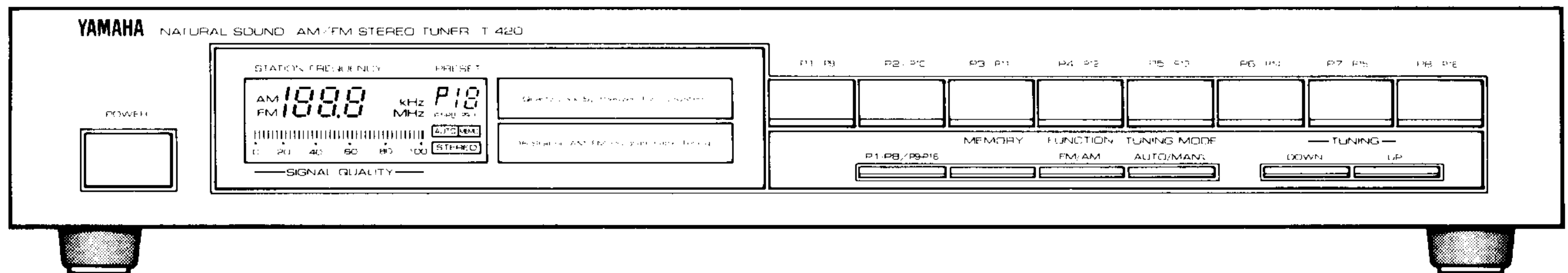


AM/FM STEREO TUNER T-420

SERVICE MANUAL



T-420

IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

CONTENTS

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SINCE 1887



YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

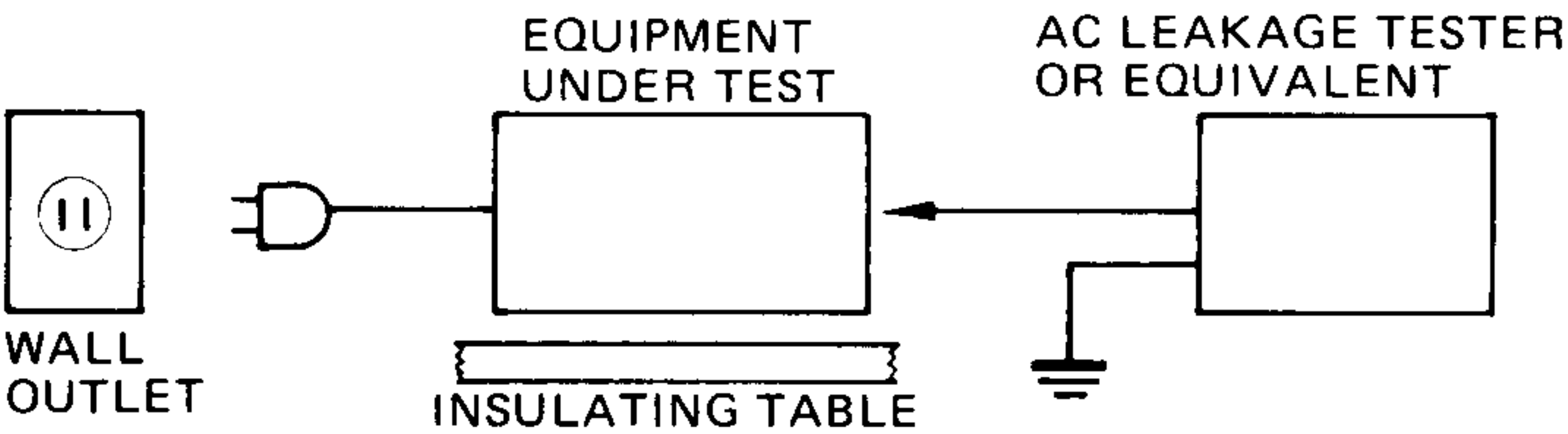
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TO SERVICE PERSONNEL

1. Critical Components Information.
Components having special characteristics are marked  and must be replaced with parts having specifications equal to those originally installed.
2. Leakage Current Measurement (For 120V Model Only).
When service has been completed, it is imperative that you verify that all exposed conductive surfaces are properly insulated from supply circuits.
- Meter impedance should be equivalent to 1500 ohm shunted by 0.15μF.

• Leakage current must not exceed 0.5mA.

• Be sure to test for leakage with the AC plug in both polarities.



POLARIZATION

This tuner product is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature.

SPECIFICATIONS

FM SECTION

Tuning Range	87.5 to 108.0MHz (G)(A)(B) 87.5 to 107.9MHz (U)(C) 87.5 to 108.0MHz or 87.5 to 107.9MHz (R)	
50dB Quieting Sensitivity		
Mono, 75Ω	1.6μV (15.3dBf)	
Stereo, 75Ω	21μV (37.7dBf)	
Usable Sensitivity		
30dB S/N Quieting 75Ω	0.8μV (9.3dBf) (U)(C)(A)(B)(R)	
Usalbe Sensitivity (DIN)		
Mono (S/N 26dB), 75Ω	1.4μV (G)	
Stereo (S/N 46dB), 75Ω	30μV (G)	
Image Response Ratio	40dB (U)(C)(A)(B)(R) 75dB (G)	
IF Response Ratio	90dB (U)(C)(A)(B)(R) 75dB (G)	
Spurious Response Ratio	70dB	
AM Suppression Ratio	55dB	
Capture Ratio	1.5dB	
Alternate Channel Selectivity	85dB (U)(C)(A)(B)(R)	
Selectivity (two Signals)		
40kHz DEV. ±300kHz	70dB (G)	
Signal to Noise Ratio		
Mono	82dB (U)(C)(A)(B)(R)	
Stereo	76dB (U)(C)(A)(B)(R)	
Signal to Noise Ratio (DIN-Weighted)		
40kHz DEV. Mono	75dB (G)	
Stereo	70dB (G)	
Harmonic Distortion		
Mono	1kHz	0.1%
Stereo	1kHz	0.2%
G model (40kHz DEV.)		
Mono	1kHz	0.1%
Stereo	1kHz	0.2%
Stereo Separation	1kHz	40dB
Frequency Response		
30Hz to 13kHz	0 ± 0.5dB (G)	
30Hz to 15kHz	0 ± 0.5dB (U)(C)(A)(B)(R)	

AM SECTION

Tuning Range	530 to 1610kHz (U)(C) 531 to 1611kHz (A)(B)(G) 530 to 1610kHz or 531 to 1611kHz (R)
Usable Sensitivity	300μV/m
Selectivity	24dB
Signal to Noise Ratio	50dB
Image Response Ratio	40dB
Spurious Response Ratio	50dB
Harmonic Distortion 400Hz	0.3%

AUDIO SECTION

Output Level/Impedance	
FM 100% MOD 1kHz	500mV/2.2kΩ (U)(C)(A)(B)(R)
FM 40kHz DEV. 1kHz	400mV/3.3kΩ (G)
AM 30% MOD 400Hz	150mV/2.2kΩ (U)(C)(A)(B)(R)
AM 30% MOD 400Hz	150mV/3.3kΩ (G)

GENERAL

Power Supply	
U.S. & Canadian models	120V AC, 60Hz
European model	220V AC, 50Hz
British & Australian models	240V AC, 50Hz
Other model	110 – 130V AC/220 – 240V AC, 50/60Hz
Power Consumption	7W (A)(G)(B) 6W (U)(C)(R)
Dimensions (W x H x D)	435 x 72.5 x 236.5 (17-1/8 x 2-7/8 x 9-1/4")
Weight	2.3 kg (5 lbs. 1 oz)

(U) U.S.A. model

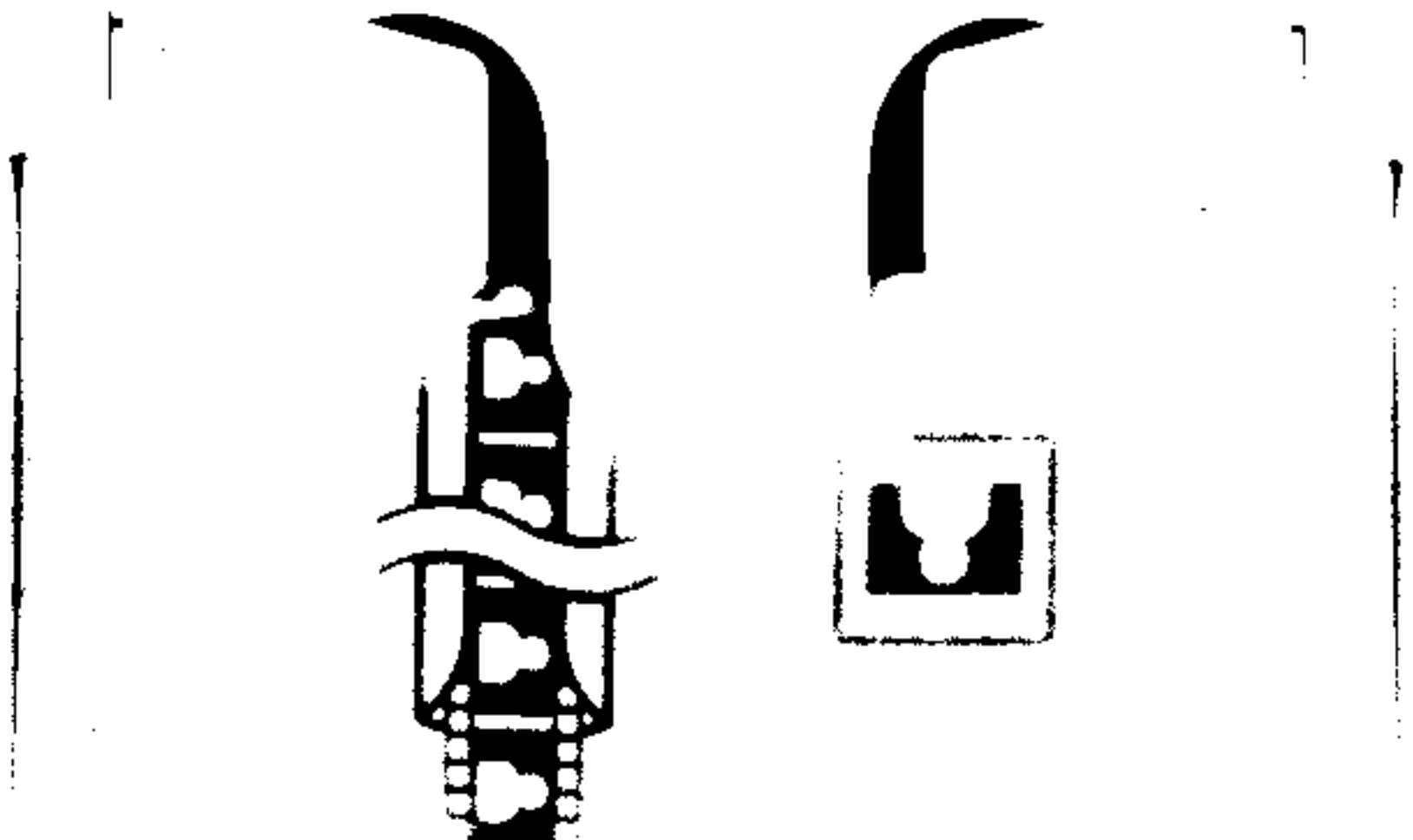
(C) Canadian model

(A) Australian model

(G) European model

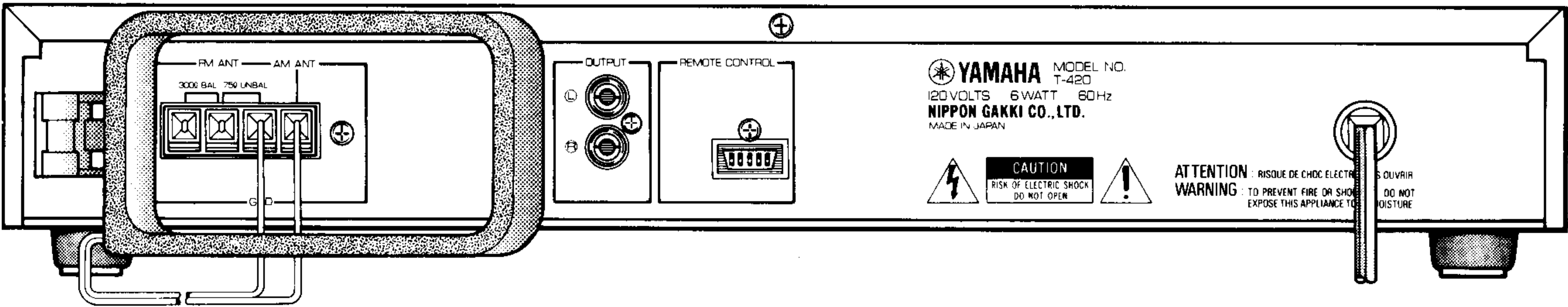
(B) British model

(R) Other model

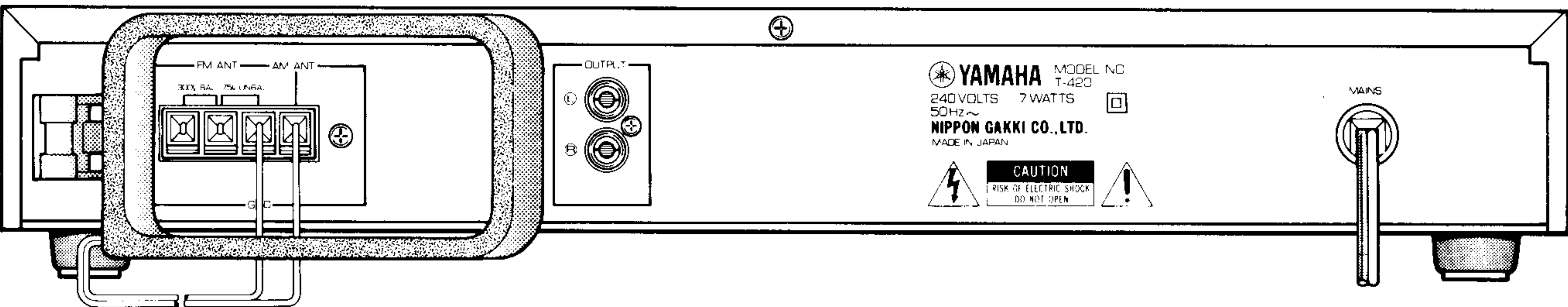


REAR PANELS

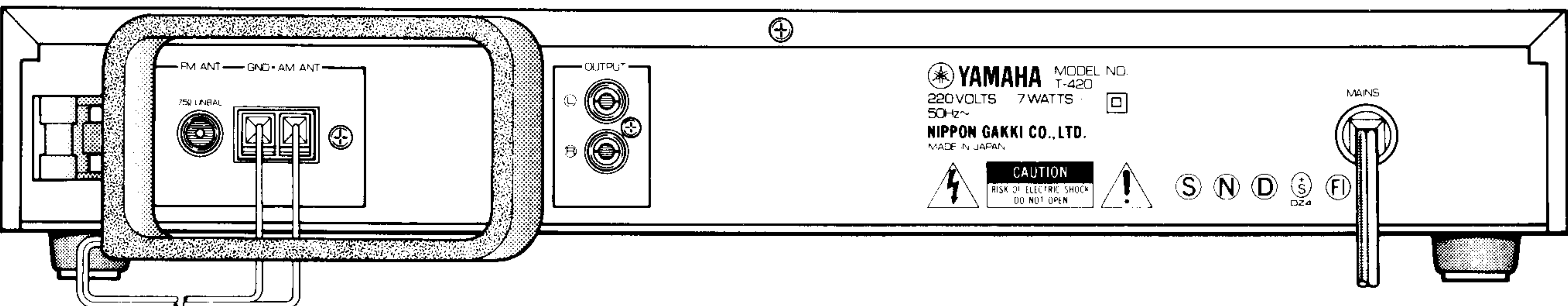
▼ U.S.A. & Canadian models



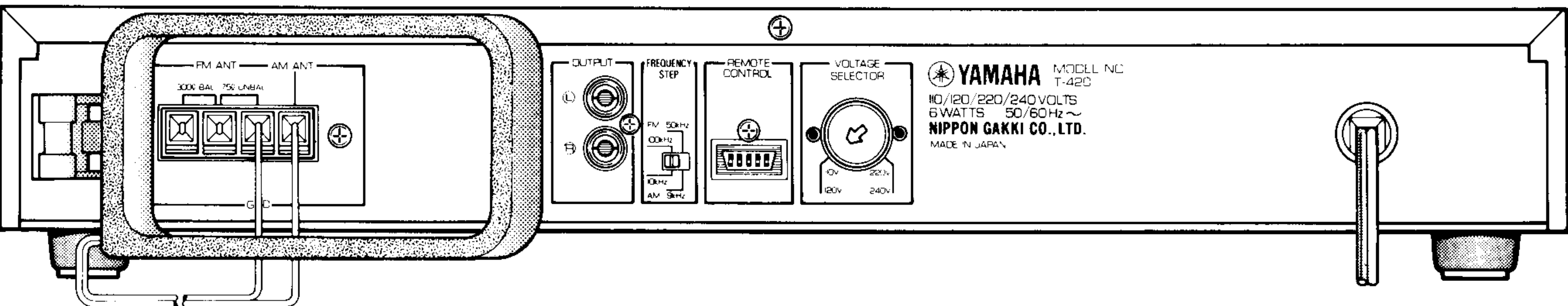
▼ British & Australian models



▼ European model

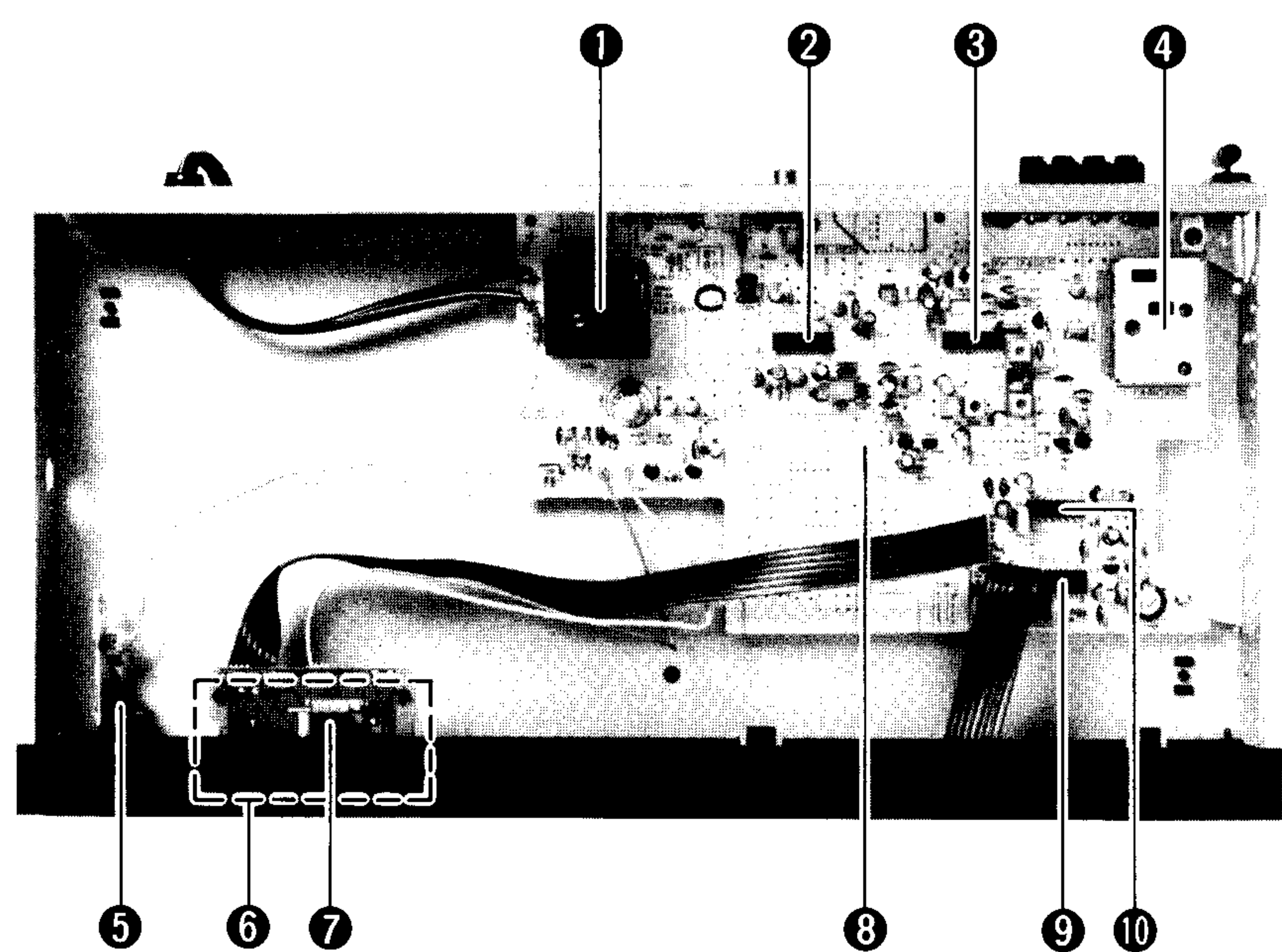


▼ Other model



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INTERNAL VIEW



- ① POWER TRANSFORMER
U, C models: GA693100
R, A, G, B models: GA693200
- ② MPX IC: LA3401
- ③ IF IC: LA1265
- ④ FRONT END PACK
- ⑤ POWER SWITCH
- ⑥ DISPLAY UNIT
- ⑦ LCD DRIVER: LC7580
- ⑧ TUNER CIRCUIT BOARD (1)
- ⑨ 4 BIT CPU: LC6523C-779
- ⑩ PLL IC: LM7001

DISASSEMBLY PROCEDURES

1. Removal of Top Cover

Remove 5 screws (①) in Fig. 1, and slide the Top Cover back.

2. Removal of Front Panel

Remove 4 screws (②) and 3 hooks in Fig. 1, and pull the Front Panel forward.

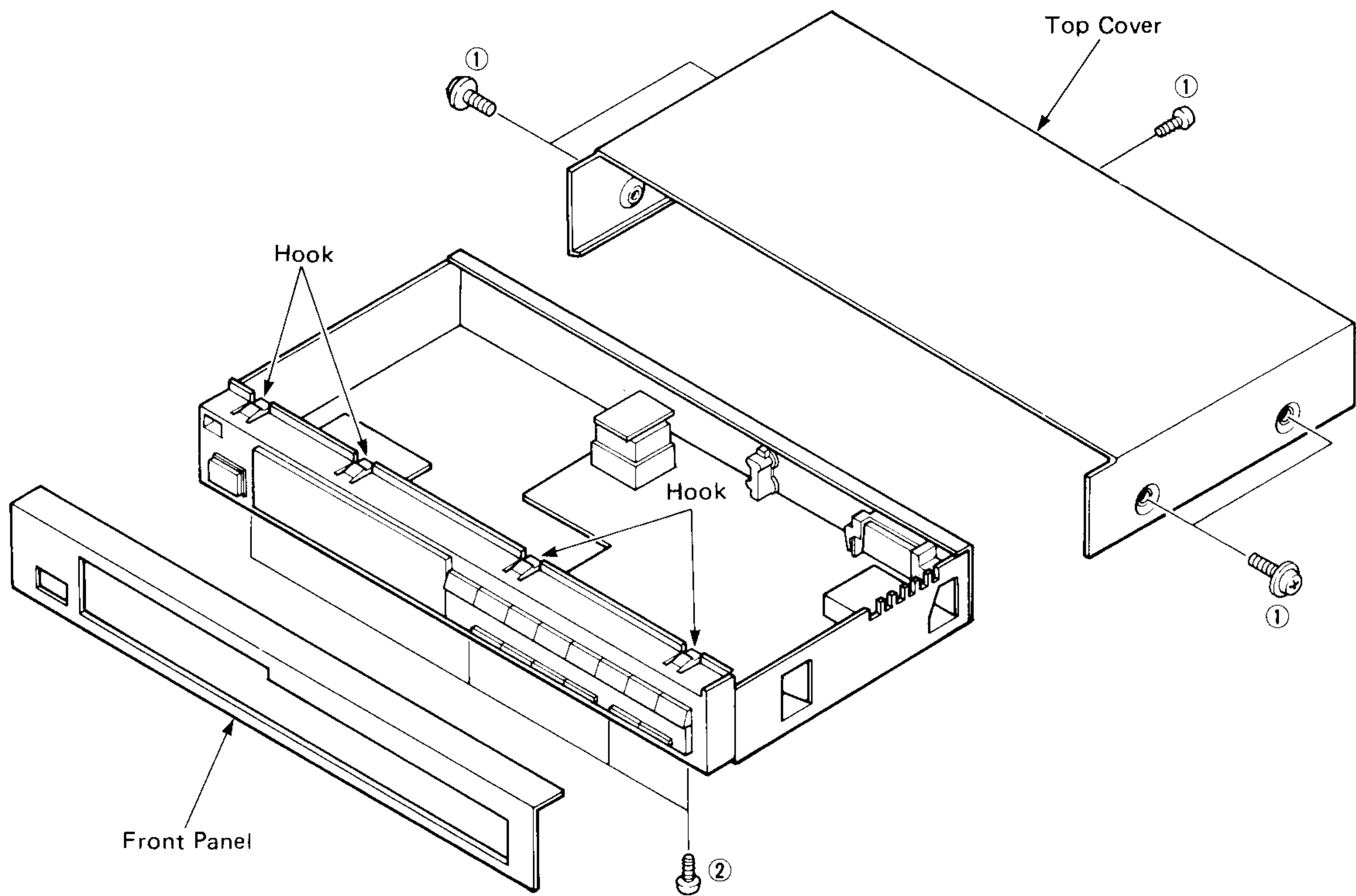


Fig. 1

ADJUSTMENTS

1. Before adjustment

- 1) After the power switch is pushed on, wait for 5 minutes before measuring, to be sure of the most stable operation.
- 2) Adjust the OSC coil and IFT with a nonferrous screw driver.
- 3) Set the switches to the following positions.
TUNING MODE AUTO
- 4) Proceed with the AM section adjustments after having finished the FM section adjustment.
- 5) 0dBμ = 1μV Ex: 60dBμ = 1mV

2. Measuring instruments abbreviation

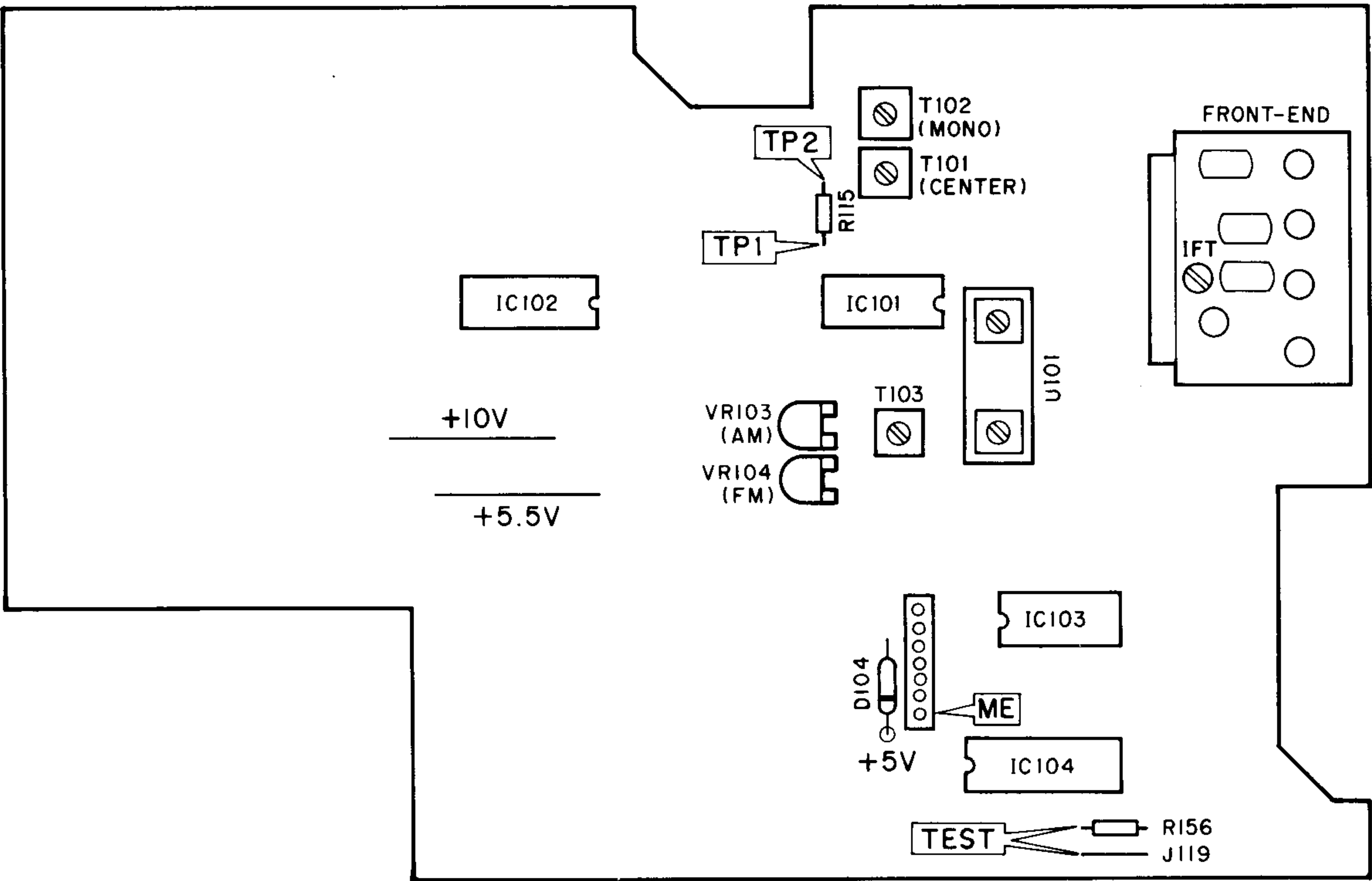
- FM SG : FM signal generator
- SSG : Stereo signal generator
- AM SG : AM signal generator
- DIST. M : Distortion meter
- FC : Frequency counter
- A C V M : AC voltmeter
- D C V M : DC voltmeter

< POWER SUPPLY CHECK >

Check that the following voltages are obtained respectively across each test point and ground on tuner circuit.

Test Point	Rating or standard	Remark								
+10V	+10V ± 0.5V	Make sure that AC line voltage comes within <table><tr><th>Models</th><th>AC line voltage</th></tr><tr><td>U, C</td><td>120V ± 10%</td></tr><tr><td>G</td><td>220V ± 10%</td></tr><tr><td>A, B</td><td>240V ± 10%</td></tr></table>	Models	AC line voltage	U, C	120V ± 10%	G	220V ± 10%	A, B	240V ± 10%
Models	AC line voltage									
U, C	120V ± 10%									
G	220V ± 10%									
A, B	240V ± 10%									
+5.5V	+5.5V ± 0.5V									
+5V	+5V ± 0.25V									

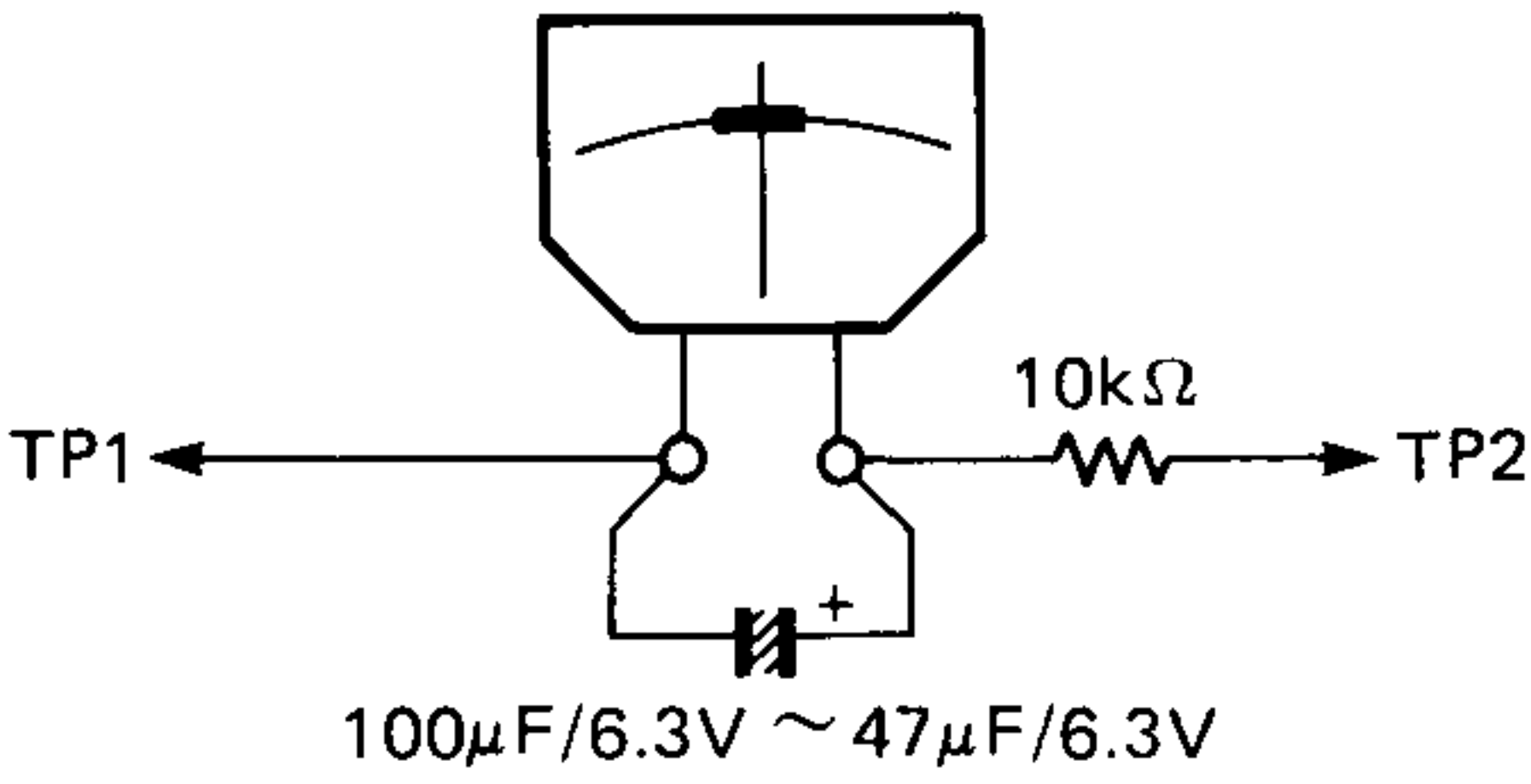
TEST POINTS



< FM TUNER SECTION >

- Use 19kHz L.P.F. to measure the output.
- On step 1 and 8 connect the auxiliary center meter (ji00036 or similar) to confirm the best tuned point.
- 100% modulation means that the Frequency Deviation is 75kHz.

Auxiliary Center Meter



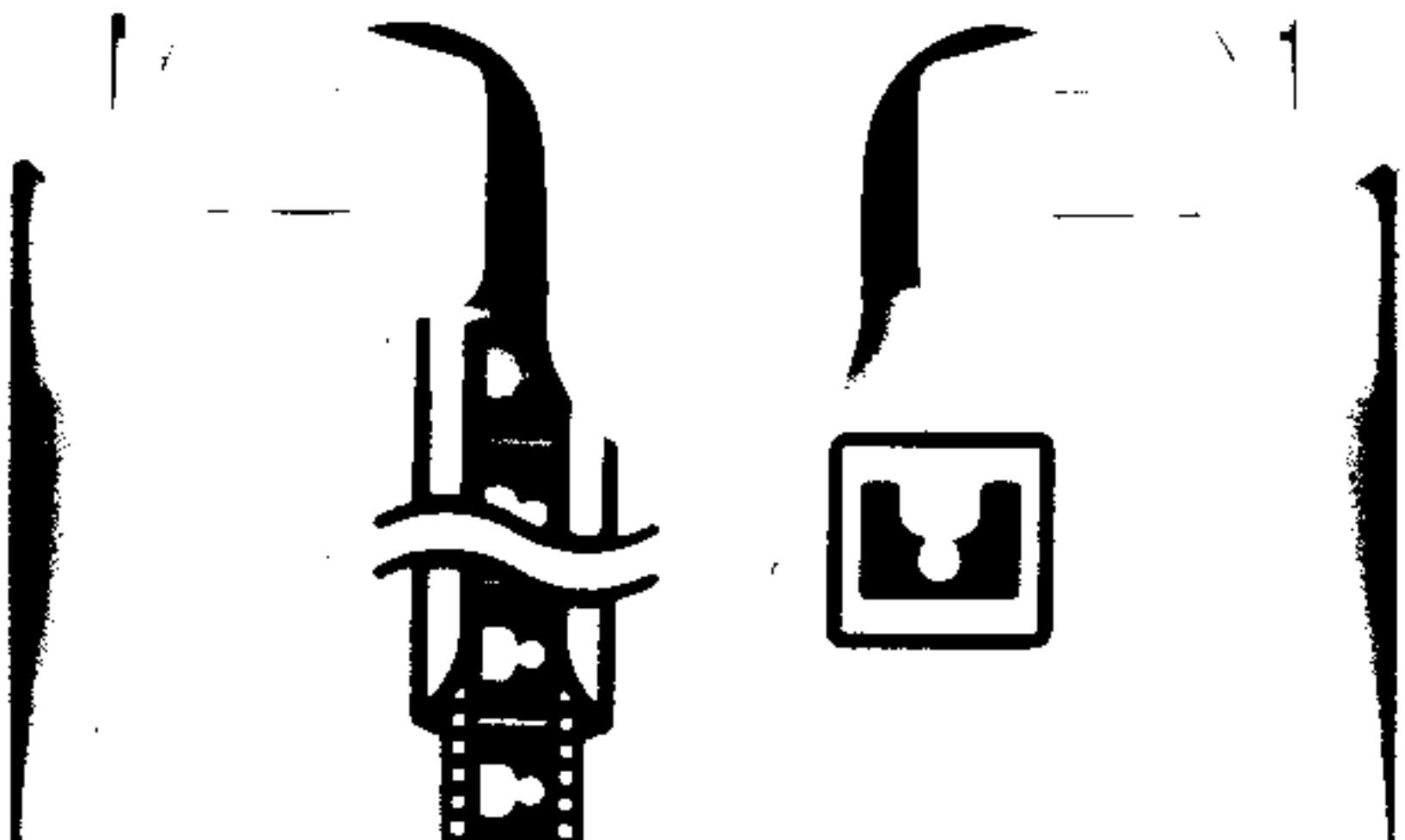
- Shorting TEST (R156 and J119 Before Fig. TEST POINT) while set at FM will result in automatic memory of each preset from P1/P9 to P9/P16 as given in the right table. This is convenient when making an adjustment.

P1/P9	P2/P10	P3/P11	P4/P12	P5/P13
AM 630kHz	AM 1080kHz	AM 1440kHz	FM 87.5MHz	FM 95.1MHz

P6/P14	P7/P15	P8/P16
FM 98.1MHz	FM 101.5MHz	FM 108.0MHz (A, B, G, R) FM 107.9MHz (U, C)

Step	Item to be Adjusted	Connection terminal	Instrument required	Adjustment locations	Adjustment method	Rating or standard	Remarks
1	Discriminator balance	75Ω FM ANT	FM SG [98.1MHz ± 1kHz 70dBμ (81.2dBf, 3.16mV/75Ω) MONO 1kHz 100% MOD]	T101 (CENTER)	Adjust so that the pointer of the auxiliary center meter points to 0 when tuned to signal of FM SG.	0V ≤ ±50mV (DCVM)	
		TP1 ~ TP2	Auxiliary center meter or DCVM				
2	Monaural distortion	75Ω FM ANT	FM SG [98.1MHz ± 1kHz 70dBμ (81.2dBf, 3.16mV/75Ω) MONO 100Hz 100% MOD]	T102 (MONO)	Reduce distortion to minimum.		
		OUTPUT L, R	DIST. M L.P.F.				
3	Stereo distortion	75Ω FM ANT	FM SG, SSG [98.1MHz ± 1kHz 70dBμ (81.2dBf, 3.16mV/75Ω) STEREO L, R 1kHz, 100% MOD]	IFT in Front-end	Same as step 2	Less than -33dB	Confirm that stereo indicator lights up.
		OUTPUT L, R	DIST. M L.P.F.				
4	Confirmation of monaural distortion	75Ω FM ANT	FM SG [98.1MHz ± 1kHz 70dBμ (81.2dBf, 3.16mV/75Ω) MONO 1kHz 100% MOD]			Less than -41dB	
		OUTPUT L, R	DIST. M L.P.F.				
5	Confirmation of sensitivity	75Ω FM ANT	FM SG [98.1MHz ± 1kHz 70dBμ (81.2dBf, 3.16mV/75Ω) MONO 1kHz 100% MOD]		Lower FM SG output level so that S/N becomes 30dB	Less than 4dBμ (15.2 dBf, 1.58 μV/75Ω) [G model only Less than 6dBμ (17.3 dBf, 2 μV/75Ω)]	
		OUTPUT L, R	ACVM L.P.F.				
6	Confirmation of separation	75Ω FM ANT	FM SG SSG [98.1MHz ± 1kHz 70dBμ (81.2dBf, 3.16mV/75Ω) STEREO L, R 1kHz 100% MOD]			Less than 28dB	
		OUTPUT L, R	ACVM L.P.F.				

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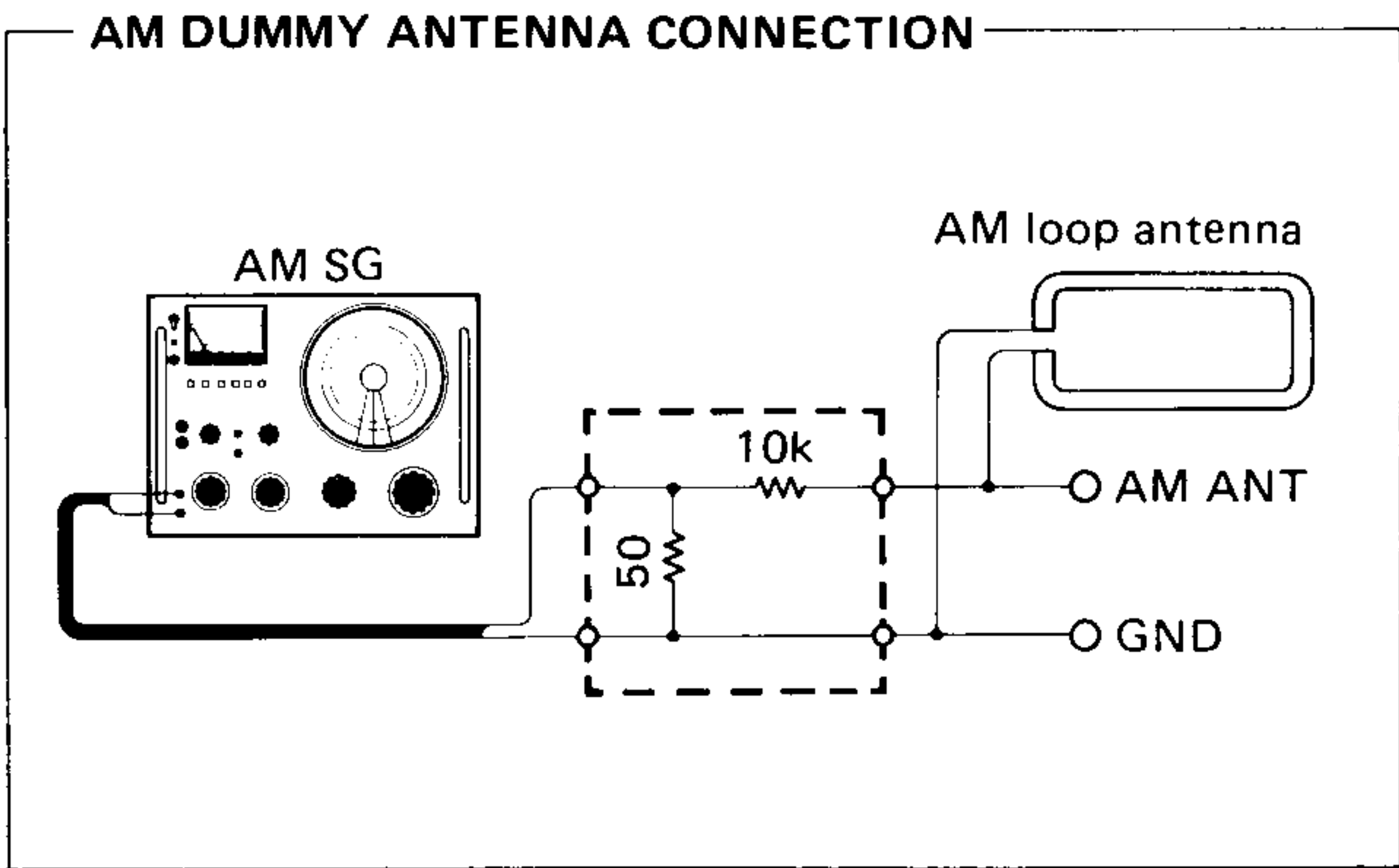


Step	Item to be Adjusted	Connection terminal	Instrument required	Adjustment locations	Adjustment method	Rating or standard	Remarks
7	Confirmation of discriminator balance	75Ω FM ANT	FM SG [98.1MHz ± 1kHz 70dBμ (81.2dBf, 3.16mV/75Ω) MONO 1kHz 100% MOD		Confirm that the auxiliary center meter deflects to 0 when tuned to signal of FM SG.	$0V \leq \pm 50mV$ (DCVM)	
		TP1 ~ TP2	Auxiliary center meter or DCVM				
8	Full-scale signal quality level	75Ω FM ANT	FM SG, SSG [98.1MHz ± 1kHz 70dBμ (81.2dBf, 3.16mV/75Ω) STEREO L, R 1kHz, 100% MOD	VR104 (FM)	2.6V ± 0.1V		Confirm that all signal quality indicators goes out at detuned point.
		75Ω ME ~ GND	DCVM				
9	Confirmation of auto seach reception	300Ω FM ANT	FM SG [98.1MHz ± 1kHz 26dBμ (37.3dBf, 20μV/75Ω) MONO 1kHz 100% MOD			Confirm that auto search reception is possible with the tuning key.	Confirm that muting is performed at auto reception.

Note: X dBμ = x +5.2dBμf

< AM TUNER SECTION >

- Connect the AM loop antenna to the AM ANT terminals.
- Connect the AM dummy antenna for adjustment.

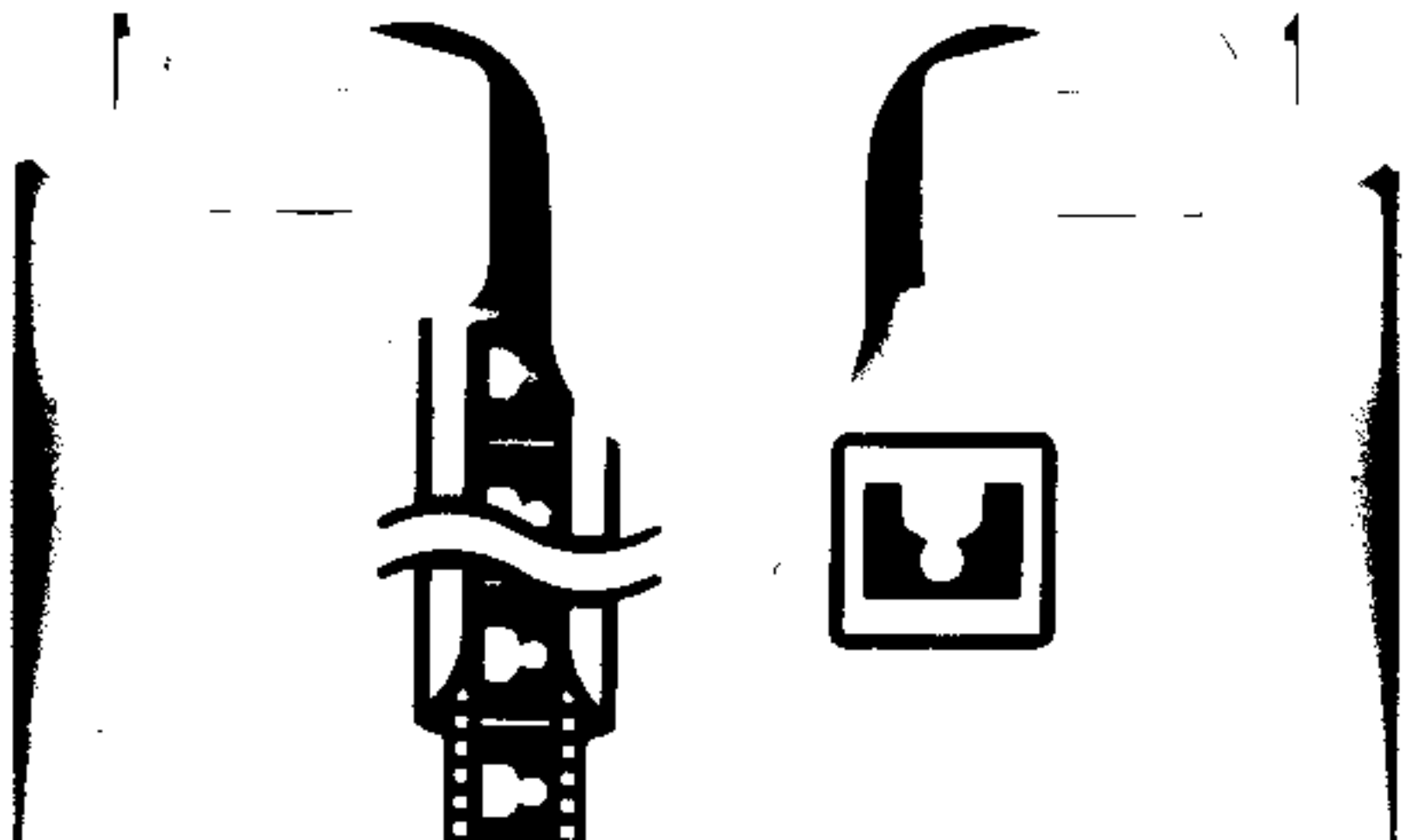


Step	Item to be Adjusted	Connection terminal	Instrument required	Adjustment locations	Adjustment method	Rating or standard
1	AM IFT	AM ANT	AM SG AM dummy antenna [630kHz ± 0.1kHz 50dBμ (61.2dBf, 316μV/ 75Ω) 400Hz, 30% MOD	T103	Adjust T103 to maximize detector output.	
		OUTPUT	ACVM			
2	Confirmation of sensitivity	AM ANT	AM SG AM dummy antenna [630kHz ± 0.1kHz 1080kHz ± 0.1kHz 1440kHz ± 0.1kHz 400Hz, 30% MOD		Obtain AM SG output level where distortion become 10%.	Less than 60dBμ (71.2dBf, 1mV/ 75Ω)
		OUTPUT	DIST. M.			
3	Full-scale signal quality level	AM ANT	AM SG. AM dummy antenna [1080kHz ± 0.1kHz 80dBμ (91.2dBf, 10mV/75Ω) 400Hz, 30% MOD	VR103 (AM)	2.6V ± 0.1V	Confirm that all signal quality indicators goes out at detuned point.
		ME ~ GND	DCVM			
4	Confirmation of auto search reception	AM ANT	AM SG AM dummy antenna [1080kHz ± 0.1kHz 65dBμ (76.3dBf, 1.78mV/75Ω) 400Hz, 30% MOD		Confirm the auto search reception with the tuning key	Confirm that muting is performed at auto reception.

< DIGITAL CONTROL SECTION >

Step	Confirmation item	Connection terminal	Instrument required	Operation key	Confirmation method
1	Preset memory	75Ω FM ANT	FM SG, SSG [98.1MHz ± 1kHz 70dBμ (81.2dBf, 3.16mV/75Ω) STEREO, L, R 1kHz, 100% MOD]	FUNCTION key TUNING MODE key TUNING key (UP or DOWN) MEMORY key PRESET STATION key	① Receive FM 98.1MHz by means of auto search. ② Set P1-P8 → P1-P8 indicator lights. ③ Press MEMORY key → MEMORY indicator flashes about 5 seconds. ④ Press P1 → MEMORY indicator goes OFF P1 of PRESET STATION indicator lights.
		AM ANT	AM SG AM dummy antenna [1080kHz ± 0.1kHz 80dBμ (91.2dBf, 10mV/75Ω) 400Hz, 30% MOD]	P1-P8/P9-P16	⑤ Receive AM 1080kHz ⑥ Press MEMORY key → MEMORY indicator flashes about 5 seconds. ⑦ Press P2 → MEMORY indicator goes OFF P2 of PRESET STATION indicator lights.
		75Ω FM ANT AM ANT	FM SG, SSG AM SG AM dummy antenna		⑧ Press P1 and P2 and check that content is read out. → P1 and P2 of PRESET STATION indicator lights.
					⑨ Set P9-P16 → P9-P16 indicator flashes. ⑩ Press MEMORY key → MEMORY indicator flashes. ⑪ Press P9 → MEMORY indicator goes OFF. P9-P16 indicator lights. P9 indicator lights. ⑫ Press P9 and check that content is read out.
2	Tuning mode	Same as step 1	Same as step 1	FUNCTION key TUNING MODE key TUNING key (UP or DOWN) PRESET STATION key P1, P2	Tune to FM 98.1MHz and AM 1080kHz, and check that when receiving MAN'L/MONO, FM reception become forced mono AUTO indicator → Goes out STEREO indicator → Goes out
3	Last channel memory			POWER key	① Read out P1. ② Turn OFF POWER key. ③ Turn ON POWER key after 5 seconds. ④ P1 content should come on. P1 of PRESET STATION indicator lights.

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μ-COM DATA

● IC104: LC6523C-779

1-chip type 4-bit microcomputer which incorporates 2048 x 8 bit ROM (for programming) and 128 x 4 bit RAM (for data memory)

Terminal No.	Discription	I/O	Function
1	PE ₃	OUT	Muting out. MUTE ON → "H"
2	VDD	IN	+5V
3	PF ₀ /SI	OUT	Key scan out. D1 D2 (Refer to table 1) D3 D4
4	PF ₁ /SO		
5	PF ₂ /SCK		
6	PF ₃ /INT		
7	PG ₀	IN	Key scan input. K1 K2 (Refer to table 1) K3 K4
8	PG ₁		
9	PG ₂		
10	PG ₃		
11	PA ₀	IN	Control signal input. REM0 REM1 (Refer to table 2)
12	PA ₁		
13	PA ₂	IN	Detection input for power down "L" → Back up mode
14	PA ₃	IN	TEST terminal ("H" in normal condition) TEST terminal is "L" while set will result in automatic memory of specific frequency.
15	OSC ₂	OUT	Terminal for clock oscillating circuit.
16	OSC ₁	IN	
17	TEST	IN	Gnd
18	Vss	IN	Gnd
19	RES	IN	Reset input. "L" in reset mode.
20	PC ₀	OUT	Control data output. (LM7001, LC7580)
21	PC ₁	OUT	Forwarding clock of data.
22	PC ₂	OUT	Forwarding select of data. LM7001 ACTIVE → "H" LC7580 ACTIVE → "H"
23	PC ₃		
24	PD ₀	IN	Destination symbol.
25	PD ₁		
26	PD ₂		
27	PD ₃	OUT	Muting output for display.
28	PE ₀	IN	Prohibit search stop. "L" in stop mode.
29	PE ₁	IN	Destination MONO/STEREO. "L" in stereo mode.
30	PE ₂	OUT	Compulsion mono mode control. Compulsion mono → "H"

● KEY MATRIX

OUTPUT INPUT	D1 (Pin 3)	D2 (Pin 4)	D3 (Pin 5)	D4 (Pin 6)
K1 (Pin 7)	FM/AM (SW101)	UP (SW103)	P1/P9 (SW107)	P5/P13 (SW111)
K2 (Pin 8)	AUTO/MAN'L (SW102)	DOWN (SW104)	P2/P10 (SW108)	P6/P14 (SW112)
K3 (Pin 9)		P1-8/P9-16 (SW105)	P3/P11 (SW109)	P7/P15 (SW113)
K4 (Pin 10)		MEMORY (SW106)	P4/P12 (SW110)	P8/P16 (SW114)

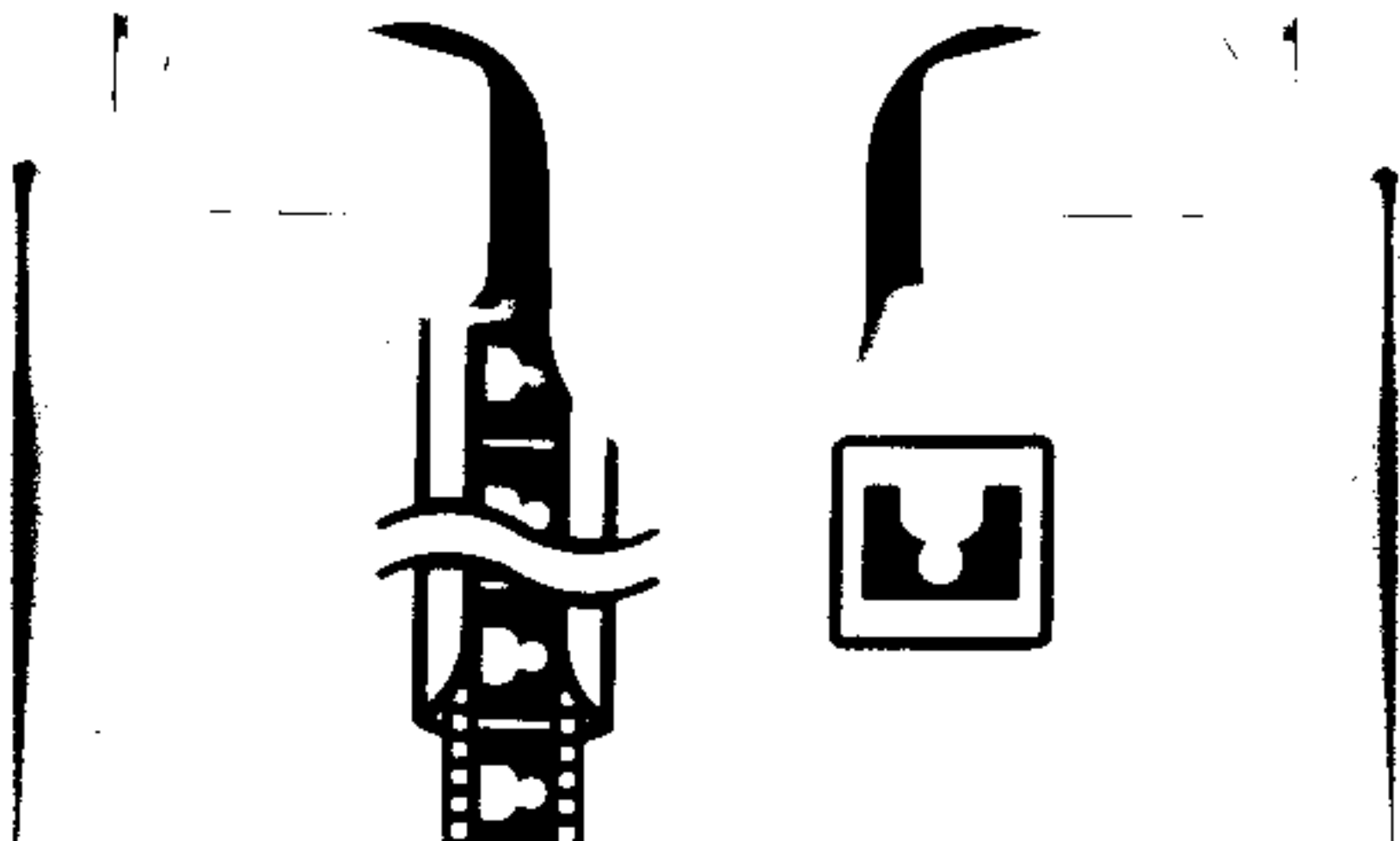
Table 1

● REMOTO CONTROL SIGNAL

REM 0 (Pin 11)	REM 1 (Pin 12)	CONTROL
L	H	PRESET UP
H	L	PRESET DOWN
H	H	P1-P8/P9-P16

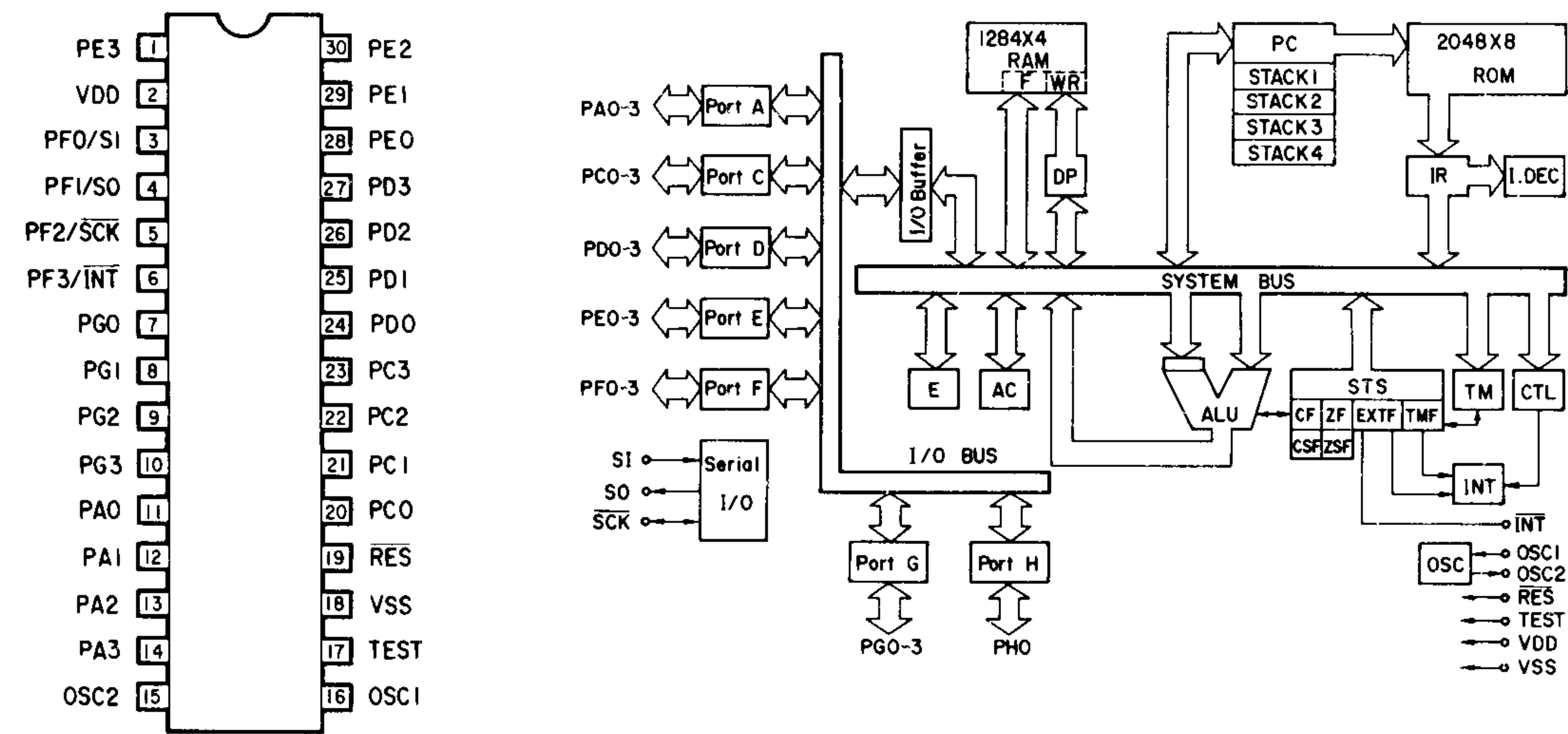
Table 2

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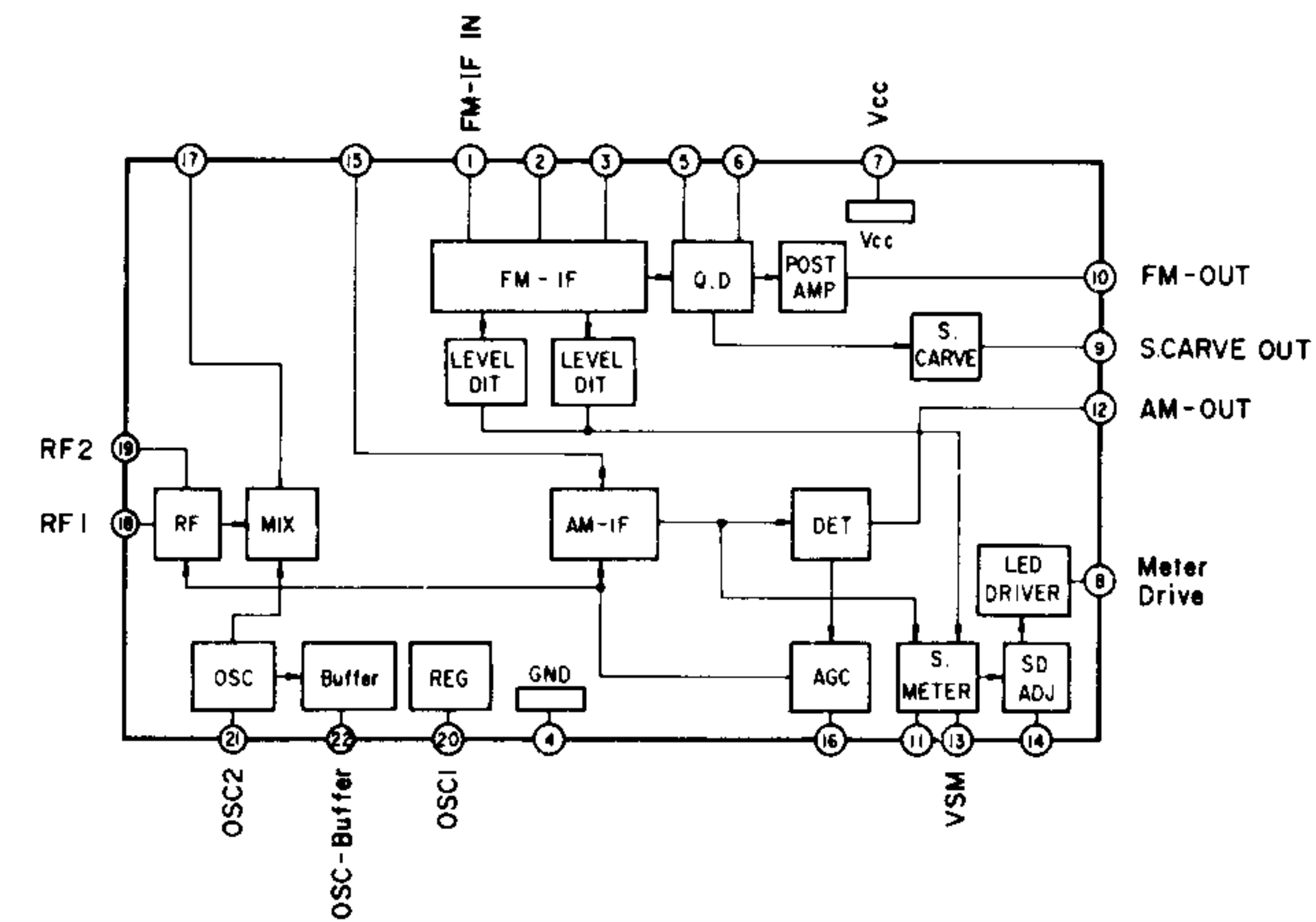


IC BLOCK CIRCUIT DATA

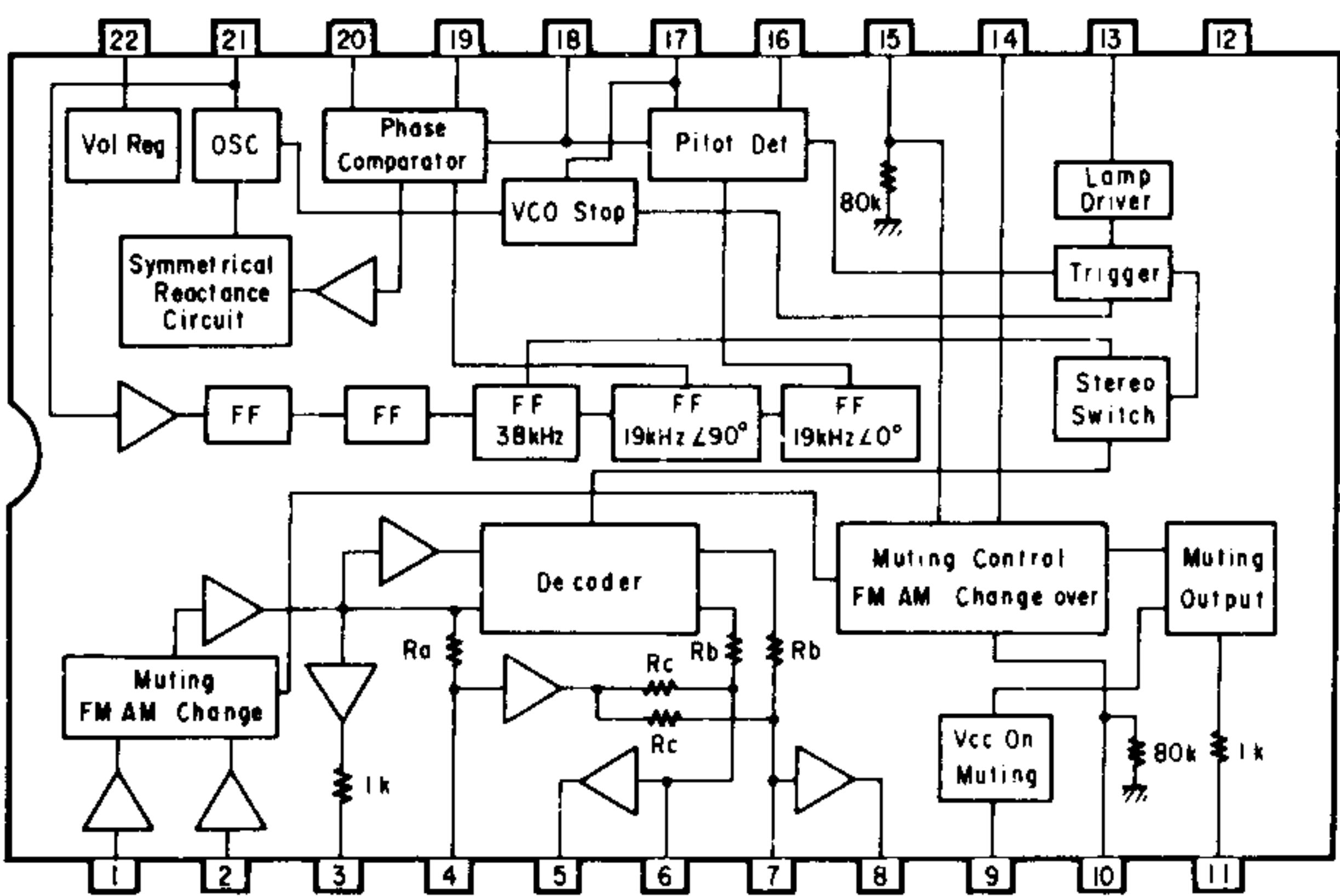
IC104: LC6523C-779



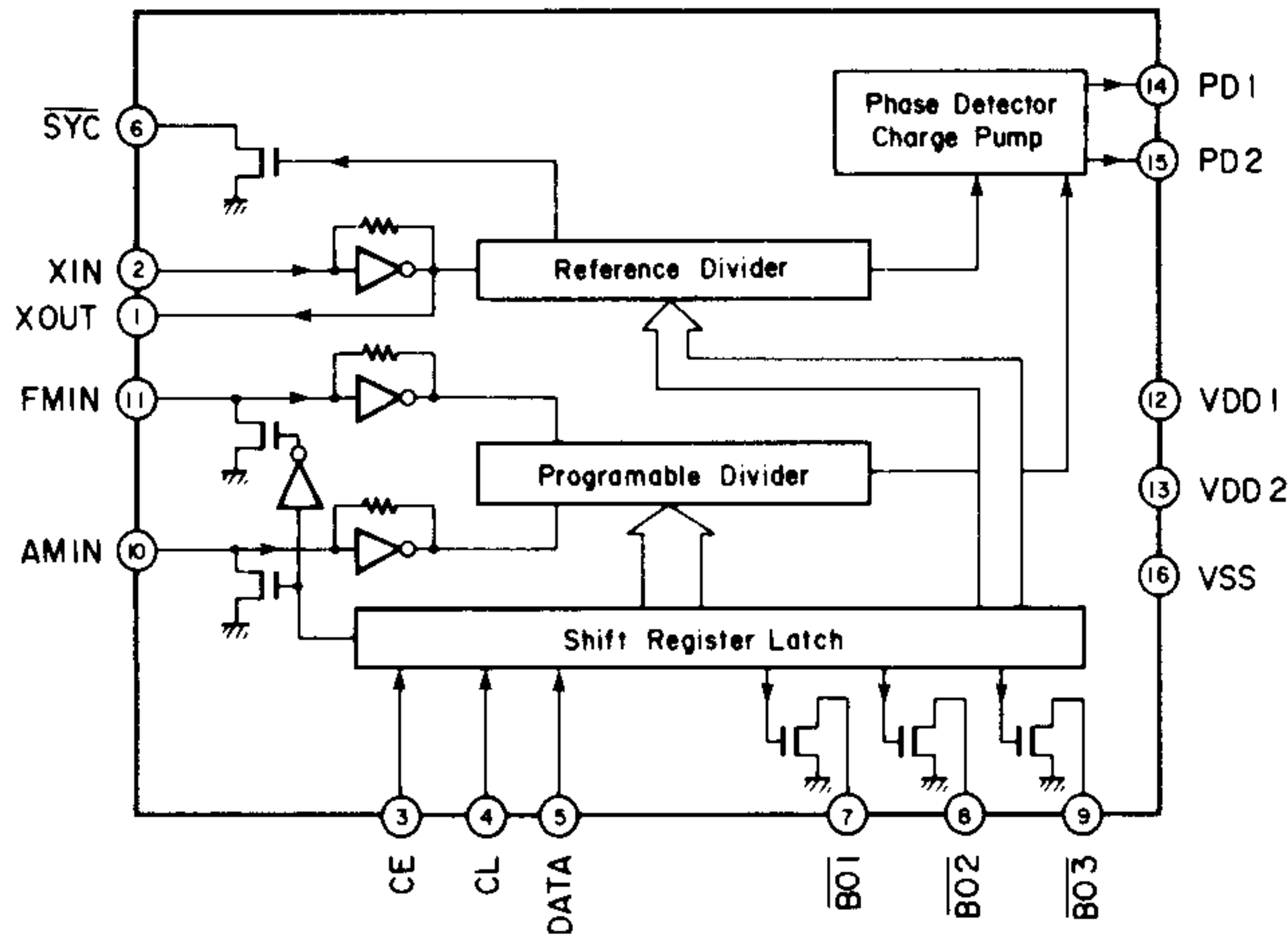
IC101: LA1265



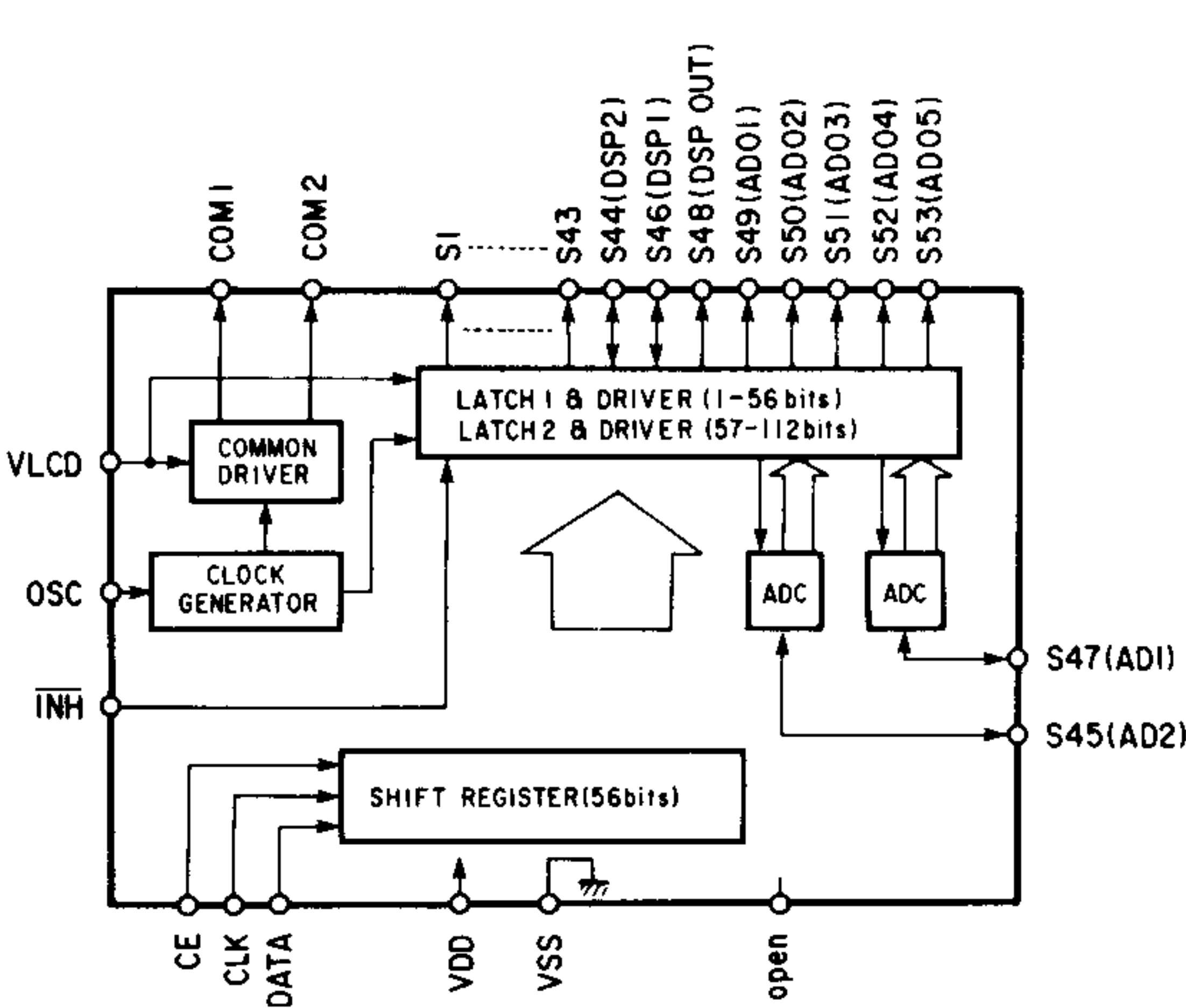
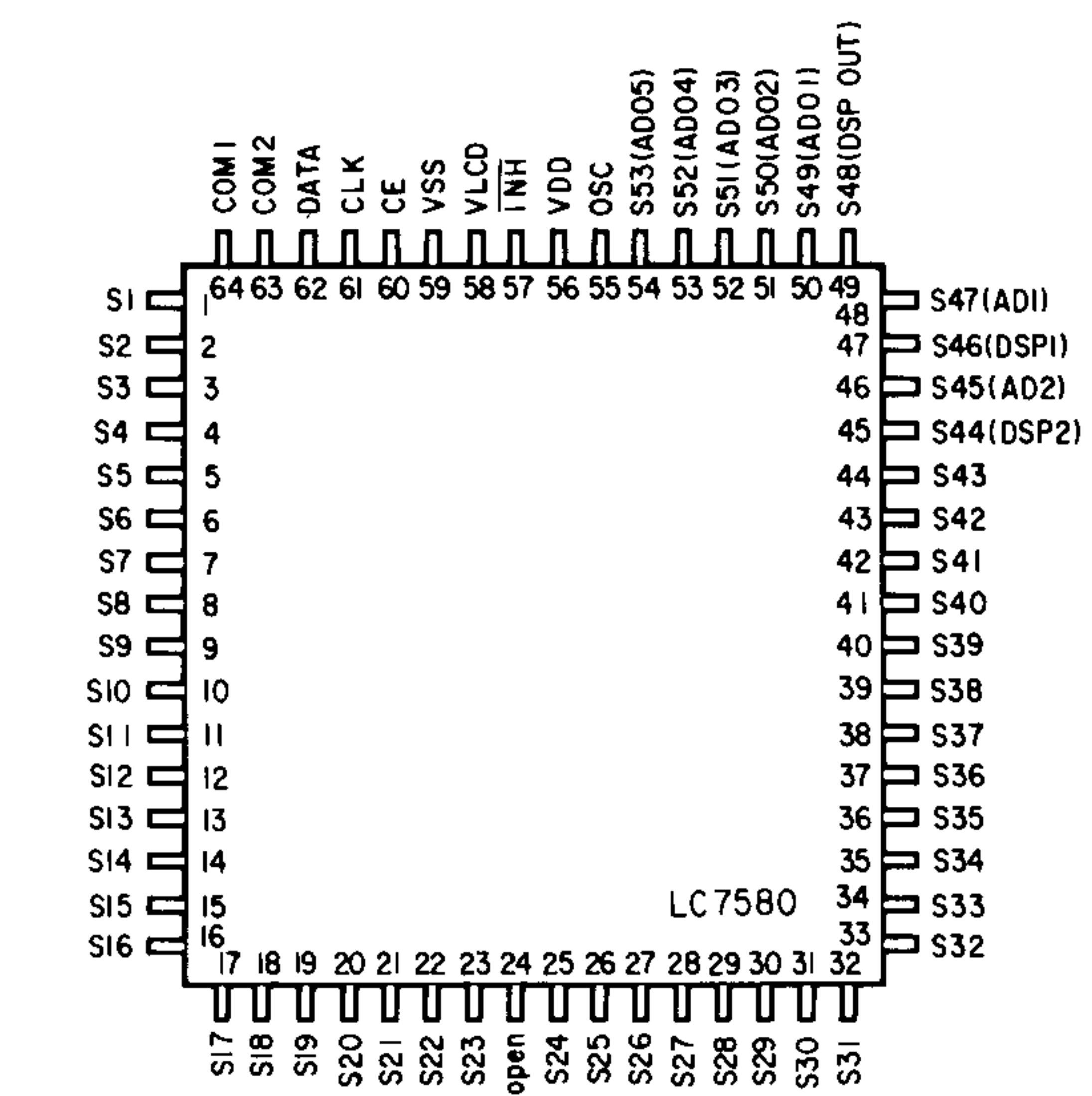
IC102: LA3401



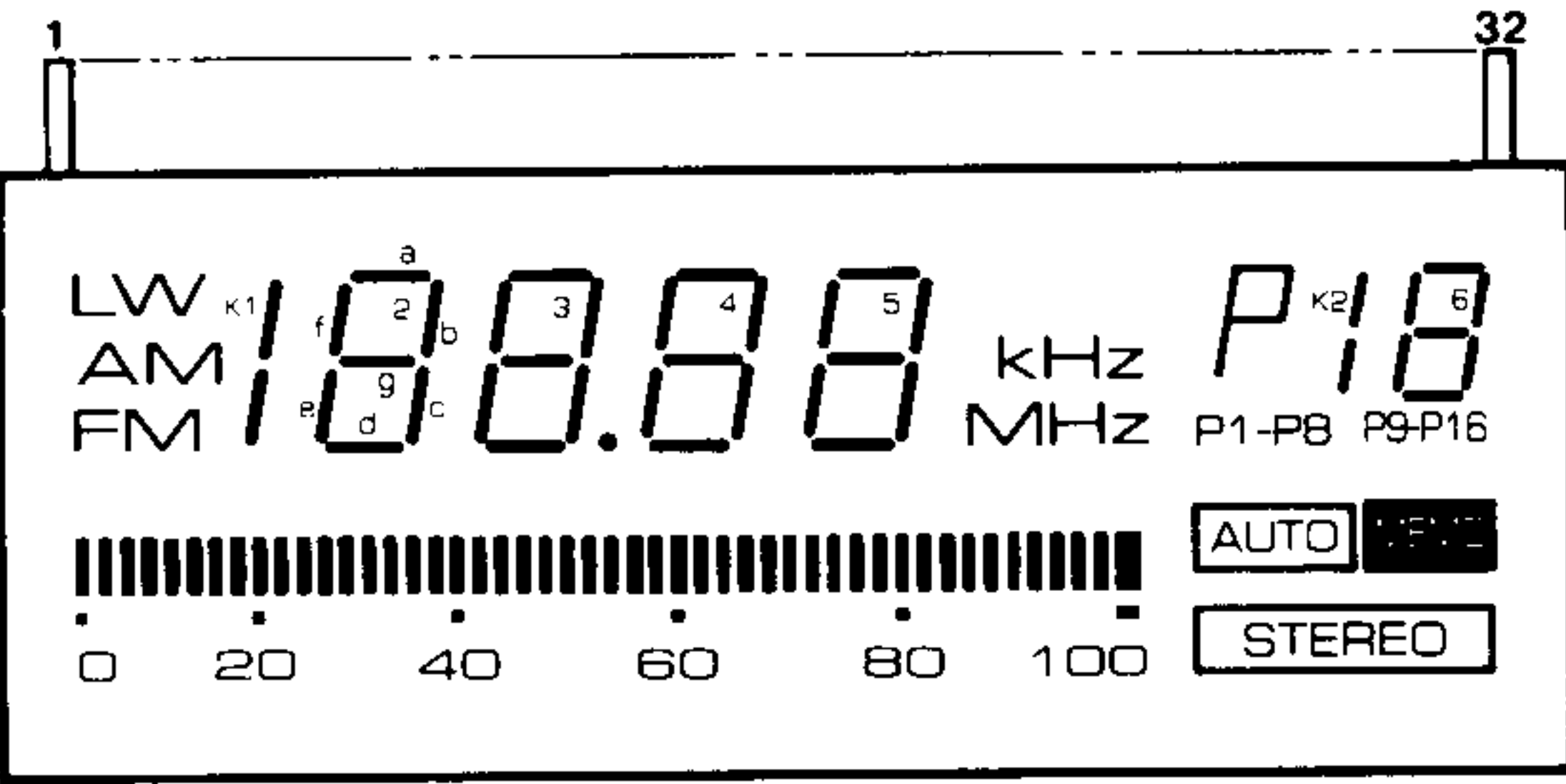
IC103: LM7001



IC301: LC7580

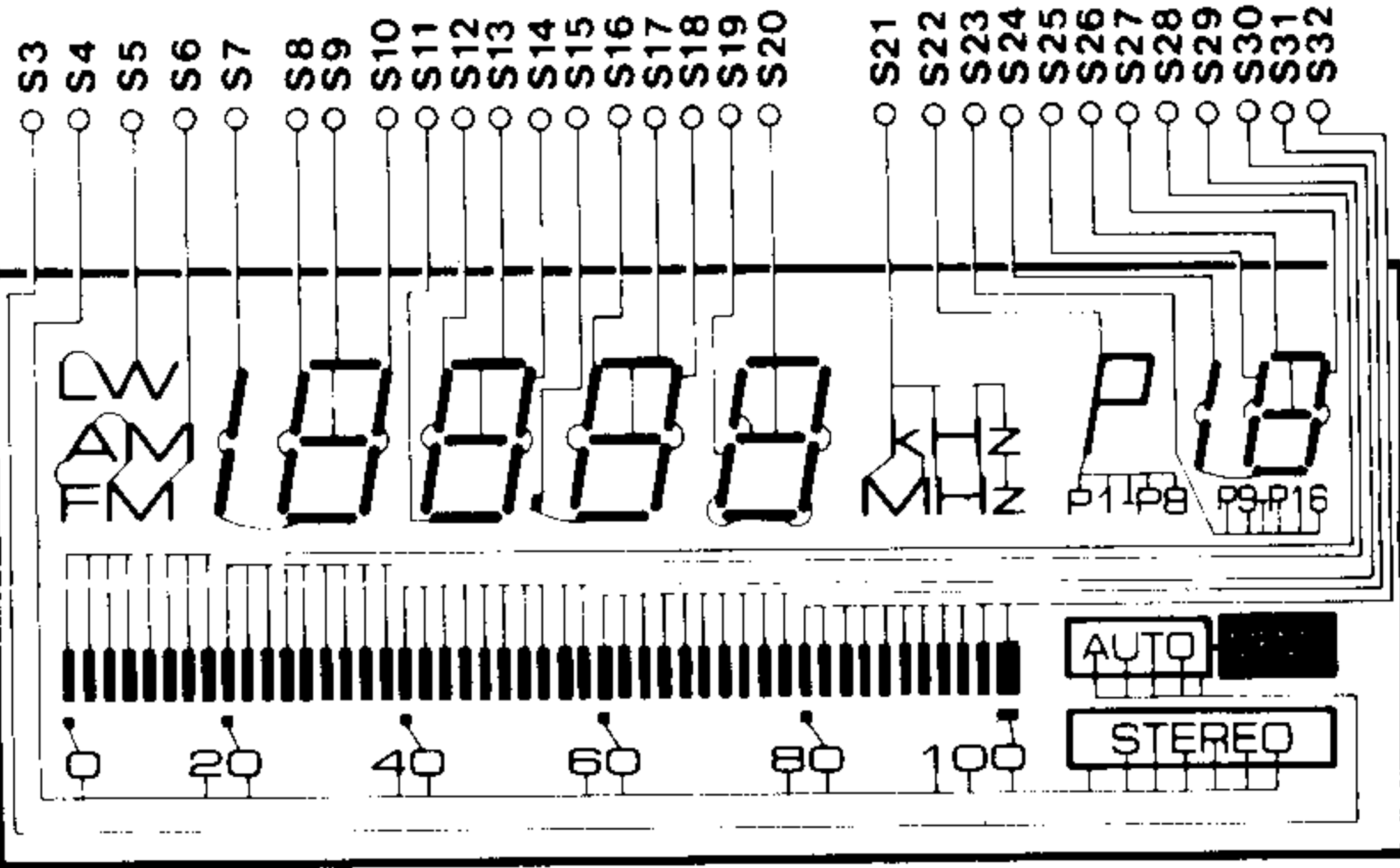


LCD9422P

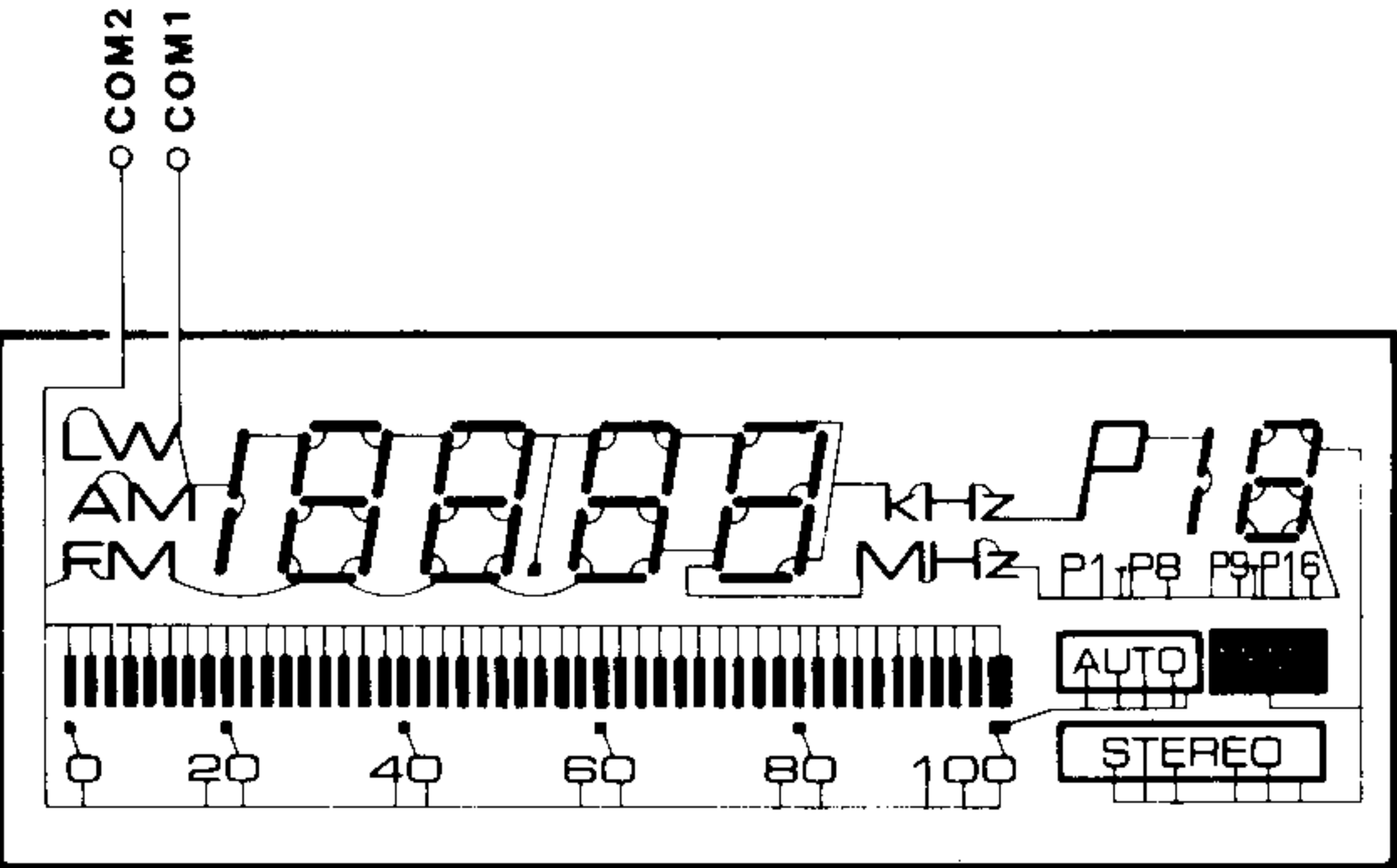


LCD Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC301 Pin No.	63	64	2	3	1	4	5	6	7	8	9	10	11	12	13	14
COM1	—	COM1	MEMO	STEREO	LW	AM	K1	2f	2a	2b	—	3f	3a	3b	COL	4f
COM2	COM2	—	AUTO	0 ~ 100	—	FM	2d	2e	2g	2c	3d	3e	3g	3c	4d	4e
LCD Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
IC301 Pin No.	15	16	17	18	20	21	22	23	25	26	27	50	51	52	53	54
COM1	4a	4b	5c, d	5a, f	kHz	P	—	K2	6f	6a	6b	—	—	—	—	—
COM2	4g	4c	5b, e	5g	MHz	P1-P8	P9-P16	6d	6e	6g	6c	M1	M2	M3	M4	M5

SEGMENT

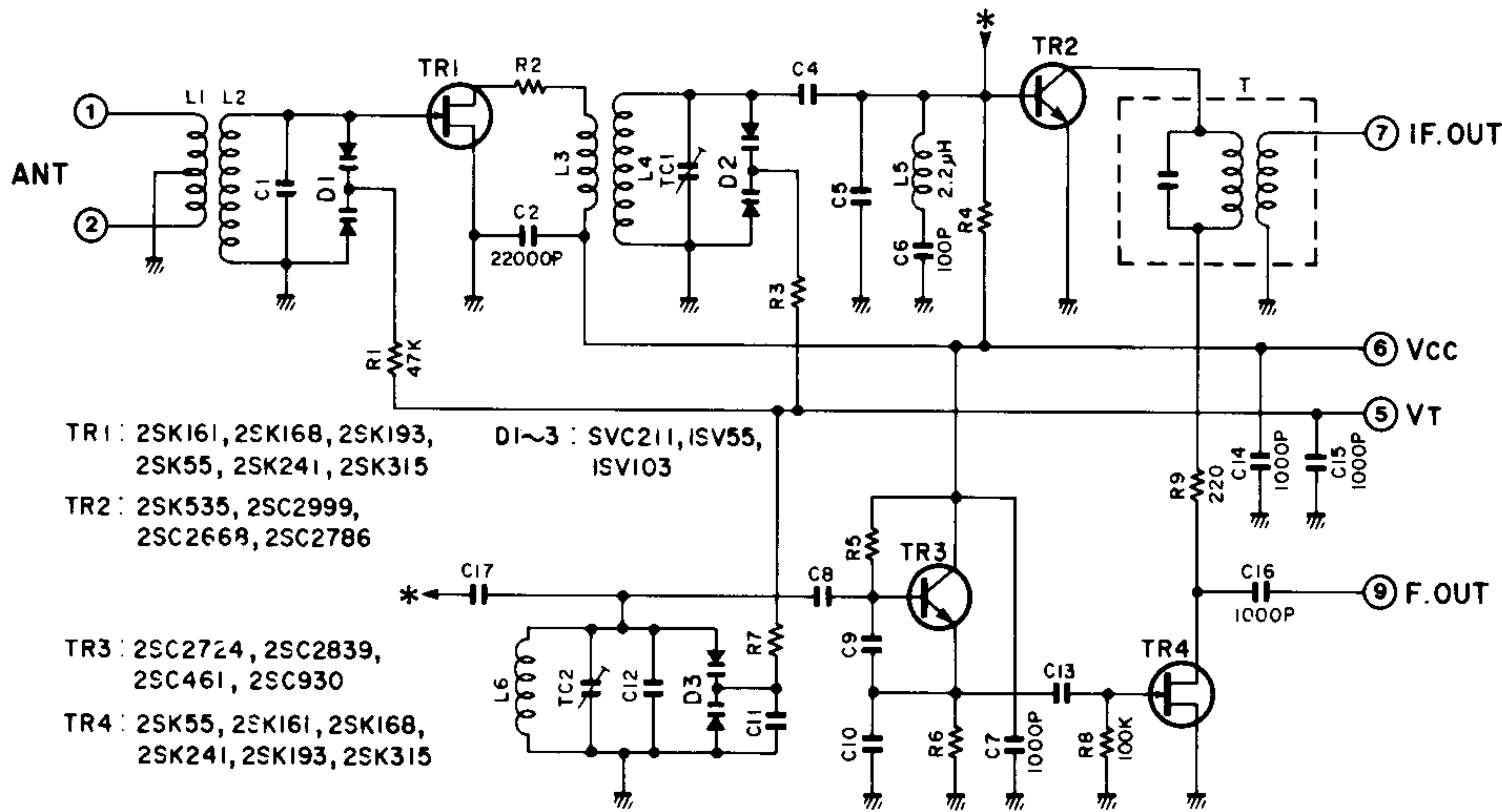


COMMON



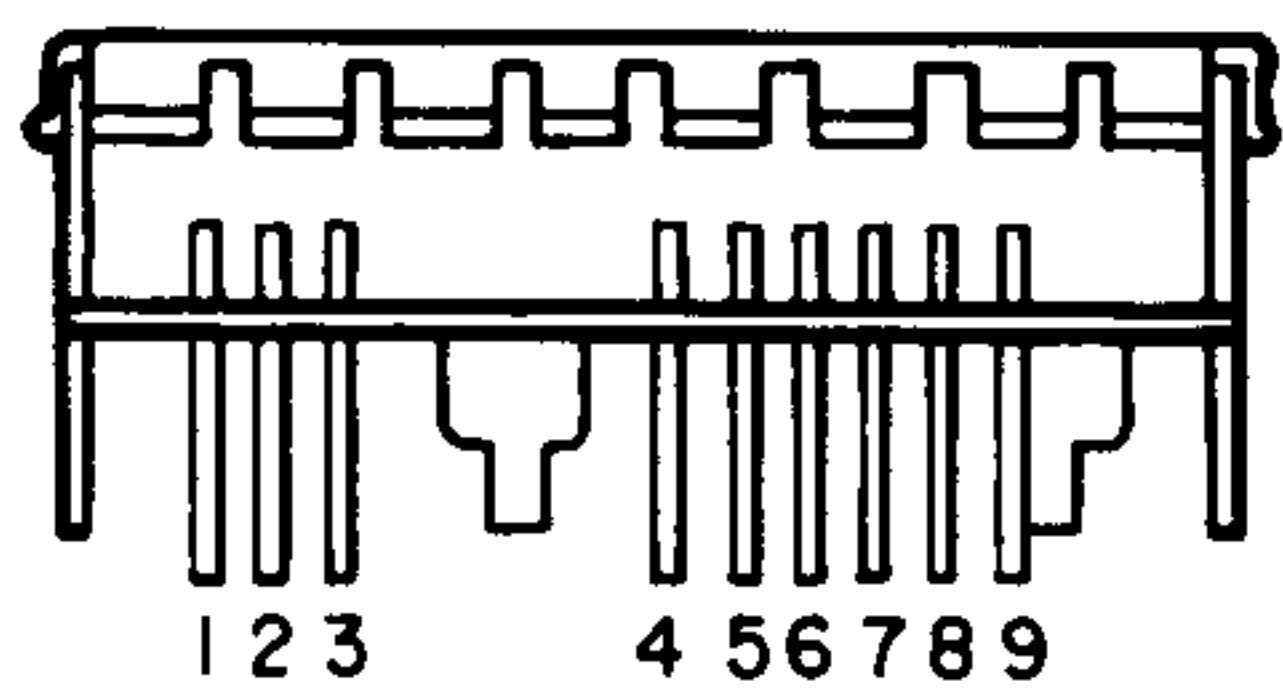
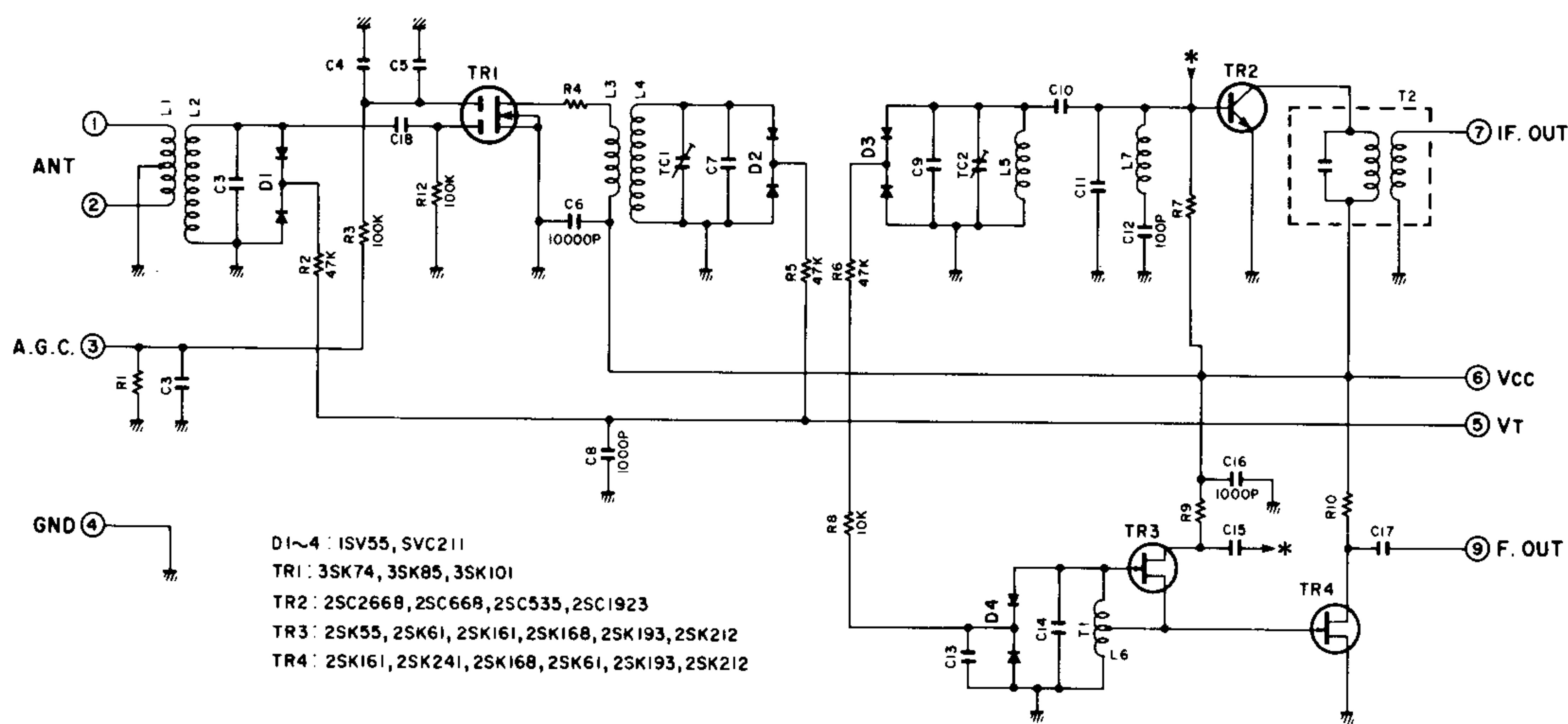
● FRONT END PACK (PK101)

R, U, C, A, B models (PA00081)



T-420

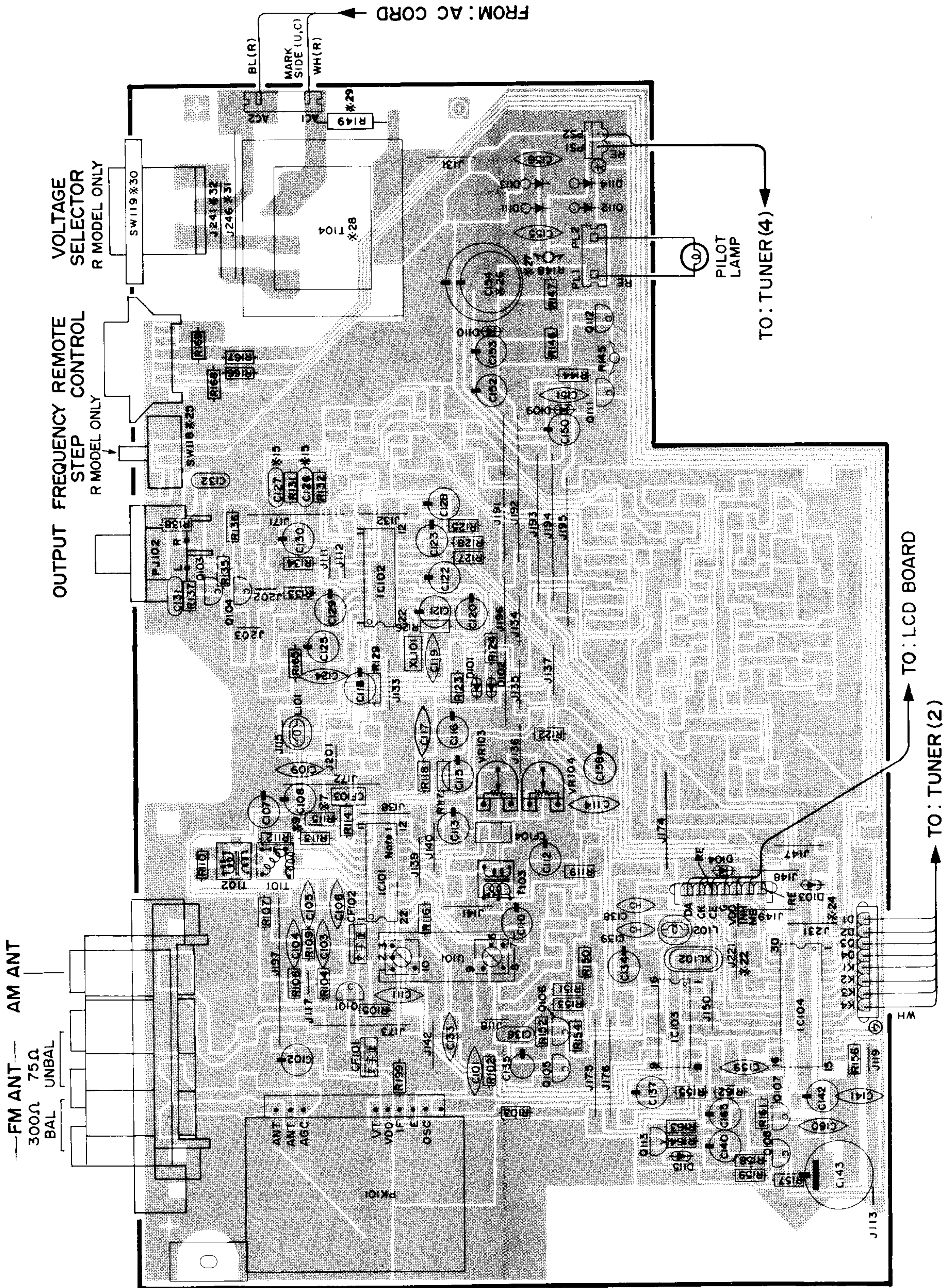
G model (VA76190)



Pin No.	Name
1	ANT.
2	ANT.
3	A.G.C.
4	GND
5	VT (1.5 ~ 3V)
6	Vcc (12V)
7	IF OUT
8	GND
9	F OUT

PRINTED CIRCUIT BOARD (Pattern side)

Tuner Circuit Board (1) (U, C, R models)



Note 1) LA1265 or LA1267 is usable for IC101. When replacing it, use case for pin positions arranged as follows.

24

13

24

13

—FM ANT— AM ANT
300Ω 75Ω
BAL UNBAL

Note 2) 文字面 : Letter side

OUTPUT

TO: TUNER(3)
(G MODEL ONLY)

Tuner Circuit Board (1) (A, B, G models)

*40
C174

FROM: AC CORD

G MODEL ONLY

PILOT LAMP

TO: TUNER(4)

TO: LCD BOARD

TO: TUNER(2)

(view from part side.)

LA1267

LA1265

1

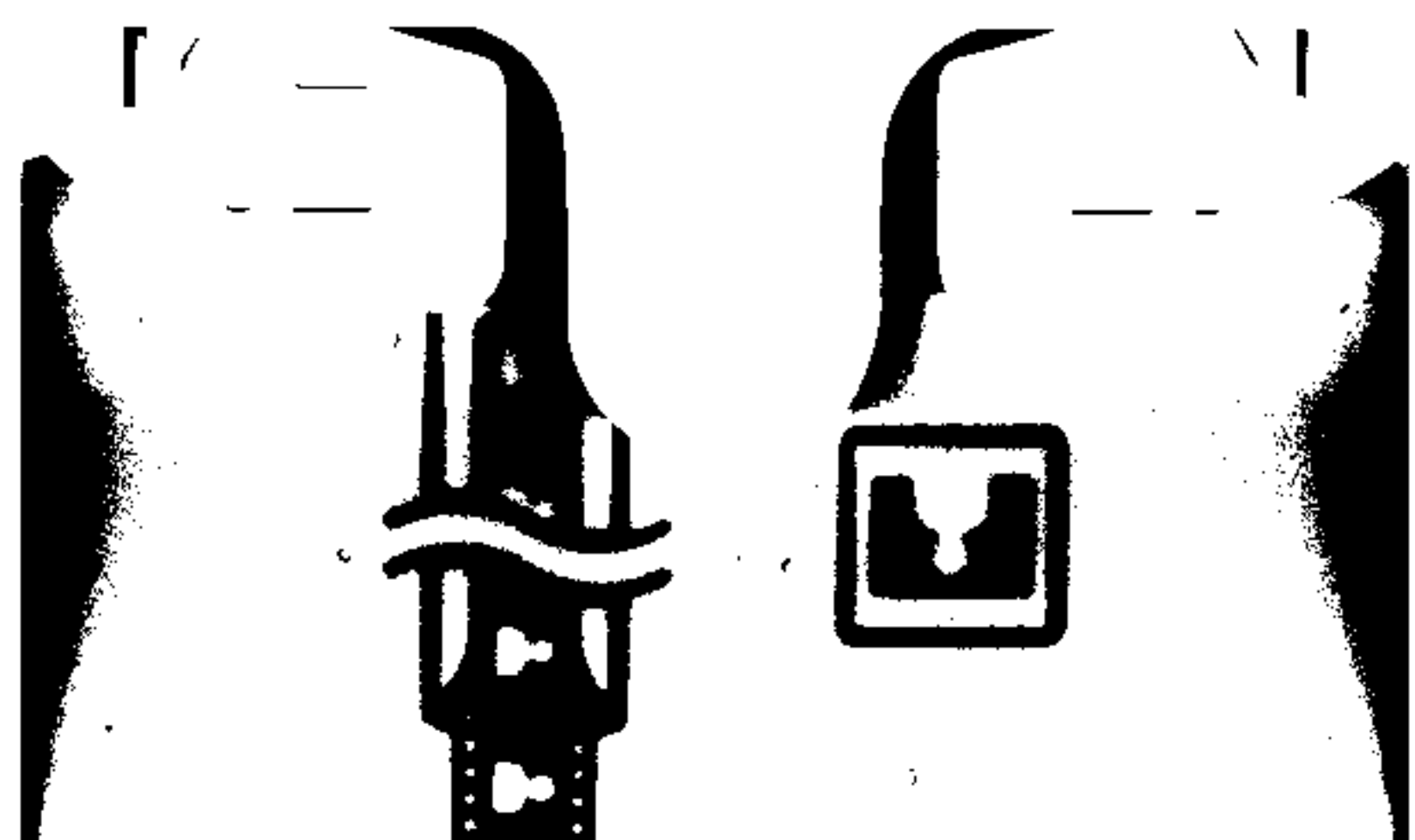
Note) * marked

		R	U, C	A, B	G
1	Antenna Terminal	VA84590	VA84590	VA84590	LA00580
2	R101	OPEN	OPEN	OPEN	470k
3	PK101	PA00081	PA00081	PA00081	VA76190
7	C108	1/50	3.3/50	1/50	1/50
8	C109	100P	100P	100P	OPEN
9	R115	47k	18k	47k	47k
10	J201	SHORT	SHORT	SHORT	OPEN
11	R160	OPEN	OPEN	OPEN	4.7k
12	T105	OPEN	OPEN	OPEN	GE20053
13	R129	10k	10k	10k	22k
14	R165	33k	33k	33k	18k
15	C126, 127	1200P	1200P	Ⓢ750P/100	Ⓢ390P/100
16	R131, 132	6.3k	6.2k	6.2k	120k
17	R133, 134	2.2k	2.2k	2.2k	3.3k
18	C161, 162	OPEN	OPEN	OPEN	2700P
19	L103, 104	Jamper	Jamper	Jamper	GE90185
20	C163, 164	OPEN	OPEN	OPEN	1000P
21	C131, 132	1500P	1500P	1500P	OPEN
22	J221	OPEN	SHORT	OPEN	OPEN
23	J211	OPEN	OPEN	SHORT	SHORT
24	J231	SHORT	OPEN	OPEN	OPEN
25	SW118	VA94530	OPEN	OPEN	OPEN
26	C154	1000/25	1000/16	1000/25	1000/16
27	R148	22	10	27	15
28	T104	GA69320	GA69310	GA69320	GA69320
29	R149	OPEN	1/2P 2.2M	OPEN	OPEN
30	SW119	LA00581	OPEN	OPEN	OPEN
31	J246	OPEN	SHORT	SHORT	SHORT
32	J241	SHORT	OPEN	OPEN	OPEN
33	PJ102	LB20227	LB20227	LB20227	OPEN
34	C166 ~ 169,172,173	OPEN	OPEN	OPEN	0.01
35	R198	OPEN	OPEN	OPEN	47k
36	J208, 209	OPEN	OPEN	OPEN	SHORT
38	PJ102	OPEN	OPEN	OPEN	VB29900
39	C131, 132	OPEN	OPEN	OPEN	3900P
40	C174	OPEN	OPEN	OPEN	0.01

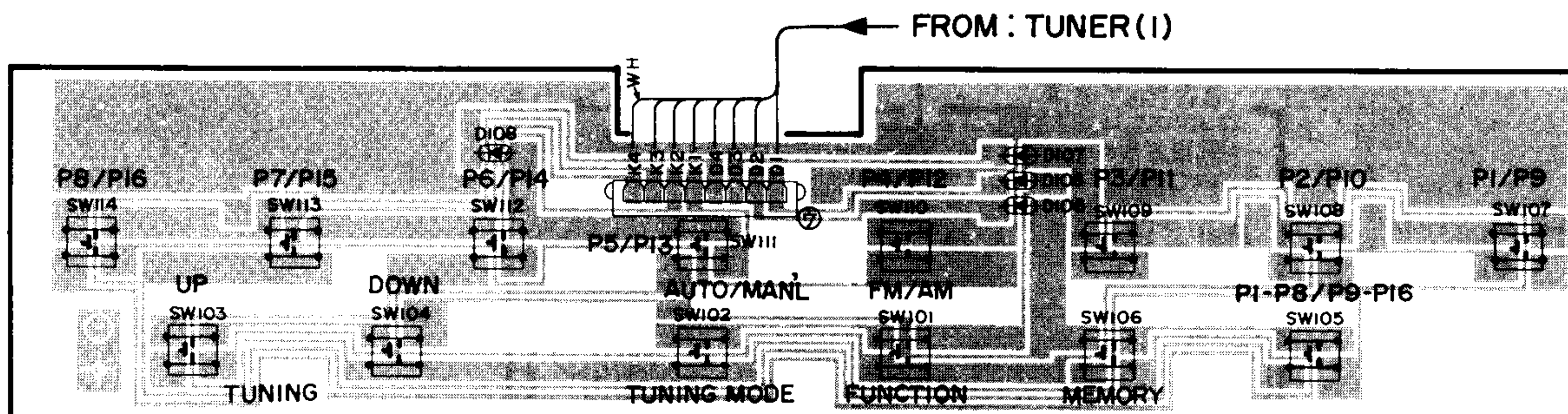
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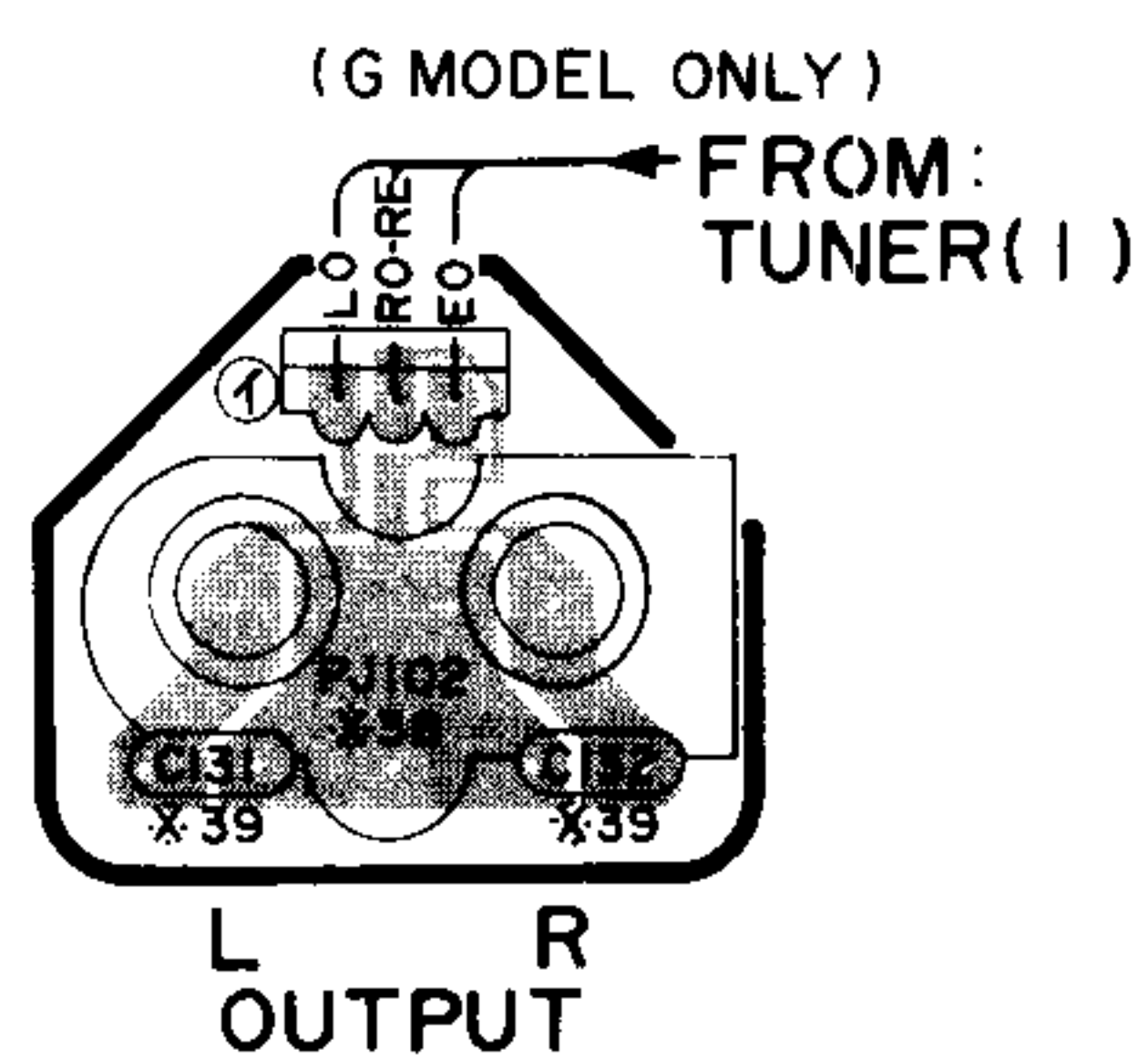
6



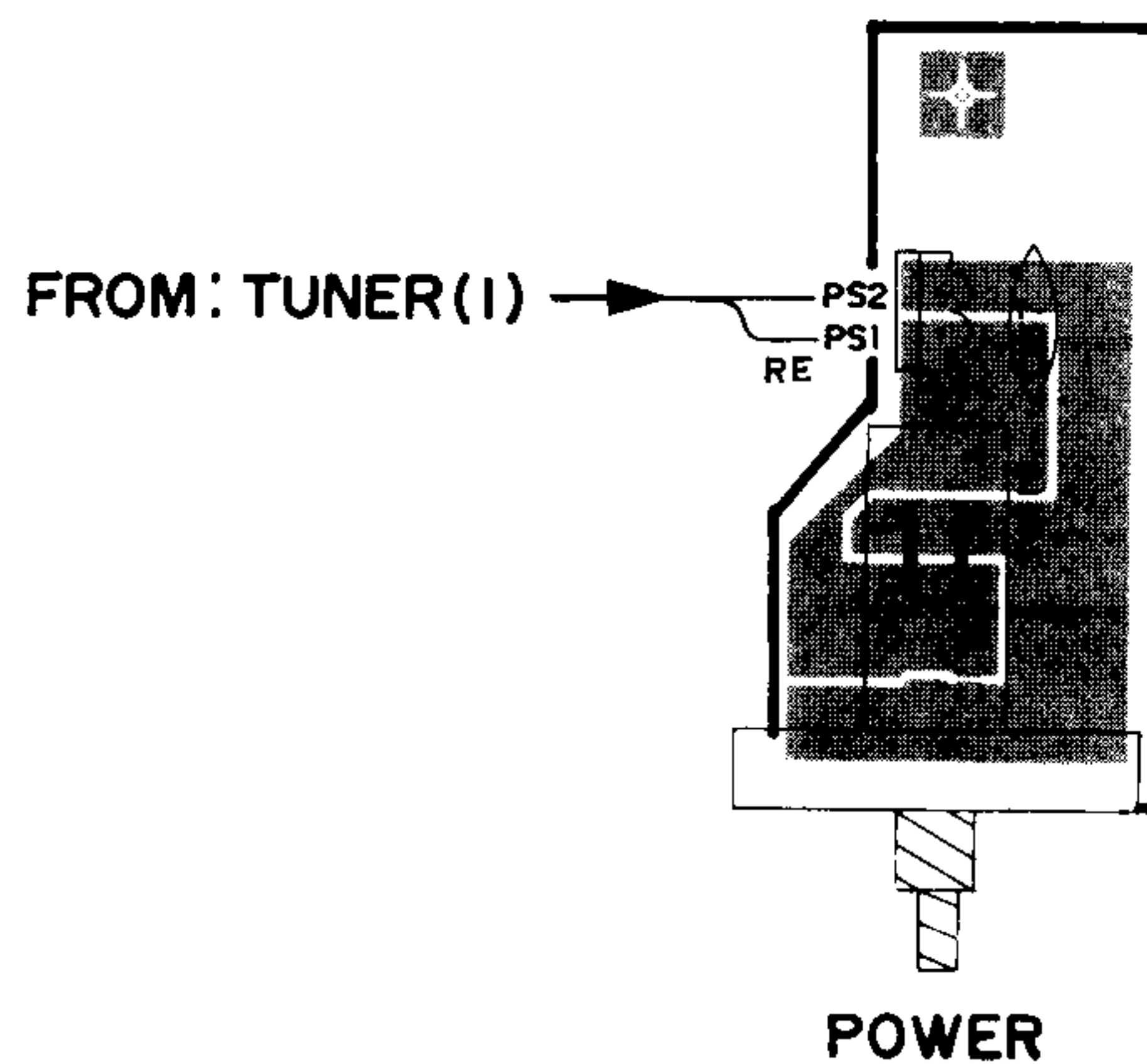
Tuner Circuit Board (2)



Tuner Circuit Board (3)



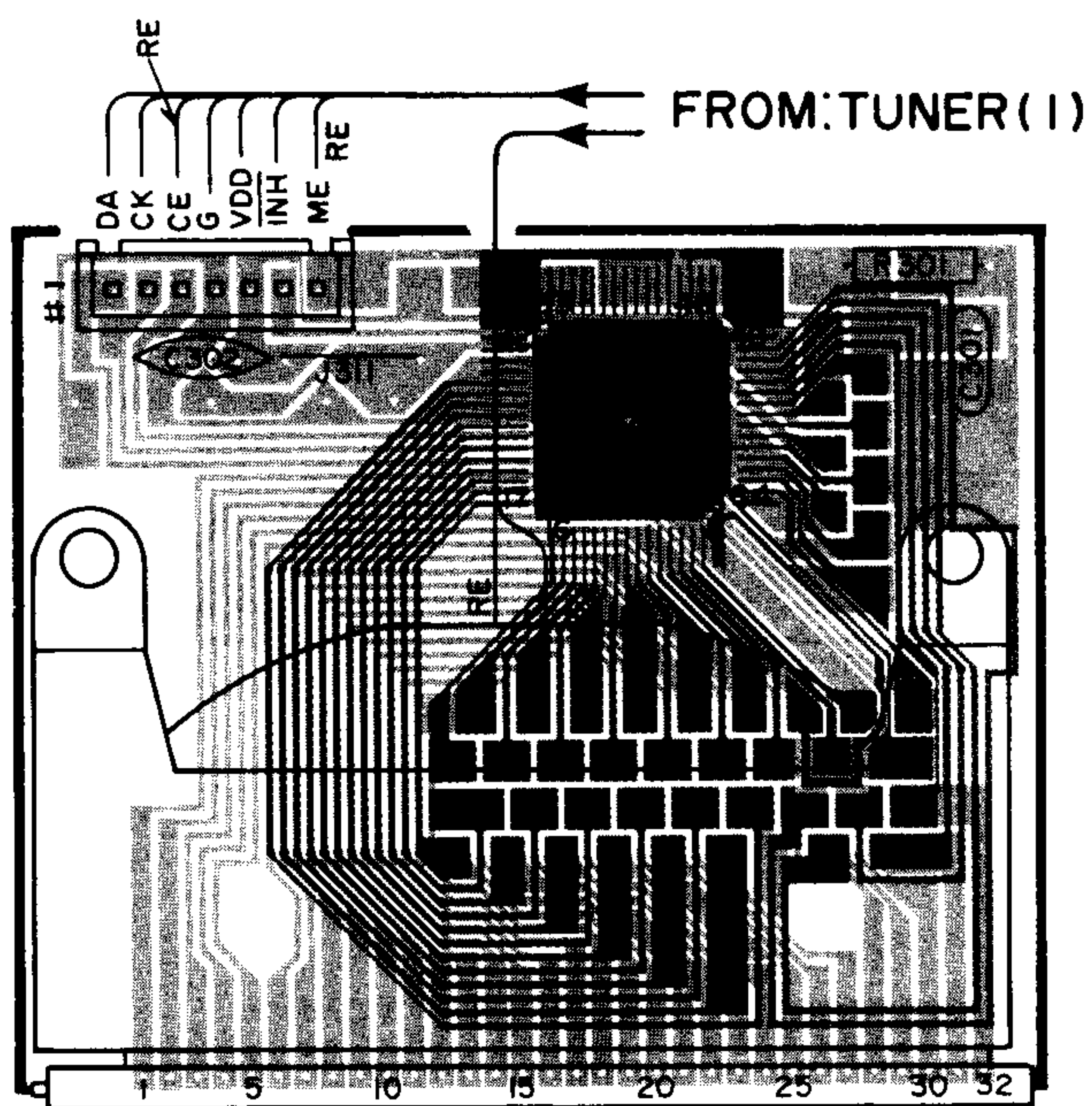
Tuner Circuit Board (4)



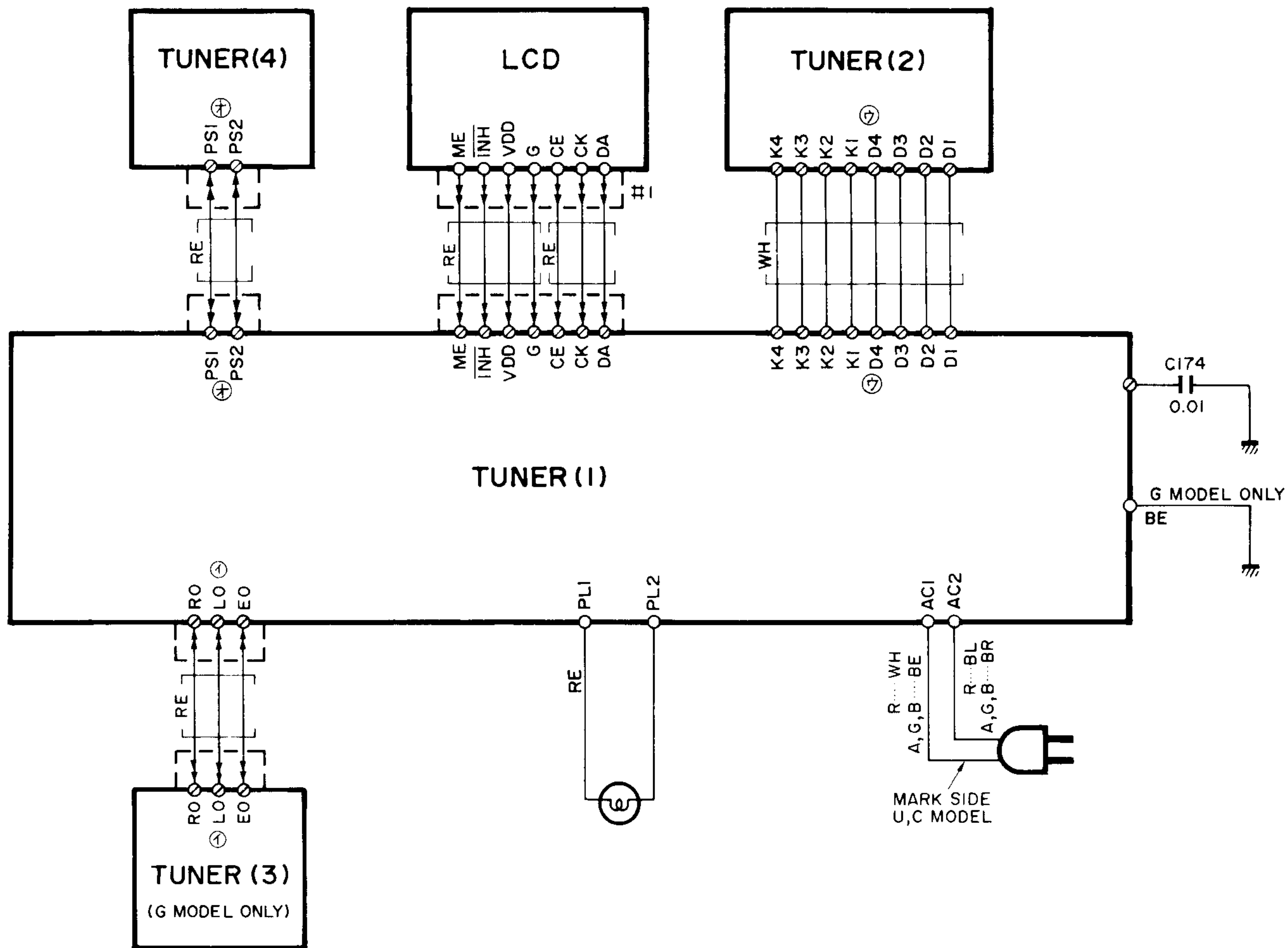
T-420

PRINTED CIRCUIT BOARD(Pattern side)

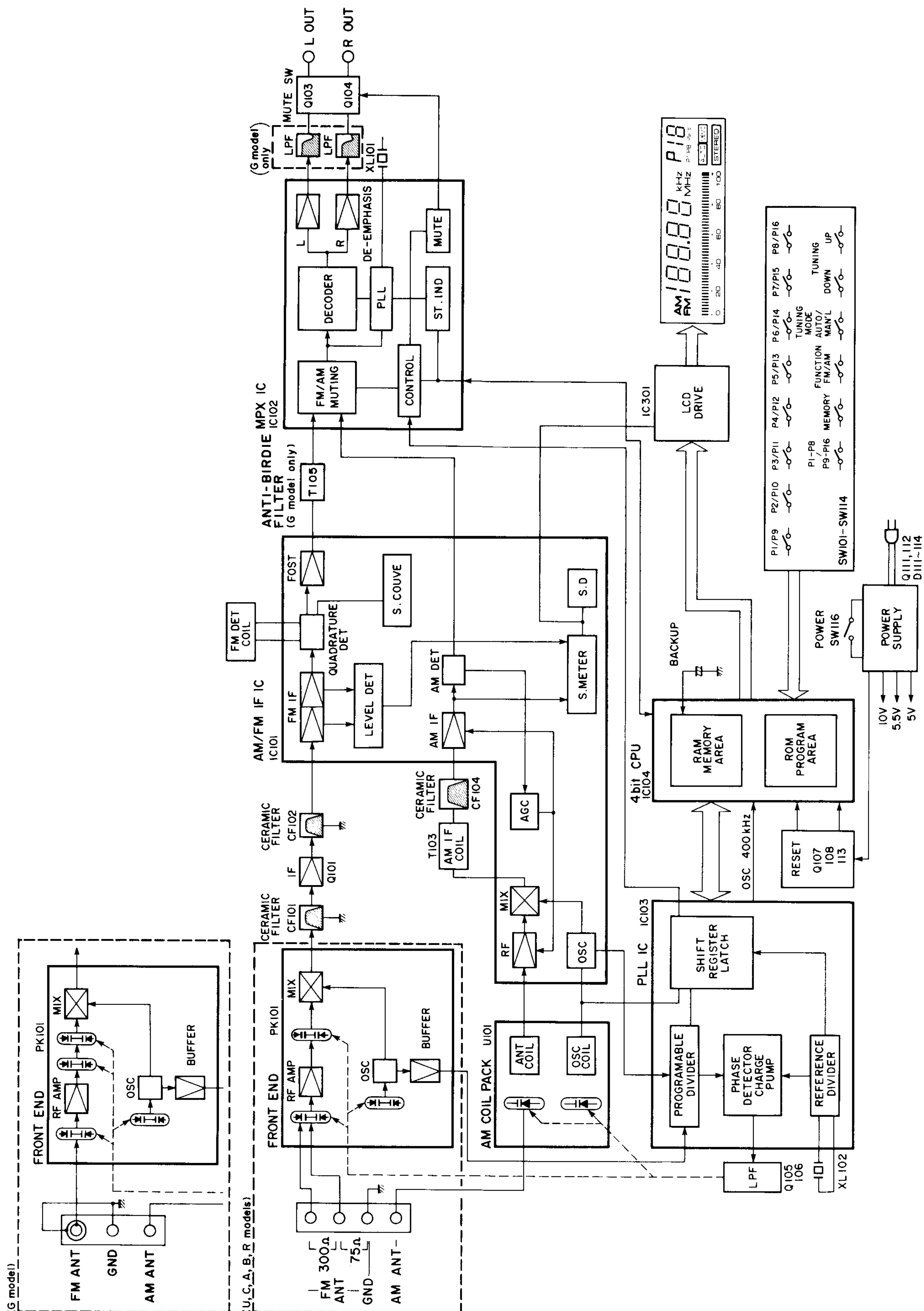
LCD

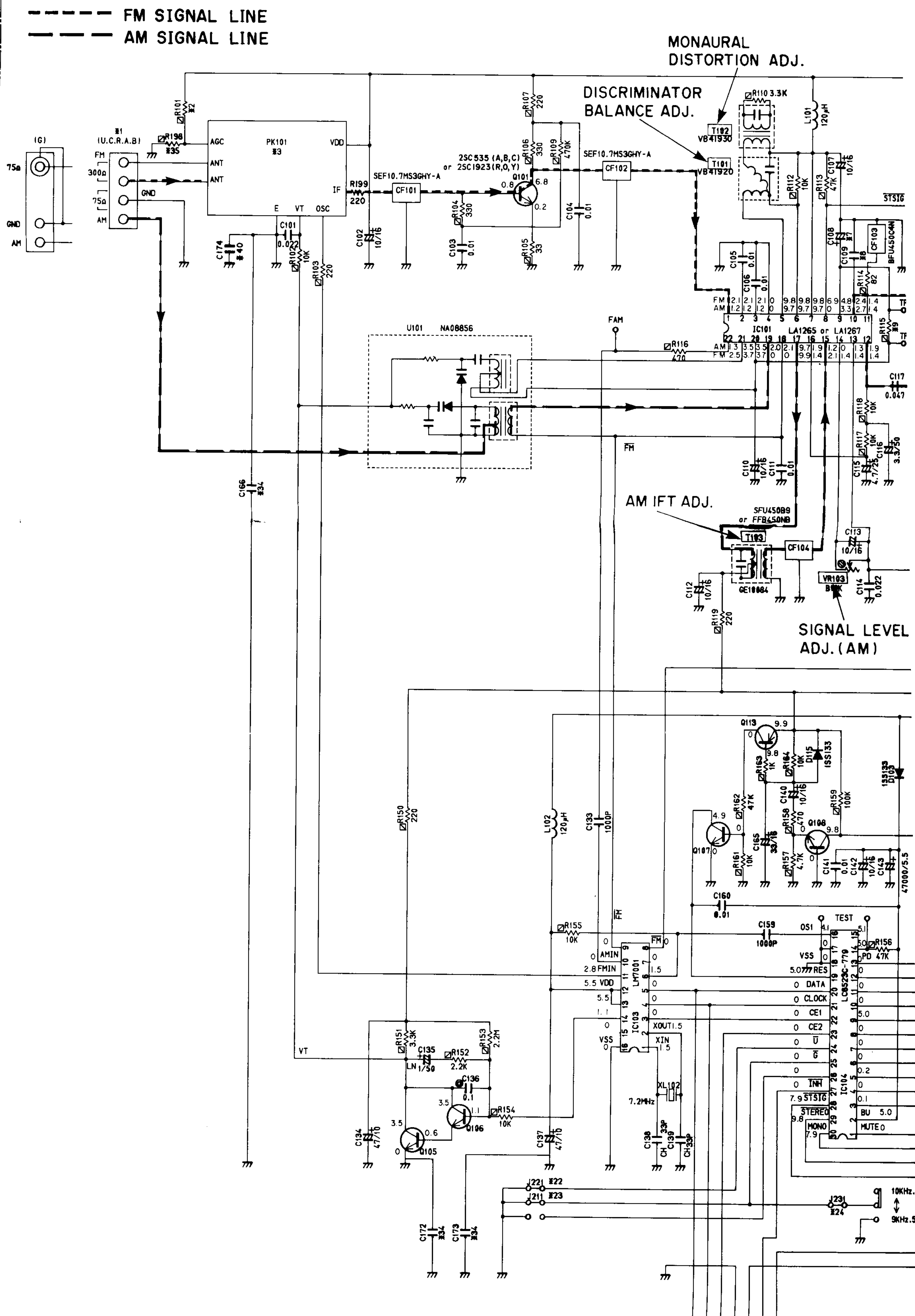


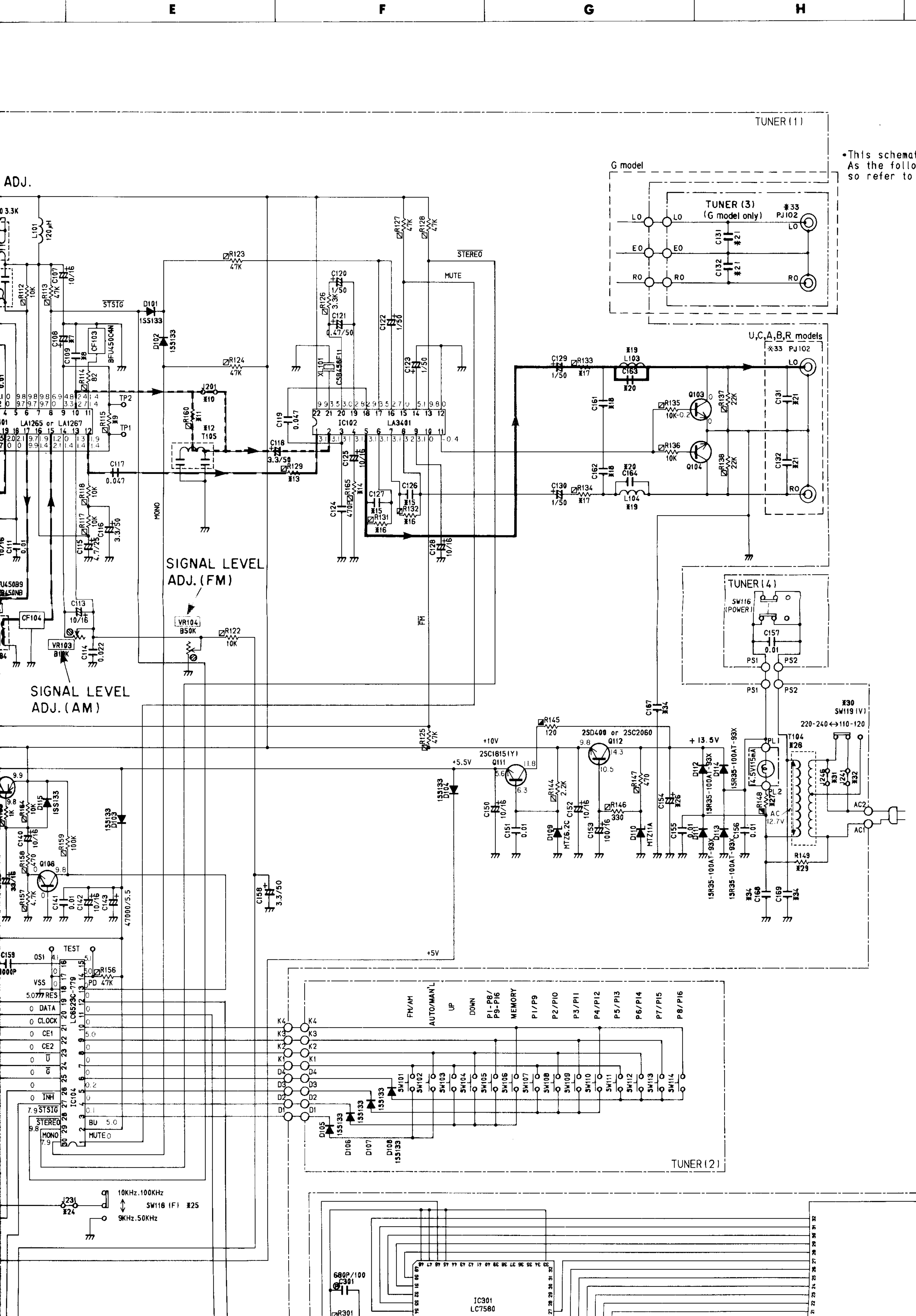
WIRING



BLOCK DIAGRAM







ADJ.

TUNER (1)

This schematic is as the following so refer to

G model

TUNER (3)
(G model only)

*33
PJ102

L0

E0

R0

C131

*21

C132

*21

R0

C131

*21

C132

*21

R0

C131

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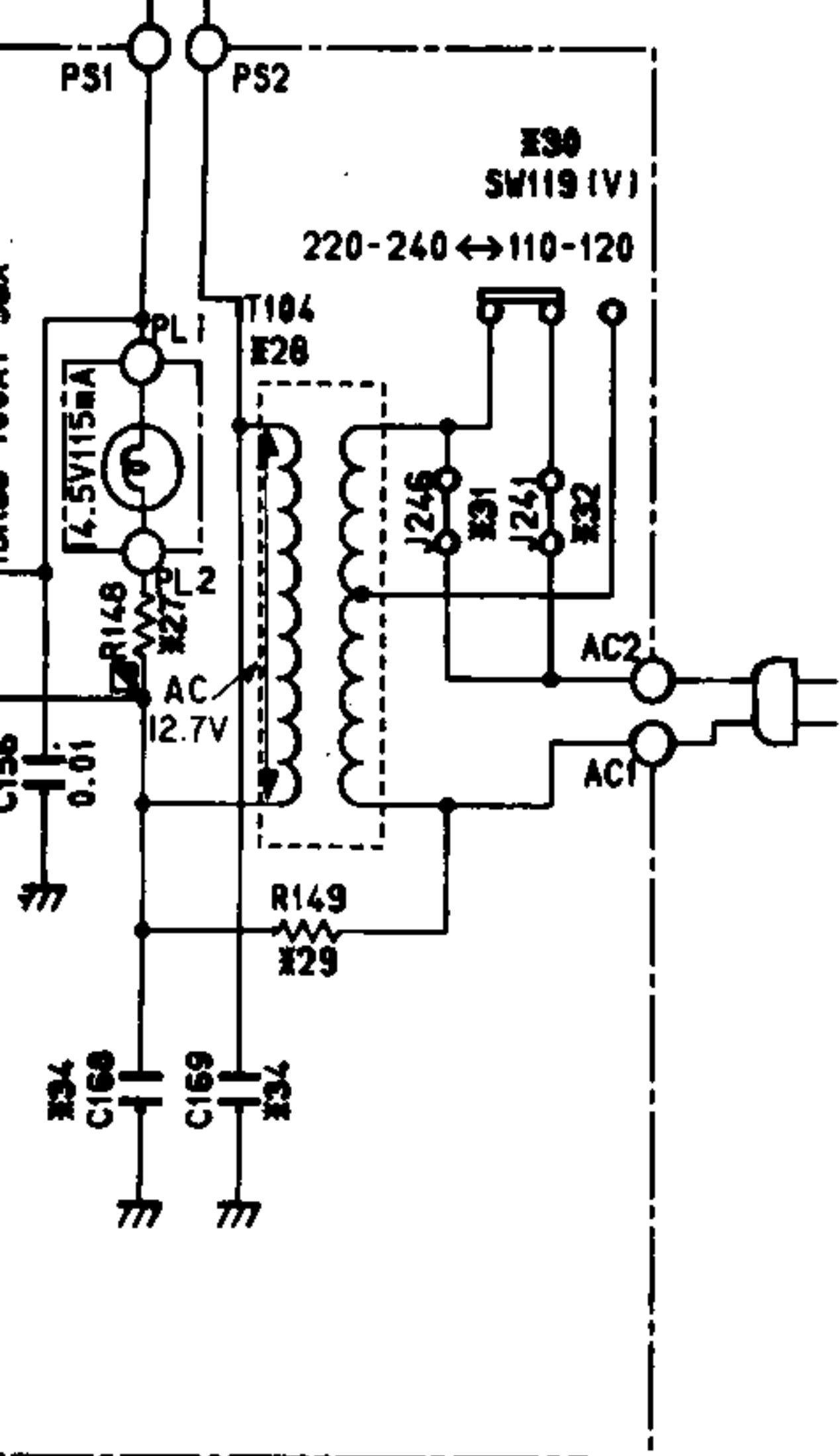
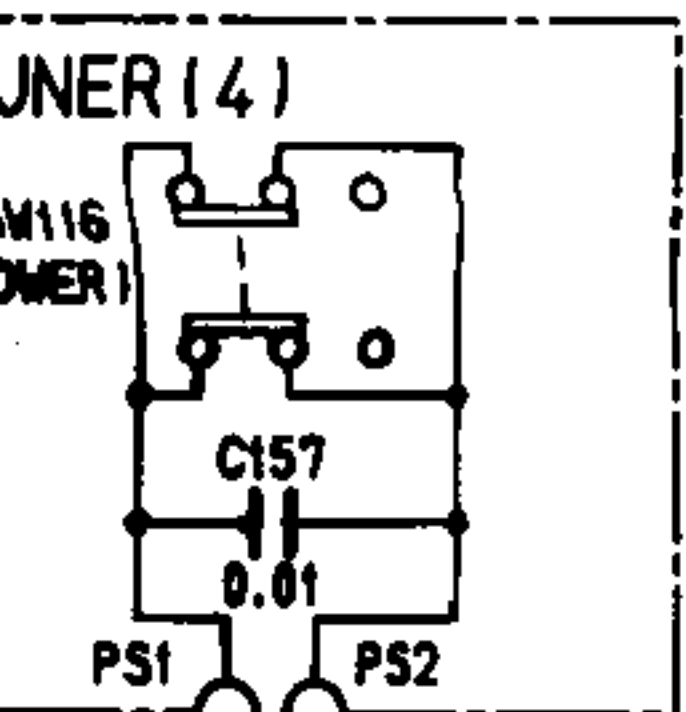
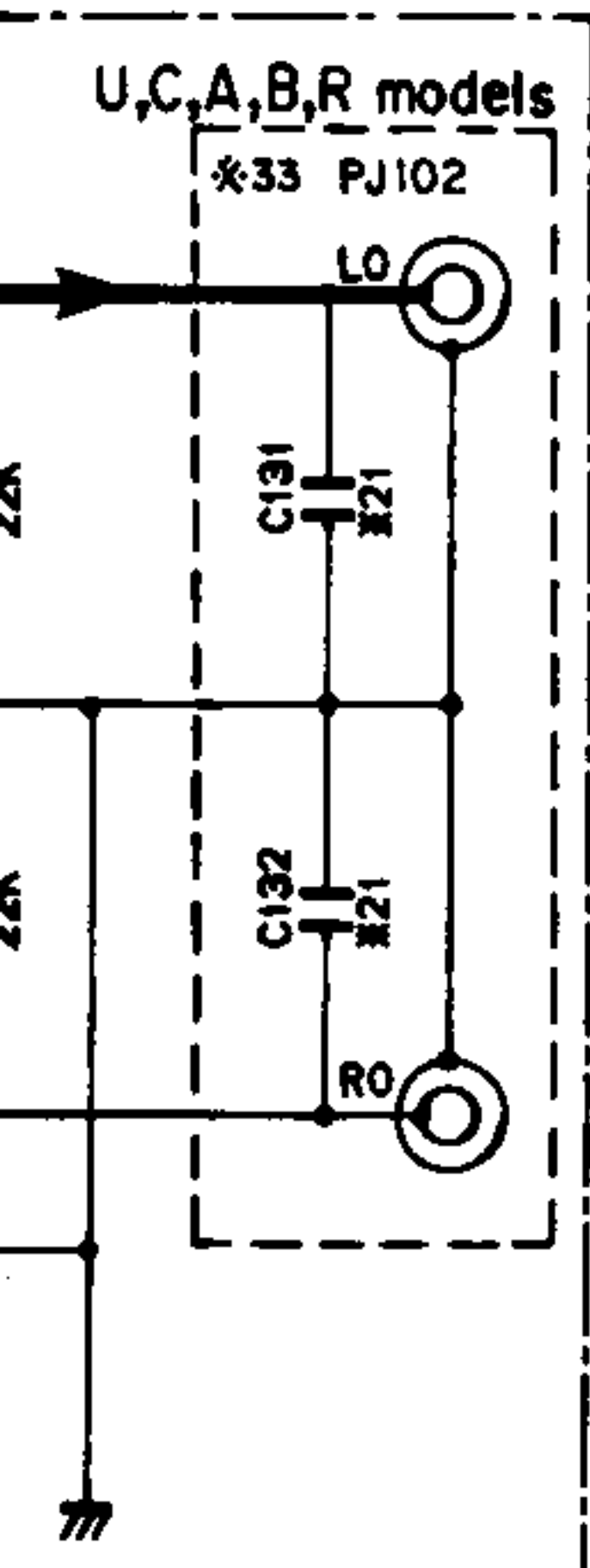
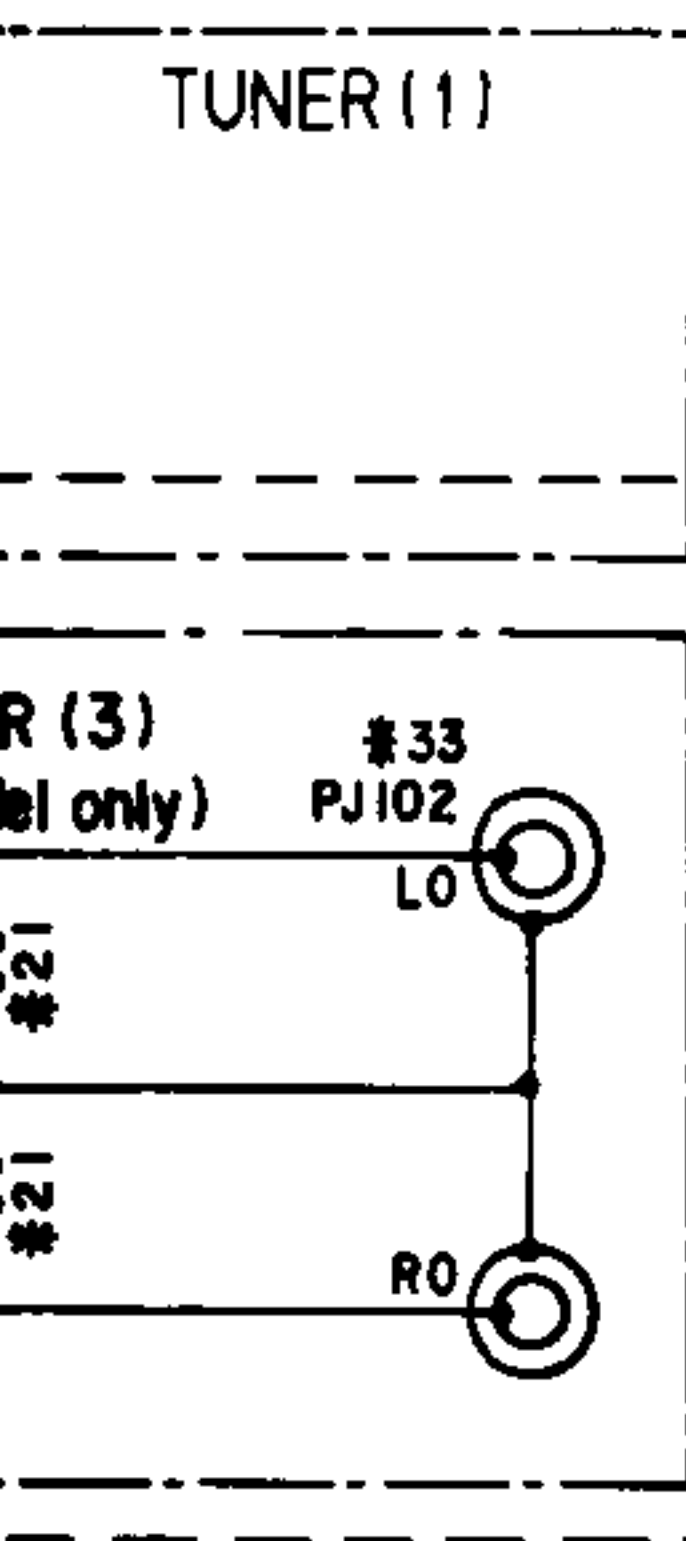
C132

*21

R0

C131

*21

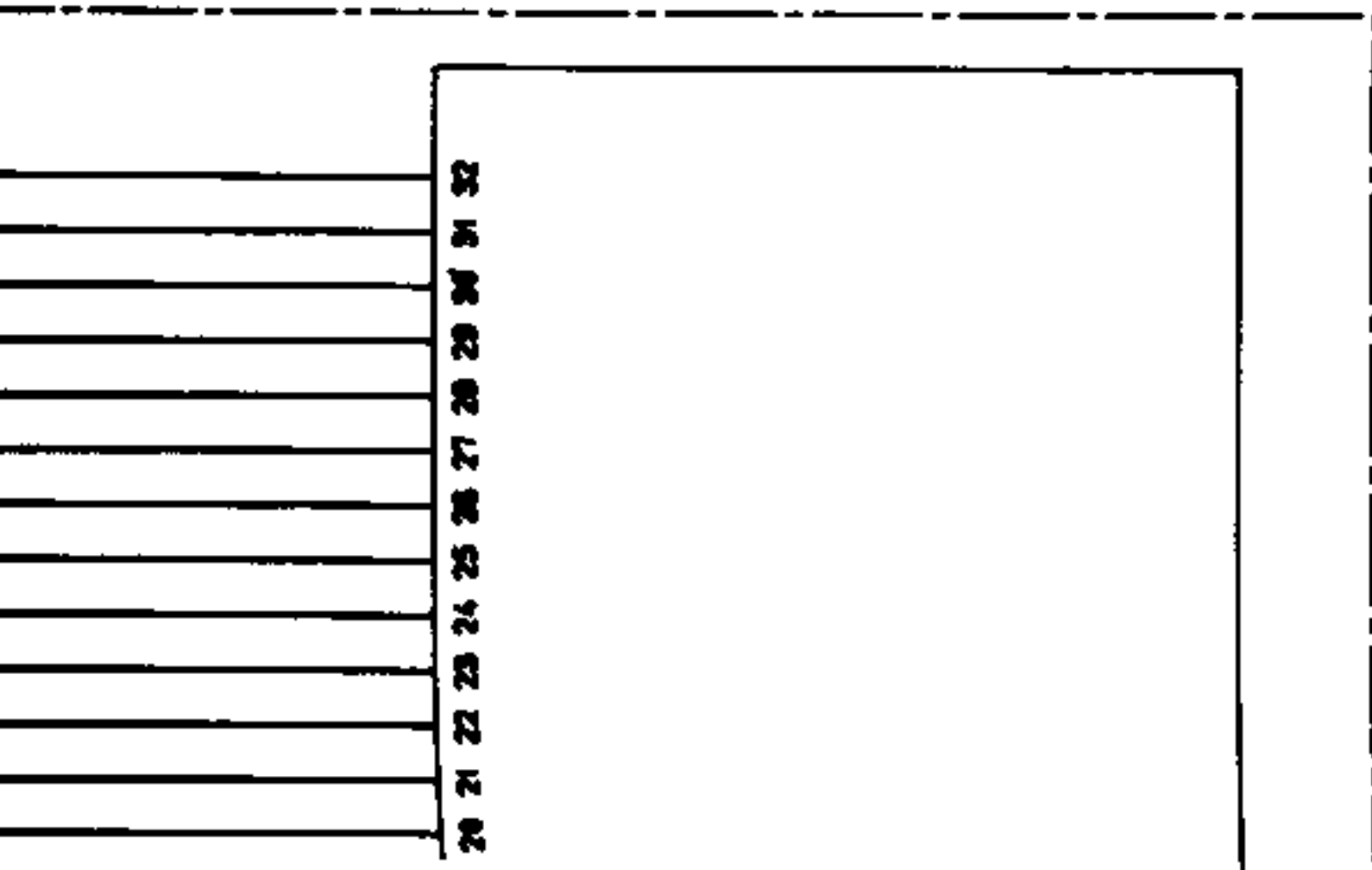


•This schematic diagram is for U.S.A and Canadian models.
As the following parts and values differ from each model,
so refer to the corresponding column.

•NOTICE
(U) U.S.A model
(C) Canadian model
(A) Australian model
(G) European model
(B) British model
(R) Other model

Note) * marked

		R	U, C	A, B	G
#1		VA84590			LB00580
#2	R101	OPEN			470K
#3	PK101	PA00081			VA76190
#4					
#5					
#6					
#7	C108	1/50	3.3/50	1/50	
#8	C109	100P			OPEN
#9	R115	47K	18K	47K	
#10	J201	SHORT			OPEN
#11	R160	OPEN			4.7K
#12	T105	OPEN			GE20053
#13	R129	10K			22K
#14	R165	33K			18K
#15	C126,127	1200P		750P/100	390P/100
#16	R131,132	62K			120K
#17	R133,134	2.2K			3.3K
#18	C161,162	OPEN			2700P
#19	L103,104	SHORT			GE90185
#20	C163,164	OPEN			1000P
#21	C131,132	1500P			3900P
#22	J221	OPEN	SHORT	OPEN	
#23	J211	OPEN		SHORT	
#24	J231	SHORT	OPEN		
#25	SW118	VA94530	OPEN		
#26	C154	1000/25	1000/16	1000/25	1000/16
#27	R148	22	10	27	15
#28	T104	GA6932	GA6931	GA6932	
#29	R149	OPEN	1/2P2.2M	OPEN	
#30	SW119	LA00581	OPEN		
#31	J246	OPEN	SHORT		
#32	J241	SHORT	OPEN		
#33	PJ102	LB20227			V829900
#34	C166~169 C172,173	OPEN			0.01
#35	R198	OPEN			47K
#36	J208~210	OPEN			SHORT
#40	C174	OPEN			0.01



RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR
□	CARBON FILM RESISTOR (1/6W)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
■	FIRE PROOF CARBON FILM RESISTOR
□	SEMENT MOLDED RESISTOR
⊙	SEMI VARIABLE RESISTOR

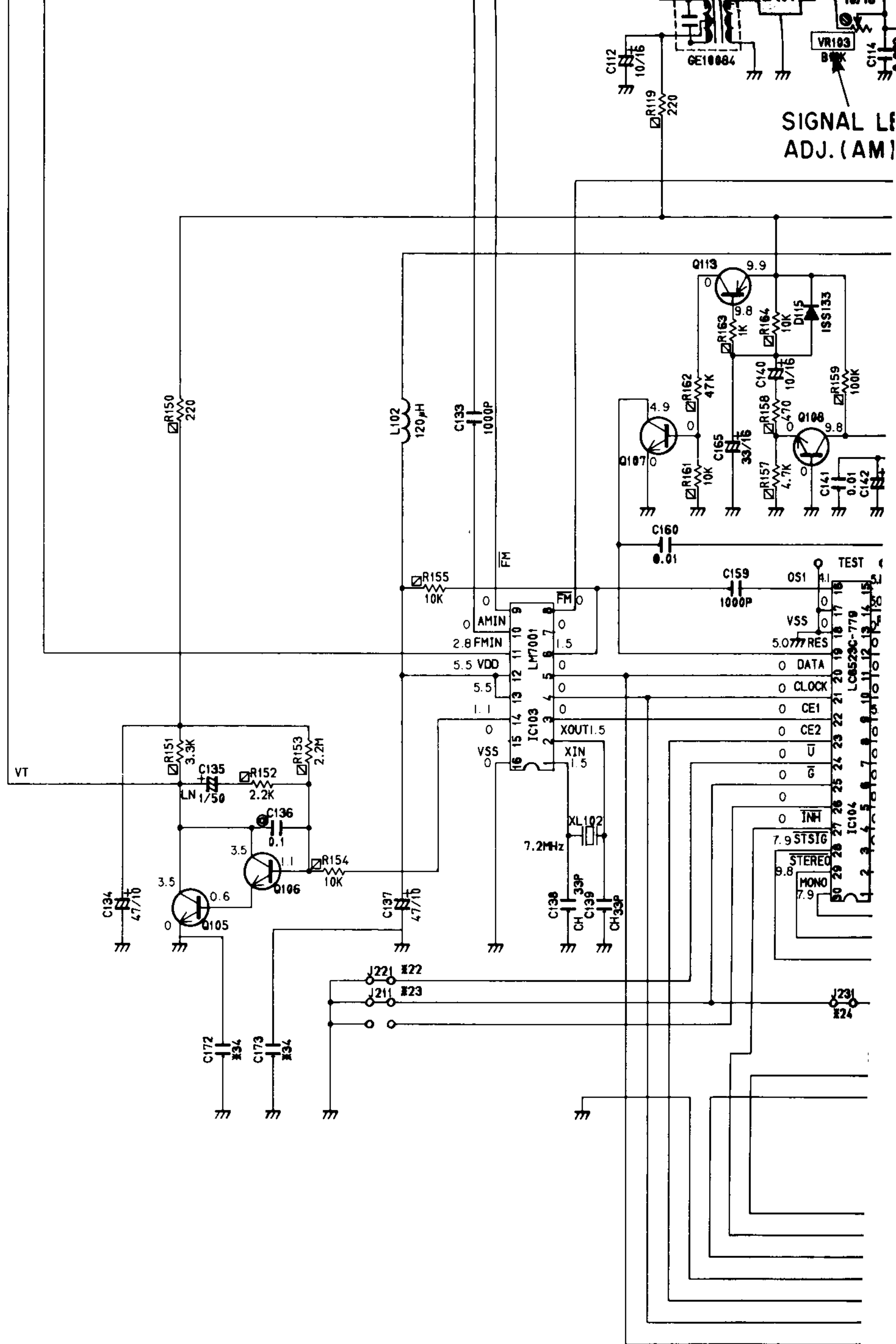
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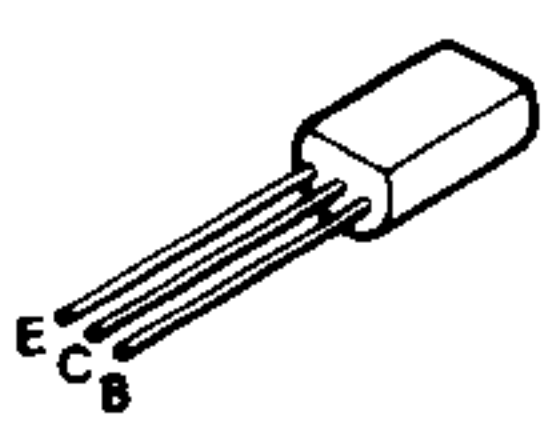
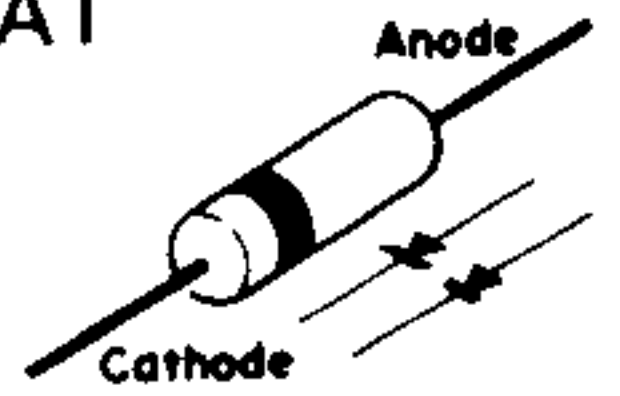
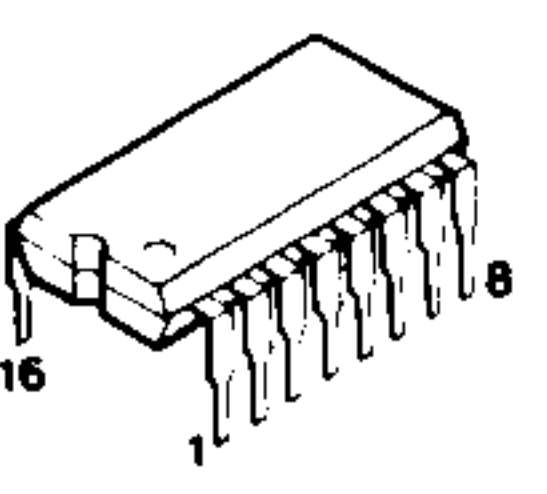
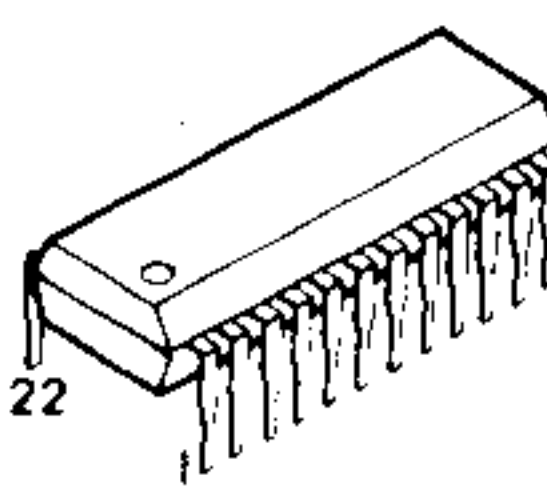
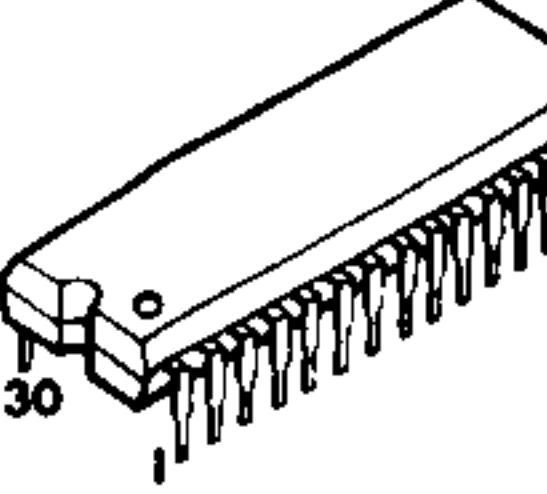
8

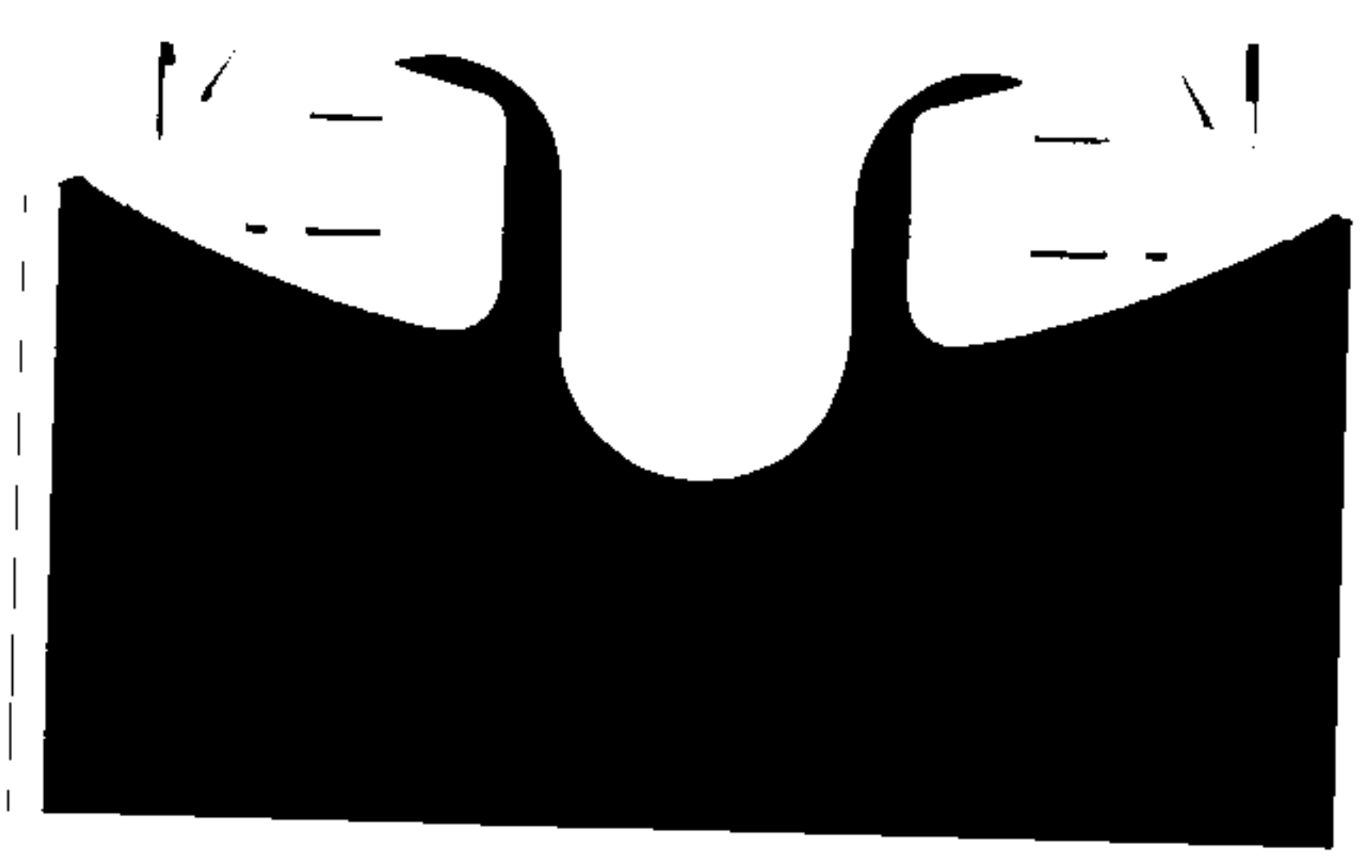


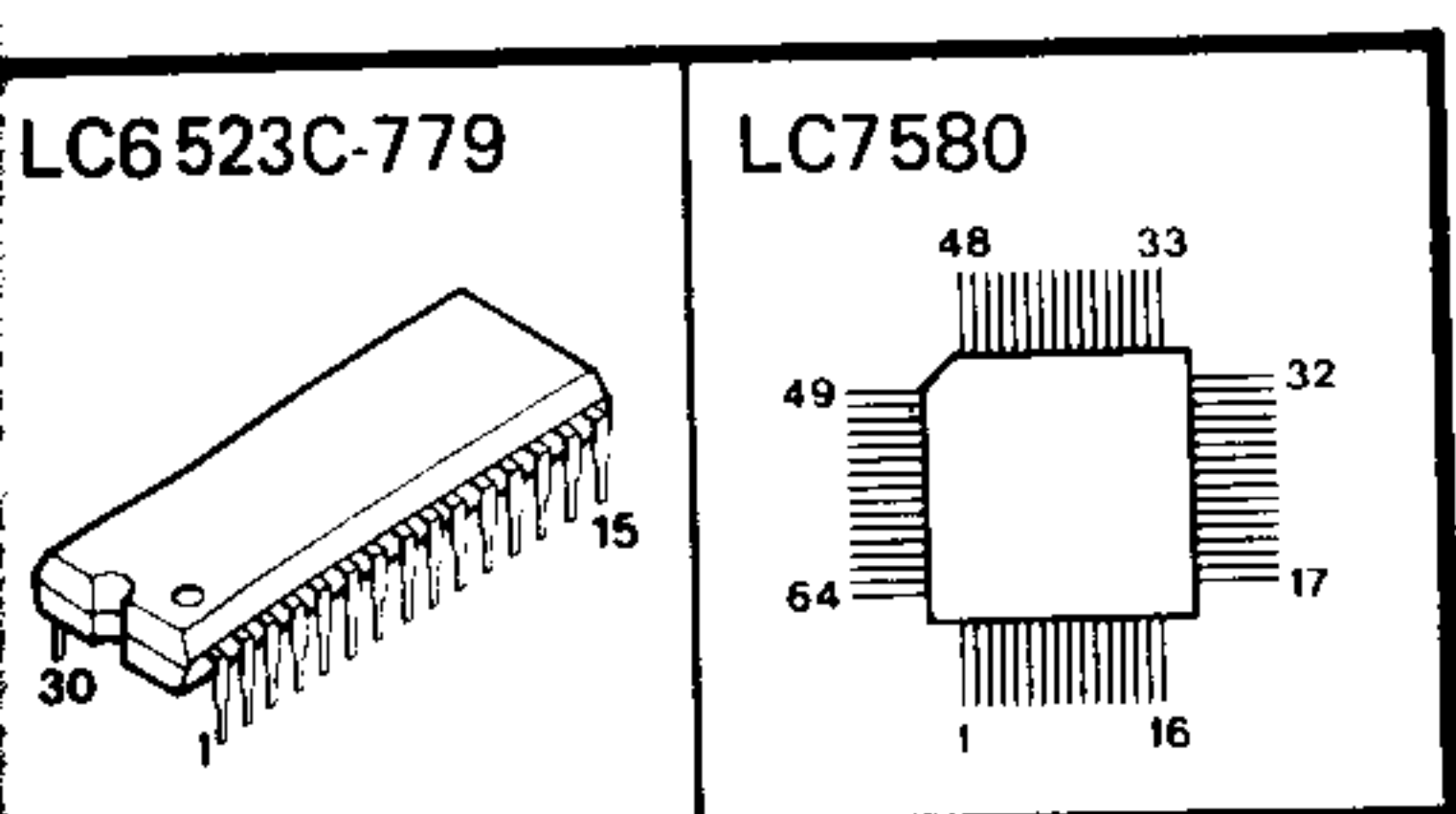
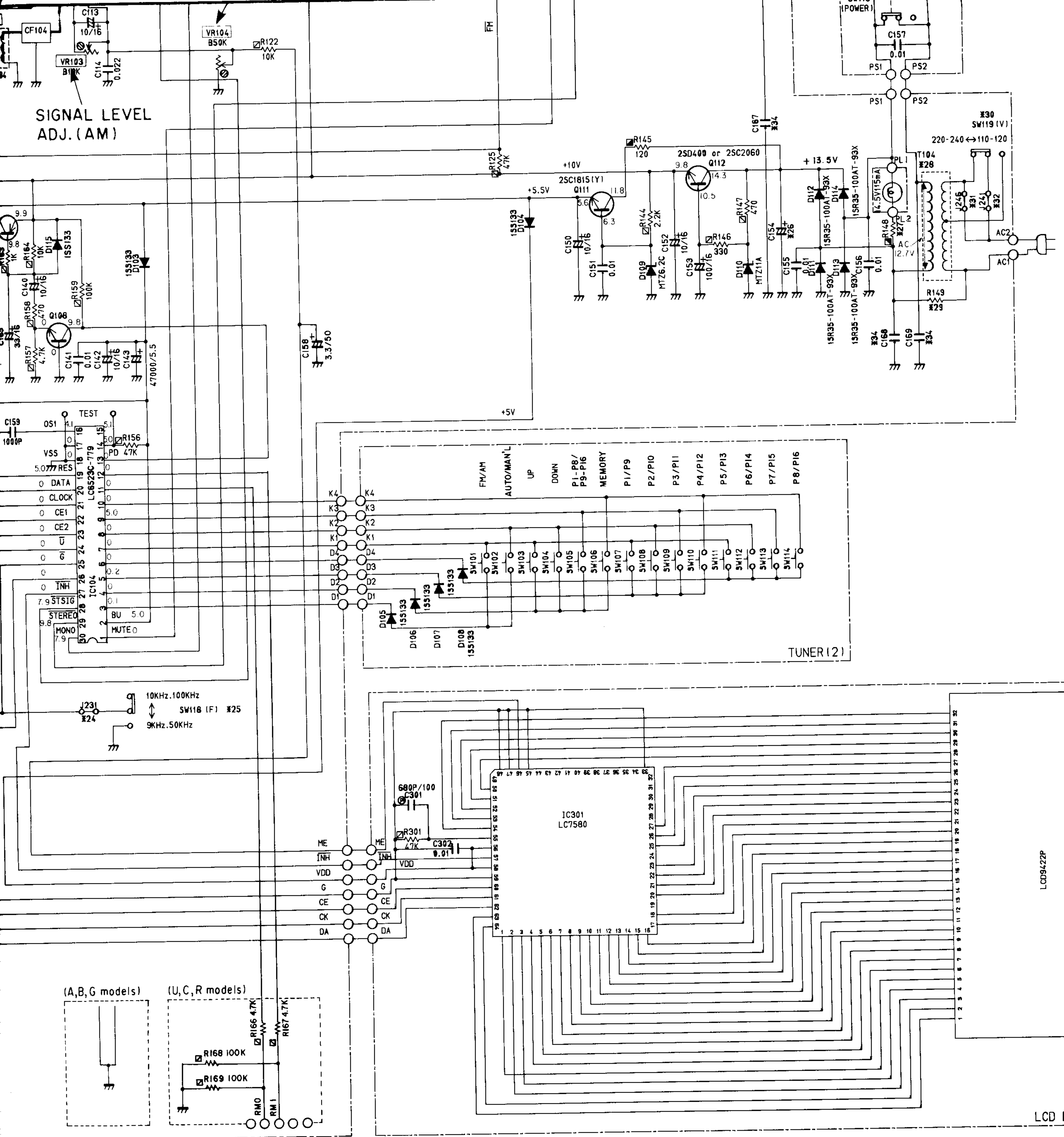
SIGNAL LEVEL
ADJ. (AM)

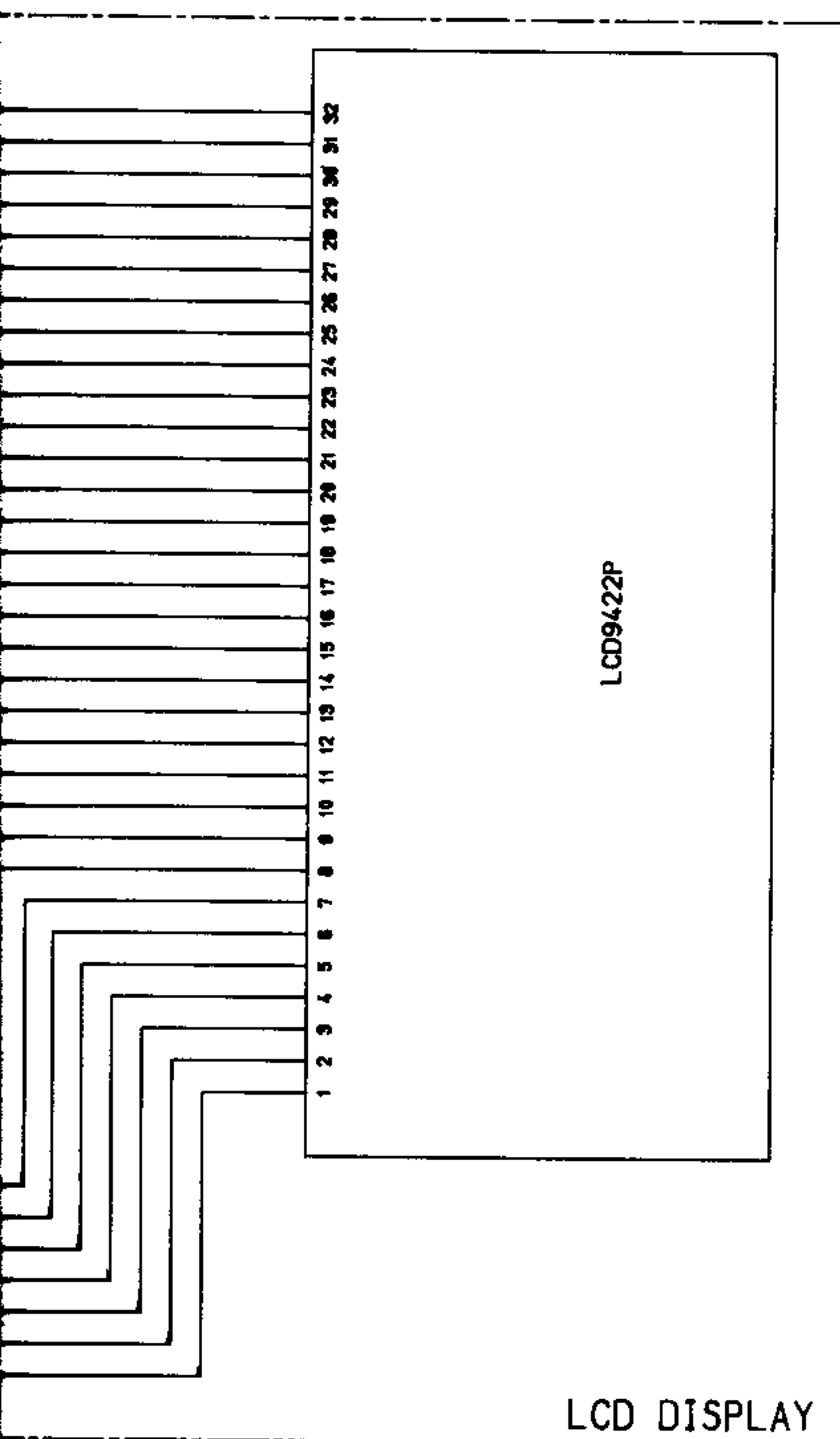
(A,B,G n

PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.

2SA1115 (E, F) 2SA1310 (R, S, T) 2SC1815 (Y) 2SC2603 (E, F) 2SC3312 (R, S, T) 2SC2060 2SC535 (A, B, C) 2SC1923 (R, O, Y)	2SD400 	1SS133 MTZ6.2C MTZ11A 1SR35-100AT 	LM7001 	LA1265 LA3401 	LC6523C-779 
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RESISTORCAPACITOR

UNLESS OTHERWISE SPECIFIED :

- *All voltages measured with a 10M Ω /DC electric volt meter.*
- *Components having special characteristics are marked  and must be replaced with parts having specifications equal to those originally installed.*

PARTS LIST

■WARNING
Components having special characteristics are marked  and must be replaced with parts having specifications equal to those originally installed.

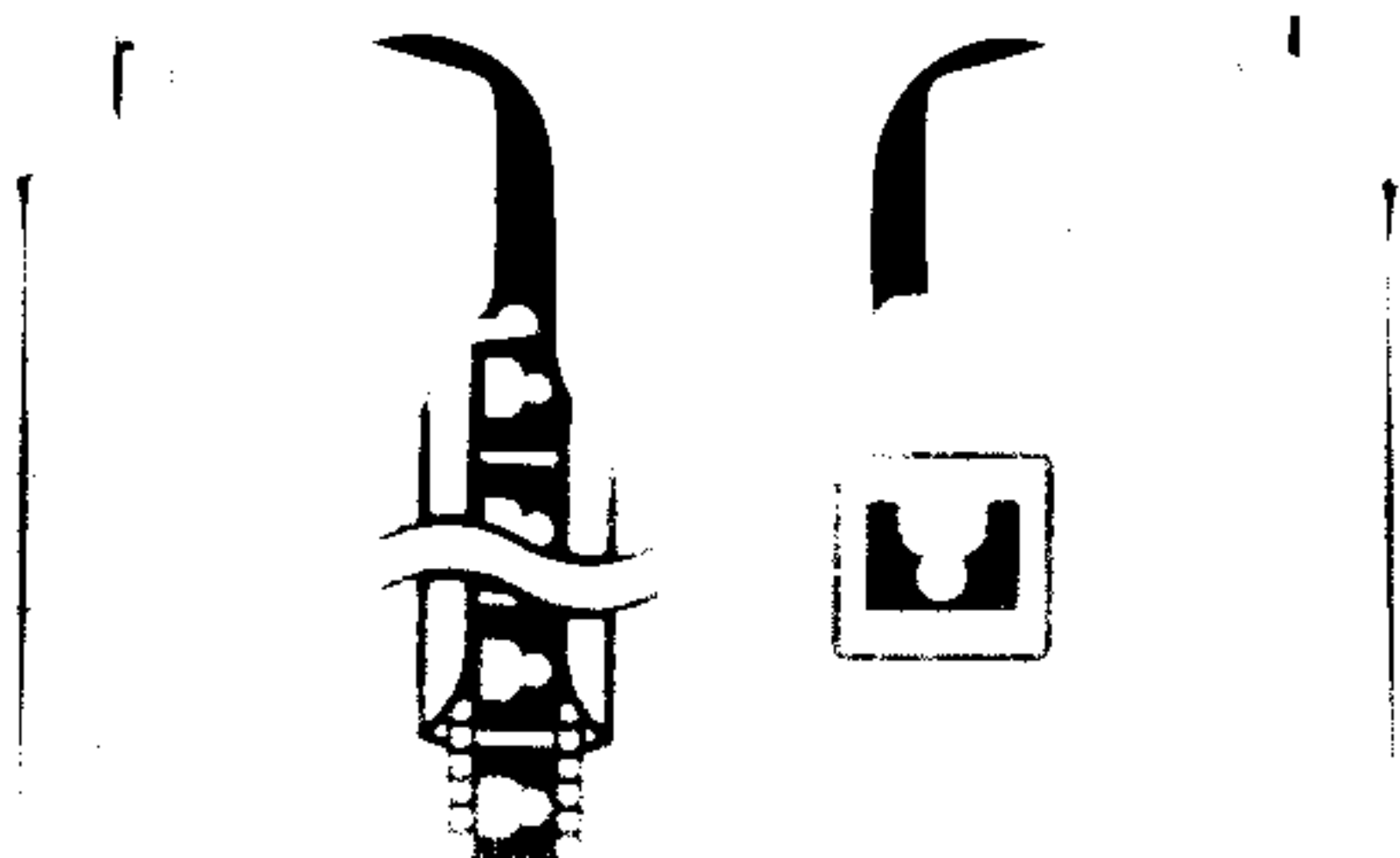
T-420

■ELECTRICAL PARTS

Ref. No.	Part No.			Description	部 品 名	Remarks	Common Model	Markets	ランク
※	NA	08	97	30	Tuner Circuit Board			T-30	R
※	NA	08	97	40	"			T-30	U,C
※	NA	08	98	10	"			T-28	A,B
※	NA	08	98	20	"			T-28	G
	FG	21	13	30	Ceramic Cap.	33pF 50V	セラコン	C138,139	
	FG	21	21	00	"	100pF 50V	"	C109	R,U,A,C,B
	FG	21	24	70	"	470pF 50V	"	C124	
	FG	21	31	00	"	1000pF 50V	"	C133,159	
	FG	24	41	00	"	0.01μF 50V	"	C103~106,111,141,151,155~157,160	
	FG	24	41	00	"	0.01μF 50V	"	C166~169,172~174	G
	FG	24	42	20	"	0.022μF 50V	"	C101,114	
	FG	24	44	70	"	0.047μF 50V	"	C117,119	
	FZ	00	64	00	Electrolytic Cap.	47000μF 5.5V	スーパーキャパシタ	C143	
	UT	45	23	90	Polypropylene Film Cap.	390pF 100V	ポリプロコン	C126,127	G
	UT	45	27	50	"	750pF 50V	"	"	A,B
	FA	15	31	20	Mylar Cap.	1200pF 50V	マイラーコン	"	R,U,C
	FA	15	31	00	"	1000pF 50V	"	C163,164	G
	FA	15	31	50	"	1500pF 50V	"	C131,132	R,U,C,A,B
	FA	15	33	90	"	3900pF 50V	"	"	G
	FA	15	32	70	"	2700pF 50V	"	C161,162	G
	FA	15	51	00	"	0.1μF 50V	"	C136	
	Ui	22	74	70	Electrolytic Cap.	47μF 10V	ケミコン	C134,137	
	Ui	23	71	00	"	10μF 16V	"	C102,107,110,112,113,125,128,140,142,150,152	
	UJ	13	73	30	"	33μF 16V	"	C165	
	UJ	13	81	00	"	100μF 16V	"	C153	
	Ui	24	64	70	"	4.7μF 25V	"	C115	
	Ui	26	54	70	"	0.47μF 50V	"	C121	
	Ui	36	61	00	"	1μF 50V	"	C120,122,123,129,130	
	UJ	46	63	30	"	3.3μF 50V	"	C108	U,C
	Ui	36	61	00	"	1μF 50V	"	"	R,A,G,B
	UJ	46	63	30	"	3.3μF 50V	"	C116,118,158	
	FZ	00	47	20	"	1000μF 16V	"	C154	U,G,C
	UW	94	91	00	"	1000μF 25V	"	"	R,A,B
	UL	46	61	00	"	1μF 50V	"	C135	
※	GA	69	31	00	Power Transformer		電源トランス	T104	U,C
※	GA	69	32	00	"		"	"	R,A,G,B
※	GE	10	08	40	AM IFT Coil	450KHz	AM IFT コイル	T103	
※	VB	41	92	00	FM DET Coil	QU-7	F M 検波 コイル	T101	
※	VB	41	93	00	"	QU-7	"	T102	
	GE	20	05	30	Anti-birdie Filter	114KHz	アンチバーディーフィルター	T105	G
	GE	90	18	50	Inductor	39mH	固定インダクター	L103,104	G
※	GE	90	19	80	RF Inductor	120μH	R F インダクター	L101,102	
	GG	00	05	50	AM Ceramic Filter	BFU450C4N	AMセラミックフィルター	CF103	
	GG	00	06	60	"	SFU450B9	"	CF104	
	GG	00	05	60	FM Ceramic Filter	SFE10.7MS3GHY-A	FMセラミックフィルター	CF101,102	
※	GG	00	07	50	Ceramic Resonator	CSB456F11	セラミック振動子	XL101	
	QU	00	38	00	Quartz Crystal Unit	7.2MHz	水晶振動子	XL102	
	HG	30	92	20	Carbon Resistor	2.2MΩ 1/2P	カーボン抵抗	R149	U,C

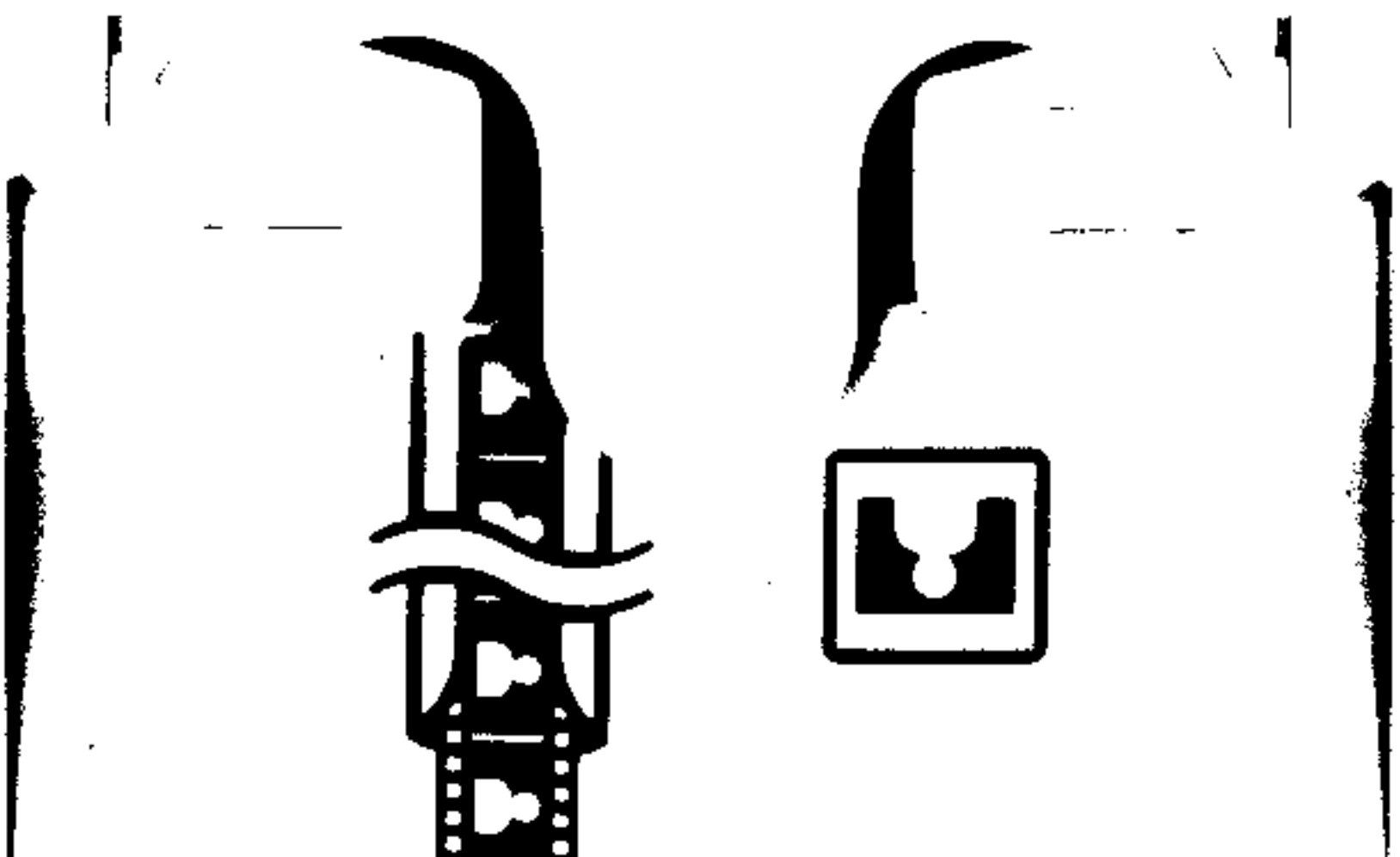
※New Parts (新規部品)

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Ref. No.	Part No.				Description	部 品 名	Remarks	Common Model	Markets	ランク
	HV	45	41	00	Flame Proof Carbon Resistor	10Ω 1/4W	不燃化カーボン抵抗	R148		U,C
	HV	45	41	50	"	15Ω 1/4W	"	"		G
	HV	45	42	20	"	22Ω 1/4W	"	"		R
	HV	45	42	70	"	27Ω 1/4W	"	"		A,B
	HV	45	51	20	"	120Ω 1/4W	"	R145		
	HT	37	03	90	Pre-Set Potentiometer	B20kΩ	半 固 定 抵 抗	VR103		
	HT	37	04	10	"	B50kΩ	"	VR104		
	iA	11	15	10	Transistor	2SA1115 (E,F)	ト ラ ン ジ ス タ	Q113	} Inter-changeable	
	iX	60	31	70	"	2SA1310 (R,S,T)	"	"		
	iC	18	15	20	"	2SC1815 (Y)	"	Q111		
	iC	26	03	10	"	2SC2603 (E,F)	"	Q103~108	} Inter-changeable	
	iX	60	31	80	"	2SC3312 (R,S,T)	"	"		
	iC	20	60	00	"	2SC2060	"	Q112	} Inter-changeable	
	iD	04	00	10	"	2SD400	"	"		
	iC	05	35	40	"	2SC535 (A,B,C)	"	Q101		
	iF	00	34	50	Diode	1SS133	ダ イ オ ー ド	D101~108,115		
	iF	00	84	80	"	ISR35-100AT	"	D111~114		
	iF	00	88	20	Zener Diode	MTZ11A	ツェナーダイオード	D110		
	iF	01	07	50	"	MTZ6.2C	"	D109		
※	iG	15	80	00	IC	LC6523C-779	I C	IC104		
※	iG	15	81	00	"	LA3401	"	IC102		
※	iG	15	82	00	"	LA1265	"	IC101		
※	iG	15	84	00	"	LM7001	"	IC103		
※	VA	94	53	00	Slide Switch		ス ラ イ ド ス イ ッ チ	SW118		R
	KA	80	36	90	Push Switch		プ ッ シ ュ ス イ ッ チ	SW116		
	KA	90	63	80	Switch	5M EVQ-QRB-04M	ラ イ ト タ ッ チ ス イ ッ チ	SW101~114		
※	LA	00	58	10	Voltage Selector		電 圧 切 換 器	SW119		R
※	VB	29	90	00	Pin Jack	2P	ピ ン ジャ ッ ク	PJ102		G
	LB	20	22	70	"	2P	"	"		R,U,A,C,B
※	NA	08	85	60	AM Coil Pack		AM電子同調コイルパック	U101		
	PA	00	08	10	Front End Pack	FE343U	フ ロ ン ト エ ン ド パ ッ ク	PK101		R,U,A,C,B
※	VA	76	19	00	"	TFFC2U100X	"	"		G
	LA	00	20	00	Lapping Terminal	P=7.5 2P i-Type	i 型 ラ ッ ピ ン グ 端 子 板			
	LA	00	38	70	"	P=10 2P WTM-Type	WTM型ラッピング端子板			
※	VA	84	59	00	Antenna Terminal	4P	ア ン テ ナ 端 子 台			R,U,A,C,B
※	LA	00	58	00	"		ア ン テ ナ 端 子			G
※	LB	50	07	10	Socket	5P Remote Signal	ST コ ネ ク タ ソ ケ ッ ト			R,U,C
※	VA	72	58	00	Holder Cable	8P	パ ラ レ ル ケ ー ブ ル ホ ル ダ ー			
	BB	06	83	70	Ground Metal		ア ー ス 金 具			
	BB	06	62	90	Ground Washer		ア ー ス ワ ッ シ ャ ー			G

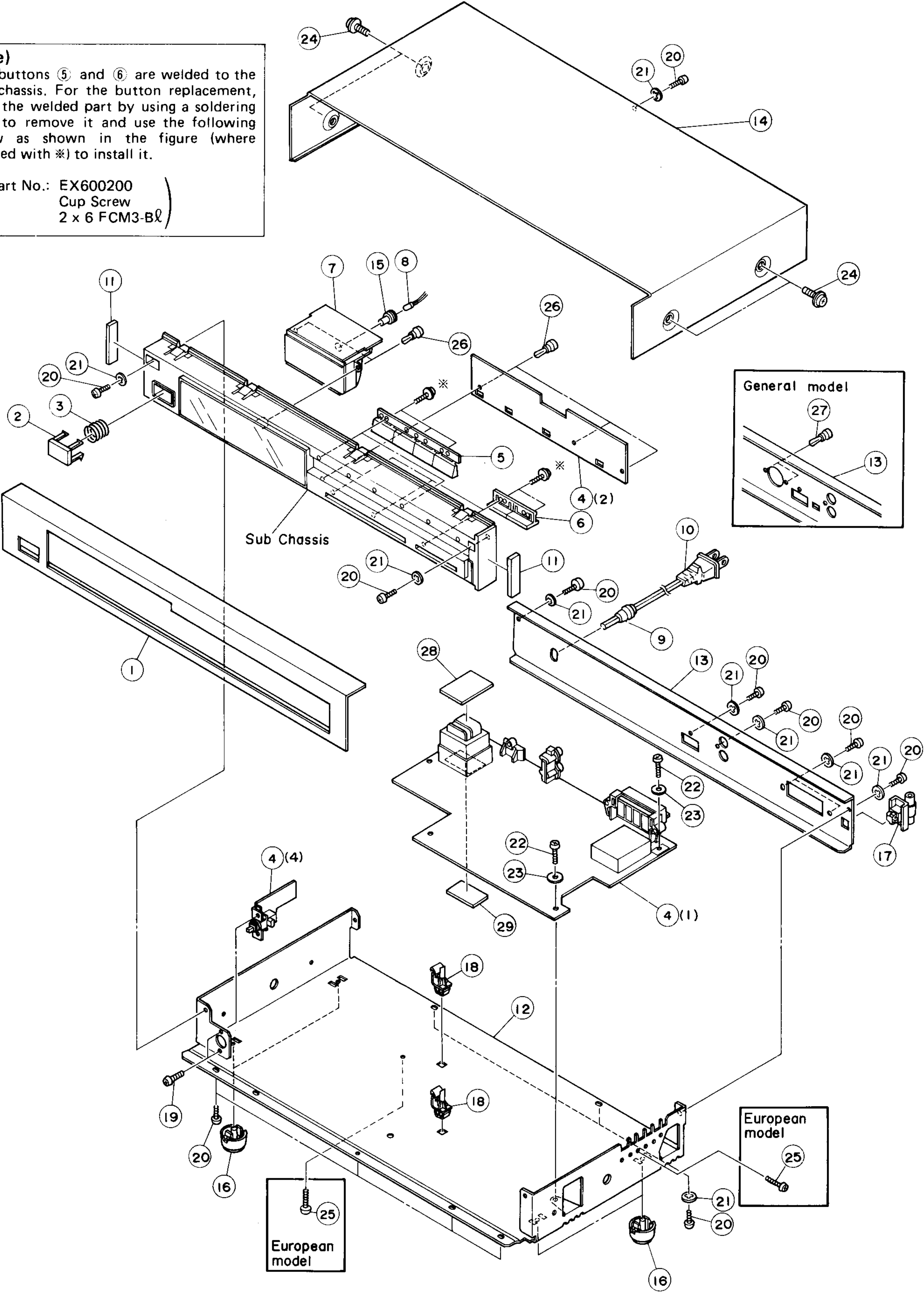
※New Parts (新規部品)



EXPLODED VIEW

Note)
The buttons ⑤ and ⑥ are welded to the sub chassis. For the button replacement, heat the welded part by using a soldering iron to remove it and use the following screw as shown in the figure (where marked with *) to install it.

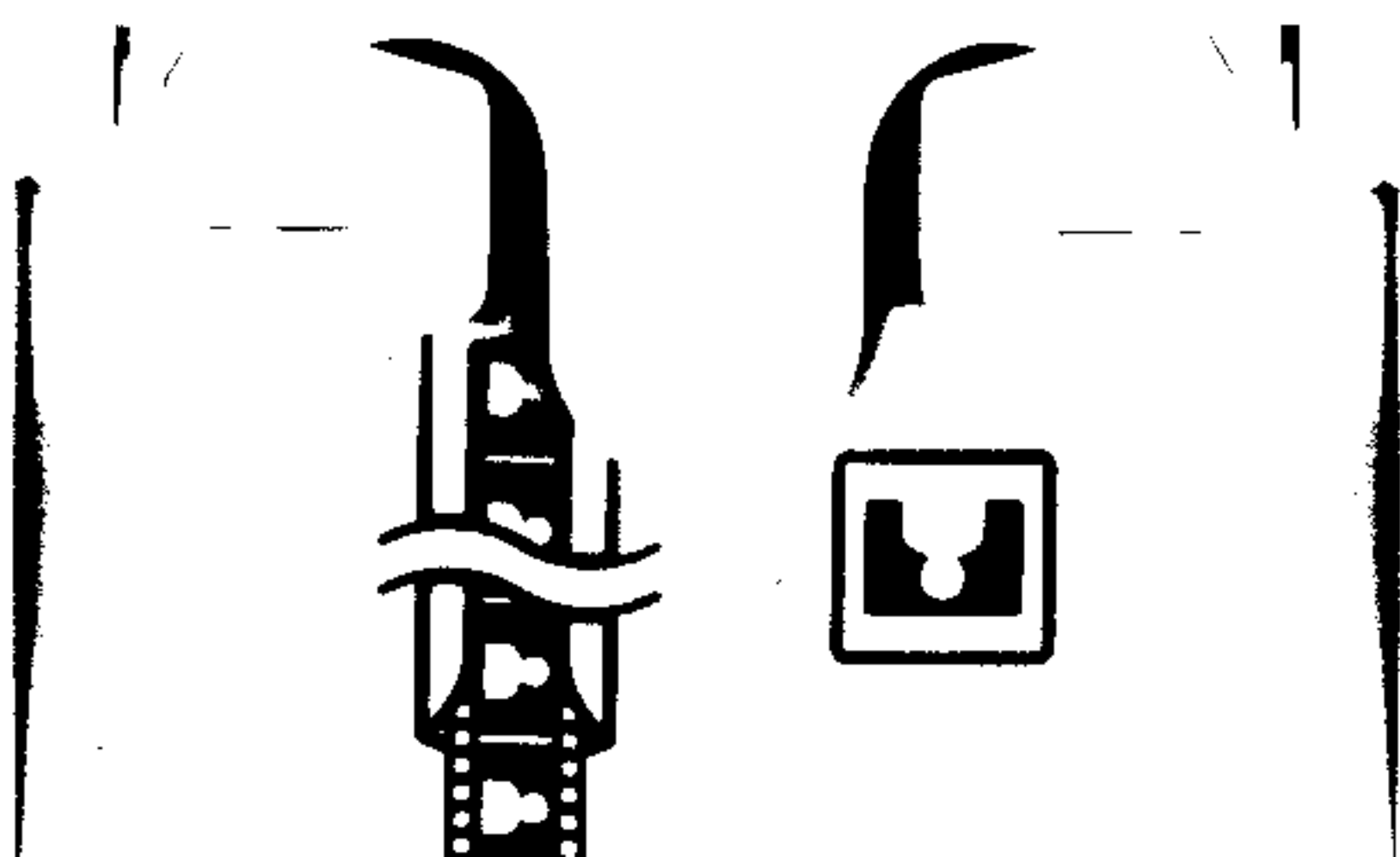
(Part No.: EX600200
Cup Screw
2 x 6 FCM3-BL)



MECHANISM PARTS

Ref. No.	Part No.				Description		部 品 名	Remarks	Common Model	Markets	ランク
※ 1	VA	77	15	00	Front Panel		フ ロ ン ト パ ネ ル	Black			
※ "	VB	00	54	00	"		"	Silver			
2	CB	63	51	10	Button	Power	ボ タ ン	Black			
"	CB	63	51	00	"	"	"	Silver			
3	AA	61	78	80	Spring		バ ネ				
4	NA	08	97	30	Tuner Circuit Board		チ ュ ー ナ ー シ ー ト		T-30	R	
"	NA	08	97	40	"		"		T-30	U,C	
"	NA	08	98	10	"		"		T-28	A,B	
"	NA	08	98	20	"		"		T-28	G	
5	VA	71	89	00	Button	4P	ボ タ ン	Black			
※ "	VB	00	59	00	"	4P	"	Silver			
6	VA	71	90	00	"	2P	"	Black			
※ "	VB	00	60	00	"	2P	"	Silver			
7	NA	09	00	70	LCD Circuit Board		L C D 表 示 シ ー ト		T-30		
※ 8	VA	73	96	00	Lamp	115mA 14.5V	ラ ン プ				
9	CB	62	01	90	Cord Stopper	CM-22B	コ ー ド ス ト ッ パ ー			R,A,G,B	
"	CB	62	02	00	"	CM-22C	"			U,C	
10	MG	00	16	30	Power Cord	6A 250V 2m	電 源 コ ー ド			R	△
"	MG	00	22	20	"	10A 125V 1.98m	"			U,C	△
"	MG	00	09	20	"	7.5A 250V 2.5m	"	Inter-changeable		A	△
"	MG	00	14	90	"	7.5A 250V 2.5m	"			A	△
※ "	MG	00	23	10	"	7.5A 250V 2m	"			A	△
"	MG	00	09	60	"	2.5A 250V 2m	"	Inter-changeable		G	△
"	MG	00	16	20	"	2.5A 250V 2m	"			G	△
※ "	MG	00	23	20	"	2.5A 250V 2m	"			G	△
"	MG	00	18	60	"	2.5A 250V 2m	"			B	△
11	VB	27	31	00	Damper		ダ ン パ ー				
※ 12	VA	95	98	00	Chassis		シ ャ ー シ ー				
※ 13	VA	96	00	00	Rear Panel		リ ア パ ネ ル			R	
※ "	VA	96	02	00	"		"			U,C	
※ "	VA	96	03	00	"		"			G	
※ "	VA	96	04	00	"		"			A,B	
※ 14	VA	77	16	00	Top Cover		ト ッ プ カ バ ー	Black			
※ "	VB	00	56	00	"		"	Silver			
15	CB	63	07	50	Lamp Cap.		ラ ン プ キ ャ ッ プ		M-80		
16	CB	61	03	90	Leg		ト ラ ン レ ッ グ				
17	CB	60	74	70	Antenna Holder		ア ン テ ナ ホ ル ダ ー		T-6a		
18	VA	77	29	00	Support		基 板 サ ポ ー ト				
19	ED	33	00	66	Binding Head Screw	3×6 FCRM3-BI	バ イ ン ド 小 ネ ジ	PACK			
20	Ei	33	00	86	Binding Head Tapping Screw	3×8 FCRM3-BI	バ イ ン ド タ ッ ピ ン グ ネ ジ	PACK			
21	EV	43	00	36	Toothed Lock Washer	φ3 ZMC2-Y	歯 付 座 金	PACK			
22	ED	33	01	06	Binding Head Tapping Screw	3×10FCRM3-BI	バ イ ン ド タ ッ ピ ン グ ネ ジ	PACK			
23	EV	20	30	36	Flat Washer	φ3 FCRM3-BI	平 座 金	PACK			
24	EK	96	60	70	BW Head Tapping Screw	4×8 ZMC2-BI	BWヘッドタッピングネジ	Black			
"	EK	13	50	20	"	4×8 FNM3-3g	"	Silver			
25	Ei	23	01	26	Binding Head Tapping Screw	3×12 FCRM3-3g	バ イ ン ド タ ッ ピ ン グ ネ ジ	PACK		G	
26	CB	60	56	20	Plastic Rivet		プ ラ ス チ ッ ク リ ヱ ッ ト				
27	CB	60	92	60	"		"			R	
28	VB	27	29	00	Cushion A		ク ッ シ ョ ン A				
29	VB	27	30	00	" B		" B				
	CB	06	92	50	Binding Tie	BK-1	イ ン シ ュ ロ ッ ク タイ				

※New Parts (新規部品)



T-420

YAMAHA