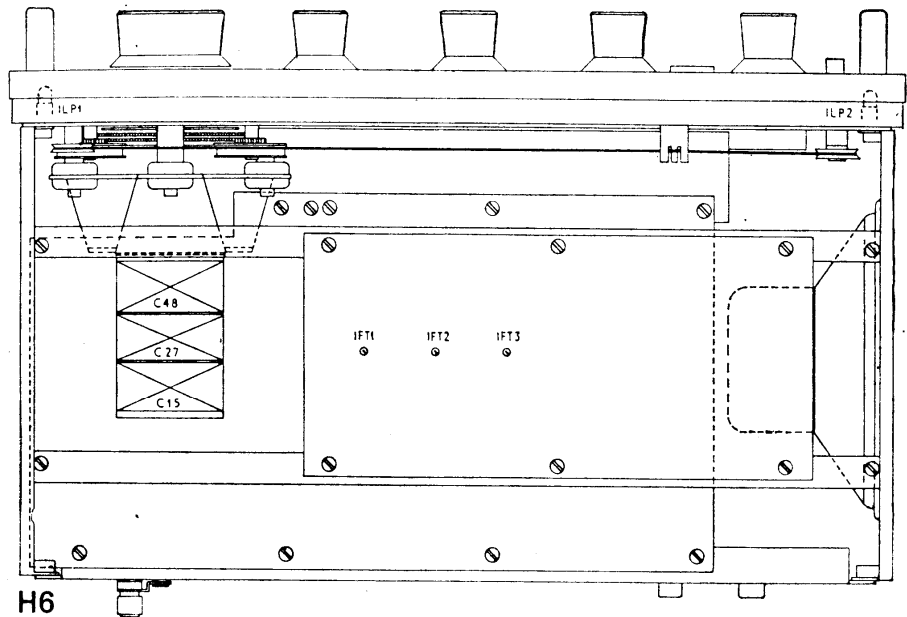


TABLE 1. *Oscillator alignment frequencies and adjustments*

Range	Frequency	Trimmer	Frequency	Core
1	20.0 Mc/s	C39	8.0 Mc/s	L12
2	8.0 Mc/s	C40	3.6 Mc/s	L13
3	3.5 Mc/s	C41	1.5 Mc/s	L14
4	1400 kc/s	C42	550 kc/s	L15
5	330 kc/s	C43	160 kc/s	L16

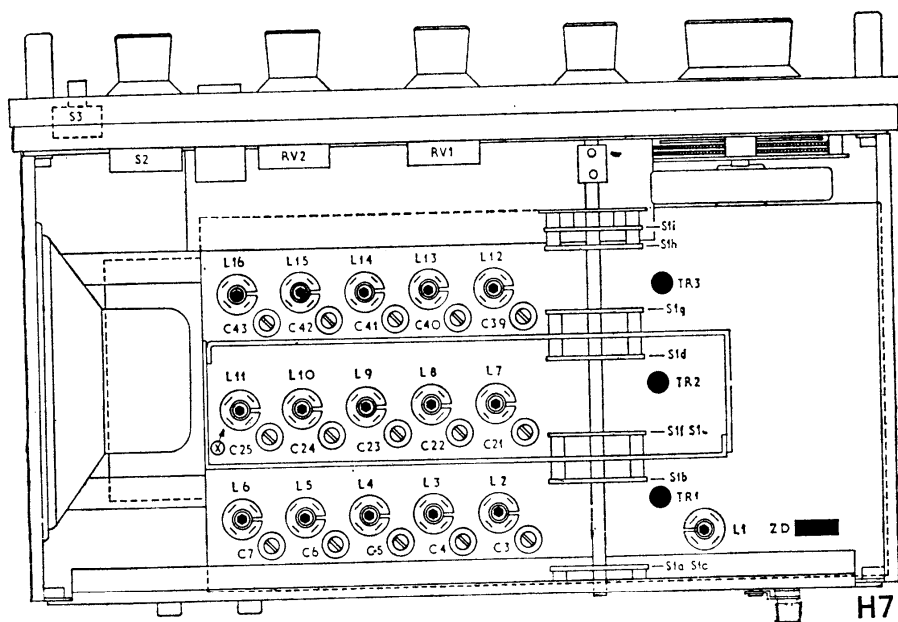
On completion of any realignment of the local oscillator circuits, disconnect the harmonic generator and connect the signal generator in its place prior to commencing realignment of the R.F. aerial and mixer circuits. The generator output impedance should be arranged to match 75 Ω when aligning Ranges 1-3 and 400 Ω for Ranges 4 and 5. Modulation should be set to 30 per cent at 400 c/s and the output meter should be connected to the telephone socket as during I.F. alignment.

Adjustments are made at the same frequencies employed for oscillator alignment but using the trimmers and cores listed in Table 2. As with oscillator alignment, each adjustment should be repeated several times to cancel the inevitable interaction between trimmer and core. The aerial input circuits should be adjusted for best signal/noise ratio.

RADIO SERVICING

TABLE 2. RF/mixer alignment frequencies and adjustments

Range	Trimmer			Core		
	Frequency	Aerial	Mixer	Frequency	Aerial	Mixer
1	20.0 Mc/s	C3	C21	8.6 Mc/s	L2	L7
2	8.0 Mc/s	C4	C22	3.6 Mc/s	L3	L8
3	3.5 Mc/s	C5	C23	1.5 Mc/s	L4	L9
4	1400 kc/s	C6	C24	550 kc/s	L5	L10
5	330 kc/s	C7	C25	160 kc/s	L6	L11



(H7) UNDERSIDE VIEW
—MODEL EB36

Note: Connect generator to tag "X" on L11 when carrying out I.F. alignment.

The I.F. rejector coil L1 should be adjusted when aligning Range 4, the procedure being as follows:

Tune the receiver to 550 kc/s (low frequency alignment point) and the generator to the intermediate frequency of 465 kc/s. Increase output from the generator until an indication is obtained on the output meter. Adjust the rejector coil for *minimum* signal. Re-tune the generator to 550 kc/s reduce its output and check the adjustment of L5 for *maximum* signal. Repeat both checks to ensure accurate alignment of the two circuits.

Finally, carry out a check on the overall sensitivity at the mid-band frequency on each range. With the generator properly matched sensitivities of the order 5 μ V or better should be realised on the three higher frequency ranges. On Ranges 4 and 5 the sensitivity is a little lower being in the region of 15 μ V or better. All sensitivities are quoted for a signal/noise ratio of 15 dB and an output of 50mW in 8 Ω .

Aerials: See data for model EB35.

Drive Cord: Same as model EB35.

Batteries: Dial lamps and cabinet removal similar to model EB35.

Mains Operation: The receiver can be operated directly from all standard A.C. mains supplies by fitting a Power Unit Type 924 in place of the battery

container. The P.U. gives an output of 9 V and has the same physical size and fixing arrangements as the normal battery box. An instruction sheet is supplied with the power unit which can be ordered through your local stockist. Specify for use with EB36 receiver when ordering.

Connecting Telephones or an External Loudspeaker: The "PHONES" socket on the panel of the receiver can be used either for connection of telephones for personal listening or an external loudspeaker which can, if required, be located some distance from the receiver.

Connection to a Tape Recorder or Hi-Fi Amplifier: The socket labelled "TAPE" at the rear of the set can be used to extract a low-level signal for connection to a tape recorder or hi-fi system. A suitable plug is supplied with the receiver and this should be used to terminate a screened cable to feed the external unit. The braid of the cable should be soldered to the neck of the plug shell and the inner wire to the pin.

Using the Receiver as an Audio Amplifier: A second plug is supplied for use when employing the audio stages of the receiver as an amplifier in conjunction with a microphone, gramophone pick-up or tape-replay-head. The socket for this facility is marked "A.F. INPUT" and is arranged to cut out normal signals when the plug is inserted.

Voltage Analysis: Typical voltage readings for each stage are given in the table which follows. All readings were taken under no-signal conditions on Range 5 using a testmeter with a sensitivity of 20,000 ohms/volts. All readings are negative W.R.T. earth and a tolerance of 20 per cent should be allowed.

<i>Reference</i>	<i>Collector volts</i>	<i>Base volts</i>	<i>Emitter volts</i>
TR ₁	6.1	0.95	0.65
TR ₂	6.3	1.25	1.3
TR ₃	6.1	1.5	1.5
TR ₄	5.0	1.15	0.95
TR ₅	8.0	0.7	0.45
TR ₆	6.4	0.5	0.45
TR ₇	0.16	4.2	4.6
TR ₈	4.7	0.16	—
TR ₉	—	4.8	4.9
TR ₁₀	9.0	5.0	4.9

Circuit Modifications: TR₈ and TR₁₀ are Mullard AC128.