WRR-27

E Model

UHF PORTABLE TUNER

SPECIFICATIONS

Tuner section

Circuit system	Dual-conversion superheterodyne
Receiving frequency	470.40 – 488.00 MHz (Refer to page 8 for channel number and receiving frequency.)
Modulation	F_3 (frequency modulation)
Antenna terminal	BNC-R type connector (UG-625/U)
Monitor terminal	3.5 mm dia. jack (for miniplug)
Intermediate frequency	1st : 49.47 MHz, 2nd : 10.7 MHz
Effective selectivity	More than 70 dB (±300 kHz)
Spurious response ratio	More than 80 dB
Image response ratio	More than 110 dB
Signal-to-noise ratio	More than 25 dB at 20 dB input (0 dB = 1μV) More than 53 dB at 60 dB input (0 dB = 1μV) More than 57 dB (weighted) at 60 dB input (0 dB = 1μV)
Muting level	10 dB (0 dB = 1μV)
Frequency response	400 - 15,000 Hz ±0.5 dB (50 μsec.) 100 Hz at −3 dB
Harmonic distortion	Less than 0.5 % (modulation frequency 100 - 10,000 Hz, frequency deviation ±22.5 kHz, 60 dB input)
Rated output level	Within −64 dBm ±2 dB (modulation frequency 1 kHz, frequency deviation ±3 kHz, 60 dB input)
Output impedance	600 ohms, balanced
Monitor output	5 mW (8 ohm load, modulation frequency 1 kHz, frequency deviation ±3 kHz, 60 dB input)
Operating temperature	−20°C to + 60°C (−4°F to + 140°F)

General

Semiconductors	3 ICs, 12 FETs, 23 transistors, 22 diodes, 1 LED
Power requirement	9 V dc, six batteries, size AA (IEC designation R6)
Current consumption	80 mA or less
Battery life	Approx. 5 hours of continuous use with Sony New Super Batteries SUM-3NS
Dimensions	Approx. 148 × 35 × 116 mm (w/h/d) ($5^{7}/_{8} \times 1^{1}/_{8} \times 4^{9}/_{16}$ inches) incl. projecting parts and controls
Weight	800 g (1 lb 12 oz) with batteries
Finish	Satin-nickel

Design and specifications subject to change without notice.

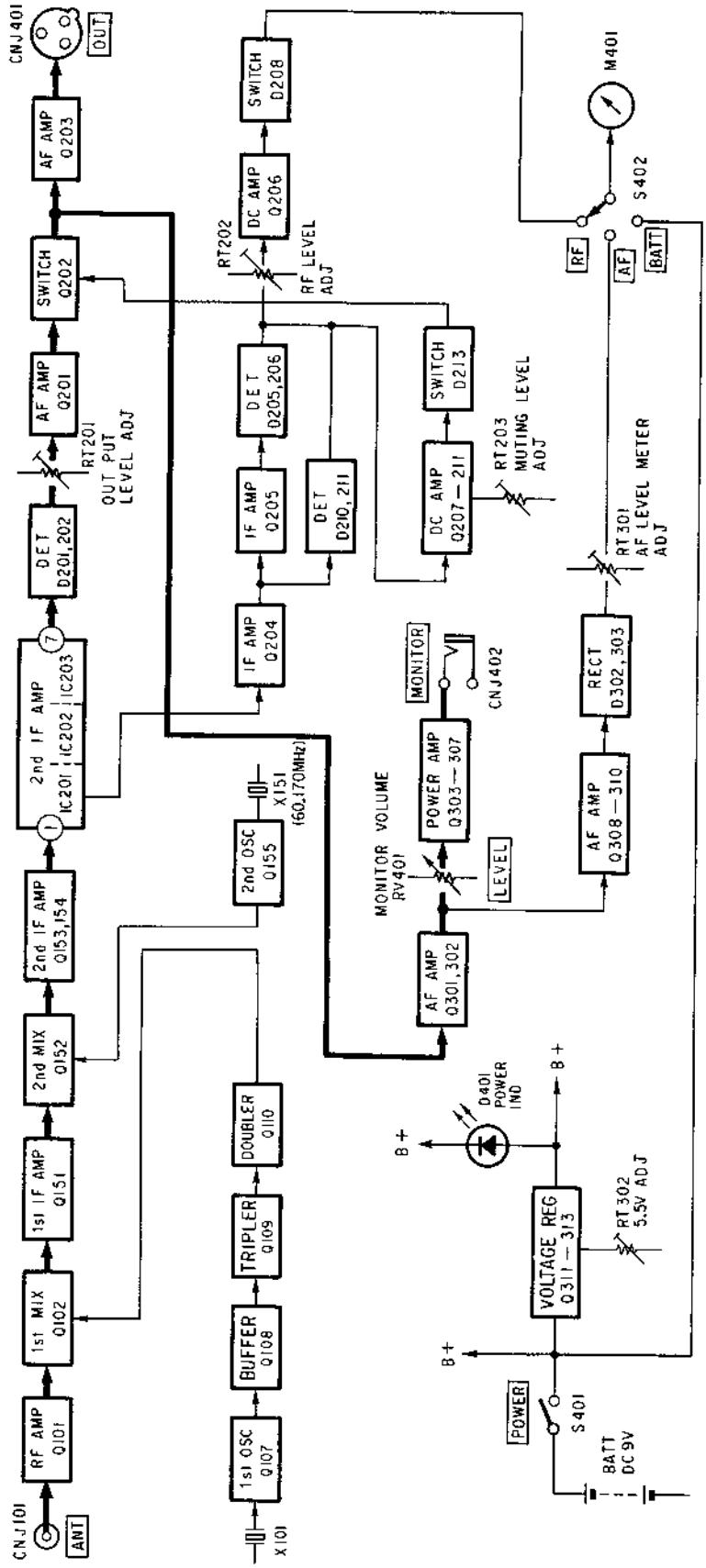
MICROFILM

SONY®

SERVICE MANUAL

SECTION 1
OUTLINE

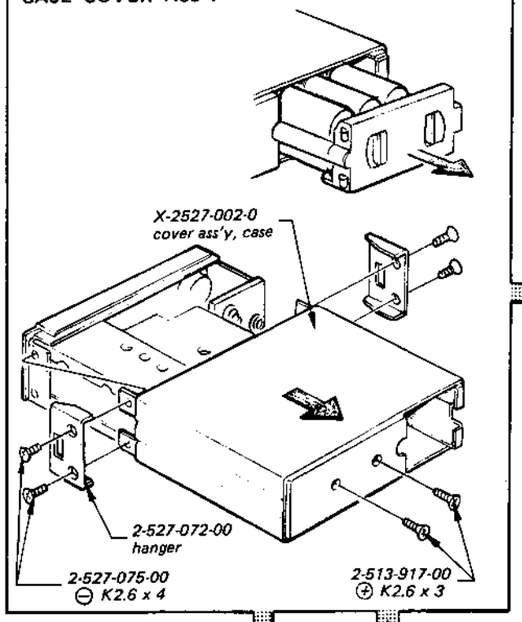
1-1. BLOCK DIAGRAM – Serial No.45038 and later



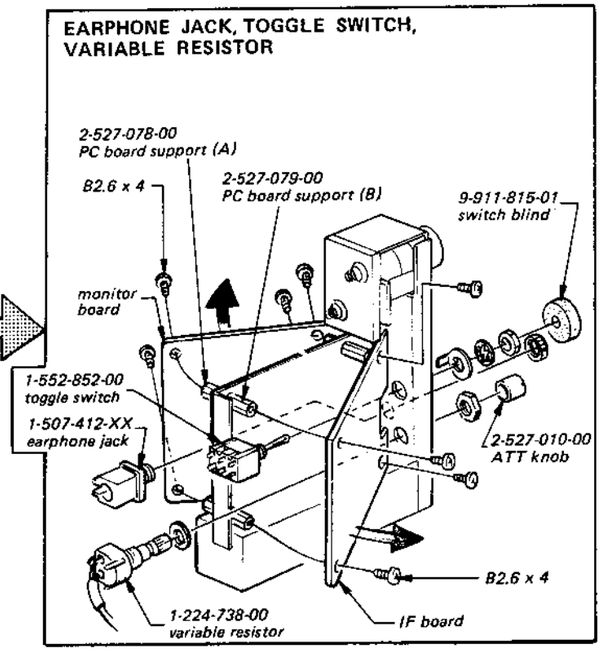
SECTION 2

DISASSEMBLY

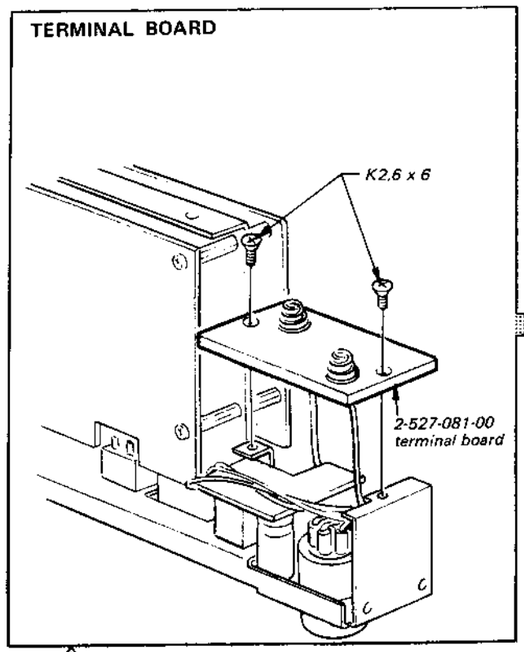
CASE COVER ASS'Y



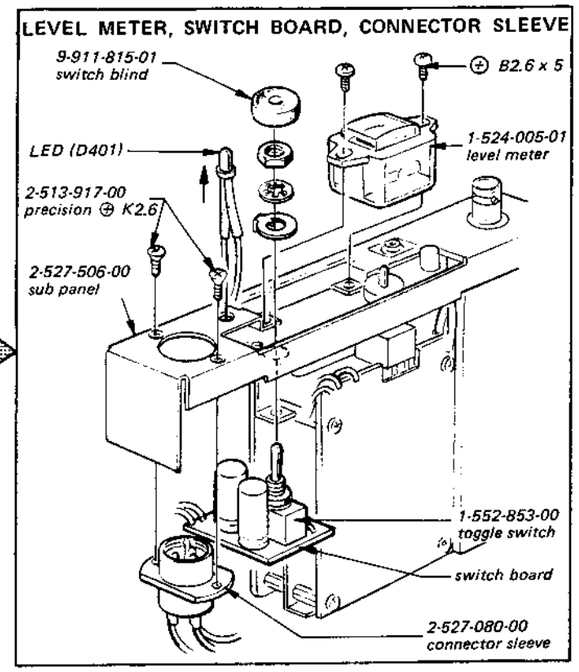
EARPHONE JACK, TOGGLE SWITCH, VARIABLE RESISTOR



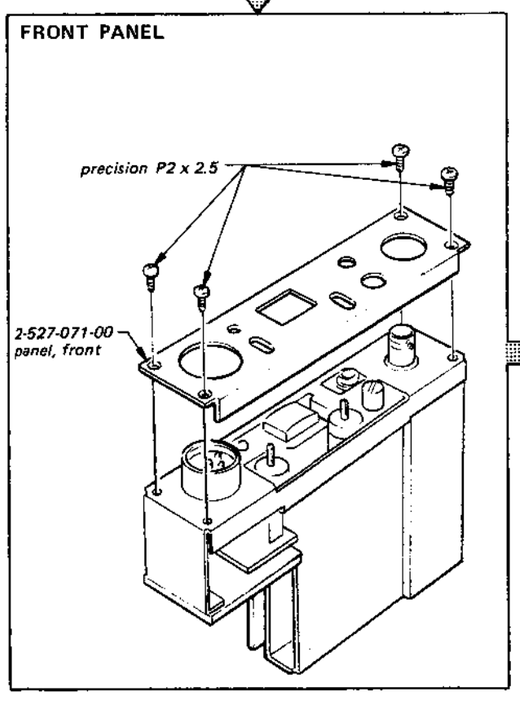
TERMINAL BOARD



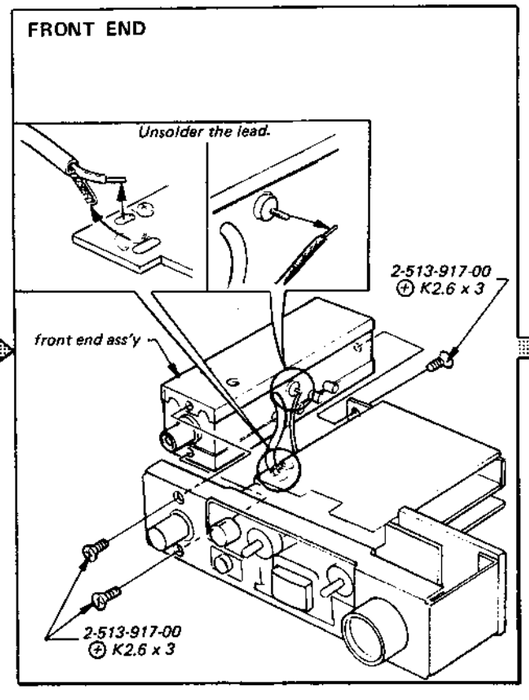
LEVEL METER, SWITCH BOARD, CONNECTOR SLEEVE



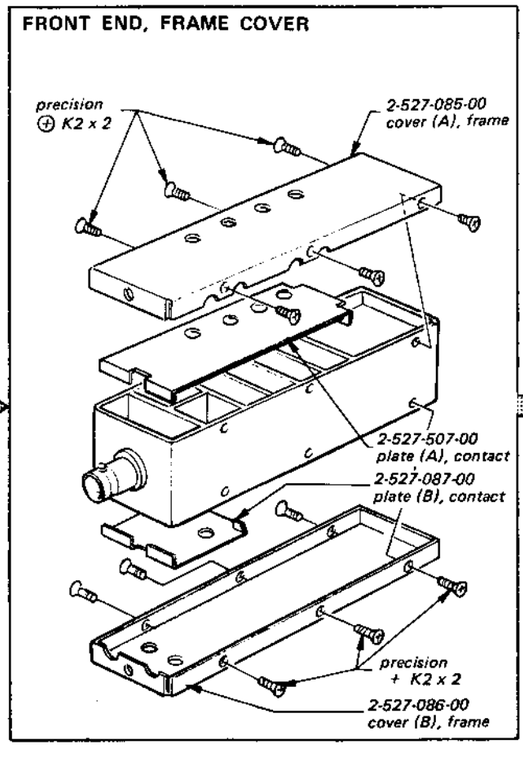
FRONT PANEL



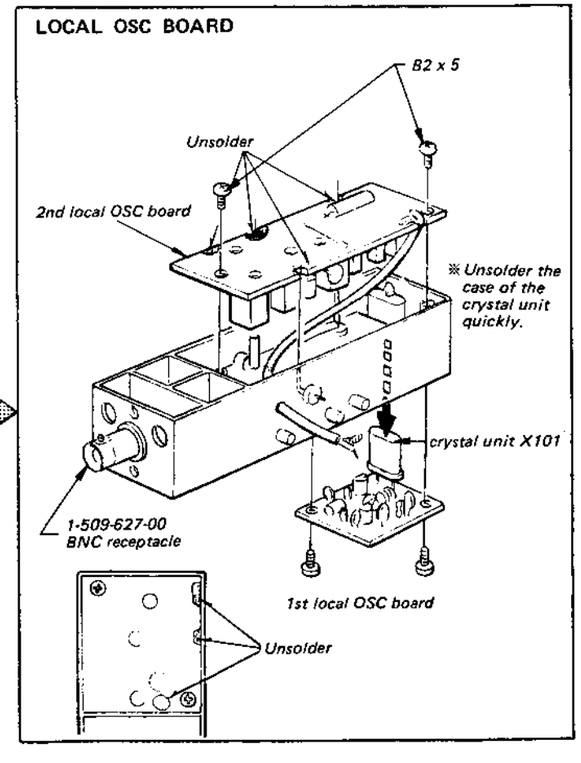
FRONT END



FRONT END, FRAME COVER



LOCAL OSC BOARD



SECTION 3
ADJUSTMENTS

3-1. FRONT END ADJUSTMENT
[CONNECTION DIAGRAM]

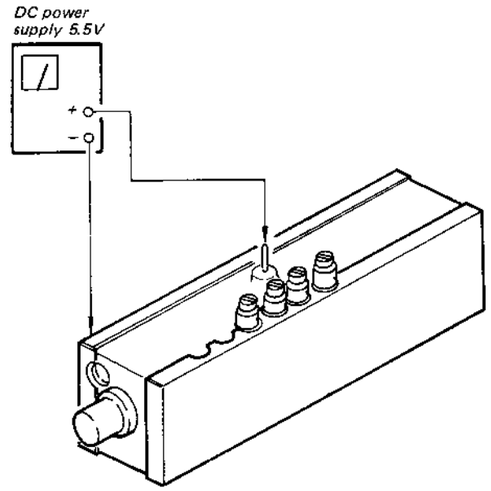


Fig. 1

The vise is useful for installing or removing the frame cover (A) and (B) when adjusting.
If the vise is not used, secure the frame covers (A) and (B) with screws.

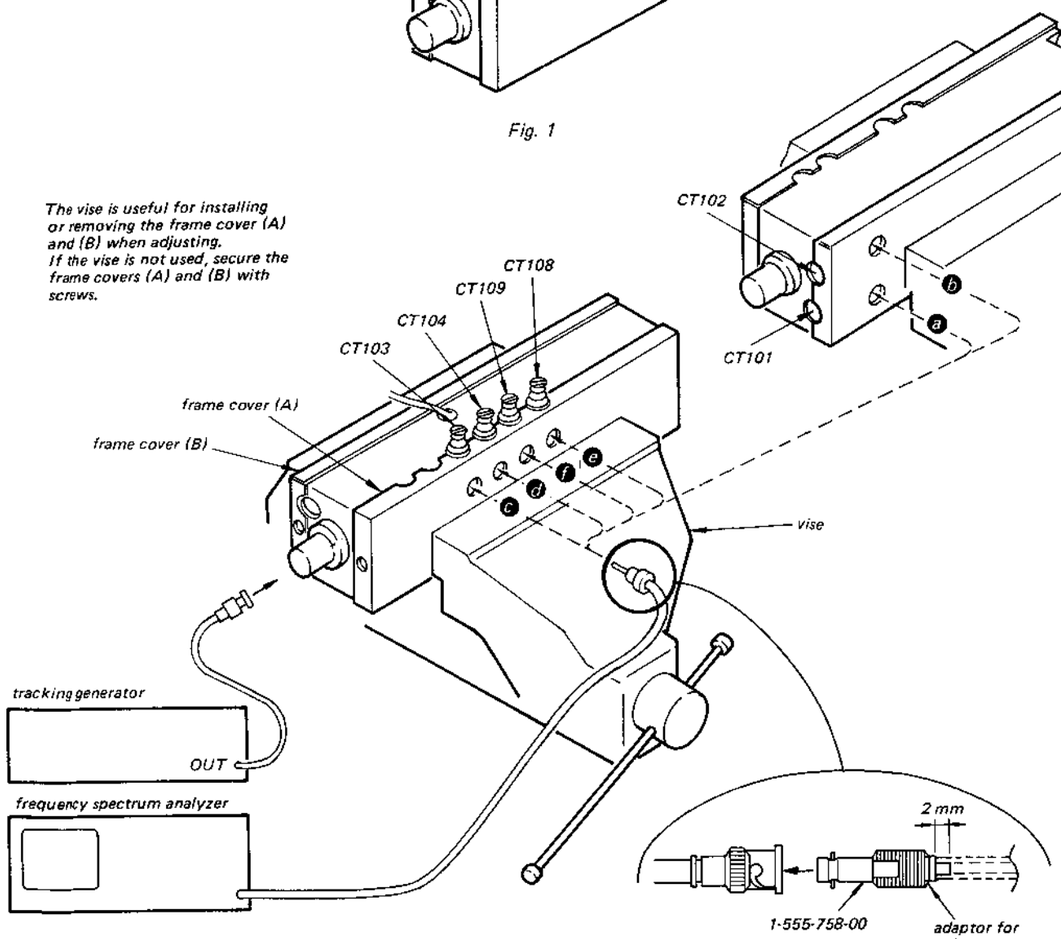


Fig. 2

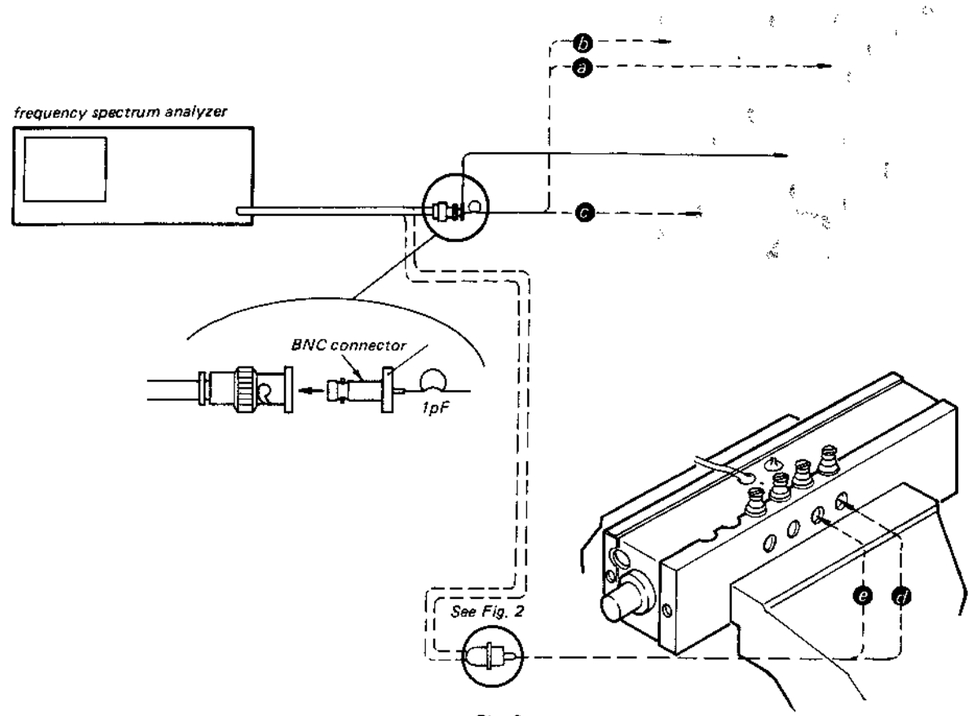


Fig. 3

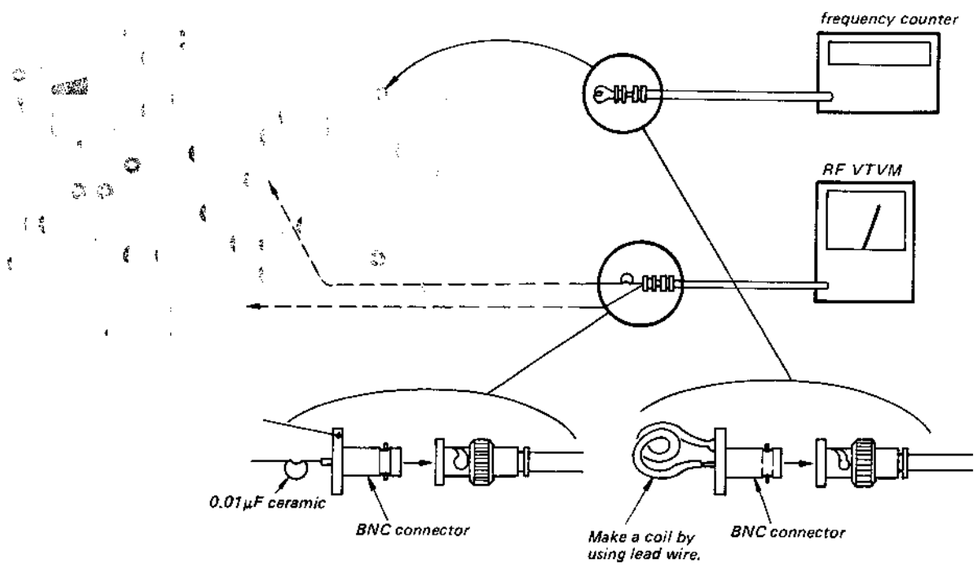
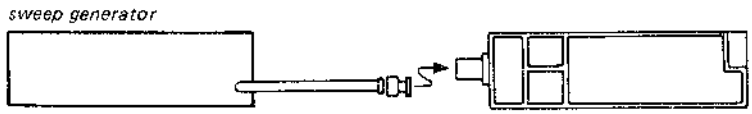


Fig. 4


sweep generator

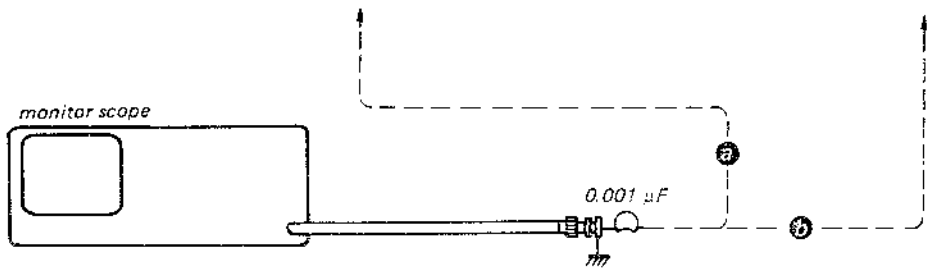

monitor scope
0.001 µF
a
b

Fig. 5

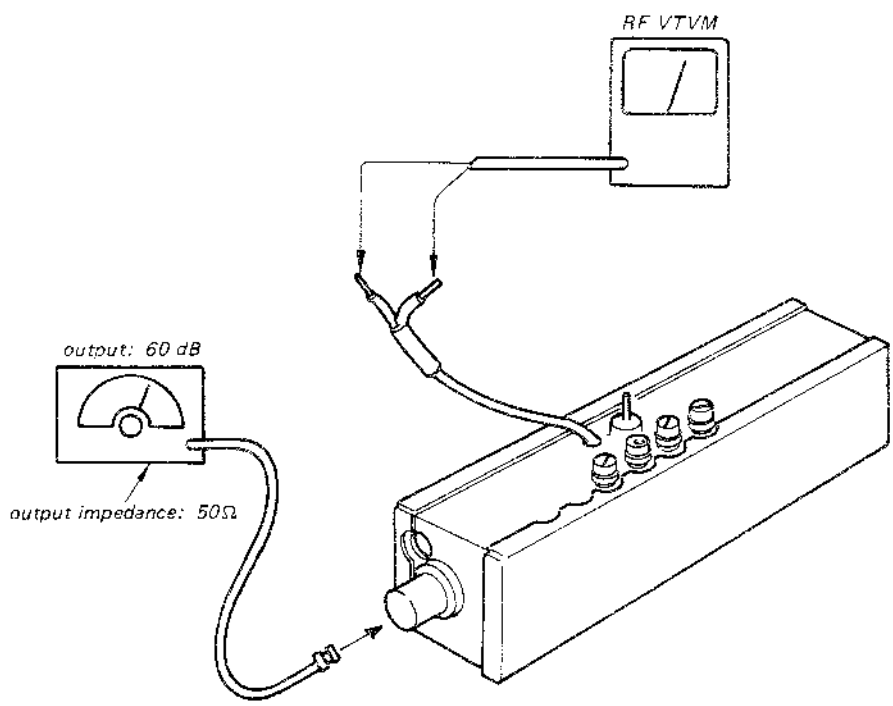
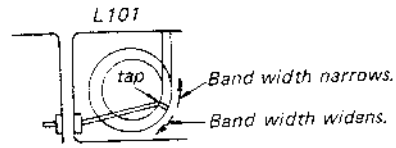
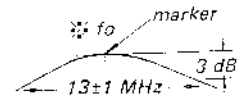
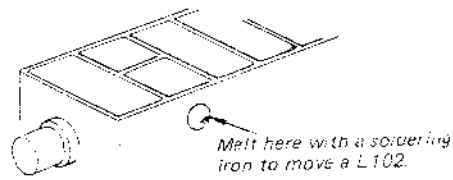
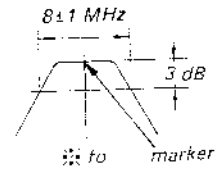

RF VTVM
output: 60 dB
output impedance: 50Ω

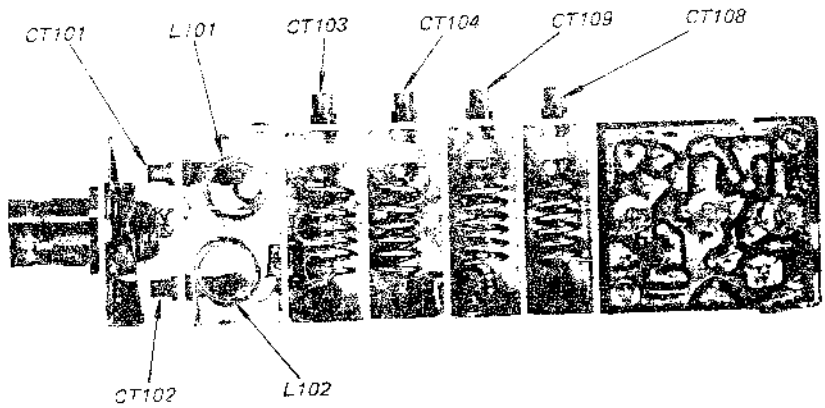
Fig. 6

[ADJUSTMENT PROCEDURE]

See pages 5 to 7 for connection diagrams.

	Step	Connection Diagram	Adjustment Parts	Remarks	Adjustment Value
Antenna stage Adjustment	1	Fig. 1 Fig. 2 ❺	CT101 L101	Detune CT102, CT103, CT104, CT108 and CT109. Adjust CT101 and the tap position of L101 for the specified waveform shown at right. 	
	2	Fig. 1 Fig. 2 ❻	CT102 L102	Adjust CT104 to obtain the marker on the center of the waveform as shown at right. Adjust the coupling between L103 and L104 to obtain the specified waveform (critical coupling) as shown at right. (If the specified waveform can not be obtained, bring L104 closer to L103 or separate L104 from L103.) 	

[ADJUSTMENT LOCATION OF ANTENNA CIRCUIT]



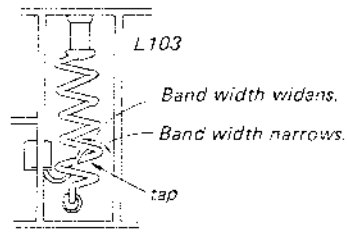
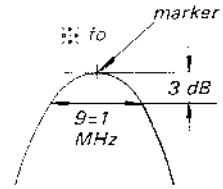
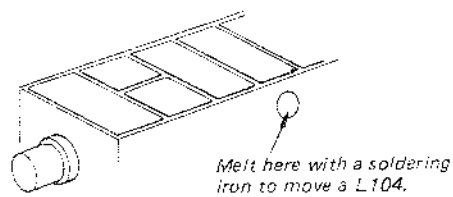
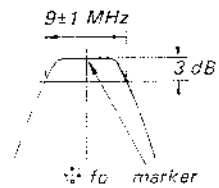
※ *fo*: receiving frequency

CH	frequency	CH	frequency
41	470.40 MHz	47	481.75 MHz
42	471.50 MHz	48	482.50 MHz
43	472.25 MHz	49	484.25 MHz
44	476.75 MHz	50	485.75 MHz
45	477.75 MHz	51	487.00 MHz
46	478.90 MHz	52	488.00 MHz

● Reference data
Channel numbers and 1st local OSC frequency

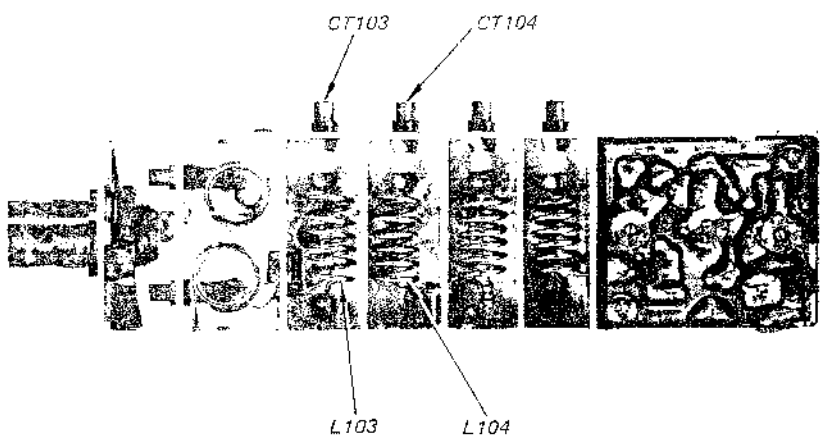
CH	frequency	CH	frequency
41	420.93 MHz	47	432.28 MHz
42	422.03 MHz	48	433.03 MHz
43	422.78 MHz	49	434.78 MHz
44	427.28 MHz	50	436.28 MHz
45	428.28 MHz	51	437.53 MHz
46	429.43 MHz	52	438.53 MHz

See pages 5 to 7 for connection diagrams.

	Step	Connection Diagram	Adjustment Parts	Remarks	Adjustment Value
	3	Fig. 1 Fig. 2 ⑥	CT101 L103	Adjust CT103 to obtain the marker on the center of the waveform as shown at right. If the specified waveform can not be obtained, adjust the tap position of L103. 	
RF AMP stage Adjustment	4	Fig. 1 Fig. 2 ⑦	CT104 L104	Adjust CT104 to obtain the marker on the center of the waveform as shown at right. Adjust the coupling between L103 and L104 to obtain the specified waveform (critical coupling) as shown at right. If the specified waveform can not be obtained, bring L104 closer to L103 or separate L104 from L103. 	

※ fo: see page 8.

[ADJUSTMENT LOCATION OF RF AMP]

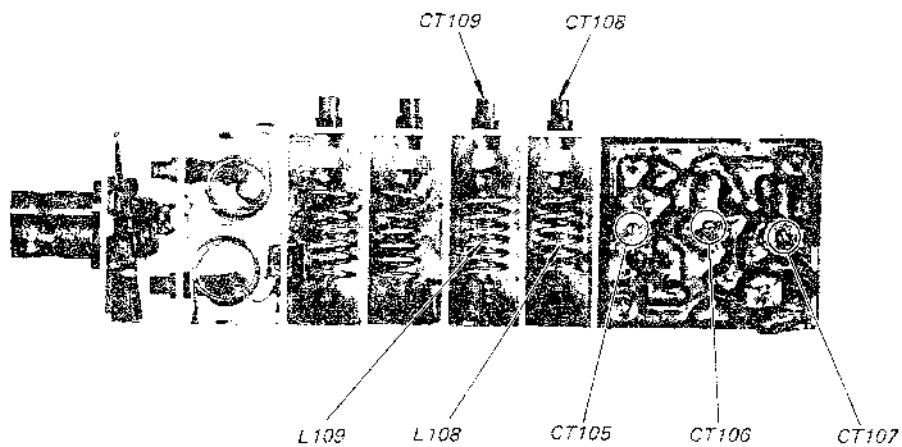


See pages 5 to 7 for connection diagrams.

	Step	Connection Diagram	Adjust-ment Parts	Remarks	Adjustment Value
1st Local OSC Adjustment	5	Fig. 1 Fig. 3 ⓔ	CT105	Adjust CT105 for maximum reading on RF VTVM, then return CT105 for 0.05 V lower than maximum reading on RF VTVM.	
	6	Fig. 1 Fig. 3 ⓕ	CT106	Adjust CT106 for maximum reading on RF VTVM.	
	7	Fig. 1 Fig. 3 ⓖ	CT107	Adjust CT107 for maximum reading on RF VTVM.	
	8	Fig. 1 Fig. 2 ⓔ	CT108	Adjust CT107 and CT108 so that the level of 1st Local OSC frequency* becomes maximum and the spurious response raitio becomes minimum.	
		Fig. 1 Fig. 2 ⓕ	CT109		

* 1st Local OSC frequency: see page 8.

[ADJUSTMENT LOCATION OF 1ST LOCAL OSC]



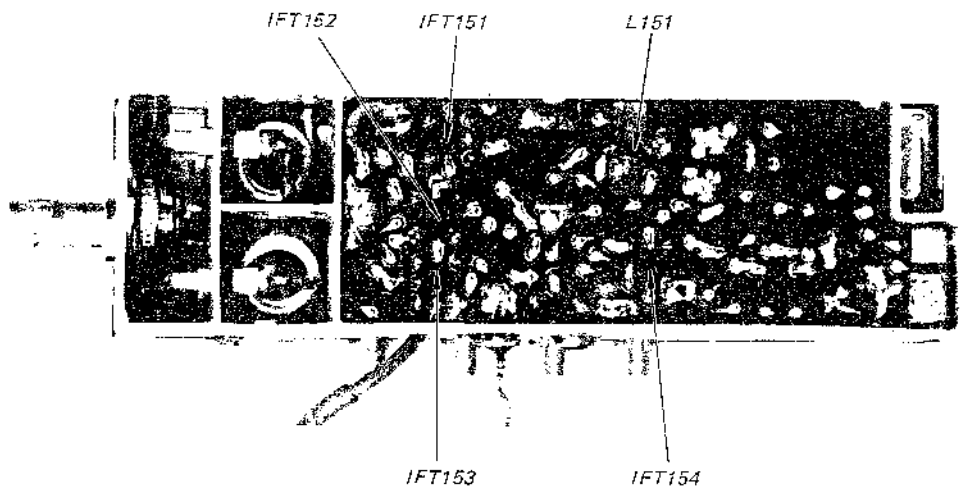
* Serial No. up to 45037: Adjustment location, adjustment parts No. and connecting location are different from Serial No.45038 and later. Refer to mounting diagrams.

	2nd Local OSC Adjustment				
Serial No.45038 and later	L151	IFT151	IFT152	IFT153	IFT154
Serial No. up to 45037	CT130	IFT101	IFT102	IFT103	IFT104

See pages 5 to 7 for connection diagrams

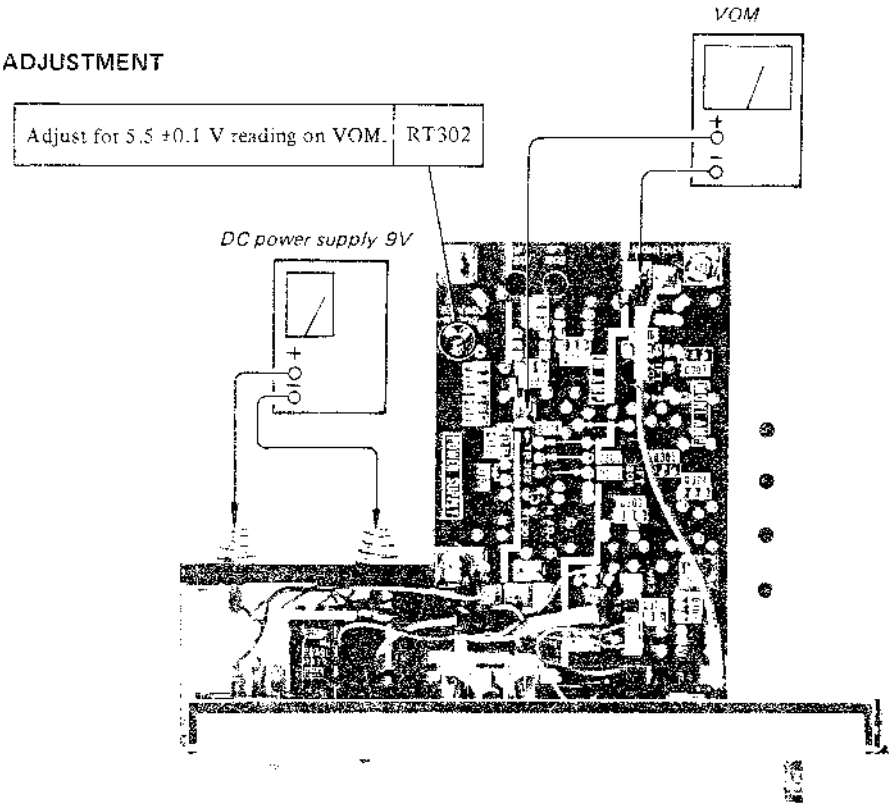
	Step	Connection Diagram	Adjustment Parts	Remarks	Adjustment Value
2nd Local OSC Adjustment	9	Fig. 1 Fig. 4	L151	Adjust L151 so that RF VTVM reading is 0.8V. (The frequency counter reading should be within the specified value.)	0.8 ±0.01V Specification: 60.17 ±0.0025 MHz.
	10	Fig. 1 Fig. 5 ❹	IFT151 IFT152 IFT153	Adjust IFT151, IFT152 and IFT153 so that the mid point of band width becomes 49.47 MHz and output level becomes maximum.	
	11	Fig. 1 Fig. 5 ❺	IFT154 IFT151 IFT152 IFT153	Adjust IFT154, IFT151, IFT152 and IFT153 so that the mid point of band width becomes 10.7 MHz and output level becomes maximum.	
Gain Measurement	12	Fig. 1 Fig. 6		Measure the gain when the signal is received accurately.	43 dB ±2 dB
			L109	If the gain does not reach 41 dB, change the tap position of L109. If it can not be obtained even after adjusting L108, repeat the adjustment from step 1.	

[ADJUSTMENT LOCATION OF 2ND LOCAL OSC]



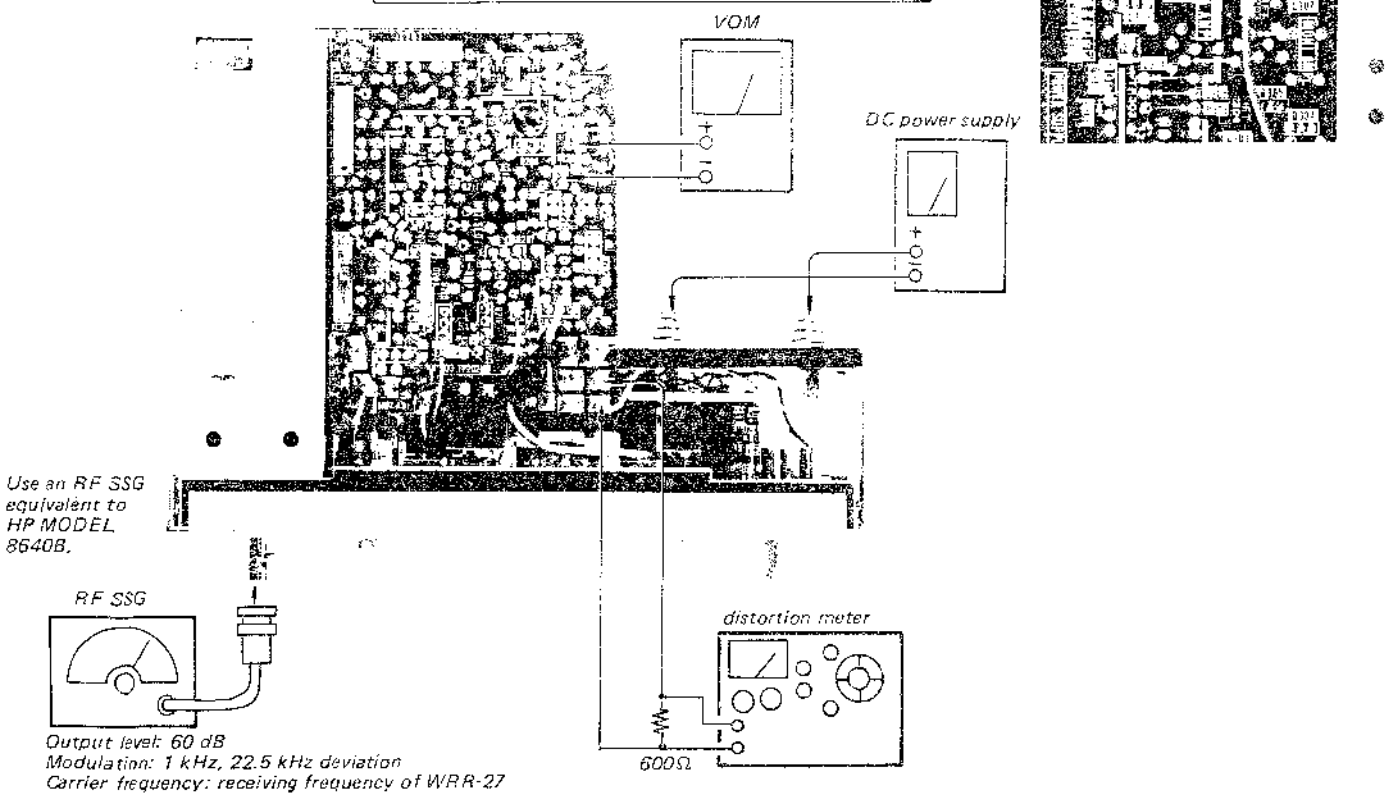
* Serial No. up to 45037: Adjustment location and connecting location are different from Serial No.45038 and later. Refer to mounting diagrams.

3-2. VOLTAGE ADJUSTMENT



3-3. DISCRIMINATOR ALIGNMENT

Adjust for 0 V reading on VOM.	IFT202
Adjust for the minimum distortion.	IFT201
Confirm that the distortion is less than 0.5 % at 1 kHz, 10 kHz modulation with 22.5 kHz deviation.	
Confirm that the distortion is less than 1 % at 1 kHz modulation with 150 kHz deviation.	



* Serial No. up to 45037: Adjustment location and connecting location are different from Serial No.45038 and later
Refer to mounting diagrams.

3-4. RF LEVEL METER CALIBRATION

Set the meter mode selector to the RF position and adjust for maximum reading on the meter. (SSG output level: 10 – 20 dB)	IFT204 IFT203
Set the output level of RF SSG to maximum and adjust for the specified pointer position (see figure below) on the meter. (SSG output level: 60 dB)	RT202

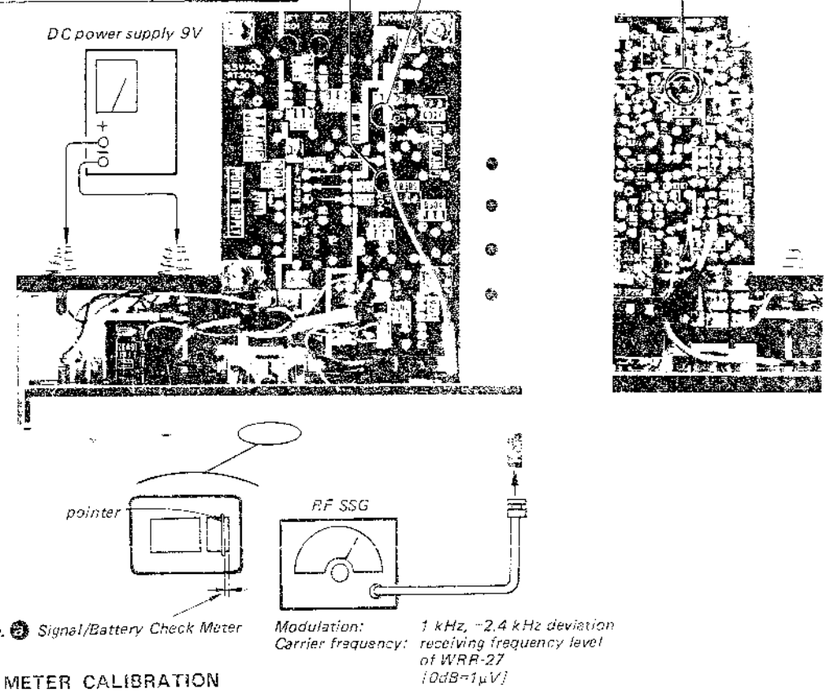


Fig. ④ Signal/Battery Check Meter

Modulation: 1 kHz, ±2.4 kHz deviation
Carrier frequency: receiving frequency level of WRR-27
[0dB=1μV]

3-5. AF LEVEL METER CALIBRATION

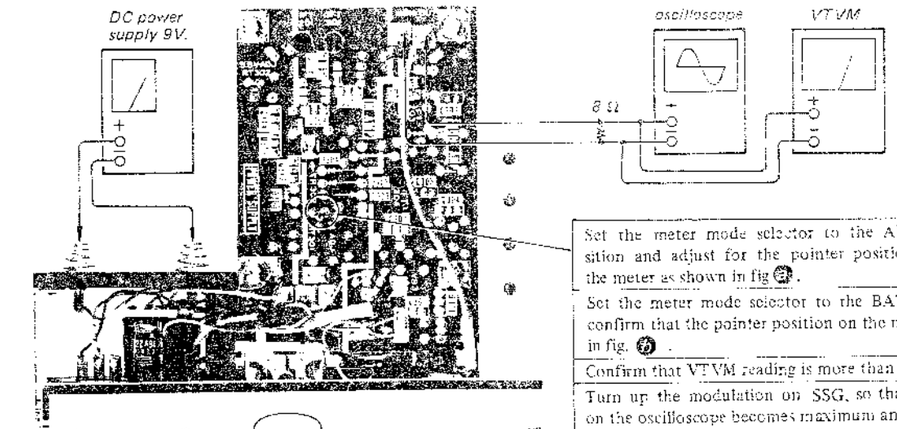
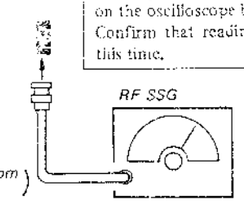


Fig. ⑤ Fig. ⑥

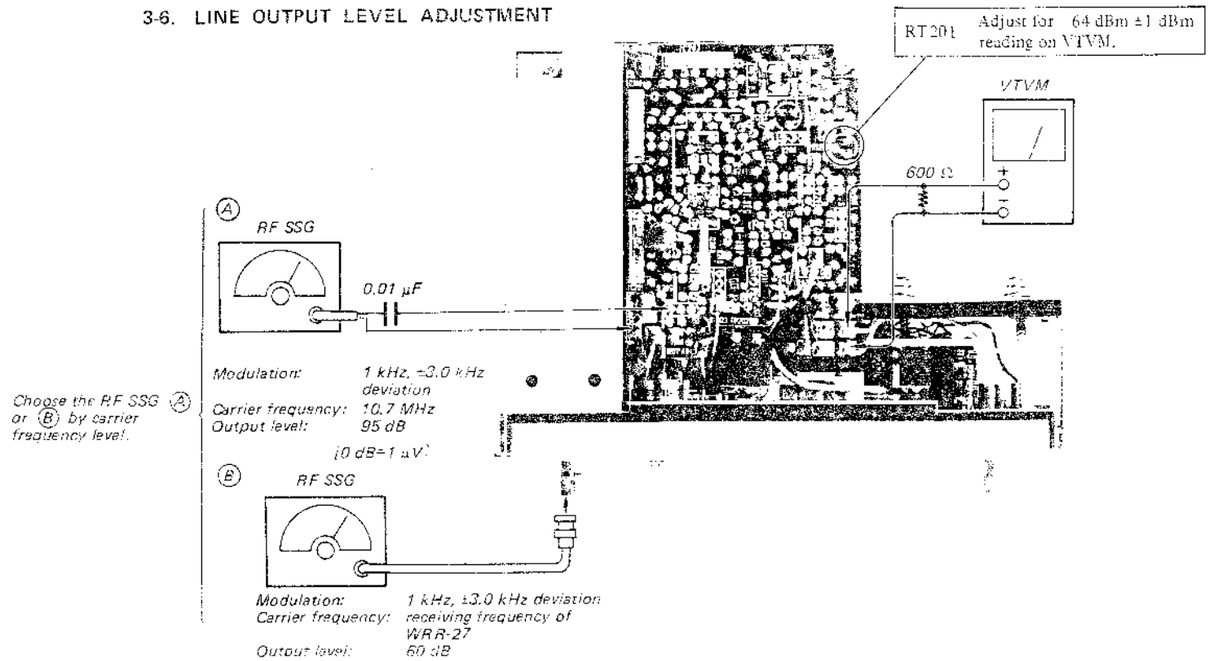
Set the meter mode selector to the AF position and adjust for the pointer position on the meter as shown in fig ⑤.	RT301
Set the meter mode selector to the BATT position and confirm that the pointer position on the meter is as shown in fig. ⑥.	
Confirm that VTVM reading is more than 0.2 V.	
Turn up the modulation on SSG, so that the waveform on the oscilloscope becomes maximum and not clipped. Confirm that reading on VTVM is more than 0.49 V at this time.	



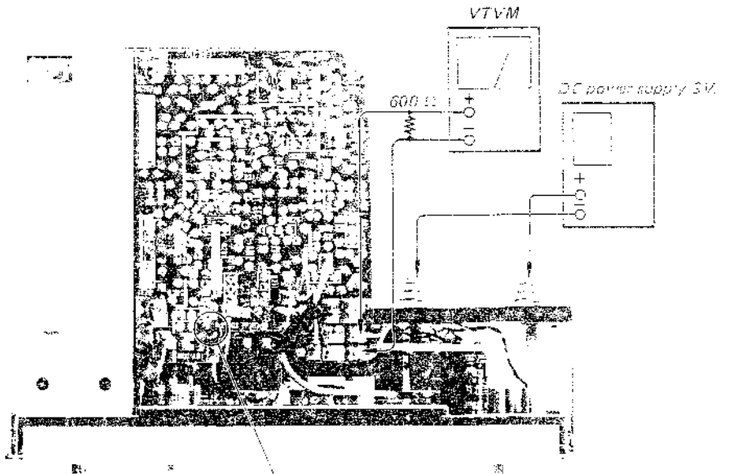
Modulation: 1 kHz, ±3.0 kHz deviation
Carrier frequency: receiving frequency level of WRR-27
Output level: 60 dB
[0 dB=1 μV]

* Serial No. up to 45037: Adjustment location and connecting location are different from Serial No.45038 and later.
Refer to mounting diagrams.

3-6. LINE OUTPUT LEVEL ADJUSTMENT



3-7. MUTING LEVEL ADJUSTMENT

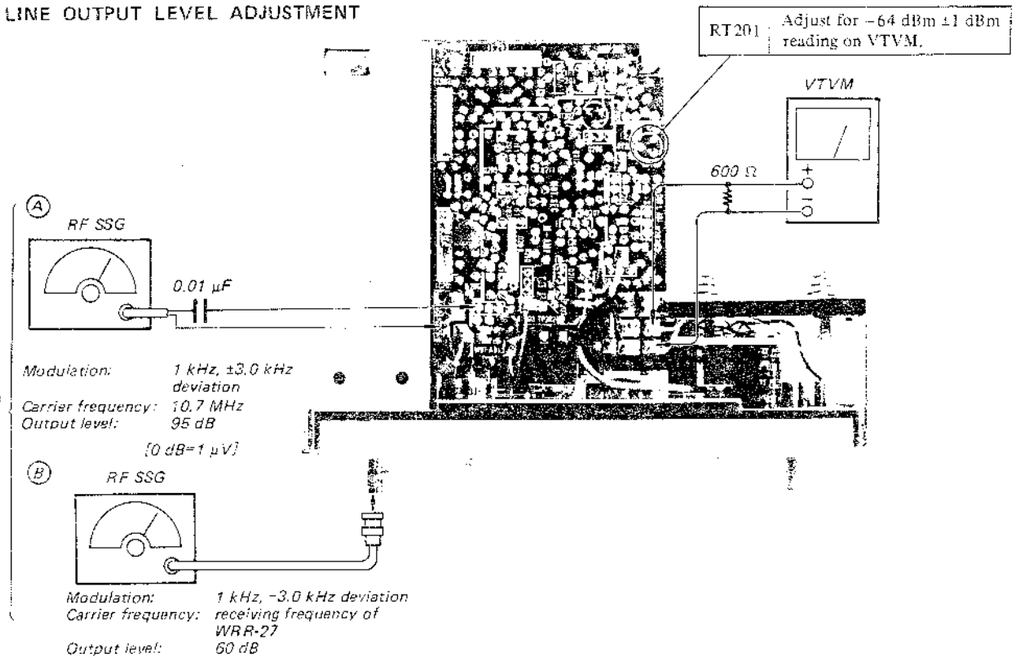


RT203	Adjust for the point where the VTVM indication suddenly increases.
Turn off the modulation of SSG. Confirm that reading on VTVM becomes lower than 10 dB. (S/N measurement)	

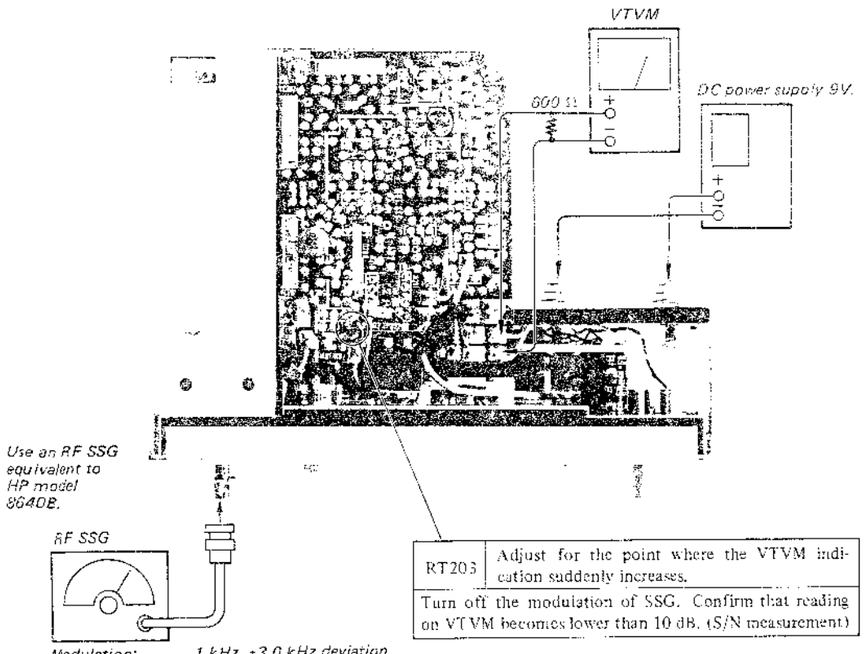
Modulation: 1 kHz, ±3.0 kHz deviation
Carrier frequency: receiving frequency of WRR-27
Output level: 10 dB [0 dB=1 μV]

* Serial No. up to 45037 : Adjustment location and connecting location are different from Serial No.45038 and later.
Refer to mounting diagrams.

3-6. LINE OUTPUT LEVEL ADJUSTMENT



3-7. MUTING LEVEL ADJUSTMENT



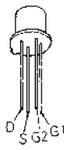
RT203	Adjust for the point where the VTVM indication suddenly increases.
Turn off the modulation of SSG. Confirm that reading on VTVM becomes lower than 10 dB. (S/N measurement)	

MEMO

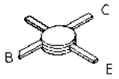
SECTION 4
DIAGRAMS

Semiconductor Lead Layouts

3SK37
3SK48

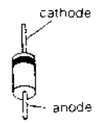


2SC2143

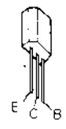


2SC2009

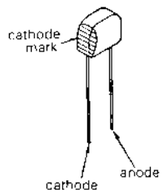
1S1555
1S1925P
1T22AM



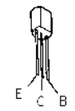
2SA1027R
2SC403C



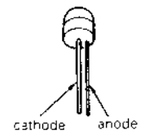
VD1222



2SA772
2SC930
2SC1364
2SA733

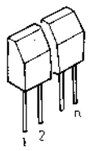


SLP224B

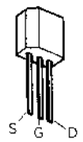


2SK43

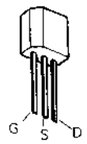
CX-161A
CX-075B



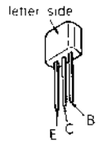
2SK23A



2SK42

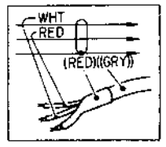


2SA1175



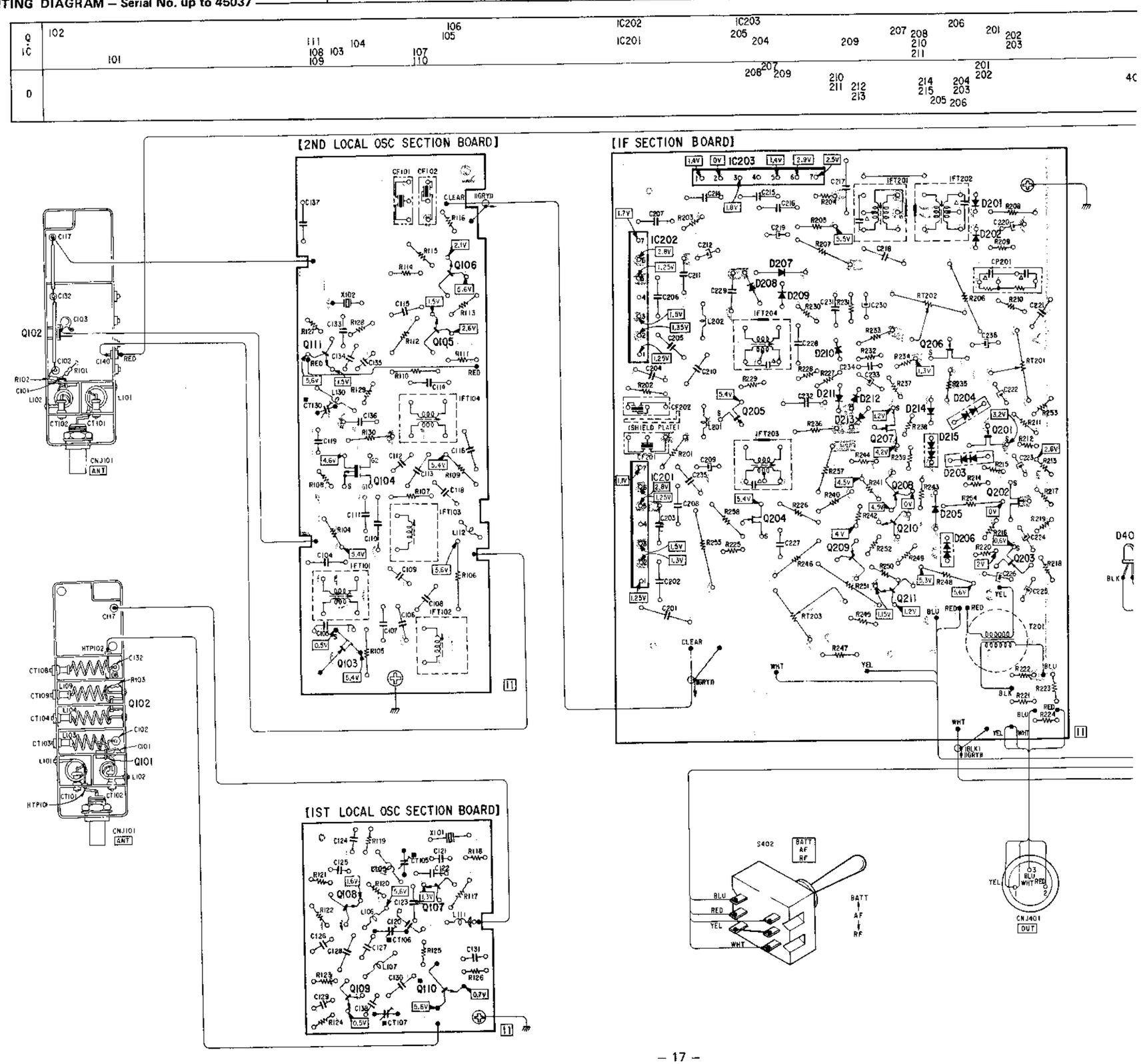
Note:

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



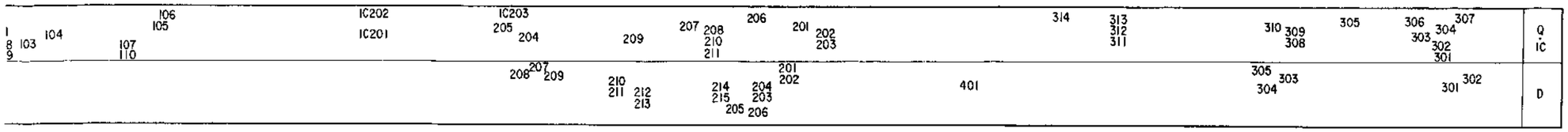
- [ ]— : indicates side identified with part number.

4-1. MOUNTING DIAGRAM – Serial No. up to 45037

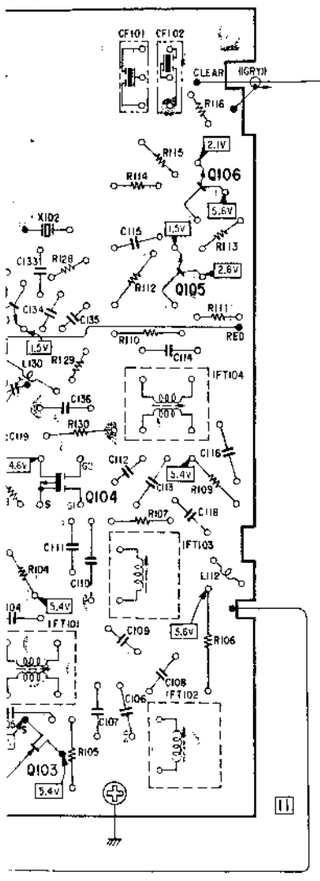


C D E F G H I

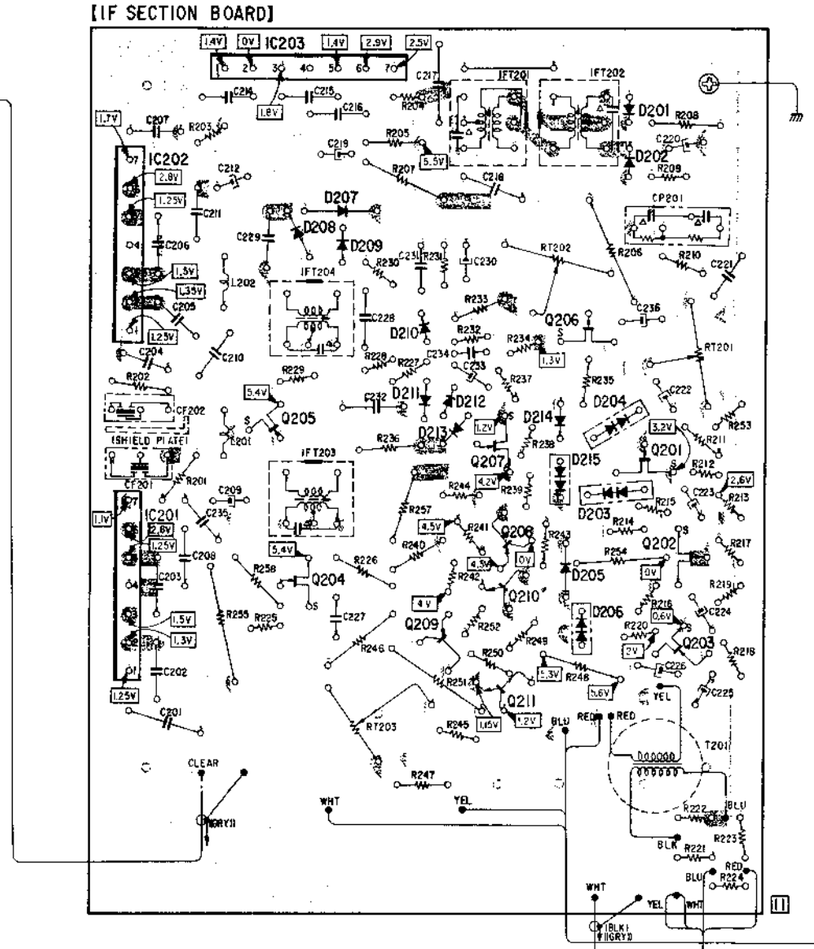
1 2 3 4 5



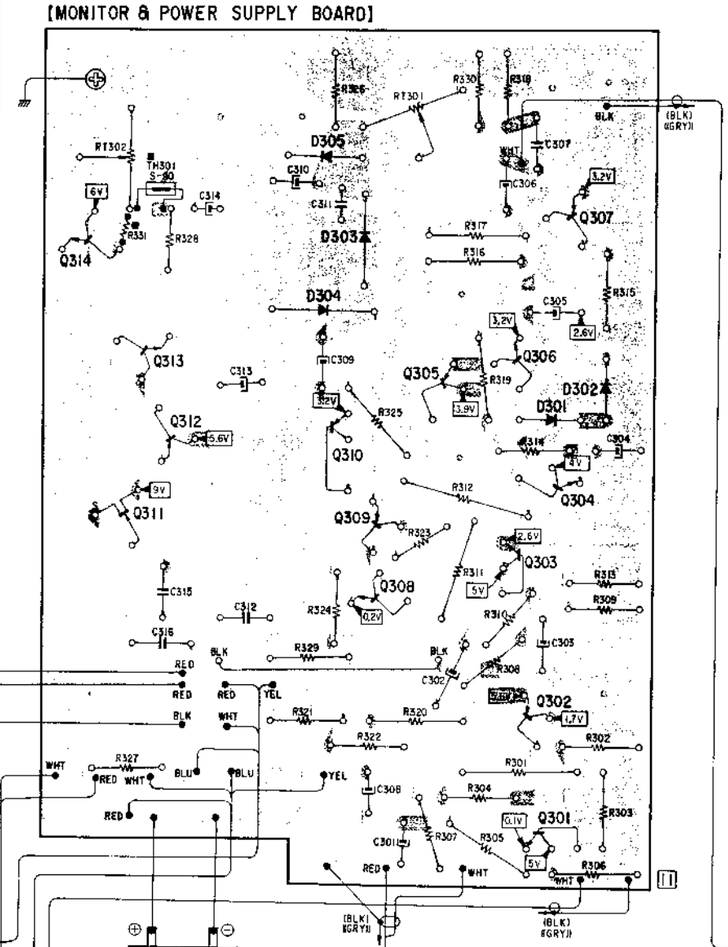
D LOCAL OSC SECTION BOARD]



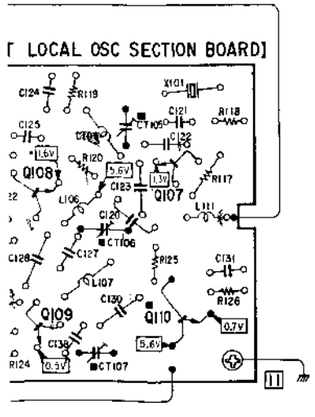
[IF SECTION BOARD]

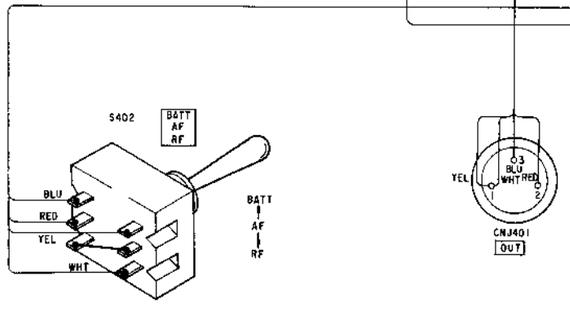


[MONITOR & POWER SUPPLY BOARD]

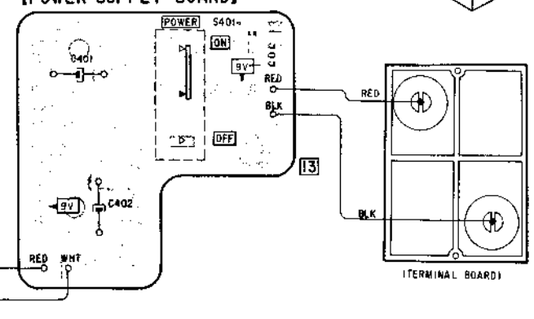


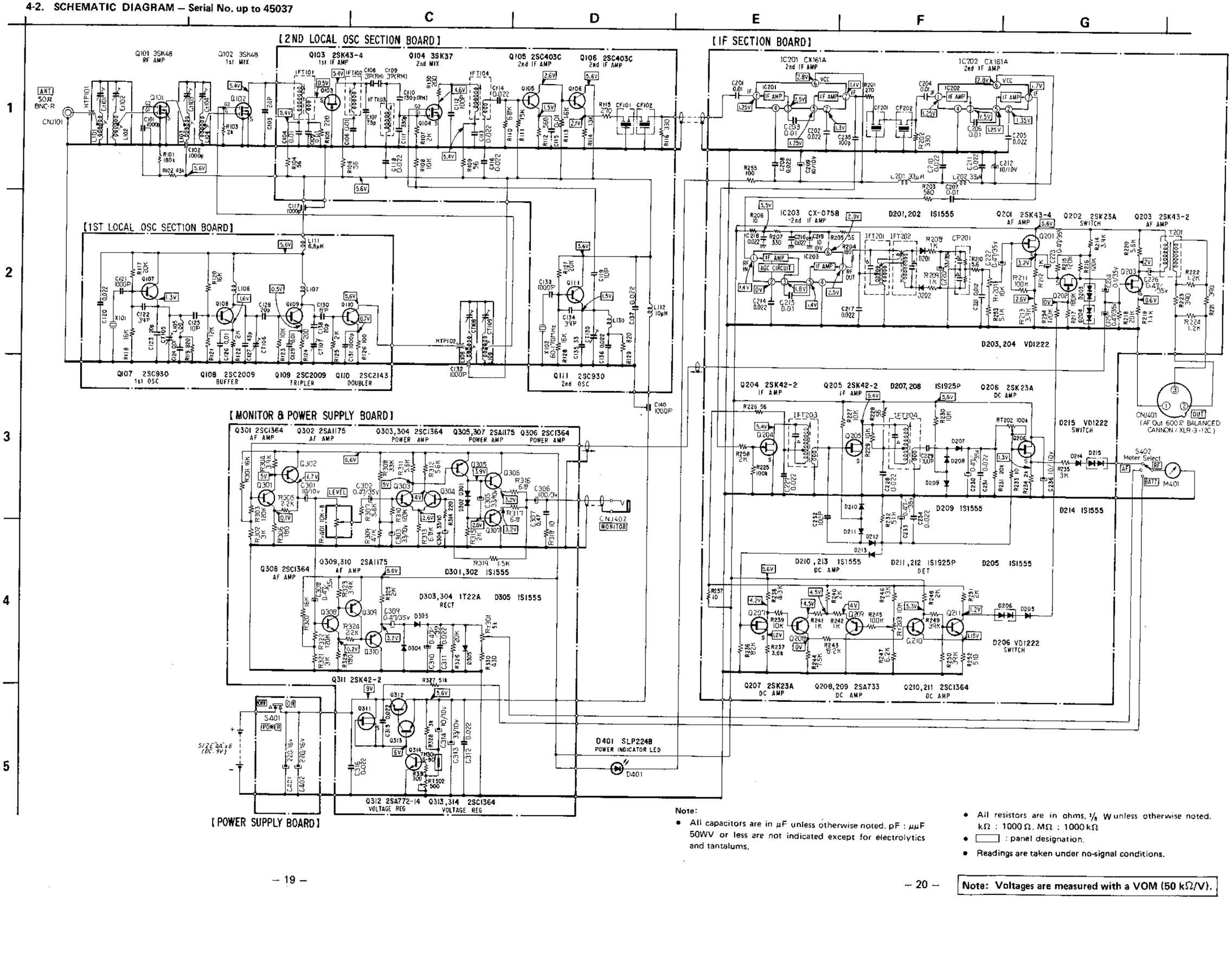
[LOCAL OSC SECTION BOARD]





[POWER SUPPLY BOARD]



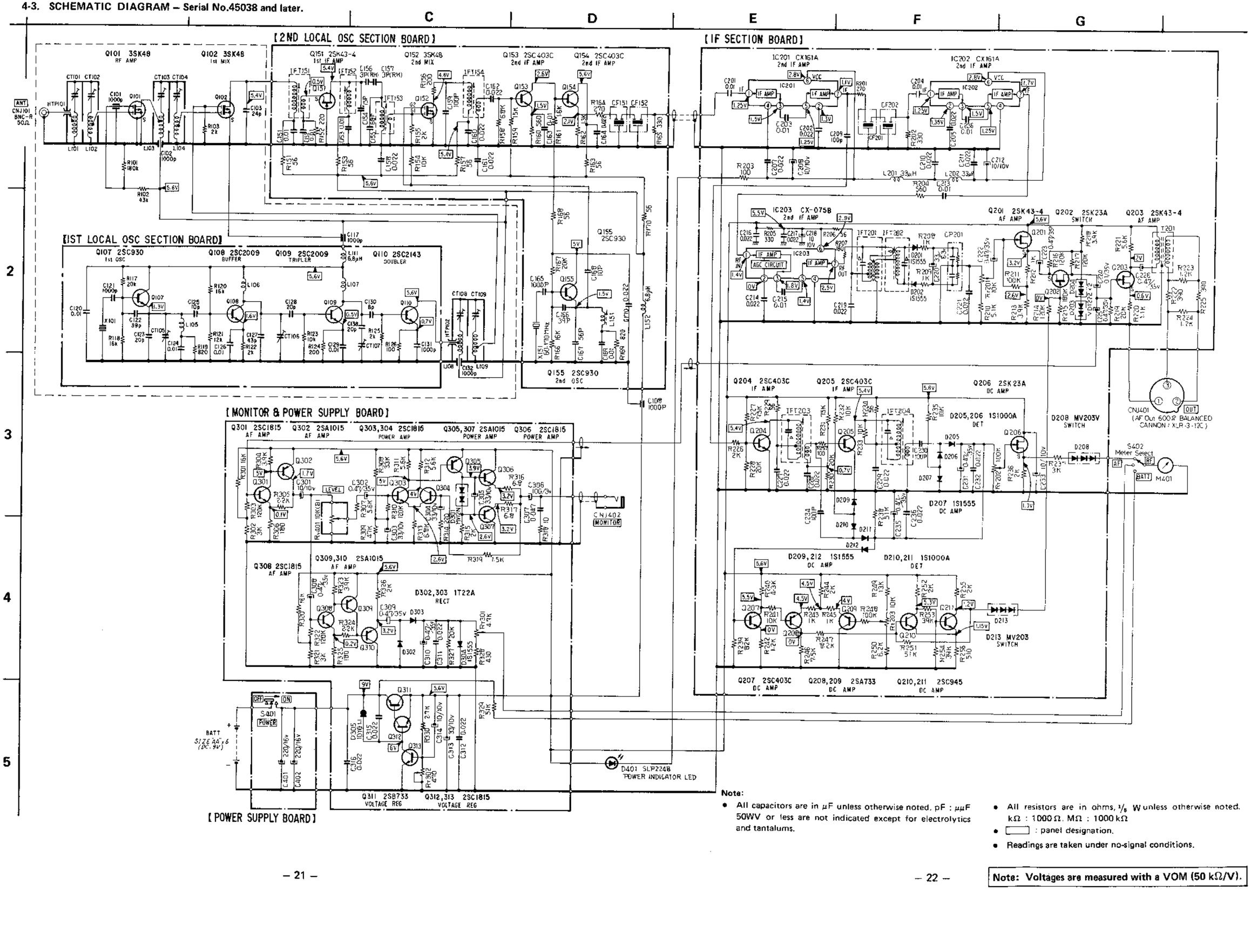


Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.

- All resistors are in ohms, 1/8 W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ☐ : panel designation.
- Readings are taken under no-signal conditions.

Note: Voltages are measured with a VOM (50 kΩ/V).

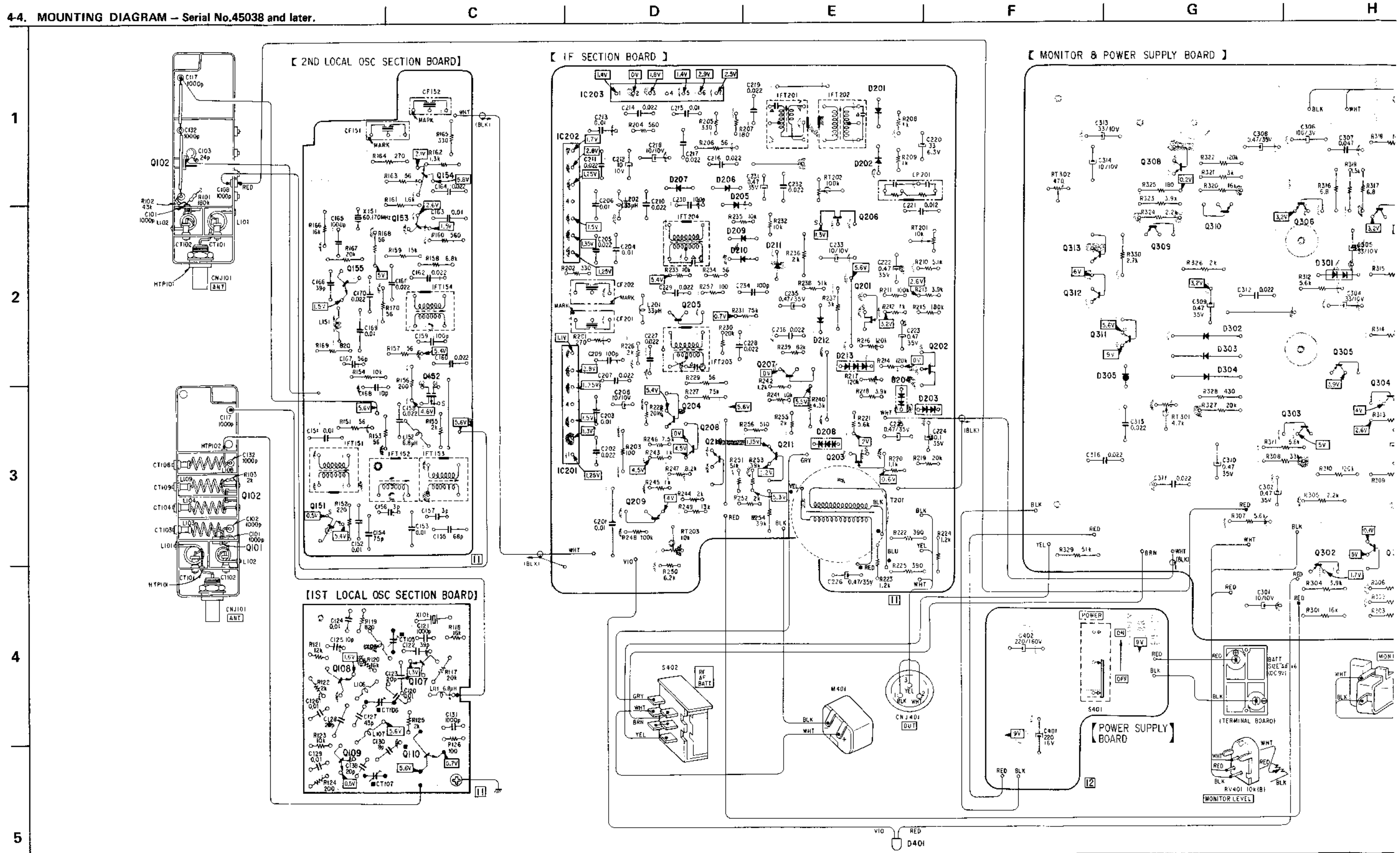


Note:

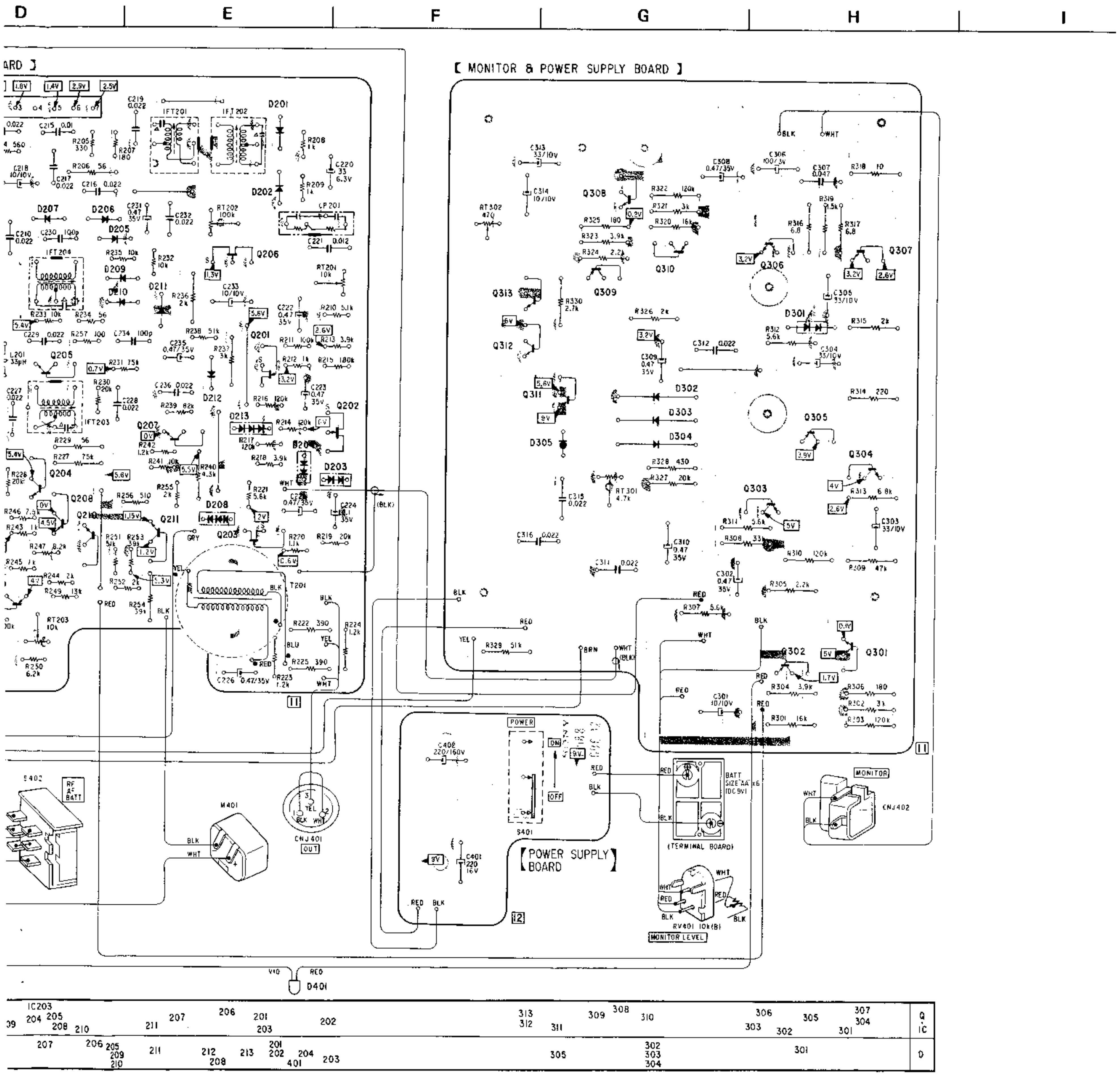
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/8 W unless otherwise noted. kΩ : 1000Ω. MΩ : 1000 kΩ
- ▭ : panel designation.
- Readings are taken under no-signal conditions.

Note: Voltages are measured with a VOM (50 kΩ/V).

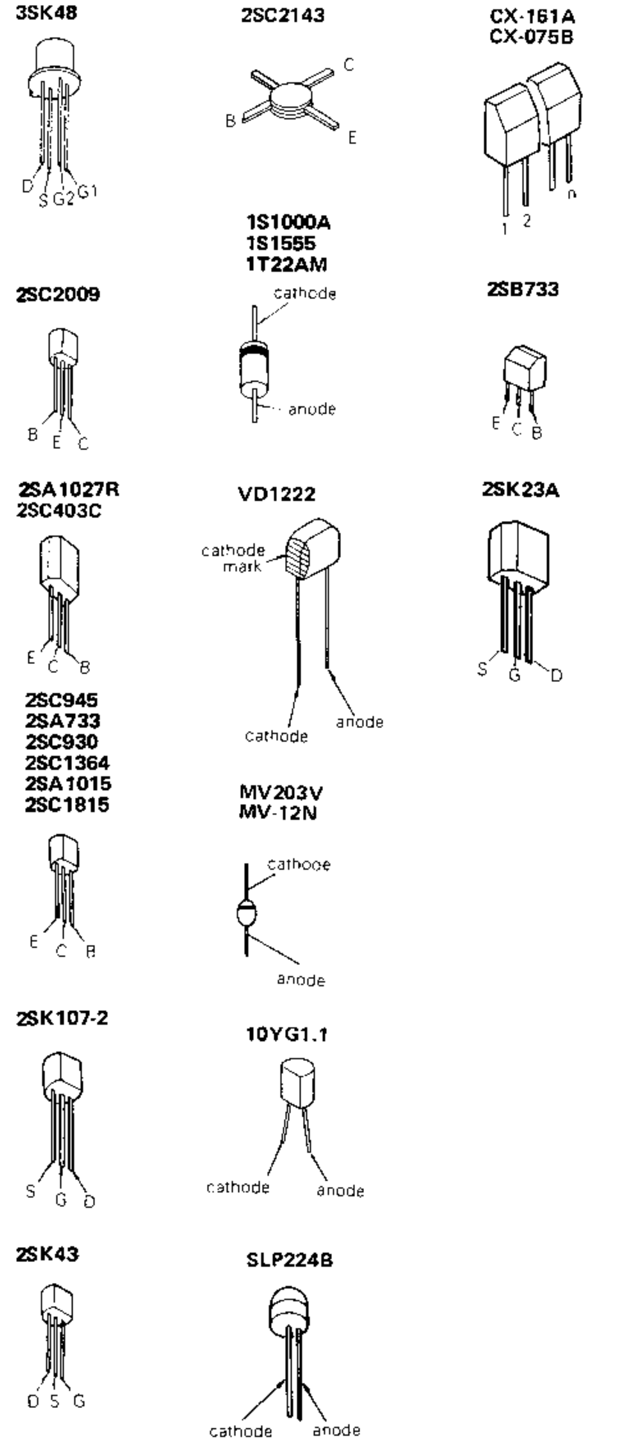
4-4. MOUNTING DIAGRAM – Serial No.45038 and later.



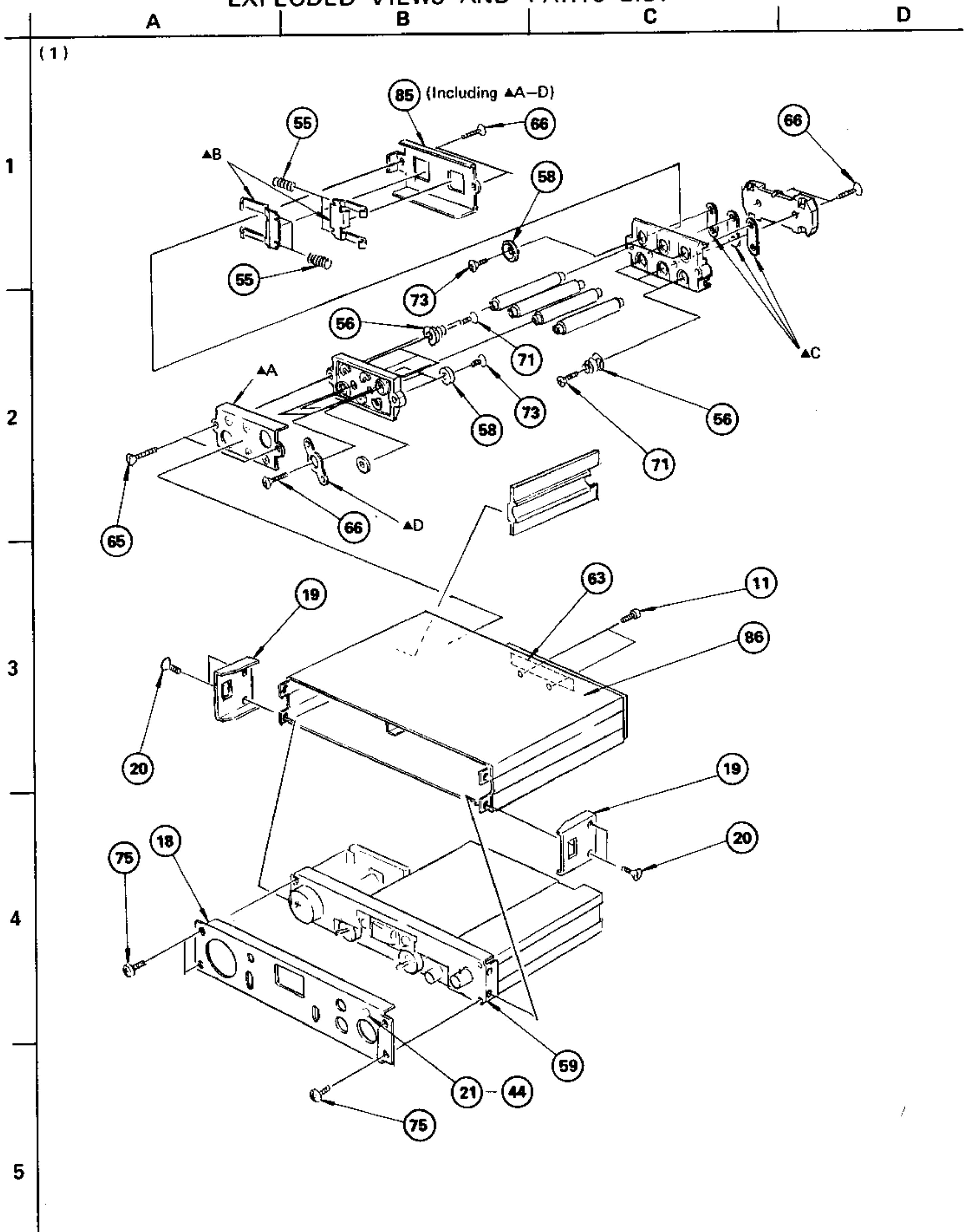
Q IC	102 101 · 151 155 108 109 · 107 154 153 110 152 · IC202 IC201 · 209 IC203 204 205 208 210 · 211 207 · 206 201 203 · 202 · 313 312 311 · 309 308 310 · 306 303 302 305 301 307 304
D	207 · 206 205 209 210 · 211 · 212 208 213 · 201 202 401 204 · 203 · 305 · 302 303 304 · 301

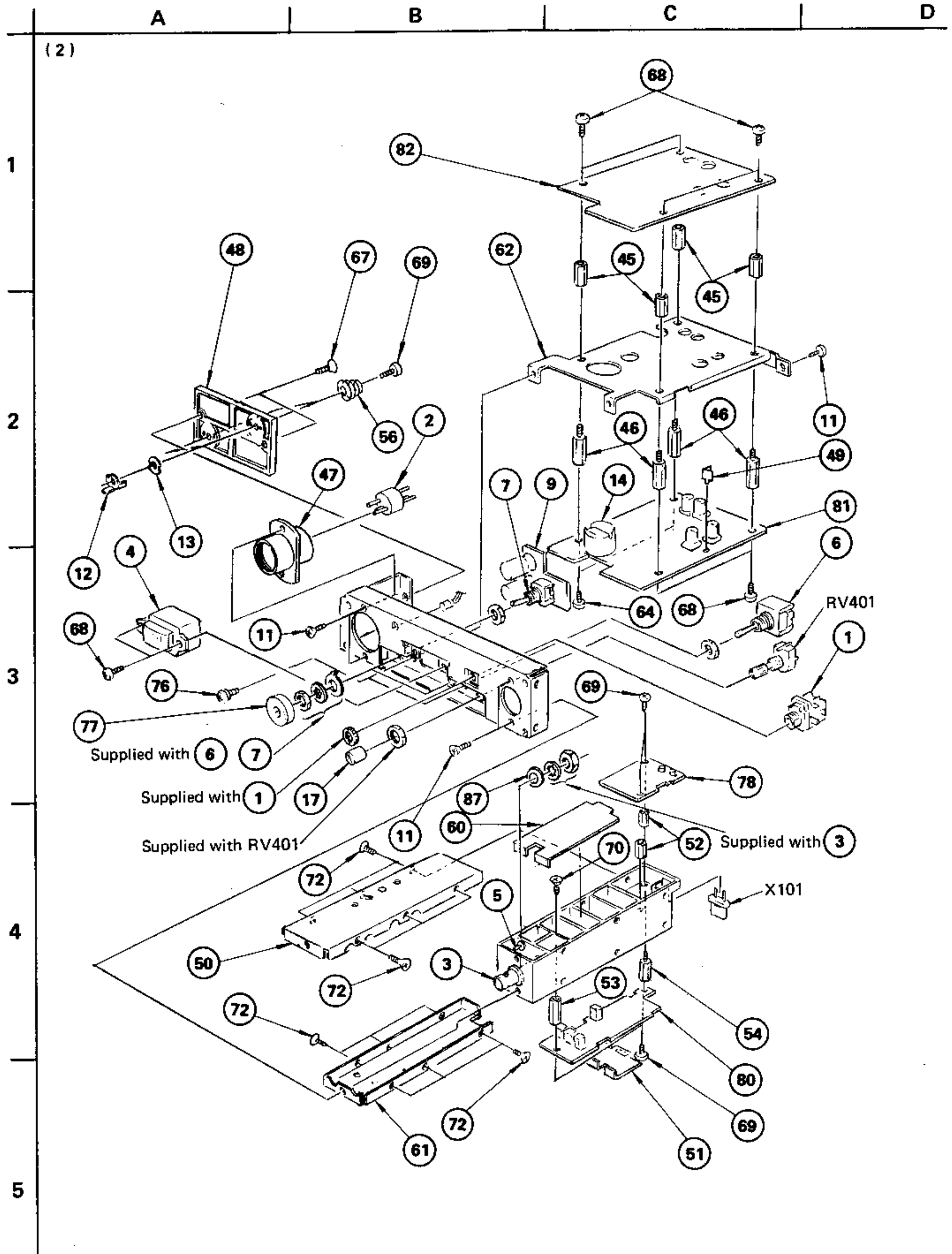


Semiconductor Lead Layouts

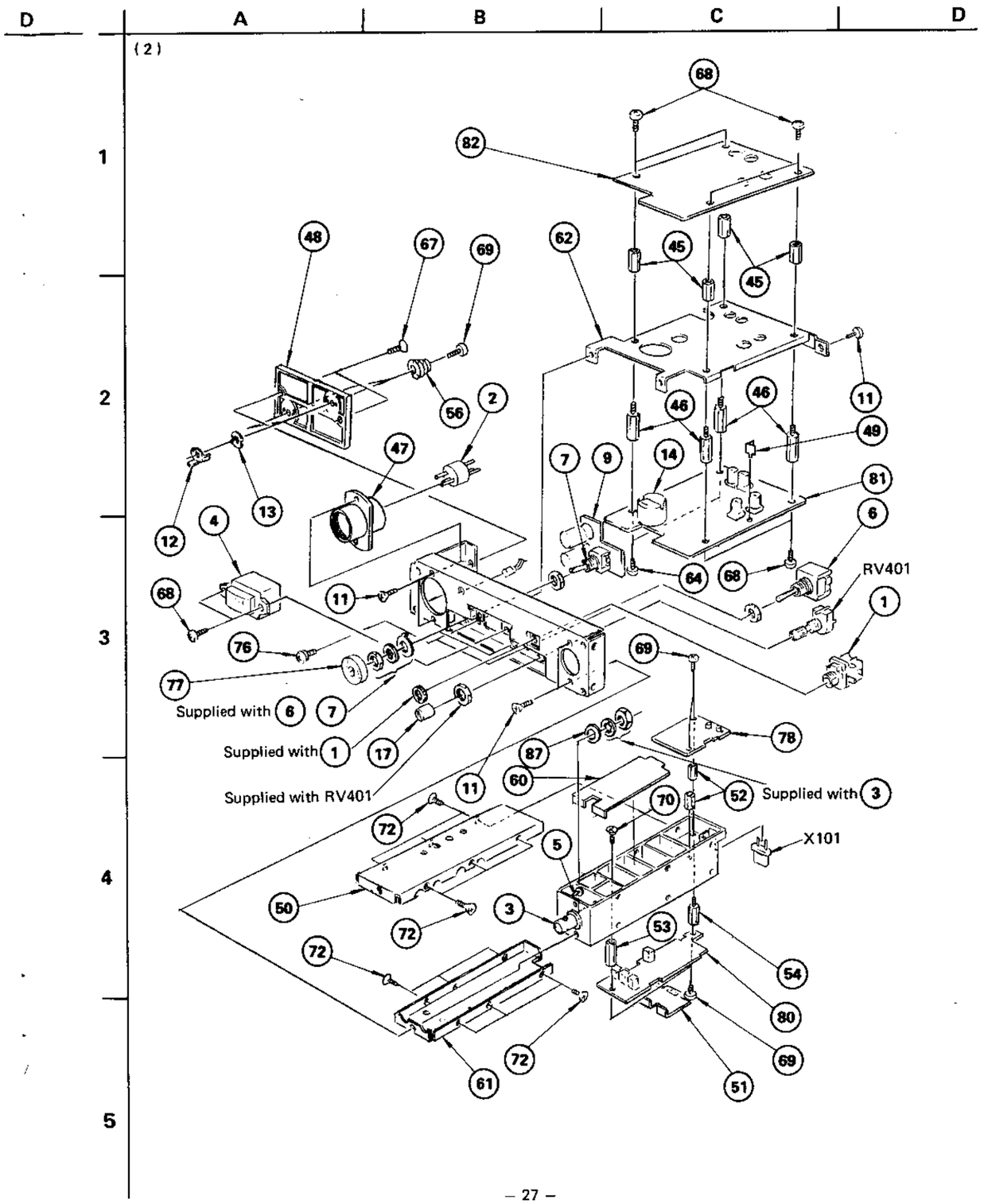


SECTION 5
EXPLODED VIEWS AND PARTS LIST





NOT



GENERAL SECTION

No.	Part No.	Description
1	1-507-412-XX	JM-35 JACK (CNJ402)
2	1-509-096-00	CANNON XLR3-14 PIN INSERT (CNJ401)
3	1-561-627-00	RECEPTACLE, BNC (CNJ101)
4	1-524-005-01	INDICATOR, LEVEL (M401)
5	1-535-240-00	TERMINAL, HERMETIC
6	1-552-852-00	SWITCH (S402)
7	1-552-853-00	SWITCH (S401)
8	.....	
9♦	1-588-696-00	PC BOARD, SWITCH
10	.....	
11	2-513-917-00	SCREW
12	2-521-310-00	CONTACT, TERMINAL
13	2-521-316-00	WASHER, TERMINAL
14♦	2-522-011-00	CASE, SHIELD
15	.....	
16	.....	
17	2-527-010-00	KNOB, ATTENUATOR
18♦	2-527-071-00	PANEL, FRONT
19♦	2-527-072-00	HANGER
20	2-527-075-00	SCREW
21♦	2-527-076-41	EMBLEM, CHANNEL (41 CH)
22♦	2-527-076-42	EMBLEM, CHANNEL (42 CH)
23♦	2-527-076-43	EMBLEM, CHANNEL (43 CH)
24♦	2-527-076-44	EMBLEM, CHANNEL (44 CH)
25♦	2-527-076-45	EMBLEM, CHANNEL (45 CH)
26♦	2-527-076-46	EMBLEM, CHANNEL (46 CH)
27♦	2-527-076-47	EMBLEM, CHANNEL (47 CH)
28♦	2-527-076-48	EMBLEM, CHANNEL (48 CH)
29♦	2-527-076-49	EMBLEM, CHANNEL (49 CH)
30♦	2-527-076-50	EMBLEM, CHANNEL (50 CH)
31♦	2-527-076-51	EMBLEM, CHANNEL (51 CH)
32♦	2-527-076-52	EMBLEM, CHANNEL (52 CH)
45♦	2-527-078-00	SUPPORT (A), PC BOARD
46♦	2-527-079-00	SUPPORT (B), PC BOARD
47♦	2-527-080-00	SLEEVE, CONNECTOR
48♦	2-527-081-00	BOARD, TERMINAL
49♦	2-527-082-00	PARTITION
50♦	2-527-085-00	COVER (A), FRAME
51♦	2-527-087-00	PLATE (B), CONTACT
52♦	2-527-088-00	SUPPORT (A), F.E PC BOARD
53♦	2-527-089-00	SUPPORT (B), F.E PC BOARD
54♦	2-527-090-00	SUPPORT (C), F.E PC BOARD
55	2-527-096-00	SPRING, COMPRESSION

GENERAL SECTION

No.	Part No.	Description
56	2-527-097-00	SPRING
57	.....	
58	2-527-098-00	TERMINAL, POSITIVE
59♦	2-527-506-00	PANEL, SUB
60♦	2-527-507-00	PLATE (A), CONTACT
61♦	2-527-086-00	COVER (B), FRAME
62♦	2-527-557-00	CHASSIS
63	2-527-074-00	LABEL, MODEL NUMBER
64	7-621-259-25	SCREW +P 2.6X4
65	7-621-555-50	SCREW +K 2X8
66	7-621-555-52	SCREW +K 2X8
67	7-621-592-00	SCREW +K 2.6X6
68	7-621-770-87	SCREW +B 2.6X5
69	7-621-771-06	SCREW +B 2X5
70	7-627-452-17	SCREW, PRECISION +K 2X3
71	7-621-772-08	SCREW +B 2X3
72	7-627-452-07	SCREW, PRECISION +K 2X2
73	7-621-555-22	SCREW +K 2X4
74	.....	
75	7-627-553-27	SCREW, PRECISION +P 2X2.5
76	7-628-254-00	SCREW +PS 2.6X5
77	9-911-815-01	BLIND, SWITCH
78♦	A-4518-094-A	MOUNTED PCB, LOCAL OSC (1ST)
79	.....	
80♦	A-4518-125-A	MOUNTED PCB, OSC, LOCAL
81♦	A-4518-126-A	MOUNTED PCB, IF
82♦	A-4518-127-A	MOUNTED PCB, MONITOR
83	.....	
84	.....	
85	A-4521-004-A	CASE ASSY, BATTERY
86♦	X-2527-002-0	COVER ASSY, CASE
87♦	2-527-083-00	SPACER

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
101	1-501-203-00	ANTENNA
102	1-504-059-11	MAGNETIC EARPHONE(ME-20H)
103	2-527-031-00	INDIVIDUAL CARTON
104	2-527-032-00	SPACER
105	2-527-033-00	CUSHION
106	2-527-503-00	BELT, SHOULDER
107	2-527-504-00	CASE, EARPHONE
108	2-527-511-00	CASE, LEATHER
109 ♦	;2-527-514-41	SEAL, CHANNEL (41 CH)
110 ♦	;2-527-514-42	SEAL, CHANNEL (42 CH)
111 ♦	;2-527-514-43	SEAL, CHANNEL (43 CH)
112 ♦	;2-527-514-44	SEAL, CHANNEL (44 CH)
113 ♦	;2-527-514-45	SEAL, CHANNEL (45 CH)
114 ♦	;2-527-514-46	SEAL, CHANNEL (46 CH)
115 ♦	;2-527-514-47	SEAL, CHANNEL (47 CH)
116 ♦	;2-527-514-48	SEAL, CHANNEL (48 CH)
117 ♦	;2-527-514-49	SEAL, CHANNEL (49 CH)
118 ♦	;2-527-514-50	SEAL, CHANNEL (50 CH)
119 ♦	;2-527-514-51	SEAL, CHANNEL (51 CH)
120 ♦	;2-527-514-52	SEAL, CHANNEL (52 CH)
121	2-599-126-11	MANUAL, INSTRUCTION
122	3-701-363-00	LABEL, TACK
123	3-701-617-00	BAG, POLYETHYLENE
124	3-701-619-00	BAG, POLYETHYLENE, STANDARD
125	3-701-623-00	BAG, POLYETHYLENE
126	3-701-625-00	BAG, POLYETHYLENE

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C101	1-161-857-00	CAP, CERAMIC	1000PF		
C102	1-161-857-00	CAP, CERAMIC	1000PF		
C103	1-102-672-00	CAP, CERAMIC	24PF RH		
C117	1-161-857-00	CAP, CERAMIC	1000PF		
C132	1-161-857-00	CAP, CERAMIC	1000PF		
C140	1-161-857-00	CAP, CERAMIC	1000PF		
C154	1-102-859-00	CERAMIC	75PF	5%	50V
C155	1-102-676-00	CERAMIC	68PF	5%	50V
C156	1-102-862-00	CERAMIC	3PF	0.25PF	50V
C157	1-102-862-00	CERAMIC	3PF	0.25PF	50V
C159	1-102-678-21	CERAMIC	100PF	5%	50V
C167	1-102-850-21	CERAMIC	56PF	5%	50V
C201	1-161-051-00	CERAMIC	0.01MF	30%	25V
C203	1-161-051-00	CERAMIC	0.01MF	30%	25V
C204	1-161-051-00	CERAMIC	0.01MF	30%	25V
C206	1-161-051-00	CERAMIC	0.01MF	30%	25V
C208	1-131-377-00	TANTALUM	10MF	10%	10V
C212	1-131-377-00	TANTALUM	10MF	10%	10V
C213	1-161-051-00	CERAMIC	0.01MF	30%	25V
C215	1-161-051-00	CERAMIC	0.01MF	30%	25V
C218	1-131-377-00	TANTALUM	10MF	10%	10V
C220	1-131-386-00	TANTALUM	33MF	10%	6.3V
C224	1-131-341-00	TANTALUM	0.1MF	10%	35V
C233	1-131-377-00	TANTALUM	10MF	10%	10V
C301	1-131-377-00	TANTALUM	10MF	10%	10V
C303	1-131-380-00	TANTALUM	33MF	10%	10V
C304	1-131-380-00	TANTALUM	33MF	10%	10V
C305	1-131-380-00	TANTALUM	33MF	10%	10V
C306	1-131-395-00	TANTALUM	100MF	10%	3.15V
C313	1-131-380-00	TANTALUM	33MF	10%	10V
C314	1-131-377-00	TANTALUM	10MF	10%	10V
CF151	1-527-358-00	FILTER, CERAMIC			
CF152	1-527-358-00	FILTER, CERAMIC			
CF201	1-527-358-00	FILTER, CERAMIC			
CF202	1-527-358-00	FILTER, CERAMIC			
CP201	1-231-202-00	CR ENCAPSULATED COMPONENT			
CT105	1-141-224-00	CAP, TRIMMER			
CT106	1-141-224-00	CAP, TRIMMER			
CT107	1-141-224-00	CAP, TRIMMER			
D201	8-719-815-55	DIODE 1S1555			
D202	8-719-815-55	DIODE 1S1555			
D203	8-719-122-20	DIODE VD1222			
D204	8-719-122-20	DIODE VD1222			
D205	8-719-422-21	DIODE 1T22AM			
D206	8-719-422-21	DIODE 1T22AM			

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D207	8-719-815-55	DIODE 1S1555
D208	8-719-920-30	DIODE MV203V
D209	8-719-815-55	DIODE 1S1555
D210	8-719-422-21	DIODE 1T22AM
D211	8-719-422-21	DIODE 1T22AM
D212	8-719-815-55	DIODE 1S1555
D213	8-719-920-30	DIODE MV203V
D301	8-719-912-00	DIODE MV12N
D302	8-719-422-21	DIODE 1T22AM
D303	8-719-422-21	DIODE 1T22AM
D304	8-719-815-55	DIODE 1S1555
D305	8-719-201-11	DIODE 10YG1.1
D401	8-719-902-24	DIODE SLP224B
IC201	8-759-601-61	IC CX-161A
IC202	8-759-601-61	IC CX-161A
IC203	8-759-600-75	IC CX-075B
♦ IFT151	;1-404-193-00	TRANSFORMER, IF
♦ IFT152	;1-404-293-00	TRANSFORMER, IF
♦ IFT153	;1-404-293-00	TRANSFORMER, IF
♦ IFT154	;1-404-194-00	TRANSFORMER, IF
IFT201	1-404-195-00	TRANSFORMER, IF
IFT202	1-404-113-00	TRANSFORMER, DISCRI
IFT203	1-404-138-00	TRANSFORMER, IFT
IFT204	1-404-138-00	TRANSFORMER, IFT
L105 ♦	;1-420-947-11	COIL, AIR-CORE
L106 ♦	;1-420-946-00	COIL, AIR-CORE
L107	1-420-945-00	COIL, AIR-CORE
L111	1-407-188-XX	MICRO INDUCTOR 6.8UH
L151	1-405-307-00	COIL, OSCILLATOR FM
L152	1-407-188-XX	MICRO INDUCTOR 6.8UH
L201	1-407-163-XX	MICRO INDUCTOR 33UH
L202	1-407-163-XX	MICRO INDUCTOR 33UH
Q101	8-761-200-00	TRANSISTOR 3SK48
Q102	8-761-200-00	TRANSISTOR 3SK48
Q107	8-729-803-04	TRANSISTOR 2SC930
Q108	8-765-300-00	TRANSISTOR 2SC2009
Q109	8-765-300-00	TRANSISTOR 2SC2009
Q110	8-765-430-00	TRANSISTOR 2SC2143
Q151	8-723-304-00	TRANSISTOR 2SK43-4
Q152	8-761-200-00	TRANSISTOR 3SK48
Q153	8-724-375-01	TRANSISTOR 2SC403C
Q154	8-724-375-01	TRANSISTOR 2SC403C
Q155	8-729-803-04	TRANSISTOR 2SC930
Q201	8-723-304-00	TRANSISTOR 2SK43-4
Q202	8-719-200-20	TRANSISTOR 2SK107-2
Q203	8-723-304-00	TRANSISTOR 2SK43-4
Q204	8-724-375-01	TRANSISTOR 2SC403C

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q205	8-724-375-01	TRANSISTOR 2SC403C
Q206	8-719-200-20	TRANSISTOR 2SK107-2
Q207	8-724-375-01	TRANSISTOR 2SC403C
Q208	8-729-612-77	TRANSISTOR 2SA1027R
Q209	8-729-612-77	TRANSISTOR 2SA1027R
Q210	8-729-663-47	TRANSISTOR 2SC1364
Q211	8-729-663-47	TRANSISTOR 2SC1364
Q301	8-729-663-47	TRANSISTOR 2SC1364
Q302	8-729-201-52	TRANSISTOR 2SA1015
Q303	8-729-663-47	TRANSISTOR 2SC1364
Q304	8-729-663-47	TRANSISTOR 2SC1364
Q305	8-729-201-52	TRANSISTOR 2SA1015
Q306	8-729-663-47	TRANSISTOR 2SC1364
Q307	8-729-201-52	TRANSISTOR 2SA1015
Q308	8-729-663-47	TRANSISTOR 2SC1364
Q309	8-729-201-52	TRANSISTOR 2SA1015
Q310	8-729-201-52	TRANSISTOR 2SA1015
Q311	8-729-113-32	TRANSISTOR 2SB733
Q312	8-729-663-47	TRANSISTOR 2SC1364
Q313	8-729-663-47	TRANSISTOR 2SC1364
R222	1-214-122-00	METAL 390 1% 1/4W
R223	1-214-134-00	METAL 1.2K 1% 1/4W
R224	1-214-134-00	METAL 1.2K 1% 1/4W
R225	1-214-122-00	METAL 390 1% 1/4W
RT201	1-226-703-00	RES, ADJ, METAL GLAZE 10K
RT202	1-226-775-00	RES, ADJ, METAL GLAZE 100K
RT203	1-226-703-00	RES, ADJ, METAL GLAZE 10K
RT301	1-226-772-00	RES, ADJ, METAL GLAZE 4.7K
RT302	1-226-770-00	RES, ADJ, METAL GLAZE 470
RV401	1-224-738-00	RES, VAR, CARBON 10K
T201	1-427-250-00	TRANSFORMER,OUTPUT
X101	1-527-359-00	CRYSTAL, OSC (41 CH)
X101	1-527-360-00	CRYSTAL, OSC (42 CH)
X101	1-527-361-00	CRYSTAL, OSC (43 CH)
X101	1-527-362-00	CRYSTAL, OSC (44 CH)
X101	1-527-363-00	CRYSTAL, OSC (45 CH)
X101	1-527-364-00	CRYSTAL, OSC (46 CH)
X101	1-527-365-00	CRYSTAL, OSC (47 CH)
X101	1-527-366-00	CRYSTAL, OSC (48 CH)
X101	1-527-367-00	CRYSTAL, OSC (49 CH)
X101	1-527-368-00	CRYSTAL, OSC (50 CH)
X101	1-527-369-00	CRYSTAL, OSC (51 CH)
X101	1-527-370-00	CRYSTAL, OSC (52 CH)
X151	1-527-608-00	OSCILLATOR, CRYSTAL

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

1/8 WATT CARBON RESISTOR

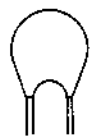
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
2.0	—	13	1-246-821-00	91	1-246-831-00	620	1-246-841-00	4.3k	1-246-851-00	30k	1-246-861-00	200k	1-246-871-00
2.2	1-246-751-00	15	1-246-761-00	100	1-246-771-00	680	1-246-781-00	4.7k	1-246-791-00	33k	1-246-801-00	220k	1-246-811-00
2.4	—	16	1-246-822-00	110	1-246-832-00	750	1-246-842-00	5.1k	1-246-852-00	36k	1-246-862-00	240k	1-247-054-00
2.7	1-246-752-00	18	1-246-762-00	120	1-246-772-00	820	1-246-782-00	5.6k	1-246-792-00	39k	1-246-802-00	270k	1-247-046-00
3.0	—	20	1-246-823-00	130	1-246-833-33	910	1-246-843-00	6.2k	1-246-853-00	43k	1-246-863-00	300k	1-247-055-00
3.3	1-246-753-00	22	1-246-763-00	150	1-246-773-00	1.0k	1-246-783-00	6.8k	1-246-793-00	47k	1-246-803-00	330k	1-247-047-00
3.6	—	24	1-246-824-00	160	1-246-834-00	1.1k	1-246-844-00	7.5k	1-246-854-00	51k	1-246-864-00	360k	1-247-056-00
3.9	1-246-754-00	27	1-246-764-00	180	1-246-774-00	1.2k	1-246-784-00	8.2k	1-246-794-00	56k	1-246-804-00	390k	1-247-048-00
4.3	—	30	1-246-825-00	200	1-246-835-00	1.3k	1-246-845-00	9.1k	1-246-855-00	62k	1-246-865-00	430k	1-247-057-00
4.7	1-246-755-00	33	1-246-765-00	220	1-246-775-00	1.5k	1-246-785-00	10k	1-246-795-00	68k	1-246-805-00	470k	1-247-049-00
5.1	—	36	1-246-826-00	240	1-246-836-00	1.6k	1-246-846-00	11k	1-246-856-00	75k	1-246-866-00	510k	1-247-058-00
5.6	1-246-756-00	39	1-246-766-00	270	1-246-776-00	1.8k	1-246-786-00	12k	1-246-796-00	82k	1-246-806-00	560k	1-247-050-00
6.2	—	43	1-246-827-00	300	1-246-837-00	2.0k	1-246-847-00	13k	1-246-857-00	91k	1-246-867-00	620k	1-247-059-00
6.8	1-246-757-00	47	1-246-767-00	330	1-246-777-00	2.2k	1-246-787-00	15k	1-246-797-00	100k	1-246-807-00	680k	1-247-051-00
7.5	1-246-818-00	51	1-246-828-00	360	1-246-838-00	2.4k	1-246-848-00	16k	1-246-858-00	110k	1-246-868-00	750k	1-247-060-00
8.2	1-246-758-00	56	1-246-768-00	390	1-246-778-00	2.7k	1-246-788-00	18k	1-246-798-00	120k	1-246-808-00	820k	1-247-052-00
9.1	1-246-819-00	62	1-246-829-00	430	1-246-839-00	3.0k	1-246-849-00	20k	1-246-859-00	130k	1-246-869-00	910k	1-247-061-00
10	1-246-759-00	68	1-246-769-00	470	1-246-779-00	3.3k	1-246-789-00	22k	1-246-799-00	150k	1-246-809-00	1 M	1-247-053-00
11	1-246-820-00	75	1-246-830-00	510	1-246-840-00	3.6k	1-246-850-00	24k	1-246-860-00	160k	1-246-870-00		
12	1-246-760-00	82	1-246-770-00	560	1-246-780-00	3.9k	1-246-790-00	27k	1-246-800-00	180k	1-246-810-00		

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	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

MYLAR CAPACITORS

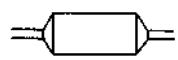
CAP. (μF)	RATING 50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				



TANTALUM CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one. 3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS



CAP. (μF)	RATING 3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

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