CRF-330K

US Model
Canadian Model
E Model
AEP Model

FM/SW/MW/LW 33-BAND RADIO RECEIVER

SPECIFICATIONS

GENERAL

Power Requirements:
Radio, Recorder: 120 V ac (adjustable to 100, 220, or 240 V)
12 V dc, eight size-D (IEC designation R20) batteries
12 V car battery with Sony Car Battery Cord DCC-9 (optional)

Clock: 1.5 V dc, one size-D battery

Power Consumption: SW: 10 W ac, FM/MW/LW: 6.5 W ac, in radio operation
SW: 12.5 W ac, FM/MW/LW: 9 W ac, in radio and recorder operation

Speaker: 12 cm (4¾ inches)

Clock: QUARTZ clock

Input: AUX IN (mini jack) 1
Maximum sensitivity 4.4 mV (–45 dB) at 50 mW output
Imput impedance 5 kΩ

Outputs: Earphone (mini jack) 1
For 8 Ω earphone
HEADPHONES (phone jack) 1
For 8 Ω headphones
Recording (mini jack) 1
Output level 0.8 mV (–60 dB)
Output impedance 1 kΩ

Control Jack: TIMER OUT (mini jack) 1

Dimensions: Approx. 451 (w) x 349 (h) x 207 (d) mm
17¾ (w) x 13¾ (h) x 8⅛ (d) inches
(including projecting parts and controls with the recorder retracted to the set)

Weight: Approx. 15.4 kg, 33 lb 15 oz
(including batteries)

RADIO SECTION

Frequency Range:
FM_2: 87.5 – 108 MHz (3.43 – 2.78 m)
FM_1: 76 – 90 MHz (3.95 – 3.33 m)
SW: 1.6 – 30 MHz (187 – 10 m)
MW: 530 – 1,605 kHz (566 – 187 m)
LW: 150 – 400 kHz (2,000 – 750 m)

Intermediate Frequency:
FM: 10.7 MHz
SW-1st: 45.145 MHz
SW-2nd: 455 kHz
MW/LW: 455 kHz

Sensitivity:
FM: 1.8 μV (5 dB), S/N = 30 dB
SW: 0.7 μV (–3 dB), S/N = 6 dB, at 10 MHz
MW: 32 μV/m (30 dB/m), S/N = 6 dB, built-in ferrite-rod antenna
LW: 57 μV/m (35 dB/m), S/N = 6 dB, built-in ferrite-rod antenna

– continued on next page –

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING 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.

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Image Rejection:
FM_2: 65 dB, at 108 MHz
FM_1: 65 dB, at 90 MHz
SW-1st: 90 dB
SW-2nd: 65 dB, at 10 MHz
MW: 55 dB, at 1,605 kHz
LW: 80 dB, at 360 kHz

Selectivity:
FM: Better than 70 dB
(± 400 kHz off resonance)
SW/MW/LW:
–60 dB at NORMAL
(± 8 kHz off resonance)
–60 dB at NARROW
(± 6 kHz off resonance)

Antennas:
FM: Telescopic antenna, external antenna terminals (75 ohms)
SW: Telescopic antenna, external antenna terminals (50 – 75 ohms)
MW/LW:
Built-in ferrite-rod antenna, external antenna terminals (high impedance)

TAPE RECORDER SECTION

Recording System: 2-track 1-channel monaural

Fast Winding Time: Approx. 1 min. 50 sec. with Sony Cassette C-60

Frequency Response: 90 – 10,000 Hz

SECTION 1
OUTLINE

1-1. TAPE RECORDER TIMER STAND BY MECHANISM

This set is equipped with a TIMER STAND BY mechanism in the tape recorder section for an automatic recording during absence of the operator. This mechanism is intended to prevent the pinch roller and recording tape from deforming when the pinch roller is left pressed against the capstan and does not rotate for a long time in the stand-by mode.

Fig. 1 shows the mechanism condition when TIMER STAND BY is set up. In this condition and when the power supply is applied by TIMER, the motor starts to rotate and the shut-off lever moves in the direction Ⓐ . Accordingly, the lever moves in the direction Ⓑ and it pushes the trigger plate in the direction Ⓒ . The trigger plate's protrusion now pushes the lock plate in the direction Ⓓ and the lock plate releases the actuator which is locked at position ※. Now the actuator moves in the direction Ⓔ and the reset arm positions as shown in Fig. 2. In this, condition, the lever moves in the direction Ⓑ′, but it does not afect to the actuator.

If TIMER STAND BY is set up when the lever positioned as shown in Fig. 3, the lever once moves in the direction Ⓑ″ after the time set by TIMER SET, and the lever locks the reset arm and releases the STAND BY condition.

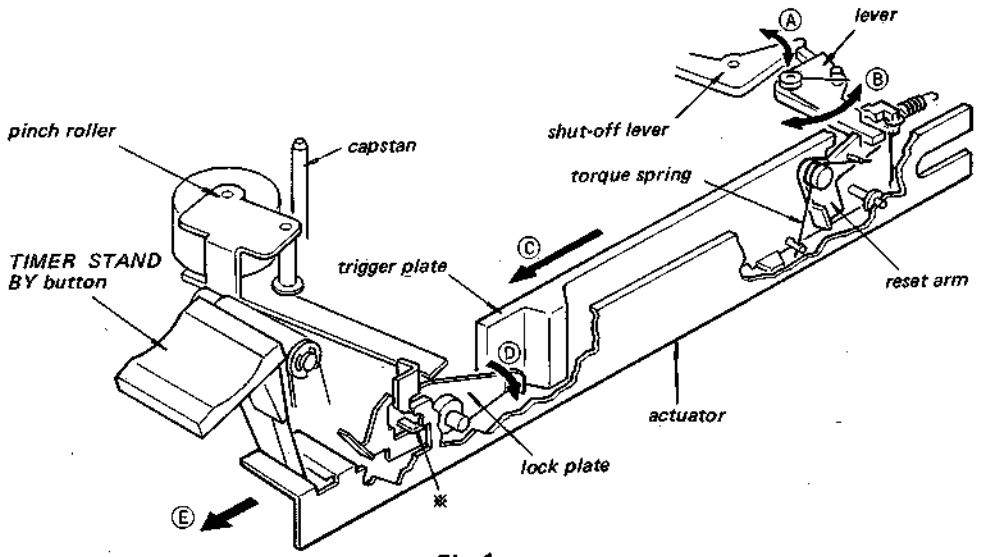


Fig. 1.

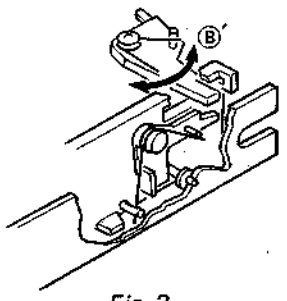


Fig. 2.

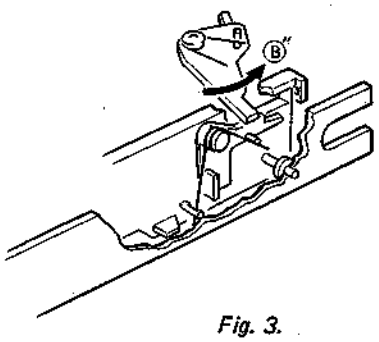


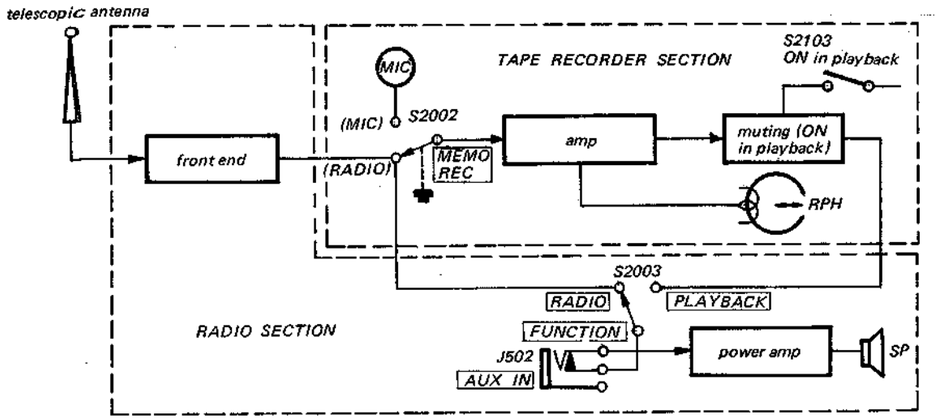
Fig. 3.

1-2. CIRCUIT DESCRIPTION

1) CONNECTION OF TAPE RECORDER AND RADIO

This set is a combination of CRF-320 radio receiver and a cassette tape recorder. With the tape recorder provision, receiving signals can easily be recorded. This set also provides a STAND BY facility combined with a timer clock, and recordings during absence of the operator can be made with ease.

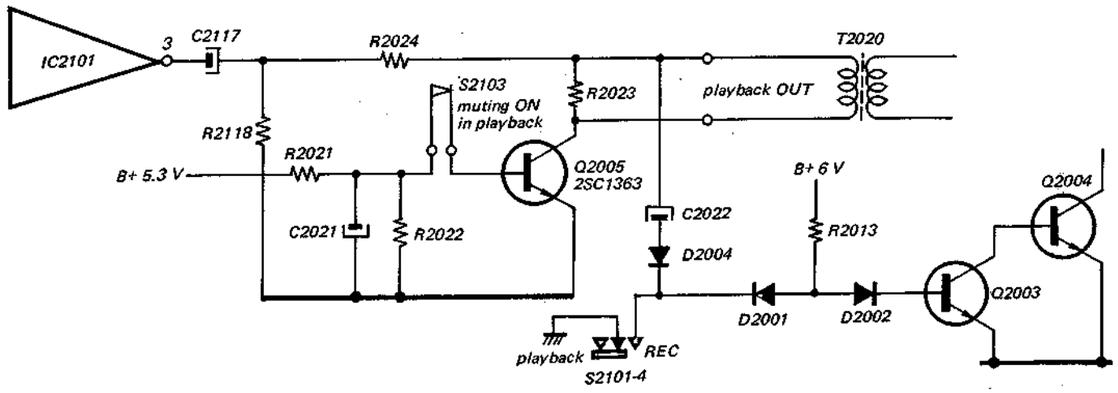
The following diagram shows a simplified signal flow. The recording from the built-in microphone can only be made when MEMO REC switch button is pressed in MIC position. And recording from AUX IN jack J502 cannot be made.



2) RECORD MUTING CIRCUIT

A muting circuit is provided in the output circuit of the tape recorder in the record mode to prevent a hawling from occuring during a record with microphone. The following diagram is the muting circuit of the tape recorder. Except in the playback mode, the muting switch S2103 is in the off position and Q2005 is also in the off state. Accordingly, no signal flows in the transformer T2020 and the output circuit is muted.

When the muting switch S2103 turns on in the playback mode, the output signal from IC2101 flows in the transformer T2020 and the signal passes to the power amplifier of the radio section. To ensure the muting operation in the record mode, the signal line is grounded through C2022, D2004 and S2101-4.

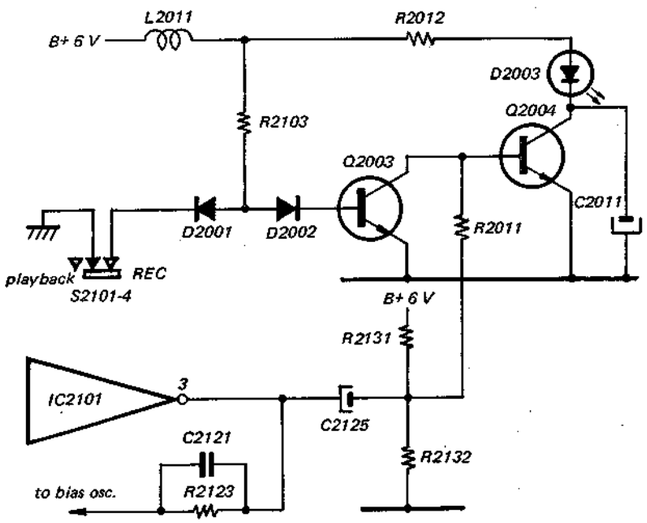


3) LED AMPLIFIER CIRCUIT

In the record mode, a part of the output signal from IC2101 goes through C2125 and R2011 to Q2004. Q2004 amplifies the signal, and the collector current of Q2004 turns D2003 (REC INDICATOR) on and the record mode is visually identified.

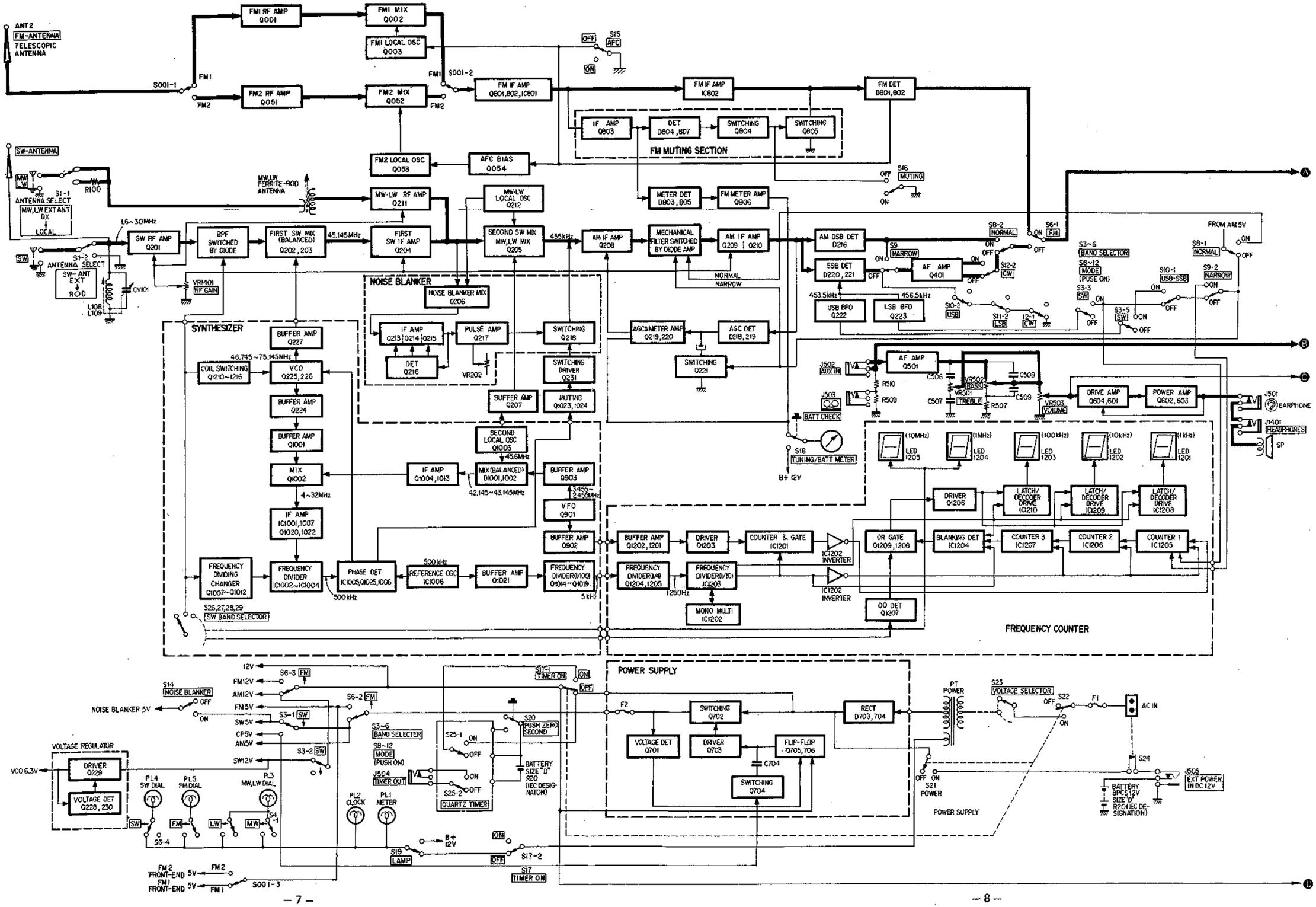
In the playback mode, this LED amplifier is muted because of unnecessity of the LED indication. In the playback mode, the bias is applied to Q2003 through R2103 and D2002 to turn on Q2003. Accordingly, the base of Q2004 is grounded and D2003 turns off.

In the record mode, the bias circuit of Q2003 is routed to the ground through D2001 and S2101-4, and Q2003 turns off. Consequently, Q2004 turns on. Q2004 is operating in class B, and D2003 lights up only when audio signals are applied to the base of Q2004 to indicate the record mode.

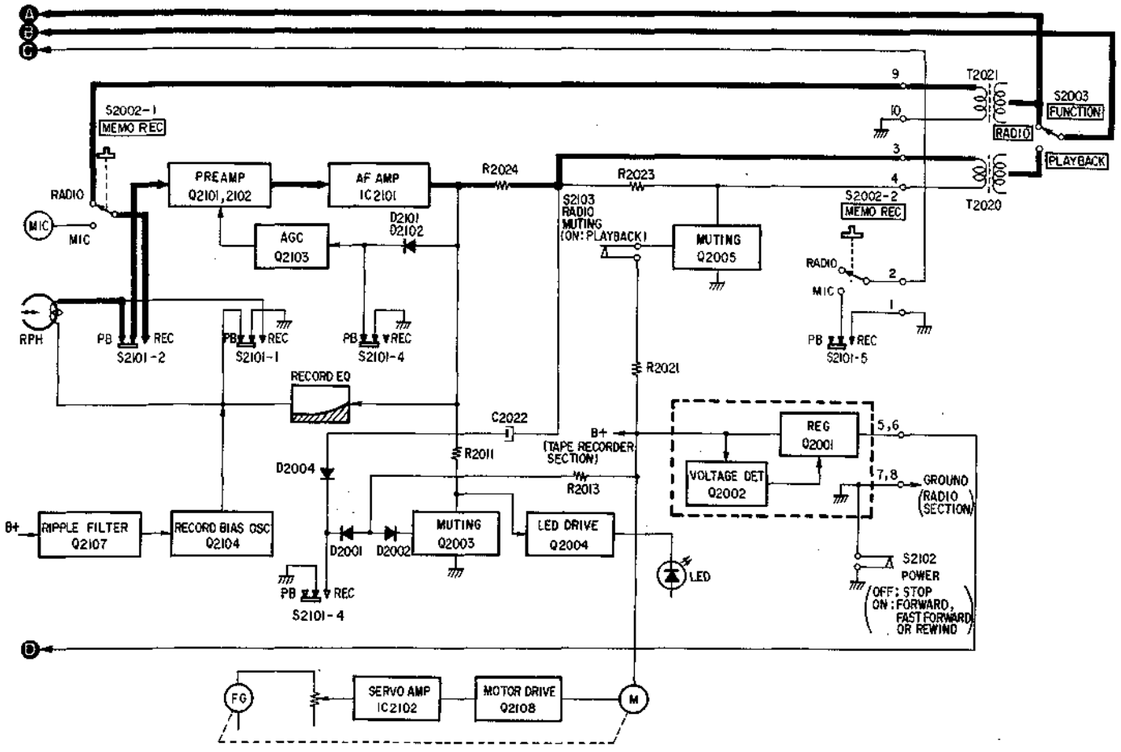


1-2. BLOCK DIAGRAM

1) Radio Section

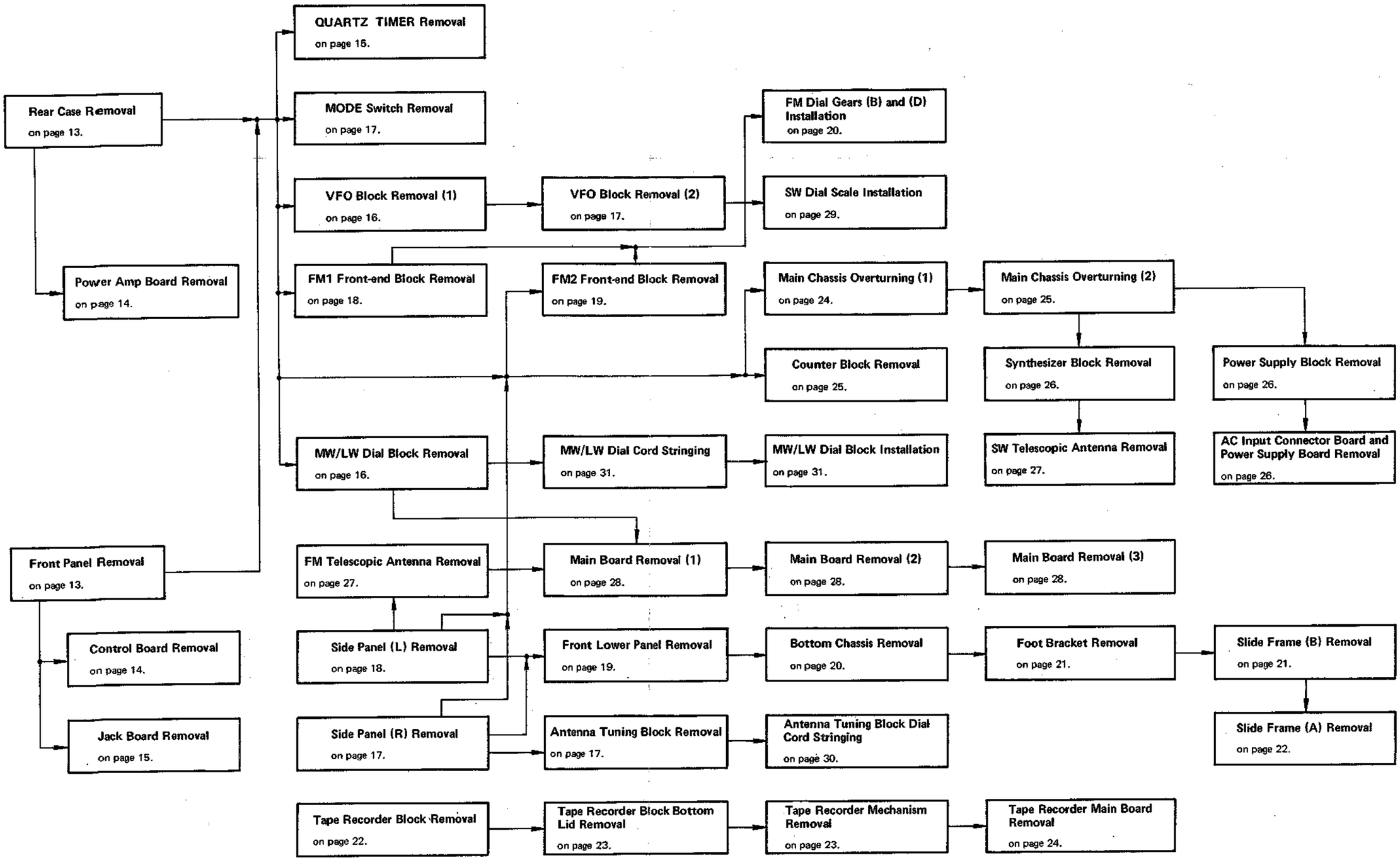


2) Tape Recorder Section

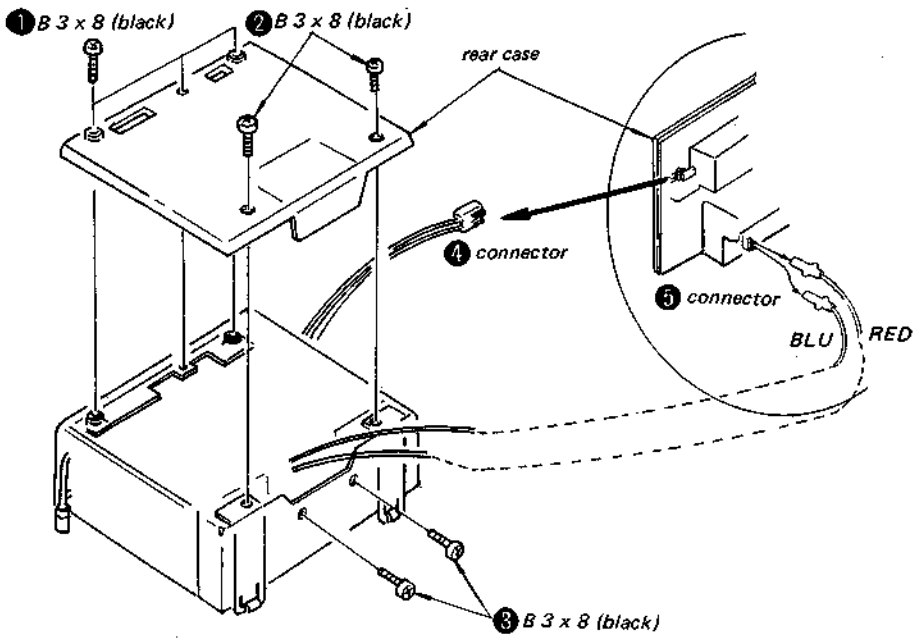


SECTION 2
DISASSEMBLY

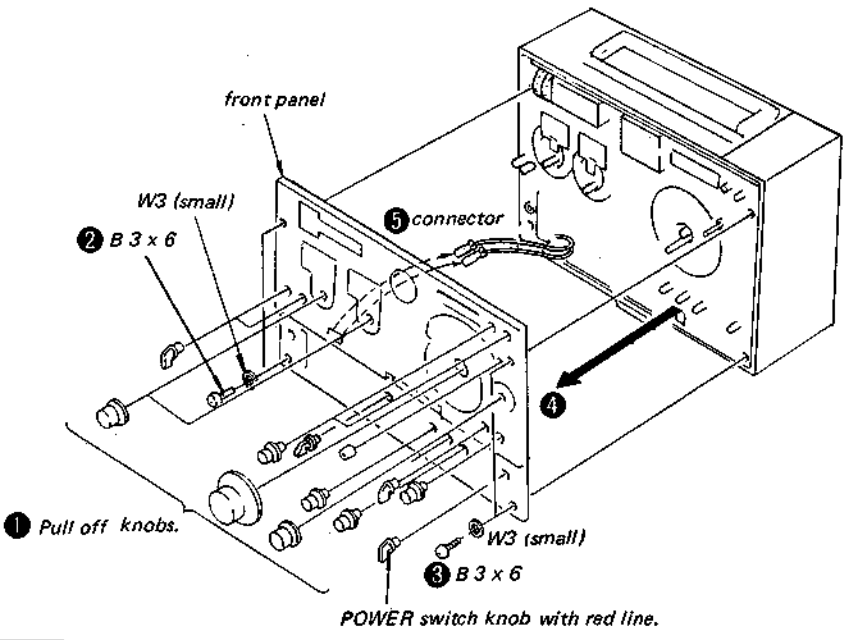
2-1. DISASSEMBLY FLOW CHART



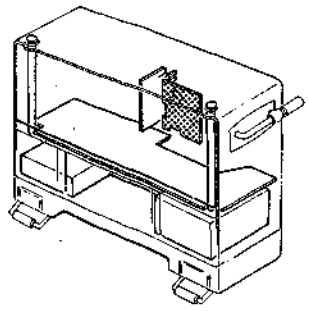
Rear Case Removal

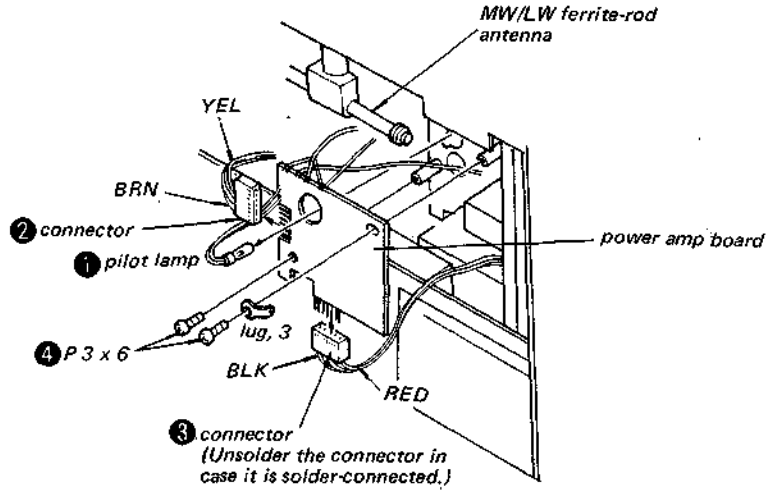


Front Panel Removal

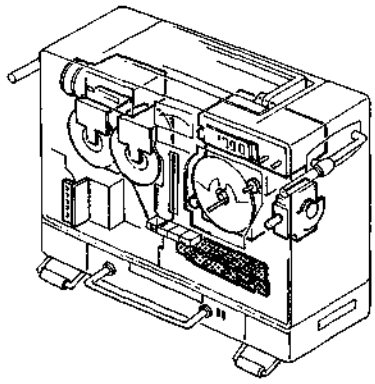


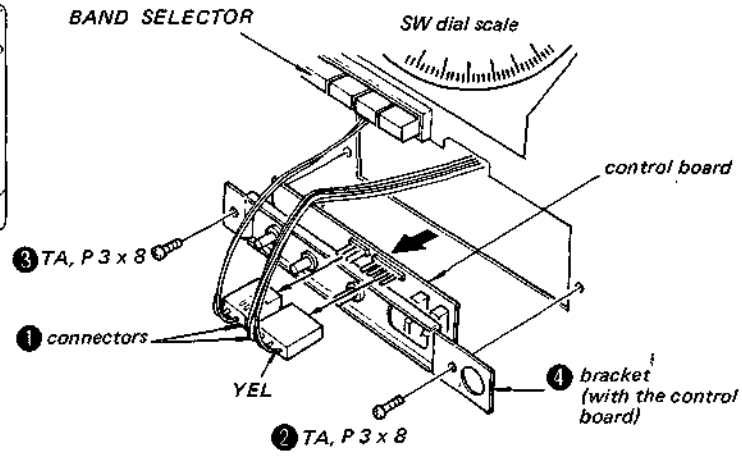
Power Amp Board Removal



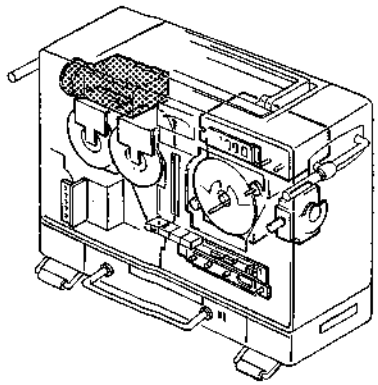


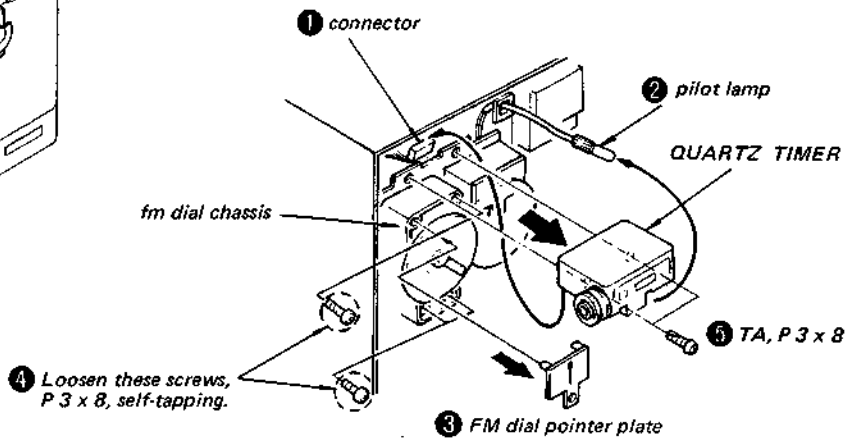
Control Board Removal



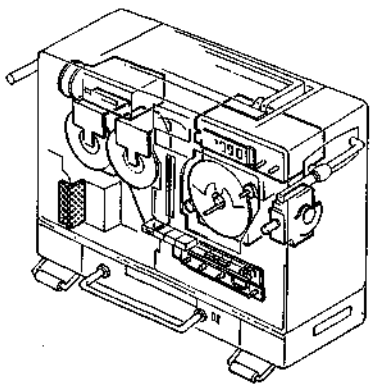


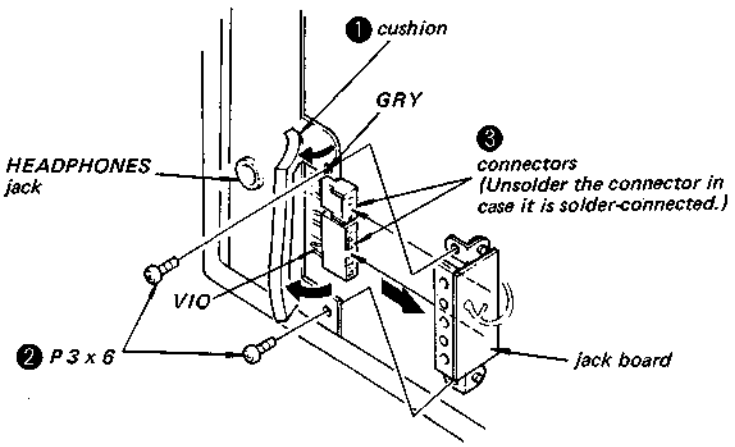
QUARTZ TIMER Removal



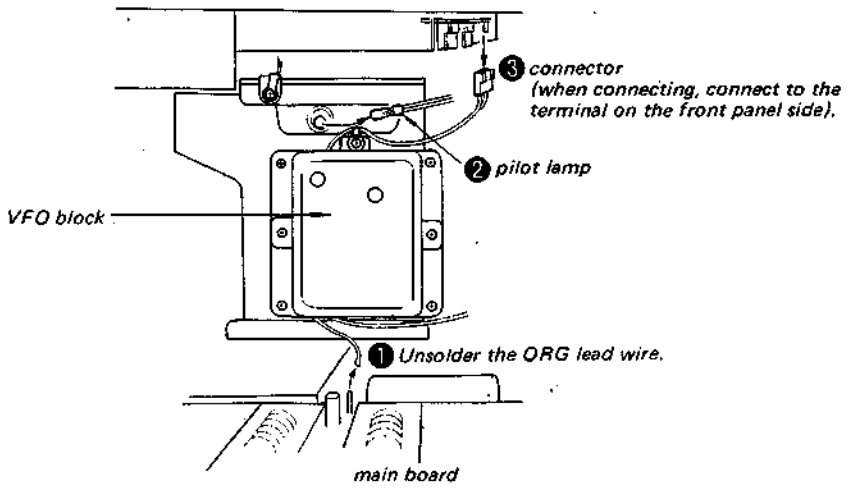


Jack Board Removal



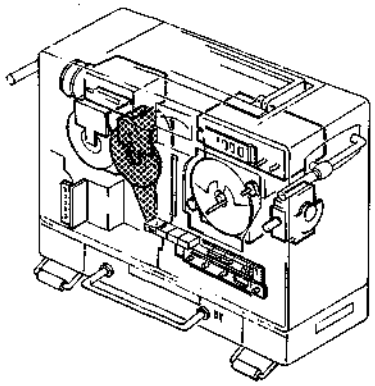


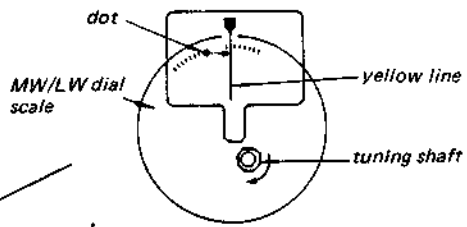
VFO Block Removal (1)



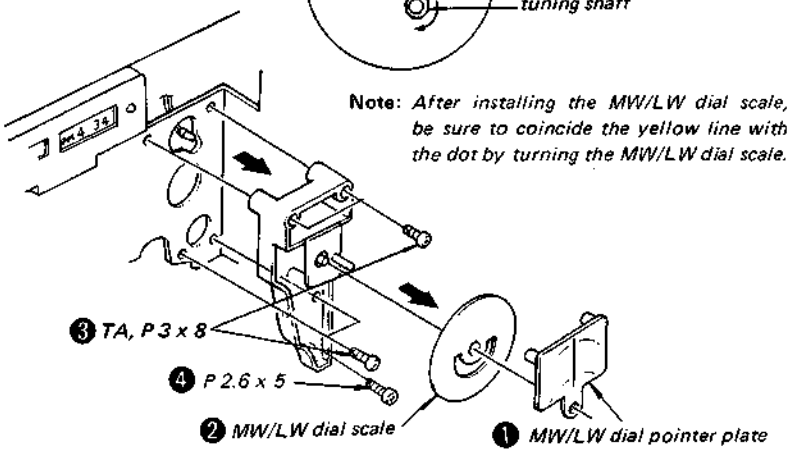
Main Board Removal
on page 28.

MW/LW Dial Block Removal



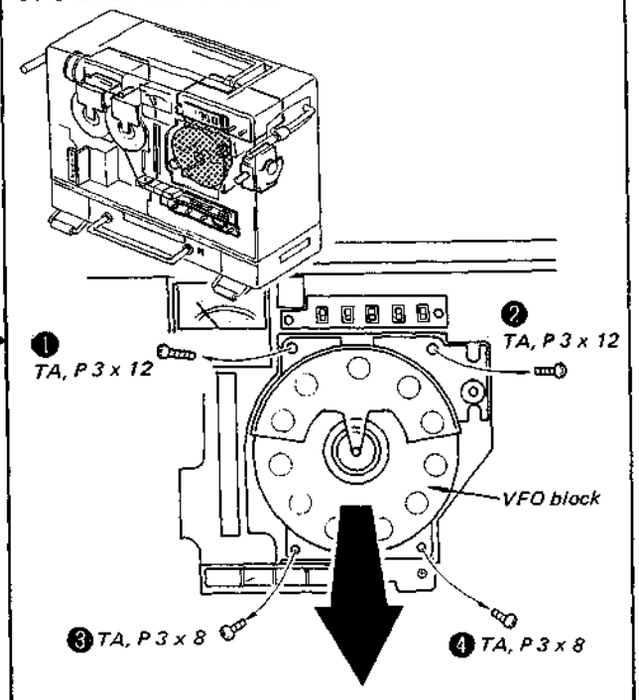


Note: *After installing the MW/LW dial scale, be sure to coincide the yellow line with the dot by turning the MW/LW dial scale.*



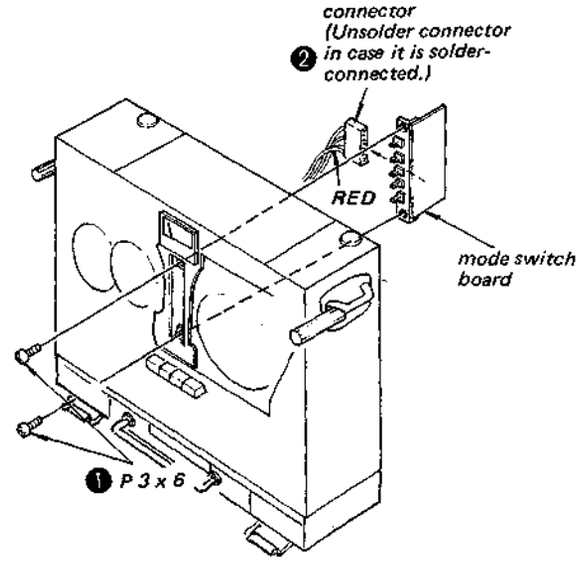
MW/LW Dial Cord Stringing
on page 31.

VFO Block Removal (2)

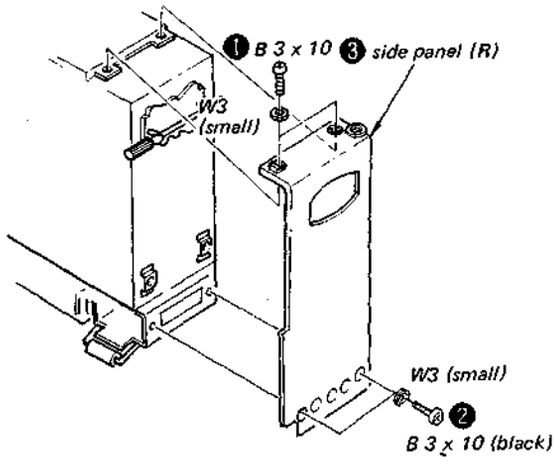


SW Dial Scale Installation on page 29.

MODE Switch Board Removal

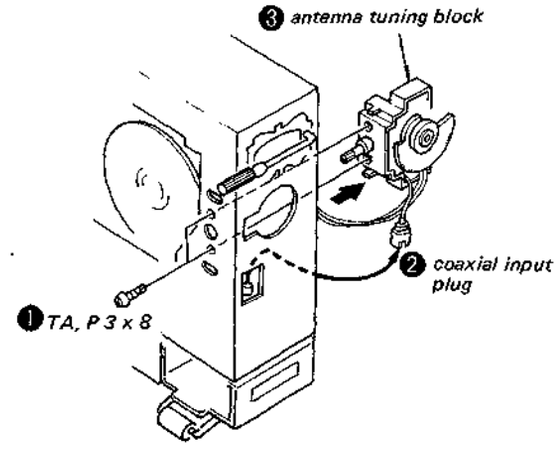


Side Panel (R) Removal



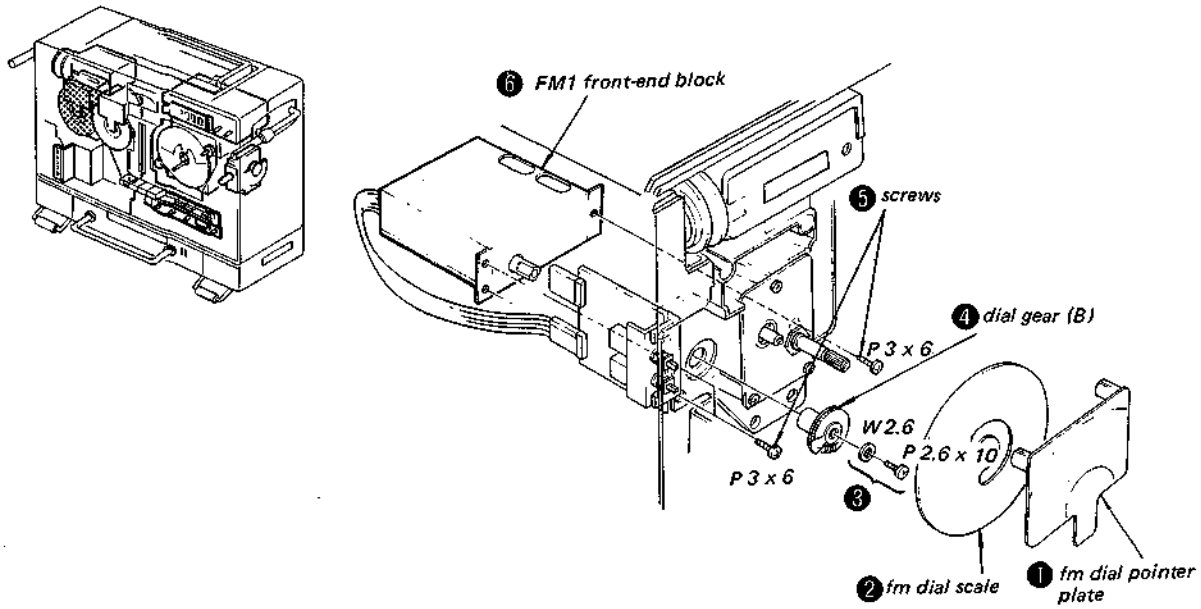
Main Chassis Overturning (1) on page 24.

Antenna Tuning Block Removal



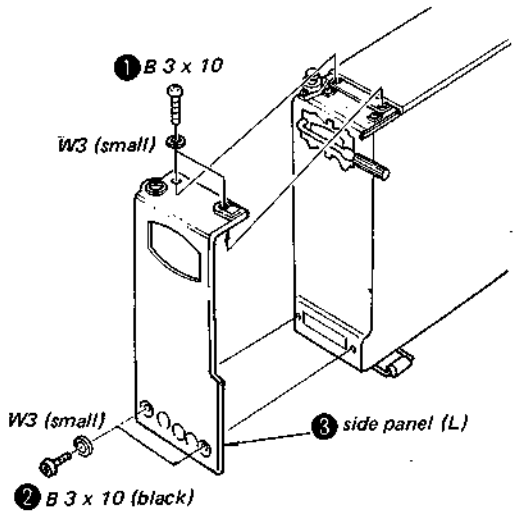
Antenna Tuning Block Dial Cord Stringing on page 30.

FM1 Front-end Block Removal



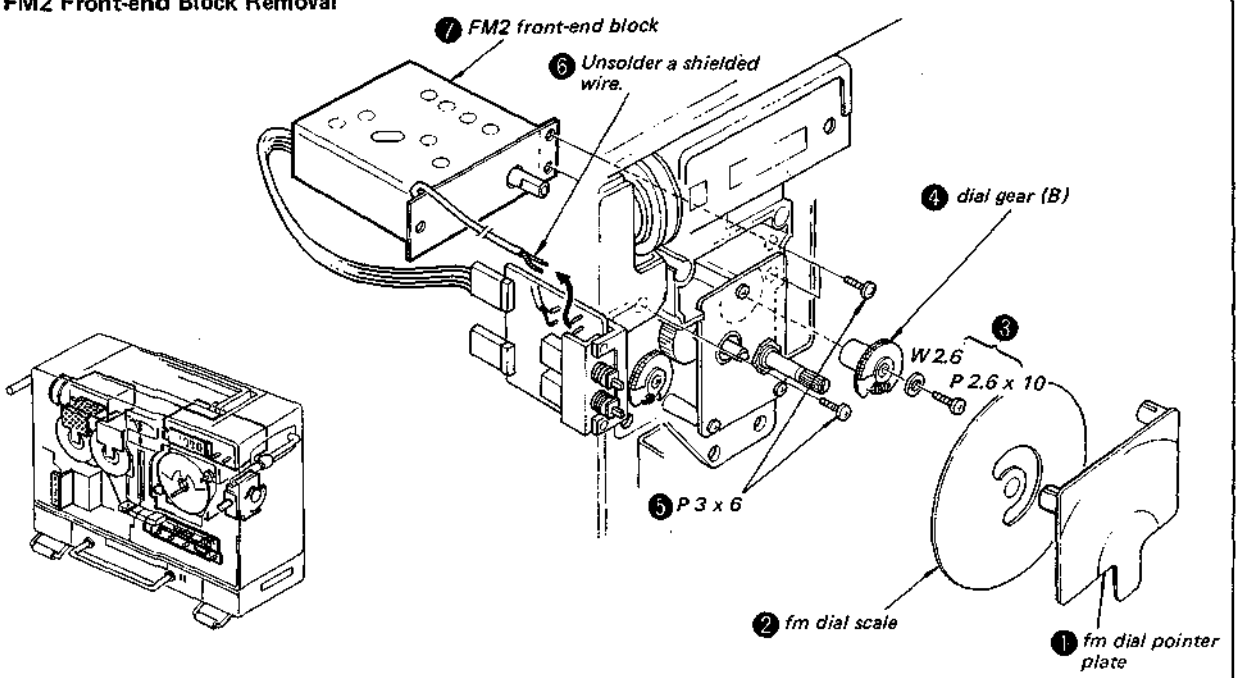
FM Telescopic Antenna Removal
on page 27.

Side Panel (L) Removal

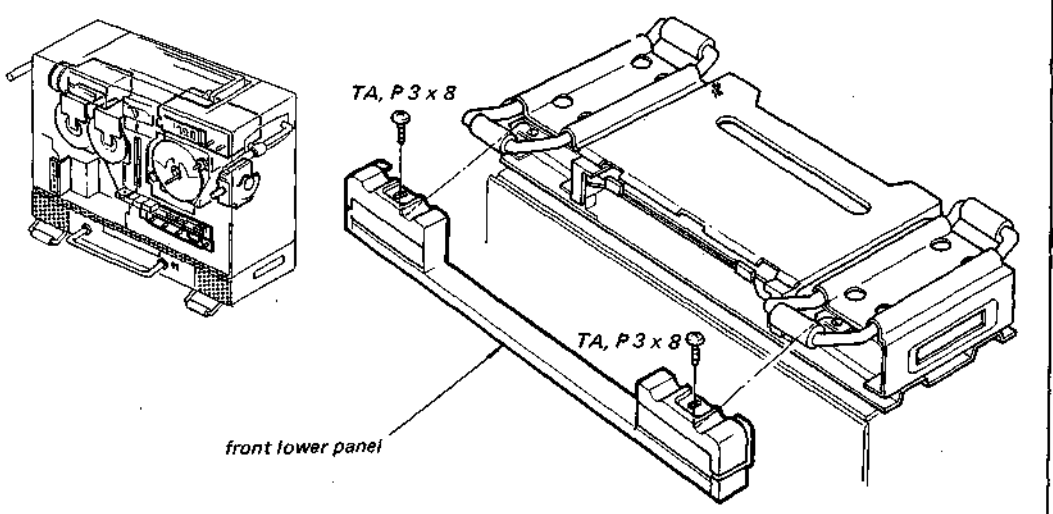


Side Panel (R) Removal
on page 17.

FM2 Front-end Block Removal



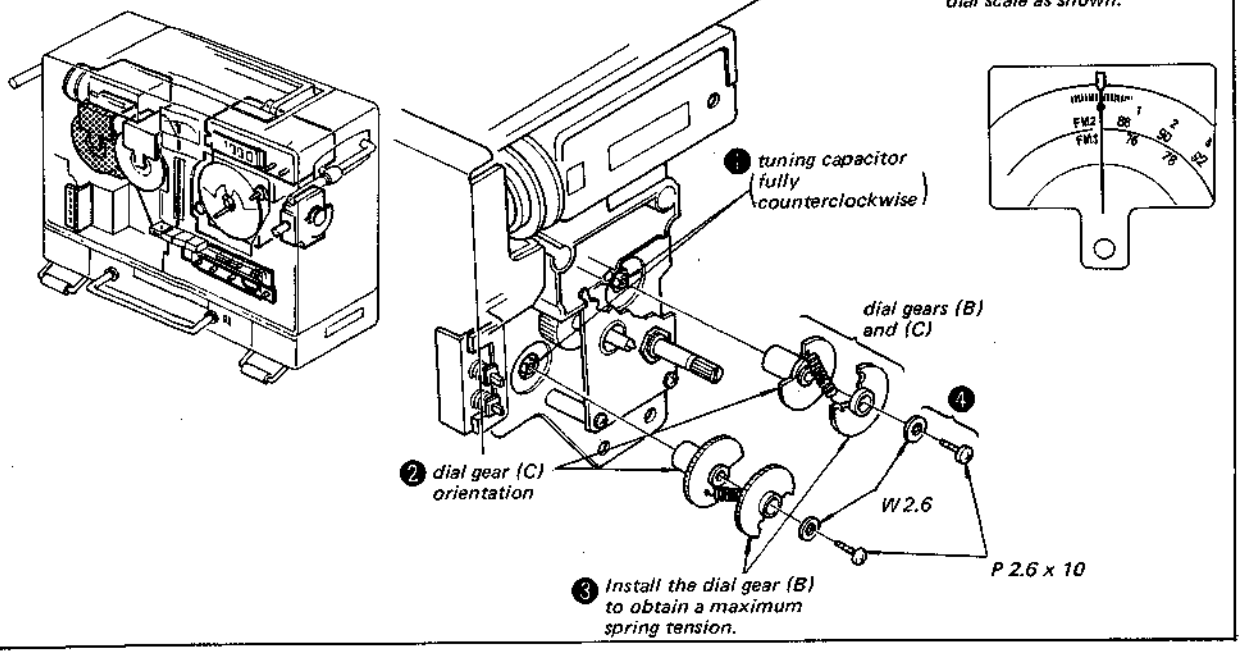
Front Lower Panel Removal



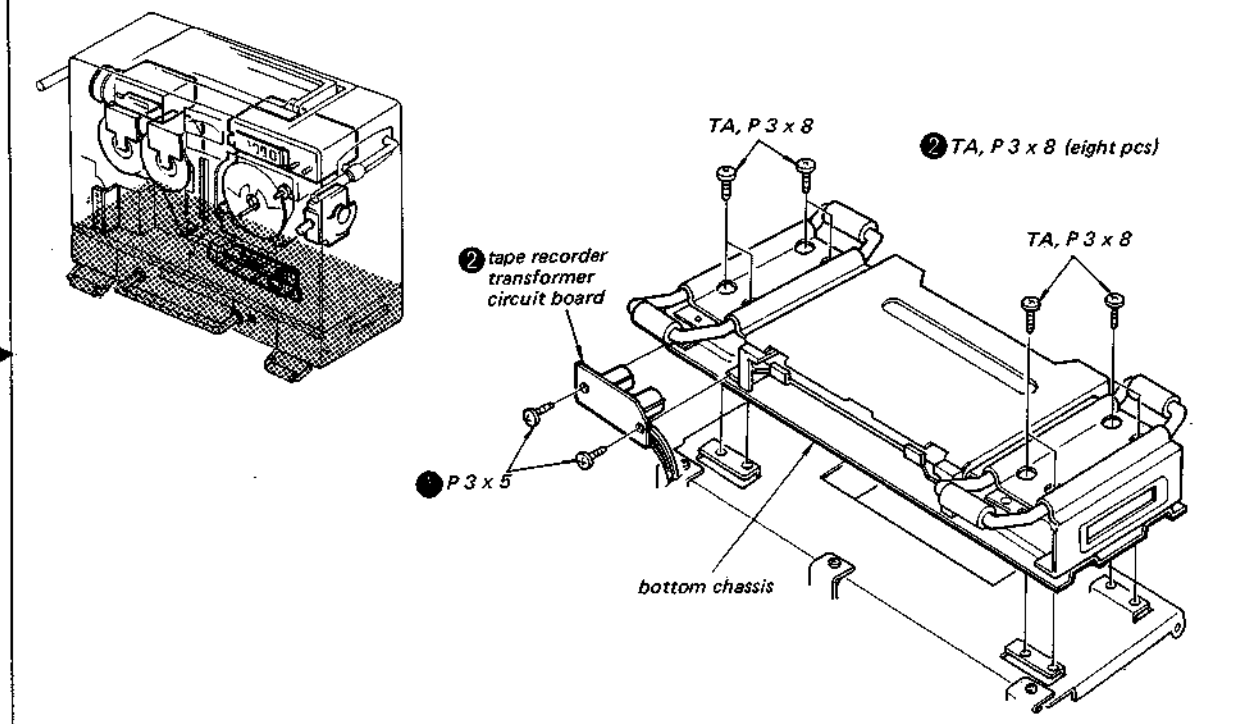
Main Chassis Overturning (1)
on page 24.

Counter Block Removal
on page 25.

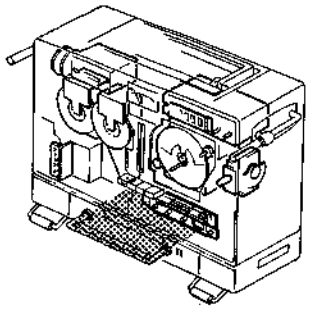
FM Dial Gears (B) and (D) Installation

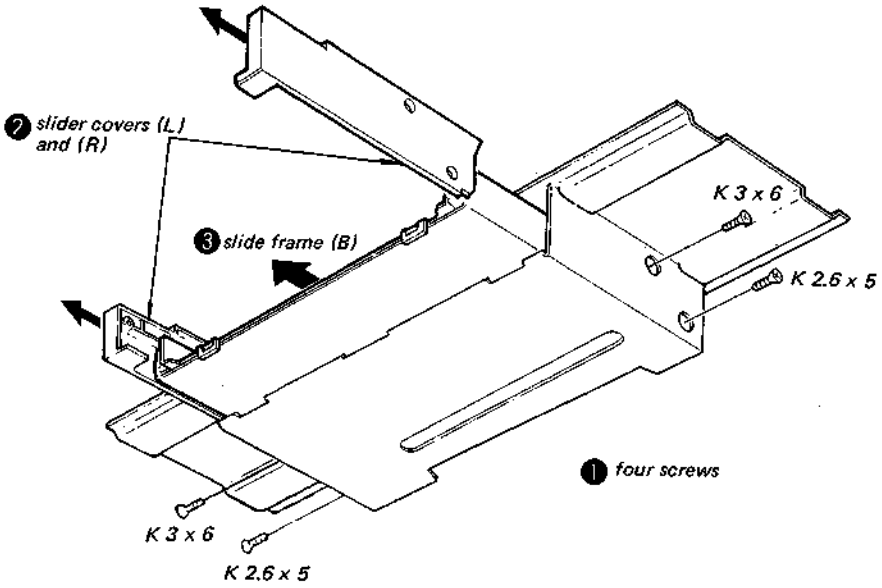


Bottom Chassis Removal

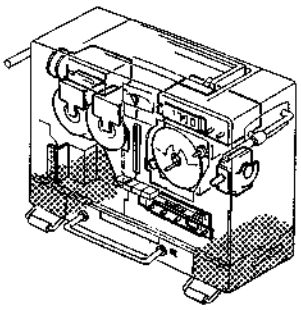


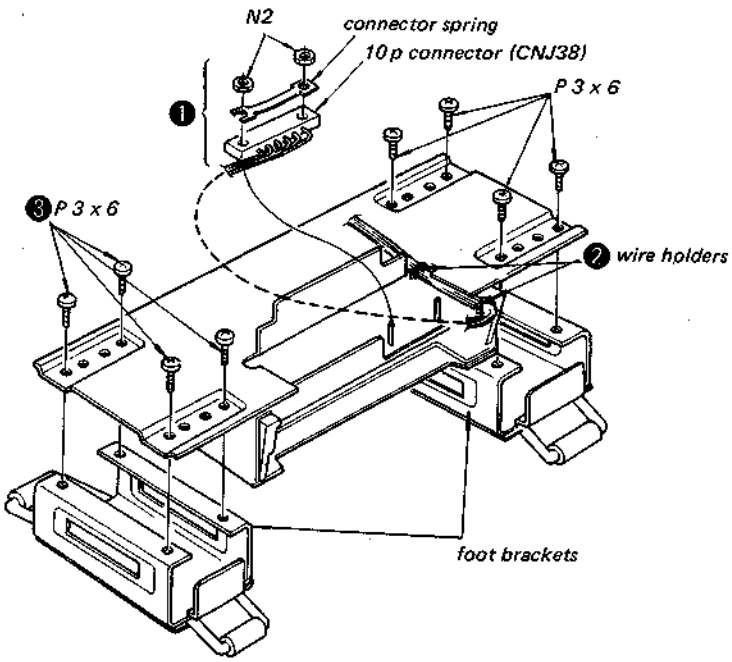
Slide Frame (B) Removal



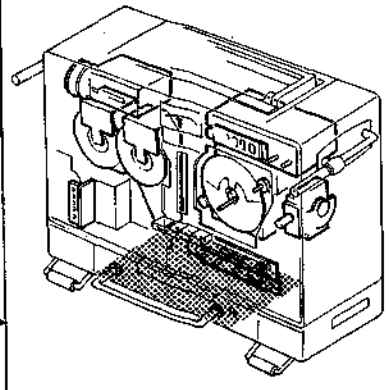


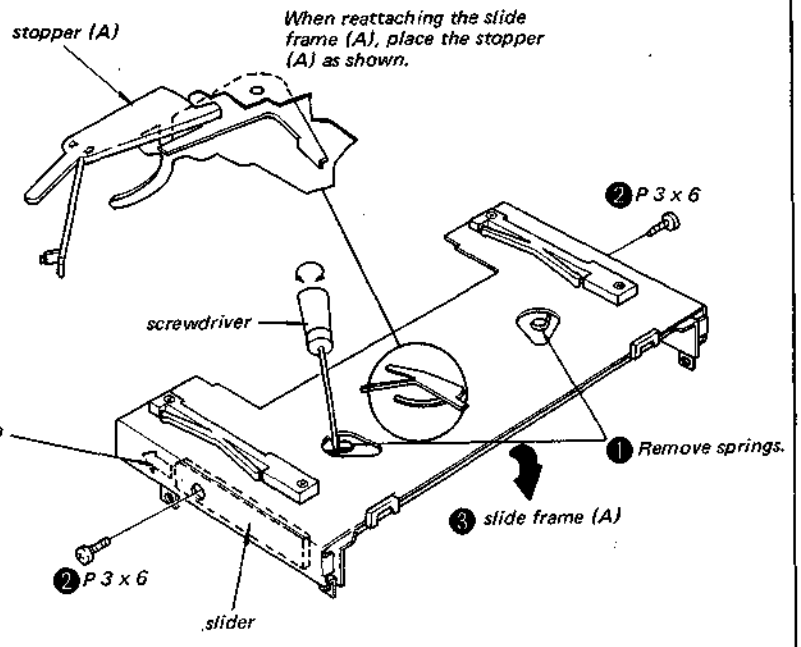
Foot Bracket Removal



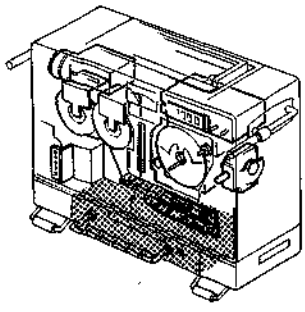


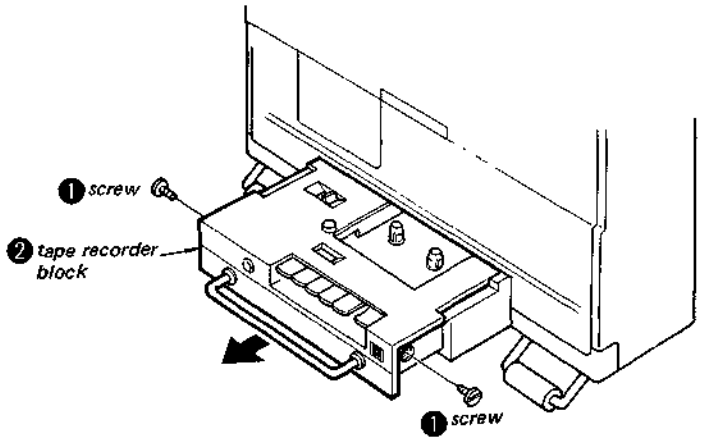
Slide Frame (A) Removal



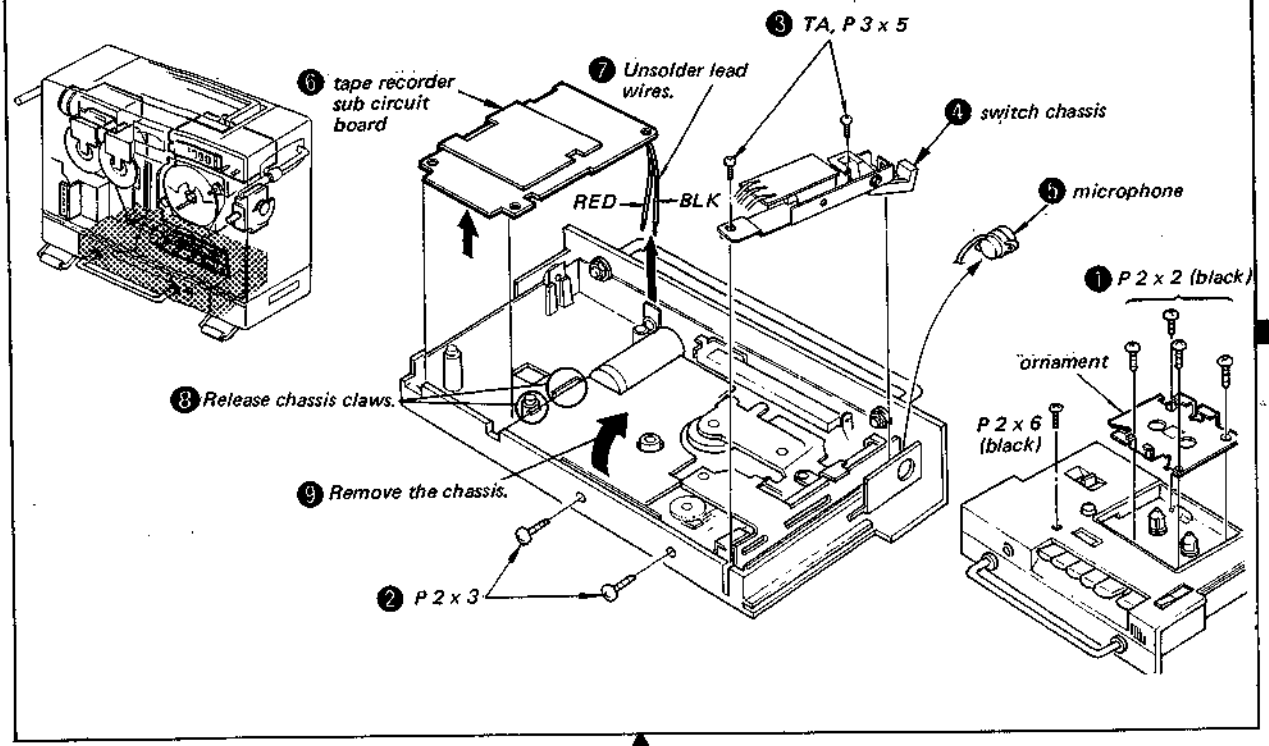


Tape Recorder Block Removal

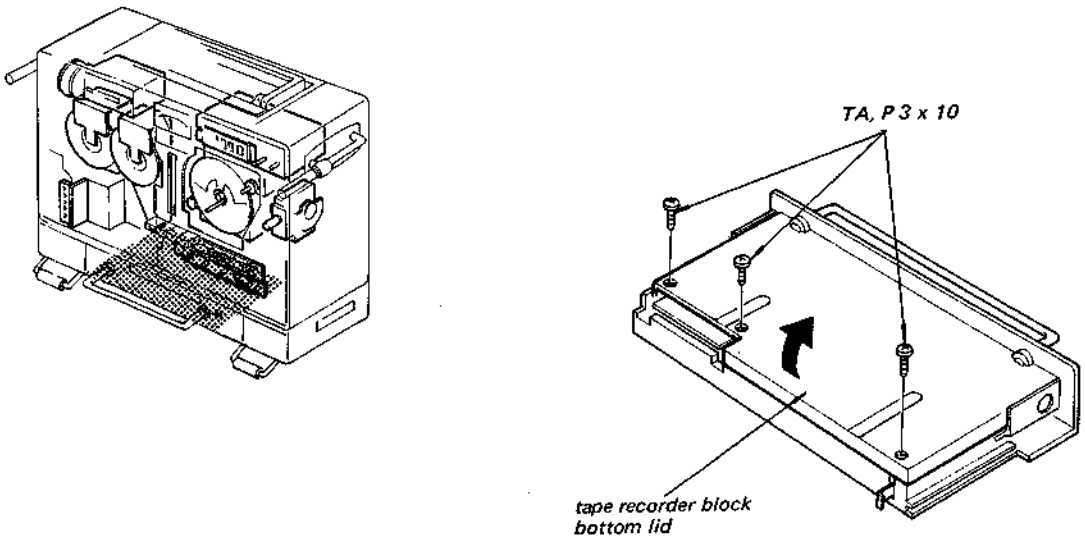




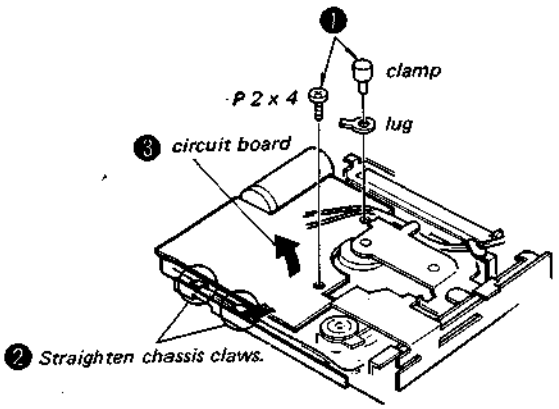
Tape Recorder Mechanism Removal



Tape Recorder Block Bottom Lid Removal

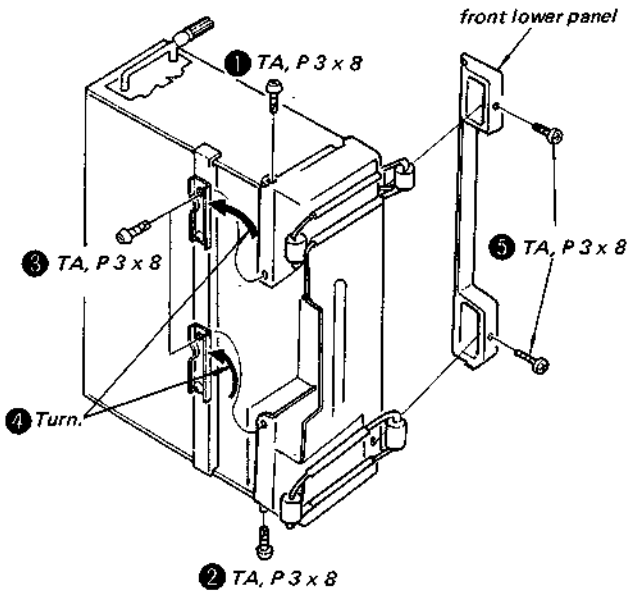


Tape Recorder Main Board Removal

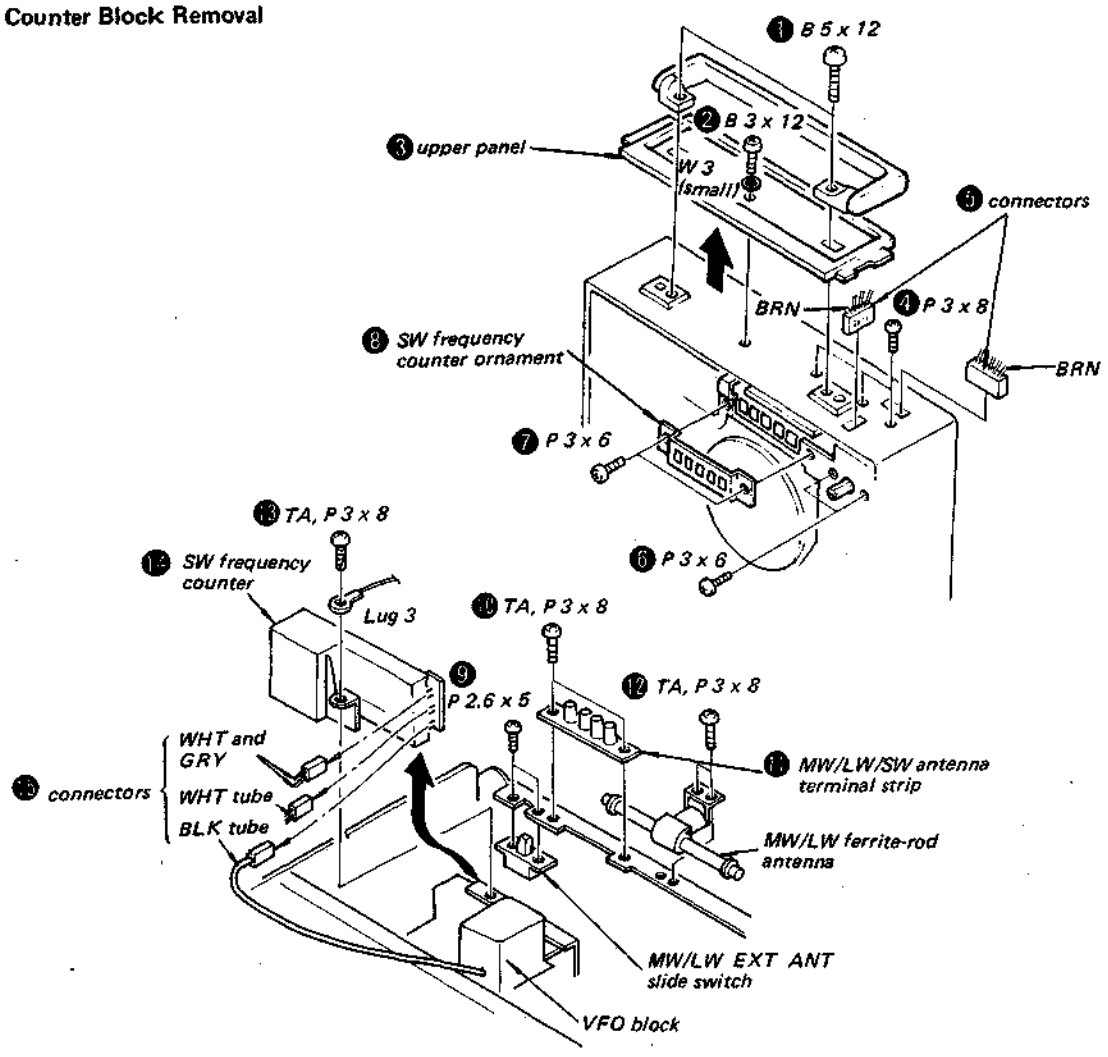


- **Rear Case Removal**
  on page 13.
- **Front Panel Removal**
  on page 13.
- **Side Panel (R) Removal**
  on page 17.
- **Side Panel (L) Removal**
  on page 18.

Main Chassis Overturning (1)

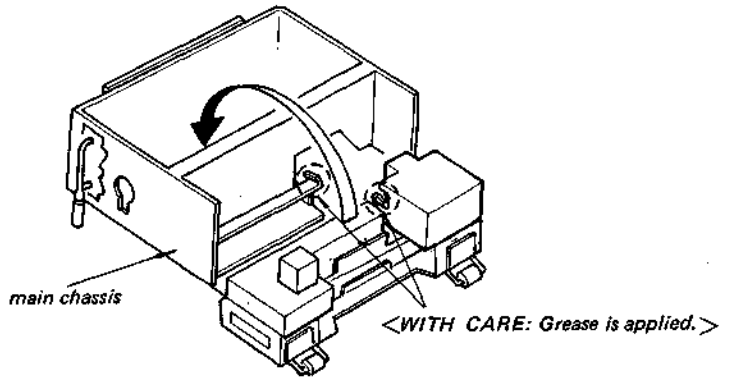


Counter Block Removal

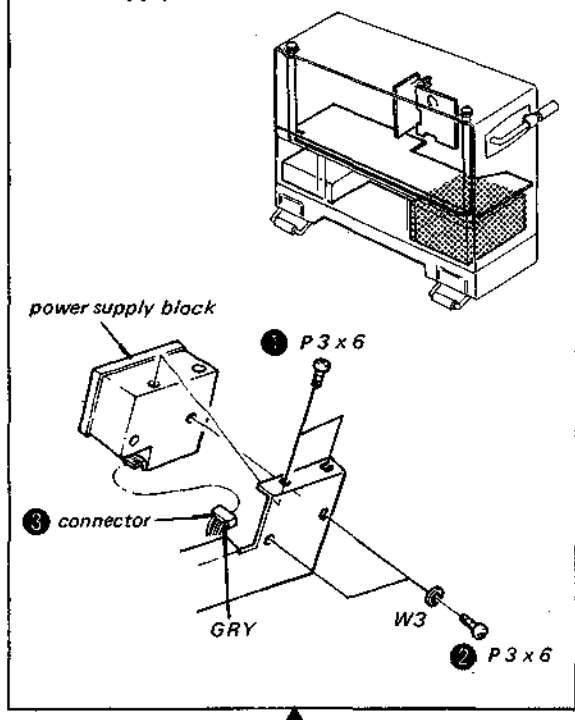


Main Chassis Overturning (2)

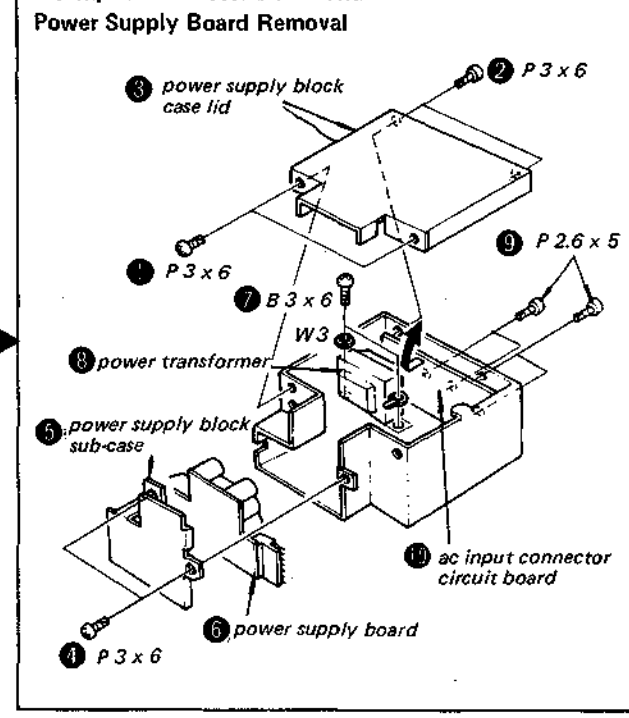
The set can be overturned as shown below.



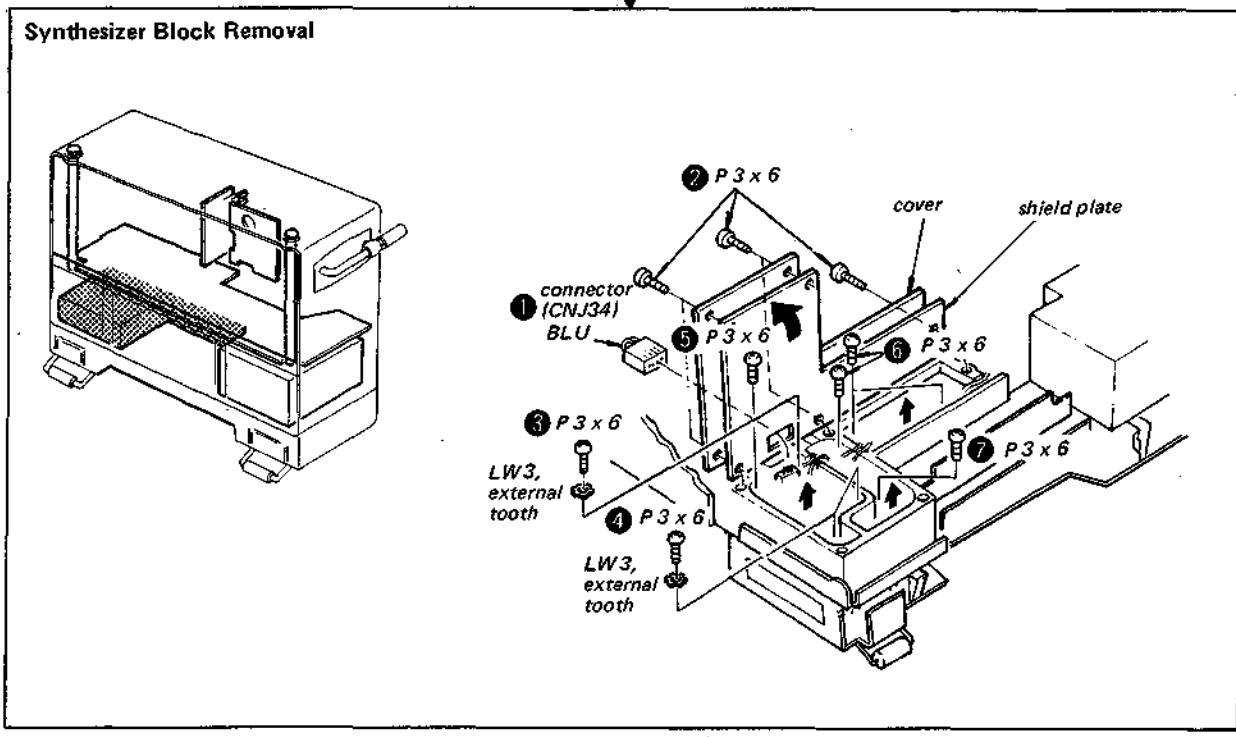
Power Supply Block Removal



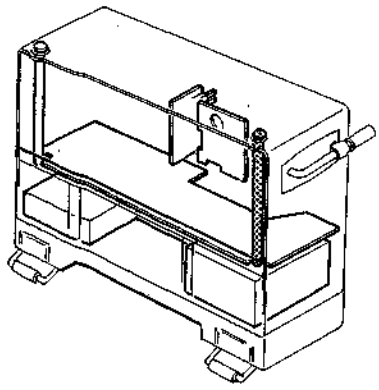
AC Input Connector Board and Power Supply Board Removal

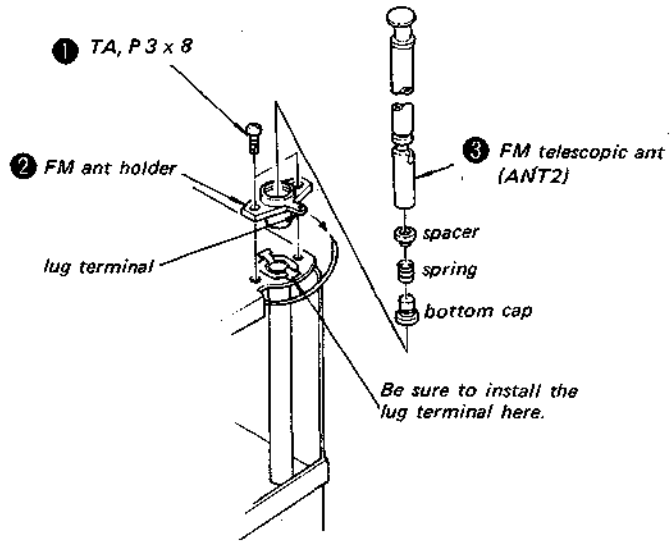


Synthesizer Block Removal



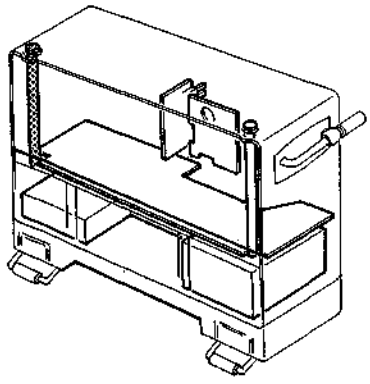
FM Telescopic Antenna Removal

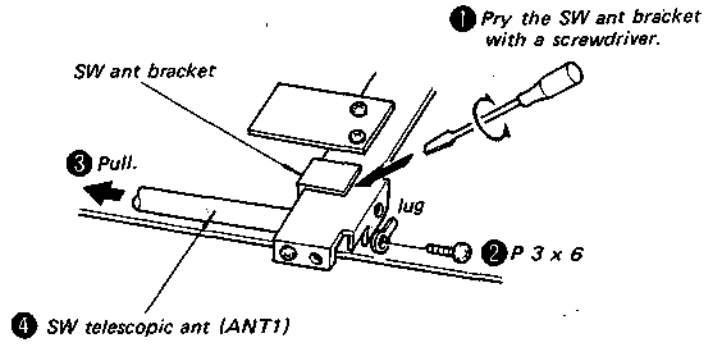




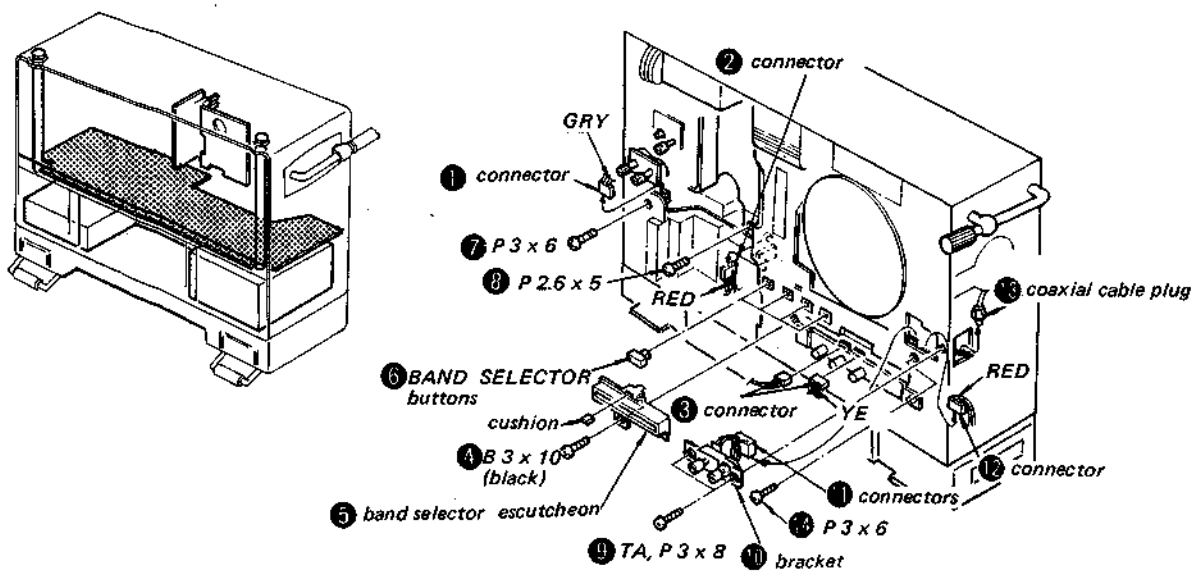
Side Panel (L) Removal
on page 18.

SW Telescopic Antenna Removal



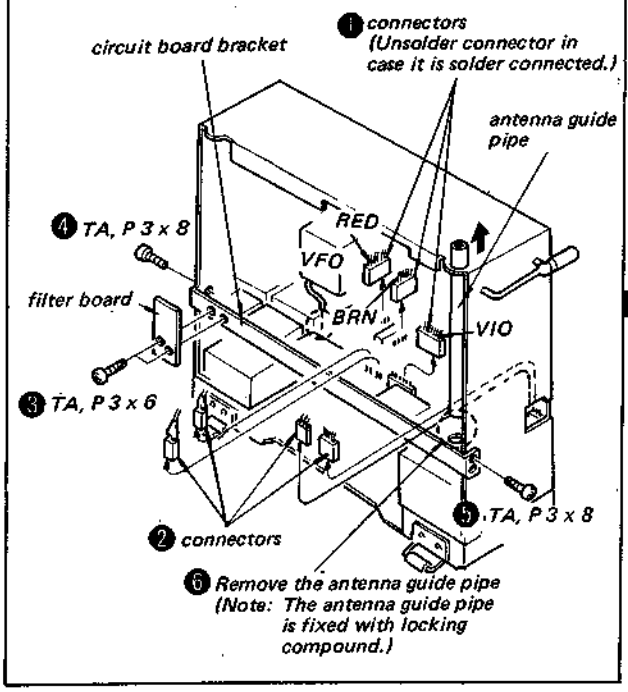


Main Board Removal (1)

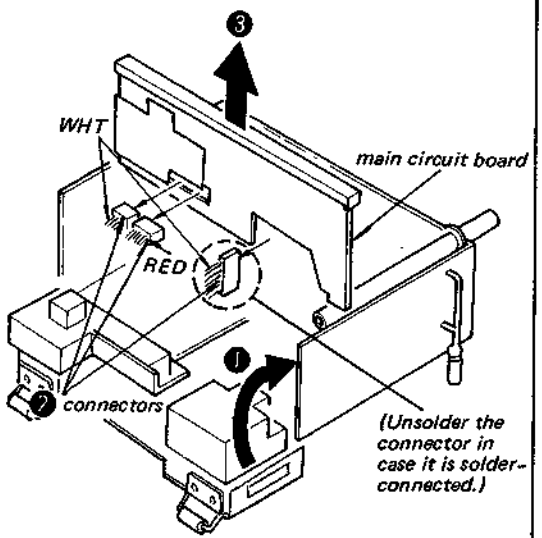


MW/LW Dial Block Removal
on page 16.

Main Board Removal (2)

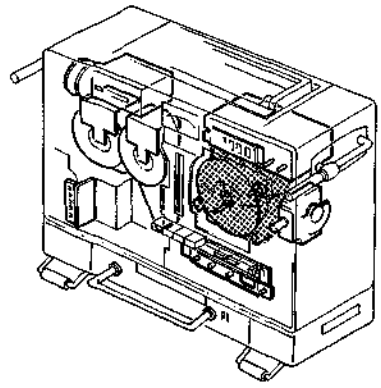


Main Board Removal (3)

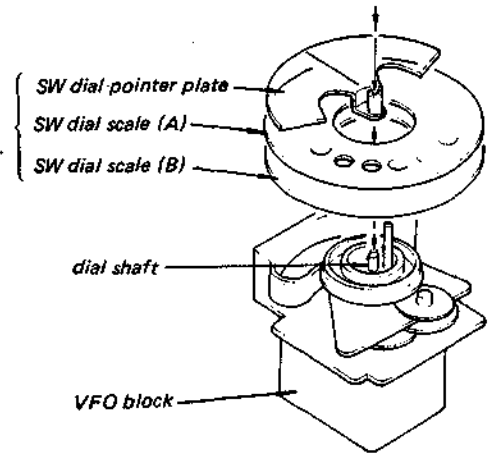


VFO Block Removal (2)
on page 17.

SW Dial Scale Installation

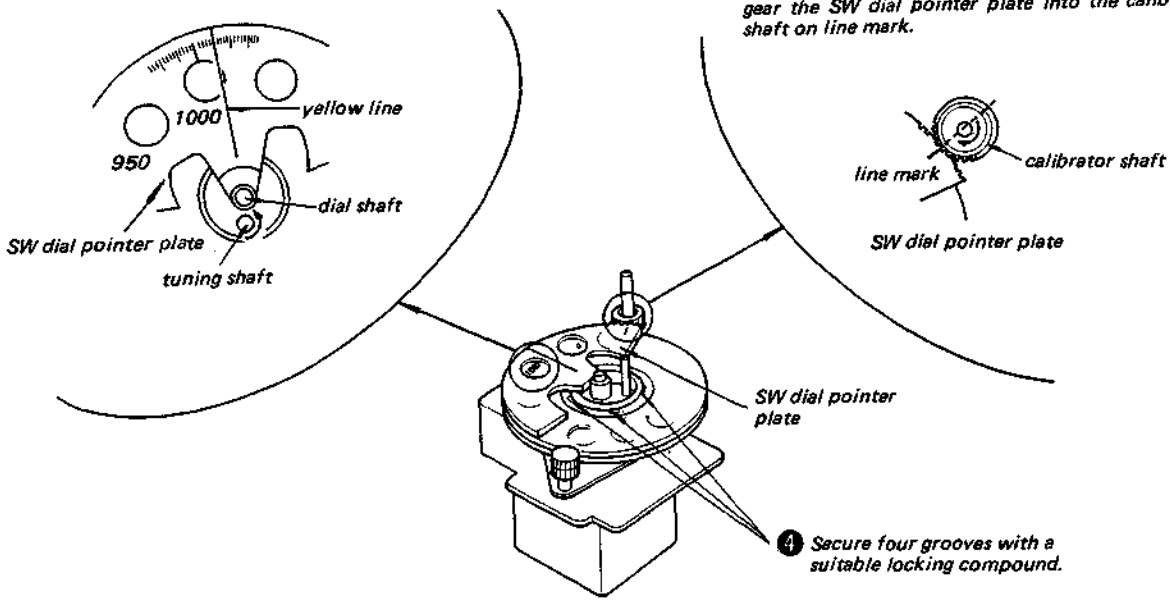


❶ *Install them slightly to the dial shaft.*



❸ *Turn the tuning shaft fully counterclockwise. Install the two kinds of dial scale and dial pointer plate so that the yellow line on the dial pointer plate points to "1010".*

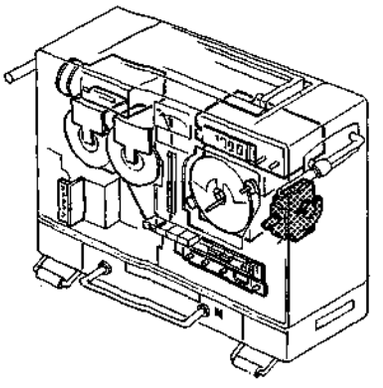
❷ *After turning the calibrator shaft fully clockwise, gear the SW dial pointer plate into the calibrator shaft on line mark.*



❹ *Secure four grooves with a suitable locking compound.*

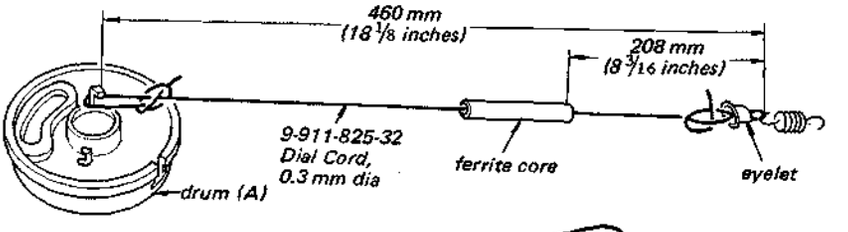
Antenna Tuning Block Removal
on page 17.

Antenna Tuning Block Dial Cord Stringing

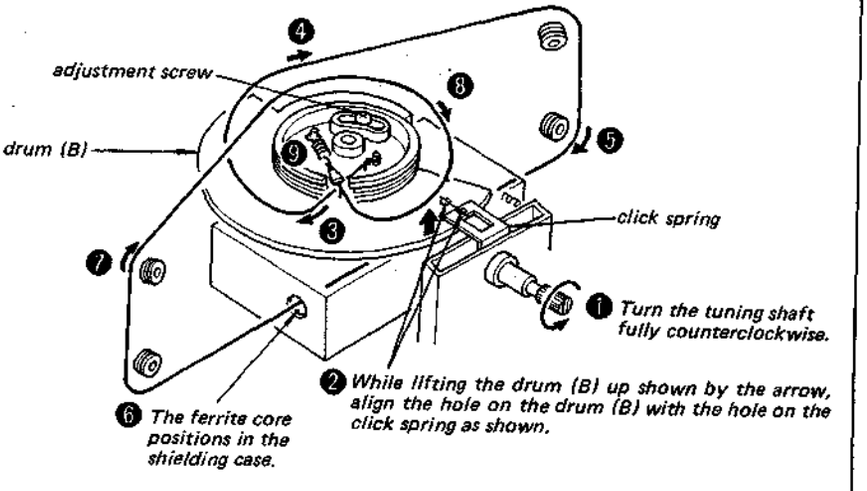


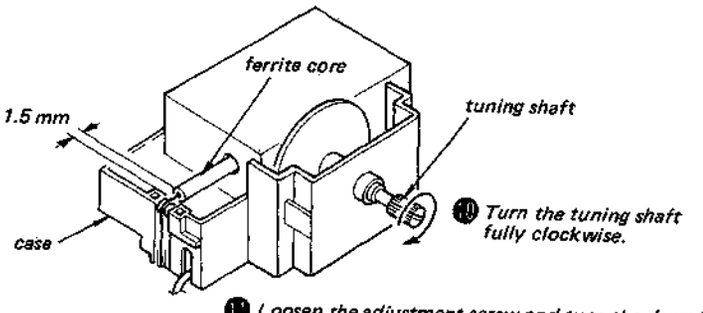
1. Dial Cord Preparation

- *Crimp the eyelet.*
- *Secure the ties, eyelet and ferrite core with a suitable locking compound.*



2. Dial Cord Stringing

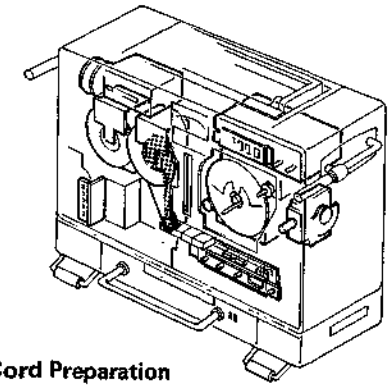




⓬ *Loosen the adjustment screw and turn the drum(A) so that the clearance between the case and the ferrite core should be 1.5 mm.*

MW/LW Dial Block Removal
on page 16.

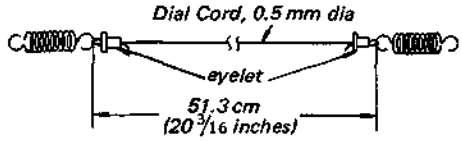
MW/LW Dial Cord Stringing



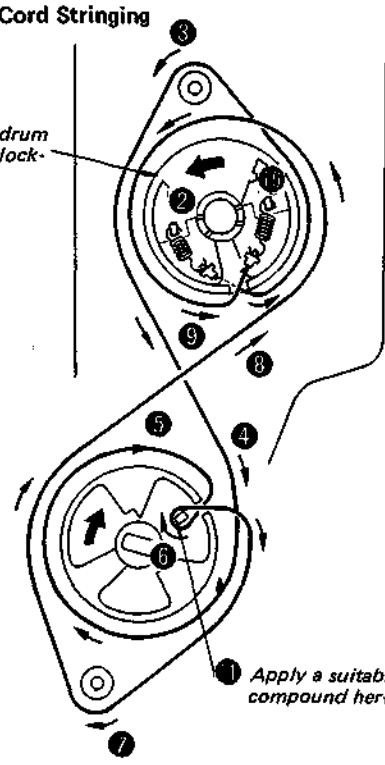
1. Dial Cord Preparation

- *Crimp the eyelets.*
- *Secure the dial cord and eyelets with a suitable locking compound.*

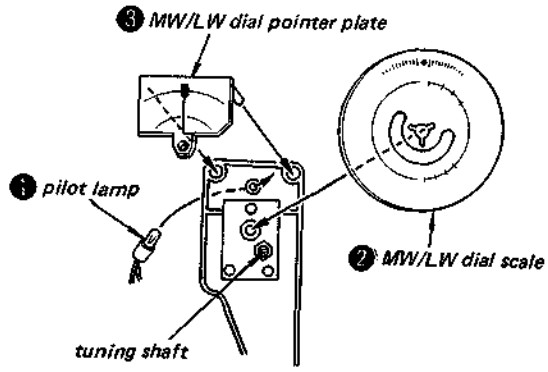
9-911-825-42
Dial Cord, 0.5 mm dia



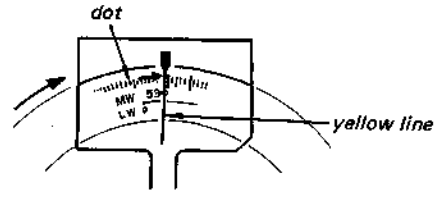
2. Dial Cord Stringing



MW/LW Dial Block Installation



❹ *Turn the tuning shaft fully clockwise and then coincide the yellow line with the dot by turning the MW/LW dial scale.*

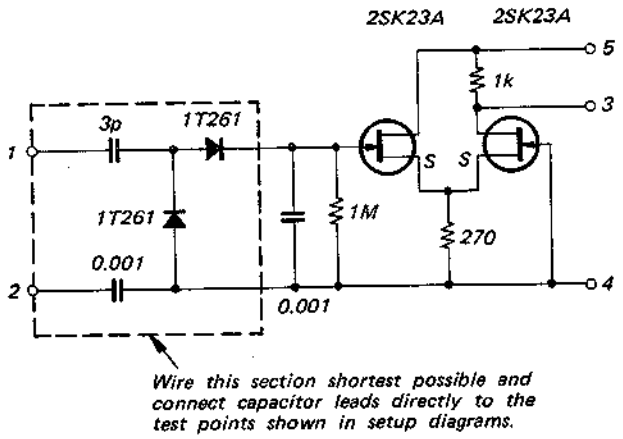


SECTION 3
ADJUSTMENTS

3-1. RADIO SECTION

Test Equipment Required:

- FM rf signal generator
- AM rf signal generator
- FM sweep generator
- AM sweep generator
- marker generator
- frequency counter
  (100 MHz, resolution ± 1 Hz)
- ac/dc VTVM
- rf VTVM
- oscilloscope
- detector (shown below)



- **Note:** 1. Adjustments to the VFO can not be made by using generally available test equipment. When trouble is encountered to the VFO, replace the VFO Block.
  Part No.: **A-3624-020-B**

  2. Overturn the main chassis before the adjustments. Refer to pages 24 and 25.

3-1. +5 V VOLTAGE ADJUSTMENT

Setting:

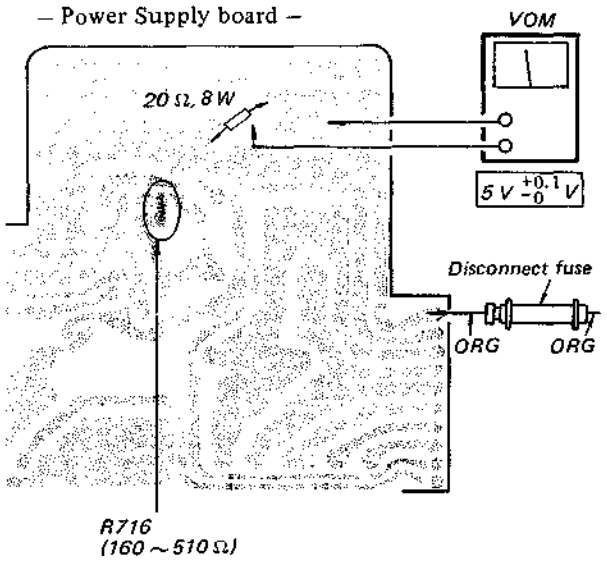
BAND SELECTOR switch: SW

Procedure:

1. Disconnect the fuse F2.
2. Install a 20 Ω, 8 W resistor on the conductor side as shown.
3. Adjust the value of R716 to obtain the specified voltage. Perform this adjustment on the conductor side.

Note: When the patterns are heated by a soldering iron, thermistor warms up. Cool off the components and circuit board at a time in selecting resistor.

4. Install the selected resistor on the component side.
5. Remove 20 Ω, 8 W resistor and reconnect the fuse.



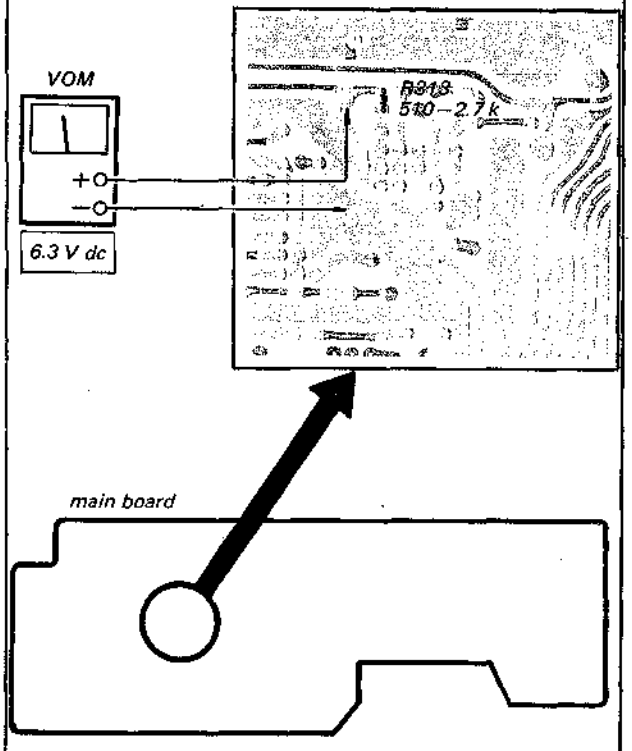
3-2. VCO POWER SUPPLY VOLTAGE ADJUSTMENT

Setting:

BAND SELECTOR switch: SW

Procedure:

Adjust the value of R313 (510 Ω – 2.7 kΩ) for the indicated VOM reading.

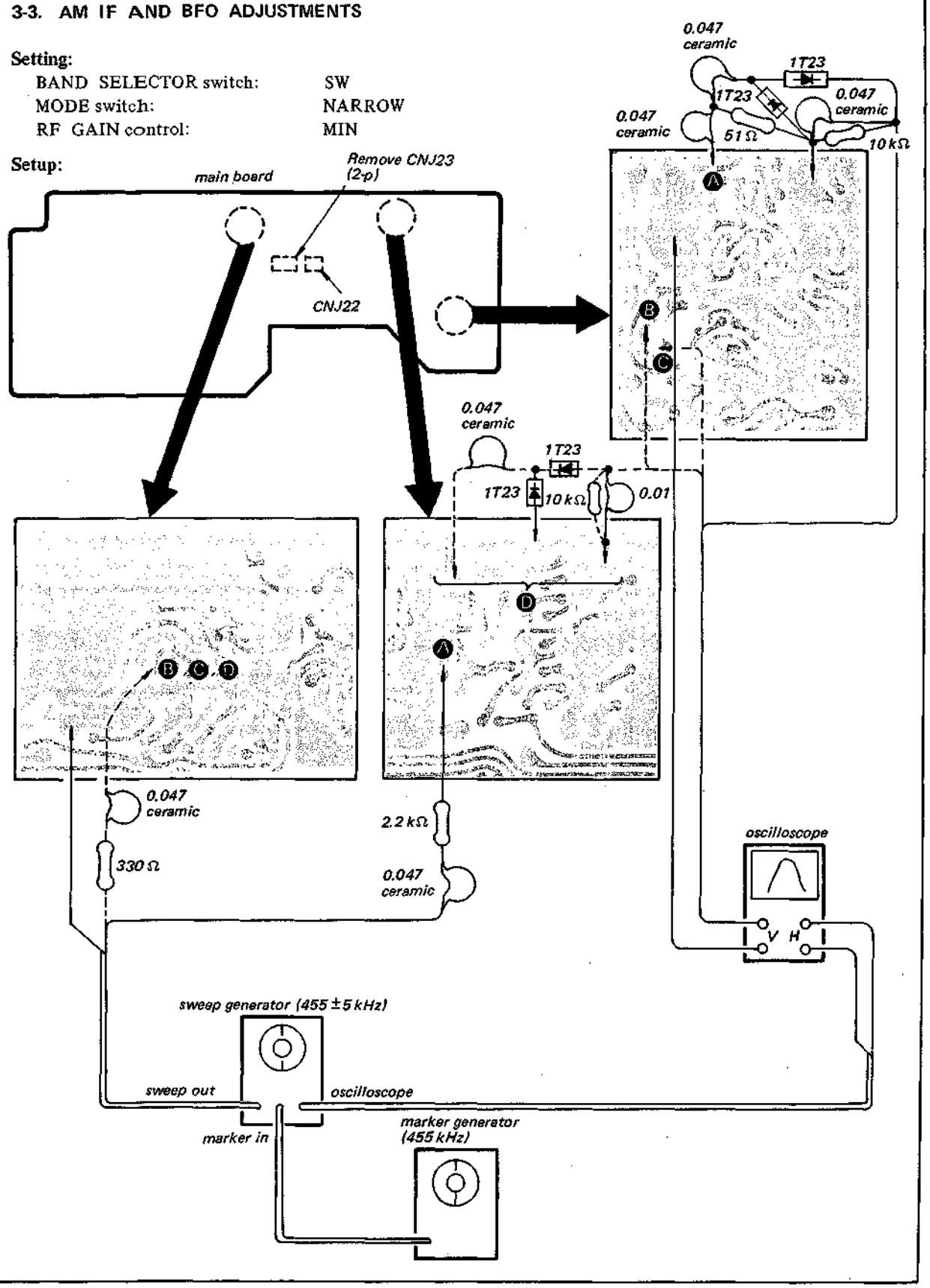


3-3. AM IF AND BFO ADJUSTMENTS

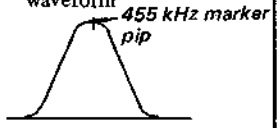
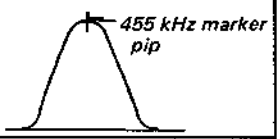
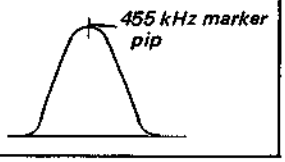
Setting:

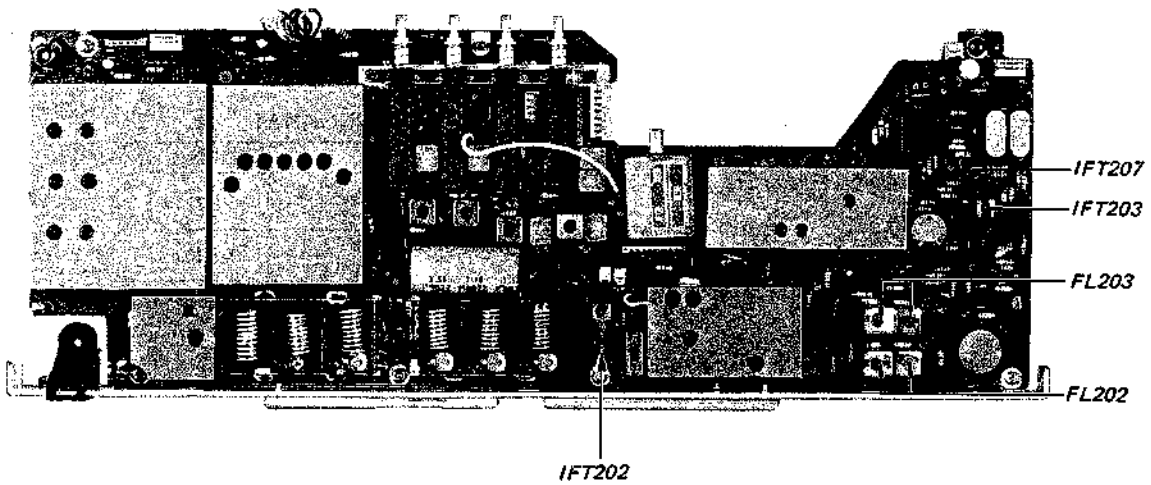
BAND SELECTOR switch:	SW
MODE switch:	NARROW
RF GAIN control:	MIN

Setup:



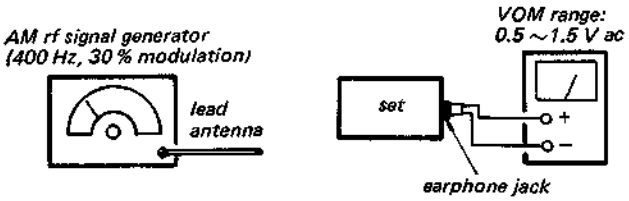
Procedure:

Adjust	Obtain
FL203 (Connect oscilloscope and sweep out to Ⓐ.) (MODE switch: NORMAL) FL202 (MODE switch: NARROW)	Highest and widest waveform 
IFT202, IFT203 (Connect oscilloscope and sweep out to Ⓑ.) (MODE switch: NORMAL)	Highest waveform 
IFT207 (MODE switch: LSB Connect oscilloscope to Ⓒ.) Check: MODE switch: USB	A beat spike on the above waveform. Set the core at the center of rotation in which a spike appears on the waveform. Beat spike should move to the opposite slope and stays stably.
IFT202 (Connect oscilloscope and sweep out to Ⓓ.) (MODE switch: NARROW)	Highest waveform 



3-4. LW/MW FREQUENCY COVERAGE AND TRACKING ADJUSTMENTS

Setup:

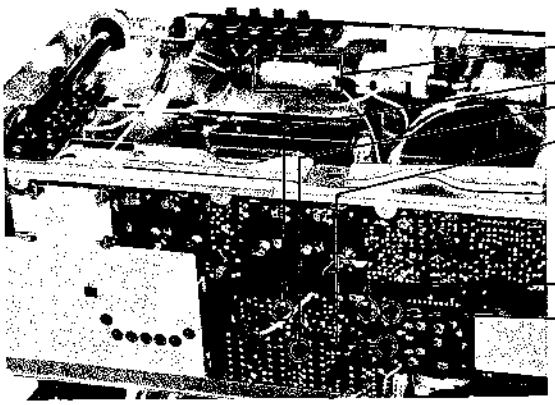


Adjust for maximum VOM reading.

A) LW

Setting:

BAND SELECTOR switch:	LW
MODE switch:	NORMAL
VOLUME control:	MAX
TONE controls:	MAX
RF GAIN control:	MAX/NORMAL



LW TRACKING	
L261-1	200 kHz
L263	
CT203	380 kHz
CT202	

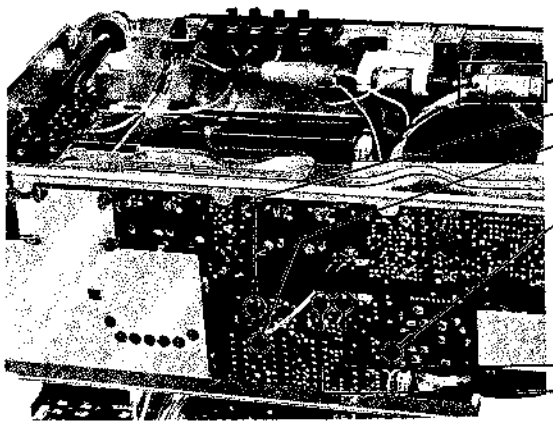
Fix L261-1 with wax after the adjustment.

LW FREQUENCY COVERAGE
L265 (146 kHz)
CT205 (407 kHz)

B) MW

Setting:

BAND SELECT switch:	MW
MODE switch:	NORMAL
VOLUME control:	MAX
TONE controls:	MAX
RF GAIN control:	MAX/NORMAL



MW TRACKING	
L261-2	620 kHz
L262	
CT204	1,400 kHz
CT201	

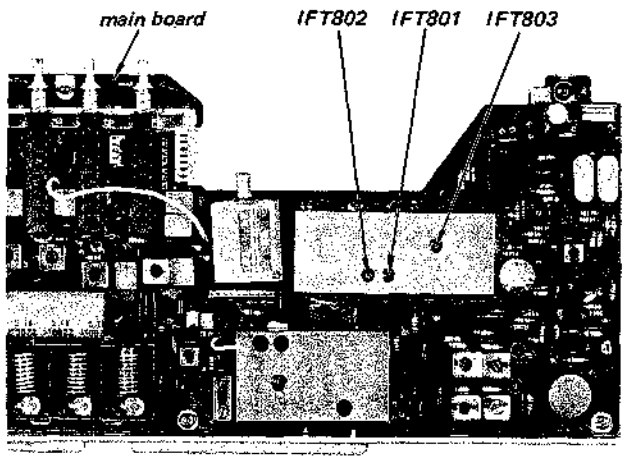
Fix L261-2 with wax after the adjustment.

MW FREQUENCY COVERAGE
L264 (520 kHz)
CT206 (1,680 kHz)

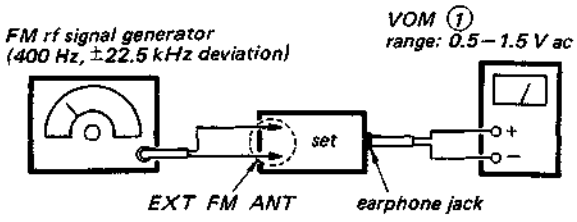
3-5. FM IF ALIGNMENT

Setting:

BAND SELECTOR switch:	FM
VOLUME control:	MAX
TONE controls:	MAX
MUTING switch:	OFF
AFC switch:	OFF



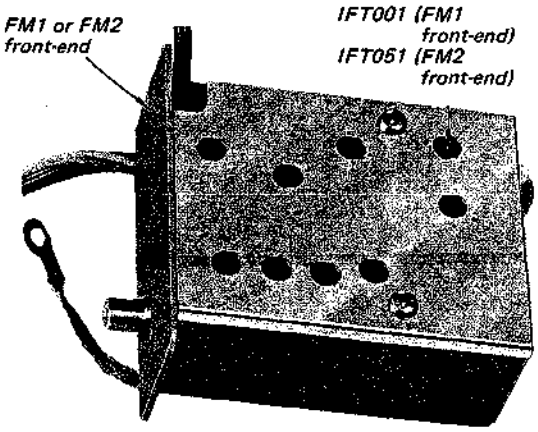
Setup:

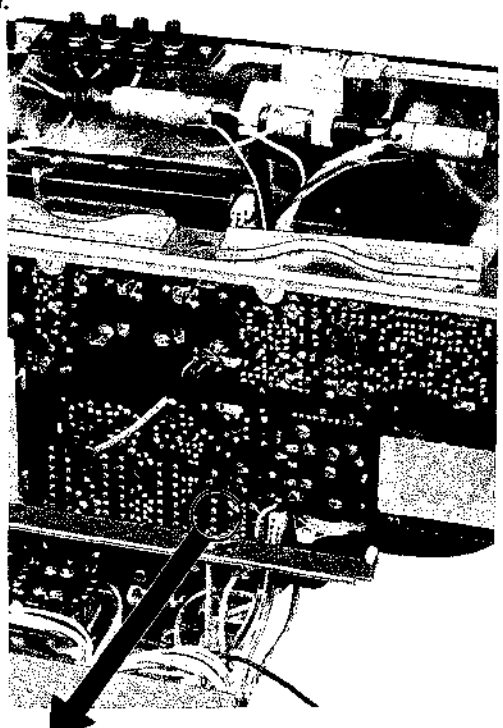


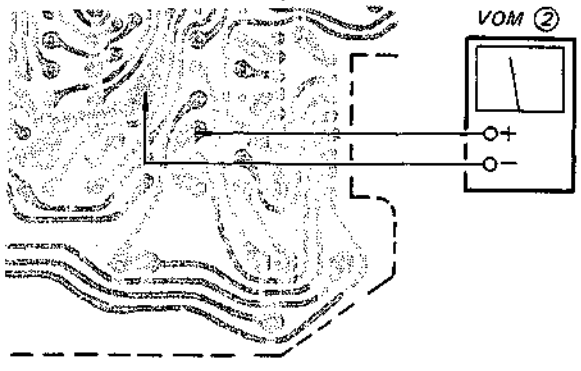
Procedure:

Remove the FM front-ends (Refer to pages 18 and 19.).

Signal Generator Frequency	Adjust	Obtain
10.7 MHz	IFT001 IFT051 IFT801 IFT802	Maximum VOM ① reading.
10.7 MHz	IFT802	0 V VOM ② reading.
FM1: 75.0–91.5 MHz FM2: 86.5–109.5 MHz (Tune the receiver in.)	IFT803	Maximum TUNING meter reading.





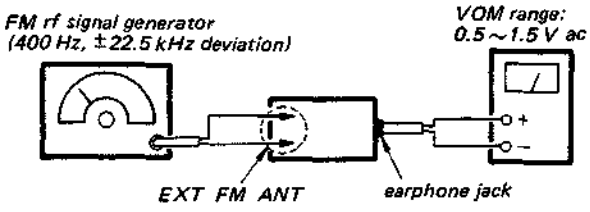


3-6. FM1 FREQUENCY COVERAGE AND TRACKING ADJUSTMENTS

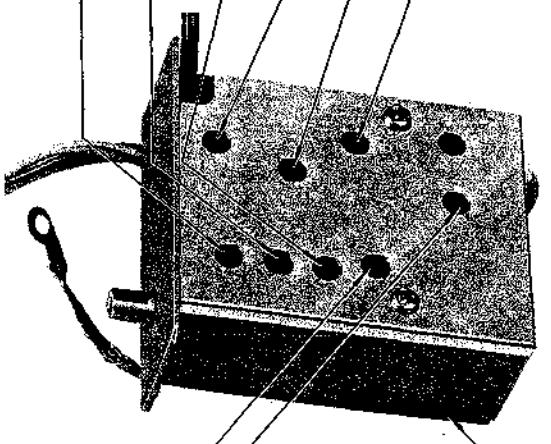
Setting:

BAND SELECTOR switch:	FM1
VOLUME control:	MAX
TONE controls	MAX
MUTING switch:	OFF
AFC switch:	OFF

Setup:



FM1 TRACKING					
75 MHz			91.5 MHz		
CT001	CT002	CT003	L001	L002	L003



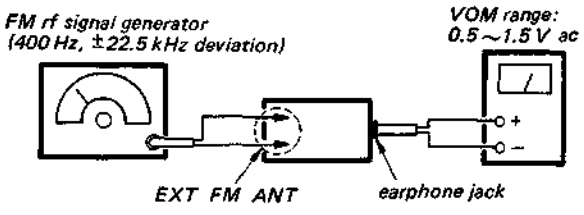
FM1 FREQUENCY COVERAGE
L004 (75 MHz)
CT004 (91.5 MHz)

3-7. FM2 FREQUENCY COVERAGE AND TRACKING ADJUSTMENTS

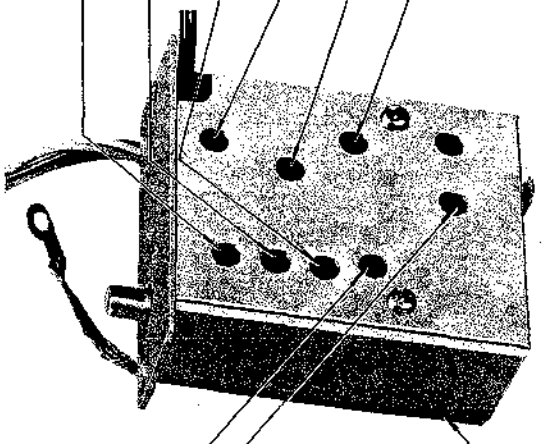
Setting:

BAND SELECTOR switch:	FM2
VOLUME control:	MAX
TONE controls	MAX
MUTING switch:	OFF
AFC switch:	OFF

Setup:



FM2 TRACKING					
109.5 MHz			86.5 MHz		
CT051	CT052	CT053	L051	L052	L053



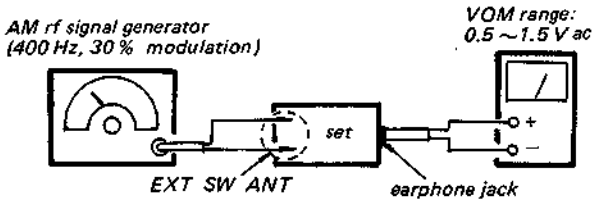
FM2 FREQUENCY COVERAGE
L054 (86.5 MHz)
CT054 (109.5 MHz)

3-8. SW 1st IF ADJUSTMENT

Setting:

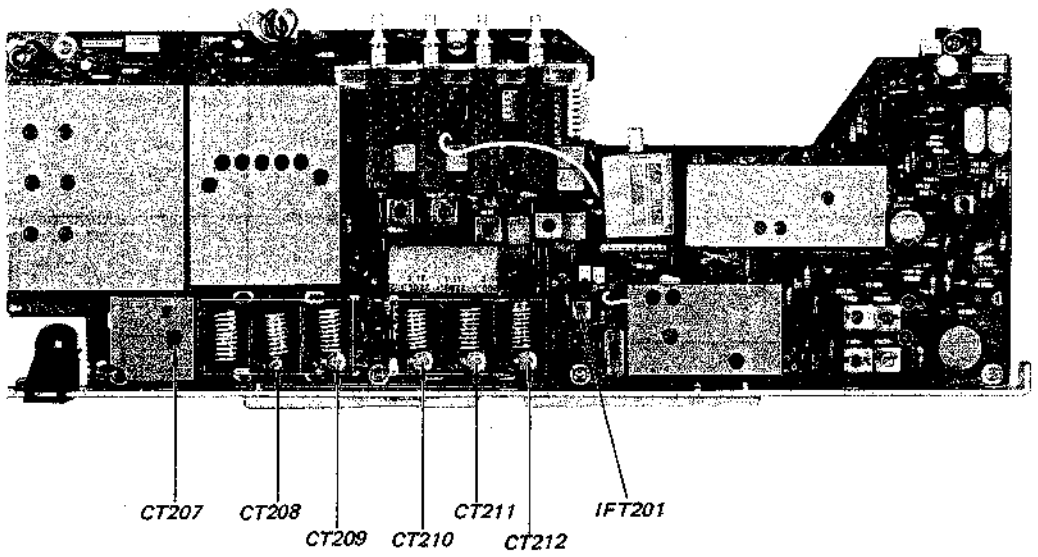
BAND SELECTOR switch:	SW
MODE switch:	NORMAL
VOLUME control:	center of rotation
TONE control:	center of rotation
NOISE BLANKER switch:	OFF

Setup:



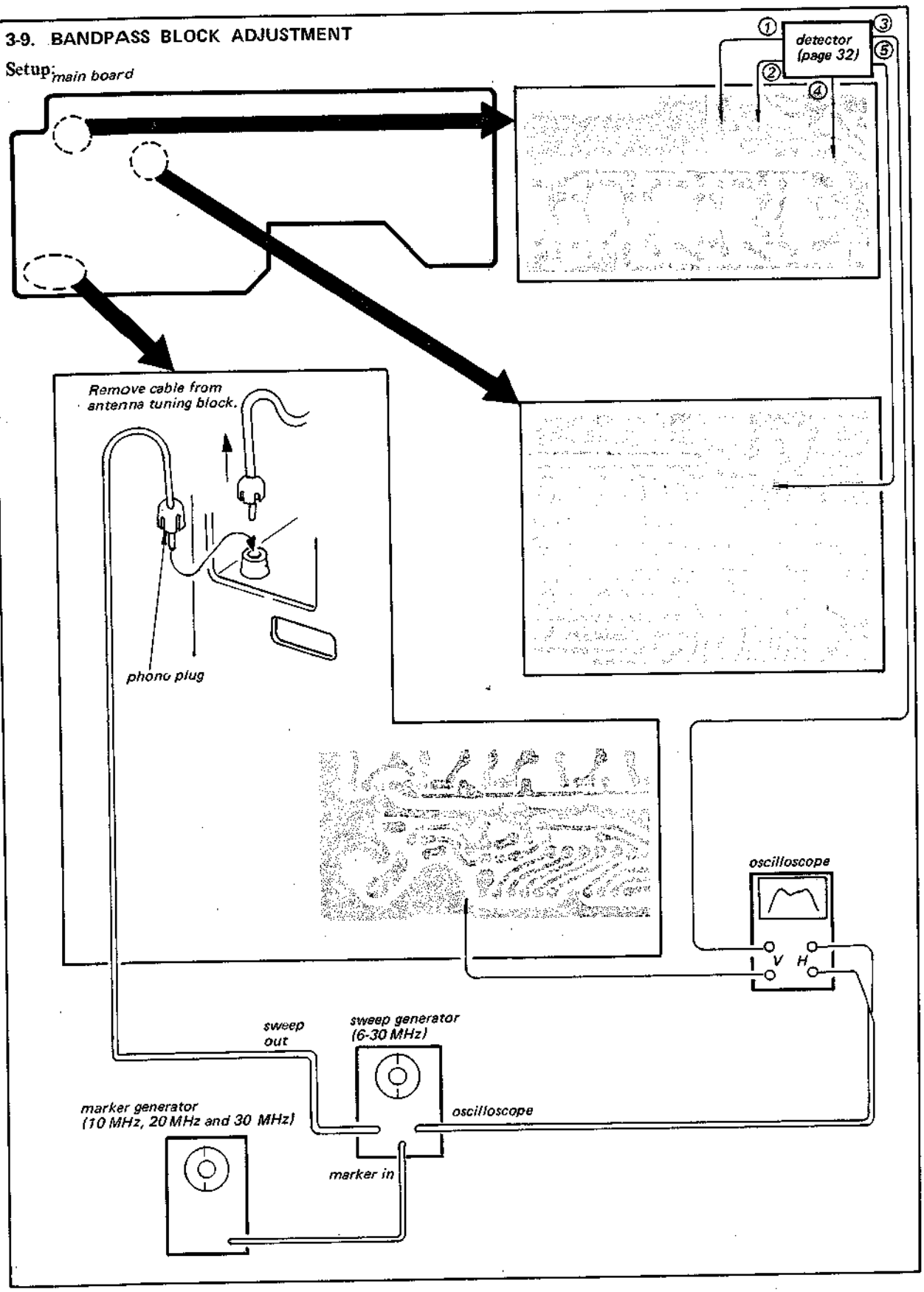
Procedure:

1. Set the AM rf signal generator to an appropriate frequency between 1.6 MHz and 30 MHz.
2. Tune the set in to the frequency set in step 1.
3. Adjust CTs207, 208, 209, 210, 211 and 212, and IFT201 for maximum VOM reading.



3-9. BANDPASS BLOCK ADJUSTMENT

Setup: *main board*

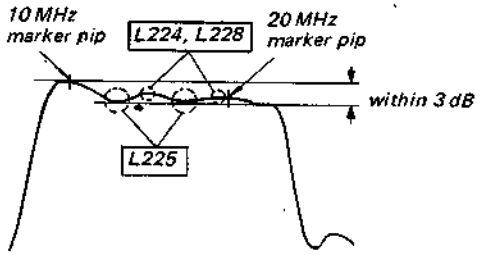


Setting:

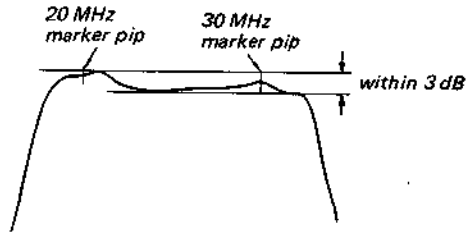
BAND SELECTOR switch:	SW
VOLUME control:	center of rotation
TONE controls:	center of rotation
Marker Generator Frequencies:	10, 20 and 30 MHz

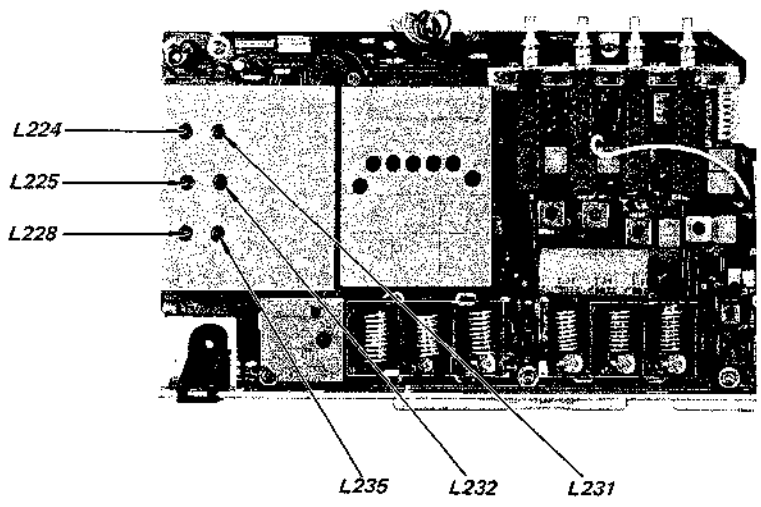
Procedure:

1. SW BAND SELECTOR switch: 10 MHz
   Sweep Generator Frequency: 6-30 MHz
2. Adjust L224, 225 and 228 to obtain a waveform shown below.



3. SW BAND SELECTOR switch: 20 MHz
   Sweep Generator Frequency: 15-35 MHz
4. Adjust L231, 232 and 235 to obtain a waveform shown below.





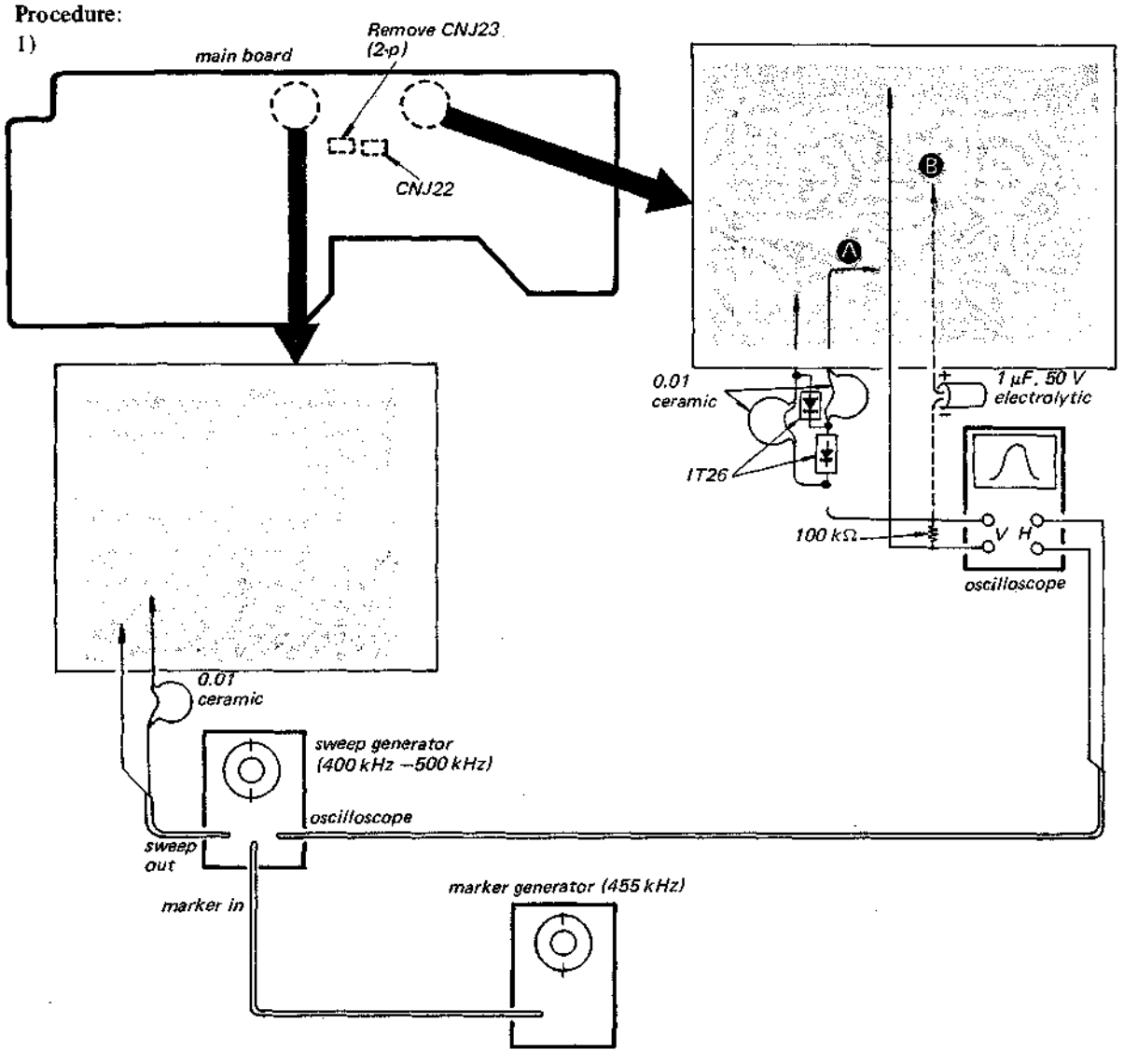
3-10. NOISE BLANKER ADJUSTMENT

Setting:

BAND SELECTOR switch: SW
NOISE BLANKER switch: ON

Procedure:

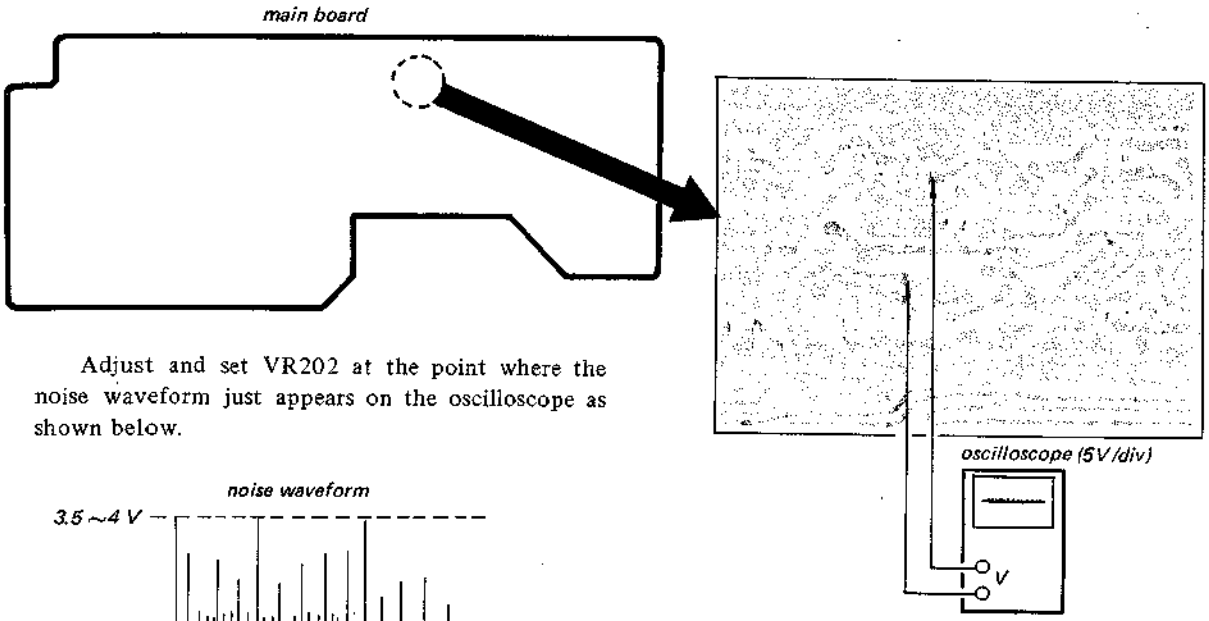
1)



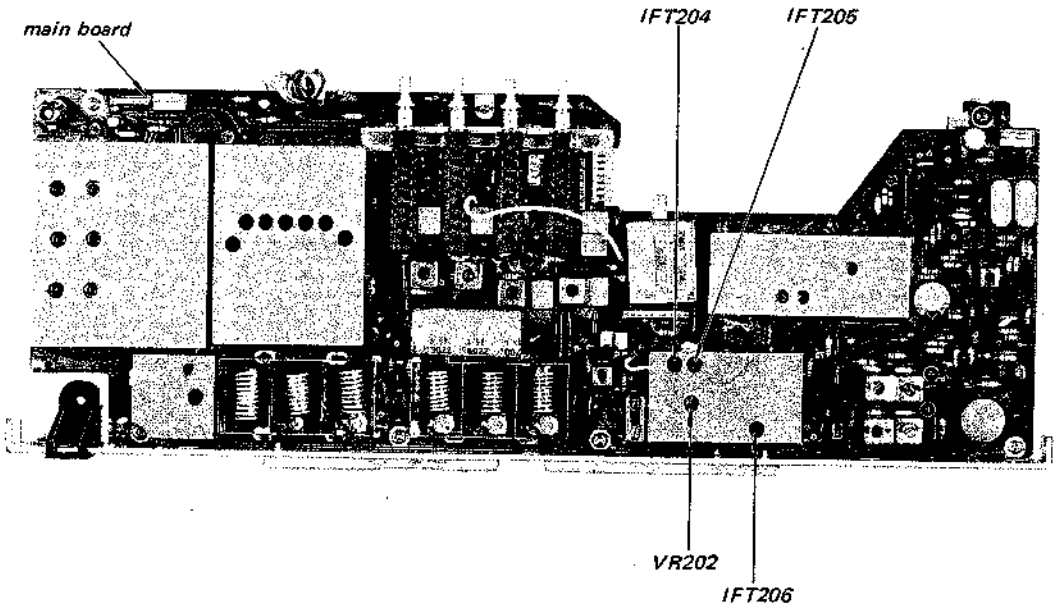
RF GAIN control: MIN

Adjust	Obtain
IFT204 IFT205 (Connect oscilloscope to A.)	Highest waveform 455 kHz marker pip about 20 kHz
IFT206 (Connect oscilloscope to B.)	

2) RF GAIN control: MAX/NORMAL



Adjust and set VR202 at the point where the noise waveform just appears on the oscilloscope as shown below.



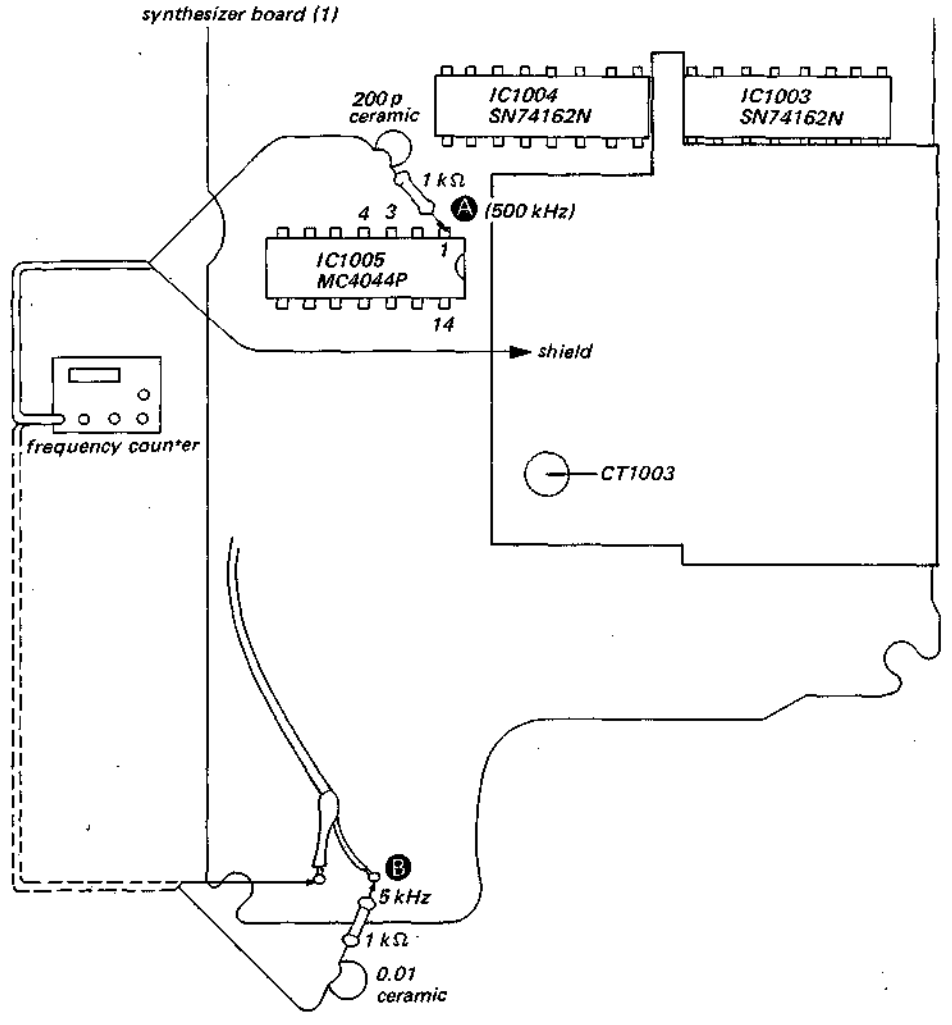
3-11. 500 kHz REFERENCE OSCILLATOR ADJUSTMENT

Setting:

BAND SELECTOR switch: SW

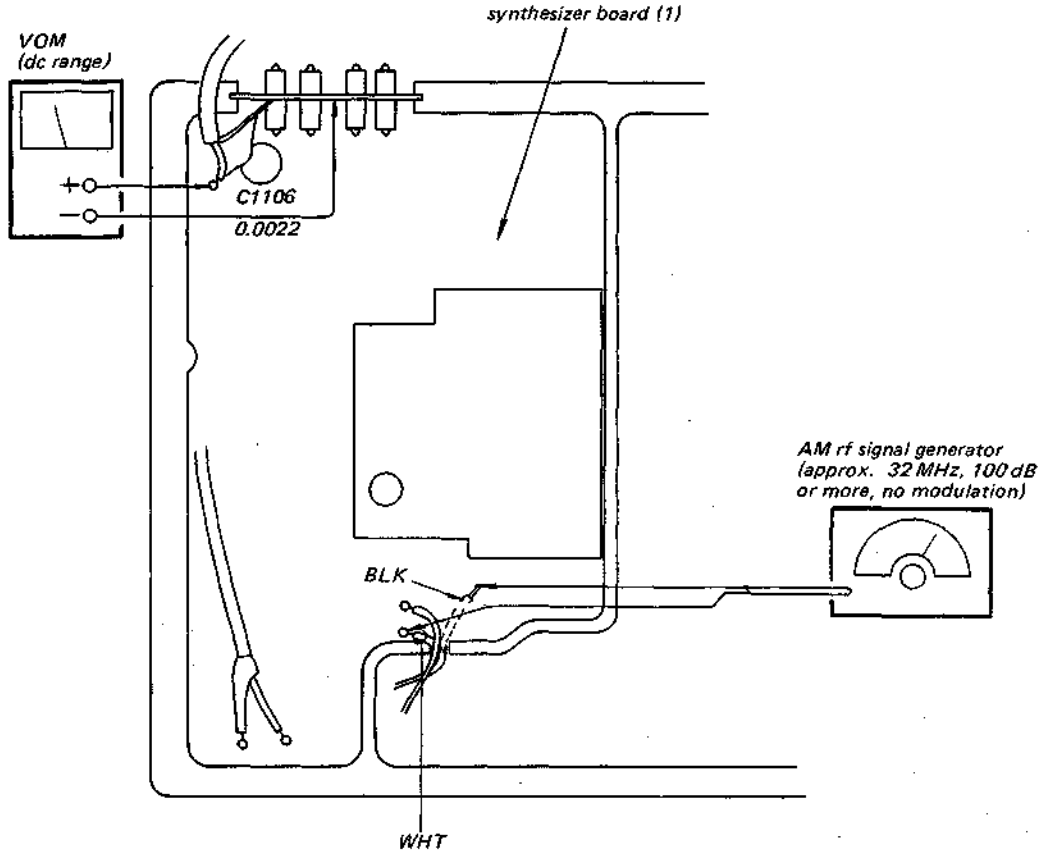
Procedure:

1)



Adjust	Connect Frequency Counter to	Frequency Counter Reading
CT1003	A	500,000 Hz ± 1 Hz
(Check)	B	5,000 Hz

2) SW BAND SELECTOR switch: 29 MHz
Unsolder a white wire.



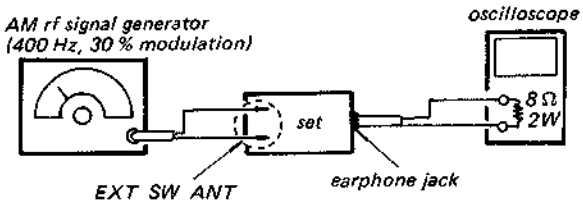
Adjust AM Rf Signal Generator Frequency	VOM Reading
around 32 MHz	0.7 V
below the frequency obtained above	6.3 V

3-12. SW 1st MIXER BALANCE ADJUSTMENT

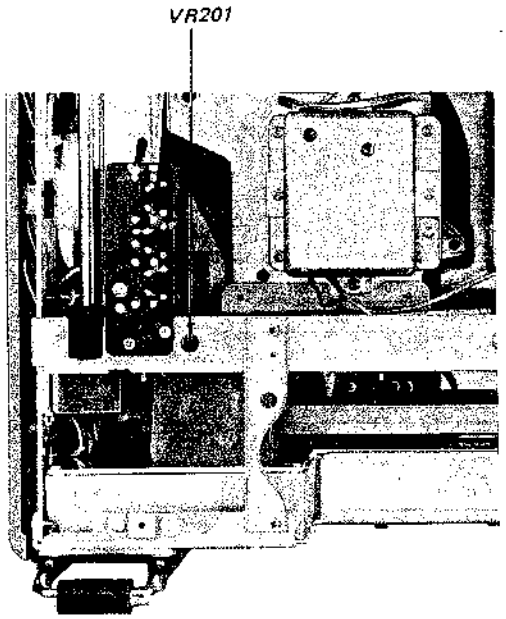
Setting:

BAND SELECTOR switch:	SW
SW BAND SELECTOR switch:	22 MHz
VOLUME control:	center of rotation
TONE controls:	center of rotation
MODE switch:	AM NORMAL

Setup:



AM Rf Signal Generator Frequency	Tune the Set to	Adjust
22.57 MHz 70 dB	around 22.8 MHz to obtain a maximum waveform	VR201 to obtain a minimum waveform

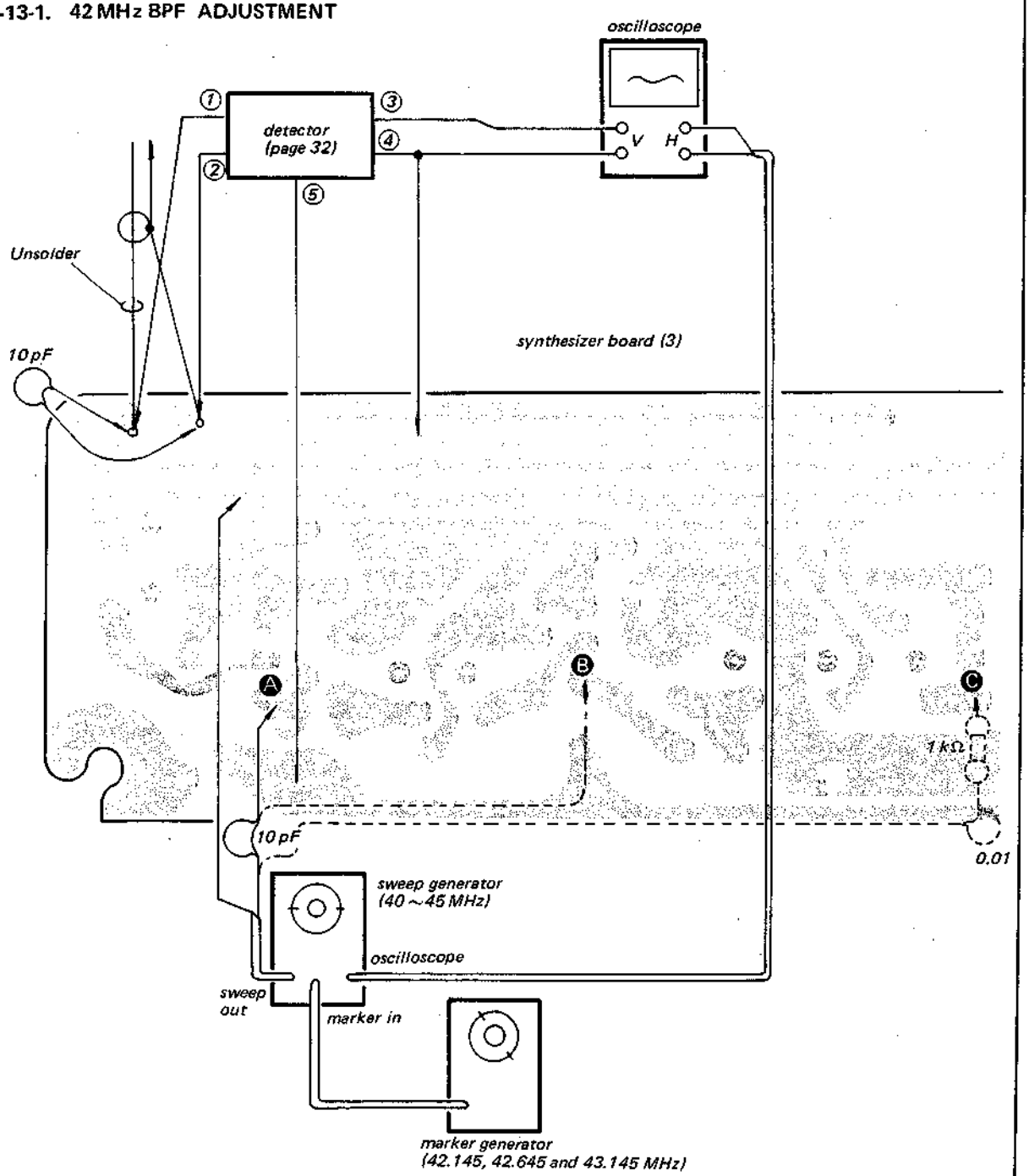


3-13. SYNTHESIZER SECTION ADJUSTMENTS

Setting:

BAND SELECTOR switch: SW

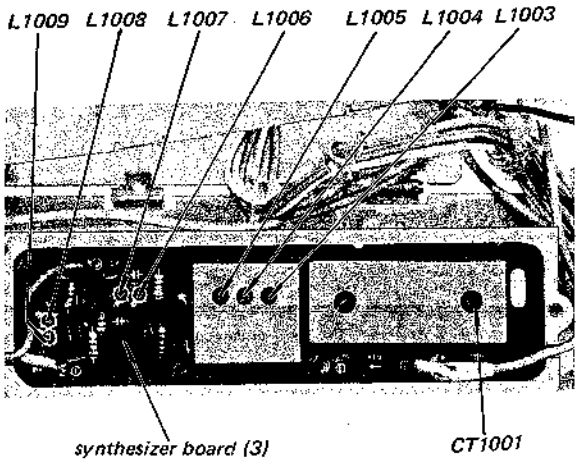
3-13-1. 42 MHz BPF ADJUSTMENT

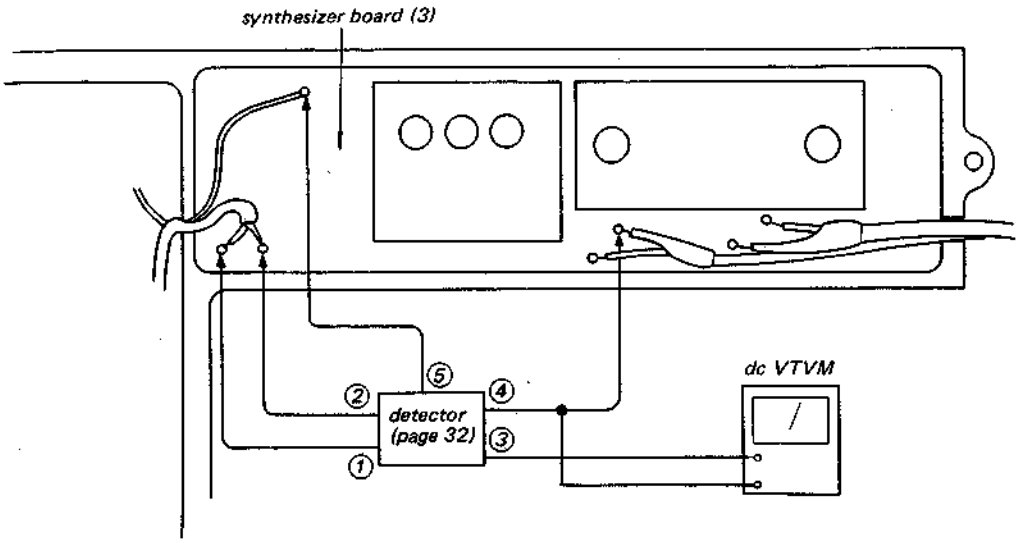


Procedure:

1. Turn CT1001 and stop the oscillation of 45.6 MHz. The 45.6 MHz pip disappears from the waveform on the oscilloscope.
2. Turn the cores, of L1003 through L1006 counterclockwise until they place on top of the coils.
3.

Connect Sweep Out to	Adjust	Obtain
Ⓐ	L1008 L1009	Maximum double-humped waveform 42.645 MHz marker pip
Ⓑ	L1006 L1007	
Ⓒ	L1003 L1004 L1005	
Ⓒ (Reduce sweep out level)	L1003 through L1009 (fine adjust)	Symmetrical waveform within 3dB 42.145 MHz marker pip 43.145 MHz marker pip





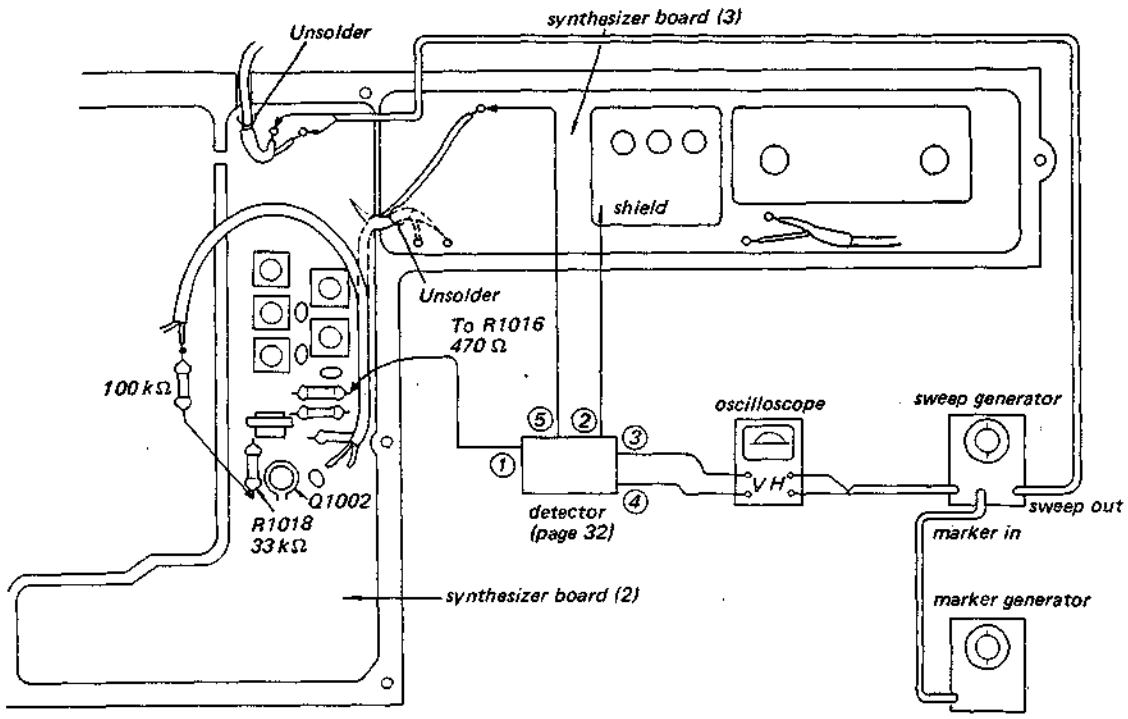
4. Turn the tuning dial throughout the range and confirm that the VTVM reading variation is within 3 dB. If not, perform steps 1 through 3.
5. Turn CT1001 and oscillate 45.6 MHz. 45.6 MHz pip appears on the waveform again.

3-13-2. 46-76 MHz BPF ADJUSTMENT

Setting:

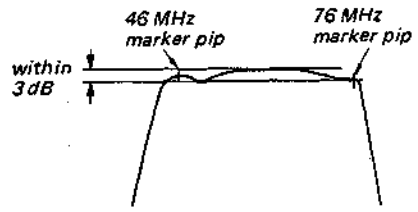
BAND SELECTOR switch: SW

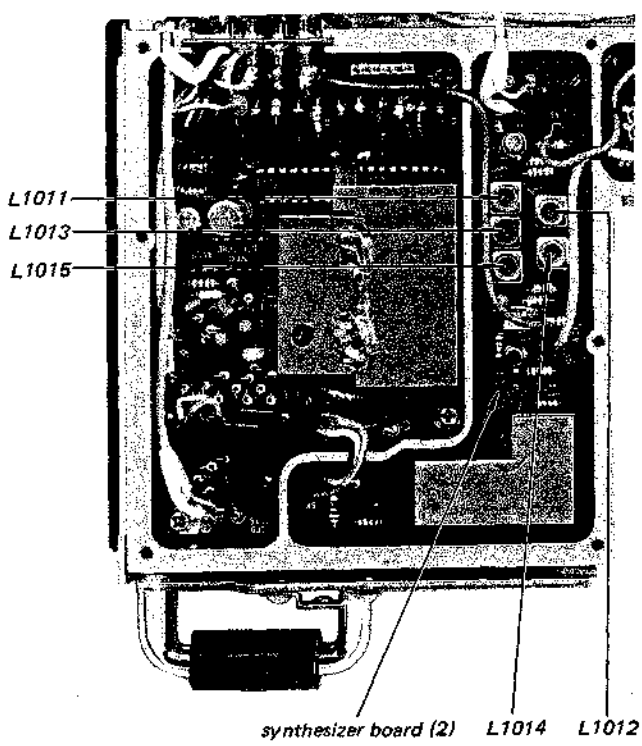
Setup:



Procedure:

Adjust	Obtain
L1012 L1014 (ORG)	Maximum amplitude at 76 MHz.
L1013 (RED)	Maximum amplitude at 46 MHz.
L1011 L1015 (BLU)	Same amplitude at 46 MHz and 76 MHz.
Repeat all the above adjustment.	



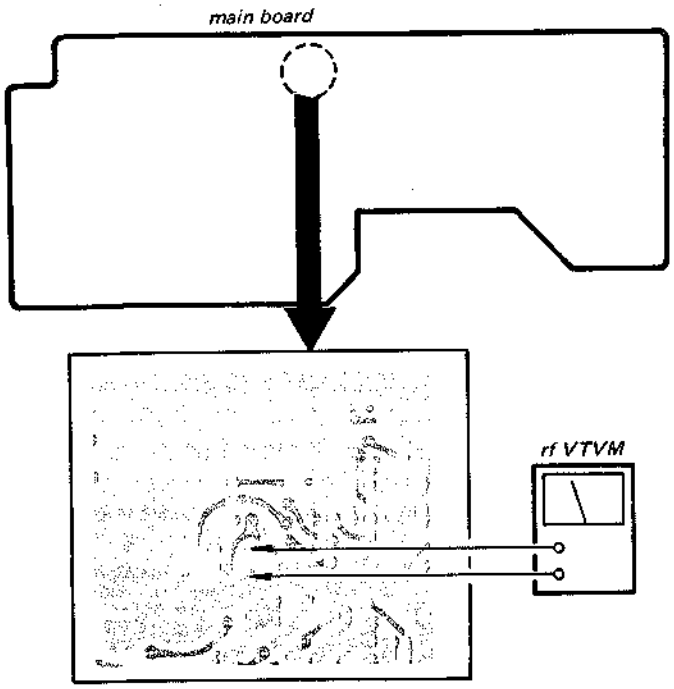


3-13-3. SW 2nd LOCAL OSCILLATOR ADJUSTMENT

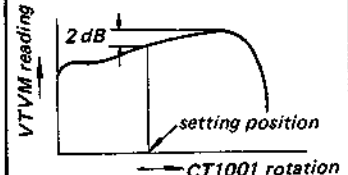
Setting:

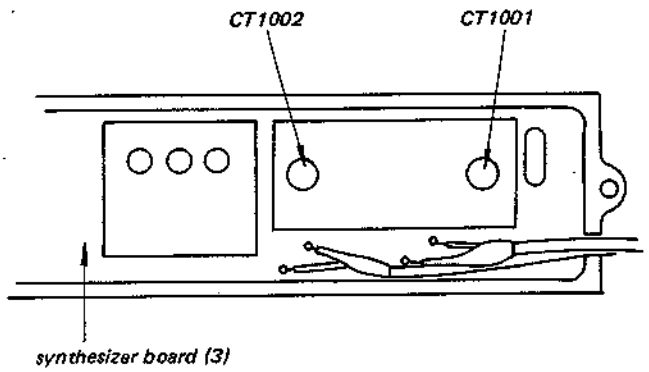
BAND SELECTOR switch: SW

Setup:



Procedure:

Adjust	Obtain
CT1001	Setting position. 
CT1002	Minimum VTVM reading.

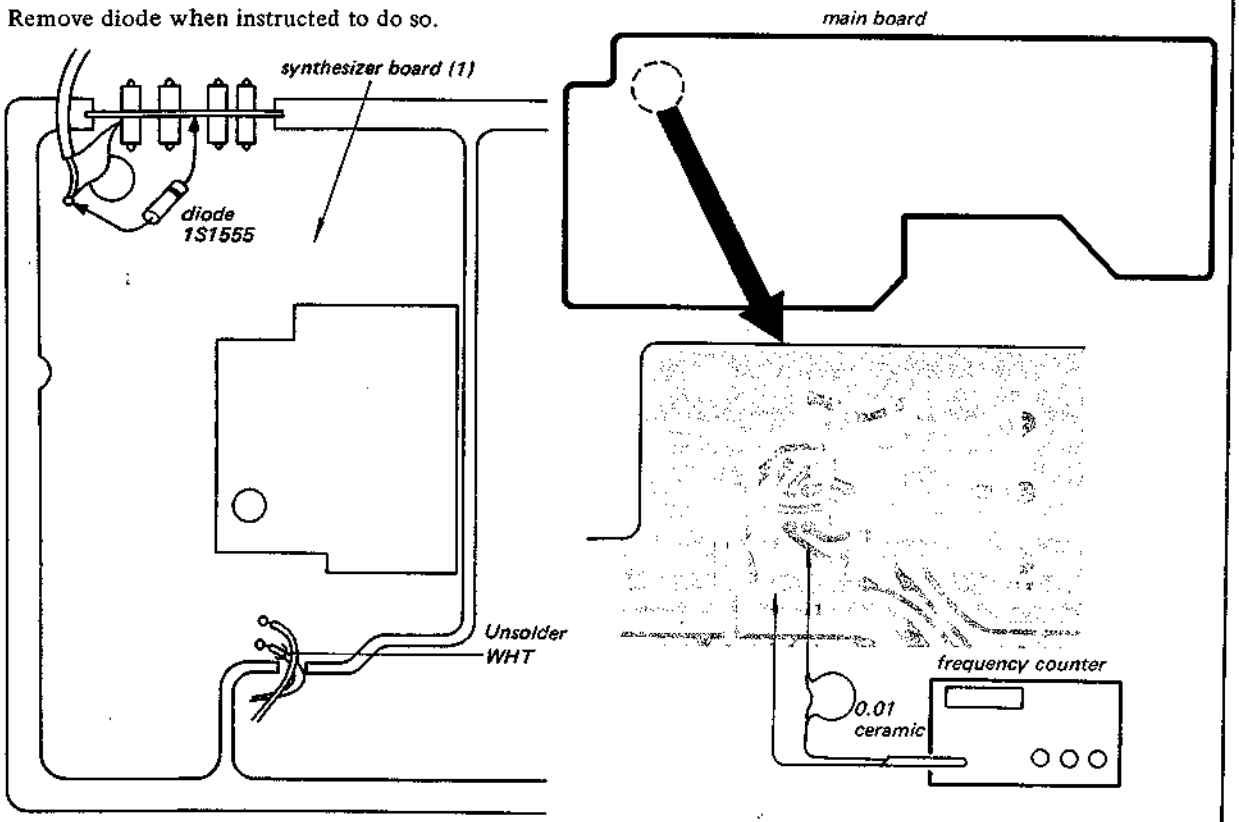


3-13-4. VCO ADJUSTMENT

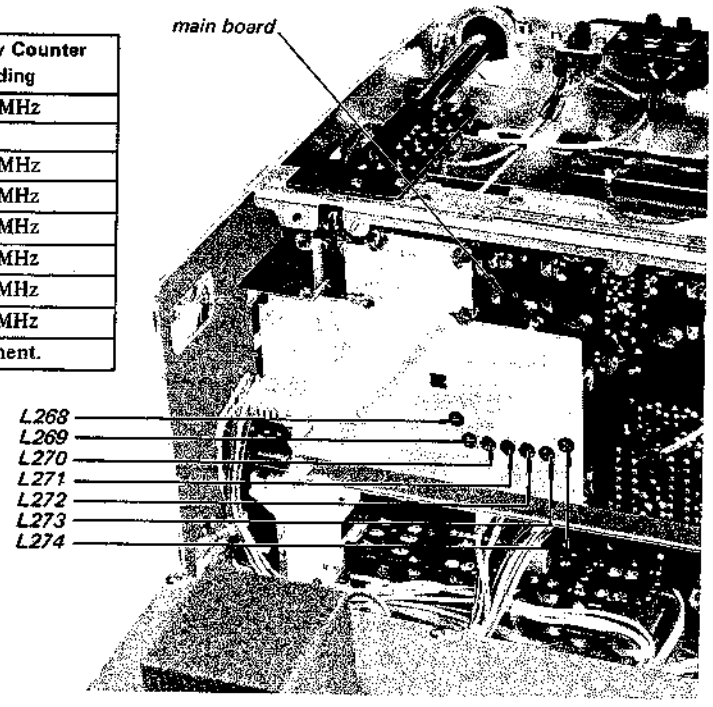
Setting:

BAND SELECTOR switch: SW

Unsolder white wire and install a diode as shown.
Remove diode when instructed to do so.



Step	SW BAND SELECTOR	Adjust	Frequency Counter Reading
1	2 MHz	L268	44.0 MHz
2	Remove diode 1S1555.		
3	3 MHz	L274	52.3 MHz
4	6 MHz	L269	56.1 MHz
5	10 MHz	L270	61.6 MHz
6	15 MHz	L273	66.4 MHz
7	20 MHz	L271	71.7 MHz
8	25 MHz	L272	76.8 MHz
9	Fix all coils with wax after the adjustment.		

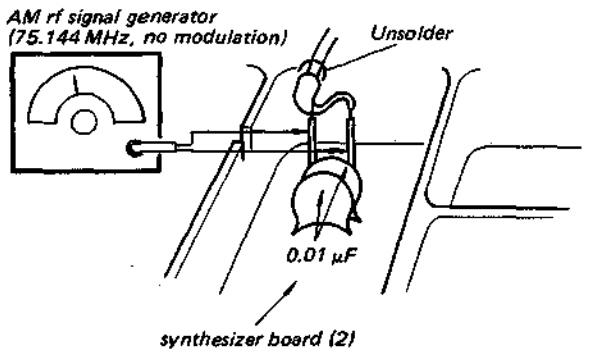


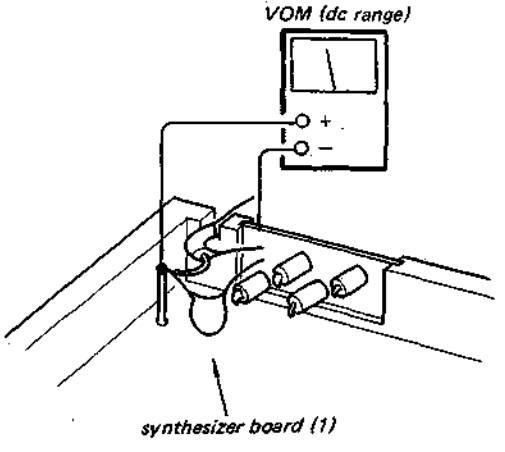
3-13-5. SYNTHESIZER SECTION CHECKOUT

Setting:

BAND SELECTOR switch: SW
SW BAND SELECTOR switch: 29 MHz

Setup:





Procedure:

1. Turn the SW tuning knob and obtain a 29 MHz 999 kHz indication on the digital frequency indicator on the front panel.
2. Fine adjust the frequency of AM rf signal generator around 75.14 MHz.

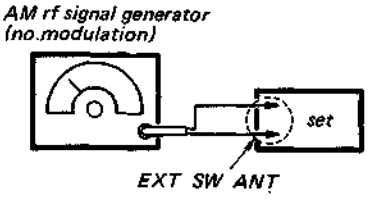
AM Rf Signal Generator Frequency	VOM Indication
above 75.144 MHz	0.7 V
below 75.144 MHz	6.3 V

3-13-6. SW SPURIOUS BEAT ADJUSTMENT

Setting:

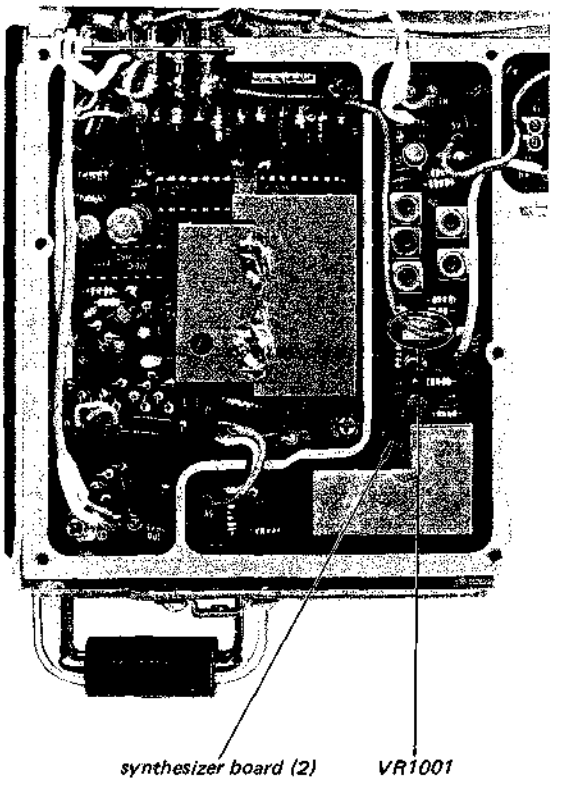
BAND SELECTOR switch: SW
SW BAND SELECTOR switch: 29 MHz
VOLUME control: MAX
TONE controls: MAX
RF GAIN control: MAX/NORMAL

Setup:



Procedure:

AM Rf Signal Generator Frequency	Adjust
approximately 29.352 MHz or 29.852 MHz	VR1001 for a minimum beat note



3-2. TAPE RECORDER SECTION

PRECAUTION

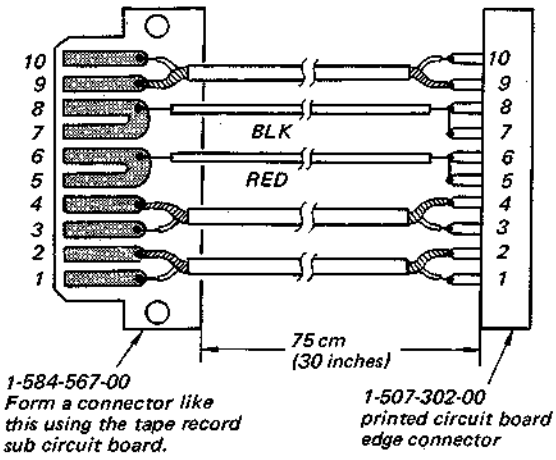
1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply a suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Preparation of Extension Cable

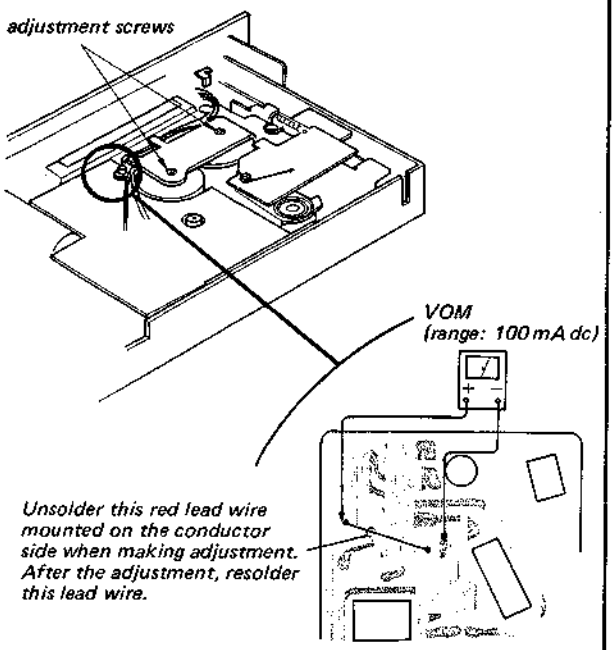
Make an extension cable as shown below and connect it between the radio and tape recorder sections.



Flywheel Thrust Play Adjustment

Procedure:

1. Mode: playback



2. Turn the adjustment screws counterclockwise until the screw tip is detached from the flywheel shafts.
3. Gradually turn either of the adjustment screws clockwise to the position where the motor current suddenly increases.
4. Then, turn the screw counterclockwise about ¼ turn from the position obtained in step 3.
5. Perform steps 3 and 4 for the another adjustment screw.
6. After the adjustment, apply a suitable locking compound to the screws.

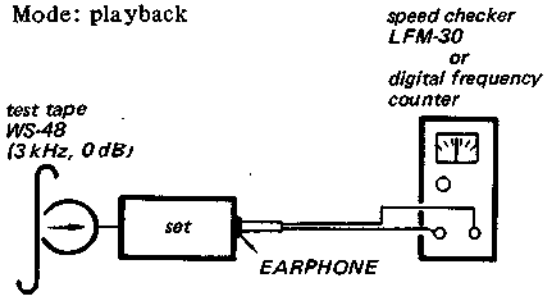
Tape Speed Adjustment

Setting:

VOLUME control: mechanical mid

Procedure:

Mode: playback

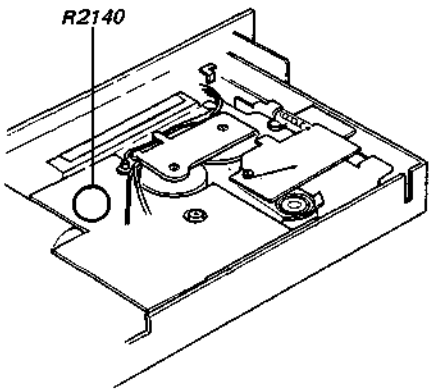


Specification:

Speed Checker	Digital Frequency Counter
−0.5 — −1.5 %	2985 — 2955 Hz

Adjustment Location:

– record/playback board –



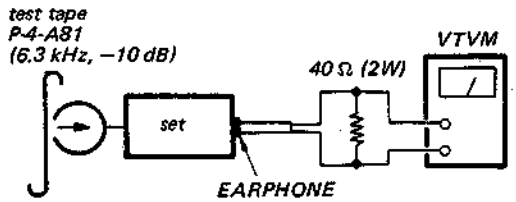
Record/playback Head Azimuth Adjustment

Setting:

VOLUME control: mechanical mid

Procedure:

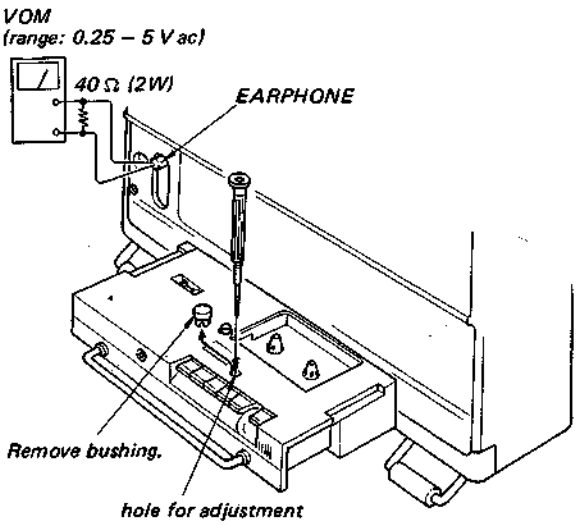
1. Mode: playback



2. Turn the adjustment screw for the highest VTVM reading.

Note: Several peaks may appear, take the highest.

Adjustment Location:



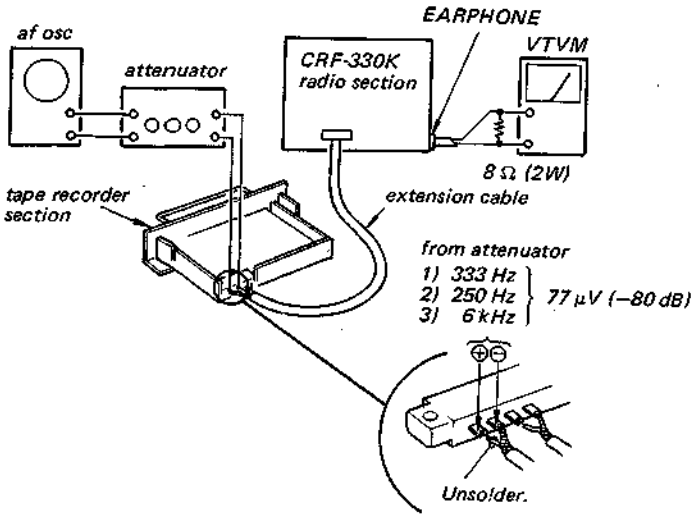
Record Bias Adjustment

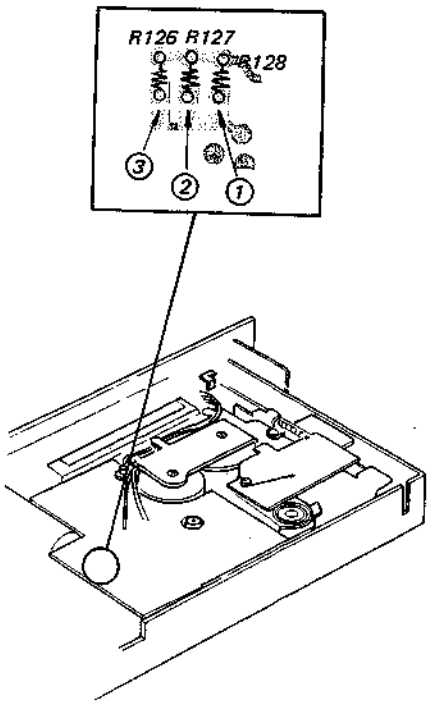
Setting:

TONE controls: mechanical mid

Adjustment Location:
– record/playback board –

Procedure:





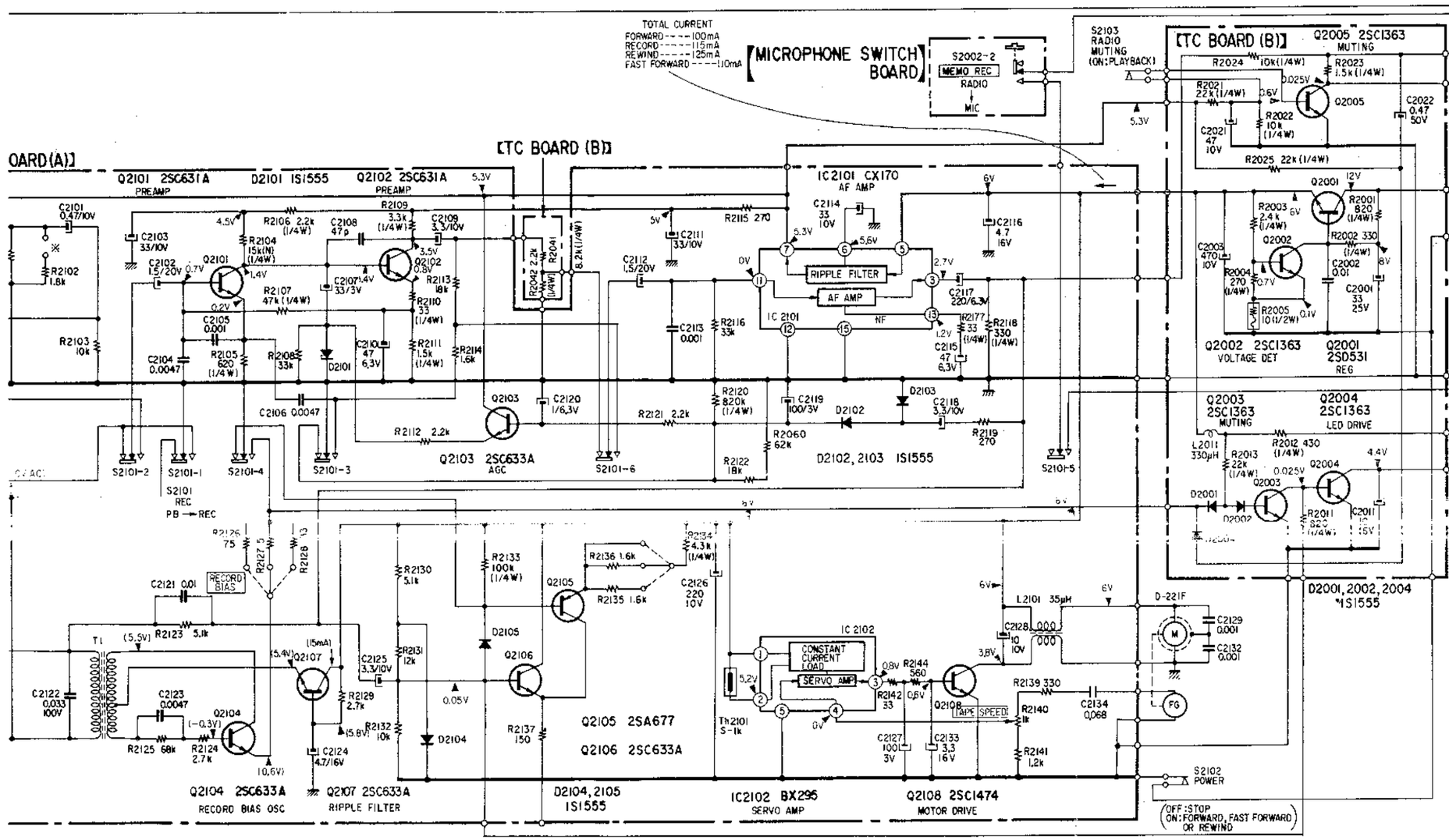
1. FUNCTION: RADIO
   Mode: record
2. Mode: playback
   Playback 333 Hz. Adjust VOLUME control for 0.25 V (–10 dB) VTVM reading.
3. Repeating the above steps, adjust as follows:

Playback	Adjust pattern connection	Level difference
250 Hz 6 kHz	①,②,③	within 18 dB

Pattern connection	6 kHz VTVM reading
①	down ↑ ↓ up
②	
③	

4. If necessary, repeat above steps.

MEMO



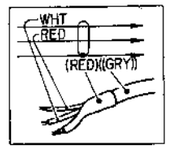
Note:

- All capacitors are in μF unless otherwise noted. pF = μμF
  50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted.
  kΩ = 1000Ω, MΩ = 1000kΩ
- (N) : low-noise resistor.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- AC voltage readings indicated by * in the bias oscillator circuit are taken with a VTVM.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 kΩ/V).
  ( ) : RECORD < > : PLAYBACK
- Total current is measured with no cassette installed.
- In using an electret condenser microphone with a red mark on the side of the case, connect R2102 shown by ※.
- ——— : B+ bus.
- Switch

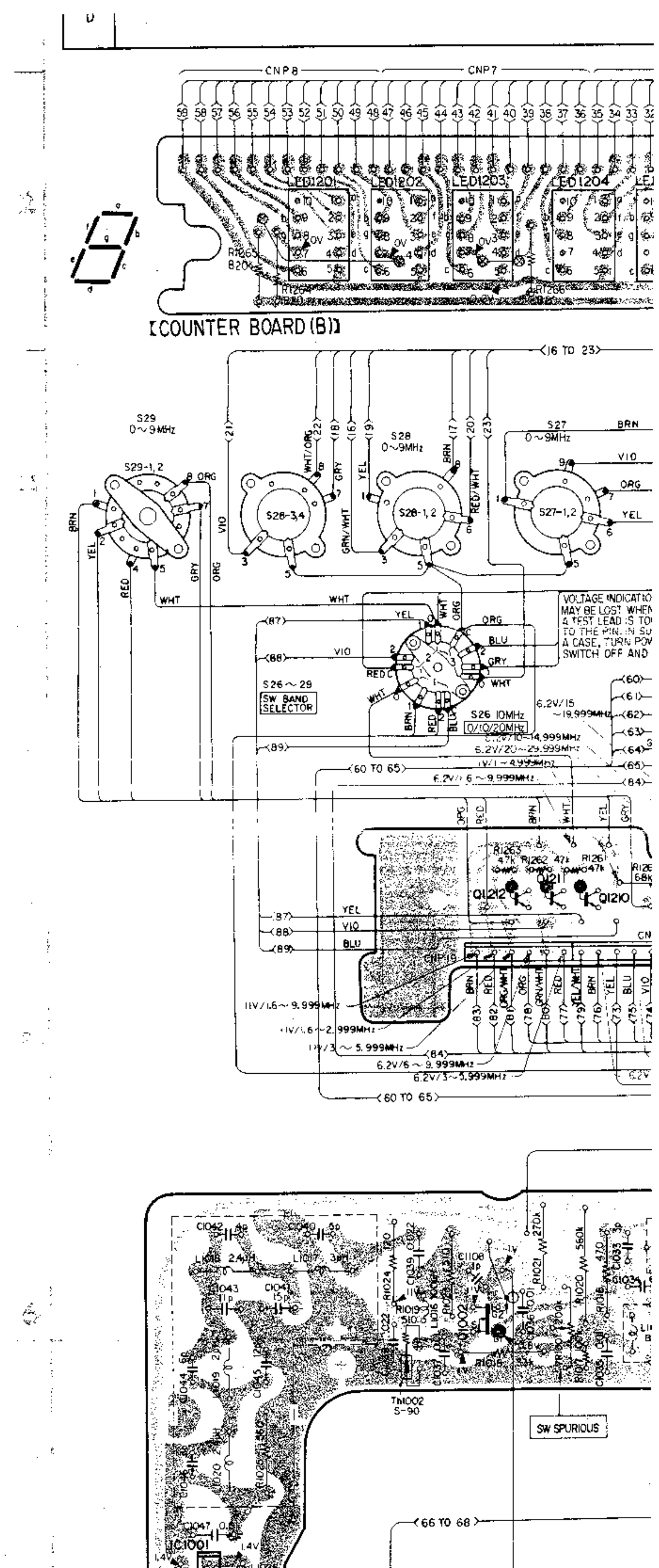
Ref. No.	Switch	Position
S2001	ISS	3
S2002	MEMO REC	RADIO
S2101	REC/PB	PB
S2102	POWER	OFF
S2103	RADIO MUTING	ON

Note:

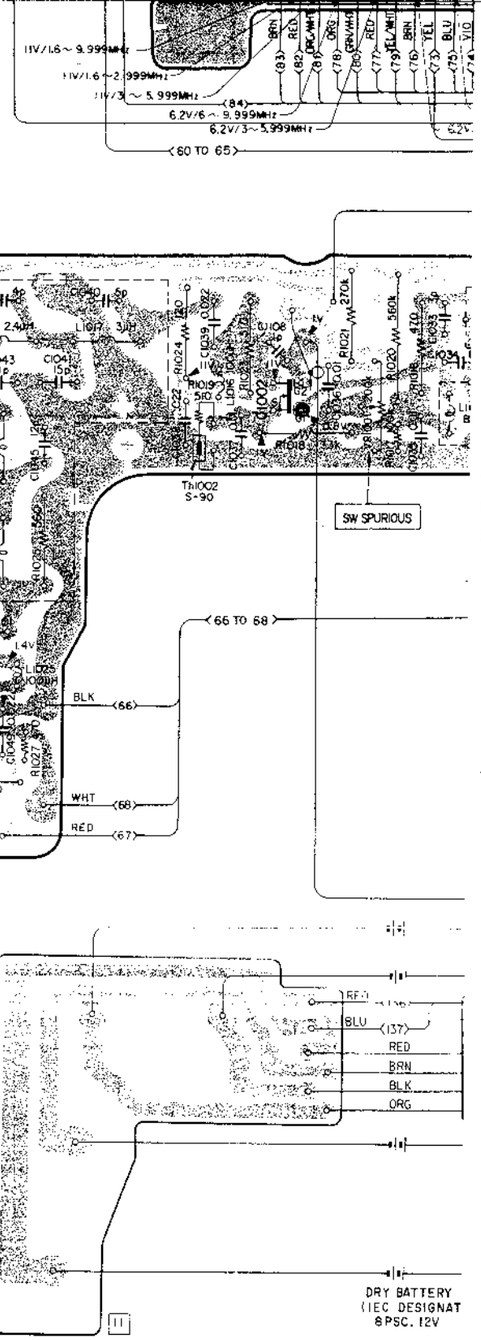
- Color code of sleeving over the end of the jacket.



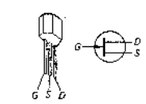
- ▭ : B+ pattern
- —•— : signal path



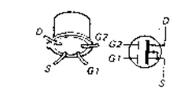
CNP8
CNP7
LED1201
LED1202
LED1203
LED1204
R1265 820
R1264
R1266
[COUNTER BOARD (B)]
(16 TO 23)
S29 0~9MHz
S29-1, 2
S28 0~9MHz
S28-3,4
S28-1, 2
S27 0~9MHz
S27-1, 2
S26~29
SW BAND SELECTOR
S26 10MHz
0/10/20MHz
VOLTAGE INDICATIO
MAY BE LOST WHEN
A TEST LEAD IS TO
TO THE PIN. IN SU
A CASE, TURN POV
SWITCH OFF AND
6.2V/15 ~19.999MHz
6.2V/20~29.999MHz
(60 TO 65)
6.2V/6~9.999MHz
R1263 47k
R1262 47k
R1261 47k
Q1212
Q1211
Q1210
CNP19
11V/1.6~9.999MHz
1V/1.6~2.999MHz
6.2V/6~9.999MHz
6.2V/3~5.999MHz
(60 TO 65)
C1042 4p
C1040 5p
L1018 2.4μH
L1017 3μH
C1043 11p
C1041 15p
R1024
C1039
R1019 510
L1016
Q1002
R1021 270k
R1020 560k
C1108
C1033
C1034
C1044
L1019
C1045
R1018 33k
Th1002 S-90
SW SPURIOUS
L1020
R1025
C1047
IC1001
(66 TO 68)



Q001, 051, Q224, 901: 2SK42

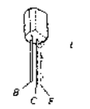


Q201, 204, 227, Q1001, 1002: 3SK37



Q202, 203

Q212: 2SC
Q003, 053
Q213, 214
Q1013–1
Q1022, 12
Q210, 211
Q801–80



Q1023, 10

IC101	1212 1211 1210 1002 1213 1214 1215 1216 1001 IC1203 IC1202 IC1208 IC1205 IC1209 IC1206 1019 1018 IC1210 IC1207 1014,1016 1015,1017 IC1007,IC1204 1021,1206,1207,1208 1013,1024 1209 1202 1022 1023 1201 1205 1020 IC1201 1025 1006 1004 IC1002 IC1006 IC1005 IC1003 IC1004 1007 1008 1009 1010 1011,1012 1003	Q IC
	1203 1204 1201 1202 1003 1004 1002 1001	D

[COUNTER BOARD (B)]

[FILER BOARD]

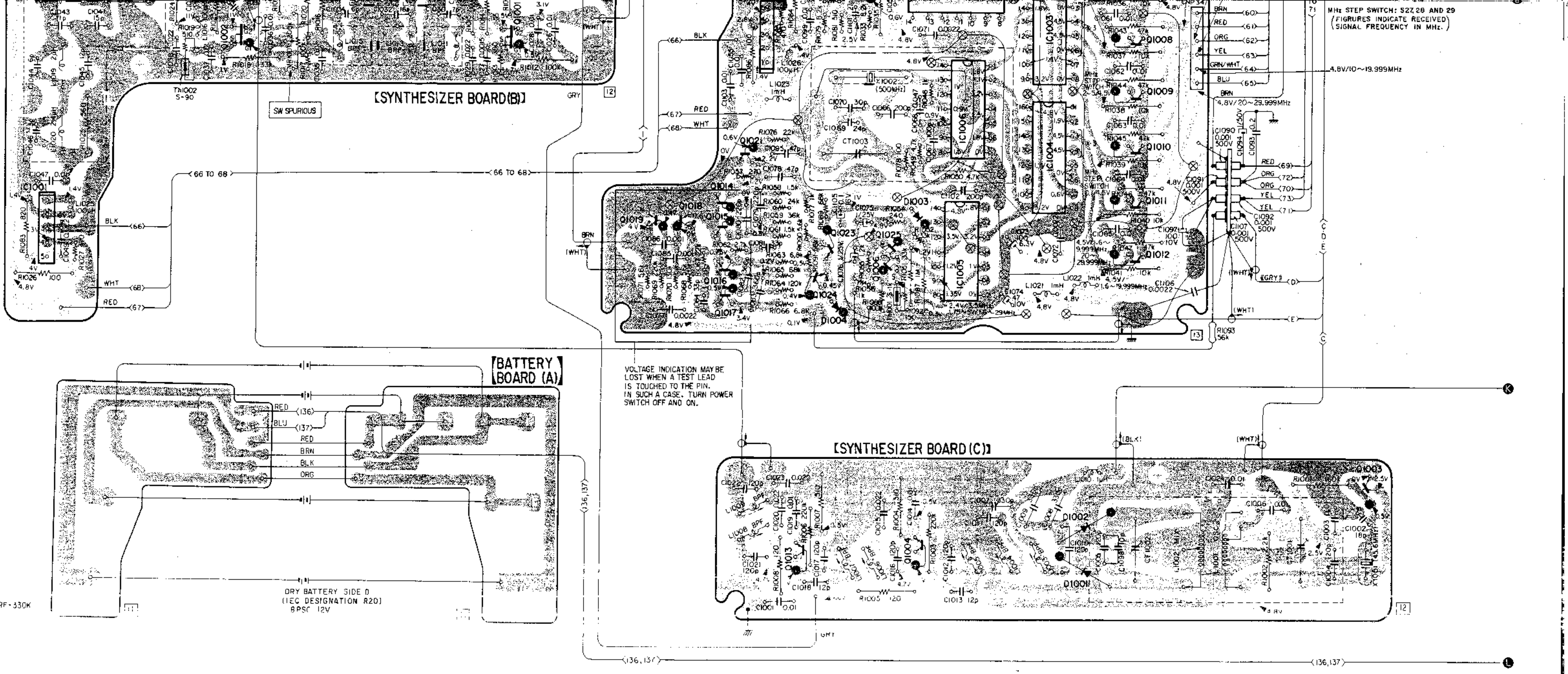
[ANTENNA TUNING BOARD]

[COUNTER BOARD(A)]

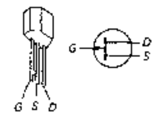
[SYNTHESIZER BOARD(B)]

[SYNTHESIZER BOARD (A)]

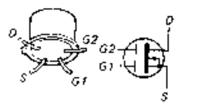
MHz STEP SWITCH: S27, 28 AND 29
(FIGURES INDICATE RECEIVED SIGNAL FREQUENCY IN MHz.)



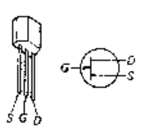
Q001, 051 }
Q224, 901 } : 2SK42



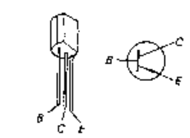
Q201, 204, 227 }
Q1001, 1002 } : 3SK37



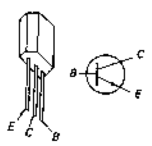
Q202, 203 }
Q052, 002 } : 2SK23A-840
Q205, 206 }
Q054: 2SK23A-860
Q902, 903 }
Q1025, 1201 } : 2SK23A-824
Q1006: 2SK23A-825



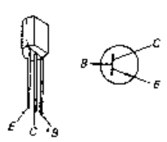
Q212: 2SC710-15
Q003, 053, 207 – 209 }
Q213, 214, 1003, 1004 }
Q1013 – 1018, 1021 } : 2SC710
Q1022, 1202, 1203 }
Q210, 211, 222 }
Q801 – 803 } : 2SC710-14



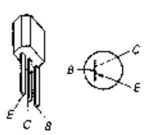
Q1023, 1024: 2SC634A



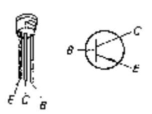
Q216, 218 – 221, 228, 230 }
Q501, 601, 604, 703 – 706 } : 2SC634A (2SC1363)
Q1007 – 1012 }
Q804, 806, 1204 – 1212: 2SC1364



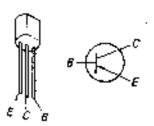
Q217, 231, 701 }
Q1213 – 1216 } : 2SA678



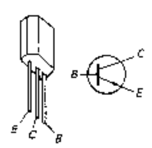
Q225, 226: 2SC1129



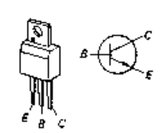
Q229, 702: 2SA684



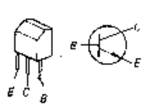
Q401: 2SC632A
Q1023, 1024: 2SC634A



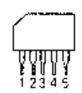
Q602, 603: 2SC1429-□5



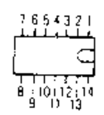
Q1019, 1020: 2SC641K



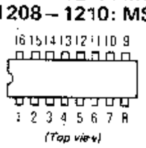
IC1001, 1007: TA7060P



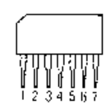
IC1002: SN74S113DC
IC1005: μPC1008C
IC1006: HD74LS00P
IC1202: MSM505
IC1204: MSM530



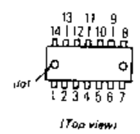
IC1003, 1004: SN74162N
IC1203: MSM551H
IC1205 – 1207: MSM5503
IC1208 – 1210: MSM561



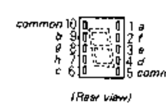
IC801, 802: CX075B



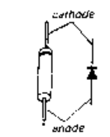
IC1201: 34013PC



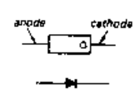
LED1201 – 1205: SL1122



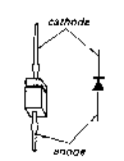
D001, 051: 1S2687S-2 }
D002, 003, 201 – 209 }
D211 – 215, 217 – 219 }
D223, 225, 237 – 241 } : 1S1555
D401, 803 – 807, 1003 }
D1004, 1201 – 1204 }
D216, 220, 221: 1T23S
D235, 801, 802 }
D1001, 1002 } : 1T261
D236: RD6A
D702: RD5A
D703, 704: 10E2



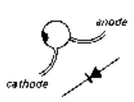
D226, 227: 1T18-0



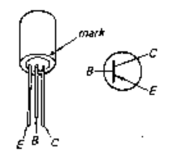
D228, 234: 1S2222



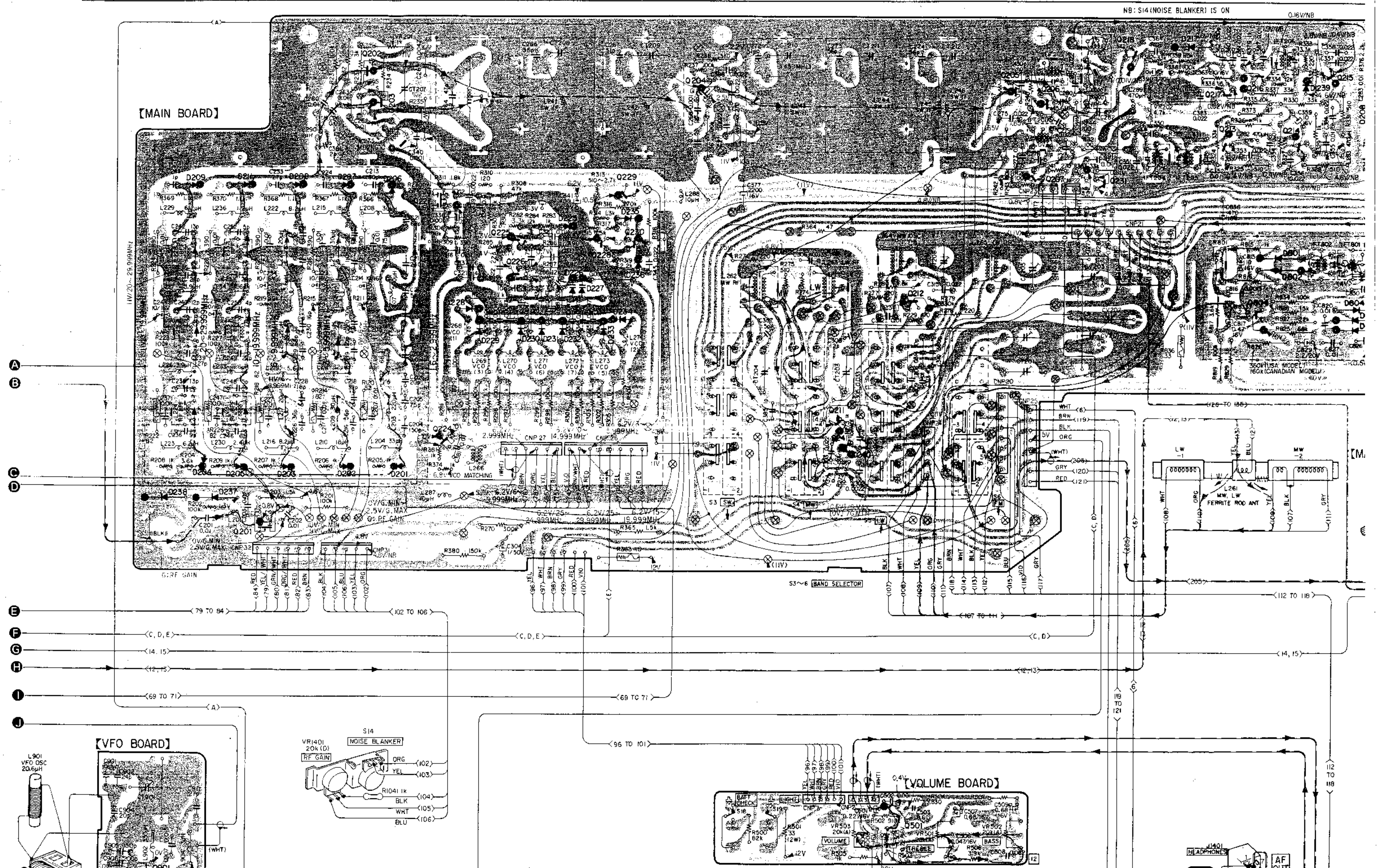
D601, 602: VD1120

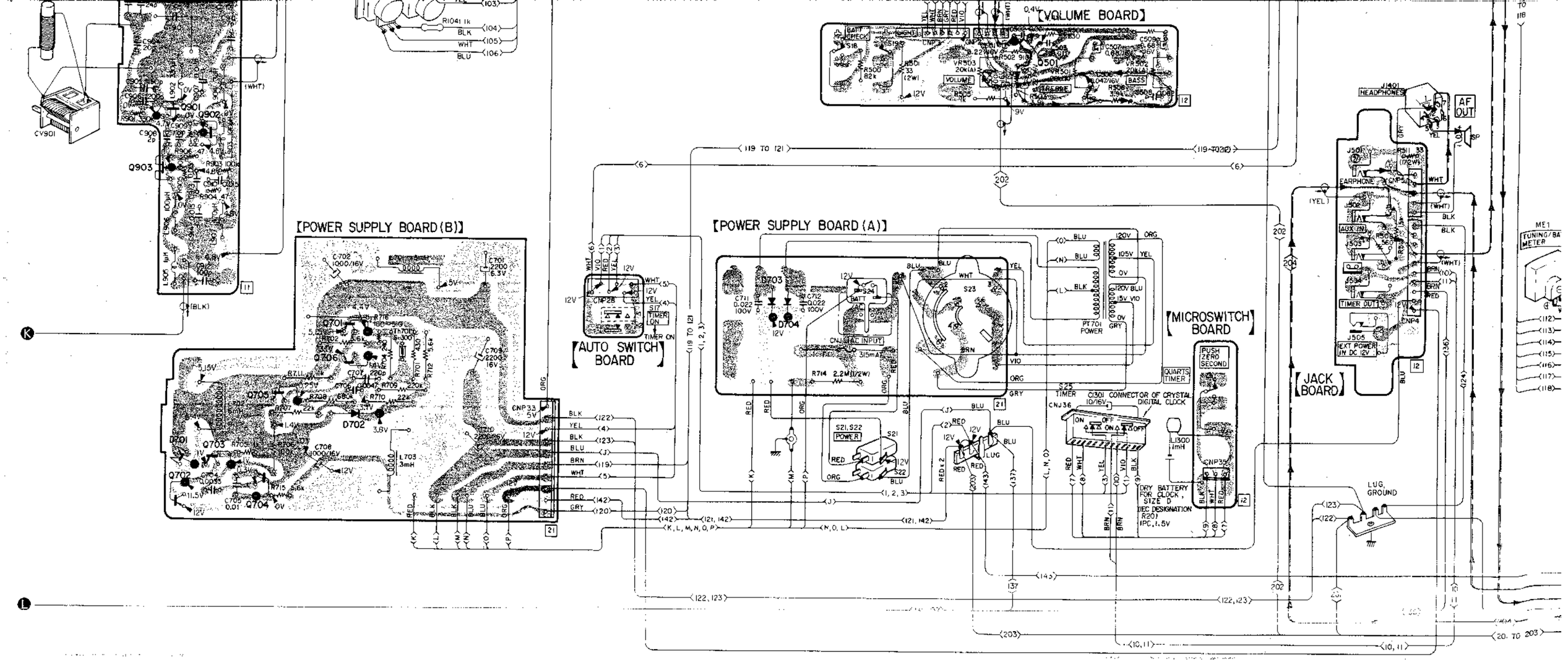


D701: 2SB324



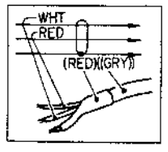
Q IC	901 903 702 902 703 704 705 201 701 706 202 203 227 224 225 226 228 229 230 204 211 501 212 205 206 207 231 218 217 213 216 804 214 215
D	701 238 209 204 237 211 205 208 203 702 207 202 206 201 228 229 230 231 225 226 232 227 233 235 236 234 703 704 241 240 217 801 802 239 804 807 806



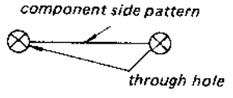


Note:

- All capacitors are in μF unless otherwise noted. pF = μμF 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ = 1000 Ω, MΩ = 1000 kΩ
- : fusible resistor.
- △ : internal component.
- : panel designation.
- : adjustment for repair.
- Transistor base-emitter voltages are measured on the 2.5 V range.
- Transistor is used for D701.
- Color code of sleeving over the end of the jacket.



- : B+ pattern
- : signal path



- : B+ bus.
- : B+ bus when S3 (BAND SELECTOR, SW) is on.
- : B+ bus at 3.501 MHz.

* Voltages are DC with respect to ground unless noted.

* Readings are taken under SW detuned conditions with a VOM (20 kΩ/V), setting VR501 (TREBLE) to minimum position, VR502 (BASS) to minimum position and VR503 (VOLUME) to mechanical mid position.

< > : FM1 .... S15 (AFC): ON, S16 (MUTING): OFF, tuning dial: minimum frequency

(( )) : FM2 .... S15 (AFC): ON, S16 (MUTING): OFF, tuning dial: minimum frequency

≪ ≫ : FM .... S15 (AFC): OFF, S16 (MUTING): ON, tuning dial: minimum frequency

[ ] : LW .... VR1401 (RF GAIN): MAX/NORMAL, MODE: NORMAL, tuning dial: minimum frequency

( ) : MW .... VR1401 (RF GAIN): MAX/NORMAL, MODE: NORMAL, tuning dial: minimum frequency

/G MAX: .... VR1401 (RF GAIN): MAX/NORMAL

/G MIN: .... VR1401 (RF GAIN): MIN

/USB: .... S10 (MODE, USB-SSB): ON

/LSB: .... S11 (MODE, LSB-SSB): ON

/SSB: .... S10 (MODE, USB-SSB) or S11 (MODE, LSB-SSB): ON

/CW: .... S12 (CW): ON

/NB: .... S14 (NOISE BLANKER): ON

/□MHz: .... When □MHz signal is received.

• ✱1 Relations of the LED indication (decimal value) and BCD (binary-coded decimal) value are as follows:

LED Indication	BCD code A	B	C	D
0	0	0	0	0
1	1	0	0	0
2	0	1	0	0
3	1	1	0	0
4	0	0	1	0
5	1	0	1	0
6	0	1	1	0
7	1	1	1	0
8	0	0	0	1
9	1	0	0	1

0 : low level
1 : high level

• ✱2 Relation of the LED indication (decimal value) and inputs to the LED are as follows:

LED Indication	LED Input Terminal a	b	c	d	e	f	g
0	1	1	1	1	1	1	0
1	0	1	1	0	0	0	0
2	1	1	0	1	1	0	1
3	1	1	1	1	0	0	1
4	0	1	1	0	0	1	1
5	1	0	1	1	0	1	1
6	0	0	1	1	1	1	1
7	1	1	1	0	0	0	0
8	1	1	1	1	1	1	1
9	1	1	1	1	0	1	1

0 : low level
1 : high level

• ✱3 0 : 0 V
1 : 4.5 V

SW BAND	IC1 ③	④
1 MHz BAND	1	1
2	0	1
3	1	0
4	0	0
5	1	1
6	0	1
7	1	0
8	0	0
9	1	0
10	0	0
11	1	1
12	0	1
13	1	0
14	0	0
15	1	1
16	0	1
17	1	0

206 07 231 218 217 213 216 804 214 215 208 805 IC802 803 806 IC801 401 602 603 209 221 219 220 222 210 801 601 223 802 604 003 053 002 052 001 054 051	Q IC
217 801 802 239 804 807 806 213 805 212 803 401 214 215 602 601 219 216 223 218 220 221 001 051 002 003	D

NB: S14 (NOISE BLANKER) IS ON

【MAIN BOARD】

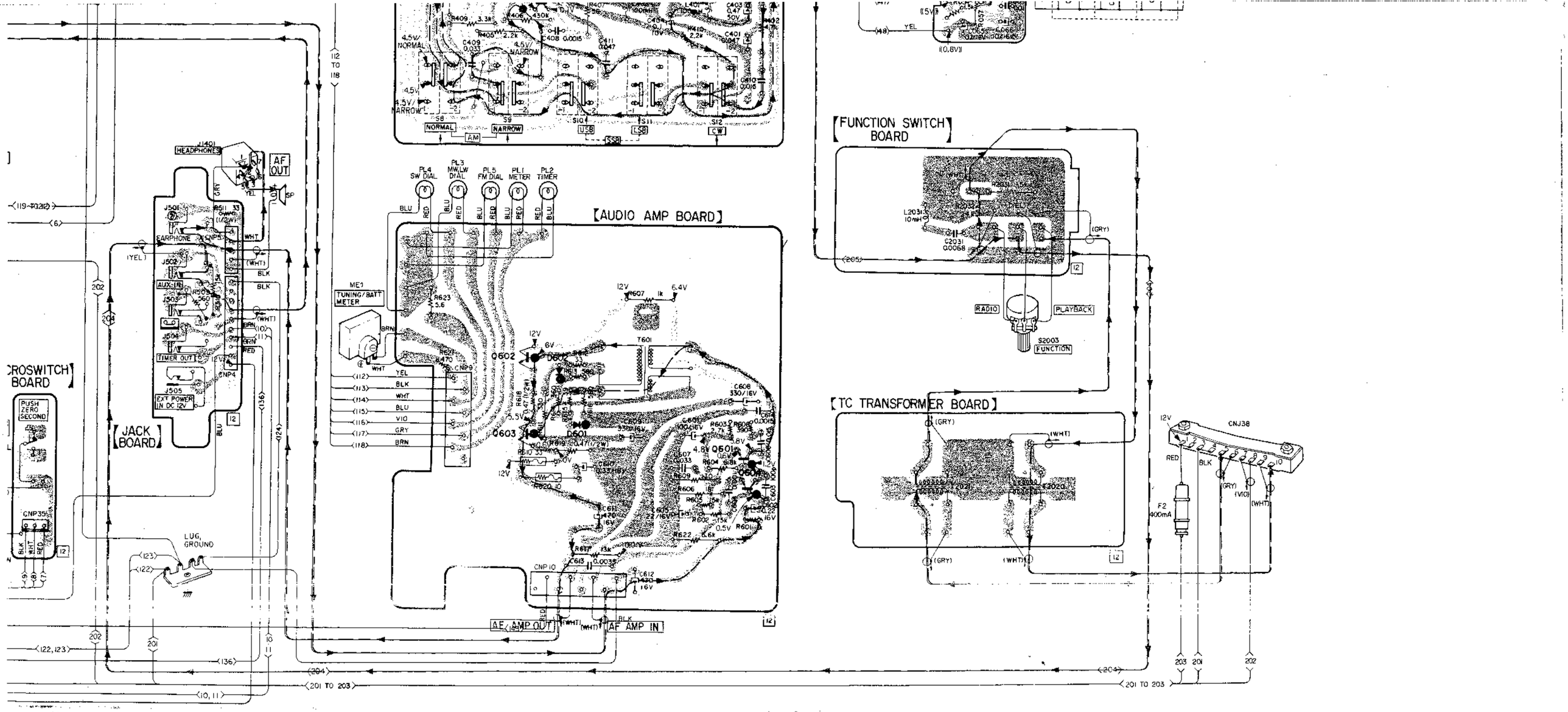
【FM1 FRONT-END BOARD】

【FM SWITCH BOARD】

【FM2 FRONT-END BOARD】

【MODE SWITCH BOARD】

【FUNCTION SWITCH BOARD】



indication (decimal value) and inputs
llows:

LED Input Terminal					
c	d	e	f	g
1	1	1	1	0
1	0	0	0	0
0	1	1	0	1
1	1	0	0	1
1	0	0	1	1
1	1	0	1	1
1	1	1	1	1
1	0	0	0	0
1	1	1	1	1
1	1	0	1	1

0 : low level
1 : high level

• ✱3 0 : 0V
1 : 4.5 V

SW BAND	IC TERMINAL					
	IC1003				IC1004	
	③	④	⑤	⑥	③	④
1 MHz BAND	1	1	1	0	1	1
2	0	1	1	0	1	1
3	1	0	1	0	1	1
4	0	0	1	0	1	1
5	1	1	0	0	1	1
6	0	1	0	0	1	1
7	1	0	0	0	1	1
8	0	0	0	0	1	1
9	1	0	0	1	0	1
10	0	0	0	1	0	1
11	1	1	1	0	0	1
12	0	1	1	0	0	1
13	1	0	1	0	0	1
14	0	0	1	0	0	1
15	1	1	0	0	0	1
16	0	1	0	0	0	1
17	1	0	0	0	0	1

SW BAND	IC TERMINAL					
	IC1003				IC1004	
	③	④	⑤	⑥	③	④
18 MHz BAND	0	0	0	0	0	1
19	1	0	0	1	1	0
20	0	0	0	1	1	0
21	1	1	1	0	1	0
22	0	1	1	0	1	0
23	1	0	1	0	1	0
24	0	0	1	0	1	0
25	1	1	0	0	1	0
26	0	1	0	0	1	0
27	1	0	0	0	1	0
28	0	0	0	0	1	0
29	1	0	0	1	0	0

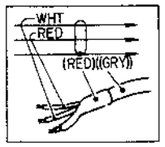
• Switch

Ref. No.	Switch	Position
S001	FM FM1 – FM2	FM1
S1-1	ANT SELECT MW, LW-EXT ANT	LOCAL
S1-2	ANT SELECT SW-ANT ROD-EXT	ROD
S2	SW ANT COIL SELECT L108-L109	L108
S3-1 – 3-6	BAND SELECTOR, SW	ON
S4-1 – 4-6	BAND SELECTOR, MW	OFF
S5-1 – 5-6	BAND SELECTOR, LW	OFF
S6-1 – 6-4	BAND SELECTOR, FM	OFF
S8	MODE, NORMAL	ON
S9	MODE, NARROW	OFF
S10	MODE, USB-SSB	OFF
S11	MODE, LSB-SSB	OFF
S12	MODE, CW	OFF
S14	NOISE BLANKER	OFF
S15	AFC	OFF
S16	MUTING	OFF
S17	TIMER ON	OFF
S18	BATT CHECK	OFF
S19	LIGHT	OFF
S20	ZERO SECOND	OFF

Ref. No.	Switch	Position
S21	POWER	OFF
S22	OFF-ON-TIMER ON	OFF
S23	VOLTAGE SELECT	100V
S24	BATT/AC	BATT
S25	QUARTZ TIMER	OFF
S26	SW BAND SELECTOR 10MHz STEP 0 – 10MHz – 20	0
S27 to 29	SW BAND SELECTOR 1MHz STEP 0 – 1MHz – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9	9
S2003	FUNCTION RADIO-PLAYBACK	RADIO

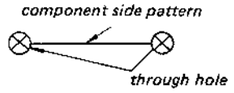
Note:

- All capacitors are in μF unless otherwise noted. pF = μμF 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ = 1000 Ω, MΩ = 1000 kΩ
- ⏦ : fusible resistor.
- △ : internal component.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- Transistor base-emitter voltages are measured on the 2.5 V range.
- Transistor is used for D701.
- Color code of sleeving over the end of the jacket.



- ▭ : B+ pattern
- —●—: signal path

component side pattern



through hole

- ——— : B+ bus.
- – – – : B+ bus when S3 (BAND SELECTOR, SW) is on.
- —·—·— : B+ bus at 3.501 MHz.

* Voltages are DC with respect to ground unless otherwise noted.

* Readings are taken under SW detuned conditions with a VOM (20 kΩ/V), setting VR501 (TREBLE) to minimum position, VR502 (BASS) to minimum position and VR503 (VOLUME) to mechanical mid position.

< >: FM1 .... S15 (AFC): ON, S16 (MUTING): OFF, tuning dial: minimum frequency

(( )): FM2 .... S15 (AFC): ON, S16 (MUTING): OFF, tuning dial: minimum frequency

≪ ≫: FM .... S15 (AFC): OFF, S16 (MUTING): ON, tuning dial: minimum frequency

[ ]: LW .... VR1401 (RF GAIN): MAX/NORMAL, MODE: NORMAL, tuning dial: minimum frequency

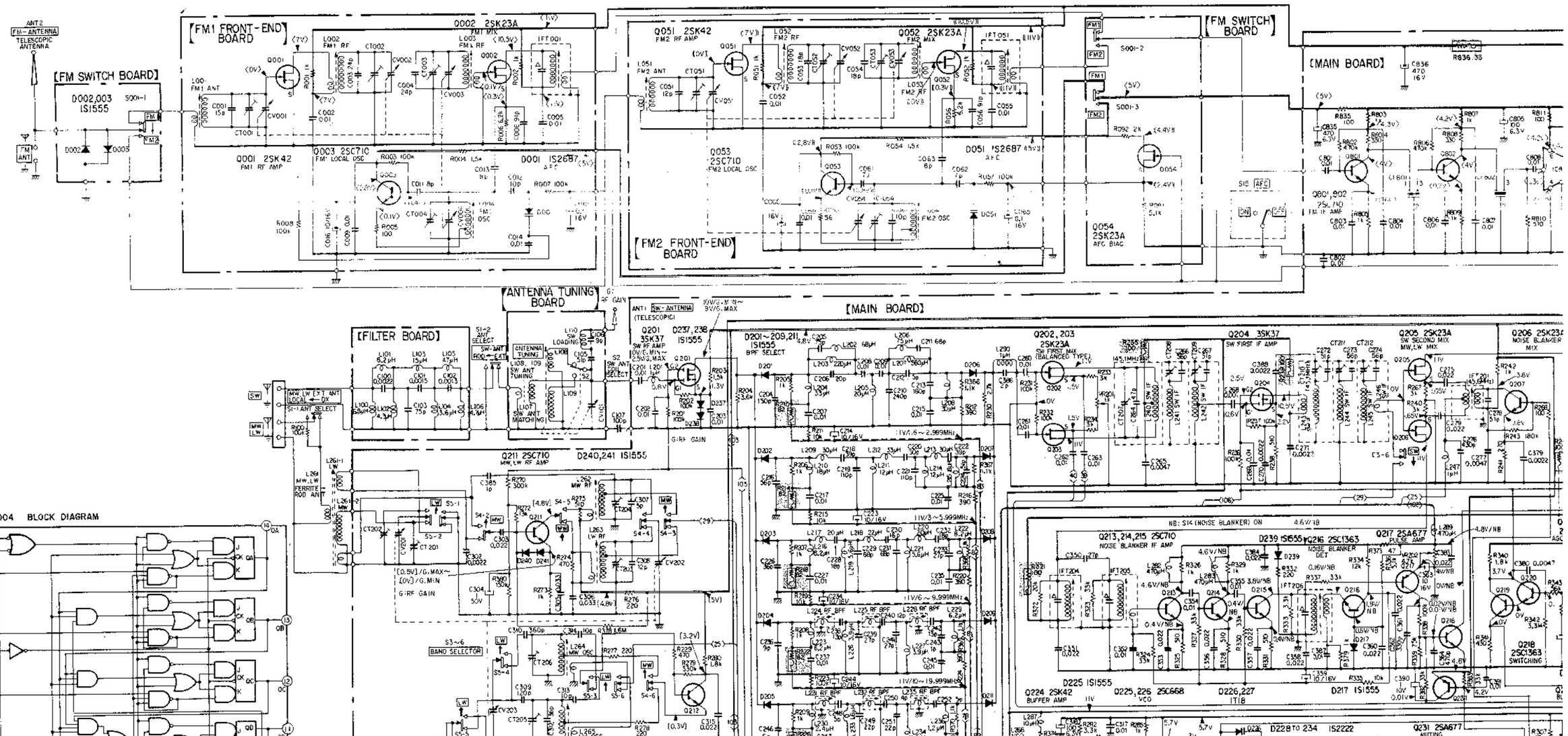
( ): MW .... VR1401 (RF GAIN): MAX/NORMAL, MODE: NORMAL, tuning dial: minimum frequency

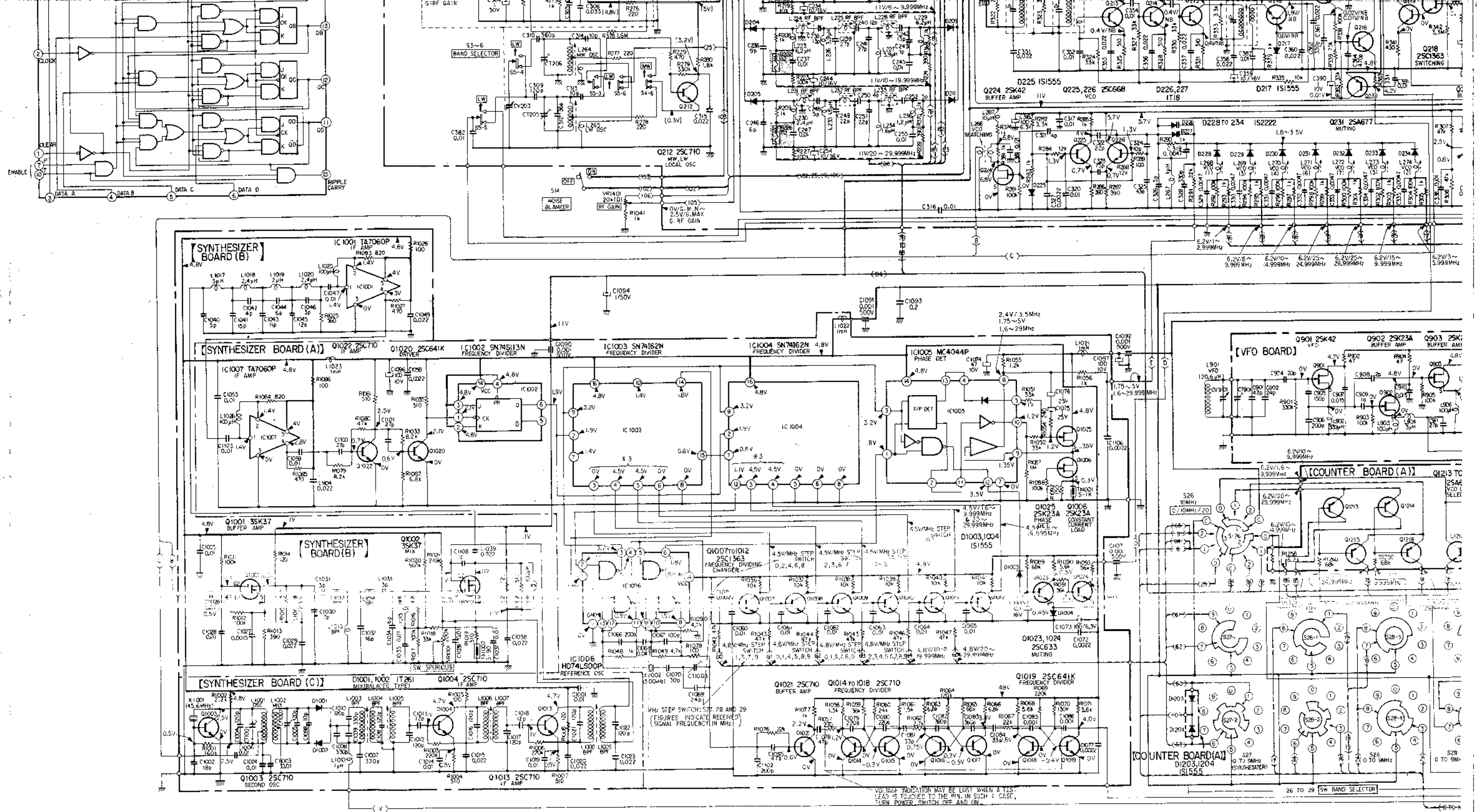
/G MAX: .... VR1401 (RF GAIN): MAX/NORMA
/G MIN: .... VR1401 (RF GAIN): MIN
/USB: .... S10 (MODE, USB-SSB): ON
/LSB: .... S11 (MODE, LSB-SSB): ON
/SSB: .... S10 (MODE, USB-SSB) or S11 (MOD LSB-SSB): ON
/CW: .... S12 (CW): ON
/NB: .... S14 (NOISE BLANKER): ON
/□MHz: .... When □MHz signal is received.

• ✱1 Relations of the LED indication (decimal value) and E (binary-coded decimal) value are as follows:

LED Indication	BCD code A	B	C	D
0	0	0	0	0
1	1	0	0	0
2	0	1	0	0
3	1	1	0	0
4	0	0	1	0
5	1	0	1	0
6	0	1	1	0
7	1	1	1	0
8	0	0	0	1
9	1	0	0	1
	0 : low level 1 : high level			

4-2. SCHEMATIC DIAGRAM – Radio Section –




SYNTHESIZER BOARD (B)
SYNTHESIZER BOARD (A)
SYNTHESIZER BOARD (C)
VFO BOARD
COUNTER BOARD (A)
IC1001 TA7060P IF AMP
IC1007 TA7060P IF AMP
IC1002 SN74S113N FREQUENCY DIVIDER
IC1003 SN74162N FREQUENCY DIVIDER
IC1004 SN74162N FREQUENCY DIVIDER
IC1005 MC4044P PHASE DET
IC1006 HD74LS00P REFERENCE OSC
Q1001 3SK37 BUFFER AMP
Q1002 3SK37 MIX
Q1003 2SC710 SECOND OSC
Q1004 2SC710 IF AMP
Q1013 2SC710 IF AMP
Q1020 2SC641K DRIVER
Q1022 2SC710 IF AMP
Q1025 2SK23A PHASE DET
Q1006 2SK23A CONSTANT CURRENT LOAD
Q1007 TO 1012 2SC1363 FREQUENCY DIVIDING CHANGER
Q1014 TO 1018 2SC710 FREQUENCY DIVIDER
Q1019 2SC641K FREQUENCY DIVIDER
Q1021 2SC710 BUFFER AMP
Q1023,1024 2SC633 MUTING
D1001,1002 1T261 MIX(BALANCED TYPE)
D1003,1004 1S1555
D1203,1204 1S1555
Q901 2SK42 VFO
Q902 2SK23A BUFFER AMP
Q903 2SK23A BUFFER AMP
Q212 2SC710 MW,LW LOCAL OSC
Q218 2SC1363 SWITCHING
Q224 2SK42 BUFFER AMP
Q225,226 2SC668 VCO
D225 1S1555
D226,227 1T18
D217 1S1555
D228 TO 234 1S2222
Q231 2SA677 MUTING
S3-6 BAND SELECTOR
S14 NOISE BLANKER
VR1401 RF GAIN
SW SPURIOUS
MHz STEP SWITCH: S27,28 AND 29 (FIGURES INDICATE RECEIVED SIGNAL FREQUENCY IN MHz)
VOLTAGE INDICATION MAY BE LOST WHEN A TEST LEAD IS TOUCHED TO THE PIN. IN SUCH A CASE, TURN POWER SWITCH OFF AND ON.
26 TO 29 SW BAND SELECTOR
CLOCK
CLEAR
ENABLE
DATA A
DATA B
DATA C
DATA D
RIPPLE CARRY

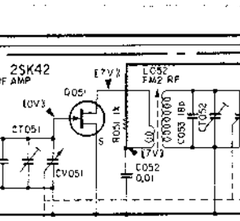
are in μF unless otherwise noted. pF = μμF
are not indicated except for electrolytics.
re in ohms, ¼ W unless otherwise noted.
MΩ = 1000 kΩ
resistor.
al component.
designation.
rment for repair.
-emitter voltages are measured on the 2.5 V

sed for D701.

sleeving over the end of the jacket.

- : B+ pattern
- —●—: signal path

component side pattern



through hole

- ——— : B+ bus.
- ———— : B+ bus when S3 (BAND SELECTOR, SW) is on.
- —·—·— : B+ bus at 3.501 MHz.

* Voltages are DC with respect to ground unless otherwise noted.

* Readings are taken under SW detuned conditions with a VOM (20 kΩ/V), setting VR501 (TREBLE) to minimum position, VR502 (BASS) to minimum position and VR503 (VOLUME) to mechanical mid position.

< >: FM1 .... S15 (AFC): ON, S16 (MUTING): OFF, tuning dial: minimum frequency

(( )): FM2 .... S15 (AFC): ON, S16 (MUTING): OFF, tuning dial: minimum frequency

≪ ≫: FM .... S15 (AFC): OFF, S16 (MUTING): ON, tuning dial: minimum frequency

[ ]: LW .... VR1401 (RF GAIN): MAX/NORMAL, MODE: NORMAL, tuning dial: minimum frequency

( ): MW .... VR1401 (RF GAIN): MAX/NORMAL, MODE: NORMAL, tuning dial: minimum frequency

/G MAX: .... VR1401 (RF GAIN): MAX/NORMAL
/G MIN: .... VR1401 (RF GAIN): MIN
/USB: .... S10 (MODE, USB-SSB): ON
/LSB: .... S11 (MODE, LSB-SSB): ON
/SSB: .... S10 (MODE, USB-SSB) or S11 (MODE, LSB-SSB): ON
/CW: .... S12 (CW): ON
/NB: .... S14 (NOISE BLANKER): ON
/□MHz: .... When □MHz signal is received.

• ※1 Relations of the LED indication (decimal value) and BCD (binary-coded decimal) value are as follows:

LED Indication	BCD code A	B	C	D
0	0	0	0	0
1	1	0	0	0
2	0	1	0	0
3	1	1	0	0
4	0	0	1	0
5	1	0	1	0
6	0	1	1	0
7	1	1	1	0
8	0	0	0	1
9	1	0	0	1

0 : low level
1 : high level

• ※2 Relation of the LED indication (decimal value) and inputs to the LED are as follows:

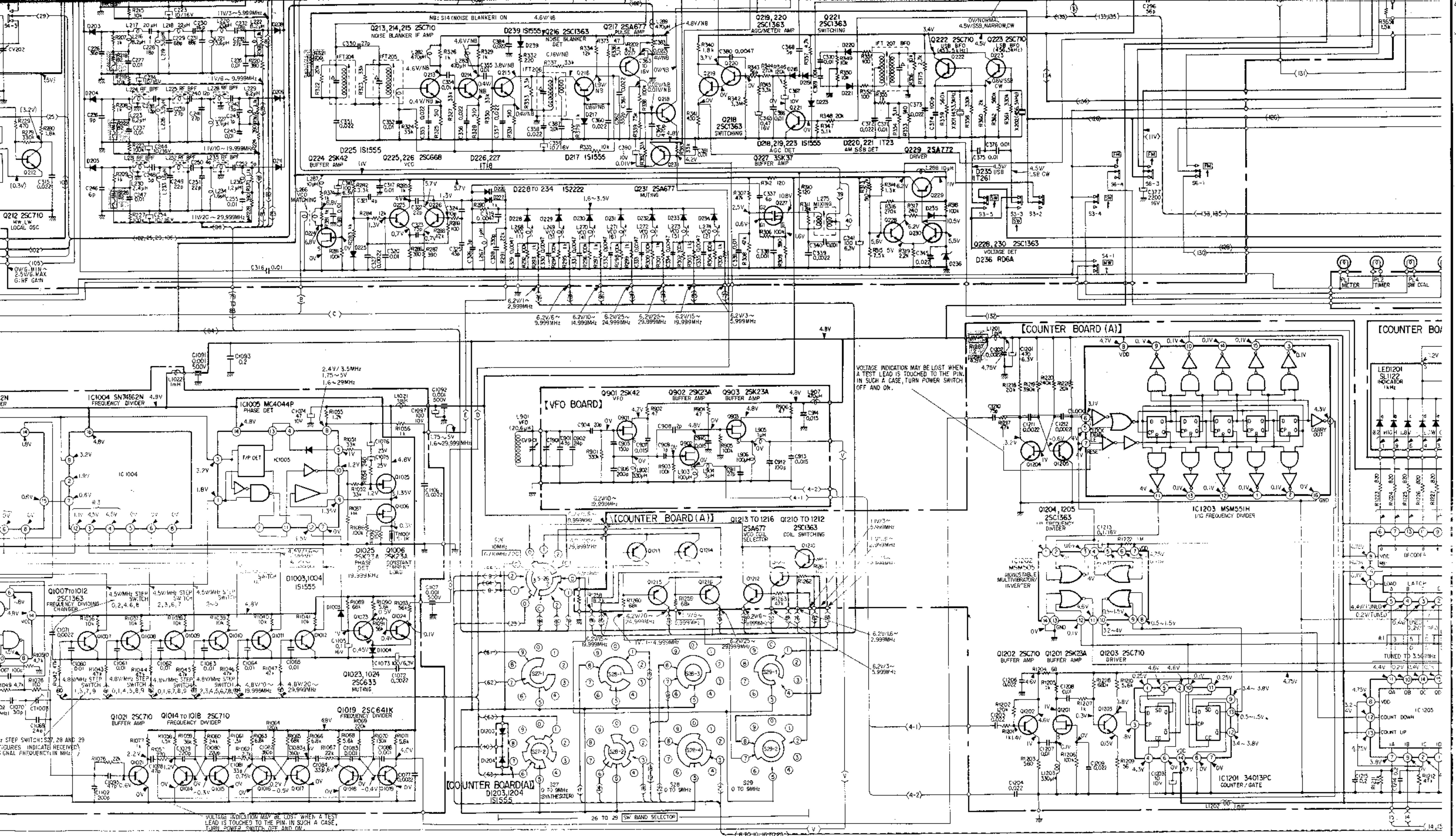
LED Indication	LED Input Terminal a	b	c	d	e	f	g
0	1	1	1	1	1	1	0
1	0	1	1	0	0	0	0
2	1	1	0	1	1	0	1
3	1	1	1	1	0	0	1
4	0	1	1	0	0	1	1
5	1	0	1	1	0	1	1
6	0	0	1	1	1	1	1
7	1	1	1	0	0	0	0
8	1	1	1	1	1	1	1
9	1	1	1	1	0	1	1

0 : low level
1 : high level

• ※3 0 : 0 V
1 : 4.5 V

SW BAND	IC TERMINAL IC1003 ③	④	⑤	⑥	IC1004 ③	④
1 MHz BAND	1	1	1	0	1	1
2	0	1	1	0	1	1
3	1	0	1	0	1	1
4	0	0	1	0	1	1
5	1	1	0	0	1	1
6	0	1	0	0	1	1
7	1	0	0	0	1	1
8	0	0	0	0	1	1
9	1	0	0	1	0	1
10	0	0	0	1	0	1
11	1	1	1	0	0	1
12	0	1	1	0	0	1
13	1	0	1	0	0	1
14	0	0	1	0	0	1
15	1	1	0	0	0	1
16	0	1	0	0	0	1
17	1	0	0	0	0	1

SW BAND
18 MHz BA
19
20
21
22
23
24
25
26
27
28
29


NB: S14 (NOISE BLANKER) ON
Q213, 214, 215 2SC710 NOISE BLANKER IF AMP
Q216 2SC1363 NOISE BLANKER DET
Q217 2SA677 PULSE AMP
Q219, 220 2SC1363 AGC/METER AMP
Q221 2SC1363 SWITCHING
Q222 2SC710 USB BFO
Q223 2SC710 LSB BFO
Q224 2SK42 BUFFER AMP
Q225, 226 2SC668 VCO
D228 TO 234 1S2222
Q231 2SA677 MUTING
Q227 3SK37 BUFFER AMP
Q229 2SA772 DRIVER
Q228, 230 2SC1363
Q212 2SC710 MW LW LOCAL OSC
PL1 METER
PL2 TIMER
PL4 SW DIAL
IC1004 SN74162N FREQUENCY DIVIDER
IC1005 MC4044P PHASE DET
[VFO BOARD]
Q901 2SK42 VFO
Q902 2SK23A BUFFER AMP
Q903 2SK23A BUFFER AMP
[COUNTER BOARD (A)]
VOLTAGE INDICATION MAY BE LOST WHEN A TEST LEAD IS TOUCHED TO THE PIN. IN SUCH A CASE, TURN POWER SWITCH OFF AND ON.
IC1203 MSM551H 1/10 FREQUENCY DIVIDER
LED1201 SL1122 INDICATOR
Q1204, 1205 2SC1363
Q1213 TO 1216 2SA677 VCO COIL SELECTOR
Q1210 TO 1212 2SC1363 COIL SWITCHING
Q1007 TO 1012 2SC1363 FREQUENCY DIVIDING CHANGER
Q1025 2SK23A PHASE DET
Q1006 2SK23A CONSTANT CURRENT LOAD
Q1023, 1024 2SC633 MUTING
Q1021 2SC710 BUFFER AMP
Q1014 TO 1018 2SC710 FREQUENCY DIVIDER
Q1019 2SC641K FREQUENCY DIVIDER
Q1202 2SC710 BUFFER AMP
Q1201 2SK23A BUFFER AMP
Q1203 2SC710 DRIVER
IC1201 34013PC COUNTER / GATE
S27 0 TO 9MHz (SYNTHESIZER)
S28 0 TO 9MHz
S29 0 TO 9MHz
D1203, 1204 1S1555
26 TO 29 SW BAND SELECTOR
VOLTAGE INDICATION MAY BE LOST WHEN A TEST LEAD IS TOUCHED TO THE PIN. IN SUCH A CASE, TURN POWER SWITCH OFF AND ON.

MAL

IODE,

id BCD

• ✱2 Relation of the LED indication (decimal value) and inputs to the LED are as follows:

LED Indication	LED Input Terminal						
	a	b	c	d	e	f	g
0	1	1	1	1	1	1	0
1	0	1	1	0	0	0	0
2	1	1	0	1	1	0	1
3	1	1	1	1	0	0	1
4	0	1	1	0	0	1	1
5	1	0	1	1	0	1	1
6	0	0	1	1	1	1	1
7	1	1	1	0	0	0	0
8	1	1	1	1	1	1	1
9	1	1	1	1	0	1	1

0 : low level
1 : high level

• ✱3 0 : 0 V
1 : 4.5 V

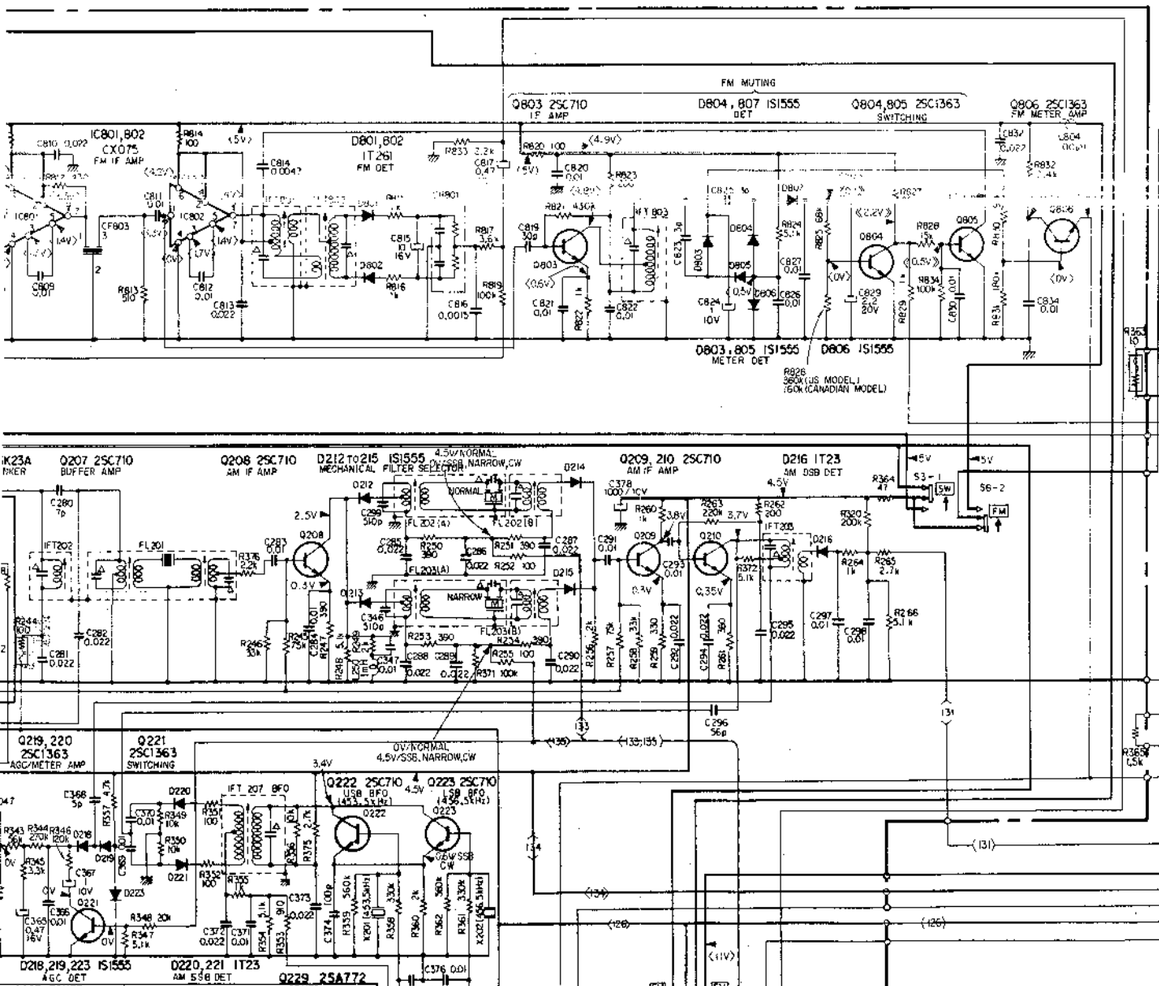
SW BAND	IC TERMINAL					
	IC1003				IC1004	
	③	④	⑤	⑥	③	④
1 MHz BAND	1	1	1	0	1	1
2	0	1	1	0	1	1
3	1	0	1	0	1	1
4	0	0	1	0	1	1
5	1	1	0	0	1	1
6	0	1	0	0	1	1
7	1	0	0	0	1	1
8	0	0	0	0	1	1
9	1	0	0	1	0	1
10	0	0	0	1	0	1
11	1	1	1	0	0	1
12	0	1	1	0	0	1
13	1	0	1	0	0	1
14	0	0	1	0	0	1
15	1	1	0	0	0	1
16	0	1	0	0	0	1
17	1	0	0	0	0	1

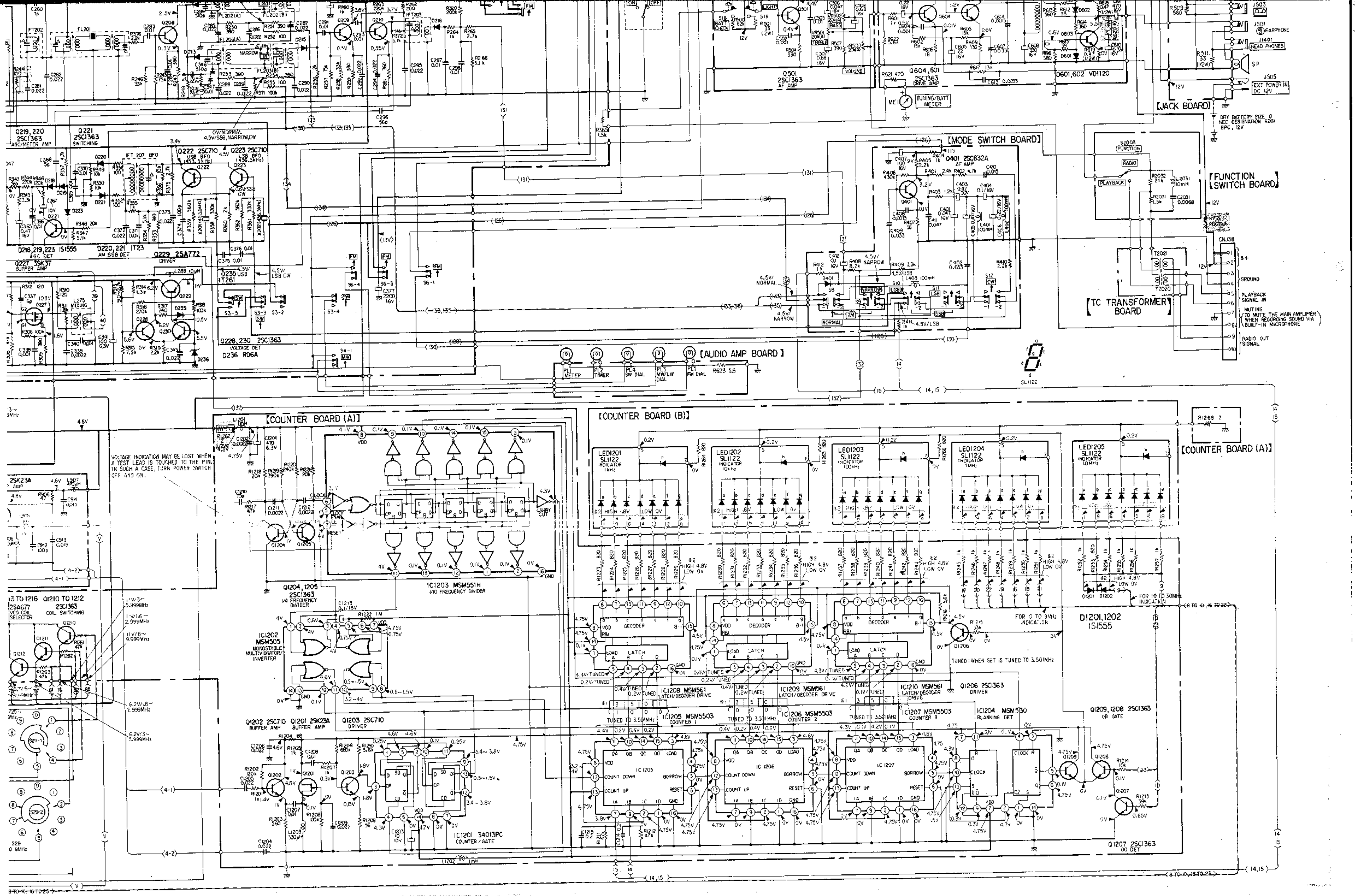
SW BAND	IC TERMINAL					
	IC1003				IC1004	
	③	④	⑤	⑥	③	④
18 MHz BAND	0	0	0	0	0	1
19	1	0	0	1	1	0
20	0	0	0	1	1	0
21	1	1	1	0	1	0
22	0	1	1	0	1	0
23	1	0	1	0	1	0
24	0	0	1	0	1	0
25	1	1	0	0	1	0
26	0	1	0	0	1	0
27	1	0	0	0	1	0
28	0	0	0	0	1	0
29	1	0	0	1	0	0

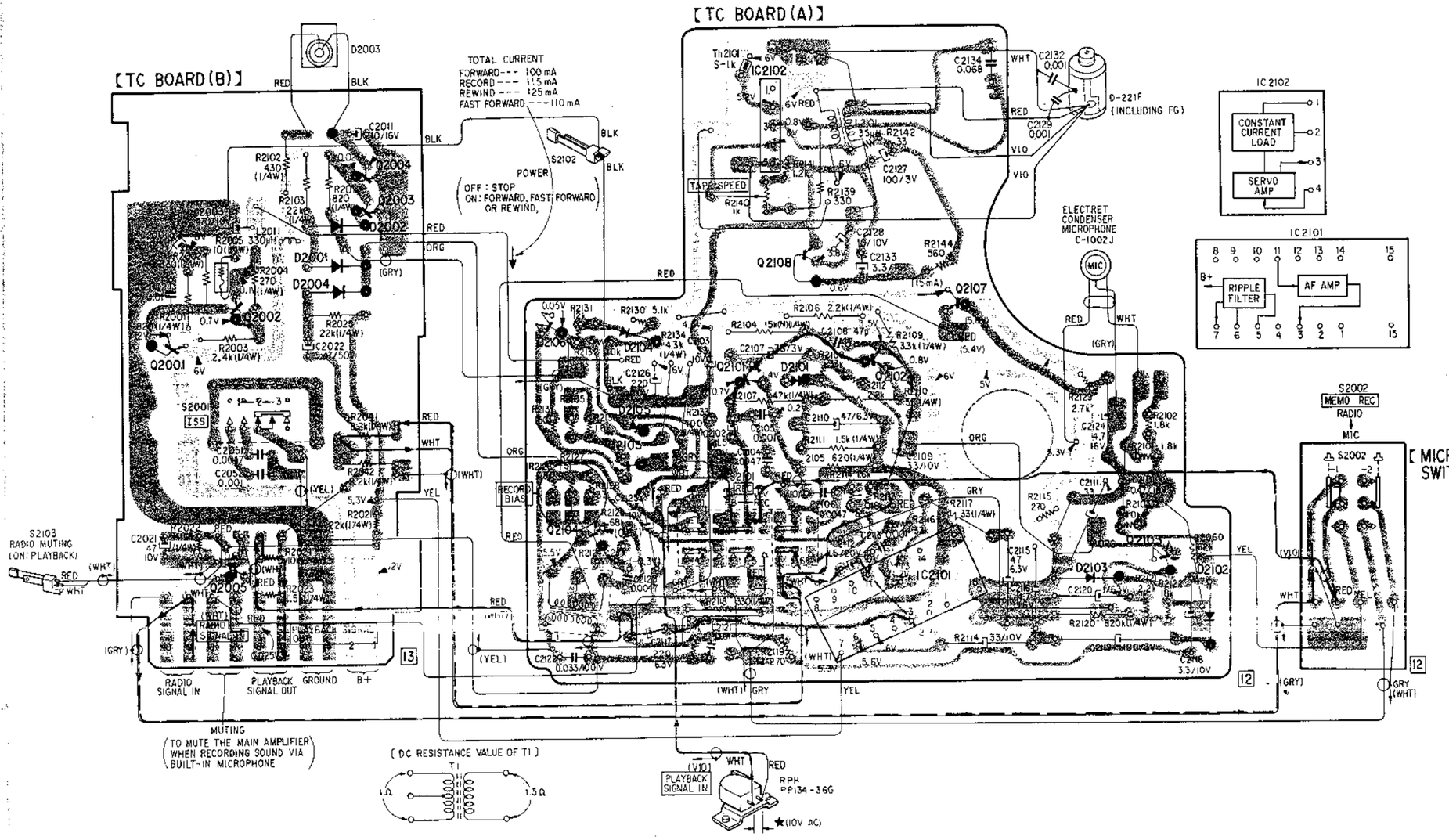
• Switch

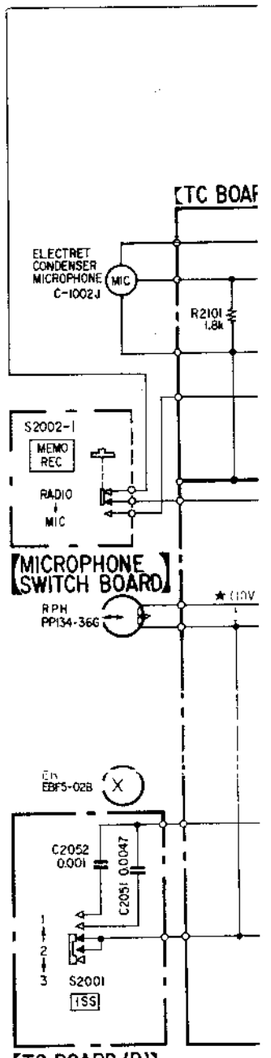
Ref. No.	Switch	Position
S001	FM FM1 – FM2	FM1
S1-1	ANT SELECT MW, LW-EXT ANT	LOCAL
S1-2	ANT SELECT SW-ANT ROD-EXT	ROD
S2	SW ANT COIL SELECT L108-L109	L108
S3-1 – 3-6	BAND SELECTOR, SW	ON
S4-1 – 4-6	BAND SELECTOR, MW	OFF
S5-1 – 5-6	BAND SELECTOR, LW	OFF
S6-1 – 6-4	BAND SELECTOR, FM	OFF
S8	MODE, NORMAL	ON
S9	MODE, NARROW	OFF
S10	MODE, USB-SSB	OFF
S11	MODE, LSB-SSB	OFF
S12	MODE, CW	OFF
S14	NOISE BLANKER	OFF
S15	AFC	OFF
S16	MUTING	OFF
S17	TIMER ON	OFF
S18	BATT CHECK	OFF
S19	LIGHT	OFF
S20	ZERO SECOND	OFF

Ref. No.	Switch	Position
S21	POWER	OFF
S22	OFF-ON-TIMER ON	OFF
S23	VOLTAGE SELECT	100 V
S24	BATT/AC	BATT
S25	QUARTZ TIMER	OFF
S26	SW BAND SELECTOR 10 MHz STEP 0 – 10 MHz – 20	0
S27 to 29	SW BAND SELECTOR 1 MHz STEP 0 – 1 MHz – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9	9
S2003	FUNCTION RADIO-PLAYBACK	RADIO




[JACK BOARD]
[MODE SWITCH BOARD]
[FUNCTION SWITCH BOARD]
[TC TRANSFORMER BOARD]
[AUDIO AMP BOARD]
[COUNTER BOARD (A)]
[COUNTER BOARD (B)]
[COUNTER BOARD (A)]
VOLTAGE INDICATION MAY BE LOST WHEN A TEST LEAD IS TOUCHED TO THE PIN. IN SUCH A CASE, TURN POWER SWITCH OFF AND ON.
IC1203 MSM551H 1/10 FREQUENCY DIVIDER
IC1202 MSM505 MONOSTABLE MULTIVIBRATOR/INVERTER
IC1201 34013PC COUNTER/GATE
IC1208 MSM561 LATCH/DECODER DRIVE
IC1209 MSM561 LATCH/DECODER DRIVE
IC1210 MSM561 LATCH/DECODER DRIVE
IC1205 MSM5503 COUNTER 1
IC1206 MSM5503 COUNTER 2
IC1207 MSM5503 COUNTER 3
IC1204 MSM5130 BLANKING DET
Q1206 2SC1363 DRIVER
Q1209, 1208 2SC1363 OR GATE
Q1207 2SC1363 OD DET
D1201, 1202 1S1555
Q1202 2SC710 BUFFER AMP
Q1201 2SK23A BUFFER AMP
Q1203 2SC710 DRIVER
Q1204, 1205 2SC1363 1/4 FREQUENCY DIVIDER
Q0501 2SC1363 AF AMP
Q604, 601 2SC1363 DRIVE AMP
Q0601, 602 VD1120
Q401 2SC632A AF AMP
Q219, 220 2SC1363 AGC/METER AMP
Q221 2SC1363 SWITCHING
Q222 2SC710 USB BFO
Q223 2SC710 LSB BFO
Q229 2SA772 DRIVER
Q228, 230 2SC1363
D236 RD6A
D218, 219, 223 1S1555
D220, 221 1T23 AM SSB DET
Q227 3SK37 BUFFER AMP
LED1201 SL1122 INDICATOR 1kHz
LED1202 SL1122 INDICATOR 10kHz
LED1203 SL1122 INDICATOR 100kHz
LED1204 SL1122 INDICATOR 1MHz
LED1205 SL1122 INDICATOR 10MHz
TUNED: WHEN SET IS TUNED TO 3.501MHz
FOR 0 TO 3MHz INDICATION
FOR 10 TO 30MHz INDICATION
PLAYBACK SIGNAL IN
MUTING (TO MUTE THE MAIN AMPLIFIER WHEN RECORDING SOUND VIA BUILT-IN MICROPHONE)
RADIO OUT SIGNAL
GROUND
DRY BATTERY SIZE D (IEC DESIGNATION R20) 8PC, 12V
EXT POWER IN DC 12V
EARPHONE
HEAD PHONES
TUNING/BATT METER
PL1 METER
PL2 TIMER
PL4 SW DIAL
PL3 MW/LW DIAL
PL5 FM DIAL

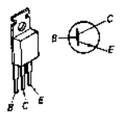




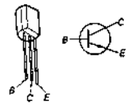
Q	2001	2002 2005	2004 2003
D			2002 2001 2004

IC	2102			2101				
Q	2106	2104	2105	2101	2108	2102	2107	2103
D	2104	2105	2101				2103	2102

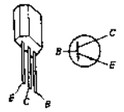
Q2001: 2SD1061



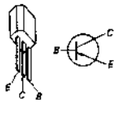
Q2002 – 2005: 2SC634A (2SC1363)



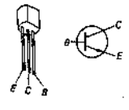
Q2101, 2102: 2SC632A
Q2103, 2104: 2SC634A
Q2106, 2107: 2SC634A



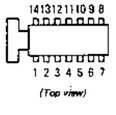
Q2105: 2SA678



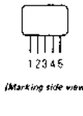
Q2108: 2SC1474



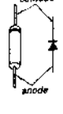
IC2101: CX170



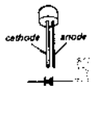
IC2102: BX295

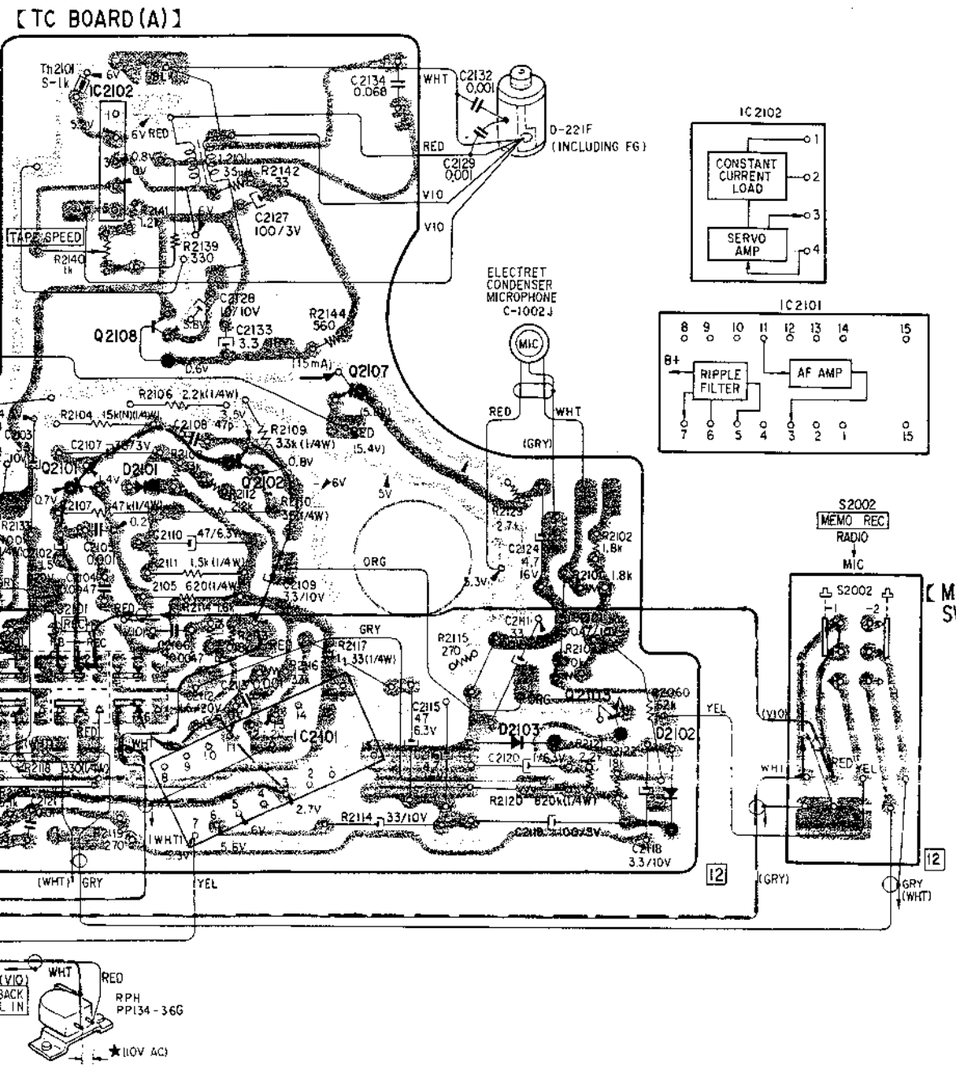


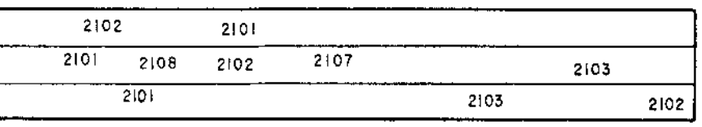
D2001, 2002
D2004, 2101 – 2105 : 1S1555



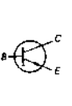
D2003: TLR109



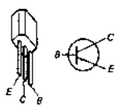




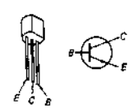
02: 2SC632A
04: 2SC634A
07: 2SC634A



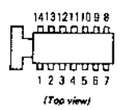
Q2105: 2SA678



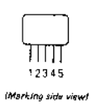
Q2108: 2SC1474



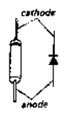
IC2101: CX170



IC2102: BX295

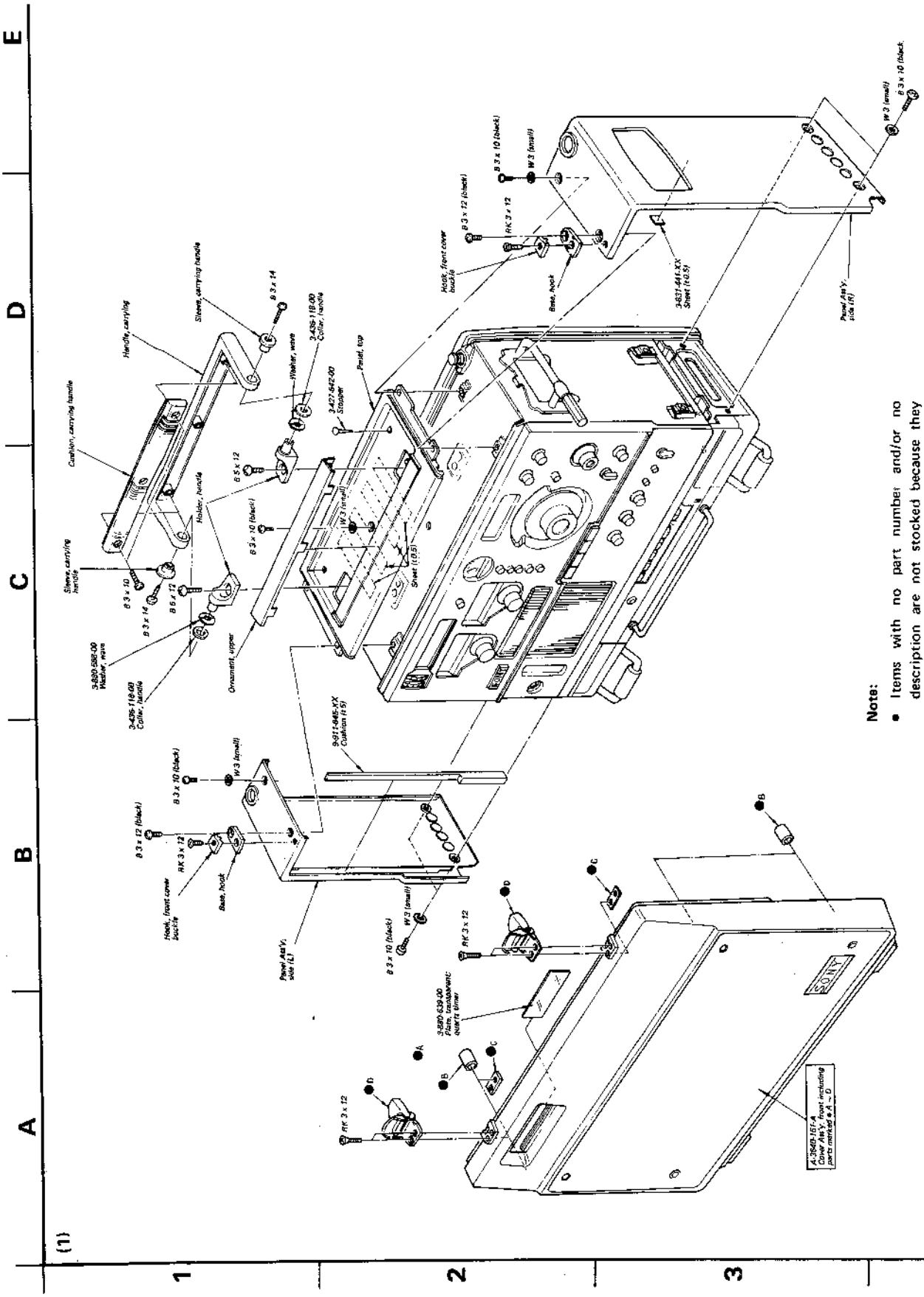


D2001, 2002
D2004, 2101 – 2105 } : 1S1555



D2003: TLR109

SECTION 5
EXPLODED VIEWS

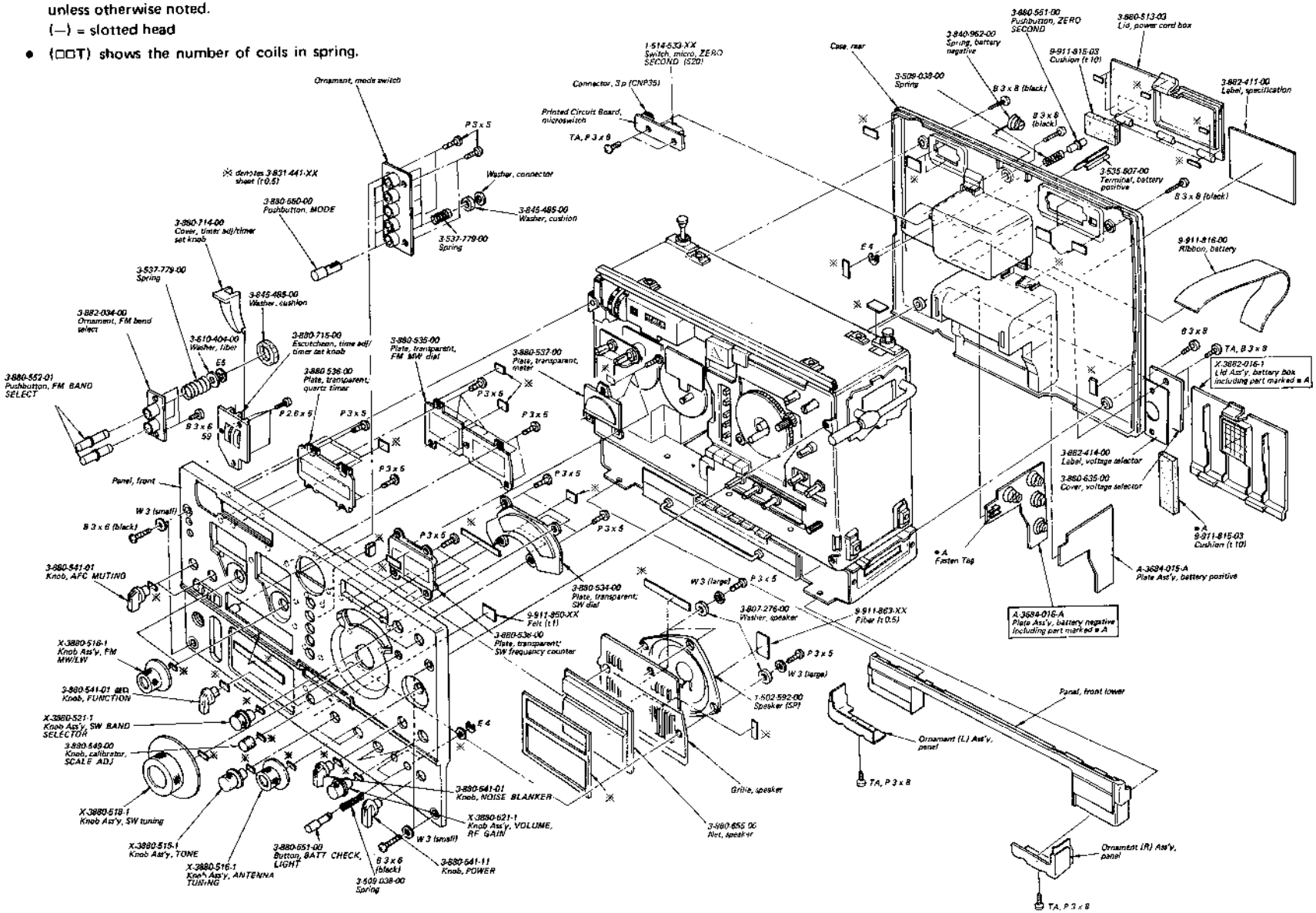


Note:

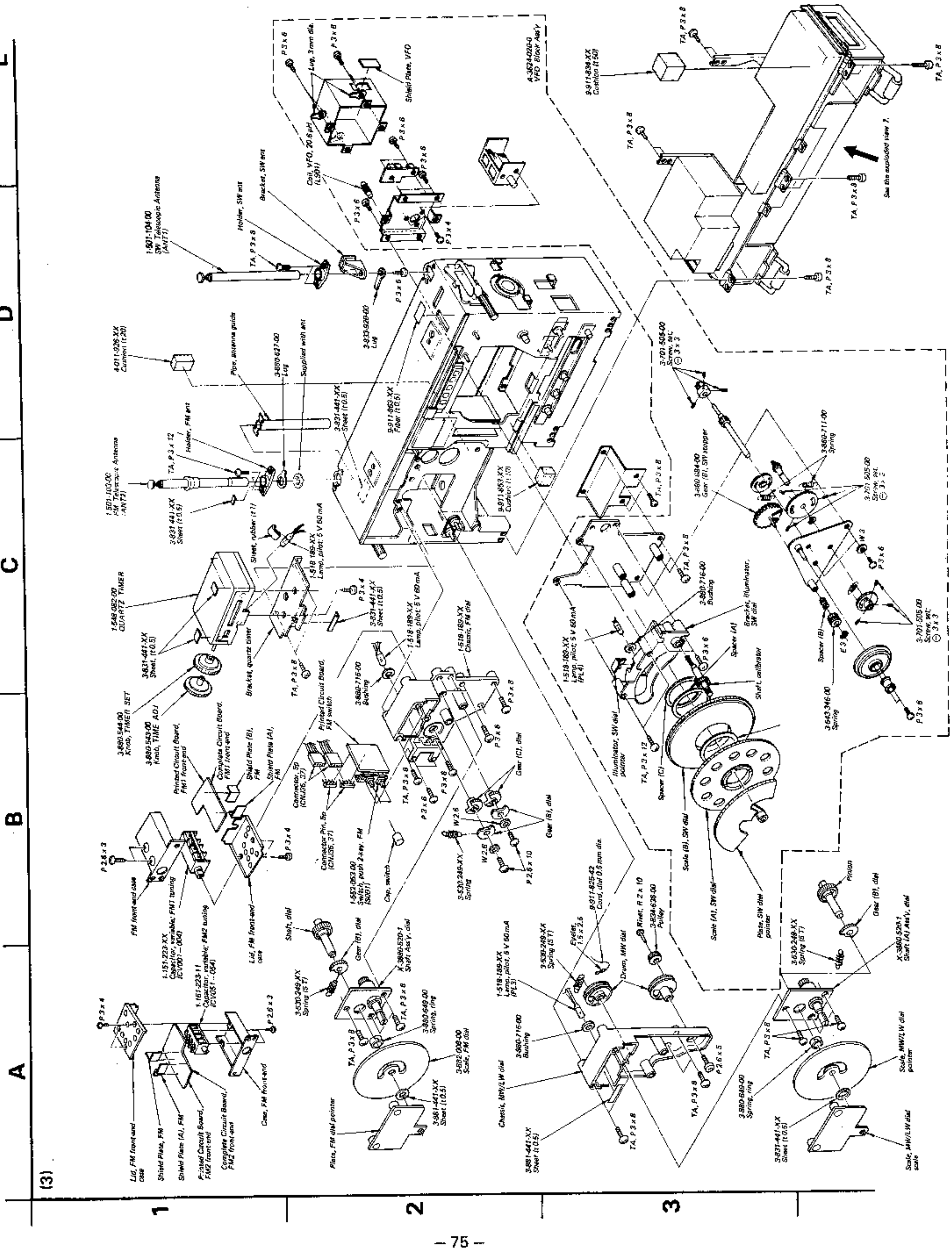
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (—) = slotted head
- (□□T) shows the number of coils in spring.

(2) **Note:**

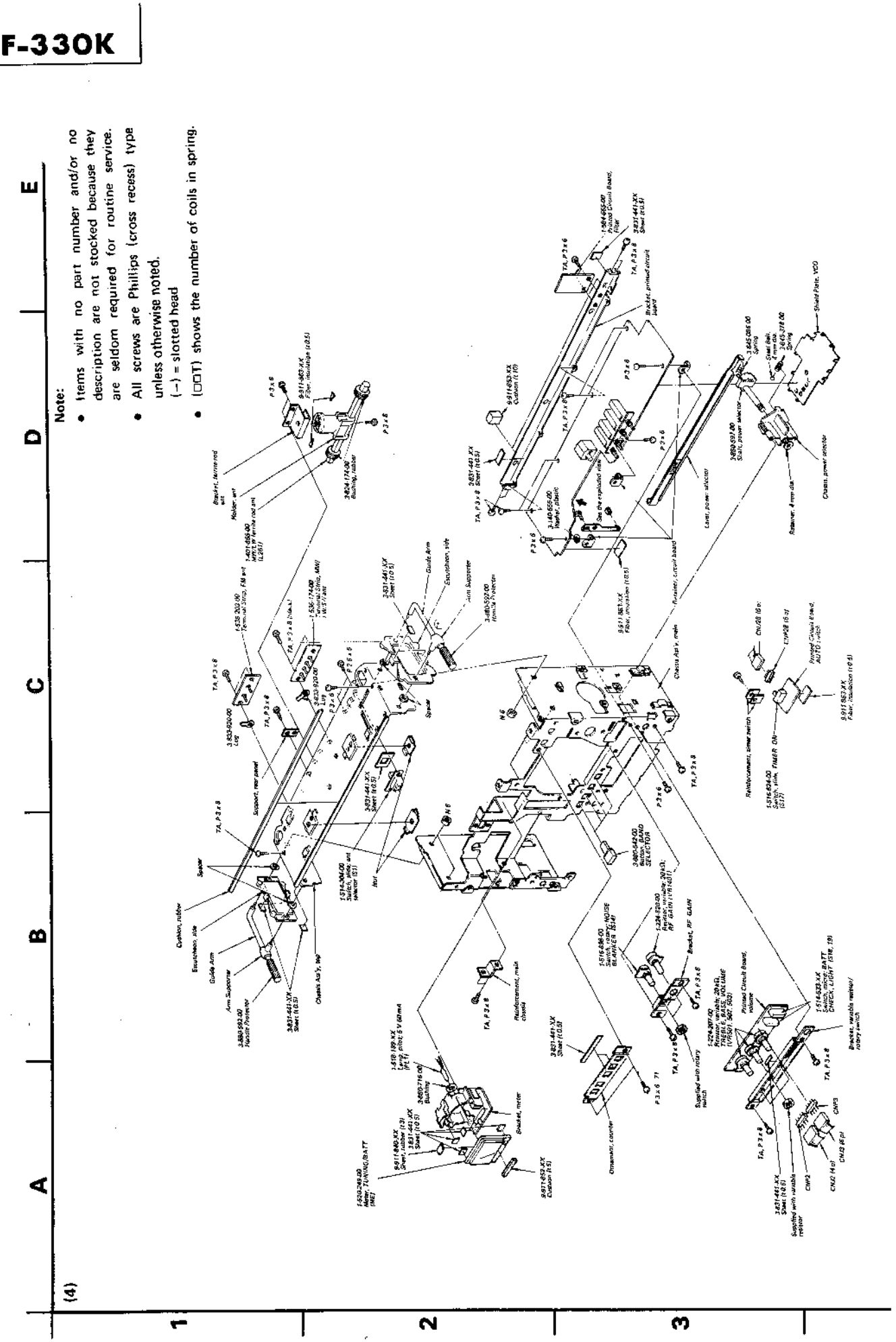
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (—) = slotted head
- (□□T) shows the number of coils in spring.



(3)

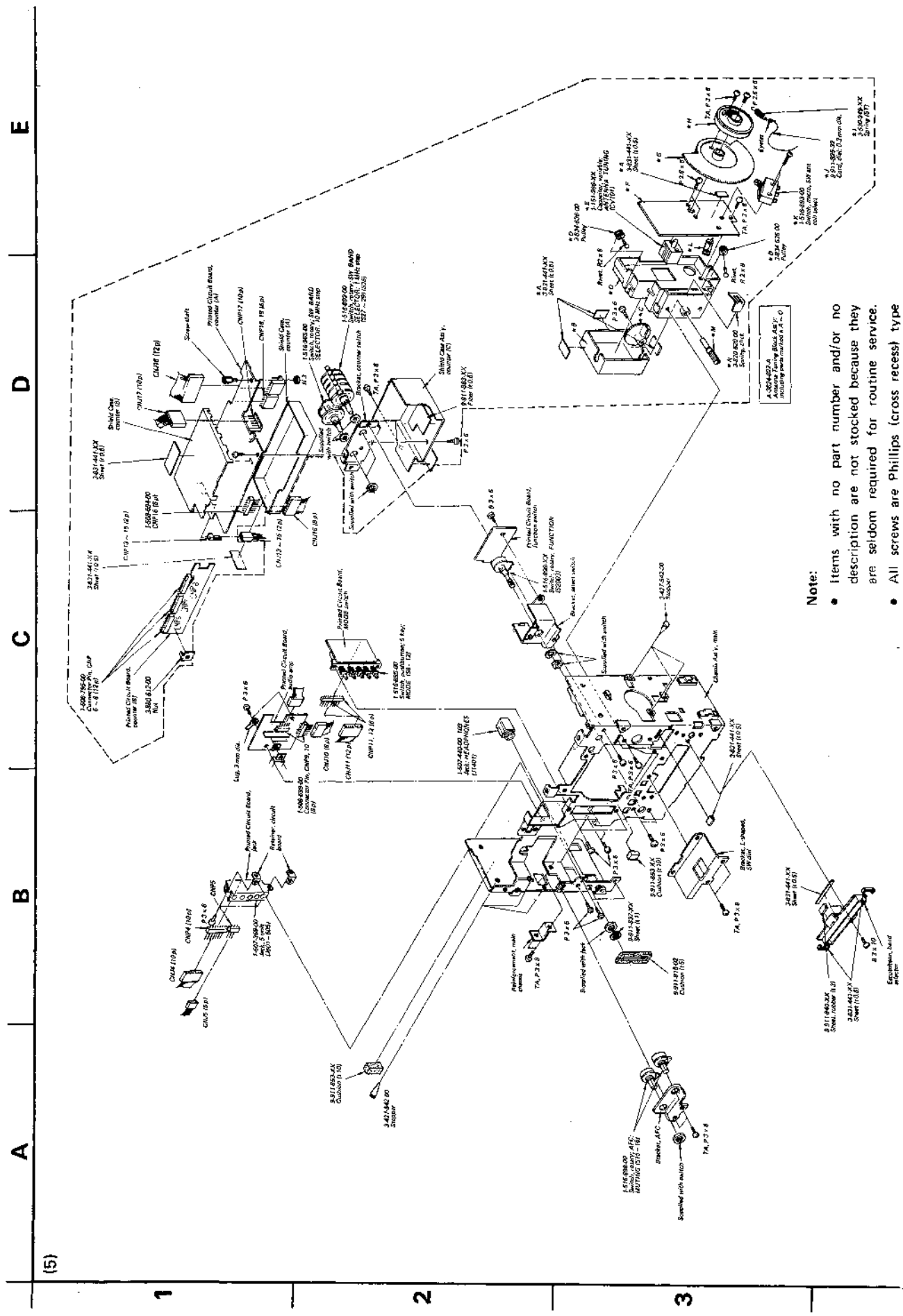


A
B
C
D
E
1
2
3
Lid, FM front-end case
Shield Plate, FM
Shield Plate (A), FM
Printed Circuit Board, FM2 front-end
Complete Circuit Board, FM2 front-end
Case, FM front-end
FM front-end case
1-151-223-XX Capacitor, variable; FM1 tuning (CV001-004)
1-151-223-11 Capacitor, variable; FM2 tuning (CV051-054)
Lid, FM front-end case
Printed Circuit Board, FM1 front-end
Complete Circuit Board, FM1 front-end
Shield Plate (B), FM
Shield Plate (A), FM
3-880-544-00 Knob, TIMER SET
3-880-543-00 Knob, TIME ADJ
3-831-441-XX Sheet (t 0.5)
1-548-082-00 QUARTZ TIMER
Bracket, quartz timer
1-518-189-XX Lamp, pilot; 5 V 60 mA
Sheet, rubber (t 1)
3-831-441-XX Sheet (t 0.5)
1-501-103-00 FM Telescopic Antenna (ANT2)
Holder, FM ant
Pipe, antenna guide
3-880-627-00 Lug
Supplied with ant
4-011-926-XX Cushion (t 20)
3-831-441-XX Sheet (t 0.5)
9-911-863-XX Fiber (t 0.5)
3-833-929-00 Lug
1-501-104-00 SW Telescopic Antenna (ANT1)
Holder, SW ant
Bracket, SW ant
Coil, VFO, 20.6 µH (L501)
Lug, 3 mm dia.
Shield Plate, VFO
A-3634-020-0 VFO Block Ass'y
9-911-834-XX Cushion (t 50)
See the exploded view 7.
9-911-853-XX Cushion (t 10)
3-701-505-00 Screw, set; ⊖ 3 x 3
3-880-184-00 Gear (B), SW stopper
3-880-711-00 Spring
3-643-346-00 Spring
Spacer (B)
Spacer (A)
Spacer (C)
Shaft, calibrator
Bracket, illuminator, SW dial
3-880-716-00 Bushing
1-518-189-XX Lamp, pilot; 5 V 60 mA (PL4)
Illuminator, SW dial pointer
Scale (B), SW dial
Scale (A), SW dial
Plate, SW dial pointer
Pinion
Gear (B), dial
3-530-249-XX Spring (ST)
X-3880-520-1 Shaft (A) Ass'y, dial
Scale, MW/LW dial pointer
3-880-649-00 Spring, ring
3-831-441-XX Sheet (t 0.5)
Scale, MW/LW dial scale
Printed Circuit Board, FM switch
Connector, 5p (CN336, 37)
Connector Pin, 5p (CN336, 37)
1-552-053-00 Switch, push 2-key, FM (S001)
Cap, switch
3-880-716-00 Bushing
1-518-189-XX Lamp, pilot; 5 V 60 mA
1-518-189-XX Chassis, FM dial
Gear (C), dial
Gear (B), dial
3-530-249-XX Spring
Shaft, dial
Gear (B), dial
X-3880-520-1 Shaft Ass'y, dial
3-530-249-XX Spring (ST)
3-880-649-00 Spring, ring
3-882-008-00 Scale, FM dial
3-881-441-XX Sheet (t 0.5)
Plate, FM dial pointer
9-911-825-42 Cord, dial 0.5 mm dia.
Rivet, R 2 x 10
3-834-636-00 Pulley
Drum, MW dial
Eyelet, 1.5 x 2.5
3-530-249-XX Spring (ST)
1-518-189-XX Lamp, pilot, 5 V 60 mA (PL3)
3-880-716-00 Bushing
Chassis, MW/LW dial
3-881-441-XX Sheet (t 0.5)
P 3 x 4
P 2.6 x 3
P 3 x 6
P 3 x 8
P 3 x 12
P 2.6 x 5
P 2.6 x 10
TA, P 3 x 8
TA, P 3 x 12
TA, P 3 x 6
W 2.6
W 3
E 3



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.



Note:

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  (-) = slotted head
- (□IT) shows the number of coils in spring.

A B C

(6)

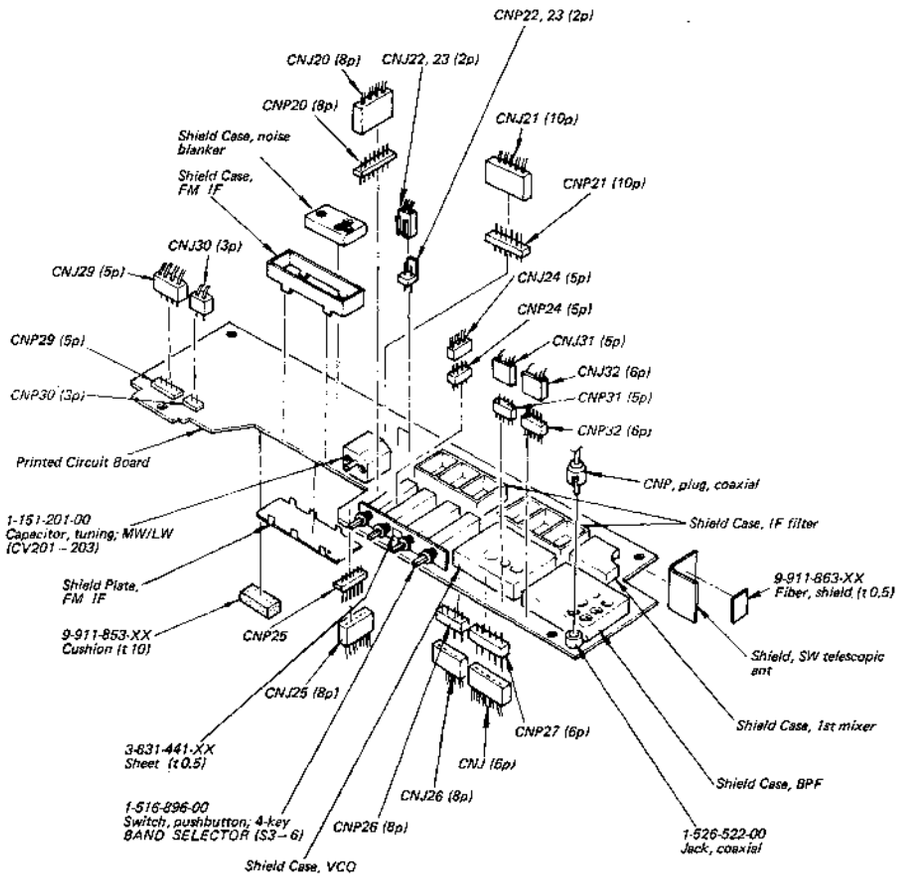
1

2

3

4

5



Note:

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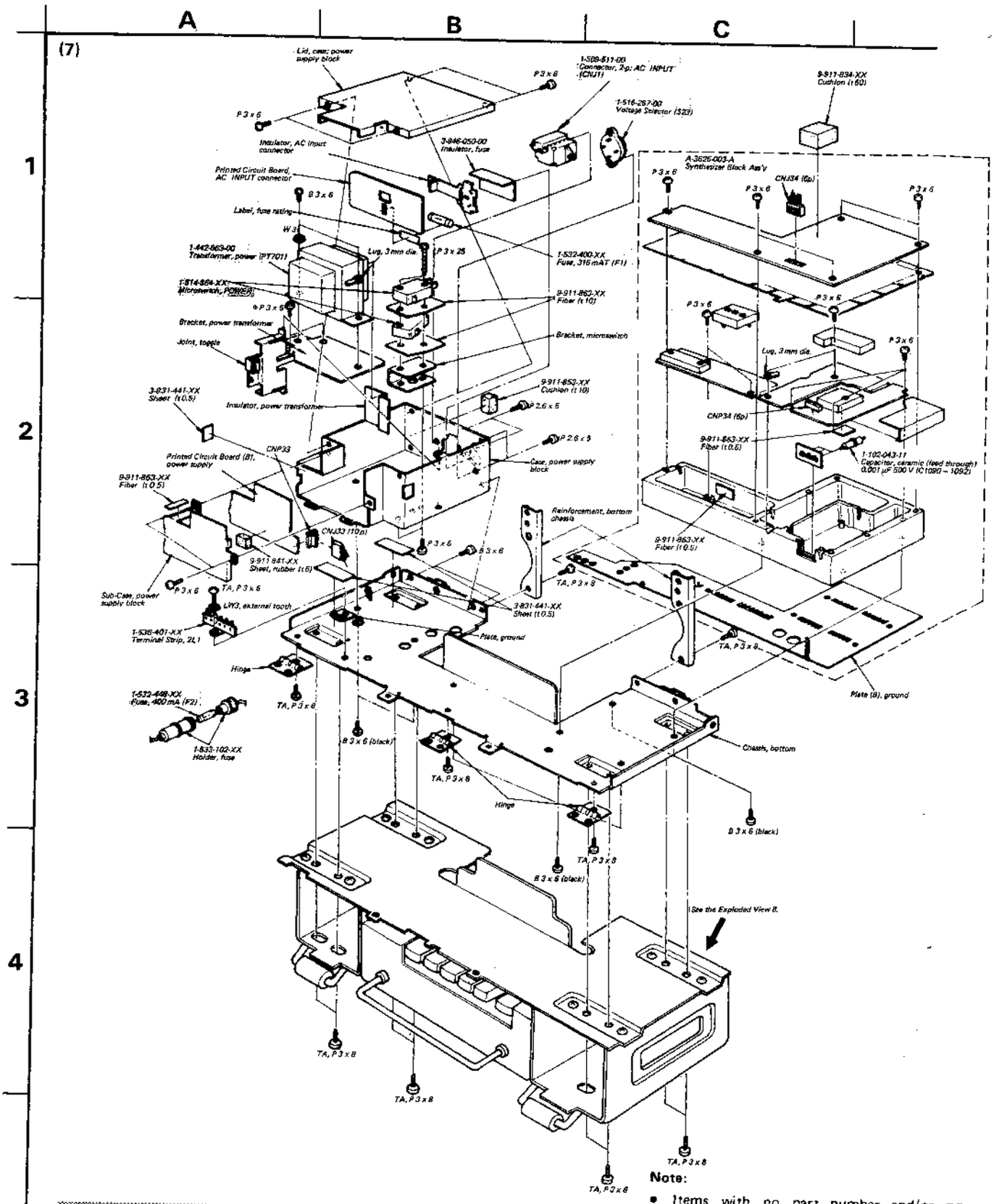
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.



Note: The components identified by shading are critical for safety. Replace only with part number specified.

Note:

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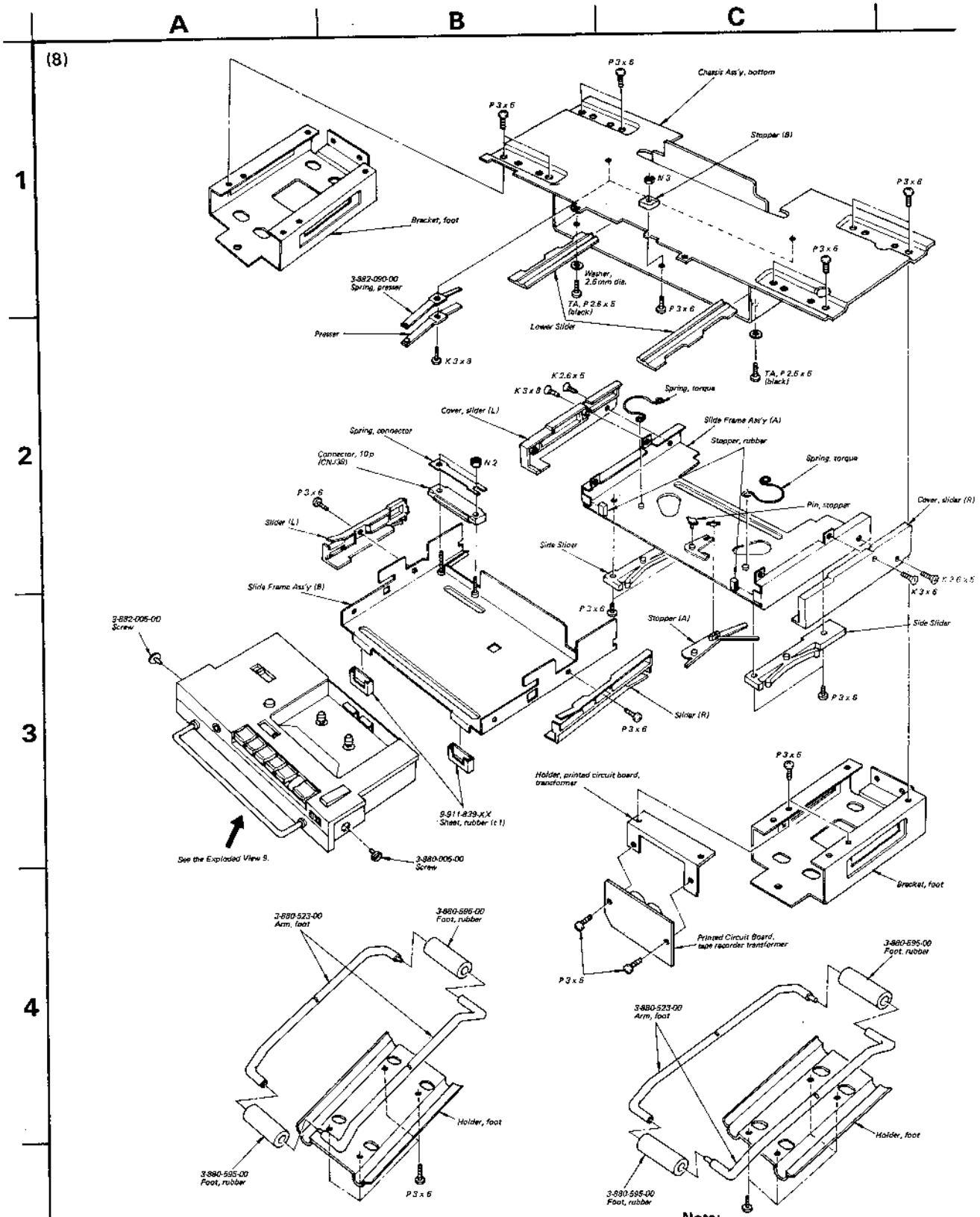
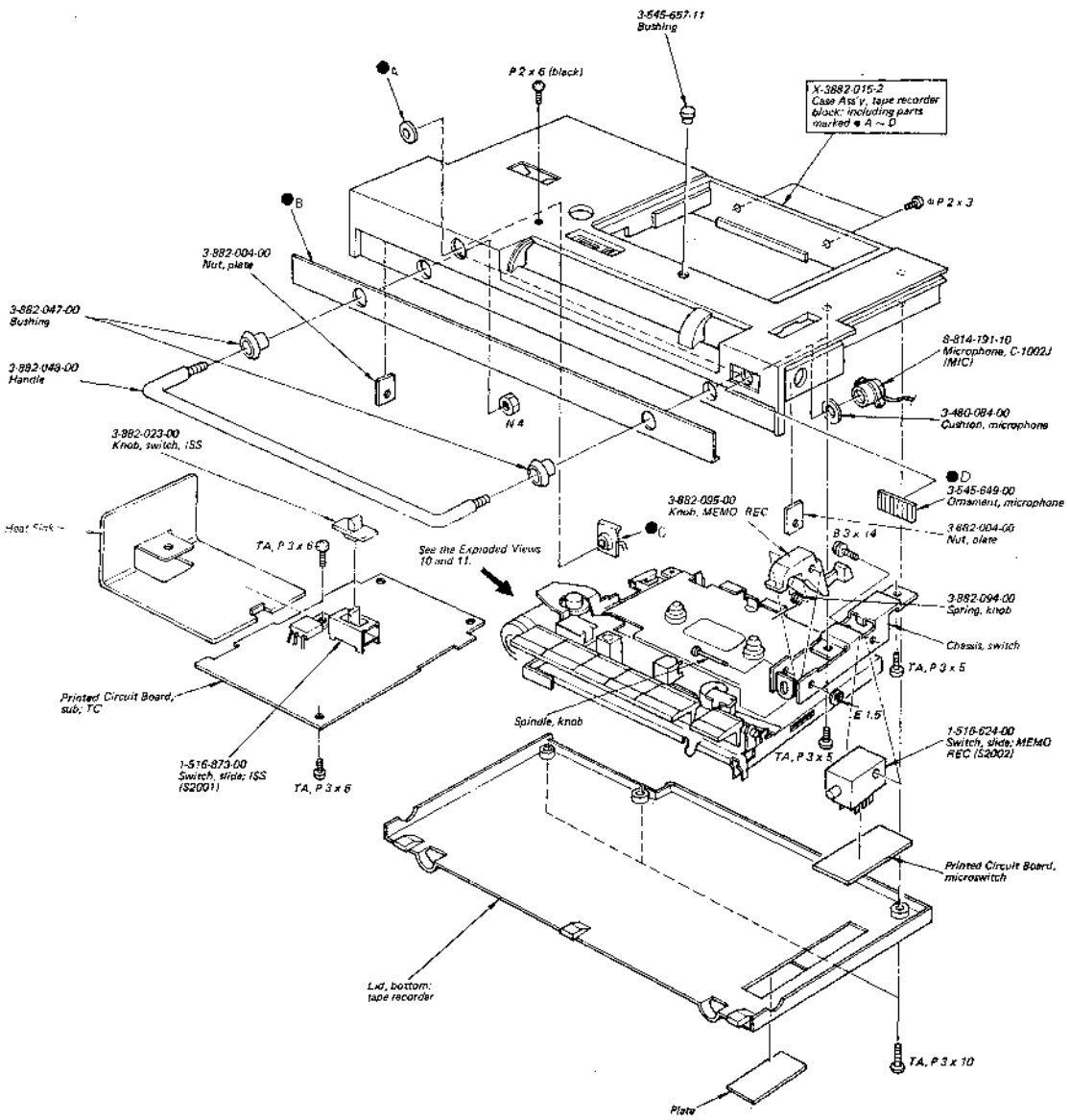
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (—) = slotted head
- (□□T) shows the number of coils in spring.

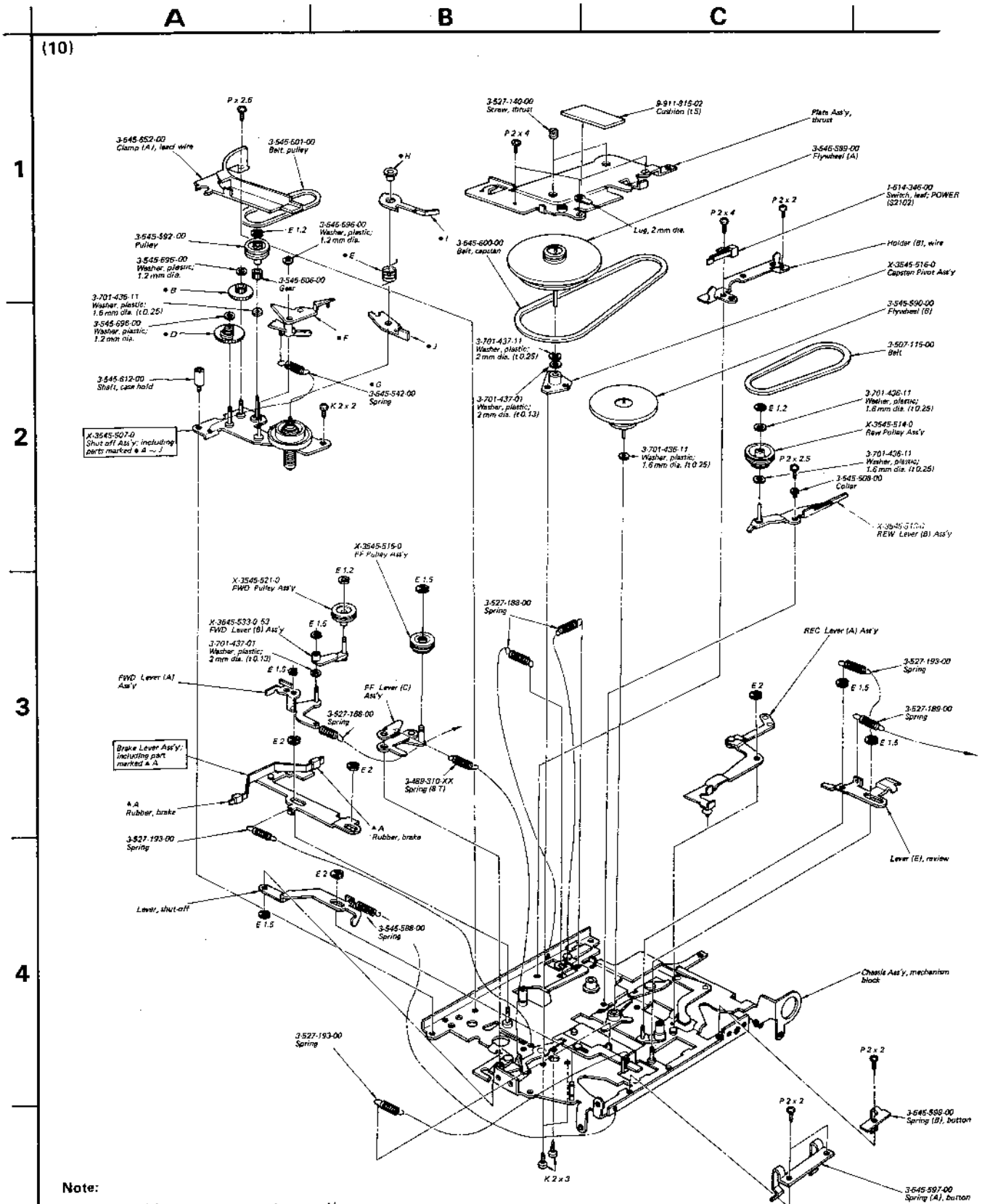
(9)



Note:

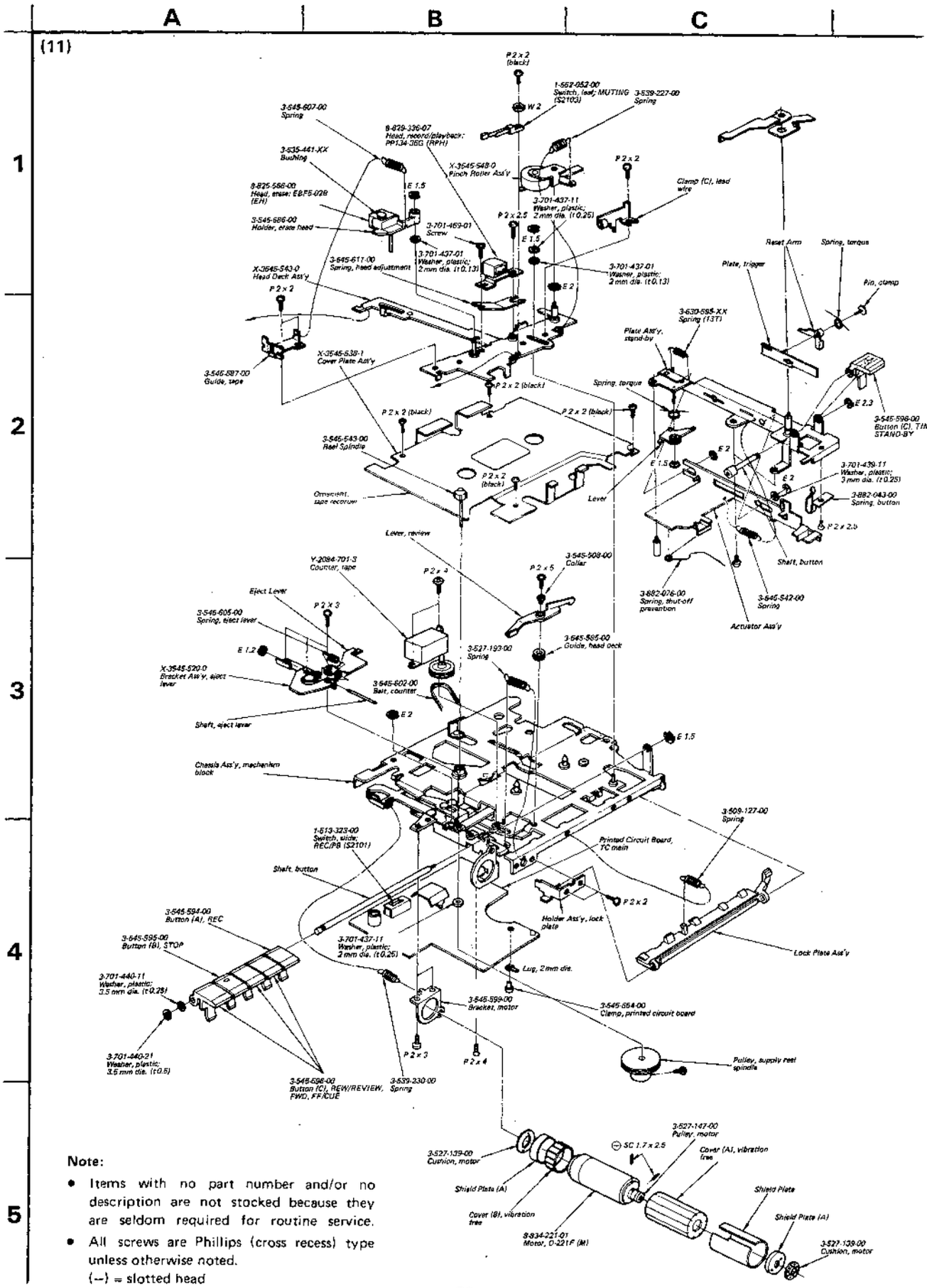
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (—) = slotted head
- (□□T) shows the number of coils in spring.

CRF-330K



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring

SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
		SEMICONDUCTORS
		Transistors
Q001		2SK42-1
Q002		2SK23A-840
Q003		2SC710
Q051		2SK42-1
Q052		2SK23A-840
Q053		2SC710
Q054		2SK23A-860
Q201		3SK37
Q202, 203		2SK23A-840
Q204		3SK37
Q205, 206		2SK23A-840
Q207 - 209		2SC710
Q210, 211		2SC710-14
Q212		2SC710-15
Q213, 214		2SC710
Q216		2SC634A
Q217		2SA678
Q218 – 221		2SC634A
Q222		2SC710-14
Q223		2SC710
Q224		2SK42-1
Q225, 226		2SC1129
Q227		3SK37
Q228		2SA634A
Q229		2SA684
Q230		2SC634A
Q231		2SA678
Q401		2SC632A
Q501		2SC634A
Q601		2SC634A
Q602, 603		2SC1429-□5
Q604		2SC634A
Q701		2SA678
Q702		2SA684
Q703 – 706		2SC634A
Q801 - 803		2SC710-14
Q804		2SC634A
Q805, 806		2SC1364
Q901,		2SK42-1
Q902, 903		2SK23A-824
Q1001, 1002		3SK37
Q1003, 1004		2SC710
Q1006		2SK23A-825
Q1007 – 1012		2SC634A
Q1013 – 1018		2SC710
Q1019, 1020		2SC641K
Q1021, 1022		2SC710
Q1023, 1024		2SC634A
Q1025, 1201		2SK23A-824
Q1202, 1203		2SC710
Q1204 – 1212		2SC1364
Q1213 – 1216		2SA678
Q2001		2SD1061
Q2002 - 2005		2SC634A
Q2101, 2102		2SC632A
Q2103, 2104		2SC634A
Q2105		2SA678
Q2106, 2107		2SC634A
Q2108		2SC1474
		ICs
IC801, 802		CX075B
IC1001		TA7060P
IC1002		SN74S113DC
IC1003, 1004		SN74162N
IC1005		μPC1008C
IC1006		HD74LS00P
IC1007		TA7060P
IC1201		34013PC
IC1202		MSM505
IC1203		MSM551H
IC1204		MSM530
IC1205 – 1207		MSM5503
IC1208 – 1210		MSM561
IC2101		CX170
IC2102		BX295A

Ref. No.	Part No.	Description
		Diodes
D001, 051		1S2687S-2
D201 – 209, D211 – 215		1S1555
D216		1T23S
D217 – 219		1S1555
D220, 221		1T23S
D223, 225		1S1555
D226, 227		1T18-0
D228 – 234		1S2222
D235		1T261
D236		RD6A
D237 – 241, D401		1S1555
D601, 602		VD1120
D701		2SB324
D702		RD5A
D703, 704		10E2
D801, 802		1T261
D803 – 807		1S1555
D1001, 1002		1T261
D1003, 1004, D1201 – 1204		1S1555
D2001, 2002		1S1555
D2003		TLR109 (LED)
D2004, D2101 – 2105		1S1555
		Thermistor
Th701	1-800-071-XX	S-300
Th1001	1-800-198-XX	S-1K
Th1002	1-800-194-00	S-90
Th2101	1-800-198-00	S-1K
		COILS
L001	1-425-909-00	FM Antenna
L002	1-425-910-00	FM RF
L003	1-425-909-00	FM Antenna
L004	1-405-750-00	FM Osc

Ref. No.	Part No.	Description
L051	1-425-929-00	Coil
L052	1-425-930-00	Coil
L053	1-425-929-00	Coil
L054	1-405-527-21	FM Osc
L201	1-407-178-XX	Microinductor, 1 µH
L210, 215	1-407-741-00	Microinductor, 18 µH
L224	1-407-864-00	RF BPF
L225	1-407-865-00	RF BPF
L228	1-407-864-00	RF BPF
L231	1-407-862-00	RF BPF
L232	1-407-863-00	RF BPF
L235	1-407-862-00	RF BPF
L261	1-401-665-00	MW/LW Ferrite-rod Antenna
L262	1-425-911-00	MW RF
L263	1-425-444-00	LW RF
L264	1-405-717-00	MW Osc
L265	1-405-716-00	LW Osc
L266	1-417-053-00	VCO Matching Transformer
L267	1-407-178-XX	Microinductor, 1 µH
L268	1-433-184-00	VCO (1)
L269	1-433-185-00	VCO (3)
L270	1-433-188-00	VCO (4)
L271	1-433-189-00	VCO (6)
L272	1-433-190-00	VCO (7)
L273	1-433-186-00	VCO (5)
L274	1-433-187-00	VCO (2)
L275	1-425-912-00	Mixing
L282, 283	1-407-661-XX	Microinductor, 470 µH
L287, 288	1-407-157-XX	Microinductor, 10 µH
L289	1-407-661-XX	Microinductor, 470 µH
L290	1-407-178-XX	Microinductor, 1 µH
L401 – 403	1-407-883-00	Microinductor, 100 mH
L701	1-407-857-00	Choke, 3 mH
L702	1-407-884-00	Choke, 6 mH
L703	1-407-857-00	Choke, 3 mH
L804	1-407-169-XX	Microinductor, 100 µH
L1010	1-407-178-XX	Microinductor, 1 µH
L1016	1-407-169-XX	Microinductor, 100 µH

Note: The components identified by shading are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description
L1021 – 1023	1-407-856-00	Choke, 1 mH
L1025, 1026	1-407-169-XX	Microinductor, 100 μH
L1201, 1202	1-407-856-00	Choke, 1 mH
L1203	1-407-175-XX	Microinductor, 330 μH
L2011	1-407-175-XX	Microinductor, 330 μH
L2031	1-407-206-XX	Microinductor, 10 mH

TRANSFORMERS

T1	1-433-105-00	Osc
T601	1-423-140-11	Input
FL201	1-403-165-00	Ceramic Filter
FL202A	1-403-888-11	Mechanical Filter
FL202B	1-403-888-21	
FL203A	1-404-024-11	Mechanical Filter
FL203B	1-404-024-21	
IFT001, 051	1-404-031-00	FM IFT
IFT202	1-404-023-00	AM IFT
IFT203	1-403-152-00	AM IFT
IFT204 – 206	1-404-023-00	AM IFT
IFT207	1-459-153-00	BFO
IFT801	1-403-959-00	FM Discriminator
IFT802	1-403-953-00	FM Discriminator
IFT803	1-403-243-00	FM IFT

CAPACITORS

All capacitors are in μF and ceramic unless otherwise noted.
50WV or less are not indicated except for electrolytics.
pF = μμF, elect = electrolytic

C001	1-102-956-11	15 p	
C002	1-161-013-11	0.01	(boundary layer)
C003, 004	1-102-960-11	24 p	
C005	1-161-013-11	0.01	(boundary layer)
C006	1-102-972-11	91 p	
C009	1-161-013-11	0.01	(boundary layer)
C011	1-102-870-11	8 p	
C012	1-102-947-11	10 p	
C013	1-102-870-11	8 p	
C014	1-161-013-11	0.01	(boundary layer)
C015	1-127-019-11	0.1 16 V	solid aluminum
C016	1-121-651-11	10 16 V	elect
C051	1-102-949-11	12 p	
C052	1-161-013-11	0.01	(boundary layer)
C053, 054	1-102-953-11	18 p	
C055	1-161-013-11	0.01	(boundary layer)
C056	1-102-972-11	91 p	
C059	1-161-013-11	0.01	(boundary layer)
C061	1-102-858-11	10 p	
C062	1-102-944-11	7 p	
C063	1-102-663-11	8 p	
C065	1-127-019-11	0.1 16 V	solid aluminum
C066	1-121-651-11	10 16 V	elect
C067	1-101-978-11	10 p	
C100	1-103-733-11	0.0022 50 V	polystyrol
C101	1-103-729-11	0.0015 50 V	polystyrol
C102	1-103-728-11	0.0013 50 V	polystyrol
C103	1-107-082-11	75 p	silvered mica
C105	1-101-882-11	51 p	
C106	1-102-946-11	9 p	
C107	1-102-975-11	100 p	
C201 – 203	1-101-118-11	0.01	
C204	1-101-361-11	150 p	
C205	1-107-082-11	75 p	silvered mica
			silvered mica
C206	1-107-068-11	20 p	silvered mica
C207 – 209	1-161-013-11	0.01	(boundary layer)
C210	1-102-979-11	240 p	
C211	1-107-081-11	68 p	silvered mica
C212	1-107-102-11	5 p	silvered mica
C213	1-101-367-11	160 p	silvered mica
C214	1-121-651-11	10 16 V	elect
C215	1-161-013-11	0.01	(boundary layer)
C216	1-107-079-11	56 p	silvered mica
C217	1-161-013-11	0.01	(boundary layer)
C218	1-107-075-11	39 p	silvered mica

Ref. No.	Part No.	Description		
C219	1-107-086-11	110 p		silvered mica
C220	1-107-072-11	30 p		silvered mica
C221	1-107-086-11	110 p		silvered mica
C222	1-107-075-11	39 p		silvered mica
C223	1-121-651-11	10	16 V	elect
C224	1-107-078-11	51 p		silvered mica
C225	1-161-013-11	0.01		(boundary layer)
C226	1-107-074-11	36 p		silvered mica
C227	1-161-013-11	0.01		(boundary layer)
C228	1-107-067-11	18 p		silvered mica
C229	1-107-081-11	68 p		silvered mica
C230	1-107-066-11	16 p		silvered mica
C231	1-107-081-11	68 p		silvered mica
C232	1-107-067-11	18 p		silvered mica
C233	1-107-071-11	27 p		silvered mica
C234	1-121-651-11	10	16 V	elect
C235	1-161-013-11	0.01		(boundary layer)
C236	1-102-507-11	9 p		
C237	1-161-013-11	0.01		(boundary layer)
C238	1-102-511-11	13 p		
C239	1-102-516-11	27 p		
C240	1-102-510-11	12 p		
C241	1-102-516-11	27 p		
C242	1-102-511-11	13 p		
C243	1-102-501-11	1 p		
C244	1-121-651-11	10	16 V	elect
C245	1-161-013-11	0.01		(boundary layer)
C246	1-102-505-11	6 p		
C247	1-161-013-11	0.01		(boundary layer)
C248	1-102-864-11	5 p		
C249	1-102-514-11	22 p		
C250	1-102-504-11	4 p		
C251	1-102-514-11	22 p		
C252	1-102-864-11	5 p		
C254	1-121-651-11	10	16 V	elect
C255	1-161-013-11	0.01		(boundary layer)
C264	1-107-077-11	47 p		silvered mica
C265	1-102-125-11	0.0047		
C266	1-107-079-11	56 p		silvered mica

Ref. No.	Part No.	Description		
C267	1-107-078-11	51 p		silvered mica
C268	1-102-074-11	0.001		
C272	1-107-078-11	51 p		silvered mica
C273, 274	1-107-079-11	56 p		silvered mica
C276	1-107-233-11	430 p		silvered mica
C277	1-102-125-11	0.0047		
C278	1-107-078-11	51 p		silvered mica
C280	1-102-944-11	7 p		
C281 – 290	1-101-924-11	0.022		
C284	1-108-239-12	0.01		mylar
C294	1-108-242-12	0.022		mylar
C295	1-101-924-11	0.022		
C296	1-107-079-11	56 p		silvered mica
C297, 298	1-108-239-12	0.01		mylar
C299	1-107-235-11	510 p		silvered mica
C302	1-108-563-12	0.0022		mylar
C303	1-101-924-11	0.022		
C304	1-121-391-11	1	50 V	elect
C305, 306	1-108-244-12	0.033		mylar
C307	1-102-942-11	5 p		
C308	1-102-949-11	12 p		
C309	1-102-679-11	120 p		
C310	1-103-714-11	360 p	50 V	polystyrol
C312	1-102-964-11	36 p		
C313, 314	1-102-947-11	10 p		
C315	1-108-242-12	0.022		mylar
C318	1-121-414-11	100	6.3 V	elect
C319	1-102-125-11	0.0047		
C321	1-102-504-11	4 p		
C322	1-102-751-11	22 p		
C323	1-102-526-11	75 p		
C324	1-101-999-11	10 p		
C325	1-102-755-11	43 p		
C326	1-102-743-11	3 p		
C328	1-102-112-11	330 p		
C329 – 335	1-102-125-11	0.0047		
C337	1-102-505-11	6 p		
C338	1-102-074-11	0.001		
C340	1-102-074-11	0.001		

Ref. No.	Part No.	Description		
C341	1-121-413-11	100	6.3 V	elect
C345	1-101-924-11	0.022		
C346	1-107-235-11	510 p		silvered mica
C350	1-107-071-11	27 p		silvered mica
C351	1-101-924-11	0.022		
C353	1-108-242-12	0.022		mylar
C356, 357	1-108-242-12	0.022		mylar
C358	1-101-924-11	0.022		
C359	1-121-651-11	10	16 V	elect
C360, 361	1-101-924-11	0.022		
C362	1-102-832-11	330 p		
C363	1-121-651-11	10	16 V	elect
C364	1-102-114-11	470 p		
C365	1-127-022-11	0.47	16 V	solid aluminum
C367	1-127-023-11	1	10 V	solid aluminum
C368	1-107-102-11	5 p		silvered mica
C371	1-108-239-12	0.01		mylar
C372	1-108-242-12	0.022		mylar
C373	1-101-924-11	0.022		
C374	1-107-085-11	100 p		silvered mica
C377	1-123-070-11	2200	16 V	elect
C378	1-121-943-11	1000	10 V	elect
C380	1-108-234-12	0.0047		mylar
C383, 384	1-101-924-11	0.022		
C385	1-102-934-11	1 p		
C386	1-102-935-11	2 p		
C387	1-161-013-11	0.01		(boundary layer)
C390	1-127-023-11	1	10 V	solid aluminum
C401	1-127-018-11	0.047	10 V	solid aluminum
C402	1-108-244-12	0.033		mylar
C403	1-121-951-11	0.47	50 V	elect
C404	1-127-019-11	0.1	10 V	solid aluminum
C405	1-127-022-11	0.47	10 V	solid aluminum
C406	1-127-020-11	0.22	10 V	solid aluminum
C407	1-121-415-11	100	16 V	elect
C408	1-102-099-11	0.0015		
C409	1-108-244-12	0.033		mylar
C410	1-161-015-11	0.015		(boundary layer)

Ref. No.	Part No.	Description		
C411	1-161-021-11	0.47		(boundary layer)
C412	1-127-019-11	0.1	10 V	solid aluminum
C501	1-127-377-11	0.22	16 V	solid aluminum
C502	1-101-918-11	0.001		
C504	1-121-415-11	100	16 V	elect
C505	1-127-377-11	0.22	16 V	solid aluminum
C506	1-127-018-11	0.0047	10 V	solid aluminum
C507	1-127-378-11	0.68	10 V	solid aluminum
C509	1-127-378-11	0.68	10 V	solid aluminum
C601	1-121-415-11	100	16 V	elect
C602	1-127-377-11	0.22	16 V	solid aluminum
C603	1-102-975-11	100 p		
C604	1-102-074-11	0.001		
C605	1-121-479-11	22	16 V	elect
C606	1-161-015-11	0.015		(boundary layer)
C607	1-161-019-11	0.033		(boundary layer)
C608, 609	1-121-521-11	330	16 V	elect
C610	1-127-203-11	0.33	16 V	solid aluminum
C611, 612	1-121-939-11	470	16 V	elect
C613	1-102-123-11	0.0033		
C614	1-102-119-11	0.0015		
C701	1-123-078-11	2200	6.3 V	elect
C702	1-121-944-11	1000	16 V	elect
C704	1-108-232-12	0.0033		mylar
C705	1-101-923-11	0.01		
C706	1-108-234-12	0.0047		mylar
C707	1-107-093-11	220 p		silvered mica
C708	1-121-944-11	1000	16 V	elect
C709, 710	1-121-660-11	2200	16 V	elect
C711, 712	1-108-381-12	0.022	100 V	mylar
C805	1-121-413-11	100	6.3 V	elect
C810	1-101-924-11	0.022		
C812	1-102-964-11	36 p		
C813	1-101-924-11	0.022		
C814	1-108-234-12	0.0047		mylar
C815	1-121-651-11	10	16 V	elect
C816	1-108-228-12	0.0015		

Note: The components identified by shading are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description		
C817	1-127-022-11	0.47	16 V	solid aluminum
C819	1-102-962-11	30 p		
C823	1-102-940-11	3 p		
C824	1-131-196-11	2.2	20 V	tantalum
C825	1-102-940-11	3 p		
C829	1-127-019-11	0.1	16 V	solid aluminum
C832	1-101-924-11	0.022		
C835	1-121-982-11	470	6.3 V	elect
C836	1-121-426-11	470	16 V	elect
C901	1-102-648-11	43 p		
C902	1-102-672-11	24 p		
C904	1-107-068-11	20 p		silvered mica
C905	1-107-089-11	150 p		silvered mica
C906	1-107-092-11	200 p		silvered mica
C907	1-108-279-12	0.015		mylar
C908	1-107-099-11	2 p		silvered mica
C909	1-107-098-11	1 p		silvered mica
C910	1-108-279-12	0.015		mylar
C911	1-107-071-11	27 p		silvered mica
C912	1-107-085-11	100 p		silvered mica
C913, 914	1-108-279-12	0.015		mylar
C1002	1-102-953-11	18 p		
C1004, 1005	1-107-087-11	120 p		silvered mica
C1007 – 1009	1-107-097-11	330 p		silvered mica
C1010 – 1012	1-107-087-11	120 p		silvered mica
C1013	1-102-949-11	12 p		
C1016, 1017	1-107-087-11	120 p		silvered mica
C1018	1-102-949-11	12 p		
C1021, 1022	1-107-087-11	120 p		silvered mica
C1024	1-161-013-XX	0.01		(boundary layer)
C1025, 1026	1-101-923-11	0.01		
C1028	1-101-923-11	0.01		
C1029	1-101-924-11	0.022		
C1030	1-102-506-11	7 p		
C1031	1-102-503-11	3 p		
C1032	1-102-512-11	16 p		

Ref. No.	Part No.	Description		
C1033	1-102-503-11	3 p		
C1034	1-102-505-11	6 p		
C1035 – 1037	1-101-923-11	0.01		
C1038, 1039	1-101-924-11	0.022		
C1040	1-102-864-11	5 p		
C1041	1-102-951-11	15 p		
C1042	1-102-504-11	4 p		
C1043	1-102-948-11	11 p		
C1044	1-102-943-11	6 p		
C1045	1-102-949-11	12 p		
C1046	1-102-503-11	3 p		
C1047	1-161-013-11	0.01		(boundary layer)
C1049	1-101-924-11	0.022		
C1055	1-101-923-11	0.01		
C1059	1-102-121-11	0.0022		
C1060 – 1065	1-101-923-11	0.01		
C1066	1-102-977-11	200 p		
C1067	1-102-973-11	100 p		
C1068	1-161-021-11	0.0047		(boundary layer)
C1069	1-107-070-11	24 p		silvered mica
C1070	1-102-409-11	30 p		
C1071, 1072	1-102-121-11	0.0022		
C1073	1-121-413-11	100	6.3 V	elect
C1074	1-121-352-11	47	10 V	elect
C1075, 1076	1-131-236-11	1	25 V	tantalum
C1077	1-102-121-11	0.0022		
C1078	1-101-880-11	47 p		
C1079, 1080	1-107-093-11	220 p		silvered mica
C1081	1-102-963-11	33 p		
C1082, 1083	1-103-714-11	360 p		polystyrol
C1084	1-102-963-11	33 p		
C1085, 1086	1-108-555-12	0.001		mylar
C1090 – 1092	1-102-043-11	0.001	500 V	feed-through
C1094	1-121-391-11	1	50 V	elect
C1095	1-101-880-11	47 p		

Ref. No.	Part No.	Description		
C1096, 1097	1-121-414-11	100	10 V	elect
C1098	1-107-061-11	10 p		silvered mica
C1099	1-161-013-11	0.01		(boundary layer)
C1100, 1101	1-102-961-11	27 p		
C1102	1-102-977-11	200 p		
C1103	1-101-923-11	0.01		
C1104	1-101-924-11	0.022		
C1105	1-127-019-11	0.1	10 V	solid aluminum
C1106	1-101-919-11	0.0022		
C1107	1-102-043-11	0.001	500 V	feed-through
C1108	1-102-934-11	1 p		
C1201	1-121-424-11	470	6.3 V	elect
C1203	1-131-193-11	10	10 V	tantalum
C1207	1-131-392-11	33	3.15 V	tantalum
C1210	1-101-890-11	75 p		
C1211, 1212	1-108-563-12	0.0022		mylar
C1213	1-127-019-11	0.1	10 V	solid aluminum
C1301	1-121-651-11	10	16 V	elect
C2001	1-121-963-11	33	25 V	elect
C2021	1-121-352-11	47	10 V	elect
C2022	1-121-726-11	0.47	50 V	elect
C2031	1-108-575-12	0.0068		mylar
C2051	1-108-234-12	0.0047		mylar
C2052	1-108-227-12	0.001		mylar
C2110	1-131-387-11	47	6.3 V	tantalum
C2101	1-131-169-11	0.47	10 V	tantalum
C2102	1-131-202-11	1.5	20 V	tantalum
C2103	1-131-380-11	33	10 V	tantalum
C2104	1-105-669-12	0.0047		mylar
C2105	1-161-190-11	0.001		(boundary layer)
C2106	1-105-669-12	0.0047		mylar
C2108	1-107-123-11	47 p		silvered mica
C2109	1-131-170-11	3.3	10 V	tantalum
C2111	1-131-173-11	33	10 V	tantalum
C2112	1-131-202-11	1.5	20 V	tantalum
C2113	1-161-190-11	0.001		(boundary layer)
C2114	1-131-380-11	33	10 V	tantalum
C2115	1-131-387-11	47	6.3 V	tantalum

Ref. No.	Part No.	Description		
C2116	1-131-375-11	4.7	10 V	tantalum
C2117	1-121-419-11	220	6.3 V	elect
C2118	1-131-368-11	3.3	16 V	tantalum
C2119	1-131-177-11	100	3 V	tantalum
C2120	1-131-244-11	1	6.3 V	tantalum
C2121	1-105-673-12	0.01		mylar
C2122	1-105-719-12	0.033		mylar
C2123	1-105-669-12	0.0047		mylar
C2124	1-131-375-11	4.7	10 V	tantalum
C2125	1-131-170-11	3.3	10 V	tantalum
C2126	1-121-420-11	220	10 V	elect
C2127	1-131-395-11	100	3 V	tantalum
C2128	1-131-377-11	33	10 V	tantalum
C2129	1-161-190-11	0.001		(boundary layer)
C2132	1-161-190-11	0.001		(boundary layer)
C2133	1-131-368-11	3.3	16 V	tantalum
C2134	1-108-249-12	0.068		mylar
	1-161-001-11	0.001		(boundary layer)
CT1001 – 1003	1-141-171-11	Trimmer		
CT201 – 206	1-141-171-XX	Trimmer		
CT207	1-141-138-XX	Trimmer		
CT208	1-141-174-00	Trimmer		
CT209 – 212	1-141-138-XX	Trimmer		
CT901	1-141-175-00	Trimmer		
CV001 – 004	1-151-223-XX	Tuning		
CV051 – 054	1-151-223-11	Tuning		
CV101	1-151-266-XX	Tuning		
CV201 – 203	1-151-201-00	Tuning		

RESISTORS

All resistors are in ohms. Common ¼ W carbon resistors are omitted. Check schematic diagram for values.

R210, 214 R218, 222 R226	1-212-879-11	82	fusible
R235, 239 R244, 321	1-212-881-11	100	fusible

Note: The components identified by shading are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description		
R363	1-212-857-11	10		fusible
R501	1-206-475-11	33	2 W	metal-oxide
R511	1-244-837-11	33	½ W	carbon
R610	1-212-869-11	33	½ W	fusible
R618, 619	1-207-459-11	0.47	½ W	wirewound
R620	1-212-857-11	10		fusible
R714	1-202-723-11	2.2 M	½ W	composition
R836	1-212-869-11	33		fusible
R1267	1-212-941-11	2	½ W	fusible
R2005	1-212-857-11	10		fusible
R2101, 2102	1-209-878-11	1.8 k	1/16 W	carbon
R2103	1-209-781-11	10	1/16 W	carbon
R2108	1-210-381-11	33	1/16 W	carbon
R2112	1-209-768-11	2.2 k	1/16 W	carbon
R2113	1-210-113-11	18 k	1/16 W	carbon
R2114	1-210-371-11	1.6 k	1/16 W	carbon
R2115	1-210-363-11	270	1/16 W	carbon
R2116	1-210-381-11	33 k	1/16 W	carbon
R2119	1-210-363-11	270	1/16 W	carbon
R2121	1-209-768-11	2.2 k	1/16 W	carbon
R2122	1-209-113-11	18 k	1/16 W	carbon
R2123	1-209-774-11	5.1 k	1/16 W	carbon
R2124	1-209-770-11	2.7 k	1/16 W	carbon
R2125	1-210-388-11	68 k	1/16 W	carbon
R2126	1-210-392-11	75	1/16 W	carbon
R2127	1-210-101-11	51	1/16 W	carbon
R2128	1-210-846-11	33	1/16 W	carbon
R2129	1-209-770-11	2.7 k	1/16 W	carbon
R2130	1-209-774-11	5.1 k	1/16 W	carbon
R2131	1-210-111-11	12 k	1/16 W	carbon
R2132	1-209-781-11	10 k	1/16 W	carbon
R2135, 2136	1-210-371-11	1.6 k	1/16 W	carbon
R2137	1-210-102-11	150	1/16 W	carbon
R2142		1.2 k	1/16 W	carbon
R2144	1-210-105-11	560	1/16 W	carbon
VR201	1-224-642-XX	1 k, adjustable; first mixer balance		
VR202	1-224-644-XX	4.7 k, adjustable; blank level		
VR501) 503	1-224-207-00	20 k, variable; TREBLE, BASS, VOLUME		

Ref. No.	Part No.	Description
VR1001	1-224-649-XX	200 k, adjustable; SW spurious beat
VR1401	1-224-820-00	20 k, variable; RF GAIN
	SWITCHES	
S1	1-514-304-00	Slide, antenna selector
S2	1-516-893-00	Micro, SW antenna coil select
S3 – 6	1-516-896-00	Pushbutton, 4-key; BAND SELECTOR
S8 – 12	1-516-895-00	Pushbutton, 5-key; MODE
S14 – 16	1-516-898-00	Rotary, NOISE BLANKER, AFC, MUTING
S17	1-516-624-00	Slide, TIMER ON
S18 – 20	1-514-533-XX	Micro, BATT CHECK, LIGHT, ZERO SECOND
S21, 22	1-514-864-XX	Micro, POWER
S23	1-516-267-00	Voltage Select
S26	1-516-965-00	Rotary, SW BAND SELECTOR
S27 – 29	1-516-892-00	Rotary, SW BAND SELECTOR
S001	1-552-053-00	Pushbutton, 2-key, FM
S2001	1-516-873-00	Slide, ISS
S2002	1-516-624-00	Slide, MEMO REC
S2003	1-516-898-XX	Rotary, FUNCTION
S2101	1-513-323-00	Slide, REC/PB
S2102	1-514-346-00	Leaf, POWER
S2103	1-552-052-00	Leaf, MUTING
	JACKS	
J501 – 505	1-507-369-00	Jack, 5-unit; earphone, AUX IN
J1401	1-507-440-00	Jack, HEADPHONES
	FUSES	
F1	1-532-400-XX	315 mA
F2	1-532-448-XX	400 mA
	MISCELLANEOUS	
ANT1	1-501-104-00	SW Telescopic Antenna
ANT2	1-501-103-00	FM Telescopic Antenna

Note: The components identified by shading are critical for safety. Replace only with part number specified.

9-950-367-21

Sony Corporation

77K0545-2
Printed in Japan

FM/SW/MW/LW 33-BAND RADIO RECEIVER

CRF-330K

US Model
Serial No. 10201 and later

Canadian Model

E Model

AEP Model

SUPPLEMENT

This supplement updates the service manual to include the production changes in US model and to cover information for Canadian, E and AEP models.
File this supplement with the service manual.

No. 1
October, 1977

SONY®
SERVICE MANUAL

CRF-330K

1. MODEL IDENTIFICATION

– Specification Label –

USA, Canadian model

SONY® WORLD ZONE MODEL NO. CRF-330K
FM/SW/MW/LW 33 BAND RADIO RECEIVER

FREQ RANGE:
FM1 76–90 MHz FM2 87.5–108 MHz LW 150–400 kHz
MW 530–1605 kHz SW 1.6–30.0 MHz (29 BANDS)
IF: FM 10.7 MHz SW 1st 45.145 MHz 2nd 455 kHz MW, LW 455 kHz
BATTERY SUPPLY:
1.5 V x 8 USE SIZE "D" STANDARD FLASHLIGHT BATT OR EQUIVALENT

EXT DC POWER SUPPLY: 12 V 900 mA
AC POWER SUPPLY: 120 V 12.5 W 60 Hz
CLOCK: QUARTZ CLOCK CRYSTAL FREQ 32.768 kHz BATT SUPPLY 1.5 V x 1 USE SIZE "D" STANDARD FLASHLIGHT BATT OR EQUIVALENT

SERIAL NO.

CERTIFICATION: DESIGN CERTIFIED AS COMPLYING WITH F.C.C. RULES PART 15, IN EFFECT AS OF DATE OF MANUFACTURE.

CAUTION
TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONEL.

ATTENTION
AFIN DE PREVENIR UN CHOC ELECTRIQUE NE PAS ENLEVER LE COUVERCLE. IL NE SE TROUVE A L'INTERIEOR AUDUNE PIECE POUVANT ETRE REPAREE PAR L'USAGER S'ADRESSER A UN REPARATEUR COMPETENT

MADE IN JAPAN

AEP model

SONY® WORLD ZONE MODEL NO. CRF-330K
FM/SW/MW/LW 33 BAND RADIO RECEIVER

FREQ RANGE: FM1 76–90 MHz FM2 87.5–108 MHz
LW 150–400 kHz MW 530–1605 kHz
SW 1.6–30.0 MHz (29 BANDS)
IF: FM 10.7 MHz SW 1st 45.145 MHz 2nd 455 kHz
MW, LW 455 kHz
BATTERY SUPPLY (1.5 V ⎓) x 8 USE SIZE "D" STANDARD FLASHLIGHT BATT OR EQUIVALENT
EXT DC POWER SUPPLY: 12 V ⎓ 900 mA
AC POWER SUPPLY: 110, 120, 220, 240 V ~ 12.5 W 50/60 Hz
CLOCK: QUARTZ CLOCK CRYSTAL FREQ 32.768 kHz BATT SUPPLY (1.5 V ⎓) x 1 USE SIZE "D" STANDARD FLASHLIGHT BATT OR EQUIVALENT

SERIAL NO.

CAUTION: TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

MADE IN JAPAN

E model

SONY® WORLD ZONE MODEL NO. CRF-330K
FM/SW/MW/LW 33 BAND RADIO RECEIVER

FREQ RANGE: FM1 76–90 MHz FM2 87.5–108 MHz
LW 150–400 kHz MW 530–1605 kHz
SW 1.6–30.0 MHz (29 BANDS)
IF: FM 10.7 MHz SW 1st 45.145 MHz 2nd 455 kHz
MW, LW 455 kHz
BATT SUPPLY: 1.5 V x 8 USE SIZE "D" STANDARD FLASHLIGHT BATT OR EQUIV
EXT DC POWER SUPPLY: 12 V 900 mA
AC POWER SUPPLY: 110, 120, 220, 240 V 12.5 W 50/60 Hz
CLOCK: QUARTZ CLOCK CRYSTAL FREQ: 32.768 kHz
BATT SUPPLY: 1.5 V x 1 USE SIZE "D" STANDARD FLASHLIGHT BATT OR EQUIV

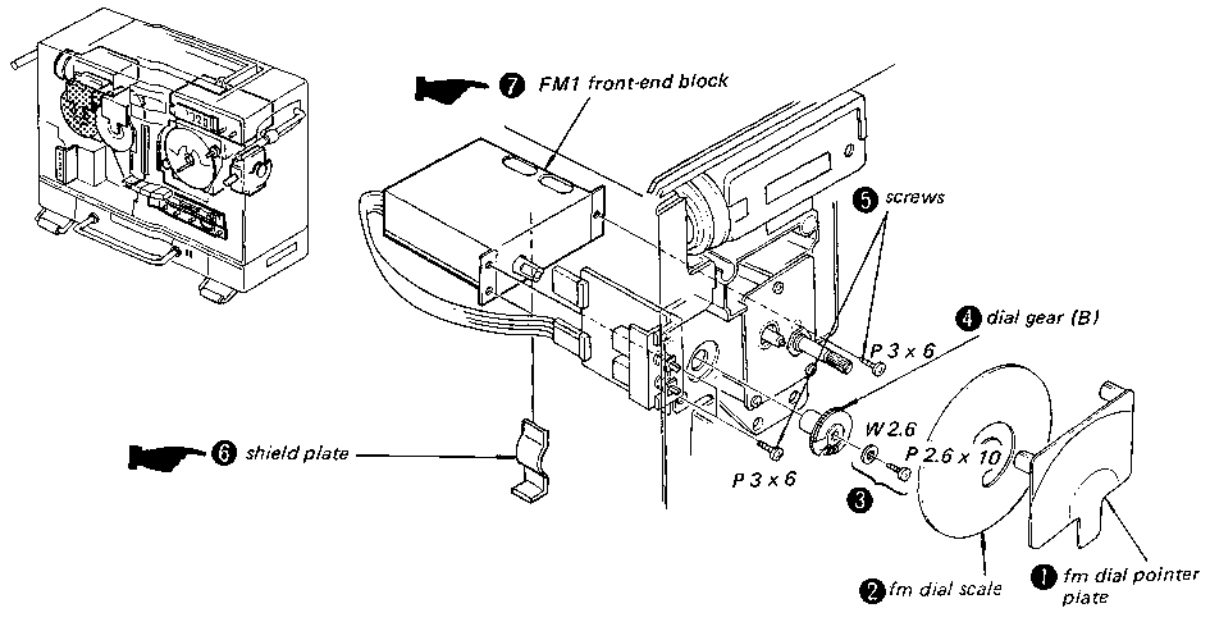
SERIAL NO.

MADE IN JAPAN

2. DISASSEMBLY

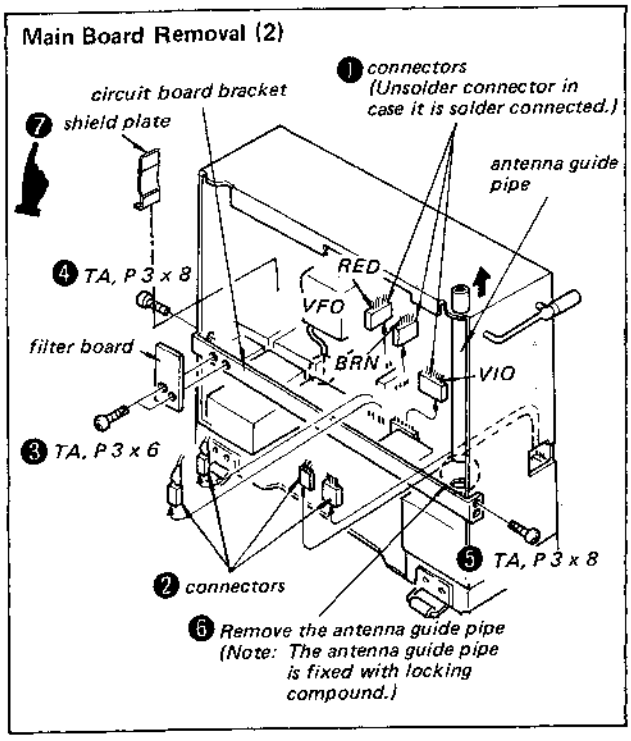
Page 18: ☛ : changed portions

FM1 Front-end Block Removal



Page 28:

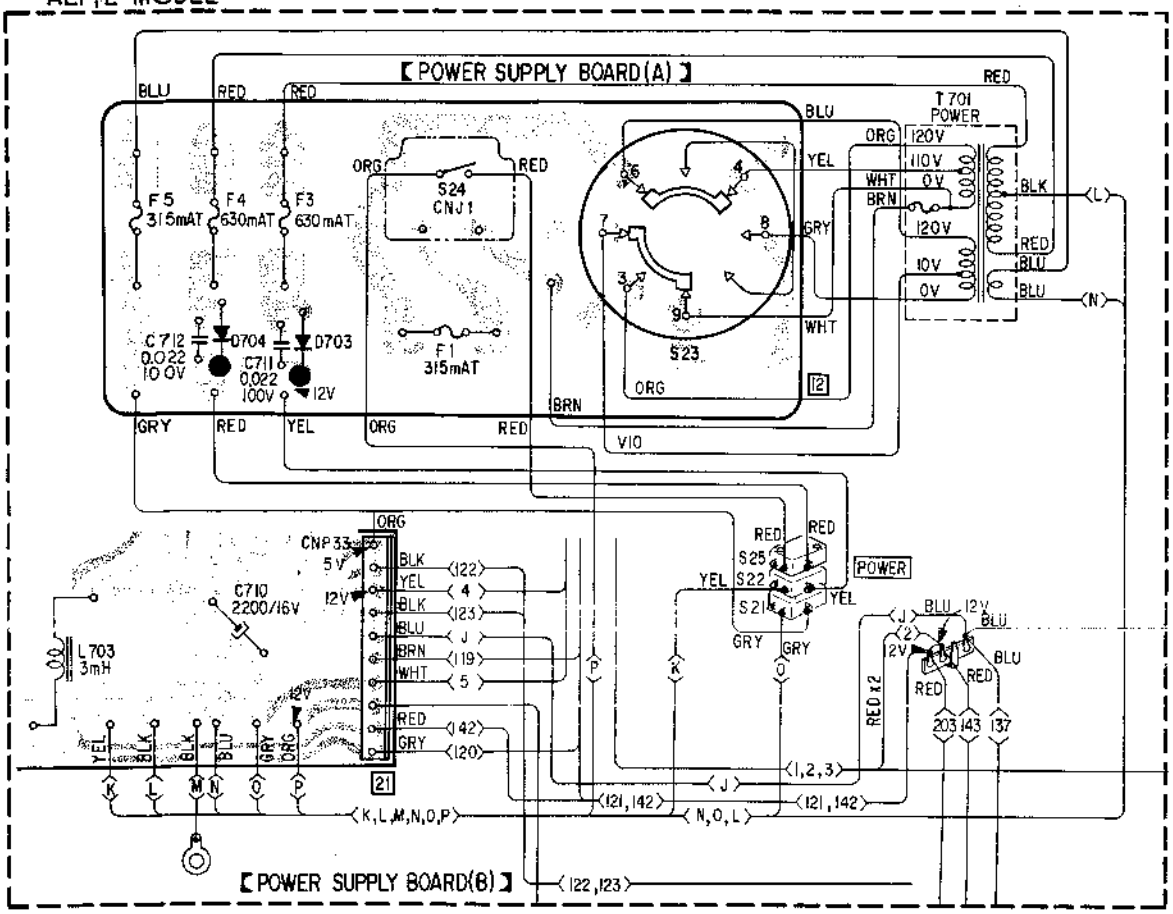
Main Board Removal (2)



3. MOUNTING DIAGRAM

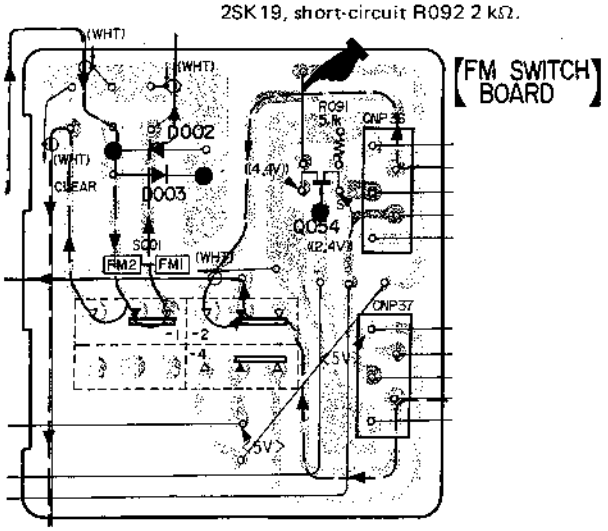
: changed portion

AEP,E MODEL



Note:

When replacing Q054 2SK23A with 2SK19, short-circuit R092 2 kΩ.



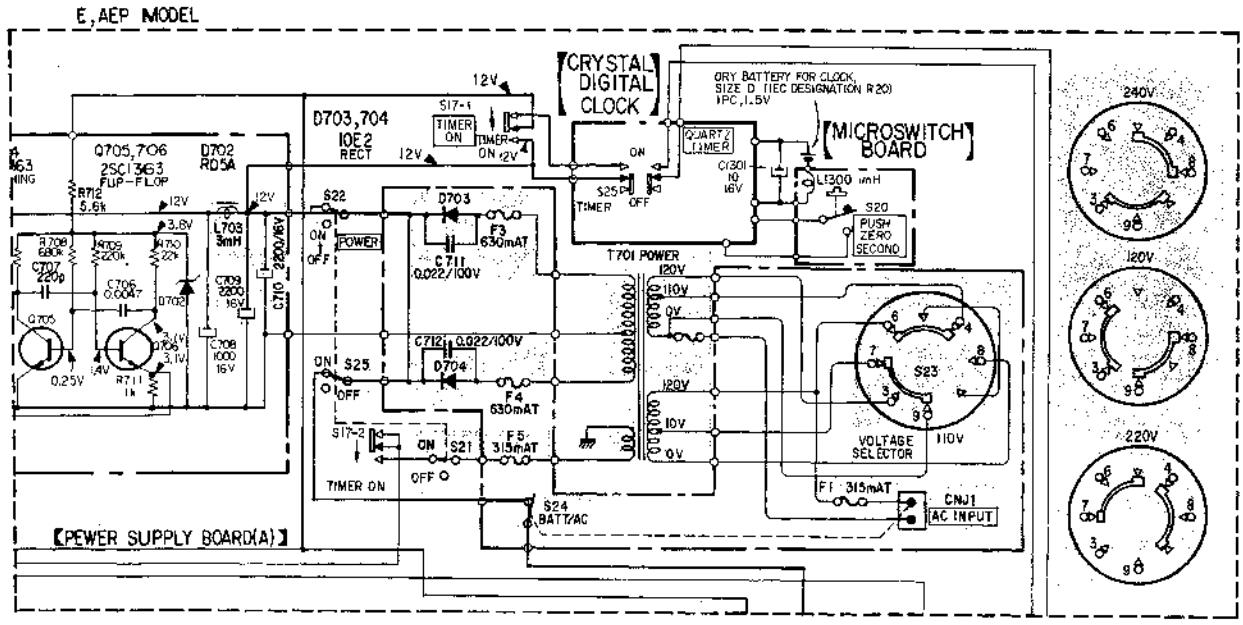
: B+ pattern

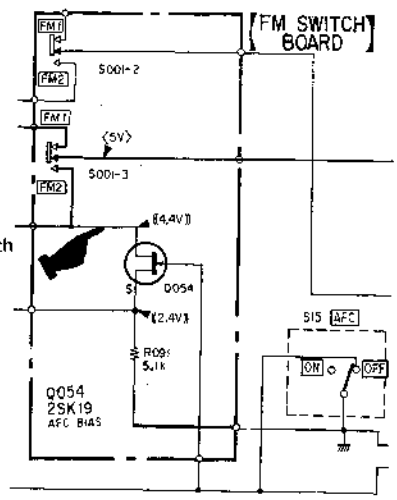
4. SCHEMATIC DIAGRAM

Note: The components identified by shading are critical for safety. Replace only with part number specified.

: changed portions

E, AEP MODEL

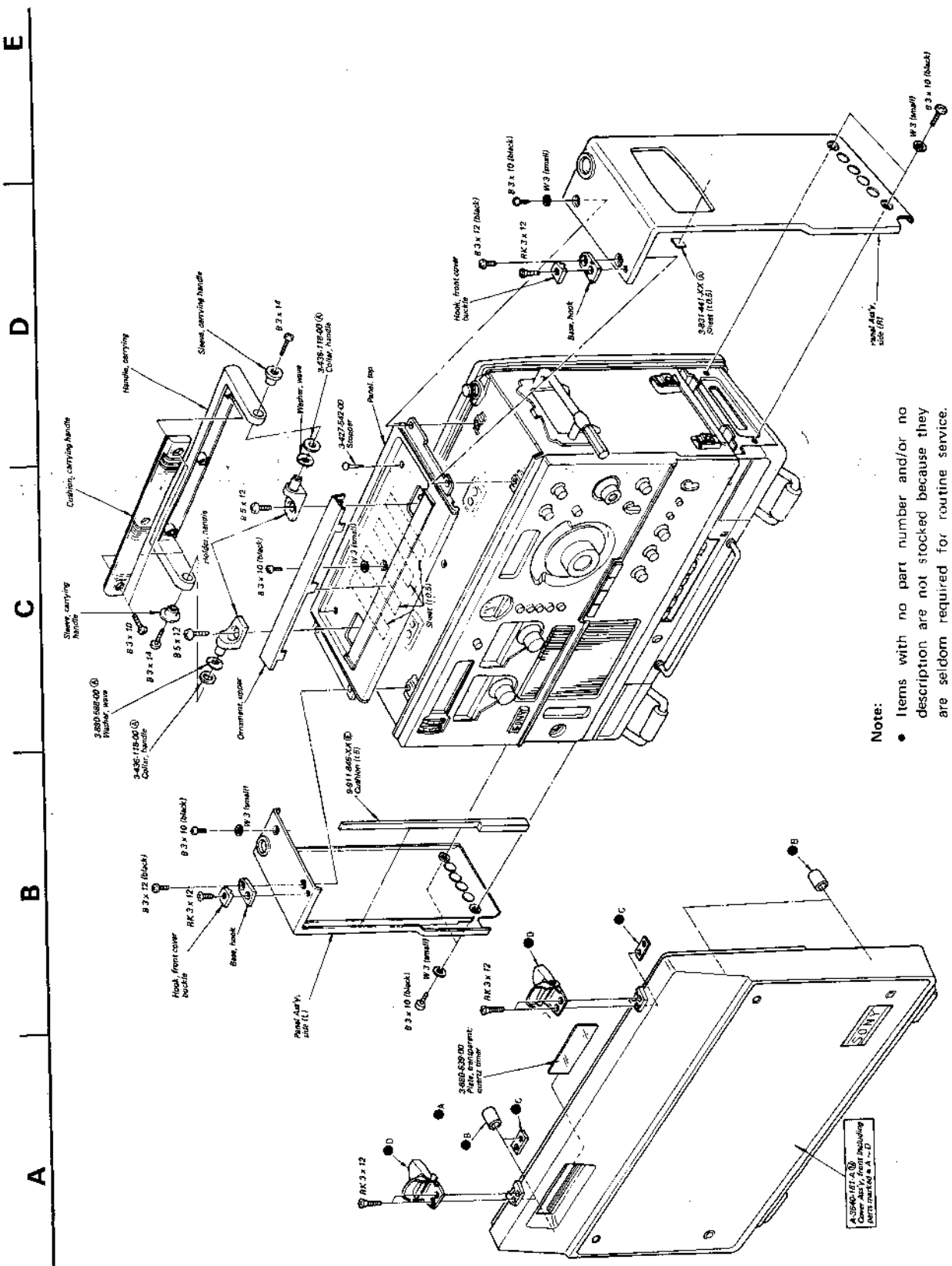




Note:
When replacing Q054 2SK23A with 2SK19, short-circuit R092 2 kΩ.

: B+ pattern

5. EXPLODED VIEWS

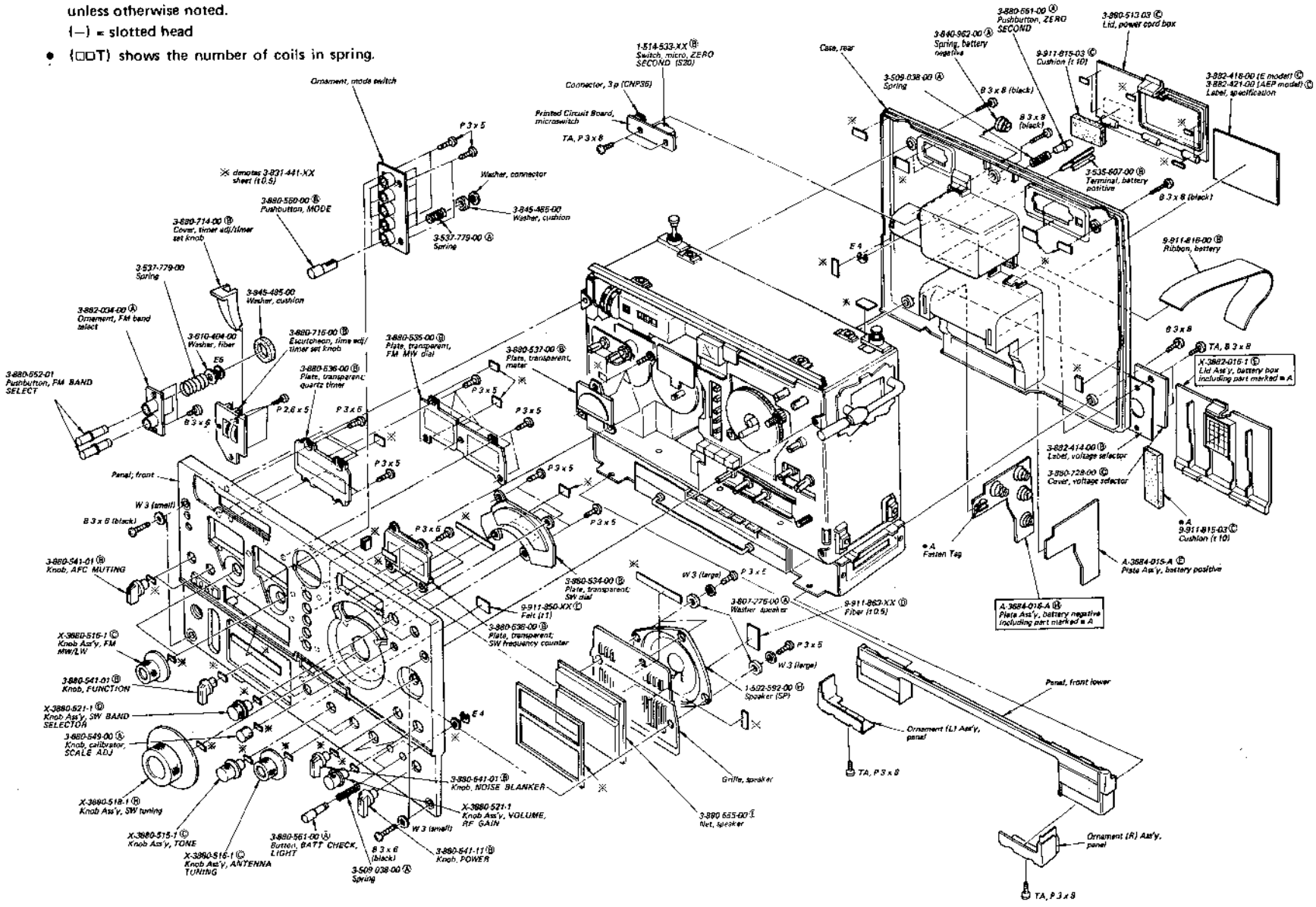


Note:

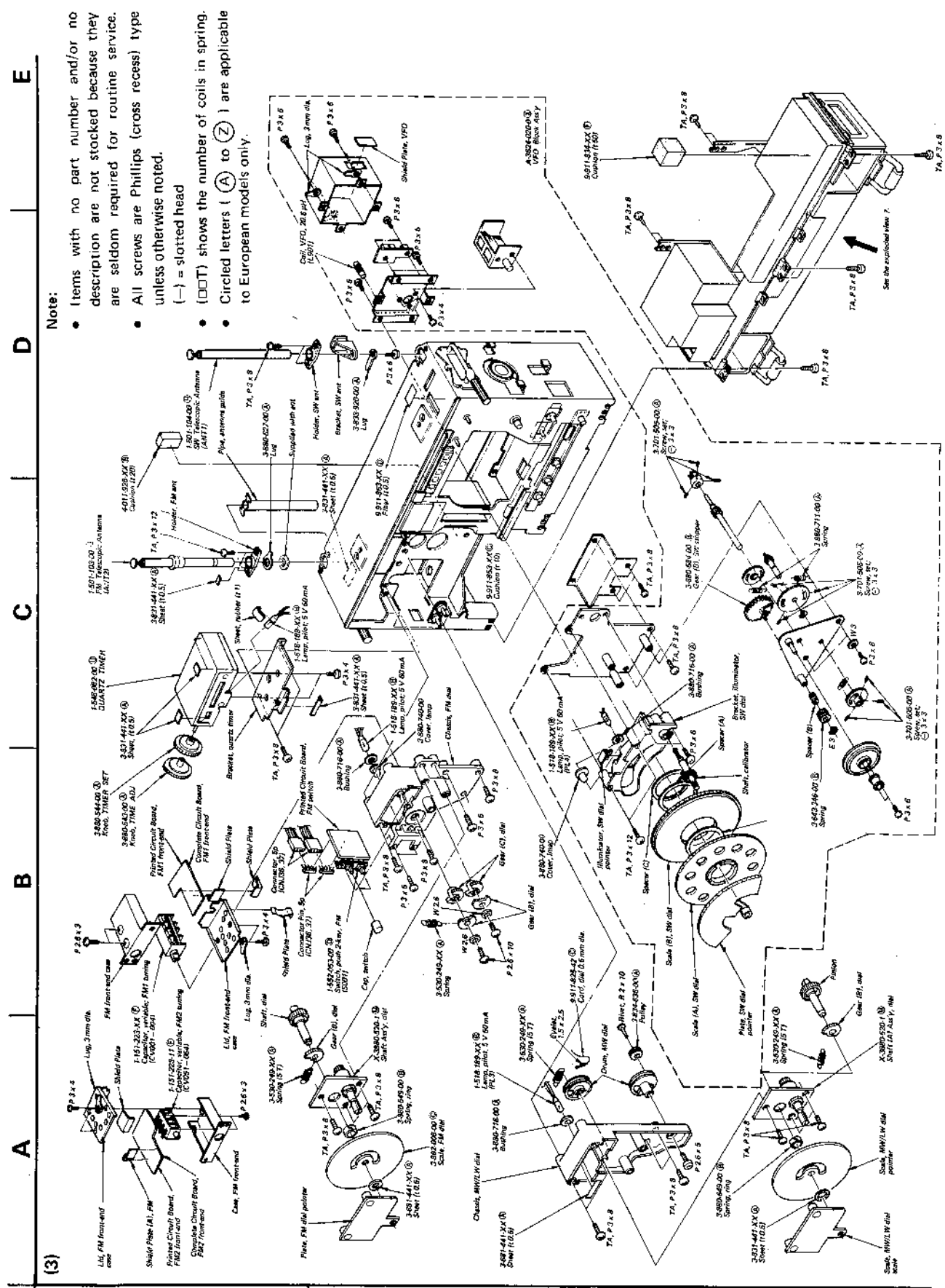
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters I (A) to (Z) I are applicable to European models only.

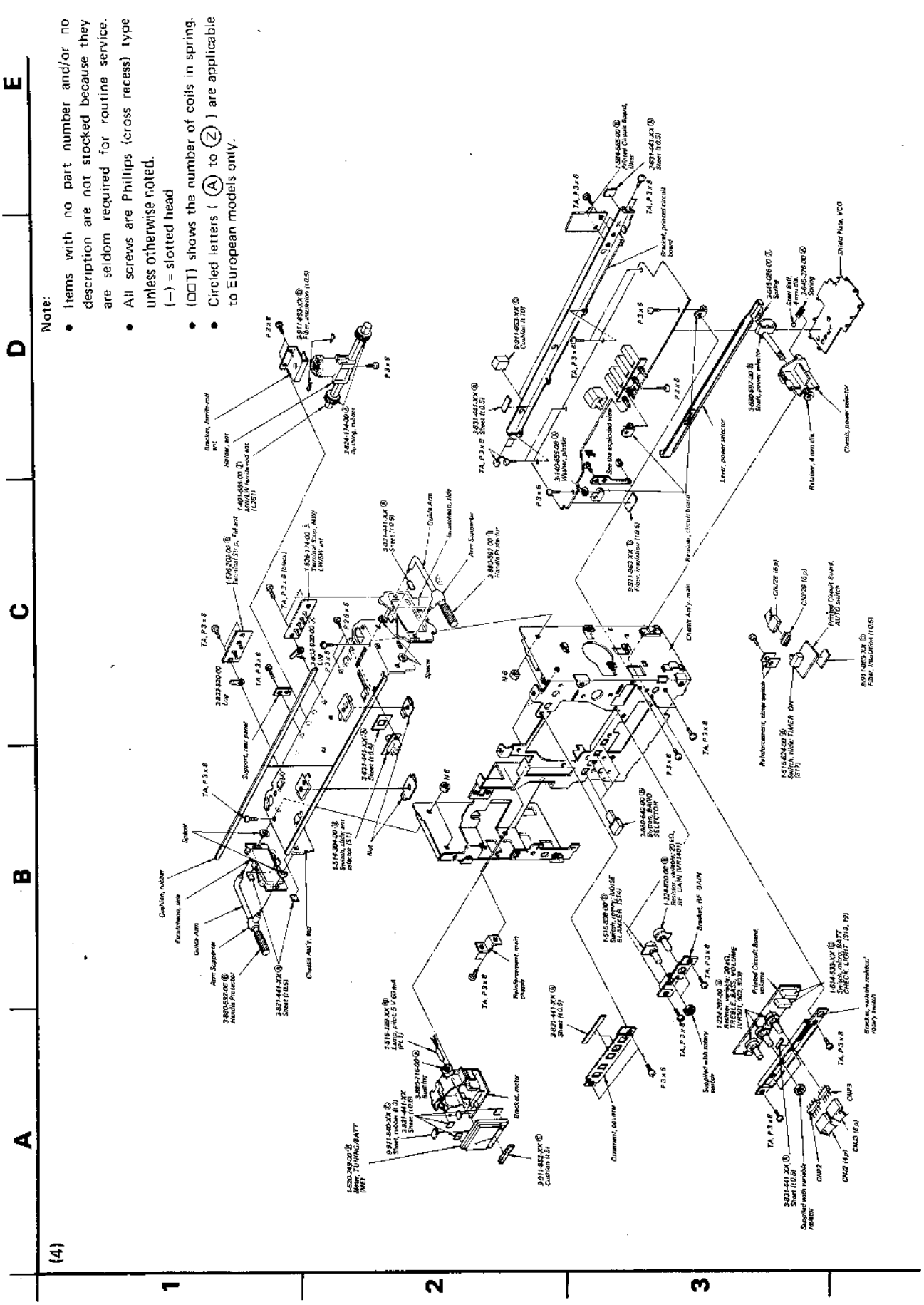
(2) **Note:**

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.



CRF-330K


Note:
• Items with no part number and/or no description are not stocked because they are seldom required for routine service.
• All screws are Phillips (cross recess) type unless otherwise noted.
(–) = slotted head
• (□□T) shows the number of coils in spring.
• Circled letters (Ⓐ to Ⓩ) are applicable to European models only.
A
B
C
D
E
1
2
3
(3)



Note:

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  (–) = slotted head
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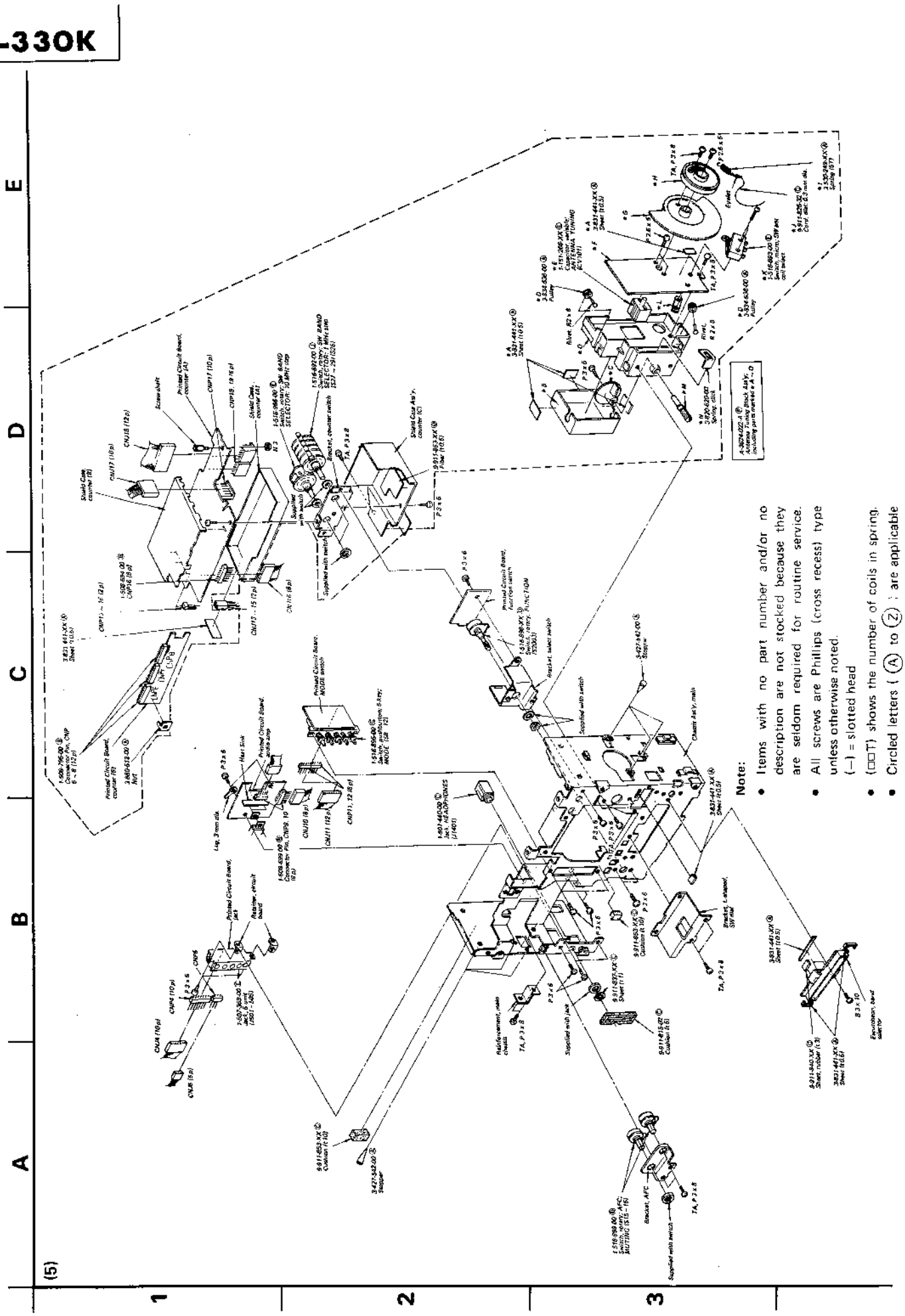
CRF-330K



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
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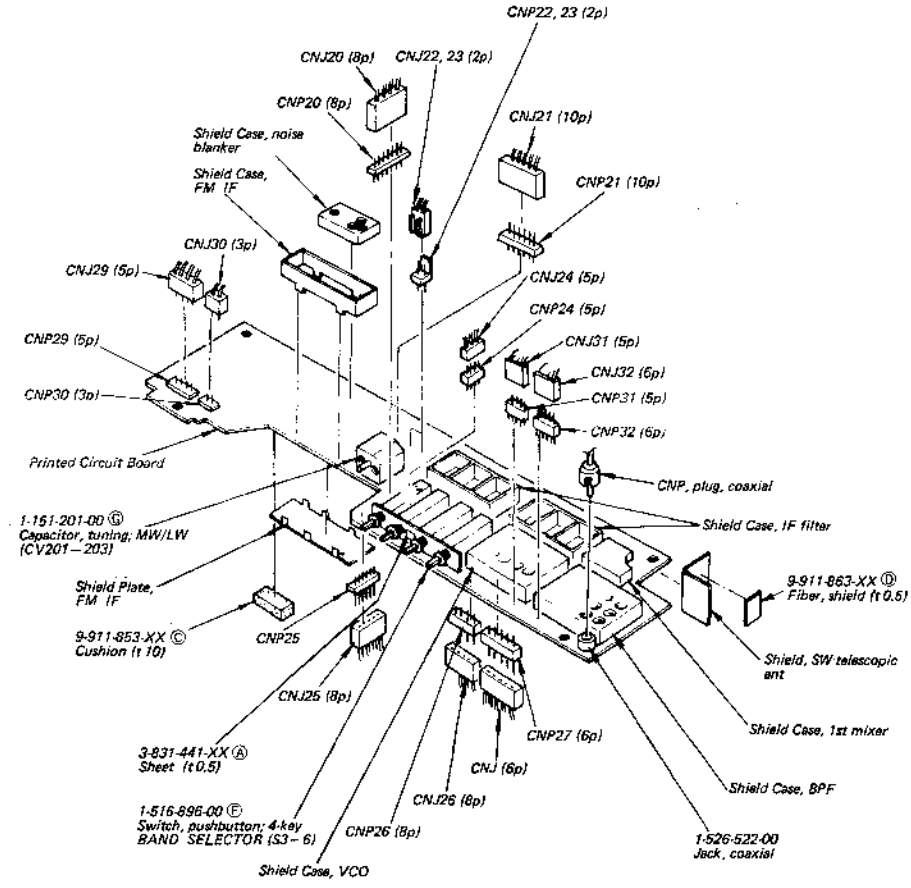
A B C

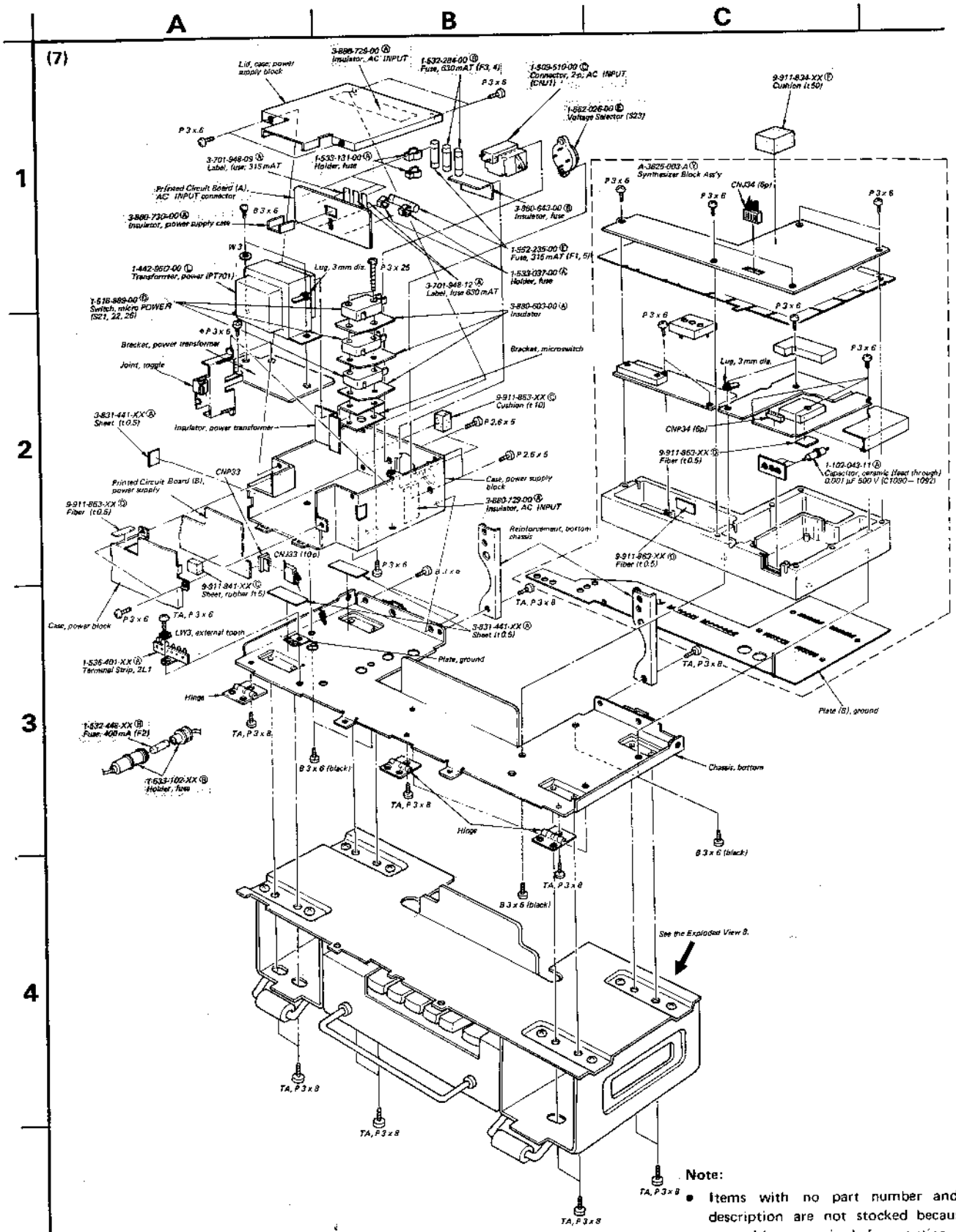
1 2 3 4 5

(6)



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.



Note: The components identified by shading are critical for safety. Replace only with part number specified.

Note:

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- (□□T) shows the number of coils in spring.
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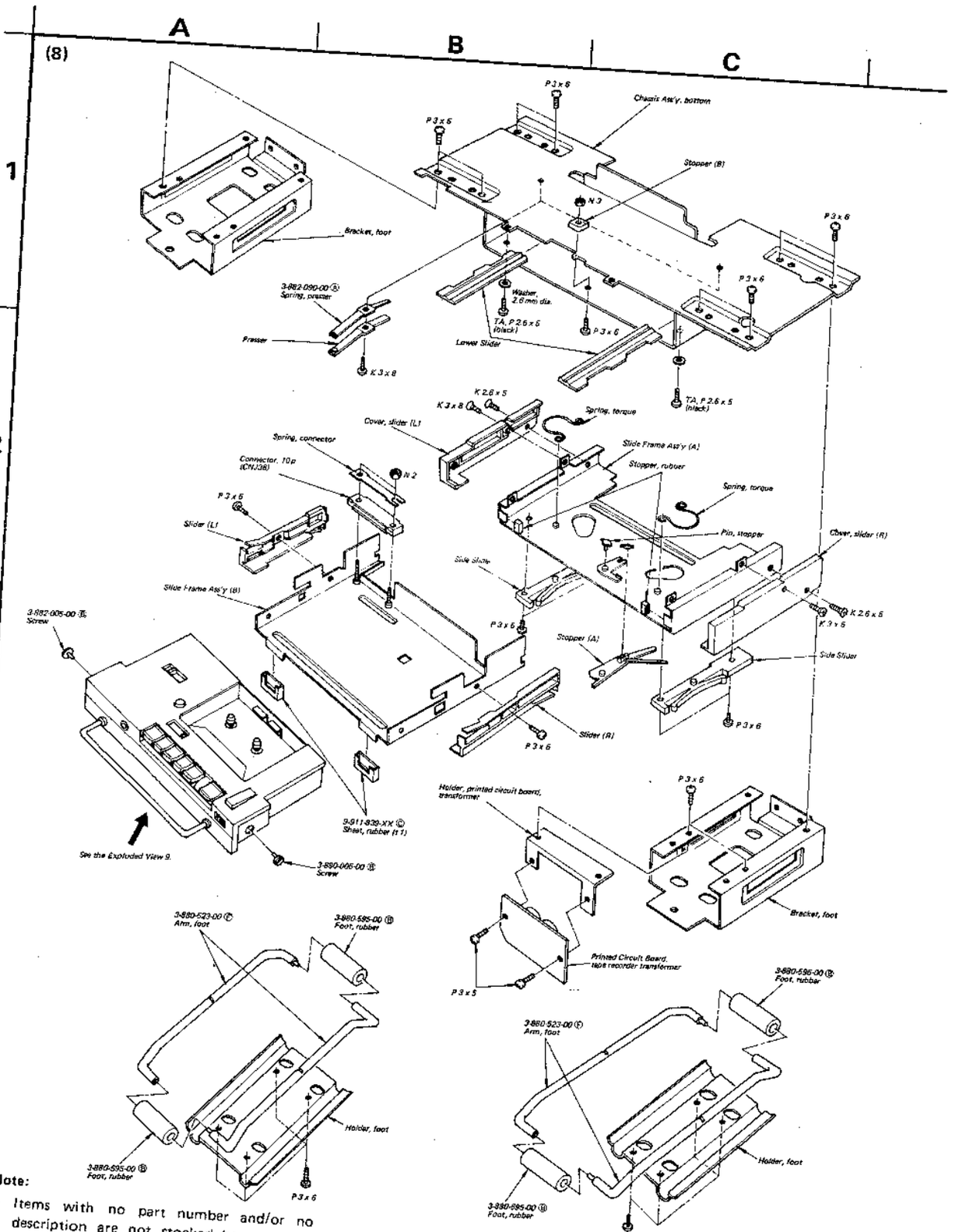

Note:

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  {—} = slotted head
- {□□T} shows the number of coils in spring.
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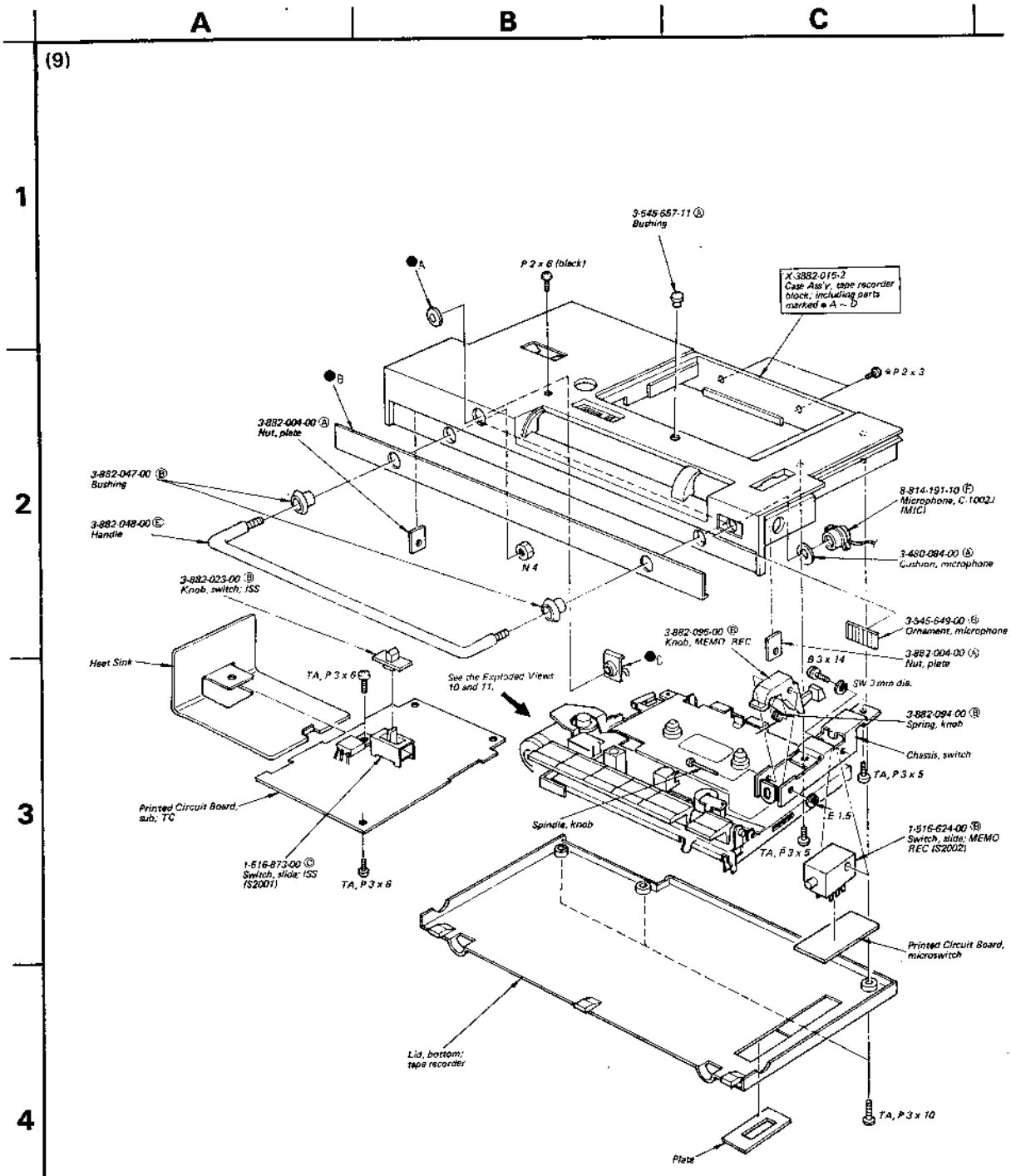

Note:

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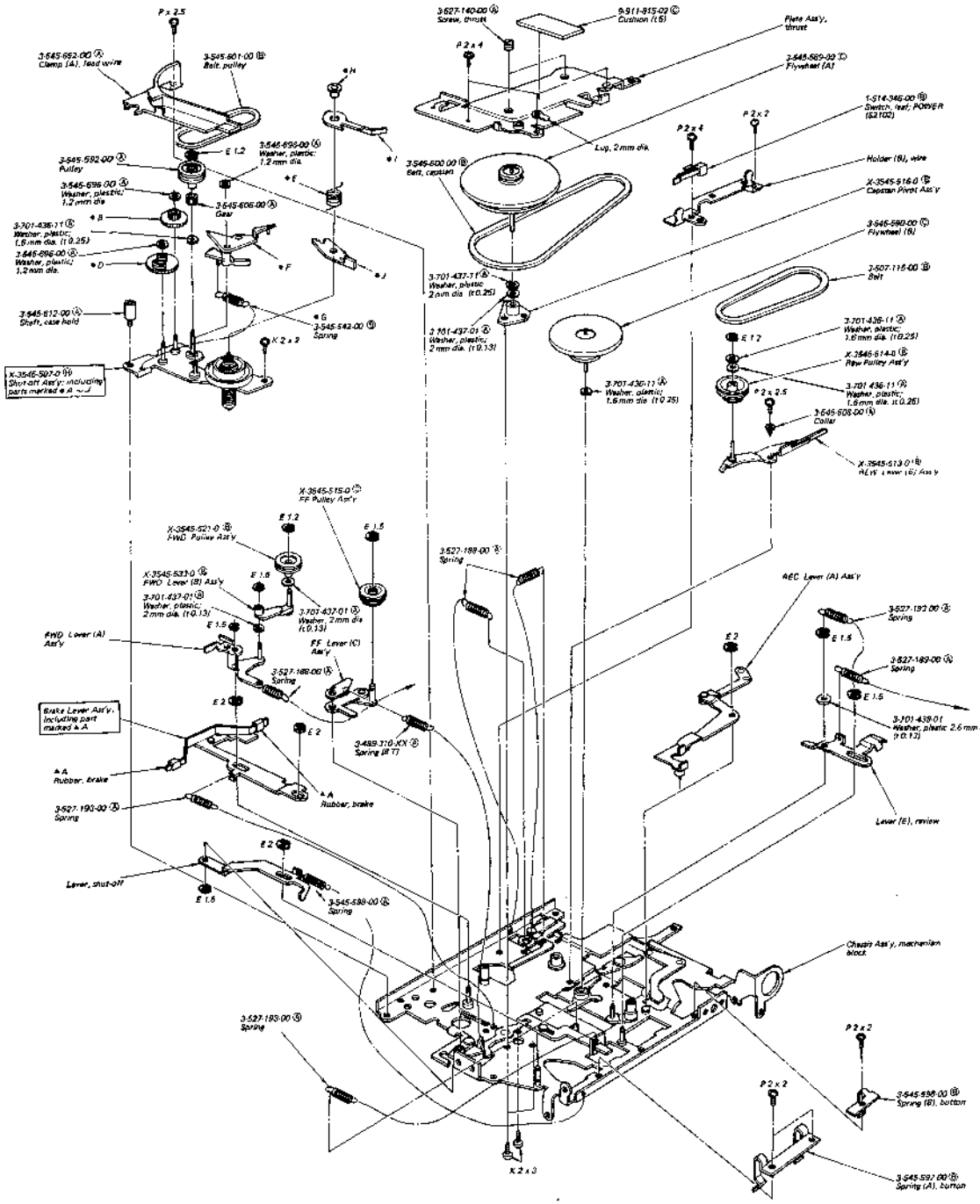
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

(10)



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

CRF-330K

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

Ref. No.	*Part No.*	*Description*
		Diodes
D001, 051		Ⓑ 1S2687S-2
D201 – 209, D211 – 215		Ⓑ 1S1555
D216		Ⓑ 1T23S
D217 – 219		Ⓑ 1S1555
D220, 221		Ⓑ 1T23S
D223, 225		Ⓑ 1S1555
D226, 227		Ⓒ 1T18-0
D228 – 234		Ⓑ 1S2222
D235		Ⓑ 1T261
D236		Ⓑ RD6A
D237 – 241, D401		Ⓑ 1S1555
D601, 602		Ⓑ VD1120
D701		Ⓑ 2SB324
D702		Ⓑ RD5A
D703, 704		Ⓑ 10E2
D801, 802		Ⓑ 1T261
D803 – 807		Ⓑ 1S1555
D1001, 1002		Ⓑ 1T261
D1003, 1004, D1201 – 1204		Ⓑ 1S1555
D2001, 2002		Ⓑ 1S1555
D2003		Ⓒ TLR109 (LED)
D2004, D2101 – 2105		Ⓑ 1S1555
		Thermistors
Th701	1-800-071-XX	Ⓐ S-300
Th1001	1-800-198-XX	Ⓐ S-1K
Th1002	1-800-194-00	Ⓐ S-90
Th2101	1-800-198-00	Ⓐ S-1K
		COILS
L001	1-425-909-00	Ⓑ FM Antenna
L002	1-425-910-00	Ⓑ FM RF
L003	1-425-909-00	Ⓑ FM Antenna
L004	1-405-750-00	Ⓑ FM Osc
L051	1-425-929-00	Ⓑ Coil
L052	1-425-930-00	Ⓑ Coil
L053	1-425-929-00	Ⓑ Coil
L054	1-405-527-21	Ⓑ FM Osc
L201	1-407-178-XX	Ⓐ Microinductor, 1 µH
L210, 215	1-407-741-00	Ⓑ Microinductor, 18 µH
L224	1-407-864-00	Ⓑ RF BPF
L225	1-407-865-00	Ⓑ RF BPF
L228	1-407-864-00	Ⓑ RF BPF
L231	1-407-862-00	Ⓑ RF BPF
L232	1-407-863-00	Ⓑ RF BPF
L235	1-407-862-00	Ⓑ RF BPF
L261	1-401-665-00	Ⓕ MW/LW Ferrite-rod Antenna
L262	1-425-911-00	Ⓑ MW RF
L263	1-425-444-00	Ⓑ LW RF
L264	1-405-717-00	Ⓑ MW Osc
L265	1-405-716-00	Ⓑ LW Osc
L266	1-417-053-00	Ⓓ VCO Matching Transformer
L267	1-407-178-XX	Ⓐ Microinductor, 1 µH
L268	1-433-184-00	Ⓑ VCO (1)
L269	1-433-185-00	Ⓑ VCO (3)
L270	1-433-188-00	Ⓑ VCO (4)
L271	1-433-189-00	Ⓑ VCO (6)
L272	1-433-190-00	Ⓑ VCO (7)
L273	1-433-186-00	Ⓑ VCO (5)
L274	1-433-187-00	Ⓑ VCO (2)
L275	1-425-912-00	Ⓑ Mixing
L282, 283	1-407-661-XX	Ⓐ Microinductor, 470 µH
L287, 288	1-407-157-XX	Ⓐ Microinductor, 10 µH
L289	1-407-661-XX	Ⓐ Microinductor, 470 µH
L290	1-407-178-XX	Ⓐ Microinductor, 1 µH
L401 – 403	1-407-883-00	Ⓒ Microinductor, 100 mH
L701	1-407-857-00	Ⓓ Choke, 3 mH
L702	1-407-884-00	Ⓗ Choke, 6 mH
L703	1-407-857-00	Ⓓ Choke, 3 mH
L804	1-407-169-XX	Ⓐ Microinductor, 100 µH
L1010	1-407-178-XX	Ⓐ Microinductor, 1 µH
L1016	1-407-169-XX	Ⓐ Microinductor, 100 µH

Note: The components identified by shading are critical for safety. Replace only with part number specified.

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Ref. No.	*Part No.*	*Description*
L1021 – 1023	1-407-856-00 Ⓒ	Choke, 1 mH
L1025, 1026	1-407-169-XX Ⓐ	Microinductor, 100 µH
L1201, 1202	1-407-856-00 Ⓒ	Choke, 1 mH
L1203	1-407-175-XX Ⓐ	Microinductor, 330 µH
L2011	1-407-175-XX Ⓐ	Microinductor, 330 µH
L2031	1-407-206-XX Ⓑ	Microinductor, 10 mH
	TRANSFORMERS	
T1	1-433-105-00 Ⓑ	Osc
T601	1-423-140-11 Ⓒ	Input
FL201	1-403-165-00 Ⓒ	Ceramic Filter
FL202A	1-403-888-11 Ⓔ	Mechanical Filter
FL202B	1-403-888-21 Ⓔ	Mechanical Filter
FL203A	1-404-024-11 Ⓕ	Mechanical Filter
FL203B	1-404-024-21 Ⓑ	Mechanical Filter
IFT001, 051	1-404-031-00 Ⓑ	FM IFT
IFT202	1-404-023-00 Ⓑ	AM IFT
IFT203	1-403-152-00 Ⓑ	AM IFT
IFT204 – 206	1-404-023-00 Ⓑ	AM IFT
IFT207	1-459-153-00 Ⓑ	BFO
IFT801	1-403-959-00 Ⓑ	FM Discriminator
IFT802	1-403-953-00 Ⓑ	FM Discriminator
IFT803	1-403-243-00 Ⓑ	FM IFT

CAPACITORS

All capacitors are in µF and ceramic unless otherwise noted.
50WV or less are not indicated except for electrolytics.
pF = µµF, elect = electrolytic

Ref. No.	*Part No.*	*Description*		
C001	1-102-956-11 Ⓐ	15 p		
C002	1-161-013-11 Ⓐ	0.01		(boundary layer)
C003, 004	1-102-960-11 Ⓐ	24 p		
C005	1-161-013-11 Ⓐ	0.01		(boundary layer)
C006	1-102-972-11 Ⓐ	91 p		
C009	1-161-013-11 Ⓐ	0.01		(boundary layer)
C011	1-102-870-11 Ⓐ	8 p		
C012	1-102-947-11 Ⓐ	10 p		
C013	1-102-870-11 Ⓐ	8 p		
C014	1-161-013-11 Ⓐ	0.01		(boundary layer)
C015	1-127-019-11 Ⓑ	0.1	16 V	solid aluminum
C016	1-121-651-11 Ⓐ	10	16 V	elect
C051	1-102-949-11 Ⓐ	12 p		
C052	1-161-013-11 Ⓐ	0.01		(boundary layer)
C053, 054	1-102-953-11 Ⓐ	18 p		
C055	1-161-013-11 Ⓐ	0.01		(boundary layer)
C056	1-102-972-11 Ⓐ	91 p		
C059	1-161-013-11 Ⓐ	0.01		(boundary layer)
C061	1-102-858-11 Ⓐ	10 p		
C062	1-102-944-11 Ⓐ	7 p		
C063	1-102-663-11 Ⓐ	8 p		
C065	1-127-019-11 Ⓑ	0.1	16 V	solid aluminum
C066	1-121-651-11 Ⓐ	10	16 V	elect
C067	1-101-978-11 Ⓐ	10 p		
C100	1-103-733-11 Ⓐ	0.0022	50 V	polystyrol
C101	1-103-729-11 Ⓐ	0.0015	50 V	polystyrol
C102	1-103-728-11 Ⓐ	0.0013	50 V	polystyrol
C103	1-107-082-11 Ⓐ	75 p		silvered mica
C105	1-101-882-11 Ⓐ	51 p		
C106	1-102-946-11 Ⓐ	9 p		
C107	1-102-975-11 Ⓐ	100 p		
C201 – 203	1-101-118-11 Ⓐ	0.01		
C204	1-101-361-11 Ⓐ	150 p		
C205	1-107-082-11 Ⓐ	75 p		silvered mica
C206	1-107-068-11 Ⓐ	20 p		silvered mica
C207 – 209	1-161-013-11 Ⓐ	0.01		(boundary layer)
C210	1-102-979-11 Ⓐ	240 p		
C211	1-107-081-11 Ⓐ	68 p		silvered mica
C212	1-107-102-11 Ⓐ	5 p		silvered mica
C213	1-101-367-11 Ⓐ	160 p		silvered mica
C214	1-121-651-11 Ⓐ	10	16 V	elect
C215	1-161-013-11 Ⓐ	0.01		(boundary layer)
C216	1-107-079-11 Ⓐ	56 p		silvered mica
C217	1-161-013-11 Ⓐ	0.01		(boundary layer)
C218	1-107-075-11 Ⓐ	39 p		silvered mica

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

Ref. No.	Part No.	Description		
C219	1-107-086-11 Ⓐ	110 p		silvered mica
C220	1-107-072-11 Ⓐ	30 p		silvered mica
C221	1-107-086-11 Ⓐ	110 p		silvered mica
C222	1-107-075-11 Ⓐ	39 p		silvered mica
C223	1-121-651-11 Ⓐ	10	16 V	elect
C224	1-107-078-11 Ⓐ	51 p		silvered mica
C225	1-161-013-11 Ⓐ	0.01		(boundary layer)
C226	1-107-074-11 Ⓐ	36 p		silvered mica
C227	1-161-013-11 Ⓐ	0.01		(boundary layer)
C228	1-107-067-11 Ⓐ	18 p		silvered mica
C229	1-107-081-11 Ⓐ	68 p		silvered mica
C230	1-107-066-11 Ⓐ	16 p		silvered mica
C231	1-107-081-11 Ⓐ	68 p		silvered mica
C232	1-107-067-11 Ⓐ	18 p		silvered mica
C233	1-107-071-11 Ⓐ	27 p		silvered mica
C234	1-121-651-11 Ⓐ	10	16 V	elect
C235	1-161-013-11 Ⓐ	0.01		(boundary layer)
C236	1-102-507-11 Ⓐ	9 p		
C237	1-161-013-11 Ⓐ	0.01		(boundary layer)
C238	1-102-511-11 Ⓐ	13 p		
C239	1-102-516-11 Ⓐ	27 p		
C240	1-102-510-11 Ⓐ	12 p		
C241	1-102-516-11 Ⓐ	27 p		
C242	1-102-511-11 Ⓐ	13 p		
C243	1-102-501-11 Ⓐ	1 p		
C244	1-121-651-11 Ⓐ	10	16 V	elect
C245	1-161-013-11 Ⓐ	0.01		(boundary layer)
C246	1-102-505-11 Ⓐ	6 p		
C247	1-161-013-11 Ⓐ	0.01		(boundary layer)
C248	1-102-864-11 Ⓐ	5 p		
C249	1-102-514-11 Ⓐ	22 p		
C250	1-102-504-11 Ⓐ	4 p		
C251	1-102-514-11 Ⓐ	22 p		
C252	1-102-864-11 Ⓐ	5 p		
C254	1-121-651-11 Ⓐ	10	16 V	elect
C255	1-161-013-11 Ⓐ	0.01		(boundary layer)
C264	1-107-077-11 Ⓐ	47 p		silvered mica
C265	1-102-125-11 Ⓐ	0.0047		
C266	1-107-079-11 Ⓐ	56 p		silvered mica
C267	1-107-078-11 Ⓐ	51 p		silvered mica
C268	1-102-074-11 Ⓐ	0.001		
C272	1-107-078-11 Ⓐ	51 p		silvered mica
C273, 274	1-107-079-11 Ⓐ	56 p		silvered mica
C276	1-107-233-11 Ⓐ	430 p		silvered mica
C277	1-102-125-11 Ⓐ	0.0047		
C278	1-107-078-11 Ⓐ	51 p		silvered mica
C280	1-102-944-11 Ⓐ	7 p		
C281 – 290	1-101-924-11 Ⓐ	0.022		
C284	1-108-239-12 Ⓐ	0.01		mylar
C294	1-108-242-12 Ⓐ	0.022		mylar
C295	1-101-924-11 Ⓐ	0.022		
C296	1-107-079-11 Ⓐ	56 p		silvered mica
C297, 298	1-108-239-12 Ⓐ	0.01		mylar
C299	1-107-235-11 Ⓐ	510 p		silvered mica
C302	1-108-563-12 Ⓑ	0.0022		mylar
C303	1-101-924-11 Ⓐ	0.022		
C304	1-121-391-11 Ⓐ	1	50 V	elect
C305, 306	1-108-244-12 Ⓐ	0.033		mylar
C307	1-102-942-11 Ⓐ	5 p		
C308	1-102-949-11 Ⓐ	12 p		
C309	1-102-679-11 Ⓐ	120 p		
C310	1-103-714-11 Ⓐ	360 p	50 V	polystyrol
C312	1-102-964-11 Ⓐ	36 p		
C313, 314	1-102-947-11 Ⓐ	10 p		
C315	1-108-242-12 Ⓐ	0.022		mylar
C318	1-121-414-11 Ⓐ	100	6.3 V	elect
C319	1-102-125-11 Ⓐ	0.0047		
C321	1-102-504-11 Ⓐ	4 p		
C322	1-102-751-11 Ⓐ	22 p		
C323	1-102-526-11 Ⓐ	75 p		
C324	1-101-999-11 Ⓐ	10 p		
C325	1-102-755-11 Ⓐ	43 p		
C326	1-102-743-11 Ⓐ	3 p		
C328	1-102-112-11 Ⓐ	330 p		
C329 – 335	1-102-125-11 Ⓐ	0.0047		
C337	1-102-505-11 Ⓐ	6 p		
C338	1-102-074-11 Ⓐ	0.001		
C340	1-102-074-11 Ⓐ	0.001		

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

Ref. No.	Part No.	Description		
C341	1-121-413-11 Ⓐ	100	6.3 V	elect
C345	1-101-924-11 Ⓐ	0.022		
C346	1-107-235-11 Ⓐ	510 p		silvered mica
C350	1-107-071-11 Ⓐ	27 p		silvered mica
C351	1-101-924-11 Ⓐ	0.022		
C353	1-108-242-12 Ⓐ	0.022		mylar
C356, 357	1-108-242-12 Ⓐ	0.022		mylar
C358	1-101-924-11 Ⓐ	0.022		
C359	1-121-651-11 Ⓐ	10	16 V	elect
C360, 361	1-101-924-11 Ⓐ	0.022		
C362	1-102-832-11 Ⓐ	330 p		
C363	1-121-651-11 Ⓐ	10	16 V	elect
C364	1-102-114-11 Ⓐ	470 p		
C365	1-127-022-11 Ⓐ	0.47	16 V	solid aluminum
C367	1-127-023-11 Ⓑ	1	10 V	solid aluminum
C368	1-107-102-11 Ⓑ	5 p		silvered mica
C371	1-108-239-12 Ⓐ	0.01		mylar
C372	1-108-242-12 Ⓐ	0.022		mylar
C373	1-101-924-11 Ⓐ	0.022		
C374	1-107-085-11 Ⓐ	100 p		silvered mica
C377	1-123-070-11 Ⓒ	2200	16 V	elect
C378	1-121-943-11 Ⓑ	1000	10 V	elect
C380	1-108-234-12 Ⓐ	0.0047		mylar
C383, 384	1-101-924-11 Ⓐ	0.022		
C385	1-102-934-11 Ⓐ	1 p		
C386	1-102-935-11 Ⓐ	2 p		
C387	1-161-013-11 Ⓐ	0.01		(boundary layer)
C390	1-127-023-11 Ⓑ	1	10 V	solid aluminum
C401	1-127-018-11 Ⓑ	0.047	10 V	solid aluminum
C402	1-108-244-12 Ⓐ	0.033		mylar
C403	1-121-951-11 Ⓐ	0.47	50 V	elect
C404	1-127-019-11 Ⓑ	0.1	10 V	solid aluminum
C405	1-127-022-11 Ⓑ	0.47	10 V	solid aluminum
C406	1-127-020-11 Ⓑ	0.22	10 V	solid aluminum
C407	1-121-415-11 Ⓑ	100	16 V	elect
C408	1-102-099-11 Ⓐ	0.0015		
C409	1-108-244-12 Ⓐ	0.033		mylar
C410	1-161-015-11 Ⓐ	0.015		(boundary layer)
C411	1-161-021-11 Ⓐ	0.47		(boundary layer)
C412	1-127-019-11 Ⓑ	0.1	10 V	solid aluminum
C501	1-127-377-11 Ⓑ	0.22	16 V	solid aluminum
C502	1-101-918-11 Ⓐ	0.001		
C504	1-121-415-11 Ⓑ	100	16 V	elect
C505	1-127-377-11 Ⓑ	0.22	16 V	solid aluminum
C506	1-127-018-11 Ⓑ	0.0047	10 V	solid aluminum
C507	1-127-378-11 Ⓑ	0.68	10 V	solid aluminum
C509	1-127-378-11 Ⓑ	0.68	10 V	solid aluminum
C601	1-121-415-11 Ⓑ	100	16 V	elect
C602	1-127-377-11 Ⓑ	0.22	16 V	solid aluminum
C603	1-102-975-11 Ⓐ	100 p		
C604	1-102-074-11 Ⓐ	0.001		
C605	1-121-479-11 Ⓐ	22	16 V	elect
C606	1-161-015-11 Ⓐ	0.015		(boundary layer)
C607	1-161-019-11 Ⓐ	0.033		(boundary layer)
C608, 609	1-121-521-11 Ⓑ	330	16 V	elect
C610	1-127-203-11 Ⓑ	0.33	16 V	solid aluminum
C611, 612	1-121-939-11 Ⓑ	470	16 V	elect
C613	1-102-123-11 Ⓐ	0.0033		
C614	1-102-119-11 Ⓐ	0.0015		
C701	1-123-078-11 Ⓑ	2200	6.3 V	elect
C702	1-121-944-11 Ⓔ	1000	16 V	elect
C704	1-108-232-12 Ⓐ	0.0033		mylar
C705	1-101-923-11 Ⓐ	0.01		
C706	1-108-234-12 Ⓐ	0.0047		mylar
C707	1-107-093-11 Ⓐ	220 p		silvered mica
C708	1-121-944-11 Ⓔ	1000	16 V	elect
C709, 710	1-121-660-11 Ⓑ	2200	16 V	elect
C711, 712	1-108-381-12 Ⓐ	0.022	100 V	mylar
C805	1-121-413-11 Ⓐ	100	6.3 V	elect
C810	1-101-924-11 Ⓐ	0.022		
C812	1-102-964-11 Ⓐ	36 p		
C813	1-101-924-11 Ⓐ	0.022		
C814	1-108-234-12 Ⓐ	0.0047		mylar
C815	1-121-651-11 Ⓐ	10	16 V	elect
C816	1-108-228-12 Ⓐ	0.0015		

Note: The components identified by shading are critical for safety. Replace only with part number specified.

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

Ref. No.	*Part No.*	*Description*		
C817	1-127-022-11 Ⓑ	0.47	16 V	solid aluminum
C819	1-102-962-11 Ⓐ	30 p		
C823	1-102-940-11 Ⓐ	3 p		
C824	1-131-196-11 Ⓑ	2.2	20 V	tantalum
C825	1-102-940-11 Ⓐ	3 p		
C829	1-127-019-11 Ⓐ	0.1	16 V	solid aluminum
C832	1-101-924-11 Ⓐ	0.022		
C835	1-121-982-11 Ⓐ	470	6.3 V	elect
C836	1-121-426-11 Ⓑ	470	16 V	elect
C901	1-102-648-11 Ⓐ	43 p		
C902	1-102-672-11 Ⓐ	24 p		
C904	1-107-068-11 Ⓐ	20 p		silvered mica
C905	1-107-089-11 Ⓐ	150 p		silvered mica
C906	1-107-092-11 Ⓐ	200 p		silvered mica
C907	1-108-279-12 Ⓐ	0.015		mylar
C908	1-107-099-11 Ⓐ	2 p		silvered mica
C909	1-107-098-11 Ⓐ	1 p		silvered mica
C910	1-108-279-12 Ⓐ	0.015		mylar
C911	1-107-071-11 Ⓐ	27 p		silvered mica
C912	1-107-085-11 Ⓐ	100 p		silvered mica
C913, 914	1-108-279-12 Ⓐ	0.015		mylar
C1002	1-102-953-11 Ⓐ	18 p		
C1004, 1005	1-107-087-11 Ⓐ	120 p		silvered mica
C1007 – 1009	1-107-097-11 Ⓐ	330 p		silvered mica
C1010 – 1012	1-107-087-11 Ⓐ	120 p		silvered mica
C1013	1-102-949-11 Ⓐ	12 p		
C1016, 1017	1-107-087-11 Ⓐ	120 p		silvered mica
C1018	1-102-949-11 Ⓐ	12 p		
C1021, 1022	1-107-087-11 Ⓐ	120 p		silvered mica
C1024	1-161-013-XX Ⓐ	0.01		(boundary layer)
C1025, 1026	1-101-923-11 Ⓐ	0.01		
C1028	1-101-923-11 Ⓐ	0.01		
C1029	1-101-924-11 Ⓐ	0.022		
C1030	1-102-506-11 Ⓐ	7 p		
C1031	1-102-503-11 Ⓐ	3 p		
C1032	1-102-512-11 Ⓐ	16 p		

Ref. No.	*Part No.*	*Description*		
C1033	1-102-503-11 Ⓐ	3 p		
C1034	1-102-505-11 Ⓐ	6 p		
C1035 – 1037	1-101-923-11 Ⓐ	0.01		
C1038, 1039	1-101-924-11 Ⓐ	0.022		
C1040	1-102-864-11 Ⓐ	5 p		
C1041	1-102-951-11 Ⓐ	15 p		
C1042	1-102-504-11 Ⓐ	4 p		
C1043	1-102-948-11 Ⓐ	11 p		
C1044	1-102-943-11 Ⓐ	6 p		
C1045	1-102-949-11 Ⓐ	12 p		
C1046	1-102-503-11 Ⓐ	3 p		
C1047	1-161-013-11 Ⓐ	0.01		(boundary layer)
C1049	1-101-924-11 Ⓐ	0.022		
C1055	1-101-923-11 Ⓐ	0.01		
C1059	1-102-121-11 Ⓐ	0.0022		
C1060 – 1065	1-101-923-11 Ⓐ	0.01		
C1066	1-102-977-11 Ⓐ	200 p		
C1067	1-102-973-11 Ⓐ	100 p		
C1068	1-161-021-11 Ⓐ	0.0047		(boundary layer)
C1069	1-107-070-11 Ⓐ	24 p		silvered mica
C1070	1-102-409-11 Ⓒ	30 p		
C1071, 1072	1-102-121-11 Ⓐ	0.0022		
C1073	1-121-413-11 Ⓐ	100	6.3 V	elect
C1074	1-121-352-11 Ⓐ	47	10 V	elect
C1075, 1076	1-131-236-11 Ⓑ	1	25 V	tantalum
C1077	1-102-121-11 Ⓐ	0.0022		
C1078	1-101-880-11 Ⓐ	47 p		
C1079, 1080	1-107-093-11 Ⓐ	220 p		silvered mica
C1081	1-102-963-11 Ⓐ	33 p		
C1082, 1083	1-103-714-11 Ⓐ	360 p		polystyrol
C1084	1-102-963-11 Ⓐ	33 p		
C1085, 1086	1-108-555-12 Ⓑ	0.001		mylar
C1090 – 1092	1-102-043-11 Ⓐ	0.001	500 V	feed-through
C1094	1-121-391-11 Ⓐ	1	50 V	elect
C1095	1-101-880-11 Ⓐ	47 p		

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

Ref. No.	Part No.	Description		
C1096, 1097	1-121-414-11 Ⓐ	100	10 V	elect
C1098	1-107-061-11 Ⓐ	10 p		silvered mica
C1099	1-161-013-11 Ⓐ	0.01		(boundary layer)
C1100, 1101	1-102-961-11 Ⓐ	27 p		
C1102	1-102-977-11 Ⓐ	200 p		
C1103	1-101-923-11 Ⓐ	0.01		
C1104	1-101-924-11 Ⓐ	0.022		
C1105	1-127-019-11 Ⓑ	0.1	10 V	solid aluminum
C1106	1-101-919-11 Ⓐ	0.0022		
C1107	1-102-043-11 Ⓐ	0.001	500 V	feed-through
C1108	1-102-934-11 Ⓐ	1 p		
C1201	1-121-424-11 Ⓑ	470	6.3 V	elect
C1203	1-131-193-11 Ⓑ	10	10 V	tantalum
C1207	1-131-392-11 Ⓑ	33	3.15 V	tantalum
C1210	1-101-890-11 Ⓐ	75 p		
C1211, 1212	1-108-563-12 Ⓑ	0.0022		mylar
C1213	1-127-019-11 Ⓑ	0.1	10 V	solid aluminum
C1301	1-121-651-11 Ⓐ	10	16 V	elect
C2001	1-121-963-11 Ⓑ	33	25 V	elect
C2021	1-121-352-11 Ⓐ	47	10 V	elect
C2022	1-121-726-11 Ⓐ	0.47	50 V	elect
C2031	1-108-575-12 Ⓑ	0.0068		mylar
C2051	1-108-234-12 Ⓐ	0.0047		mylar
C2052	1-108-227-12 Ⓐ	0.001		mylar
C2110	1-131-387-11 Ⓑ	47	6.3 V	tantalum
C2101	1-131-169-11 Ⓑ	0.47	10 V	tantalum
C2102	1-131-202-11 Ⓑ	1.5	20 V	tantalum
C2103	1-131-380-11 Ⓑ	33	10 V	tantalum
C2104	1-105-669-12 Ⓐ	0.0047		mylar
C2105	1-161-190-11 Ⓐ	0.001		(boundary layer)
C2106	1-105-669-12 Ⓐ	0.0047		mylar
C2108	1-107-123-11 Ⓐ	47 p		silvered mica
C2109	1-131-170-11 Ⓑ	3.3	10 V	tantalum
C2111	1-131-173-11 Ⓒ	33	10 V	tantalum
C2112	1-131-202-11 Ⓑ	1.5	20 V	tantalum
C2113	1-161-190-11 Ⓐ	0.001		(boundary layer)
C2114	1-131-380-11 Ⓑ	33	10 V	tantalum
C2115	1-131-387-11 Ⓑ	47	6.3 V	tantalum
C2116	1-131-375-11 Ⓑ	4.7	10 V	tantalum
C2117	1-121-419-11 Ⓑ	220	6.3 V	elect
C2118	1-131-368-11 Ⓑ	3.3	16 V	tantalum
C2119	1-131-177-11 Ⓒ	100	3 V	tantalum
C2120	1-131-244-11 Ⓑ	1	6.3 V	tantalum
C2121	1-105-673-12 Ⓐ	0.01		mylar
C2122	1-105-719-12 Ⓑ	0.033		mylar
C2123	1-105-669-12 Ⓐ	0.0047		mylar
C2124	1-131-375-11 Ⓑ	4.7	10 V	tantalum
C2125	1-131-170-11 Ⓑ	3.3	10 V	tantalum
C2126	1-121-420-11 Ⓑ	220	10 V	elect
C2127	1-131-395-11 Ⓑ	100	3 V	tantalum
C2128	1-131-377-11 Ⓑ	33	10 V	tantalum
C2129	1-161-190-11 Ⓐ	0.001		(boundary layer)
C2132	1-161-190-11 Ⓐ	0.001		(boundary layer)
C2133	1-131-368-11 Ⓑ	3.3	16 V	tantalum
C2134	1-108-249-12 Ⓐ	0.068		mylar
	1-161-001-11 Ⓐ	0.001		(boundary layer)
CT1001 – 1003	1-141-171-11 Ⓑ	Trimmer		
CT201 – 206	1-141-171-XX Ⓑ	Trimmer		
CT207	1-141-138-XX Ⓑ	Trimmer		
CT208	1-141-174-00 Ⓑ	Trimmer		
CT209 – 212	1-141-138-XX Ⓑ	Trimmer		
CT901	1-141-175-00 Ⓓ	Trimmer		
CV001 – 004	1-151-223-XX Ⓕ	Tuning		
CV051 – 054	1-151-223-11 Ⓕ	Tuning		
CV101	1-151-266-XX Ⓔ	Tuning		
CV201 – 203	1-151-201-00 Ⓖ	Tuning		

RESISTORS

All resistors are in ohms. Common ¼ W carbon resistors are omitted. Check schematic diagram for values.

R210, 214 R218, 222 R226	1-212-879-11 Ⓐ	82	fusible
R235, 239 R244, 321	1-212-881-11 Ⓐ	100	fusible

Note: The components identified by shading are critical for safety. Replace only with part number specified.

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

Ref. No.	Part No.	Description		
R363	1-212-857-11 Ⓐ	10		fusible
R501	1-206-475-11 Ⓐ	33	2 W	metal-oxide
R511	1-244-837-11 Ⓐ	33	½ W	carbon
R610	1-212-869-11 Ⓐ	33	½ W	fusible
R618, 619	1-207-459-11 Ⓐ	0.47	½ W	wirewound
R620	1-212-857-11 Ⓐ	10		fusible
R836	1-212-869-11 Ⓐ	33		fusible
R1267	1-212-941-11 Ⓐ	2	½ W	fusible
R2005	1-212-857-11 Ⓐ	10		fusible
R2101, 2102	1-209-878-11 Ⓐ	1.8 k	1/16 W	carbon
R2103	1-209-781-11 Ⓐ	10	1/16 W	carbon
R2108	1-210-381-11 Ⓐ	33	1/16 W	carbon
R2112	1-209-768-11 Ⓐ	2.2 k	1/16 W	carbon
R2113	1-210-113-11 Ⓐ	18 k	1/16 W	carbon
R2114	1-210-371-11 Ⓐ	1.6 k	1/16 W	carbon
R2115	1-210-363-11 Ⓐ	270	1/16 W	carbon
R2116	1-210-381-11 Ⓐ	33 k	1/16 W	carbon
R2119	1-210-363-11 Ⓐ	270	1/16 W	carbon
R2121	1-209-768-11 Ⓐ	2.2 k	1/16 W	carbon
R2122	1-209-113-11 Ⓐ	18 k	1/16 W	carbon
R2123	1-209-774-11 Ⓐ	5.1 k	1/16 W	carbon
R2124	1-209-770-11 Ⓐ	2.7 k	1/16 W	carbon
R2125	1-210-388-11 Ⓐ	68 k	1/16 W	carbon
R2126	1-210-392-11 Ⓐ	75	1/16 W	carbon
R2127	1-210-101-11 Ⓐ	51	1/16 W	carbon
R2128	1-210-846-11 Ⓐ	33	1/16 W	carbon
R2129	1-209-770-11 Ⓐ	2.7 k	1/16 W	carbon
R2130	1-209-774-11 Ⓐ	5.1 k	1/16 W	carbon
R2131	1-210-111-11 Ⓐ	12 k	1/16 W	carbon
R2132	1-209-781-11 Ⓐ	10 k	1/16 W	carbon
R2135, 2136	1-210-371-11 Ⓐ	1.6 k	1/16 W	carbon
R2137	1-210-102-11 Ⓐ	150	1/16 W	carbon
R2142		1.2 k	1/16 W	carbon
R2144	1-210-105-11 Ⓐ	560	1/16 W	carbon
VR201	1-224-642-XX Ⓑ	1 k, adjustable; first mixer balance		
VR202	1-224-644-XX Ⓑ	4.7 k, adjustable; blank level		
VR501 – 503	1-224-207-00 Ⓑ	20 k, variable; TREBLE, BASS, VOLUME		
VR1001	1-224-649-XX Ⓑ	200 k, adjustable; SW spurious beat		
VR1401	1-224-820-00 Ⓑ	20 k, variable; RF GAIN		

SWITCHES

S1	1-514-304-00 Ⓑ	Slide, antenna selector
S2	1-516-893-00 Ⓔ	Micro, SW antenna coil select
S3 – 6	1-516-896-00 Ⓕ	Pushbutton, 4-key; BAND SELECTOR
S8 – 12	1-516-895-00 Ⓖ	Pushbutton, 5-key; MODE
S14 – 16	1-516-898-00 Ⓓ	Rotary, NOISE BLANKER, AFC, MUTING
S17	1-516-624-00 Ⓑ	Slide, TIMER ON
S18 – 20	1-514-533-XX Ⓑ	Micro, BATT CHECK, LIGHT, ZERO SECOND
S21, 22	1-516-889-00 Ⓓ	Micro, POWER
S23	1-552-026-00 Ⓔ	Voltage Selector
S25	1-516-889-00 Ⓔ	Micro, POWER
S26	1-516-965-00 Ⓕ	Rotary, SW BAND SELECTOR
S27 – 29	1-516-892-00 Ⓙ	Rotary, SW BAND SELECTOR
S001	1-552-053-00 Ⓓ	Pushbutton, 2-key, FM
S2001	1-516-873-00 Ⓒ	Slide, ISS
S2002	1-516-624-00 Ⓑ	Slide, MEMO REC
S2003	1-516-898-XX Ⓓ	Rotary, FUNCTION
S2101	1-513-323-00 Ⓒ	Slide, REC/PB
S2102	1-514-346-00 Ⓑ	Leaf, POWER
S2103	1-552-052-00 Ⓑ	Leaf, MUTING

JACKS

J501 – 505	1-507-369-00 Ⓔ	Jack, 5-unit; earphone, AUX IN
J1401	1-507-440-00 Ⓒ	Jack, HEADPHONES

FUSES

F1	1-552-235-00 Ⓔ	315 mAT
F2	1-532-448-XX Ⓑ	400 mA
F3, 4	1-532-284-00 Ⓑ	630 mAT
F5	1-552-235-00 Ⓔ	315 mAT

MISCELLANEOUS

ANT1	1-501-104-00 Ⓗ	SW Telescopic Antenna
ANT2	1-501-103-00 Ⓘ	FM Telescopic Antenna

Note: The components identified by shading are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description
CF801 – 803	1-527-184-XX	(B) Filter, ceramic (10.7 MHz)
CNJ1	1-509-510-00	(C) Connector, 2-p; AC IN, including S24
CNJ38	1-507-302-00	(C) Connector, 10 p
CNP5	1-508-743-00	(B) Connector Pin
CNP6 – 8	1-508-795-00	(B) Connector Pin, 12 p
CNP9, 10	1-508-699-00	(B) Connector Pin, 8 p
CNP16	1-508-694-00	(B) Connector Pin, 8 p
CNP28	1-508-698-00	(B) Connector, 6 p
CR801	1-231-202-00	(B) Encapsulated Component
EH	8-825-566-00	(B) Head, erase; EBF5-02B
M	8-834-221-00	(L) Motor, D-221F
ME	1-520-249-00	(H) Meter, TUNING/BATT
MIC	8-814-191-10	(F) Microphone, C-1002J
PL1	1-518-138-XX	(B) Lamp, pilot; 5 V 60 mA; meter, timer
PL2, 3	1-518-189-XX	(B) Lamp, pilot; 5 V 60 mA; meter, timer
PL4 – 5	1-518-138-XX	(B) Lamp, pilot; 5 V 60 mA; meter, timer
PT701	1-442-950-00	(L) Transformer, power
RPH	8-829-336-07	(F) Head, record/playback; PP134-36G
SP	1-502-592-00	(H) Speaker
X201	1-527-270-00	(I) Crystal
X202	1-527-271-00	(I) Crystal
X1002	1-527-269-00	(K) Crystal

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

Ref. No.	Part No.	Description
	1-407-856-00	(C) Choke Coil, power
	1-423-230-00	(H) Transformer, output
	1-526-522-00	(B) Jack, coaxial connector
	1-533-037-00	(A) Holder, fuse
	1-533-102-00	(B) Holder, fuse
	1-533-131-00	(A) Holder, fuse
	1-536-174-00	(B) Terminal Strip, MW/LW/SW antenna
	1-536-203-00	(B) Terminal Strip, FM antenna
	1-536-401-XX	(A) Terminal Strip, 2L1
	1-548-082-00	(U) QUARTZ TIMER

ACCESSORIES & PACKING MATERIALS

Part No.	Description
1-504-059-00	(C) Earphone, EM-20H
1-534-840-00	(E) Cord, power; DK-38 (AEP model)
1-551-235-00	(E) Cord, power; DK-51 (E model)
3-701-632-00	(A) Bag, plastic
3-880-697-00	(A) Bag, plastic
3-882-401-00	(C) Cushion, protection
3-882-410-00	(H) Carton
3-993-063-14	(B) Book, SHORT WAVE GUIDE
3-995-763-11	(I) Manual, instruction

1/4 WATT CARBON RESISTORS

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-244-601-11	10	1-244-625-11	100	1-244-649-11	1.0k	1-244-673-11	10k	1-244-697-11	100k	1-244-721-11	1.0M	1-244-745-11
1.1	1-244-602-11	11	1-244-626-11	110	1-244-650-11	1.1k	1-244-674-11	11k	1-244-698-11	110k	1-244-722-11	1.1M	1-244-746-11
1.2	1-244-603-11	12	1-244-627-11	120	1-244-651-11	1.2k	1-244-675-11	12k	1-244-699-11	120k	1-244-723-11	1.2M	1-244-747-11
1.3	1-244-604-11	13	1-244-628-11	130	1-244-652-11	1.3k	1-244-676-11	13k	1-244-700-11	130k	1-244-724-11	1.3M	1-244-748-11
1.5	1-244-605-11	15	1-244-629-11	150	1-244-653-11	1.5k	1-244-677-11	15k	1-244-701-11	150k	1-244-725-11	1.5M	1-244-749-11
1.6	1-244-606-11	16	1-244-630-11	160	1-244-654-11	1.6k	1-244-678-11	16k	1-244-702-11	160k	1-244-726-11	1.6M	1-244-750-11
1.8	1-244-607-11	18	1-244-631-11	180	1-244-655-11	1.8k	1-244-679-11	18k	1-244-703-11	180k	1-244-737-11	1.8M	1-244-751-11
2.0	1-244-608-11	20	1-244-632-11	200	1-244-656-11	2.0k	1-244-680-11	20k	1-244-704-11	200k	1-244-728-11	2.0M	1-244-752-11
2.2	1-244-609-11	22	1-244-633-11	220	1-244-657-11	2.2k	1-244-681-11	22k	1-244-705-11	220k	1-244-729-11	2.2M	1-244-753-11
2.4	1-244-610-11	24	1-244-634-11	240	1-244-658-11	2.4k	1-244-682-11	24k	1-244-706-11	240k	1-244-730-11	2.4M	1-244-754-11
2.7	1-244-611-11	27	1-244-635-11	270	1-244-659-11	2.7k	1-244-683-11	27k	1-244-707-11	270k	1-244-731-11	2.7M	1-244-755-11
3.0	1-244-612-11	30	1-244-636-11	300	1-244-660-11	3.0k	1-244-684-11	30k	1-244-708-11	300k	1-244-732-11	3.0M	1-244-756-11
3.3	1-244-613-11	33	1-244-637-11	330	1-244-661-11	3.3k	1-244-685-11	33k	1-244-709-11	330k	1-244-733-11	3.3M	1-244-757-11
3.6	1-244-614-11	36	1-244-638-11	360	1-244-662-11	3.6k	1-244-686-11	36k	1-244-710-11	360k	1-244-734-11	3.6M	1-244-758-11
3.9	1-244-615-11	39	1-244-639-11	390	1-244-663-11	3.9k	1-244-687-11	39k	1-244-711-11	390k	1-244-735-11	3.9M	1-244-759-11
4.3	1-244-616-11	43	1-244-640-11	430	1-244-664-11	4.3k	1-244-688-11	43k	1-244-712-11	430k	1-244-736-11	4.3M	1-244-760-11
4.7	1-244-617-11	47	1-244-641-11	470	1-244-665-11	4.7k	1-244-689-11	47k	1-244-713-11	470k	1-244-737-11	4.7M	1-244-761-11
5.1	1-244-618-11	51	1-244-642-11	510	1-244-666-11	5.1k	1-244-690-11	51k	1-244-714-11	510k	1-244-738-11	5.1M	1-244-762-11
5.6	1-244-619-11	56	1-244-643-11	560	1-244-667-11	5.6k	1-244-691-11	56k	1-244-715-11	560k	1-244-739-11		
6.2	1-244-620-11	62	1-244-644-11	620	1-244-668-11	6.2k	1-244-692-11	62k	1-244-716-11	620k	1-244-740-11		
6.8	1-244-621-11	68	1-244-645-11	680	1-244-669-11	6.8k	1-244-693-11	68k	1-244-717-11	680k	1-244-741-11		
7.5	1-244-622-11	75	1-244-646-11	750	1-244-670-11	7.5k	1-244-694-11	75k	1-244-718-11	750k	1-244-742-11		
8.2	1-244-623-11	82	1-244-647-11	820	1-244-671-11	8.2k	1-244-695-11	82k	1-244-719-11	820k	1-244-743-11		
9.1	1-244-624-11	91	1-244-648-11	910	1-244-672-11	9.1k	1-244-696-11	91k	1-244-720-11	910k	1-244-744-11		

Note: The components identified by shading are critical for safety. Replace only with part number specified.

9-950-367-81

77J0549-1
Printed in Japan