EDDYSTONE "750"

ALIGNMENT INSTRUCTIONS

It is assumed that test instruments are available — in particular, a Signal Generator covering 85 kc/s. to 32 Mc/s. and provided with internal modulation (30%) and a calibrated attenuator ; and an audio output meter, calibrated in milliwatts and decibels and adjustable to match an impedance of 2·5 ohms. Trimming should be carried out with a non-metallic tool such as the Eddystone Cat. No. 122T.

IF STAGES.

The controls should be set as follows :

RF Gain minimum	Band Selector Range 1.
IF Gain maximum	BFO Off.
AF Gain maximum	Noise Limiter Off.

Selectivity maximum.

A 30% modulated input, at 85 kc/s., is applied between chassis and the grid of V4* (the second frequency changer), and the four cores in the IF transformers marked " 2nd " and " 3rd " in Fig. 1 adjusted to give maximum output, as indicated on the output meter. The attenuator of the S.G. should be adjusted as necessary to prevent the needle of the output meter going off the scale. An input of about 280 microvolts will normally be required to give 50 milliwatts at the speaker terminals.

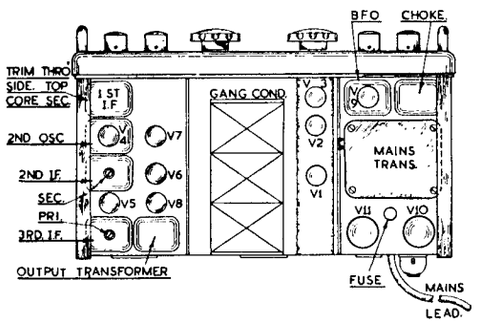


Fig. 1

Leaving the controls and connections undisturbed, the input frequency should be changed to 1620 kc/s. and the second oscillator adjusted, by moving the core in the V4 screening can (see Fig. 3), until output is maximum. Because of the slight loss in conversion, a greater input (by some 2 or 3 db) will be required to give 50 milliwatts output. The change to 85 kc/s. can be obtained with the oscillator on either the high or the low side of 1620 kc/s. and two positions of oscillator core will give output — the lower frequency position, with the core furthest in, is the correct one.

The band selector switch should now be moved to " G " and the 1620 kc/s. input applied between chassis and the stator of the centre section of the gang condenser. The primary and secondary cores in the first IF transformer (see Fig. 1) are then adjusted to give maximum output and a further very slight and very careful adjustment of the V4 oscillator core may give an improvement. The final IF sensitivity should be such that 50 milliwatts output is produced for an input (at 1620 kc/s.) of between 5 and 10 microvolts.

BFO ADJUSTMENT.

With the BFO switch at " off," a modulated signal should be applied and tuned in accurately on the receiver. The modulation is switched off, the BFO switched on and, with the pitch control at half-mesh (white spot at top), the core in the BFO unit (see Fig. 3) is set to give zero beat.

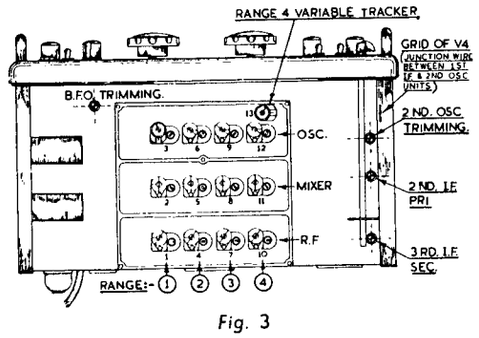


Fig. 3

RF ALIGNMENT.

The controls remain as before but with the RF gain also turned to maximum. Should it be found necessary to correct discrepancies in the scale calibration, the output from a Crystal Frequency Standard should be applied to the aerial terminals (the calibration of most Signal Generators is not accurate enough). Adjustment is then made to the cores and trimmers appropriate to each range, in the oscillator section of the coil box (see Fig. 3). Checks and adjustments should be made at the frequencies given below, using the TRIMMER CONDENSER at the higher frequency end of the scale and the CORE at the lower frequency end. The BFO should be switched on for these tests, with the pitch control at " 12 o'clock." The ceramic tracker condenser shown in Fig. 3 has been very carefully adjusted for proper tracking on Range 4 and it is not advisable to touch it.

Range 1.	13 Mc/s. and	31 Mc/s.
Range 2.	5 Mc/s. and	11 Mc/s.
Range 3.	2 Mc/s. and	4 Mc/s.
Range 4.	500 kc/s. and	1400 kc/s.

To proceed with the alignment of the RF and Mixer stages, the BFO is switched off, the crystal oscillator removed and the modulated output from the Signal Generator connected to the aerial and earth terminals, via the dummy aerial. The attenuator is set to give an output of between 10 and 20 microvolts.

A signal on 13 Mc/s. should be injected and tuned in on Range 1 of the receiver. The CORES in the RF and Mixer stages are then adjusted for maximum output as indicated by the output meter. Next, the S.G. is set to 30 Mc/s. and the output peaked by adjustment of the TRIMMER CONDENSERS. Adjustment is again made at 13 Mc/s. and the procedure repeated until no further improvement is possible.

The other ranges are aligned in the same way, using the following high and low frequency alignment points on each range :

Range	*Trimmer Frequency*	*Core Frequency*	*RF Coil*	*Mixer Coil*
1	30 Mc/s.	13 Mc/s.	1	2
2	11 Mc/s.	4·7 Mc/s.	4	5
3	4·2 Mc/s.	2 Mc/s.	7	8
4	1350 kc/s.	550 kc/s.	10	11

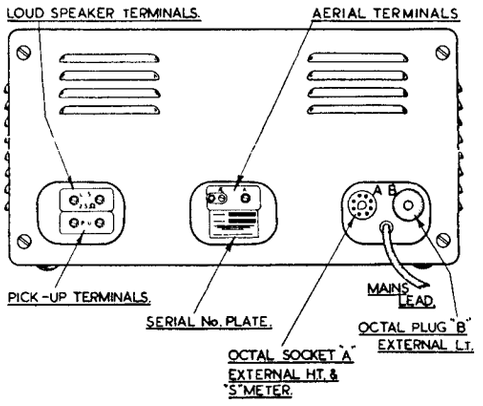


Fig. 2

VOLTAGE VALUES

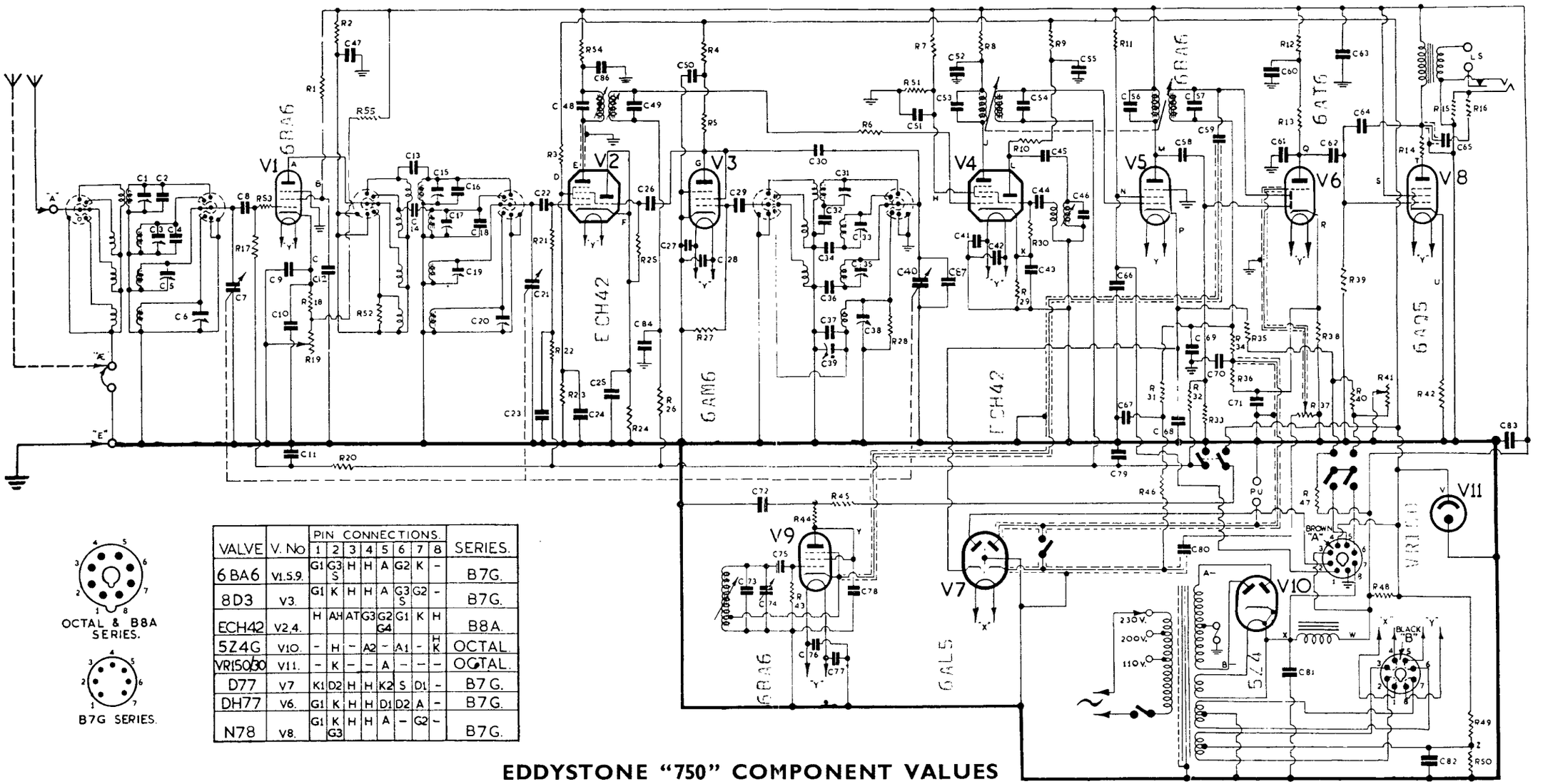
The voltages are between the point indicated and the chassis. Set the receiver at 28 Mc/s. on Range 1 with the aerial shorted out, IF and RF controls set at maximum. AF gain control set at minimum with BFO on. Two sets of values are given using different meters as shown. It will be evident that the actual voltage indicated depends on the meter employed. A tolerance of plus or minus 5% should be allowed on the values given.

Circuit Reference	*Weston 1,000 ohms/Volt*	*Avo Model 40*
A	225 volts	225 volts
B	98 "	90 "
C	1·0 "	·95 "
D	82 "	80 "
E	235 "	236 "
F	1·6 "	1·5 "
G	98 "	73 "
H	78 "	75 "
J	232 "	230 "
K	1·4 "	1·2 "
L	85 "	80 "
M	235 "	235 "
N	85 "	80 "
P	0·9 "	0·9 "
Q	65 "	13 "
R	1·0 "	0·7 "
S	235 "	235 "
T	227 "	225 "
U	4·2 "	4·1 "
V	150 "	150 "
W	235 "	235 "
X	275 "	272 "
Y	75 "	70 "
Z	2·0 "	0·9 "
A—	250 " A.C.	250 " A.C.
B—	250 " A.C.	250 " A.C.

H.T. Consumption : 96 mA.

Power Consumption : 75 volt-amps.

*Accessible under the chassis (see Fig. 3)..



VALVE	V. No	PIN CONNECTIONS. 1	2	3	4	5	6	7	8	SERIES.
6 BA6	V1.5.9.	G1	G3 S	H	H	A	G2	K	-	B7G.
8D3	V3.	G1	K	H	H	A	G3 S	G2	-	B7G.
ECH42	V2.4.	H	AH	AT	G3	G2 G4	G1	K	H	B8A.
5Z4G	V10.	-	H	-	A2	-	A1	-	H K	OCTAL.
VR150/30	V11.	-	K	-	-	A	-	-	-	OCTAL.
D77	V7	K1	D2	H	H	K2	S	D1	-	B7G.
DH77	V6.	G1	K	H	H	D1	D2	A	-	B7G.
N78	V8.	G1	K G3	H	H	A	-	G2	-	B7G.

EDDYSTONE "750" COMPONENT VALUES

RESISTORS.

R1	33,000 ohms.	1W.
R2	1,000 ohms.	Type 16.
R3	10,000 ohms.	½W.
R4	1,000 ohms.	Type 16.
R5	10,000 ohms.	Type 16.
R6	12 ohms.	½W.
R7	27,000 ohms.	1W.
R8	1,000 ohms.	Type 16.
R9	1,000 ohms.	Type 16.
R10	10,000 ohms.	Type 16.
R11	33,000 ohms.	1W.
R12	27,000 ohms.	Type 16.
R13	270,000 ohms.	Type 16.
R14	47 ohms.	½W.
R15	1,000 ohms.	½W.
R16	33,000 ohms.	½W.
R17	470,000 ohms.	Type 16.
R18	68 ohms.	Type 16.
R19	10,000 ohms.	Potentiometer.
R20	470,000 ohms.	Type 16.
R21	470,000 ohms.	Type 16.
R22	470,000 ohms.	Type 16.
R23	15,000 ohms.	1W.
R24	330 ohms.	½W.
R25	100,000 ohms.	Type 16.
R26	470,000 ohms.	Type 16.
R27	22,000 ohms.	Type 16.
R28	10,000 ohms.	Type 16.
R29	220 ohms.	½W.
R30	47,000 ohms.	Type 16.
R31	1,000,000 ohms.	Type 16.
R32	470,000 ohms.	Type 16.
R33	470,000 ohms.	Type 16.
R34	100,000 ohms.	Type 16.
R35	68 ohms.	Type 16.
R36	100,000 ohms.	Type 16.
R37	500,000 ohms.	Potentiometer.
R38	3,000 ohms.	Type 16.
R39	470,000 ohms.	Type 16.
R40	51,000 ohms.	½W.
R41	10,000 ohms.	Potentiometer.
R42	150 ohms.	½W.
R43	47,000 ohms.	Type 16.
R44	47,000 ohms.	Type 16.
R45	1,000 ohms.	½W.
R46	2,000,000 ohms.	Type 16.
R47	100,000 ohms.	Type 16.
R48	2,700 ohms.	± 5% WW.
R49	100,000 ohms.	Type 16.
R50	6,800 ohms.	½W.
R51	27,000 ohms.	1W.
R52	3,900 ohms.	Type 16 or Type T.
R53	12 ohms.	Type T.
R54	1,500 ohms.	½W.
R55	100,000 ohms.	½W

CONDENSERS.

C1	3-23 pF.	Air Trimmer.
C2	20 pF.	Silvered Mica.
C3	3-23 pF.	Air Trimmer.
C4	6 pF.	Silvered Mica.
C5	3-23 pF.	Air Trimmer.
C6	3-23 pF.	Air Trimmer.
C7	10-386 pF.	(RF Sect. Gang Cond.)
C8	100 pF.	Silvered Mica.
C9	·1 mfd.	Tub. Paper.
C10	·01 mfd.	Tub. Paper.
C11	·01 mfd.	Tub. Paper.
C12	·1 mfd.	Tub. Paper.
C13	20 pF.	Silvered Mica.
C14	6 pF.	Silvered Mica.
C15	3-23 pF.	Air Trimmer.
C16	20 pF.	Silvered Mica.
C17	3-23 pF.	Air Trimmer.
C18	6 pF.	Silvered Mica.
C19	3-23 pF.	Air Trimmer.
C20	3-23 pF.	Air Trimmer.
C21	10-386 pF.	(Mixer Sect. Gang Cond.)
C22	100 pF.	Silvered Mica.
C23	·01 mfd.	Tub. Paper.
C24	·1 mfd.	Tub. Paper.
C25	·1 mfd.	Tub. Paper.
C26	10 pF.	Ceramic.
C27	·0005 mfd.	Moulded Mica.
C28	·0005 mfd.	Moulded Mica.
C29	50 pF.	Silvered Mica.
C30	200 pF.	± 2% Silvered Mica.
C31	3-5-20 pF.	Ceramic Trimmer negative temp. coefficient.
C32	2,100 pF.	± 1% Silvered Mica.
C33	3-23 pF.	Air Trimmer.
C34	900 pF.	± 1% Silvered Mica.
C35	3-23 pF.	Air Trimmer.
C36	385 pF.	± 1% Silvered Mica.
C37 *	80 pF.	Silvered Mica.
C38	3-23 pF.	Air Trimmer.
C39	3-23 pF.	Air Trimmer
C40	10-386 pF.	(Osc. Sect. Gang Cond.)
C41	·01 mfd.	Tub. Paper.
C42	·01 mfd.	Tub. Paper.
C43	·01 mfd.	Tub. Paper.

* The 80 pF. may be silvered-mica or a ceramic condenser or a combination of both connected in parallel to obtain the correct temperature co-efficient for drift compensation.

C44	100 pF.	Silvered Mica.
C45	100 pF.	Silvered Mica.
C46	200 pF.	± 2% Silvered Mica.
C47	·1 mfd.	Tub. Paper.
C48	200 pF.	± 2% Silvered Mica.
C49	200 pF.	± 2% Silvered Mica.
C50	·1 mfd.	Tub. Paper.
C51	·1 mfd.	Tub. Paper.
C52	·1 mfd.	Tub. Paper.
C53	800 pF.	± 2% Silvered Mica.
C54	800 pF.	± 2% Silvered Mica.
C55	·1 mfd.	Tub. Paper.
C56	800 pF.	± 2% Silvered Mica.
C57	800 pF.	± 2% Silvered Mica.
C58	20 pF.	Silvered Mica.
C59	20 pF.	Silvered Mica.
C60	8 mfd.	Tub. Elect. 350v. D.C. wkg.
C61	·0005 mfd.	Moulded Mica.
C62	·01 mfd.	Moulded Mica.
C63	·01 mfd.	Moulded Mica.
C64	6 pF.	Silvered Mica.
C65	·01 mfd.	Moulded Mica.
C66	·1 mfd.	Tub. Paper.
C67	·1 mfd.	Tub. Paper.
C68	·1 mfd.	Tub. Paper.
C69	100 pF.	Silvered Mica.
C70	100 pF.	Silvered Mica.
C71	30 mfd.	Elect. 15v. D.C. wkg.
C72	·01 mfd.	Tub. Paper.
C73	400 pF.	± 2% Silvered Mica.
C74	BFO	Pitch Condenser.
C75	100 pF.	Silvered Mica.
C76	·01 mfd.	Tub. Paper.
C77	·01 mfd.	Tub. Paper.
C78	·01 mfd.	Tub. Paper.
C79	·1 mfd.	Tub. Paper.
C80	·01 mfd.	Moulded Mica.
C81	50 mfd.	Elect. 450v. D.C. wkg.
C82	30 mfd.	Elect. 15v. D.C. wkg.
C83	50 mfd.	Elect. 450v. D.C. wkg.
C84	·01 mfd.	Tub. Paper.
C86	·01 mfd.	Tub. Paper.
C87	10 pF.	Ceramic.