

EDDYSTONE

1837
SERIES

SERVICE DATA

for

- 1) CORRECTION BOARD
 - 2) COUNTER MODULE
 - 3) P.S.U.
-

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Cables: Eddystone Birmingham Telex: 337081

Issue No.1. Nov. '86'
(Kuwait).



TEST FOR CORRECTION BOARD

1. Test Equipment Required:-

1837 PSU jig

1837 Correction test jig

Oscilloscope (10mV sensitivity 30MHz bandwidth)

e.g. Telequipment D83

Frequency counter (15MHz maximum frequency, sensitivity 100mV)

e.g. Hewlett Packard type 5300B

Signal generator (high stability 30MHz 800mV maximum output)

e.g. Marconi Instruments

TF2002B with TF2170B synchroniser.

2. Visually inspect boards for:-

- i) Track shorts
- ii) Pins cut off board (underneath)
- iii) Correct polarity of tantalum and electrolytic caps
- iv) Bent IC pins

3. Connect board to test jig.

Ensure signal generator is disconnected from F1 input.

4. Switch on. The lock light may or may not come on. Test operation of the lock light by operating the lock switch.

5. Connect oscilloscope via 10:1 probe set to 10mV range to integrator output socket.

Set test jig to 'IN TUNE' mode.

Set oscilloscope trace to mid screen position.

6. Push D/A set button and adjust balance pot for zero drift of trace. (NOTE the lock light comes on during this test). Typical position of controls indicated on jig. Repeat this operation several times, ensuring D/A button is released after each adjustment.

7. Switch to lock mode and set the Gain Potentiometer to optimum position as indicated by diagram on jig.
8. With oscilloscope still connected, connect frequency counter to F2 output. Test F2 correction by slight adjustment of the fine tune knob. Noting the change of correction voltage on the oscilloscope in either direction (note control set to mid position).

The F2 frequency changes but reverts back to the original reading at the time of going into lock.

9. Connect oscilloscope to Pin 13 earth to Pin 12. Check that a 100kHz sinewave output is within the range of 2V-2.5V peak to peak.
10. Checking $F2/2$ output. Fine tune control mid position. Connect oscilloscope to Pin 4 earth to Pin 3. Check for 100mV square wave and 625kHz approximately.

Reconnect oscilloscope to Pin 6 earth Pin 3 and note that the trace is the same as that on Pin 4.

11. Connect signal generator to F1 input.

Set to 10MHz CW 800mV EMF frequency locked. Connect oscilloscope to Pin 8 and earth Pin 7, and Pin 9 earth Pin 7 earth alternatively.

Note $F1/2$ output.

Check for 100mV square wave frequency 5MHz.

12. Check $F1/2$ output at 30MHz i.e. 15MHz.
13. Connect oscilloscope back to integrator test point and set up trace in tune mode.
14. Switch to lock mode and note that trace stays steady.
15. Change F1 input by 100Hz and note that the trace goes +ve or -ve by about 80mV. Repeat this test in the other direction. Note that F2 output frequency changes by 100Hz.
16. Repeat steps 13 to 15 at 10MHz.

SUPPLEMENTARY AMENDMENT 1837/2B

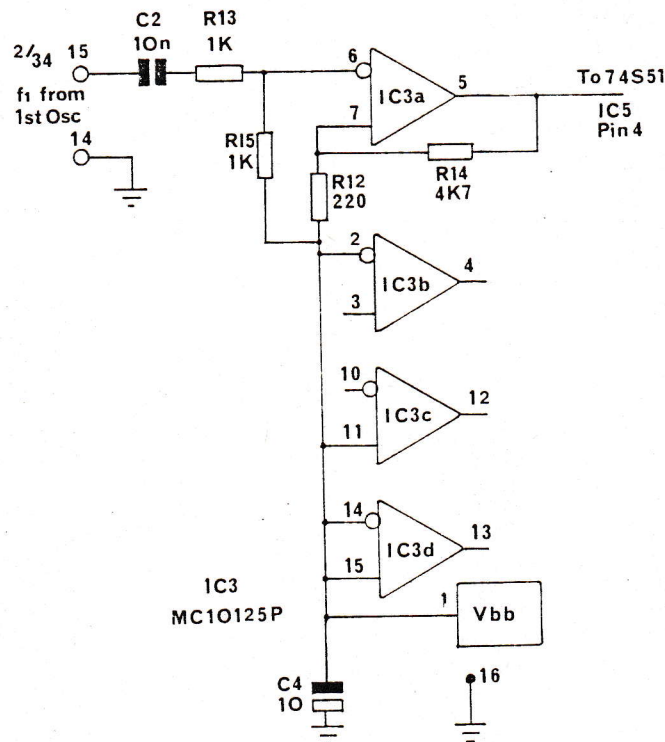
1837/1838 SERIES

A modified correction P.C.B. is now fitted to this series.

The correction module circuit 12 is amended as follows:-

IC4 is deleted

IC3 is modified as shown



5V FEED	IC4	PIN 9	DELETED
	IC3	PIN 9	ADDED
EARTH PINS	IC3	PIN 14	DELETED
	IC4	PIN 16	DELETED
	IC3	PIN 16	ADDED
-5V SUPPLY	IC3	PIN 7	DELETED
	IC3	PIN 8	ADDED
	IC4	PIN 8	DELETED

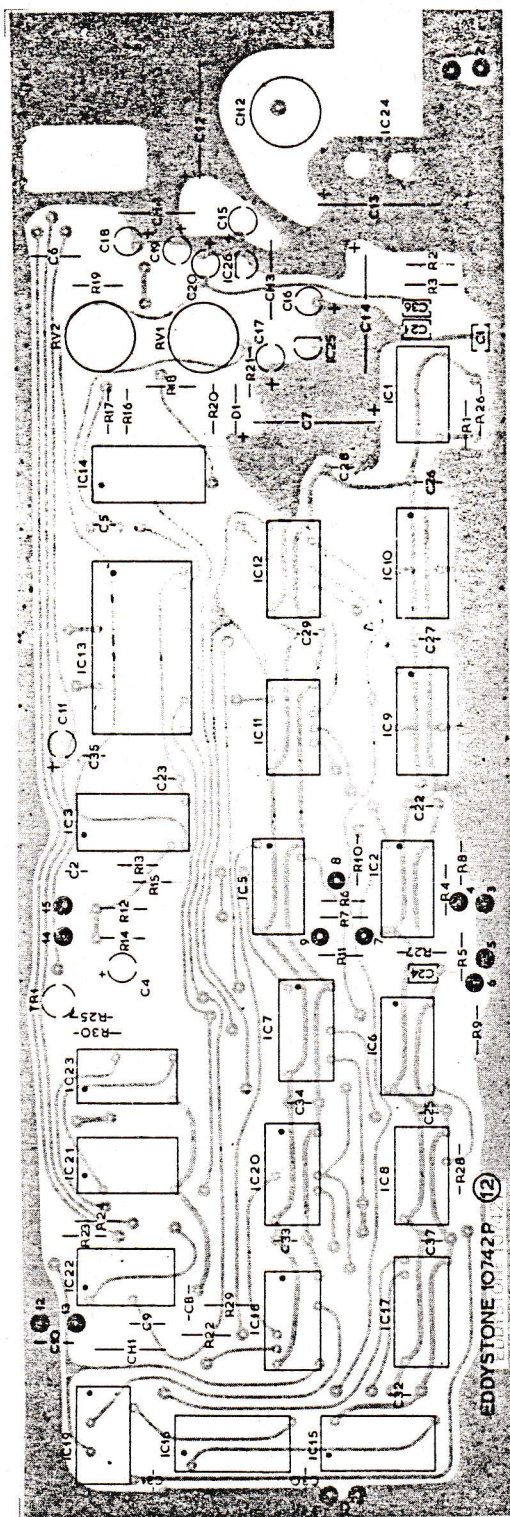
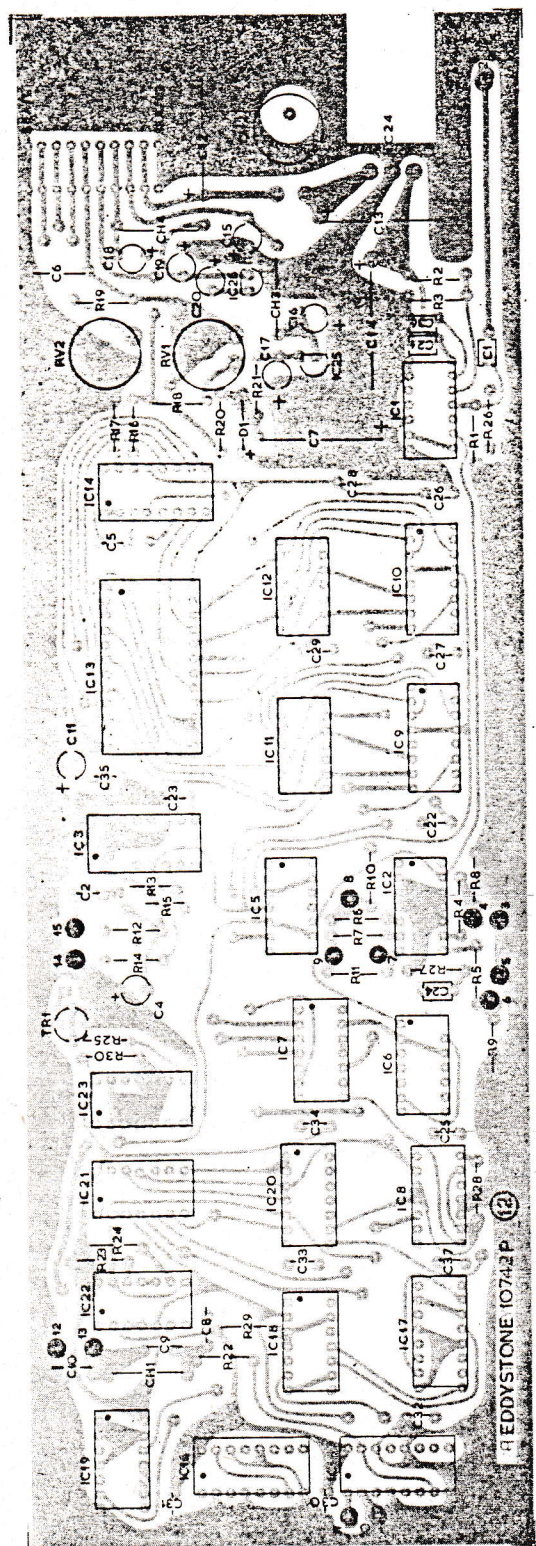
Section 4.12.2 a/ Interface.

1st Paragraph to read:

The 1st oscillator signal f_1 from the coilbox is fed into an ECL line receiver connected as a Schmitt trigger with 200mV hysteresis IC3a. The output of IC3a at TTL level drives a Schottky divide by two, IC2a.

Correction Printed Circuit Board.

The printed circuit board is shown viewed from the legend side, and is slightly less than actual size.



COMPONENTS LIST

4.12.5 CAPACITORS

C4	10 μ	TANTALUM ELECTROLYTIC 25V 20%
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RESISTORS

R12	220R
R13	1K
R14	4k7
R15	1K

INTEGRATED CIRCUITS

IC3	MC10125P	MOTOROLA
IC4	DELETED	

COUNTER MODULE TEST SPECIFICATION

1. Test Equipment Required:-

Counter test jig.

Power supply unit jig.

Signal generator, high stability.

40MHz maximum frequency. 630mV maximum output.

e.g. Marxoni Instrument. 2002B and 2170B synchronizer.

Frequency counter 15MHz maximum frequency.

e.g. Hewlett Packard type 5300B.

Continuity meter.

e.g. Avo Model 8.

2. Remember anti-static removal procedure when removing C-MOS IC's.

3. Visually inspect boards, paying particular attention to:-

- a) Removing solder shorts.
- b) Bent IC pins.
- c) Correct component locations and polarities.
- d) All inter-connecting pins mounted at right angles and soldered together cleanly so that the boards butt together properly.
- e) Check with continuity meter that the mica washer under +5V regulator is not s/c and then solder earth wire to main earthing tag.
- f) Check that the two chokes CH1 and CH2 are glued firmly to bottom board.
- g) Bend pins on bottom board where the 1MHz output co-ax travels and ensure that no sharp edges are presented to the co-ax.
- h) Check LF and HF lead are soldered correctly. With continuity meter, check that they are connected to correct position.

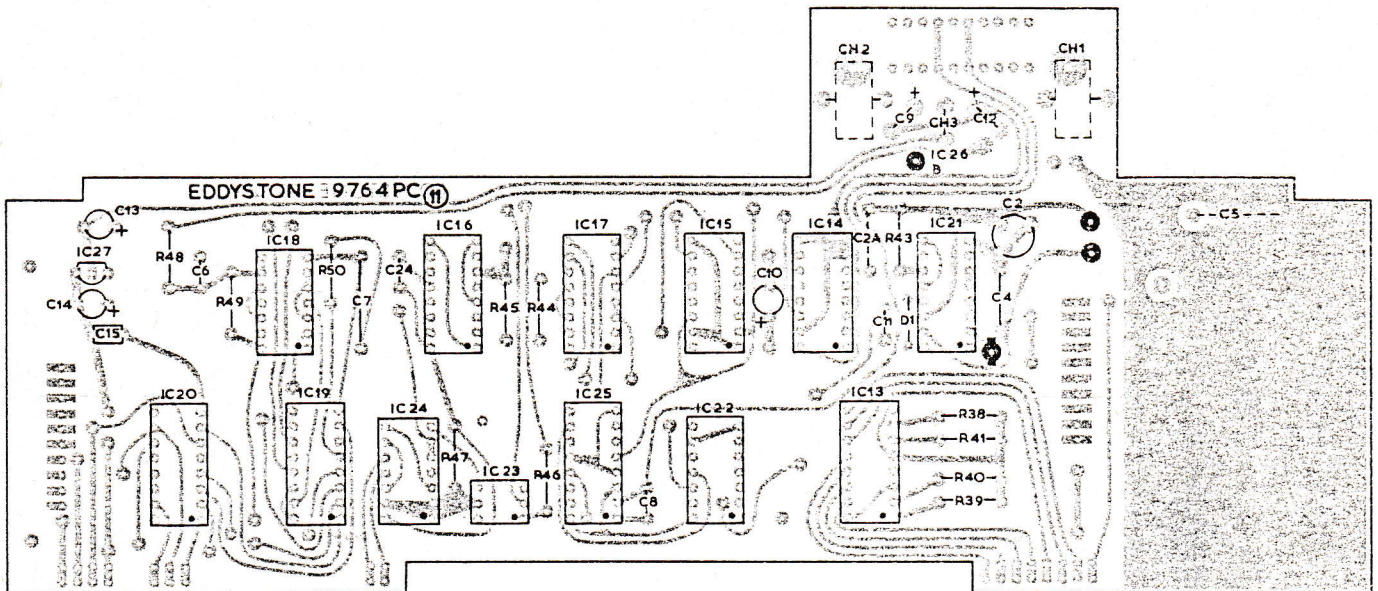
4. Insert 'C' plug from jig into counter module, making sure that it is fitted the correct way as identified (Marked bottom), fit 1MHz crystal and switch on the main PSU. Note that the oven becomes warm.

5. Switch on +9V on jig, display should read 999000.

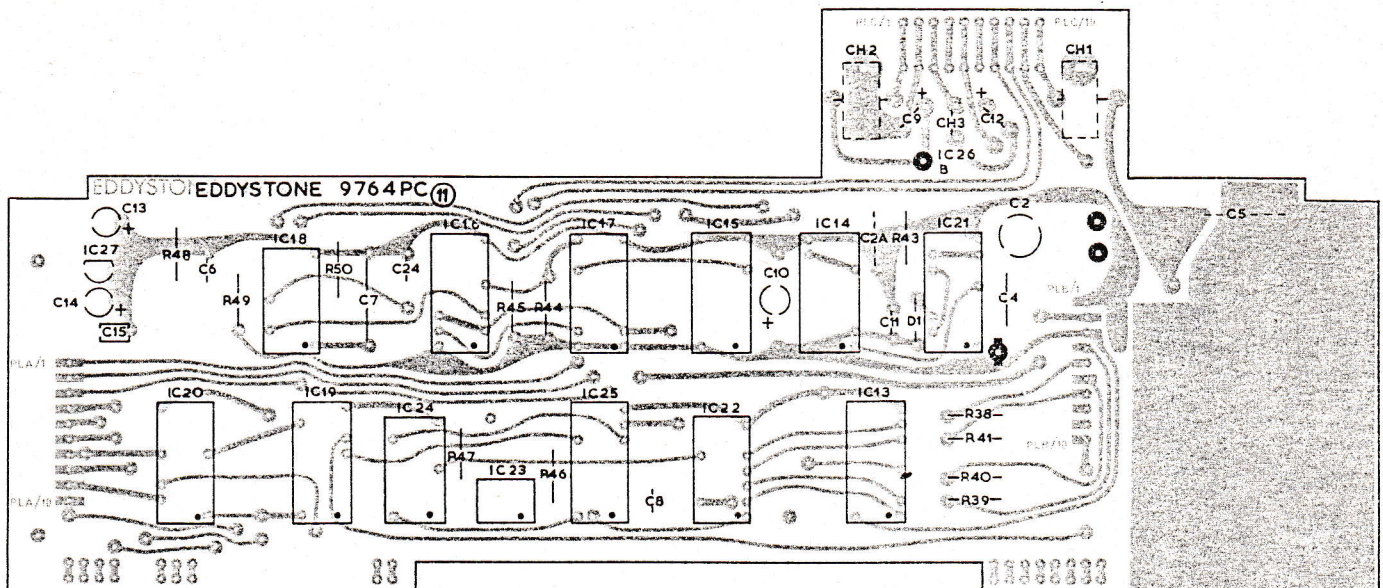
6. Check the following functions on the jig:
 - a) Overrange indicated by display flashing at approximately 1Hz.
 - b) Decimal point switching
 - c) Dimming
7. Connect LF (marked with red tracer) and HF leads to the jig. Set the signal generator to 1250kHz frequency locked, unmodulated 630mV PD and connect to LF input, switch on -9V supply jig. Display should read 986500.
8. Connect generator to HF input on jig, same frequency and level, display should read 11500. (First digit zero blanked).
9. Tune the signal generator to 100kHz unmodulated, 630mV PD, display should be blanked. With the signal generator sweep the frequency to check correct sequence of counter digits 1, 2, 3, 9, 0. Check that the overall count is correct up to 10MHz, switch in Schmitt trigger on jig and check count up to 40MHz. The count should not be irregular or drop off in sensitivity.
10. Connect frequency counter to 1MHz output co-ax lead. Check frequency swing of 1MHz oscillator is at least +30Hz - 15Hz. Set to 1MHz ± 1 Hz. Ensure unit oven temperature has stabilized at 65^o.

4.11.9. Printed Circuit Boards.

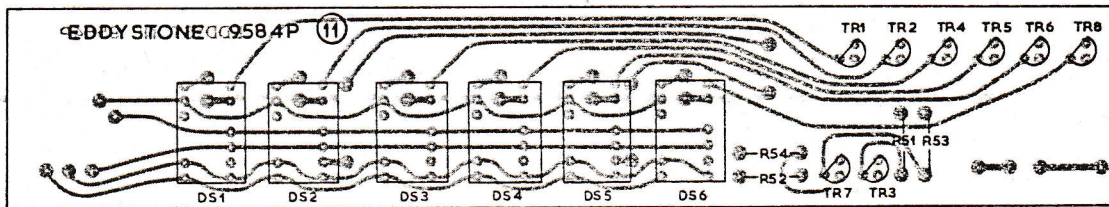
The printed circuit boards are shown viewed from the legend side, and are slightly less than actual size. Each board is shown firstly with legend and rear copper track superimposed and secondly with legend and front copper track superimposed.



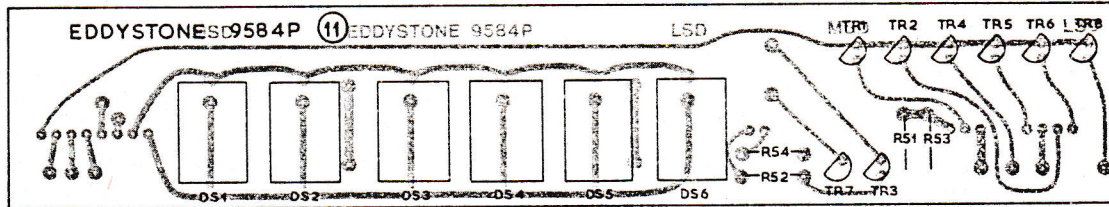
Control Section, showing rear copper track



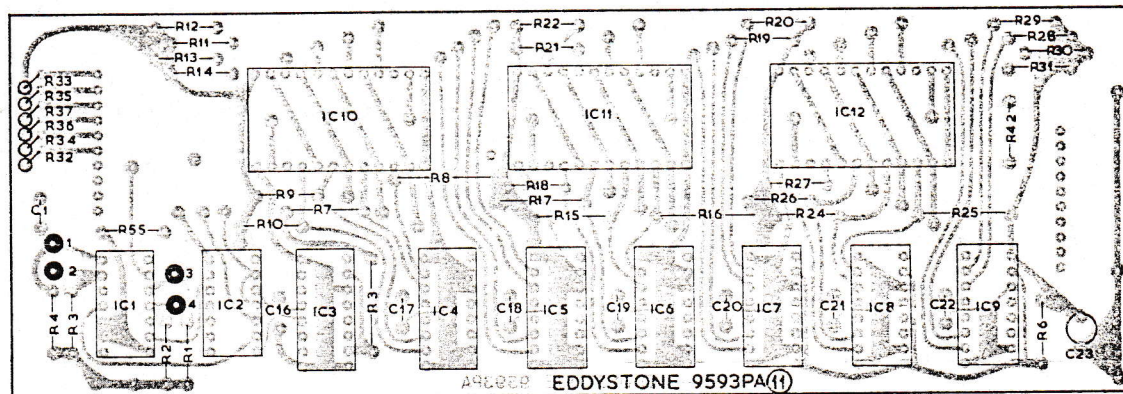
Control Section, showing front copper track



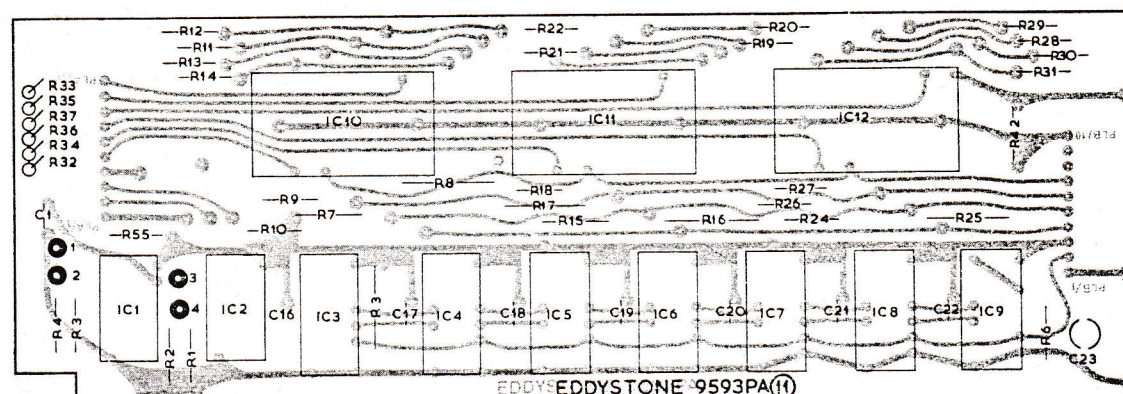
Display Section, showing rear copper track



Display Section, showing front copper track



Input, Counter and Latch Section, showing rear copper track



Input, Counter and Latch Section, showing front copper track

4.11.5. Components List. Module Prefix 11.

Capacitors

Ref	Value	Type	Voltage	Tolerance
C 1	10n	Disc Ceramic	25V	+80%-20%
C 2	2P5-27p	Trimmer 8735P		
C 3		NOT FITTED		
C 4	220p	Polystyrene	125V	2%
C 5	470n	Polycarbonate	100V	20%
C 6	10n	Disc Ceramic	25V	+80%-20%
C 7	270p	Polystyrene	125V	2%
C 8	10n	Disc Ceramic	25V	+80%-20%
C 9	100μ	Tubular Electrolytic	25V	+50%-10%
C10	22μ	Tantalum Electrolytic	16V	+50%-10%
C11	10n	Disc Ceramic	25V	+80%-20%
C12	100μ	Tubular Electrolytic	25V	+50%-10%
C13	10μ	Tantalum Electrolytic	16V	20%
C14	22μ	Tantalum Electrolytic	16V	20%
C15	10n	Disc Ceramic	25V	+80%-20%
C16	10n	Disc Ceramic	25V	+80%-20%
C17	10n	Disc Ceramic	25V	+80%-20%
C18	10n	Disc Ceramic	25V	+80%-20%
C19	10n	Disc Ceramic	25V	+80%-20%
C20	10n	Disc Ceramic	25V	+80%-20%
C21	10n	Disc Ceramic	25V	+80%-20%
C22	10n	Disc Ceramic	25V	+80%-20%
C23	22μ	Tantalum Electrolytic	16V	20%
C24	10n	Disc Ceramic	25V	+80%-20%
C25	220μ	Tubular Electrolytic	16V	+50%-10%

Resistors

Ref	Value (Ω)
R 1	47
R 2	47
R 3	47
R 4	47
R 5	1k
R 6	1k
R 7	3k3
R 8	3k3
R 9	3k3
R10	3k3
R11	3k3
R12	3k3
R13	3k3
R14	3k3
R15	3k3
R16	3k3

Ref	Value (Ω)
R17	3k3
R18	3k3
R19	3k3
R20	3k3
R21	3k3
R22	3k3
R23	not fitted
R24	3k3
R25	3k3
R26	3k3
R27	3k3
R28	3k3
R29	3k3
R30	3k3
R31	3k3
R32	100k

Resistors continued...

Ref	Value (Ω)
R33	100k
R34	100k
R35	100k
R36	100k
R37	100k
R38	100k
R39	100k
R40	100k
R41	100k
R42	100k
R43	10M
R44	3k3

Ref	Value (Ω)
R45	3k3
R46	1k
R47	10k
R48	4k7
R49	22k
R50	100k
R51	18
R52	12k
R53	18
R54	12k
R55	1k
R56	5R1 3 Watt W.W.

All resistors except R56 are Mullard CR25, 0.3 Watt 5%.

Coils

Ref	Value/Type/Part No.
CH1	D5116 Eddystone
CH2	D5116 Eddystone
CH3	3.3mH Sigma SC60

Transistors

Ref	Type
TR1	BC214KB)
TR2	BC214KB)
TR3	BC214KB)
TR4	BC214KB) TEXAS
TR5	BC214KB)
TR6	BC214KB)
TR7	BC214KB)
TR8	BC214KB)

Diodes

Ref	Type
D1	BAX13 Mullard

Displays

Ref	Type	
DS1	5082-7663	Hewlett-Packard
DS2	5082-7663	Hewlett-Packard
DS3	5082-7663	Hewlett-Packard
DS4	5082-7663	Hewlett-Packard
DS5	5082-7663	Hewlett-Packard
DS6	5082-7663	Hewlett-Packard

Integrated Circuits

Ref	Type		Ref	Type	
IC 1	SN75107N-00	Texas	IC15	MC14518BCP	Motorola
IC 2	SN74LS10N-00	Texas	IC16	SN74490N-00	Texas
IC 3	SN74LS192N-00	Texas	IC17	MC14049BCP	Motorola
IC 4	SN74LS192N-00	Texas	IC18	MC14011BCP	Motorola
IC 5	SN74LS192N-00	Texas	IC19	MC14017BCP	Motorola
IC 6	SN74LS192N-00	Texas	IC20	MC14049BCP	Motorola
IC 7	SN74LS192N-00	Texas	IC21	MC14049BCP	Motorola
IC 8	SN74LS192N-00	Texas	IC22	MC14002BCP	Motorola
IC 9	SN74LS192N-00	Texas	IC23	MCT2	Monsanto
IC10	MC14508BCP	Motorola	IC24	MC14011BCP	Motorola
IC11	MC14508BCP	Motorola	IC25	MC14528BCP	Motorola
IC12	MC14508BCP	Motorola	IC26	MC7805CT	Motorola
IC13	MC14511BCP	Motorola	IC27	MC79L05CP	Motorola
IC14	MC14518BCP	Motorola			

MOS Device. See appendix for handling instructions.

Miscellaneous

Ref	Description	Part No.
XL1	1MHz Crystal	9605P
	Crystal Oven	8647P
SKA	10 way connector top entry	9863P
SKB	10 way connector top entry	9863P
SKC	10 way connector side entry	9865P
PLC	10 way free connector (mating for above)	9866P
	Printed Circuit Board (Display)	9584P
	Printed Circuit Board Assembled (Display)	LP3506/27
	Printed Circuit Board (Input, Counter and latch)	9593PA
	Printed Circuit Board Assembled (Input, counter and latch)	LP3506/29

Miscellaneous continued...

Ref	Description	Part No.
	Printed Circuit Board (Control)	9764PB
	Printed Circuit Board Assembled. (Control)	LP3506/28
	Display Module Complete	LP3512

Spares should be ordered by quoting the complete Circuit Reference including the module prefix (where applicable), the description and the part number given in the list. From time to time, components of the type listed may be unavailable and equivalent types may be fitted or supplied as spares. All orders and enquiries should be directed to the address below, quoting the Type and Serial Nos. of the receiver in all communications.

EDDYSTONE RADIO LIMITED,
SALES AND SERVICE DEPT.,
ALVECHURCH ROAD,
BIRMINGHAM B31 3PP.
ENGLAND.

TELEPHONE : 021-475-2231
TELEX: 337081
CABLES: EDDYSTONE
BIRMINGHAM

4.12.5. Components List. Module Prefix 12.

Capacitors

Ref	Value	Type	Voltage	Tolerance
C 1	10n	Disc Ceramic	25V	+80%-20%
C 2	10n	Disc Ceramic	25V	+80%-20%
C 3	10n	Tantalum Electrolytic	25V	20%
C 4	1n	Disc Ceramic	250V	20%
C 5	100p	Ceramic	750V	20%
C 6	100n	Polycarbonate	100V	20%
C 7	150 μ	Tube Electrolytic	16V	+50%-10%
C 8	820p	Silvered Mica	350V	10%
C 9	100p	Silvered Mica	350V	10%
C10	820p	Silvered Mica	350V	10%
C11	10 μ	Tantalum Electrolytic	25V	20%
C12	150 μ	Tubular Electrolytic	16V	+50%-10%
C13	150 μ	Tubular Electrolytic	16V	+50%-10%
C14	220 μ	Tubular Electrolytic	10V	+50%-10%
C15	4 μ 7	Tantalum Electrolytic	35V	20%
C16	4 μ 7	Tantalum Electrolytic	35V	20%
C17	10 μ	Tantalum Electrolytic	25V	20%
C18	10 μ	Tantalum Electrolytic	25V	20%
C19	10 μ	Tantalum Electrolytic	25V	20%
C20	10 μ	Tantalum Electrolytic	25V	20%
C21	10n	Disc Ceramic	25V	+80%-20%
C22	10n	Disc Ceramic	25V	+80%-20%
C23	10n	Disc Ceramic	25V	+80%-20%
C24	10n	Disc Ceramic	25V	+80%-20%
C25	10n	Disc Ceramic	25V	+80%-20%
C26	10n	Disc Ceramic	25V	+80%-20%
C27	10n	Disc Ceramic	25V	+80%-20%
C28	10n	Disc Ceramic	25V	+80%-20%
C29	10n	Disc Ceramic	25V	+80%-20%
C30	10n	Disc Ceramic	25V	+80%-20%
C31	10n	Disc Ceramic	25V	+80%-20%
C32	10n	Disc Ceramic	25V	+80%-20%
C33	10n	Disc Ceramic	25V	+80%-20%
C34	10n	Disc Ceramic	25V	+80%-20%
C35	10n	Disc Ceramic	25V	+80%-20%
C36	10n	Disc Ceramic	25V	+80%-20%
C37	10n	Disc Ceramic	25V	+80%-20%

Resistors

Ref	Value (Ω)
R 1	1k
R 2	10k
R 3	330

Ref	Value (Ω)
R 4	1k5
R 5	1k5
R 6	1k5

Resistors continued.....

Ref	Value (Ω)
R 7	1k5
R 8	47
R 9	47
R10	47
R11	47
R12	1k5
R13	1k5
R14	220
R15	220
R16	2k2
R17	2k7
R18	3k9

Ref	Value (Ω)
R19	100
R20	1k2
R21	560
R22	3k3
R23	4k7
R24	4k7
R25	1k
R26	1k
R27	1k
R28	1k
R29	1k
R30	1k

All resistors are Mullard CR25, 0.3 Watt 5%.

Potentiometers

Ref	Description	Part No.
RV1	4k7 Carbon linear preset	9031P
RV2	560 Carbon linear preset	9034P

Chokes

Ref	Value/Type/Part No.	
CH1	4.7mH	Sigma SC60
CH2	D5116	Eddystone
CH3	1mH	Sigma SC60
CH4	1mH	Sigma SC60

Diodes

Ref	Type
D1	BZX79 C4V7

Transistors

Ref	Type
TR1	BC107B

Integrated Circuits

Ref	Type	
IC 1	SN75107AN-00	Texas
IC 2	SN74S113N -00	Texas
IC 3	MC1035P	Motorola
IC 4	MC1068P	Motorola
IC 5	SN74S51N-00	Texas
IC 6	SN74393N-00	Texas
IC 7	SN7402N -00	Texas
IC 8	SN7470N -00	Texas
IC 9	SN74L75N-00	Texas
IC10	SN74L75N-00	Texas
IC11	SN74197N-00	Texas
IC12	SN74197N-00	Texas
IC13	SN74116N-00	Texas
IC14	MC1408L-8	Motorola
IC15	SN74490N-00	Texas
IC16	SN74490N-00	Texas
IC17	SN74490N-00	Texas
IC18	SN7470N - 00	Texas
IC19	SN7400N - 00	Texas
IC20	SN74164N-00	Texas
IC21	SN7430N - 00	Texas
IC22	SN7400N - 00	Texas
IC23	SN7472N - 00	Texas
IC24	MC7805CT	Motorola
IC25	MC79L15CP	Motorola
IC26	MC79L05CP	Motorola

Miscellaneous

Description	Part No.
Printed Circuit Board	9570P
Printed Circuit Board Assembled	LP3506/1
SKA. Connector 10 way	9865P
PLA . Connector 10 way. Free (Mating for above)	9866P
Correction Module complete	LP3506/1

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