

ICF-C280L

SERVICE MANUAL

AEP Model
UK Model



SPECIFICATIONS

Time display:

UK: 12-hour system
Others: 24-hour system

Frequency range:

FM	87.6–107.5 MHz (AEP, UK, G)
FM	65 – 108 MHz (EE)
AM	
(MW)	531–1,602 kHz
LW	153–255 kHz

Intermediate frequency:

FM: 10.7 MHz, AM: 455 kHz

Speaker: Approx. 6.6 cm (2 5/8 inches) dia., 8 Ω

Power output: 90 mW (at 10% harmonic distortion)

Power requirements:

UK: 240V AC, 50 Hz

Others: 220-230 V AC, 50 Hz

For the power backup function: 9V DC, one 6F22 battery

Battery life: Approx. 80 hours, using the Sony S-006P(U) battery

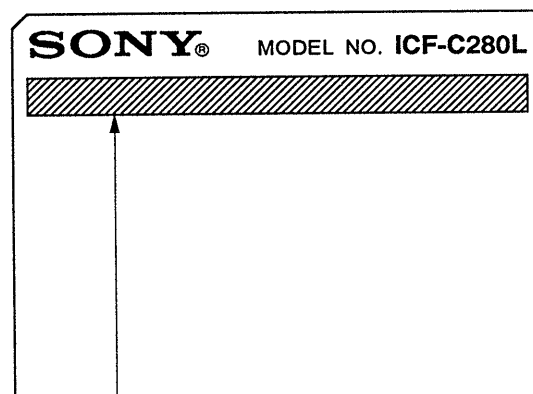
Dimensions: Approx. 192 × 58 × 166 mm (w/h/d)
(7 5/8 × 2 3/8 × 6 5/8 inches) incl. projecting parts and controls

Mass: Approx. 620 g (1 lb 6 oz) not incl. battery

Design and specifications are subject to change without notice.



MODEL IDENTIFICATION

– Model Number Label –



- Carved on rear cabinet
AEP, German, East European models:
AC 220 – 230 V ~50 Hz 5 W
UK model: AC 240 V ~50 Hz 5 W

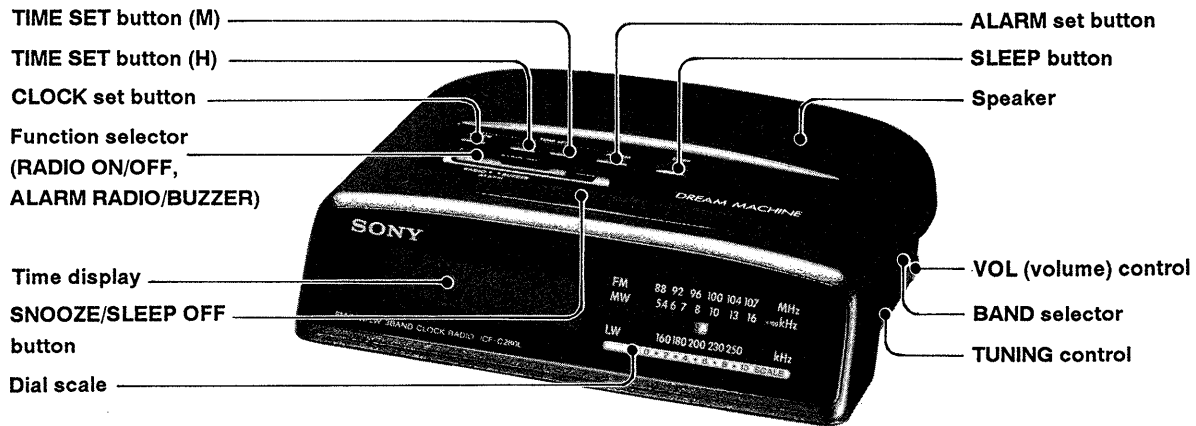
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

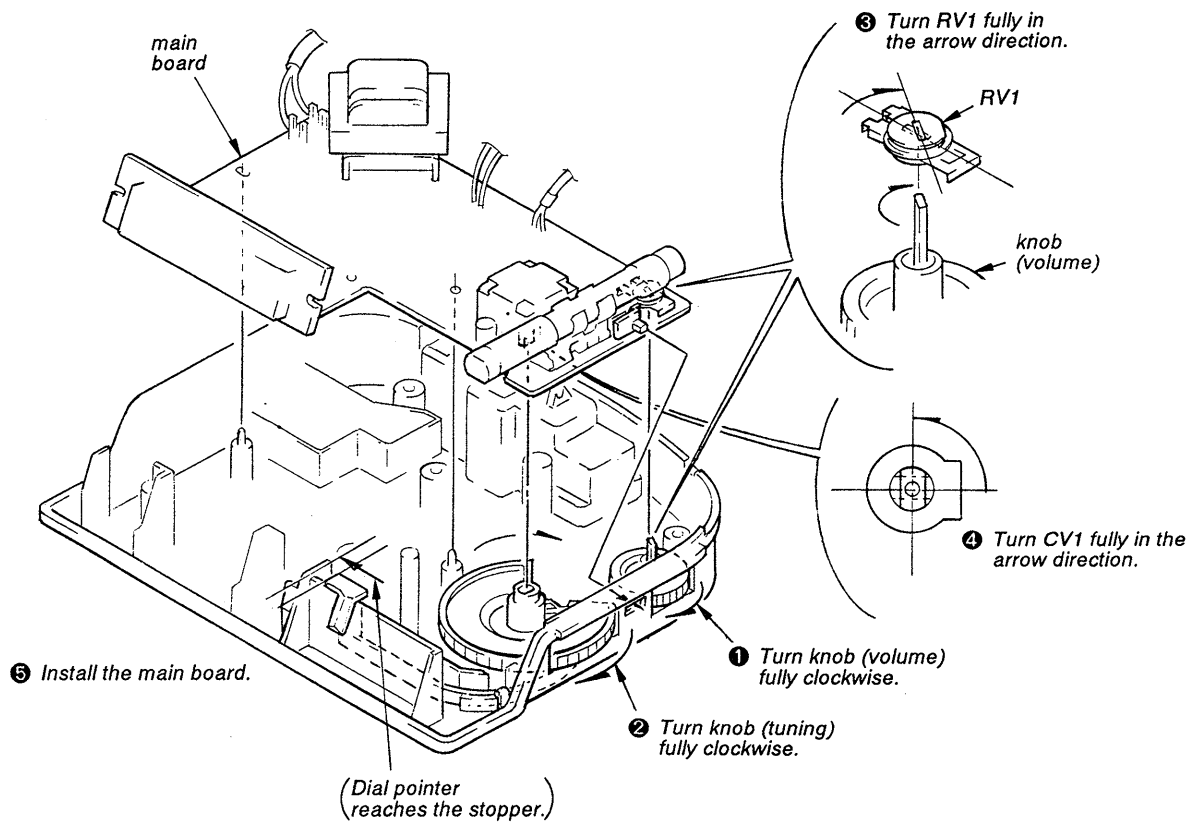
FM/MW/LW 3BAND CLOCK RADIO
SONY

SECTION 1 GENERAL

LOCATION OF CONTROLS



SECTION 2 DIAL POINTER SETTING

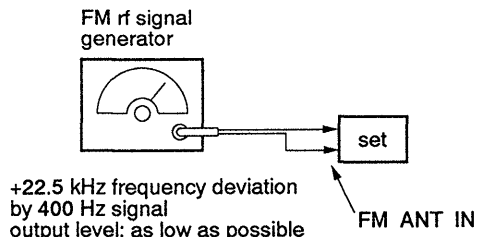


SECTION 3 ELECTRICAL ADJUSTMENTS

• FM Section

Setting:

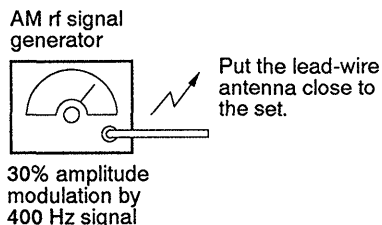
BAND switch : FM



• AM Section

Setting:

BAND switch : MW, LW



() : East European

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L4	CT4
86.35 MHz (64.0 MHz)	108.05 MHz (109.5 MHz)

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L5, L6	CT5
86.35 MHz (64.0 MHz)	108.05 MHz (109.5 MHz)

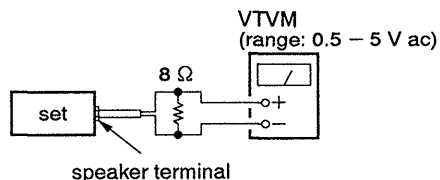
AM IF ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
T2	
455 kHz	

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L3	CT3
520 kHz	1650 kHz

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L7-1	CT6
620 kHz	1,400 kHz

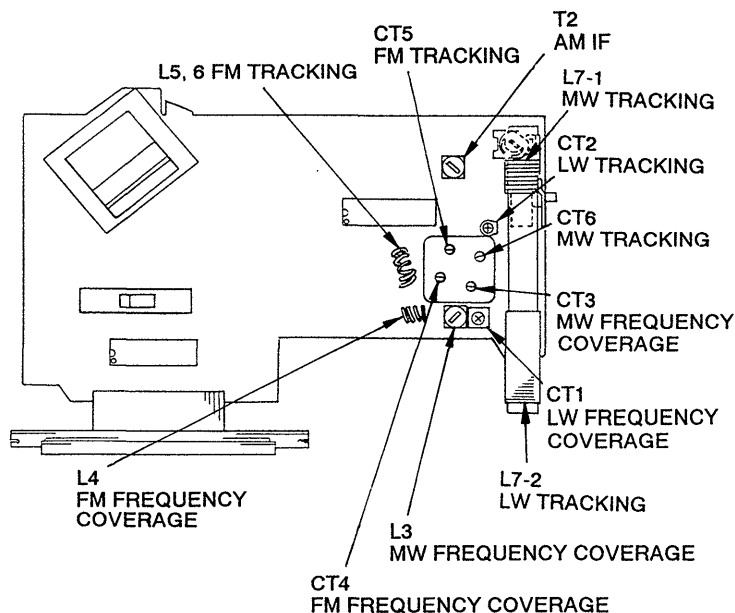
LW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
checking	CT1
145 kHz	265 kHz

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L7-2	CT2
160 kHz	240 kHz



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

Adjustment Location: MAIN Board



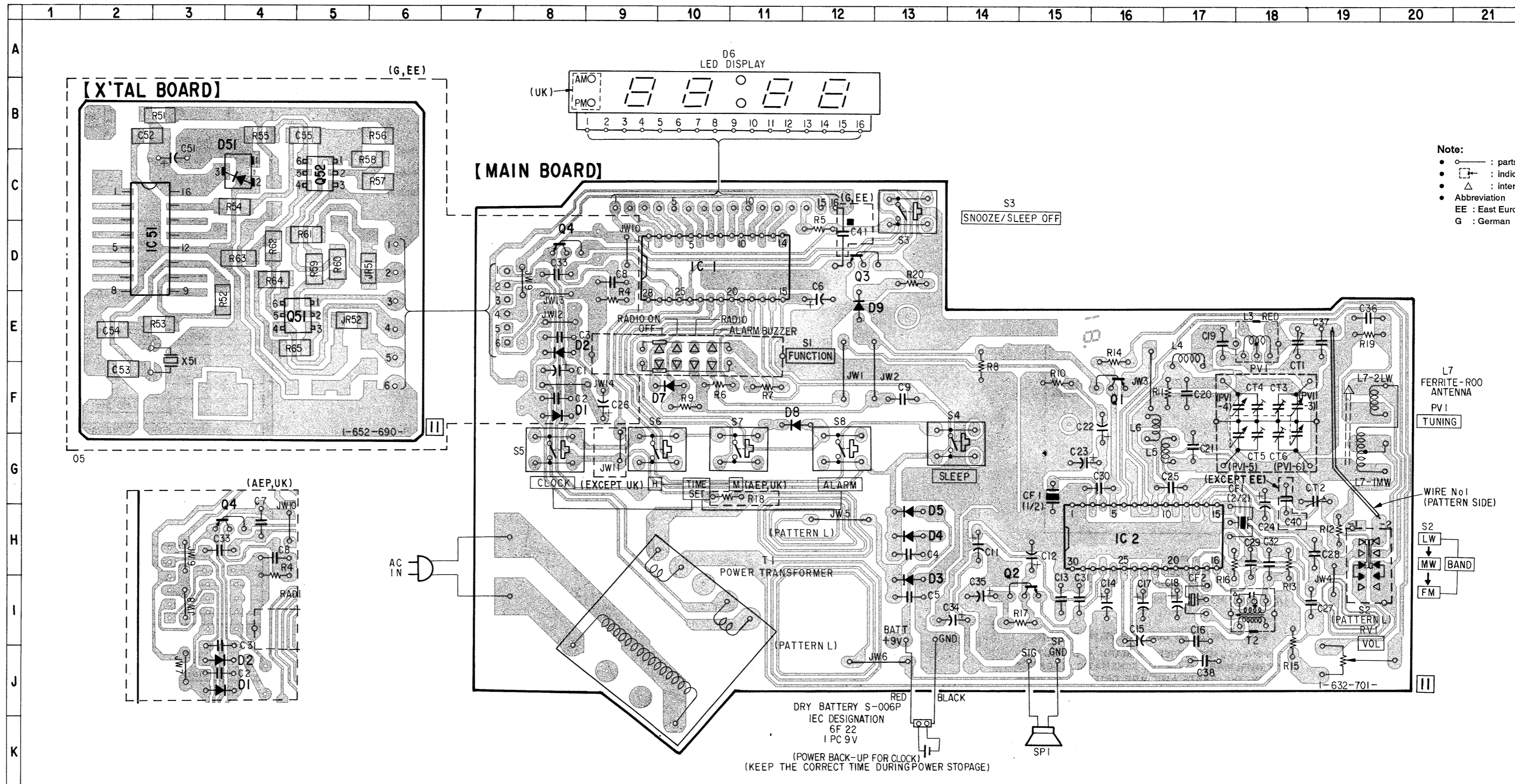
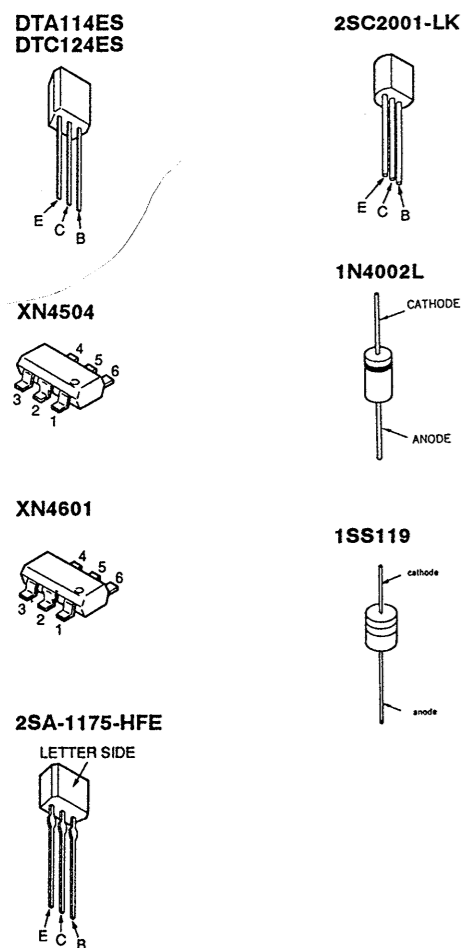
SECTION 4
DIAGRAMS

4-1. PRINTED WIRING BOARDS

• Semiconductor Location

Ref. No.	Location
D1	F-8
D2	E-8
D3	I-13
D4	H-13
D5	H-13
D6	B-10
D7	F-10
D8	F-11
D9	E-12
D51	C-4
IC1	D-10
IC2	H-16
IC51	D-2
Q1	F-16
Q2	I-15
Q3	D-12
Q4	D-8
Q51	E-5
Q52	C-5

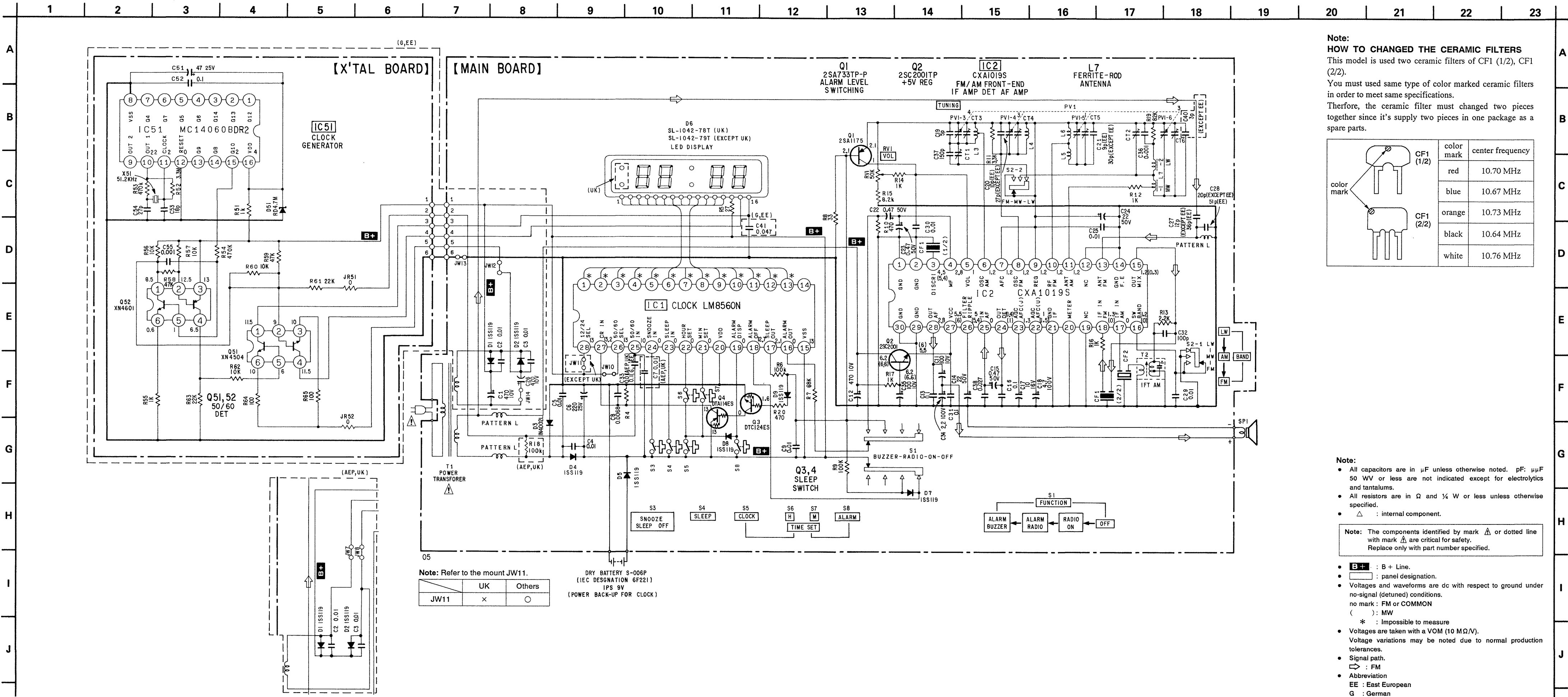
• Semiconductor Lead Layouts



Note:

- : parts extracted from the component side.
- : indicates side identified with part number.
- △ : internal component.
- Abbreviation
- EE : East European
- G : German

RED BLACK
 DRY BATTERY S-006P
 IEC DESIGNATION
 6F 22
 1 PC 9V
 (POWER BACK-UP FOR CLOCK)
 (KEEP THE CORRECT TIME DURING POWER STOPPAGE)



Note:
HOW TO CHANGED THE CERAMIC FILTERS
 This model is used two ceramic filters of CF1 (1/2), CF1 (2/2). You must used same type of color marked ceramic filters in order to meet same specifications. Therefore, the ceramic filter must changed two pieces together since it's supply two pieces in one package as a spare parts.

color mark	center frequency
red	10.70 MHz
blue	10.67 MHz
orange	10.73 MHz
black	10.64 MHz
white	10.76 MHz

Note:
 • All capacitors are in μF unless otherwise noted. pF: μpF 50 WV or less are not indicated except for electrolytics and tantalums.
 • All resistors are in Ω and $\frac{1}{4}$ W or less unless otherwise specified.
 • Δ : internal component.

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

• **B+** : B + Line.
 • \square : panel designation.
 • Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
 no mark : FM or COMMON
 () : MW
 * : Impossible to measure
 • Voltages are taken with a VOM (10 M Ω /V). Voltage variations may be noted due to normal production tolerances.
 • Signal path.
 \Rightarrow : FM
 • Abbreviation
 EE : East European
 G : German

Note: Refer to the mount JW11.

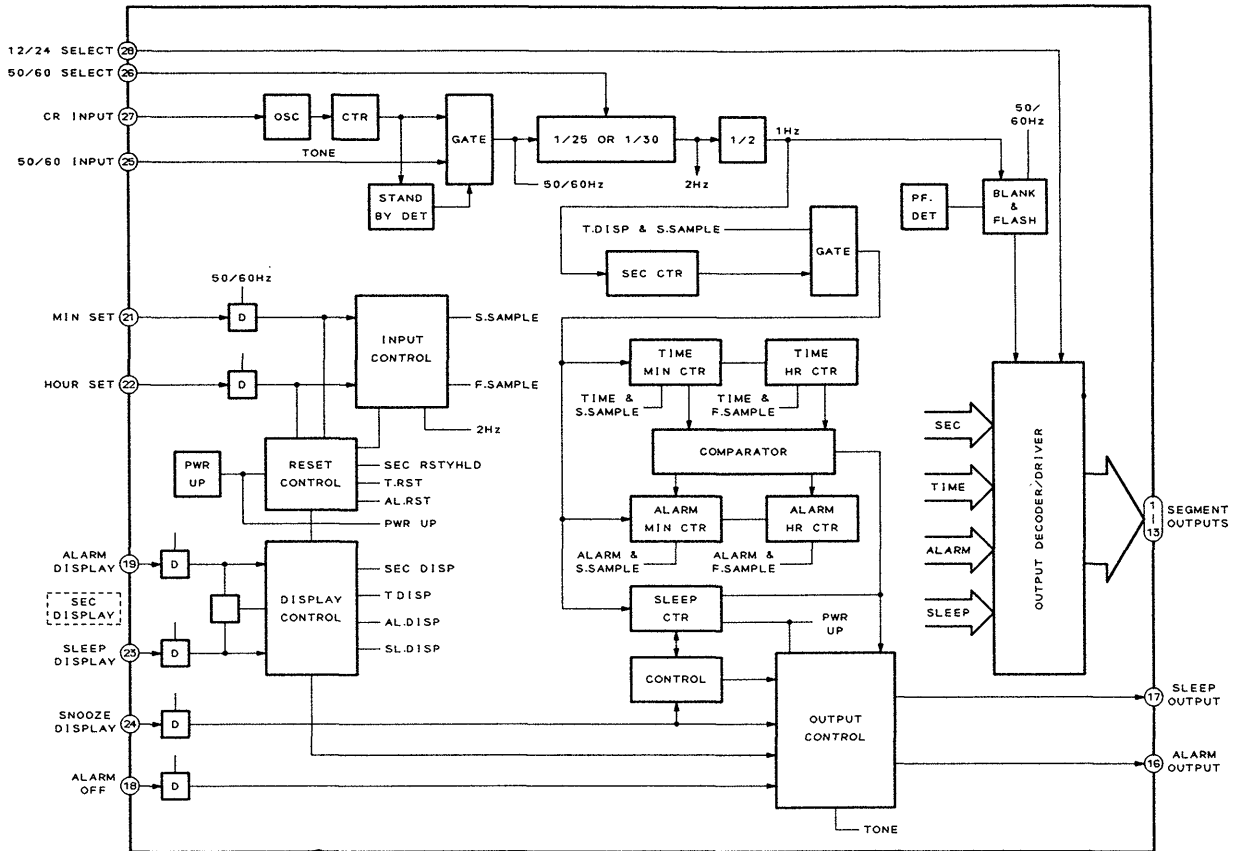
	UK	Others
JW11	×	○

DRY BATTERY S-006P (IEC DESIGNATION 6F221) 1PS 9V (POWER BACK-UP FOR CLOCK)

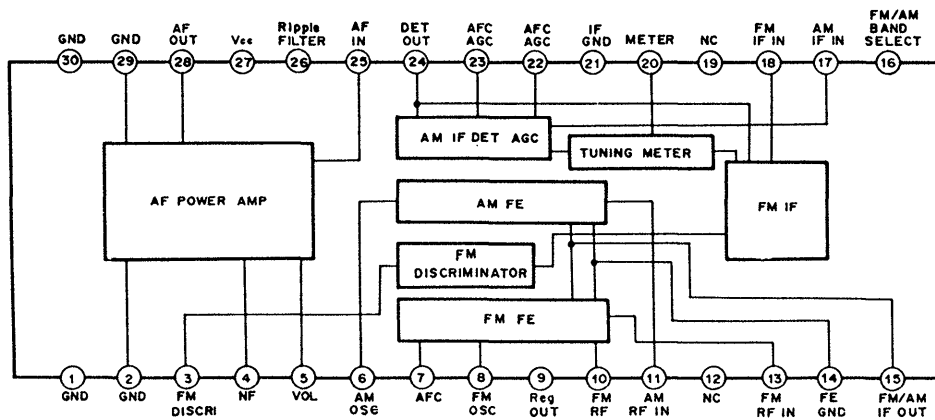
● IC Block Diagrams

MAIN Board

IC1 LM8560N

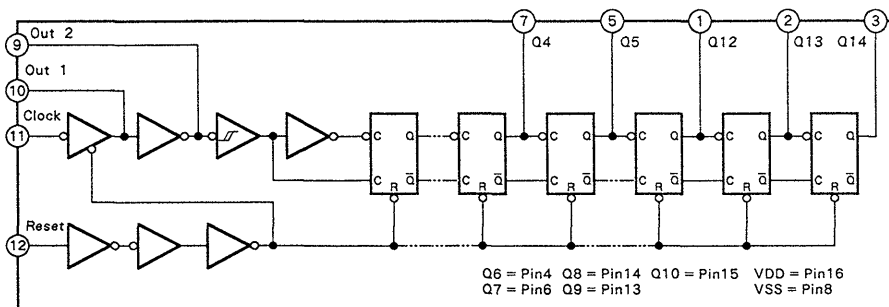


IC2 CXA1019S



X'TAL Board

IC51 MC14060BDR2



SECTION 5 EXPLODED VIEW

NOTE:

- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) ... (RED)

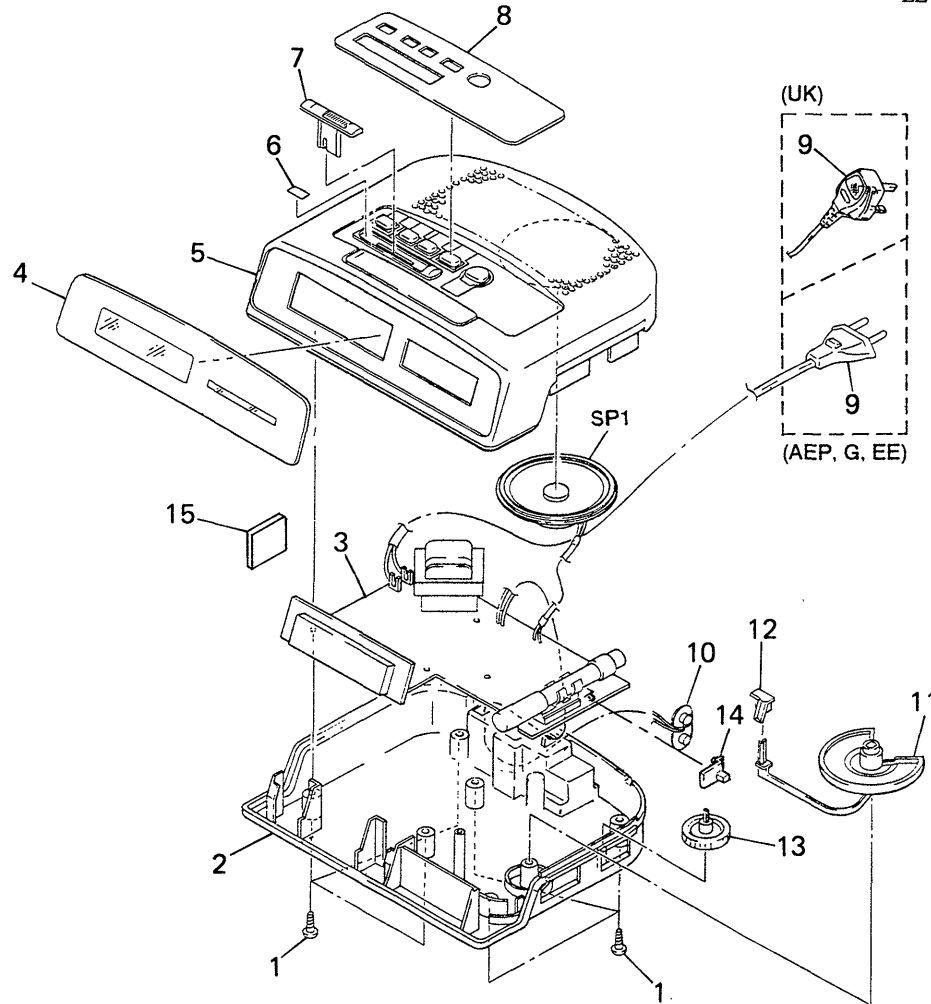
↑ ↑
 Parts Color Cabinet's Color

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

- Abbreviations
G : German
EE : East European



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	7-685-648-79	SCREW +BTP 3X12 TYPE2 N-S		6	3-916-616-01	SEAL (FUNCTION)	
2	3-913-827-21	CABINET (LOWER) (BLACK) (UK)		7	3-377-808-01	KNOB (FUNCTION) (BLACK)	
2	3-913-827-31	CABINET (LOWER) (WHITE) (UK)		7	3-377-808-41	KNOB (FUNCTION) (WHITE)	
2	3-913-827-41	CABINET (LOWER) (BLACK) (AEP, G, EE)		8	3-913-833-01	PLATE, ORNAMENTAL (BLACK)	
2	3-913-827-51	CABINET (LOWER) (WHITE) (AEP, G, EE)		8	3-913-833-11	PLATE, ORNAMENTAL (WHITE)	
* 3	A-3661-978-A	MAIN BOARD, COMPLETE (EE)		\triangle 9	1-555-795-00	CORD, POWER (AEP, G, EE)	
* 3	A-3661-988-A	MAIN BOARD, COMPLETE (UK)		\triangle 9	1-696-572-21	CORD, POWER (UK)	
* 3	A-3661-989-A	MAIN BOARD, COMPLETE (AEP)		10	1-535-804-21	SNAP, BATTERY	
* 3	A-3662-012-A	MAIN BOARD, COMPLETE (G)		11	3-902-474-01	KNOB (TUNING)	
4	3-913-828-21	PLATE, TRANSPARENT (EE)		* 12	3-913-829-01	CAP (POINTER)	
4	3-913-828-31	PLATE, TRANSPARENT (UK)		13	3-902-091-01	KNOB (VOL)	
4	3-913-828-51	PLATE, TRANSPARENT (AEP, G)		14	3-902-472-01	KNOB (BAND)	
5	X-3368-530-3	CABINET (UPPER) ASSY (BLACK)		* 15	A-3679-577-A	X' TAL BOARD, COMPLETE (G, EE)	
5	X-3368-530-4	CABINET (UPPER) ASSY (WHITE)		SP1	1-503-082-00	SPEAKER	

SECTION 6 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA ..: μ A. uPA..: μ PA.
uPB..: μ PB. uPC..: μ PC. uPD..: μ PD..
- CAPACITORS ● Abbreviations
uF: μ F EE : East European
● COILS G : German
uH: μ H

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-3661-978-A	MAIN BOARD, COMPLETE (EE) *****		C23	1-124-902-00	ELECT	0.47uF 20% 50V
*	A-3661-988-A	MAIN BOARD, COMPLETE (UK) *****		C24	1-126-233-11	ELECT	22uF 20% 50V
*	A-3661-989-A	MAIN BOARD, COMPLETE (AEP) *****		C25	1-101-004-00	CERAMIC	0.01uF 50V
*	A-3662-012-A	MAIN BOARD, COMPLETE (G) *****		C26	1-124-472-11	ELECT	470uF 20% 10V (G, EE)
*	1-535-771-11	TERMINAL		C27	1-102-949-00	CERAMIC	12PF 5% 50V (AEP, G, UK)
*	1-535-804-21	SNAP, BATTERY		C27	1-102-964-00	CERAMIC	36PF 5% 50V (EE)
*	1-575-159-11	CORD, CONNECTION		C28	1-101-882-00	CERAMIC	5PF 5% 50V (EE)
*	1-765-685-11	CORD, CONNECTION (G, EE)		C28	1-102-958-00	CERAMIC	20PF 5% 50V (AEP, G, UK)
< CAPACITOR >				C29	1-101-004-00	CERAMIC	0.01uF 50V
C1	1-124-472-11	ELECT	470uF 20% 10V (G, EE)	C30	1-101-004-00	CERAMIC	0.01uF 50V
C2	1-101-004-00	CERAMIC	0.01uF 50V	C31	1-162-851-11	CERAMIC	0.1uF 20% 16V
C3	1-101-004-00	CERAMIC	0.01uF 50V	C32	1-102-973-00	CERAMIC	100PF 5% 50V
C4	1-101-004-00	CERAMIC	0.01uF 50V	C33	1-101-004-00	CERAMIC	0.01uF 50V (AEP, UK)
C5	1-101-004-00	CERAMIC	0.01uF 50V	C33	1-162-851-11	CERAMIC	0.1uF 20% 16V (G, EE)
C6	1-124-120-11	ELECT	220uF 20% 25V	C34	1-124-925-11	ELECT	2.2uF 20% 100V
C7	1-101-004-00	CERAMIC	0.01uF 50V (AEP, UK)	C35	1-126-948-11	ELECT	100uF 20% 10V
C8	1-161-049-00	CERAMIC	0.0068uF 10% 50V	C36	1-102-074-00	CERAMIC	0.001uF 10% 50V
C9	1-161-379-00	CERAMIC	0.01uF 20% 25V	C37	1-101-361-00	CERAMIC	150PF 5% 50V
C11	1-126-948-11	ELECT	100uF 20% 10V	C38	1-161-056-00	CERAMIC	0.027uF 10% 25V
C12	1-124-472-11	ELECT	470uF 20% 10V	C40	1-102-936-00	CERAMIC	3.0PF +-0.25PF 50V (AEP, G, UK)
C13	1-162-851-11	CERAMIC	0.1uF 20% 16V	C41	1-161-021-11	CERAMIC	0.047uF 10% 25V (G, EE)
C14	1-126-233-11	ELECT	22uF 20% 50V	< FILTER >			
C15	1-124-465-00	ELECT	0.47uF 20% 50V	CF1	1-567-097-61	FILTER, CERAMIC	
C16	1-162-851-11	CERAMIC	0.1uF 20% 16V	CF2	1-578-677-11	FILTER, CRYSTAL	
C17	1-126-964-11	ELECT	10uF 20% 16V	< TRIMMER >			
C18	1-124-927-11	ELECT	4.7uF 20% 100V	CT1	1-141-245-00	CAP, TRIMMER	30PF
C19	1-102-998-11	CERAMIC	5PF 0.5PF 50V	CT2	1-141-260-00	CAP, TRIMMER	50PF
C20	1-102-947-00	CERAMIC	10PF 5% 50V (EE)	< DIODE >			
C20	1-102-961-00	CERAMIC	27PF 5% 50V (AEP, G, UK)	D1	8-719-911-19	DIODE	1SS119
C21	1-102-946-00	CERAMIC	9.0PF +-0.5PF 50V (EE)	D2	8-719-911-19	DIODE	1SS119
C21	1-102-962-00	CERAMIC	30PF 5% 50V (AEP, G, UK)	D3	8-719-031-85	DIODE	1N4002L
C22	1-124-902-00	ELECT	0.47uF 20% 50V	D4	8-719-911-19	DIODE	1SS119

Ref. No.	Part No.	Description	Remark
D5	8-719-911-19	DIODE 1SS119	
D6	1-808-342-11	DIODE SL-1042-78T (UK)	
D6	1-808-344-11	DIODE SL-1042-79T (AEP, G, EE)	
D7	8-719-911-19	DIODE 1SS119	
D8	8-719-911-19	DIODE 1SS119	
D9	8-719-911-19	DIODE 1SS119	
< IC >			
IC1	8-759-821-46	IC LM8560N	
IC2	8-752-035-29	IC CXA1019S	
< COIL >			
L3	1-406-028-00	COIL, OSC (MW)	
* L4	1-405-962-00	COIL, FM OSC (AEP, G, UK)	
L4	1-428-241-11	COIL, AIR-CORE (EE)	
* L5	1-428-164-11	COIL, AIR-CORE	
L6	1-428-163-11	COIL, AIR-CORE (EE)	
* L6	1-428-164-11	COIL, AIR-CORE (AEP, G, UK)	
L7	1-402-276-11	ANTENNA, FERRITE-ROD (LW/MW)	
< VARIABLE CAP >			
CT3-6 } PV1	1-141-487-11	CAP, VARIABLE (TUNING) (EE)	
CT3-6 } PV1	1-151-614-11	CAP, VARIABLE (TUNING) (AEP, G, UK)	
< TRANSISTOR >			
Q1	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q2	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q3	8-729-900-36	TRANSISTOR DTC124ES	
Q4	8-729-900-61	TRANSISTOR DTA114ES	
< RESISTOR >			
R4	1-247-888-11	CARBON 240K 5% 1/4W	
R5	1-249-398-11	CARBON 27 5% 1/4W F	
R6	1-249-441-11	CARBON 100K 5% 1/4W	
R7	1-249-439-11	CARBON 68K 5% 1/4W	
R8	1-249-435-11	CARBON 33K 5% 1/4W	
R9	1-249-441-11	CARBON 100K 5% 1/4W	
R10	1-249-413-11	CARBON 470 5% 1/4W F	
R11	1-249-423-11	CARBON 3.3K 5% 1/4W F	
R12	1-249-417-11	CARBON 1K 5% 1/4W F	
R13	1-249-421-11	CARBON 2.2K 5% 1/4W F	
R14	1-249-417-11	CARBON 1K 5% 1/4W F	
R15	1-249-428-11	CARBON 8.2K 5% 1/4W	
R16	1-249-417-11	CARBON 1K 5% 1/4W F	
R17	1-249-417-11	CARBON 1K 5% 1/4W F	
R18	1-249-441-11	CARBON 100K 5% 1/4W (AEP, UK)	

Ref. No.	Part No.	Description	Remark
R19	1-249-440-11	CARBON 82K 5% 1/4W	
R20	1-249-413-11	CARBON 470 5% 1/4W F	
< VARIABLE RESISTOR >			
RV1	1-228-790-00	RES, VAR, CARBON 50K (VOL)	
< SWITCH >			
S1	1-572-262-11	SWITCH, SLIDE (FUNCTION)	
S2	1-554-061-00	SWITCH, SLIDE (BAND)	
S3	1-553-856-00	SWITCH, KEY BOARD (SNOOZE/SLEEP OFF)	
S4	1-553-856-00	SWITCH, KEY BOARD (SLEEP)	
S5	1-553-856-00	SWITCH, KEY BOARD (CLOCK)	
S6	1-553-856-00	SWITCH, KEY BOARD (TIME SET (H))	
S7	1-553-856-00	SWITCH, KEY BOARD (TIME SET (M))	
S8	1-553-856-00	SWITCH, KEY BOARD (ALARM)	
< TRANSFORMER >			
△T1	1-449-939-11	TRANSFORMER, POWER (UK)	
△T1	1-449-940-11	TRANSFORMER, POWER (AEP, G, EE)	
T2	1-404-902-11	TRANSFORMER, IF	

*	A-3679-577-A	X' TAL BOARD, COMPLETE (G, EE)	

< CAPACITOR >			
C51	1-124-477-11	ELECT 47uF 20% 25V	
C52	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C53	1-163-099-00	CERAMIC CHIP 18PF 5% 50V	
C54	1-163-103-00	CERAMIC CHIP 27PF 5% 50V	
C55	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
< DIODE >			
D51	8-719-105-73	DIODE RD4.7M-B2	
< IC >			
IC51	8-759-278-23	IC MC14060BDR2	
< TRANSISTOR >			
Q51	8-729-425-18	TRANSISTOR XN4504	
Q52	8-729-402-84	TRANSISTOR XN4601	
< RESISTOR >			
R51	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R52	1-216-133-00	METAL CHIP 3.3M 5% 1/10W	
R53	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R54	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R55	1-216-049-00	METAL CHIP 1K 5% 1/10W	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

X'TAL

Ref. No.	Part No.	Description			Remark
R56	1-216-073-00	METAL CHIP	10K	5%	1/10W
R57	1-216-073-00	METAL CHIP	10K	5%	1/10W
R58	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R59	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R60	1-216-073-00	METAL CHIP	10K	5%	1/10W
R61	1-216-081-00	METAL CHIP	22K	5%	1/10W
R62	1-216-073-00	METAL CHIP	10K	5%	1/10W
R63	1-216-081-00	METAL CHIP	22K	5%	1/10W
R64	1-216-025-00	METAL CHIP	100	5%	1/10W
R65	1-216-025-00	METAL CHIP	100	5%	1/10W
< JUMPER RESISTOR >					
JR51	1-216-295-00	RES CHIP	0	5%	1/10W
JR52	1-216-295-00	RES CHIP	0	5%	1/10W
< VIBRATOR >					
X51	1-760-385-11	VIBRATOR, CRYSTAL (51.2KHz)			

MISCELLANEOUS					

△9	1-555-795-00	CORD, POWER (AEP, G, EE)			
△9	1-696-572-21	CORD, POWER (UK)			
SP1	1-503-082-00	SPEAKER			

ACCESSORIES & PACKING MATERIALS					

	3-758-757-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN, SPANISH) (AEP, G, UK)			
	3-758-757-41	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN, PORTUGUESE) (AEP)			
	3-758-757-61	MANUAL, INSTRUCTION (ENGLISH, POLISH, CZECH, HUNGARIAN, RUSSIAN) (EE)			
*	3-914-173-01	INDIVIDUAL CARTON (AEP, G, EE)			
*	3-918-076-01	INDIVIDUAL CARTON (UK)			

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.