

Courtesy of www.televideo.ws

ICF-5900W



*US Model
Canadian Model
UK Model
AEP Model
E Model*

FM/AM MULTI-BAND RECEIVER

SPECIFICATIONS

Power Requirements: 4.5 V dc, three batteries size D (IEC designation R20)
US and Canadian Model

120 V ac, 60Hz with Sony ac power adaptor AC-110

UK, AEP and E Model

220 – 240V ac (100, 110–127V adjustable)
50/60Hz with optional Sony ac power adaptor AC-3W
AC-456C (West Germany Model)

or 12V car battery with optional Sony car battery cord DCC-127H

Power Output: 1,900mW dc (Total Harmonic Distortion 10%)

Power Consumption: **US and Canadian Model**

6W ac (60Hz) with Sony ac power adaptor AC-110

UK, AEP and E Model

7.4VA (50Hz) 6.8VA (60Hz) with optional ac power adaptor AC-3W

Circuit Systems: FM/MW: Superheterodyne

SW: Dual conversion superheterodyne

Frequency Range: FM: 87.5 – 108 MHz

SW₁: 3.9 – 10 MHz (77 – 30m)

SW₂: 11.7 – 20 MHz (25.6 – 15m)

SW₃: 20 – 28 MHz (15 – 10.7m)

MW: 530 – 1,605 kHz

Antennas: FM/SW: Telescopic antenna, external antenna terminals

MW: Built-in ferrite-rod antenna, external antenna terminal

Speaker: 10 cm (4 inches) dia.

Dimensions: Approx. 223 (W) x 234 (h) x 102 (d) mm

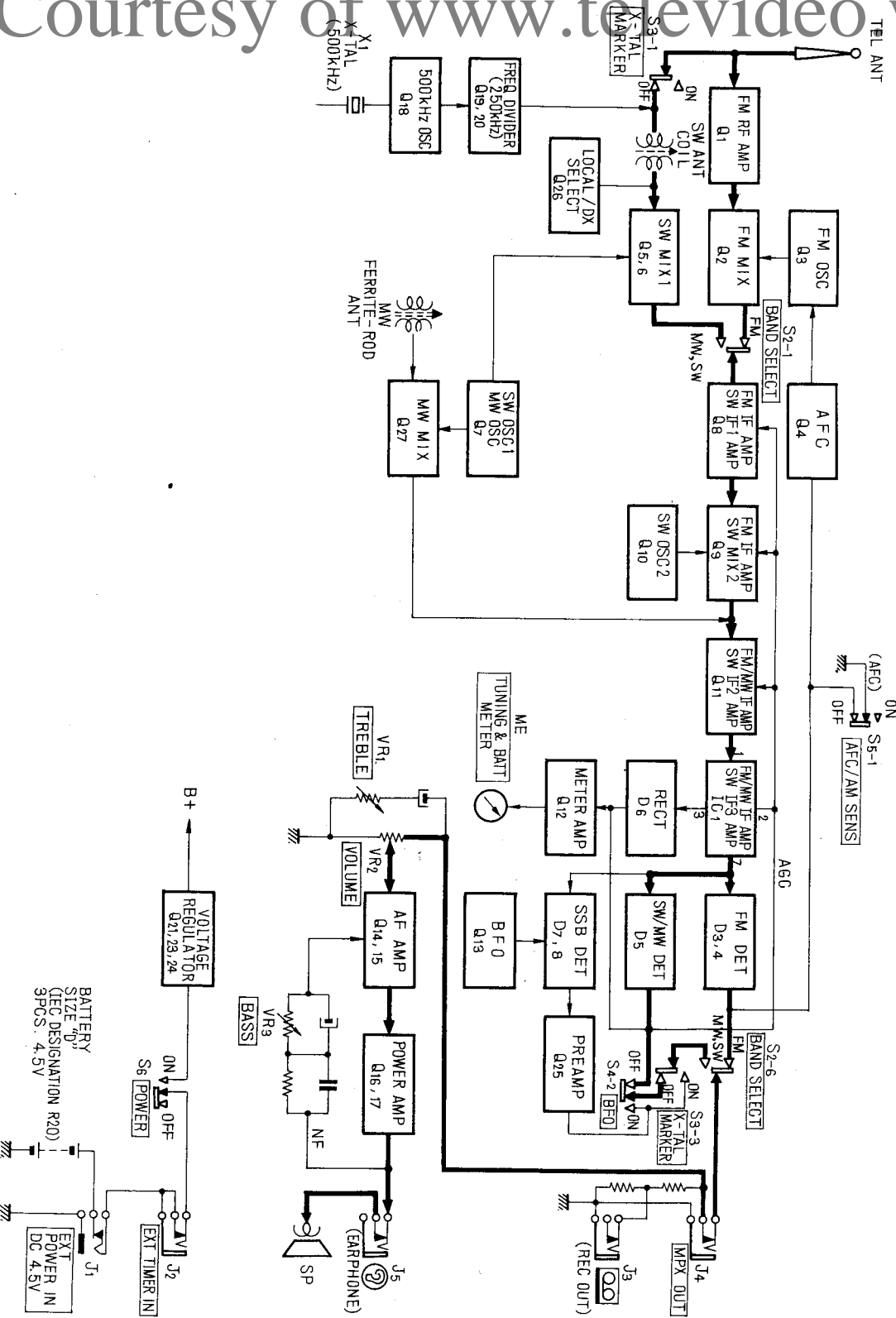
8 7/8 (W) x 9 1/4 (h) x 4 (d) inches

(Including projecting parts and controls)

Weight: Approx. 2.2 kg, 4 lb 7 oz

(Including batteries)

SONY[®]
SERVICE MANUAL



SECTION 1
OUTLINE
1-1. BLOCK DIAGRAM

SECTION 2
DISASSEMBLY

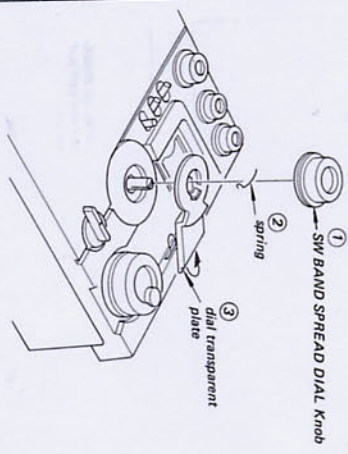
ADJUSTMENT COVER REMOVAL
Remove a screw (B3 x 5).

- SW FREQUENCY SCALE ADJUSTMENT
- SW OSC 2 ADJUSTMENT
- MARKER ADJUSTMENT

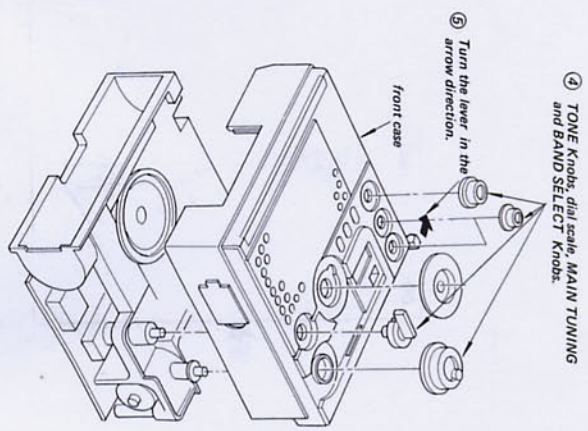
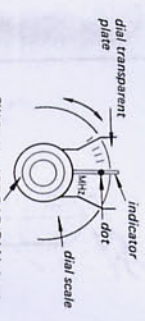
REAR CASE REMOVAL
Remove four screws (TA, P3 x 52).

- SW TRACKING ADJUSTMENT
- SW MIXER 1 ADJUSTMENT
- SW OSC 2 ADJUSTMENT
- MARKER ADJUSTMENT

FRONT CASE REMOVAL

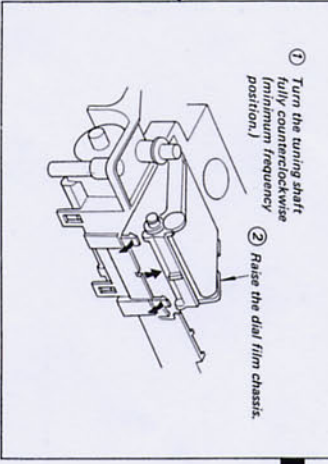


- SETTING OF SW BAND SPREAD DIAL**
1. Turn the SW BAND SPREAD DIAL knob fully counterclockwise and secure it with hand.
 2. Turning the dial scale, match the dot to the indicator.

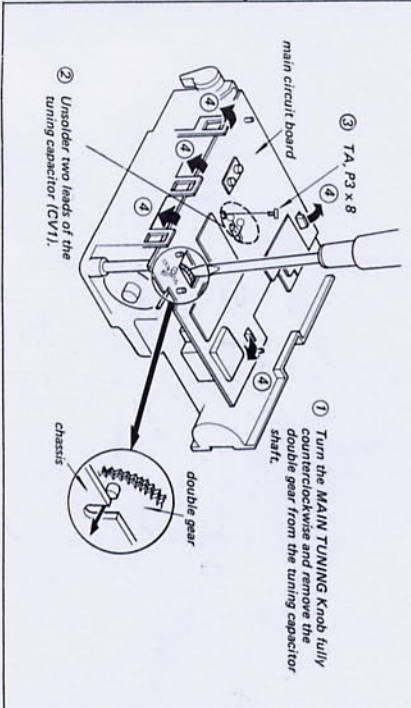


- FM IF ADJUSTMENT
- FM FREQUENCY COVERAGE ADJUSTMENT
- FM TRACKING ADJUSTMENT
- AM IF ADJUSTMENT
- MW FREQUENCY COVERAGE ADJUSTMENT
- MW TRACKING ADJUSTMENT
- BFO ADJUSTMENT

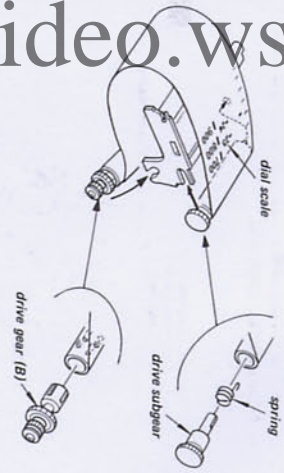
DIAL FILM CHASSIS REMOVAL



MAIN CIRCUIT BOARD (1) REMOVAL



DIAL FILM ATTACHMENT (1)



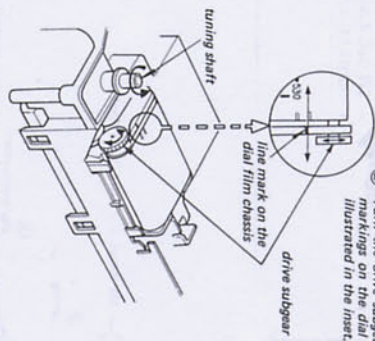
2 Pull the drive gear (B) in the direction of A and turn it clockwise to eliminate any slack of the dial film. Holding the dial film not to be unwound, further turn the gear about 90° clockwise to wind up the spring.



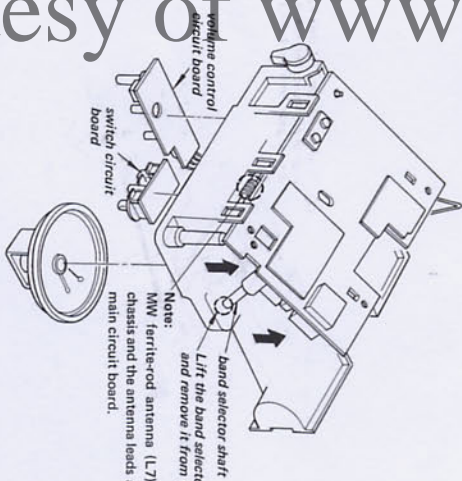
DIAL FILM POSITIONING

1 Turn the tuning shaft fully counter-clockwise and hold it not to turn clockwise.

2 Turn the drive subgear so that the markings on the dial film place as illustrated in the insert.

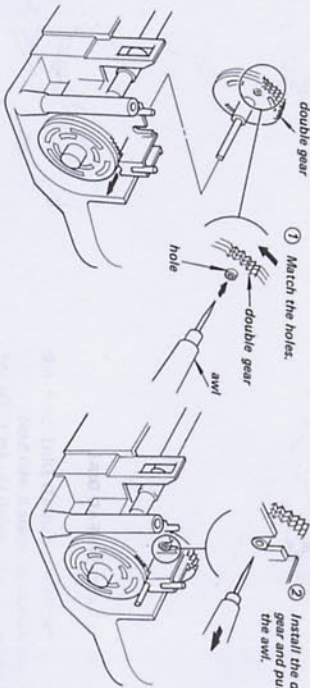


MAIN CIRCUIT BOARD (2) REMOVAL

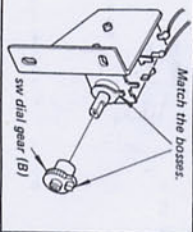


Note: MNV ferrite-core antenna (L7) is mounted on the chassis and the antenna leads are connected to the main circuit board.

DOUBLE GEAR INSTALLATION



SW DIAL GEAR (B) INSTALLATION



Courtesy of www.televideo.ws

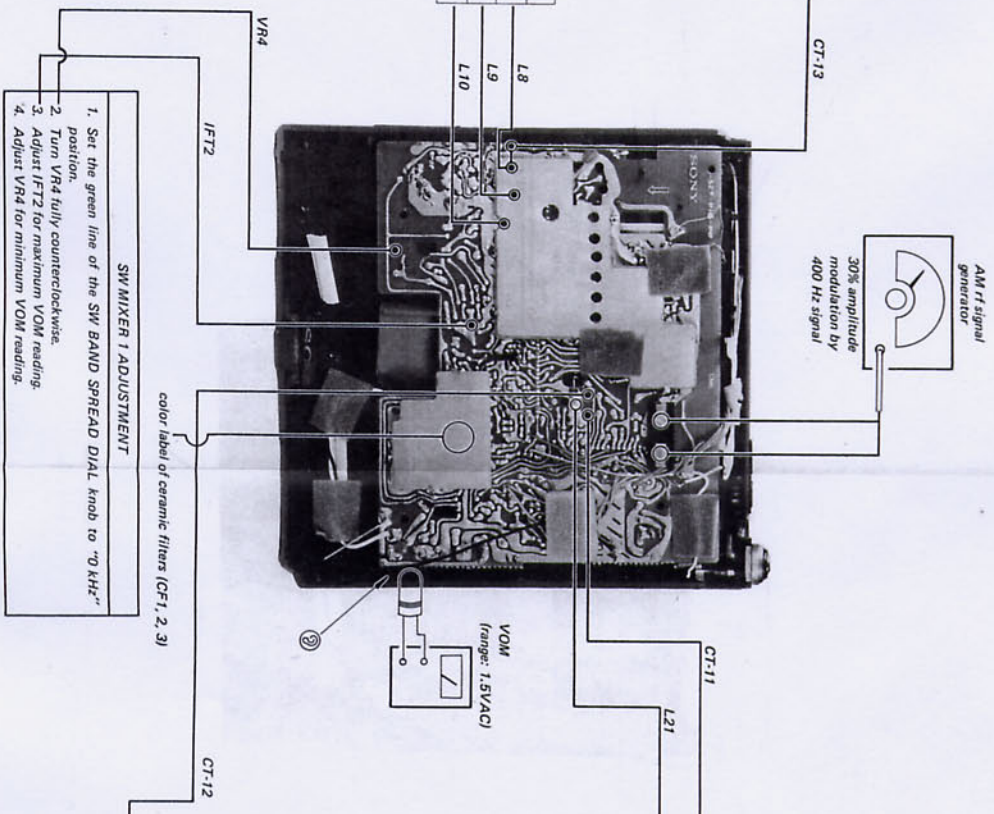
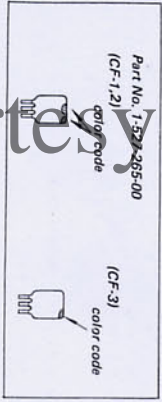
SW SECTION (1)

SETTING: OFF/LOCAL
 AF/CAM SENS Switch: SW1
 BAND SELECT Switch: OFF
 X-TAL MARKER Switch: OFF
 BFO Switch: OFF
 MAIN TUNING: f min

- MARKER LEVEL ADJUSTMENT**
1. BAND SELECT switch: SW3
 2. X-TAL MARKER TUNING Knob to tune in 28MHz
 3. Turn the MAIN TUNING Knob to zero beating and adjust for zero beating.
 4. Adjust CT13 so that the TUNING & BATT METER reads within 5 - 6.

SW TRACKING ADJUSTMENT			
4.0 MHz	SW1	L8	
12.0 MHz	SW2	L9	
21.0 MHz	SW3	L10	

Note:
 The color code of the ceramic filters (CF1, 2, 3) should coincide with those on the circuit board.



- SW MARKER 1 ADJUSTMENT**
1. Set the green line of the SW BAND SPREAD DIAL knob to "0 KHz" position.
 2. Turn VR4 fully counterclockwise.
 3. Adjust IFT2 for maximum VOM reading.
 4. Adjust VR4 for minimum VOM reading.

(After this adjustment, perform MARKER adjustment.)

SW OSC 2 ADJUSTMENT

Ceramic Filter	specified center Freq.	fully counterclockwise Position (⊖ side)	fully clockwise Position (⊕ side)
green	10.61 MHz	CT-11 (10.76 MHz)	L21 (10.46 MHz)
black	10.64 MHz	CT-11 (10.79 MHz)	L21 (10.49 MHz)
blue	10.67 MHz	CT-11 (10.82 MHz)	L21 (10.52 MHz)
red	10.70 MHz	CT-11 (10.85 MHz)	L21 (10.55 MHz)
orange	10.73 MHz	CT-11 (10.88 MHz)	L21 (10.58 MHz)
white	10.76 MHz	CT-11 (10.91 MHz)	L21 (10.61 MHz)
yellow	10.79 MHz	CT-11 (10.94 MHz)	L21 (10.64 MHz)

Specification: 300 KHz ±3 KHz

Note:
 1) Adjust L21 for the maximum level and set it to the peak position in the counterclockwise direction.
 2) Do not adjust L21 to the image frequency.

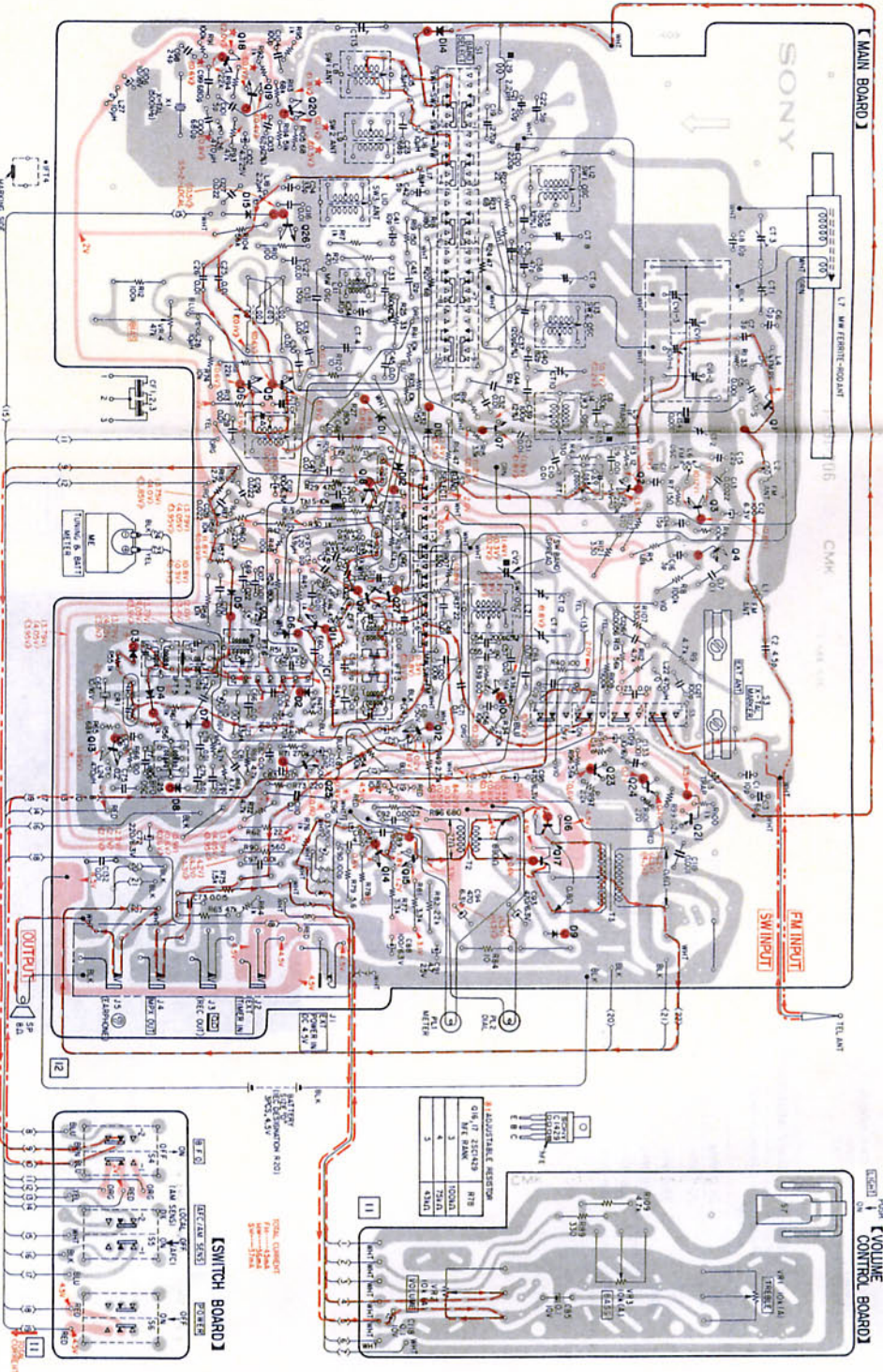
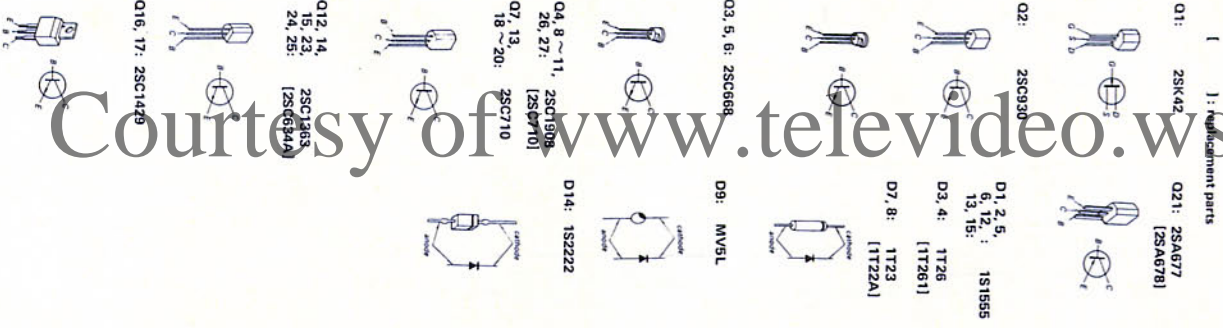
- MARKER ADJUSTMENT**
- This adjustment should be performed after the SW OSC 2 adjustment.
1. Set the green line of the SW BAND SPREAD DIAL knob to "0 KHz" position.
 2. Set BFO switch to ON and X-TAL MARKER switch to OFF.
 3. Tune the set to the specified center frequency of fm - f circuit and adjust AM r f signal generator for zero beating.
 4. Set X-TAL MARKER switch to ON and increase the output level of the AM r f signal generator to 100 dB.
 5. Adjust CT-12 for zero beating.
 6. Change the frequencies of the AM r f signal generator and confirm that the noise of beating does not vary. If necessary, repeat step 3 to 6 again.

Courtesy of www.teleo.com

SECTION 4
DIAGRAMS

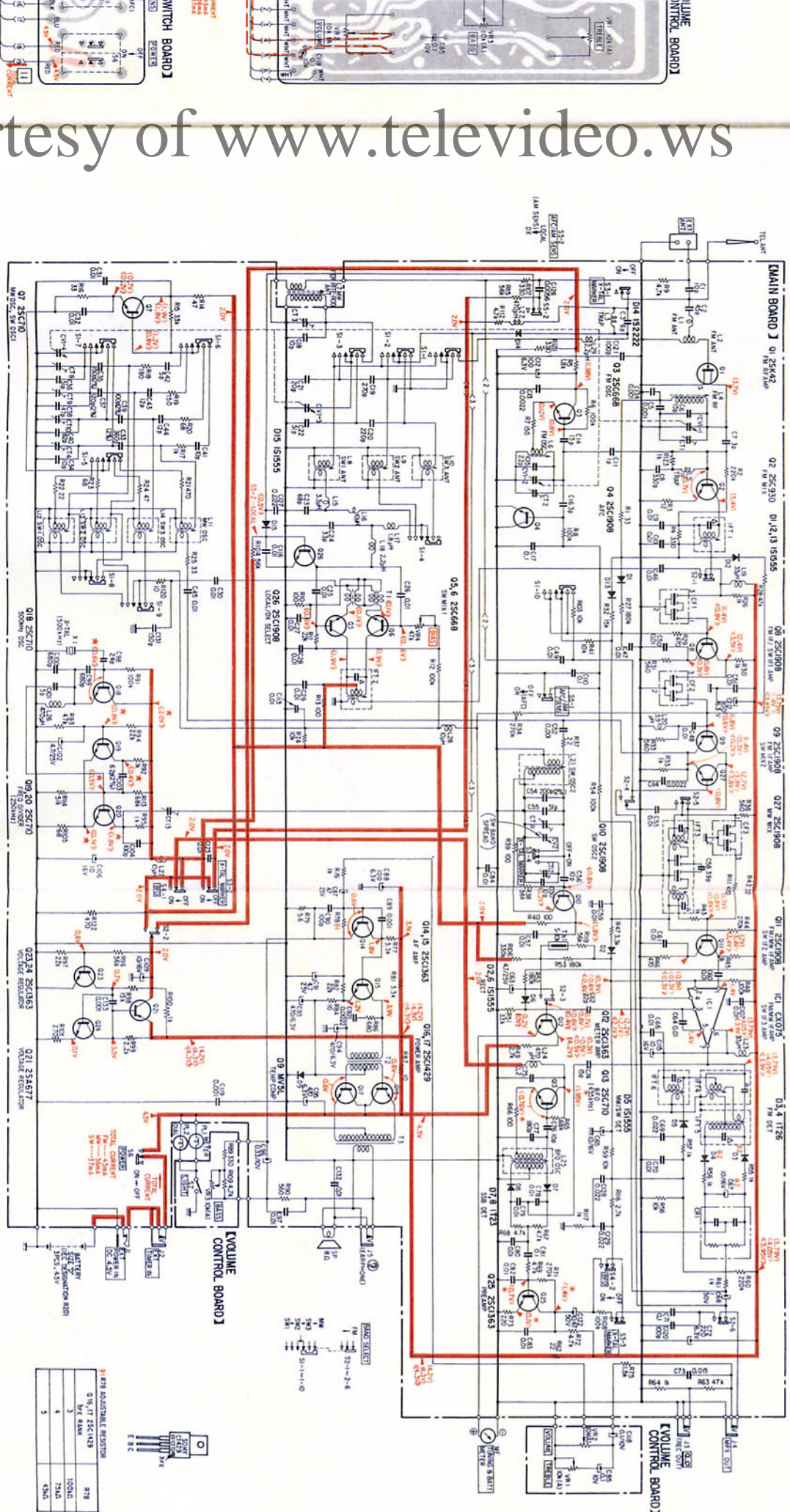
4-1. MOUNTING DIAGRAM — Conductor Side —

0	0
1	1C
2	2A
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33



- Note**
- indicates parts on the conductor side.
 - indicates lead wire connection on the conductor side.
 - indicates lead wire connection through the component side.
 - B + pattern.
 - FM signal or SW signal path.
 - FM signal path.
 - FM signal path.
- DC resistance of transformer is measured on the mounted board.
The value is standard value.
- *2: Polarity of D3, D4 and G67 must be opposite to the polarity printed on the circuit board.

ICF-5900W ICF-5900W



Note:

- All capacitors are in μF unless otherwise noted. 50 or less working voltages are not indicated except for electrolytic type. $\mu = \mu\text{mF}$
- All resistors are in Ω , $1/\text{W}$, unless otherwise noted. $k = 1,000$ $M = 1,000k$
- Δ indicates internal components.
- --- indicates B + circuit.
- Voltages are DC with respect to ground unless otherwise noted. Readings are taken under no-signal conditions with a VOM (20k Ω/V).
- --- indicates the adjustment for repair.
- Voltage variations may be noted due to normal production tolerances.
- Voltages between base and emitter are measured with 2.5V range.
- --- indicates designation on the panel.

Switch Mode:

Ref. No.	Switch	Position
S1	BAND SELECT	MW
S2	BAND SELECT	FM
S3	X-TAL MARKER	OFF
S4	BFO	OFF
S5	AFC	OFF
S6	AM SENS	LOCAL
S6	POWER	OFF
S7	LIGHT	OFF

1/2W ADDITIONAL RESISTOR

Part No.	Value	Quantity
978	5.1k Ω 25C1438	1
979	10k Ω 25C1439	1
980	15k Ω 25C1440	1
981	20k Ω 25C1441	1
982	30k Ω 25C1442	1
983	50k Ω 25C1443	1

Courtesy of www.televideo.ws

SECTION 6
ELECTRICAL PARTS LIST

Note: Circled letters (A) to (Z) are applicable to European models only.

Note: Circled letters (A) to (Z) are applicable to European models only.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
SEMICONDUCTORS											
Transistors											
Q1	2SK42	FM Ant	L1	1-401-526-00	FM Ant	C1	1-102-947-11	10p	C45~51	1-101-923-11	0.001
Q2	2SC930	FM RF	L4	1-425-888-00	FM RF	C3	1-101-579-11	4.5p	C52	1-101-455-11	0.001
Q3	2SC668	FM Osc	L6	1-405-568-00	FM Osc	C2	1-102-808-11	6p	C53	1-101-923-11	0.001
Q4	2SC710	MW Ferrite-rod Ant	L7	1-401-541-XX	MW Ferrite-rod Ant	C3	1-102-808-11	6p	C54	1-107-264-11	200p
Q5, 6	2SC668	SW1 Ant	L8	1-401-643-00	SW1 Ant	C5	1-102-074-11	0.0001	C55	1-102-757-11	51p
Q8~11	2SC710	SW2 Ant	L9	1-401-644-00	SW2 Ant	C6	1-102-951-11	15p	C62	1-102-959-11	22p
Q12	2SC634A	SW3 Ant	L10	1-401-645-00	SW3 Ant	C7	1-102-936-11	3p	C63	1-121-395-11	4.7
Q13	2SC710	MW Osc	L11	1-405-520-00	MW Osc	C8	1-102-820-11	330p	C64	1-101-923-11	0.001
Q14, 15	2SC634A	SW1 Osc	L12	1-405-710-00	SW1 Osc	C9, 10	1-101-923-11	0.01	C65	1-121-651-11	10
Q16, 17	2SC1429	SW2 Osc	L13	1-405-711-00	SW2 Osc	C11	1-102-934-11	1p	C66	1-101-923-11	0.001
Q18~20	2SC710	SW3 Osc	L14	1-405-712-00	SW3 Osc	C12	1-121-413-11	100	C67	1-121-651-11	10
Q21	2SK478	3.3µH	L15	1-407-184-XX	3.3µH	C13	1-102-121-11	0.0022	C68	1-121-391-11	1
Q23~25	2SC634A	10µH	L16	1-407-157-XX	10µH	C14	1-102-951-11	15p	C69	1-105-677-12	0.022
Q26, 27	2SC710	1.8µH	L17	1-407-181-XX	1.8µH	C15	1-102-751-11	22p	C70	1-101-923-11	0.001
IC1	IC	2.2µH	L18	1-407-182-XX	2.2µH	C16	1-102-936-11	3p	C71	1-101-797-11	0.1
	IC		L19	1-407-163-XX	33µH	C17	1-101-797-11	0.1	C72	1-121-419-11	220
	Diodes		L20	1-407-185-XX	3.9µH	C18	1-102-947-11	10p	C73	1-105-675-12	0.015
			L21	1-405-713-00	SW Osc 2	C19	1-107-095-11	270p	C74	1-102-951-11	15p
			L22	1-407-661-XX	470µH	C20	1-107-093-11	220p	C75	1-101-798-11	0.2
			L23	1-407-163-XX	33µH	C21	1-102-958-11	20p	C76	1-102-947-11	10p
D1, 2	1S1555	470µH	L24	1-407-661-XX	470µH	C22	1-101-882-11	51p	C77	1-102-705-11	180p
D3, 4	1T761	BFO Osc	L25	1-405-714-00	BFO Osc	C23	1-101-888-11	68p	C78~80	1-102-923-11	0.001
D5, 6	1S1555	470µH	L26	1-407-661-XX	470µH	C24	1-102-963-11	33p	C81	1-101-797-11	0.1
D7, 8	1T72A	10µH	L27, 28	1-407-157-XX	10µH	C25~32	1-101-923-11	0.01	C82, 83	1-105-673-12	0.001
D9	MV5L	2.2µH	L29	1-407-182-XX	2.2µH	C33	1-107-265-11	360p	C84	1-101-923-11	0.001
D12, 13	1S1555					C34	1-102-947-11	10p	C85	1-127-019-11	0.1
D14	1S2222										
D15	1S1555										
TRANSFORMERS											
Th1	1-800-202-XX	FM IFT	FT1	1-403-872-00	FM IFT	C35	1-107-263-11	150p	C87	1-121-395-11	4.7
			FT2	1-404-021-00	SW IFT	C36	1-102-693-11	51p	C88	1-121-424-11	470
			FT3	1-403-972-00	AM IFT	C37	1-107-262-11	120p	C89	1-101-455-11	10
			FT4	1-403-959-00	FM Discriminator	C38	1-102-887-11	47p	C90	1-102-973-11	100p
			FT5	1-403-953-00	FM Discriminator	C39	1-107-261-11	100p	C91	1-121-395-11	4.7
			FT6	1-403-137-00	AM IFT	C40	1-102-706-11	82p	C92	1-102-121-11	0.0022
			T1	1-417-014-31	Balun	C41	1-102-947-11	10p	C93~95	1-121-424-11	470
			T2	1-423-204-XX	Input	C42	1-102-942-11	5p	C96	1-127-021-11	0.33
			T3	1-427-306-XX	Output	C43, 44	1-102-949-11	12p	C97	1-105-673-12	0.001

All coils are microinductor unless otherwise noted.

All capacitors are in µF and of ceramic unless otherwise noted. 50 and/or less working voltages are not noted except for electrolytic type. (p = pµF, elect = electrolytic)

→ Due to replacement parts, the descriptions are different from the diagrams.

Note: Circled letters (A) to (Z) are applicable to European models only.

Ref. No. Part No. Description

C98	1-102-960-11	(A) 24 p
C99, 100	1-102-116-11	(A) 680 p
C101	1-102-942-11	(A) 5 p
C102	1-121-395-11	(A) 4.7
C103	1-107-259-11	(B) 6 p
C104	1-102-973-11	(A) 100 p
C106	1-121-651-11	(A) 10
C107	1-101-973-11	(A) 0.001
C109	1-121-651-11	(A) 10
C110	1-101-797-11	(A) 0.01
C112	1-121-413-11	(A) 70
C113	1-101-973-11	(A) 0.01
C114	1-102-121-11	(A) 0.0022
C115	1-121-651-11	(A) 70
C116	1-101-973-11	(A) 0.01
C118	1-127-019-11	(A) 1
C119	1-101-455-11	(A) 0.001
C120, 121	1-102-973-11	(A) 0.001
C122	1-121-726-11	(A) 4.7
C123	1-101-973-11	(A) 0.01
C126	1-105-670-12	(A) 0.0056
C127	1-101-974-11	(A) 0.022
C128, 129	1-105-677-12	(A) 0.022
C130	1-107-061-11	(A) 30 p
C131	1-101-361-11	(A) 150 p
C132	1-101-973-11	(A) 0.01
C133, 134	1-102-074-11	(A) 0.001

RESISTORS

Regular-type 1/4 W carbon resistors are omitted. Check the schematic diagram for the resistance values. (K = 1000)

VR1 ~3 1-224-539-00 (B) 10 kΩ, variable, TREBLE, VOL UME, BASS

VR4 1-224-647-XX (B) 47 kΩ, adjustable

SWITCHES

S1 1-514-316-00 (B) Slide, BAND SELECT (MW/SW)

S2 1-514-861-XX (B) Slide, BAND SELECT (FM)

S3 1-514-821-21 (C) Slide, X-TAL MARKER

S4 ~6 1-516-977-00 (B) Lever Slide, BFO, AFC/AM SENS, POWER

MISCELLANEOUS

ANT 1-501-155-00 (T) Antenna, telescopic

CF1, 2, 3 1-527-265-00 (B) Filter, ceramic

CRI 1-231-202-00 (B) Encapsulated Component

J1 ~5 1-507-369-XX (B) Jack, EXT POWER IN DC 4.5 V, EXT TIMER IN, REC OUT, MPX OUT, earphone

ME 1-520-248-00 (B) TUNING & BATT METER

PLL 2 1-518-169-XX (B) Lamp, 4.5 V 40 mA, meter, dial

SP 1-502-584-00 (H) Speaker

XI 1-527-269-51 (K) Crystal, 500 KHz

ACCESSORIES & PACKING MATERIALS

Part No. Description

X-3844-608-0 (D) Shoulder Strap Ass'y

X-3880-411-0 (D) Cushion Ass'y, upper

1-463-129-00 (K) Adaptor, ac plug, AC-110 (US model)

1-463-130-00 (K) Adaptor, ac plug, AC-110 (Canadian model)

1-504-059-11 (C) Earphone, ME-20H

3-880-467-11 (D) Carton

3-880-470-00 (D) Cushion, side

3-880-490-00 (B) Bag, plastic, unit

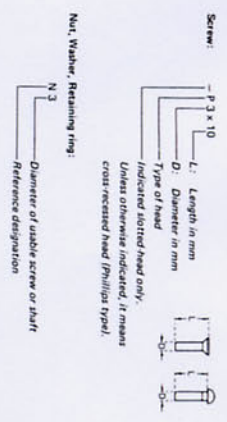
3-993-144-31 (D) Manual, instruction (Canadian model)

3-995-759-21 (B) Manual, instruction (US, Canadian model)

3-995-759-41 (B) Manual, instruction (AEP, UK model)

3-995-759-51 (B) Manual, instruction (E model)

HARDWARE NOMENCLATURE



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding head (B) screw for replacement
PWH		pan-head screw with washer face	binding head (B) screw and flat washer for replacement
P5		pan-head screw with spring washer	binding head (B) screw and spring washer for replacement
P5P		pan-head screw with spring and flat washers	binding head (B) screw and spring and flat washers for replacement
PSW		round-head screw	binding head (B) screw for replacement
R		flat-counterbunk-head screw	binding head (B) screw for replacement
K		oval-counterbunk-head screw	binding head (B) screw for replacement
RK		oval-counterbunk-head screw	binding head (B) screw for replacement
B		brinding-head screw	binding head (B) screw for replacement
T		trough-head screw	binding head (B) screw for replacement
F		flat-filler-head screw	binding head (B) screw for replacement
RF		fillister-head screw	binding head (B) screw for replacement
BV		brake-head screw	binding head (B) screw for replacement

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding head self-tapping (T A, B) screw for replacement
PTWH		pan-head self-tapping screw with washer face	binding head self-tapping (T A, B) screw and flat washer for replacement
PTTW		pan-head thread-rolling screw with washer face	binding head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	ex: SC 2.6 x 4, hexagon socket
SC		hexagon socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	ex: LW3, internal
LW		internal-tooth lock washer	ex: LW2, internal
LW		external-tooth lock washer	ex: LW2, external
RETAINING RINGS			
E		retaining ring	
D		group-type retaining ring	

SONY

Courtesy of Sony