



SERVICE MANUAL

VHF MARINE TRANSCEIVER

IC-M500

INTRODUCTION

This service manual describes the latest service information at the time of going to press of the IC-M500 VHF MARINE TRANSCEIVER (U.S.A. version). Addresses are provided on the inside back cover for your convenience.

DANGER

DO NOT connect the transceiver to an AC outlet or to a DC power supply that uses more than 16 V. This will ruin the transceiver.

DO NOT expose the transceiver to rain, snow or any liquids.

DO NOT reverse the polarities of the power supply when connecting the transceiver.

DO NOT apply an RF signal of more than 20 dBm (100 mW) to the antenna connector. This could damage the transceiver's front end.



ORDERING PARTS

Be sure to include the following four points when ordering replacement parts:

1. Component part number and name.
2. Equipment model name and unit name.
3. 10-digit order numbers for mechanical parts.
4. Quantity required.

<SAMPLE ORDER>

IC	MC3357P	
	IC-M500 MAIN UNIT	5 pieces
Screw	HS M4 × 35 SUS ZK	
	IC-M500 Front panel	8810004240 10 pieces

REPAIR NOTE

1. Make sure a problem is internal before disassemble the transceiver.
2. **DO NOT** open the transceiver until the transceiver is disconnected from a power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits or electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the transceiver is defective.
6. **DO NOT** transmit power into a signal generator or a sweep generator.
7. **ALWAYS** connect a 30 dB~40 dB attenuator between the transceiver and a deviation meter or spectrum analyzer when using such test equipment.
8. **READ** the instructions of test equipment thoroughly before connecting equipment to the transceiver.

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SECTION 1 SPECIFICATIONS

■ GENERAL

- Frequency range : 156~157.5 MHz (Transmit)
156~163.0 MHz (Receive)
- Type of emission : 16K0G3E (16K0F3E)
- Number of channels : All U.S.A. and International channels
48 Memory channels (3 groups × 16 channels)
10 Weather channels
- Frequency stability : ±0.0005%
- Antenna impedance : 50 Ω
- Power supply voltage : 13.8 V DC (Negative ground)
- Usable temperature range : -20°C ~ +60°C (-4°F ~ +140°F)
- Dimensions : 287 (W) × 90 (H) × 208 (D)mm
11.3 (W) × 3.5 (H) × 8.2 (D)in
(Projections not included)
- Weight : 4.3 kg (9.5 lb)

■ TRANSMITTER

- RF output power : High 25 W
Low 1 W
- Modulation system : Variable reactance frequency modulation
- Current drain : High power 7.0 A
Low power 2.0 A
- Microphone impedance : 600 Ω
- Maximum deviation : ±5 kHz
- Spurious emissions : -70 dB
- Adjacent channel power : -70 dB
- Noise and hum : 40 dB

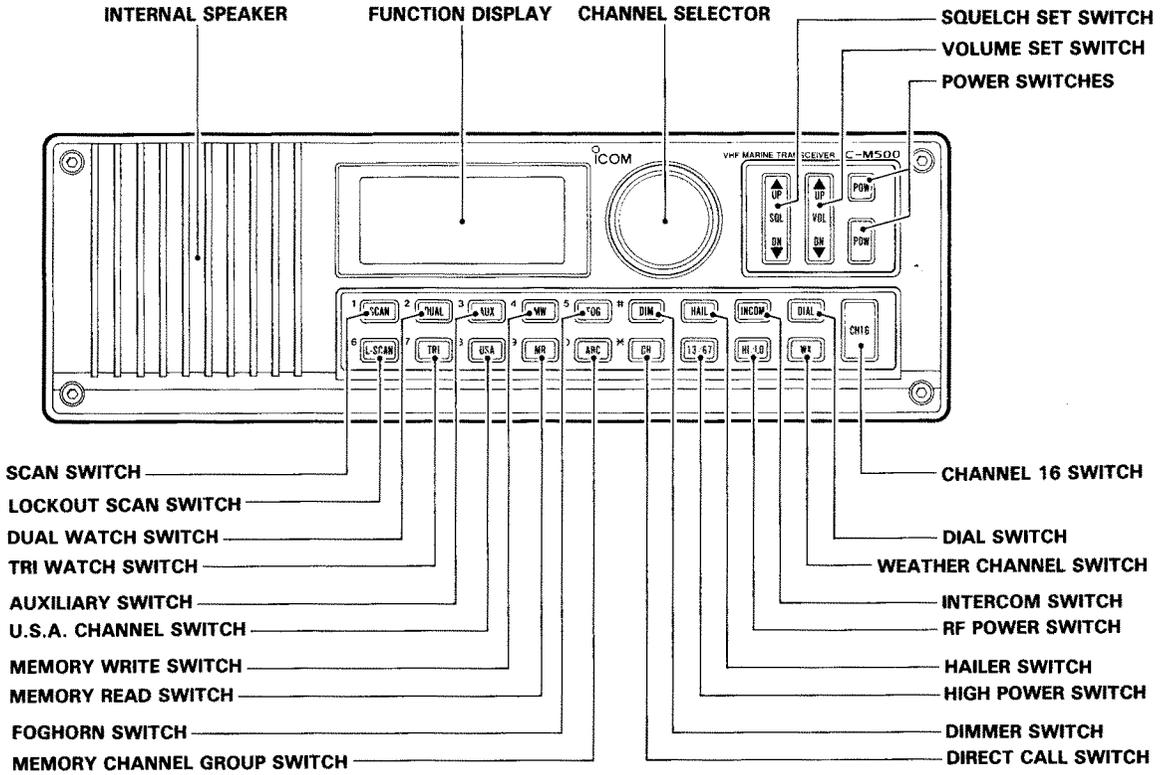
■ RECEIVER

- Receiver system : Double conversion superheterodyne
- Sensitivity : 0.3 μV at 12 dB SINAD
- Squelch sensitivity (Threshold) : Less than 0.18 μV
- Intermediate frequencies : 1st 21.8 MHz
2nd 455 kHz
- Current drain (At 13.2V DC) : Audio max. 2.5 A
Standby 0.7 A
- Adjacent channel selectivity : 70 dB
- Spurious response : 70 dB
- Noise and hum : 40 dB
- Audio output power : 10 W at 10% distortion with a 4 Ω load
- Audio output impedance : 4 Ω, 8 Ω or 16 Ω

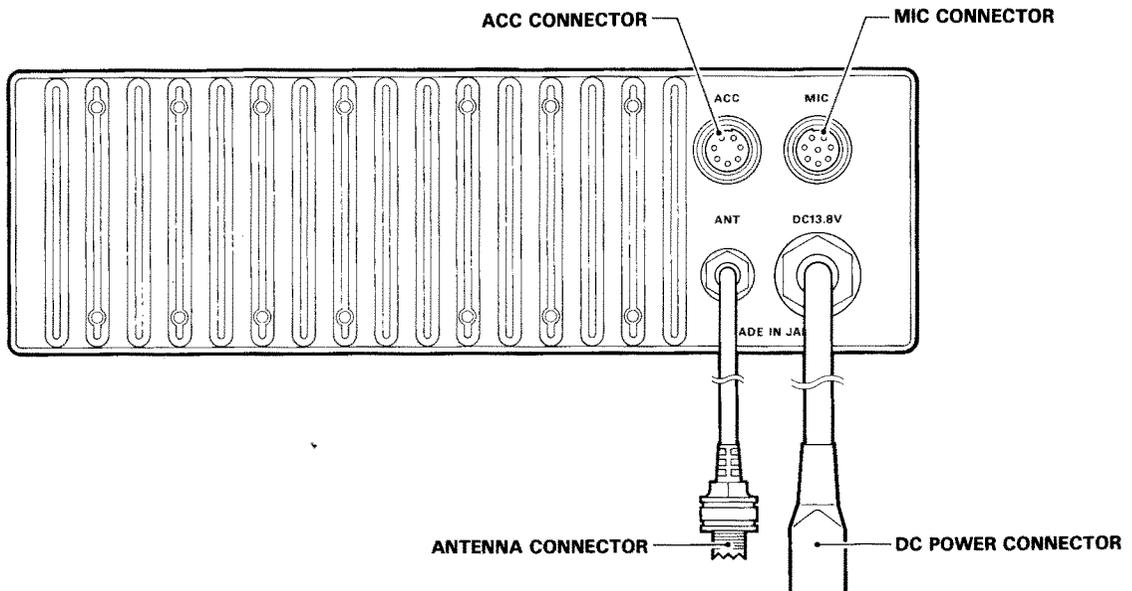
SECTION 2 OUTSIDE AND INSIDE VIEWS

2-1 OUTSIDE VIEWS

● **FRONT PANEL**

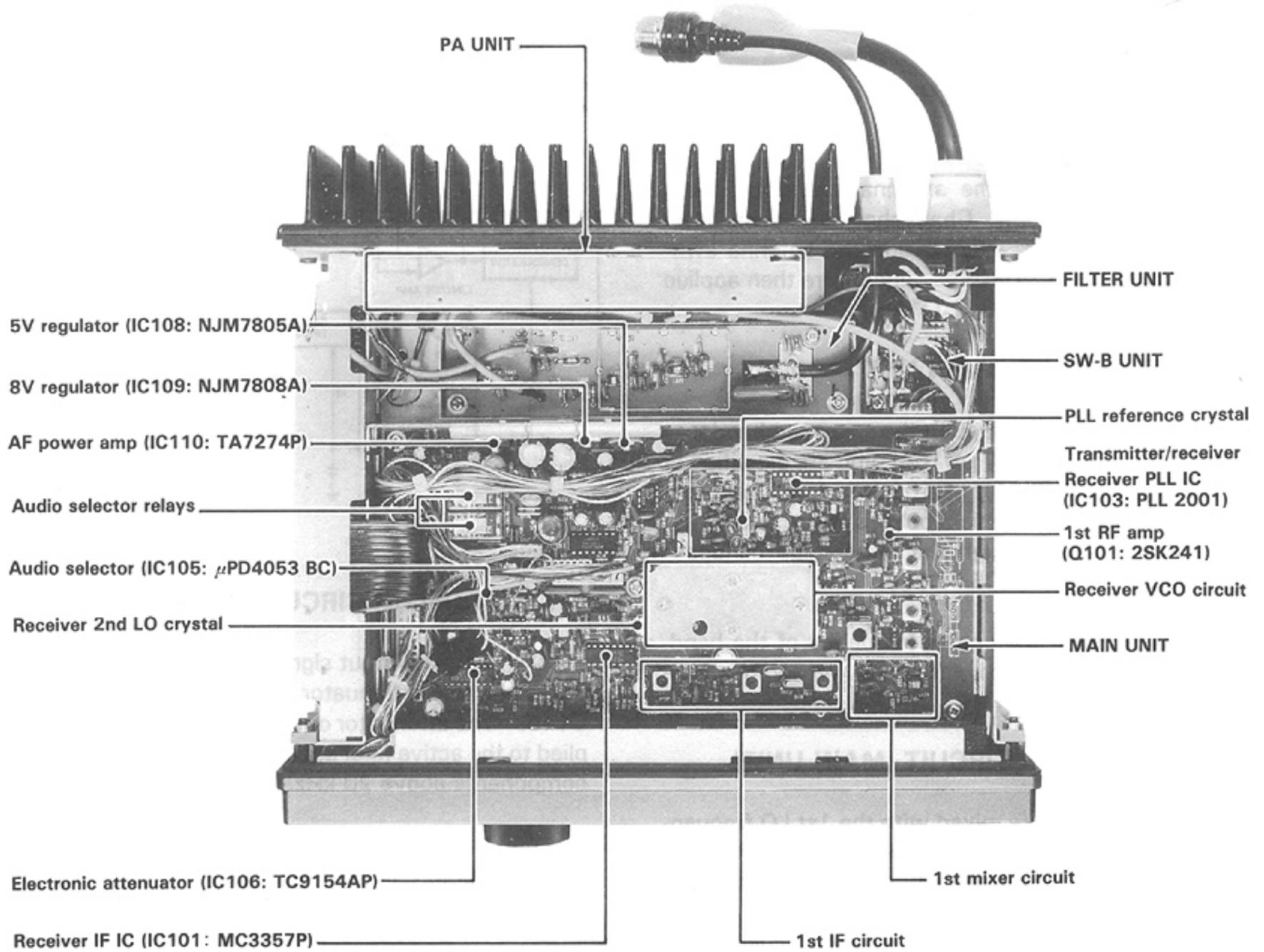


● **REAR PANEL**

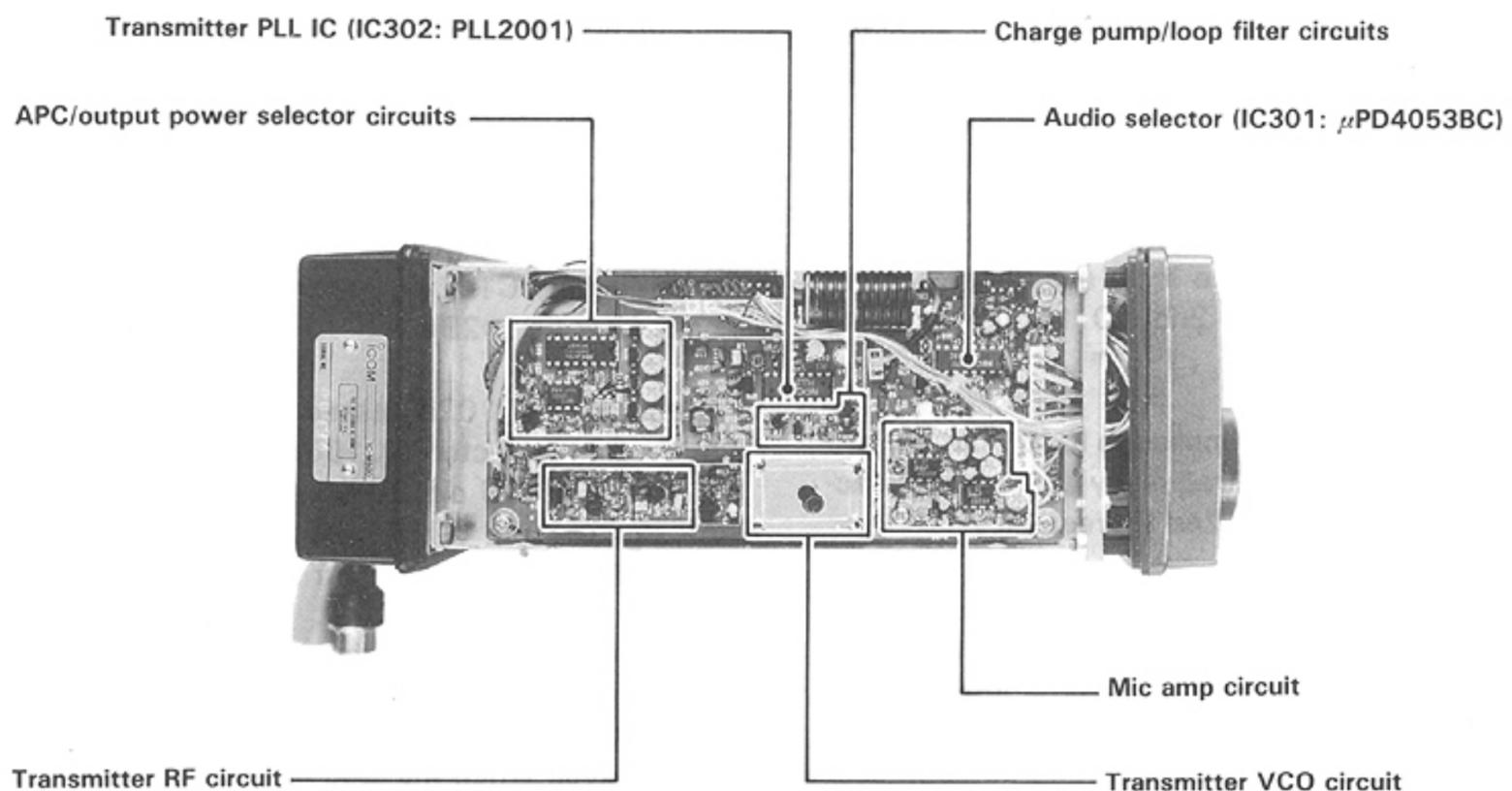


2-2 INSIDE VIEWS

● MAIN UNIT



● PLL-YGR UNIT



SECTION 3 CIRCUIT DESCRIPTION

3-1 RECEIVER CIRCUITS

3-1-1 ANTENNA SWITCHING CIRCUIT (FILTER UNIT)

Signals enter through the antenna connector, pass through a three-stage Chebyshev low-pass filter (C809~C815, L804~L806), and the antenna switching circuit (D803~D805). Signals are then applied to the MAIN UNIT via P801 (J113).

3-1-2 RF CIRCUIT (MAIN UNIT)

The signals then pass through the two-stage bandpass filter (L101, L102, D101~D104), and are amplified at the RF amplifier (Q101). Q101 is a low distortion, high gain MOS FET which obtains high sensitivity. Signals then pass through the three-stage bandpass filter (L103~L105, D105~D110).

D101~D110 tune the center frequency of the bandpass filters for wide bandwidth receiving and good image rejection.

3-1-3 1ST MIXER CIRCUIT (MAIN UNIT)

The filtered signals are mixed with the 1st LO frequency (Receiver PLL output) at the 1st mixer circuit to obtain the 21.8 MHz 1st IF signal. The 1st mixer circuit employs a balanced mixer consisting of Q102, Q103, L106, L107 and other parts. The mixed signal passes through the crystal filter (F1101) where unwanted heterodyned signals are rejected.

3-1-4 IF CIRCUIT (MAIN UNIT)

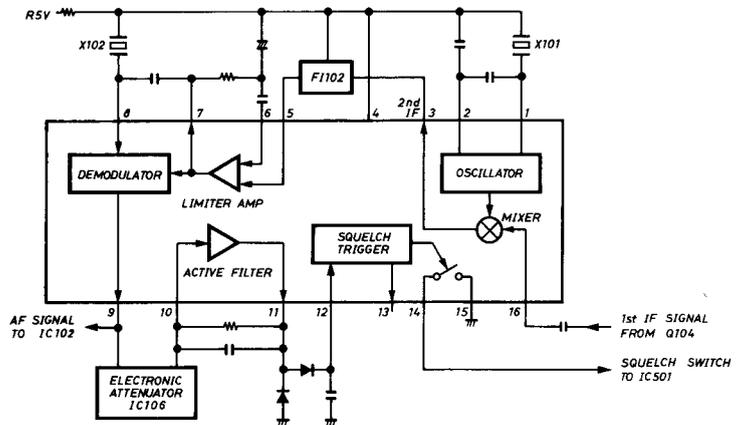
The 1st IF signal from F1101 is amplified at IF amplifier Q104 and is then applied to the FM IF IC chip (IC101).

IC101 contains the 2nd mixer, limiter amplifier, quadrature detector, active filter, squelch trigger, and local oscillator section. The local oscillator section generates a 21.345 MHz 2nd LO frequency using crystal X101.

The IF signal from Q104 is applied to IC101 pin 16, and is mixed with the 2nd LO frequency at the mixer section to obtain the 455 kHz 2nd IF frequency.

The 2nd IF frequency from pin 3 passes through the ceramic filter (F1102) where unwanted heterodyned signals are removed. The signal then re-enters IC101 pin 6. The signal is amplified at the limiter amplifier section and is detected at the quadrature detector section (pins 7, 8 and X102). The detected signal (AF signal) is output from pin 9.

IC101 INSIDE DIAGRAM



3-1-5 SQUELCH CIRCUIT (MAIN UNIT)

A portion of AF output signals from pin 9 is applied to the electronic attenuator (IC106 pins 11~15) via C145. The attenuator output from IC106 pin 11 is applied to the active filter section in IC101 to obtain noise components above 20 kHz.

The noise signal output from IC101 pin 11 is rectified at the detector (D114, D116), passes through the squelch trigger section (pins 12, 13), and is then applied to CPU (IC501) pin 41 on the LOGIC UNIT. When the squelch is closed, the output of IC101 pin 13 is LOW.

When the CPU pin 41 receives LOW, CPU expander (IC503) pin 13 is HIGH, turning off Q105 and Q117 on the MAIN UNIT. As a result, no audio is emitted.

3-1-6 AF CIRCUIT (MAIN UNIT)

The AF signals from IC101 pin 9 pass through the de-emphasis circuit (R129, C146), are applied to the AF preamplifier (IC102A), and are then applied to the high-pass filter (IC102B).

Output from IC102B passes through the audio switch, the audio selector (IC106) and the electronic attenuator (IC106 pin 2~6), and is amplified at Q127. AF signals from Q127 pass through the audio switch (Q117) and are then power amplified at IC110.

IC110 is compact but provides at least 10 W output at 10% distortion for a 4 Ω load. A protective circuit is built into IC110, protecting the IC from damage in most cases, even when the load presents an open circuit or is short circuited to ground.

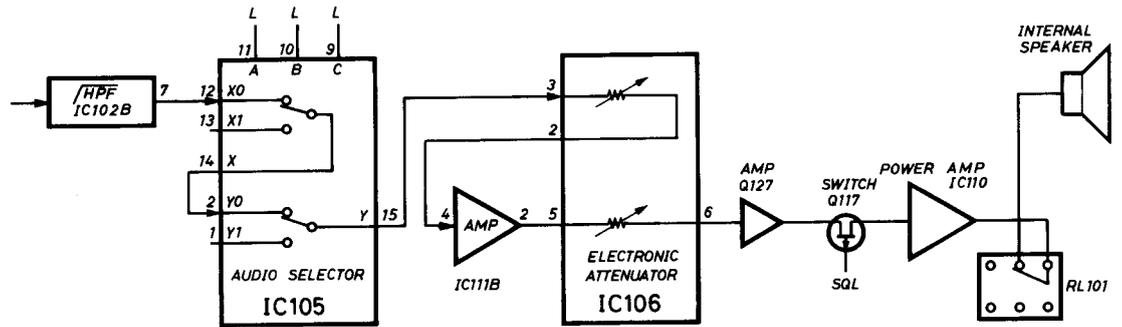
Output from IC110 passes through the intercom/receiver audio switching relay (RL1), the SW-B UNIT, the CONNECTOR (B) UNIT, microphone and the attenuator (R901, R902), and is then applied to the internal speaker as 5 W maximum. When using an external speaker, the signals do not pass through the attenuator, resulting in a maximum power of 10 W.

3-1-7 AUDIO SELECTOR CIRCUIT (MAIN AND PLL-YGR UNITS)

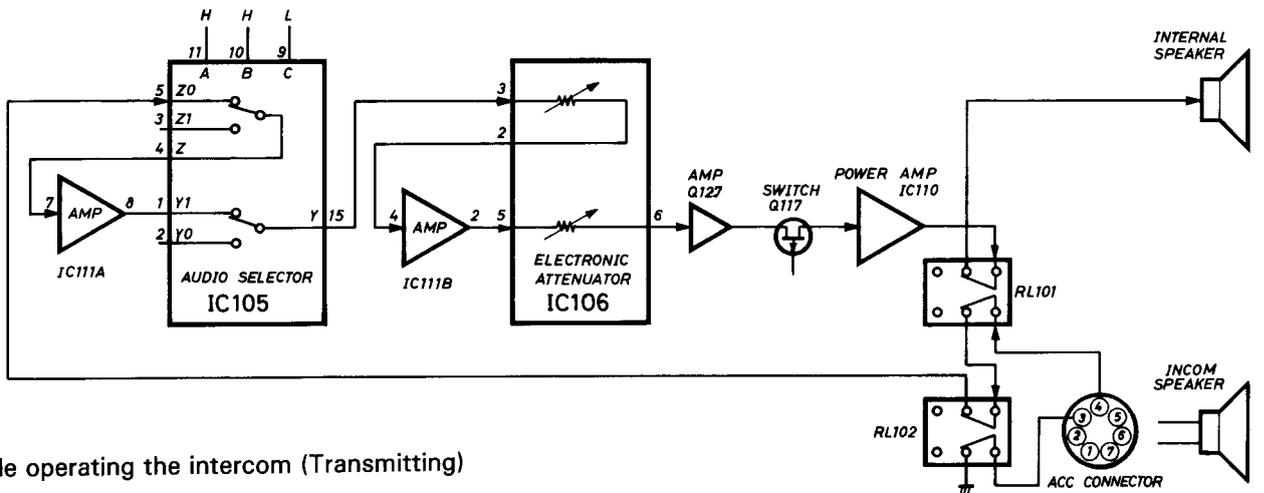
IC105 and IC301 are triple 2-channel multiplexers which switch the AF signal. Pins 9~11 are switch control signal inputs that function as follows:

AF SIGNAL FLOW CHART

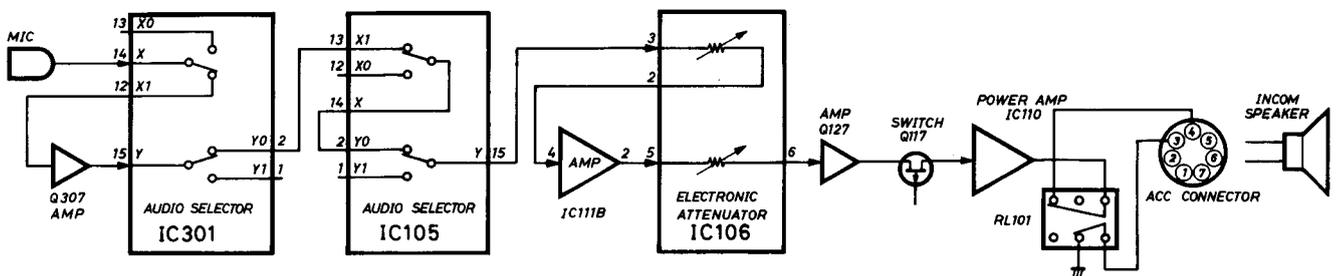
1. While receiving



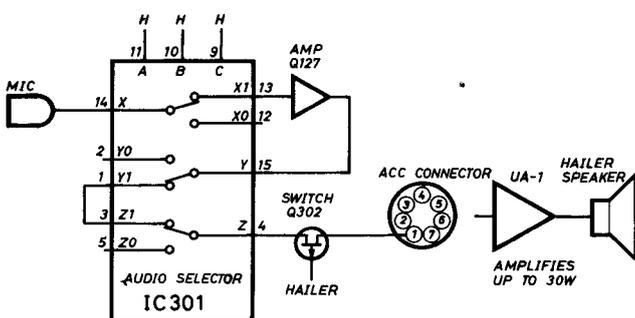
2. While operating the intercom (Receiving)



3. While operating the intercom (Transmitting)



4. While operating the hailer



CONTROL INPUT			"ON" CHANNEL
A (Pin 11)	B (Pin 10)	C (Pin 9)	
L	L	L	X0, Y0, Z0
L	L	H	X0, Y0, Z1
L	H	L	X0, Y1, Z0
H	L	L	X1, Y1, Z0
H	L	H	X1, Y0, Z1
H	H	L	X1, Y1, Z0
H	H	H	X1, Y1, Z1

3-2 TRANSMITTER CIRCUIT

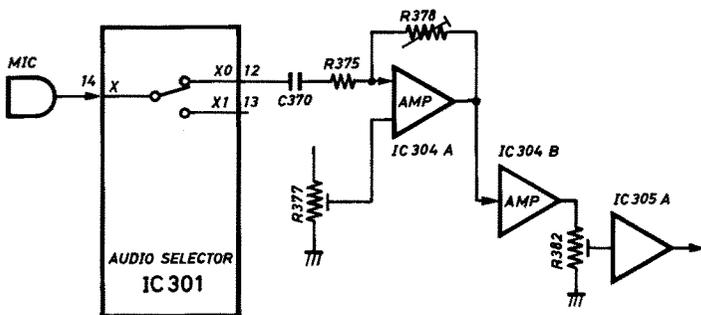
3-2-1 MICROPHONE AMPLIFIER (PLL-YGR UNIT)

AF signals from the microphone pass through the audio selector (IC301), the pre-emphasis (C370, R375), microphone amplifier (IC304A) and limiter amplifier (IC304B) circuits.

The pre-emphasis circuit characteristics +6dB/octave at 300 Hz~3 kHz. R377 adjusts the modulation wave form. R378 adjusts the microphone amp gain.

Output signals from IC304B pass through the maximum deviation pot (R382) and are applied to the splatter filter (IC305A). IC305A eliminates unwanted signal components of more than 3kHz. The output signals from IC305A pass through C383 and are applied to the modulation circuit (D304) in the VCO where the signal is modulated into FM.

MIC AMP



3-2-2 BUFFER AMPLIFIER (PLL-YGR UNIT)

The oscillated signal at VCO (Q308) is buffer amplified at Q309, and then passes through the high isolation separator (L307). A portion of the signal is fed back to the PLL circuit, and the other portion is applied to the transmitter buffer amplifiers (Q315, Q317, Q319).

Q314 controls the bias voltage to Q317 and Q319 with T MUTE signals from IC503. Hence, unwanted transmission of signals is prevented, even if the PLL is unlocked.

3-2-3 POWER AMPLIFIER (PA UNIT)

The amplified signal from Q319 is amplified at the drive amplifier (IC701) and the power amplifier (Q701). IC701 has 10 W output capability and Q701 has 50 W capability. The amplified signal from Q701 passes through the strip line and is applied to the FILTER UNIT via P702 (J802). The signal then passes through the antenna switching circuit, the low-pass filter and is then applied to the antenna connector.

3-2-4 APC CIRCUIT (PLL-YGR CIRCUIT)

At the low-pass filter, the output power level is detected by the APC (Auto Power Control) detector circuit (D801, D802 and strip line). When the antenna impedance is matched at a 50Ω, the voltage detected at the APC detector is at a minimum.

The detected voltage is applied to the differential amplifier (IC306). The APC reference voltage is applied to IC306 pin 3.

When the antenna impedance is mismatched, detected voltage is higher than the reference voltage. IC306 decreases the Q318 and Q320 collector currents, decreasing Q319 and IC701 output until the detected voltage equals the reference voltage. Hence, the final transistor is protected from damage caused by antenna mismatching.

Transmitter output power of HIGH or LOW is selected by the reference voltage.

3-3 PLL CIRCUIT

3-3-1 RECEIVER PLL CIRCUIT (MAIN UNIT)

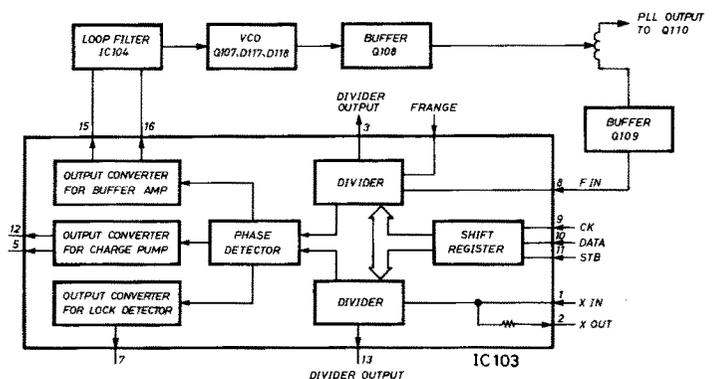
The oscillated signal from the VCO (Q107) is amplified at Q108 and Q109 and is then applied to IC103. IC103 directly divides the oscillated signal with the dividing data from the CPU (IC501).

The divided signal is phase detected in IC103 using a reference frequency oscillated at X103 and Q106. The phase detected wave is then applied to the loop filter (IC104A) to be converted into DC voltage (PLL lock voltage). The lock voltage is applied to D117 and D118 to determine the VCO oscillated frequency.

The lock voltage is also used in the RF bandpass filter stage to tune the center frequency. Output from IC104A is amplified at IC104B and is then applied to the bandpass filter.

Q126 stops VCO oscillation when transmitting.

RX PLL



3-3-2 TRANSMITTER PLL CIRCUIT (PLL-YGR UNIT)

The oscillated signal from the VCO (Q308) is amplified at Q309 and Q316 and is then applied to IC302. IC302 directly divides the oscillated signal with the dividing data from the CPU (IC501).

The divided signal is phase detected in IC302 using a reference frequency from the MAIN UNIT. The phase detected wave is then applied to the charge pump (Q311~Q313) and then to the lag-lead type loop filter (R402, R326, R325, C390, C435) to be converted into DC voltage (PLL lock voltage). The lock voltage is applied to D317 and D318 to determine the VCO oscillated frequency.

D304 carries out frequency modulation (FM). Q310 stops VCO oscillation when receiving.

3-4 LOGIC CIRCUITS

3-4-1 EXPANDER IC PORT ALLOCATIONS

● IC502

PIN NO.	PORT	I/O	DESCRIPTION
4	TON C	OUT	Outputs HIGH when an optional tone mode is selected.
6	LOW O	OUT	Outputs HIGH when low power is selected.
11	CH16	OUT	Outputs HIGH when channel 16 is selected.
12	INCOM	OUT	Outputs HIGH when the intercom mode is selected.
13	HAIL	OUT	Outputs HIGH when the hailer mode is selected.
14	TX OFF	OUT	Outputs LOW when the hailer or intercom mode is selected to deactivate the transmission even if the PTT switch is pushed.

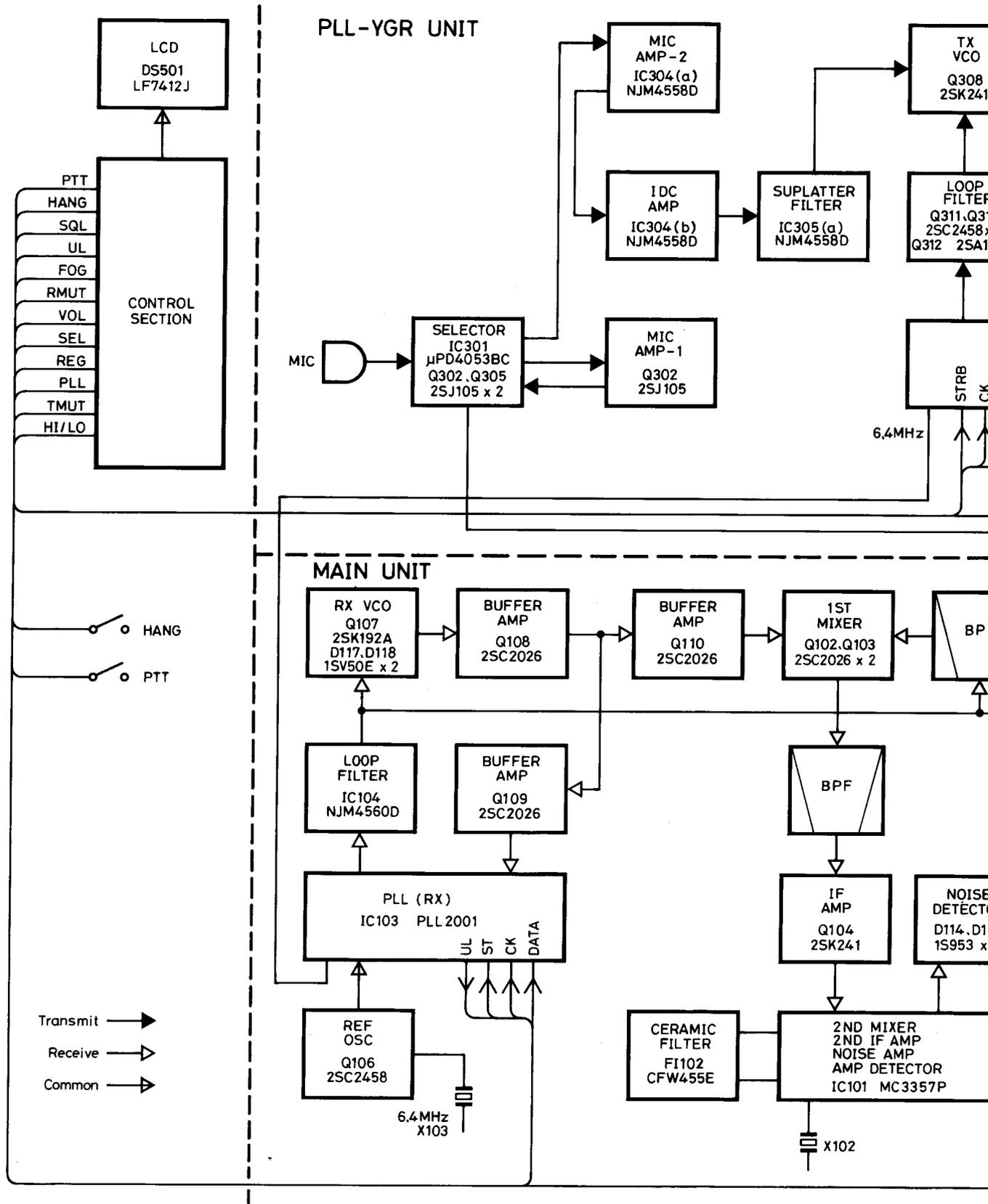
● IC503

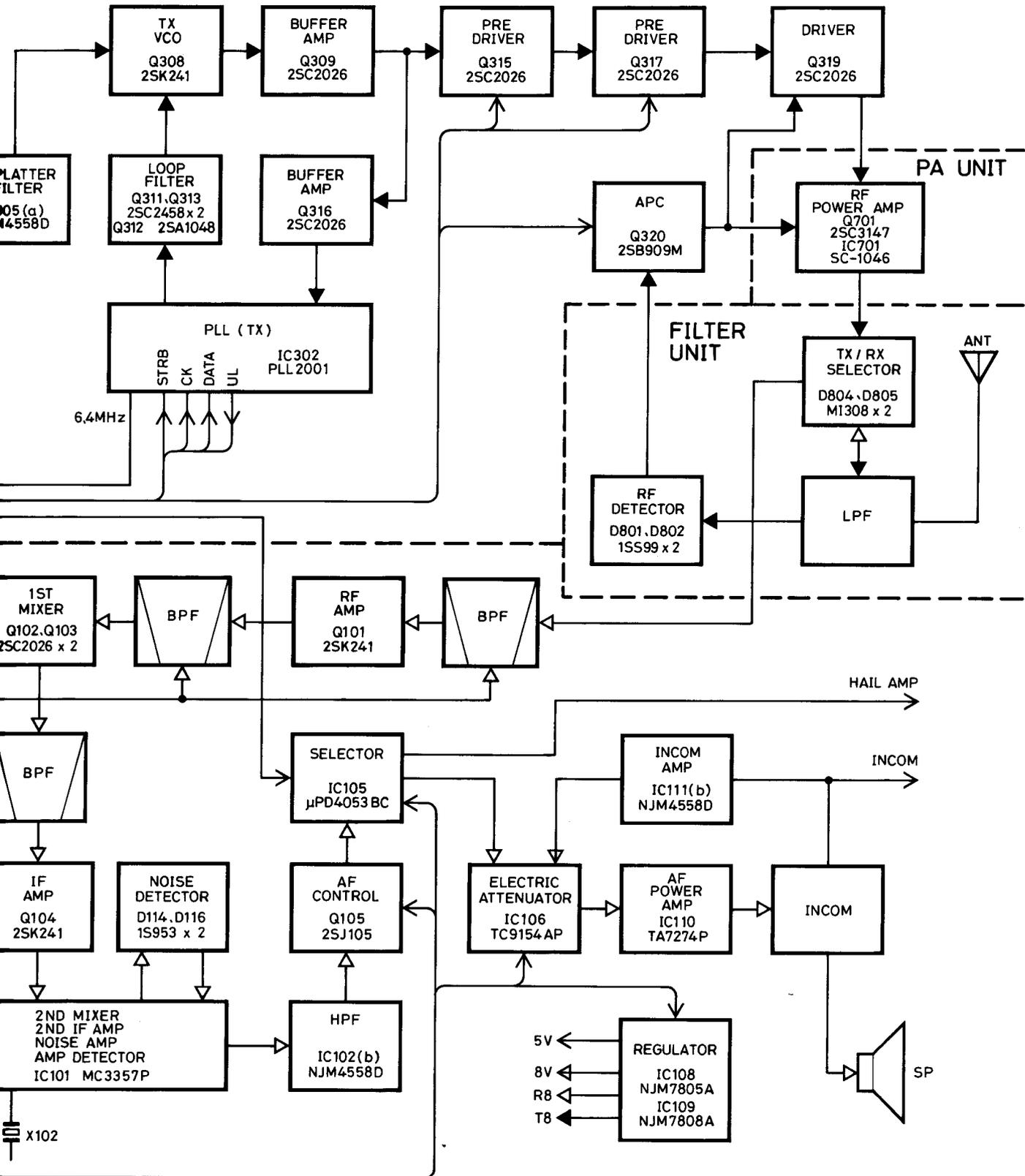
PIN NO.	R PORT	I/O	DESCRIPTION
4 ~ 6	DIM1 ~ DIM3	OUT	Used for LCD backlight intensity.
11	FOGS	OUT	Outputs HIGH when the foghorn function is activated.
13	R MUT	OUT	Outputs HIGH when the squelch is closed.
14	T MUT	OUT	Outputs HIGH when the PLL is unlocked.

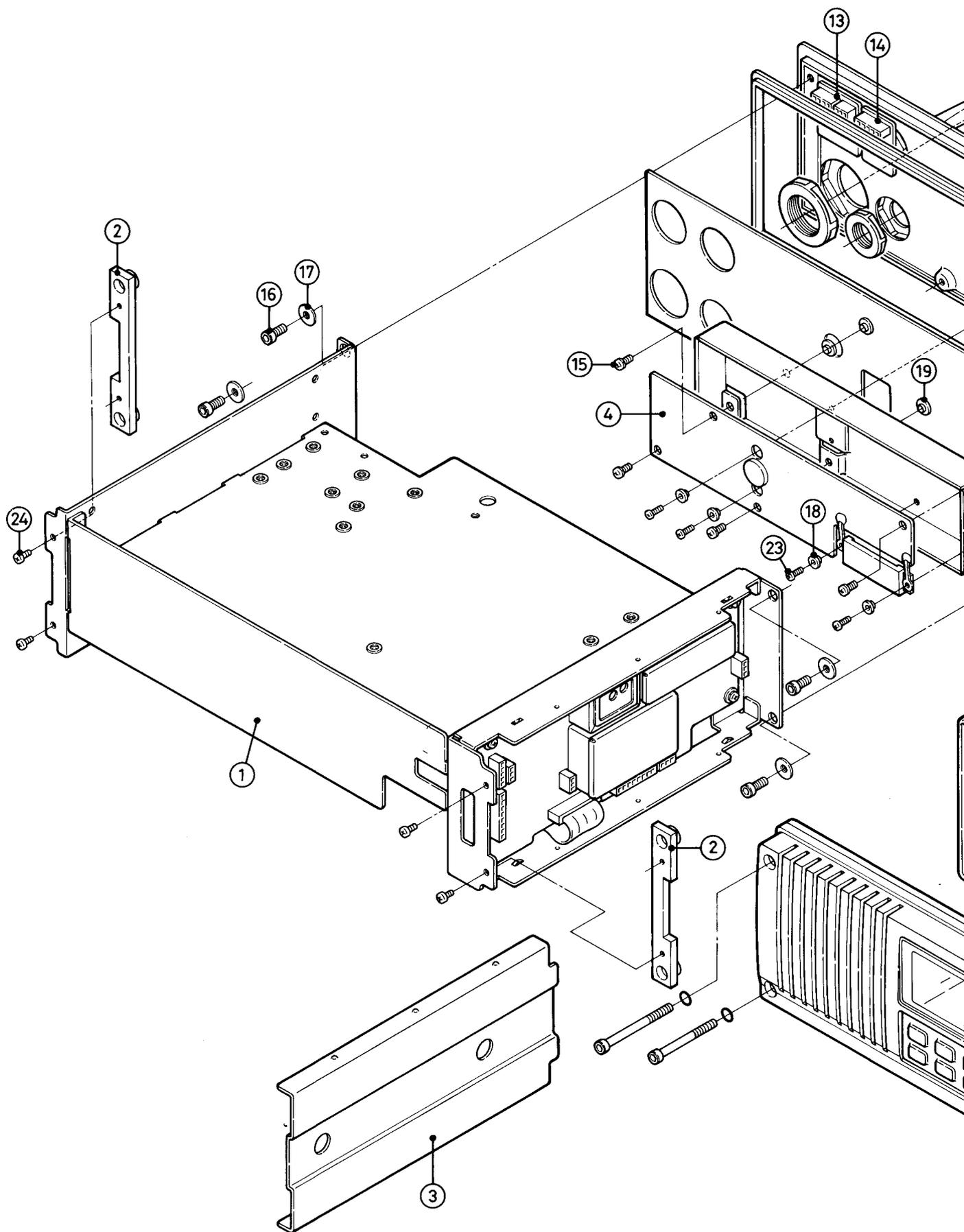
3-4-2 CPU PORT ALLOCATIONS

PIN NO.	PORT	I/O	DESCRIPTION
1 ~ 16 69 ~ 80	S0~S27	OUT	LCD buffer output.
21 ~ 23	COM0~ COM2	OUT	LCD common.
29	P40 (IO SB)	OUT	Strobe signal output for expander IC (IC502, IC503).
30	P41 (RF DO)	OUT	Modulation signal output while transmitting.
31	P42 (FOG)	OUT	Outputs a 300 Hz (approx.) signal when the [FOG] switch is on.
32	P43 (INTI MAT)	OUT	Initial matrix signal output used for CPU initialization.
34 ~ 37	P50 ~ P53 (KEY MAT)	OUT	Key matrix signal output used when operating switches.
38	INT4	IN	Interrupts CPU operation. When the port is LOW, the CPU enters standby mode.
39	SCK (CK)	OUT	CK (clock) signal output for serial data.
40	SO (DATA)	OUT	Serial data output.
41	SQL	IN	Receives HIGH when the squelch is open.
42	UL TX	IN	Receives LOW when the transmitter PLL is unlocked.
43	UL RX	IN	Receives LOW when the receiver PLL is unlocked.
44	PTT	IN	Receives LOW when the PTT switch is pushed.
45	FUNC	IN	Receives LOW when the [FUNC] switch is pushed.
46	BEEP	OUT	Outputs 1 kHz (approx.) signal when any switch is pushed.
47	TX SB	OUT	Strobe signal output for the transmitter PLL IC (IC302).
48	RX SB	OUT	Strobe signal output for the receiver PLL IC (IC103).
49	VOL SB	OUT	Strobe signal output for the electronic attenuator (IC106).
50	HANG	IN	Receives LOW when the microphone is placed on the microphone hanger.
51	TXD	IN	Receives LOW when transmitter power is output.
52	RF DI	IN	Modulation signal input for indication on the FUNCTION DISPLAY.
53	LOW I	IN	Selects the high or low RF output power, each time a LOW signal is received.
60 ~ 67	P60 ~ P63 P70 ~ P73	IN	Key matrix input.

SECTION 4 BLOCK DIAGRAM

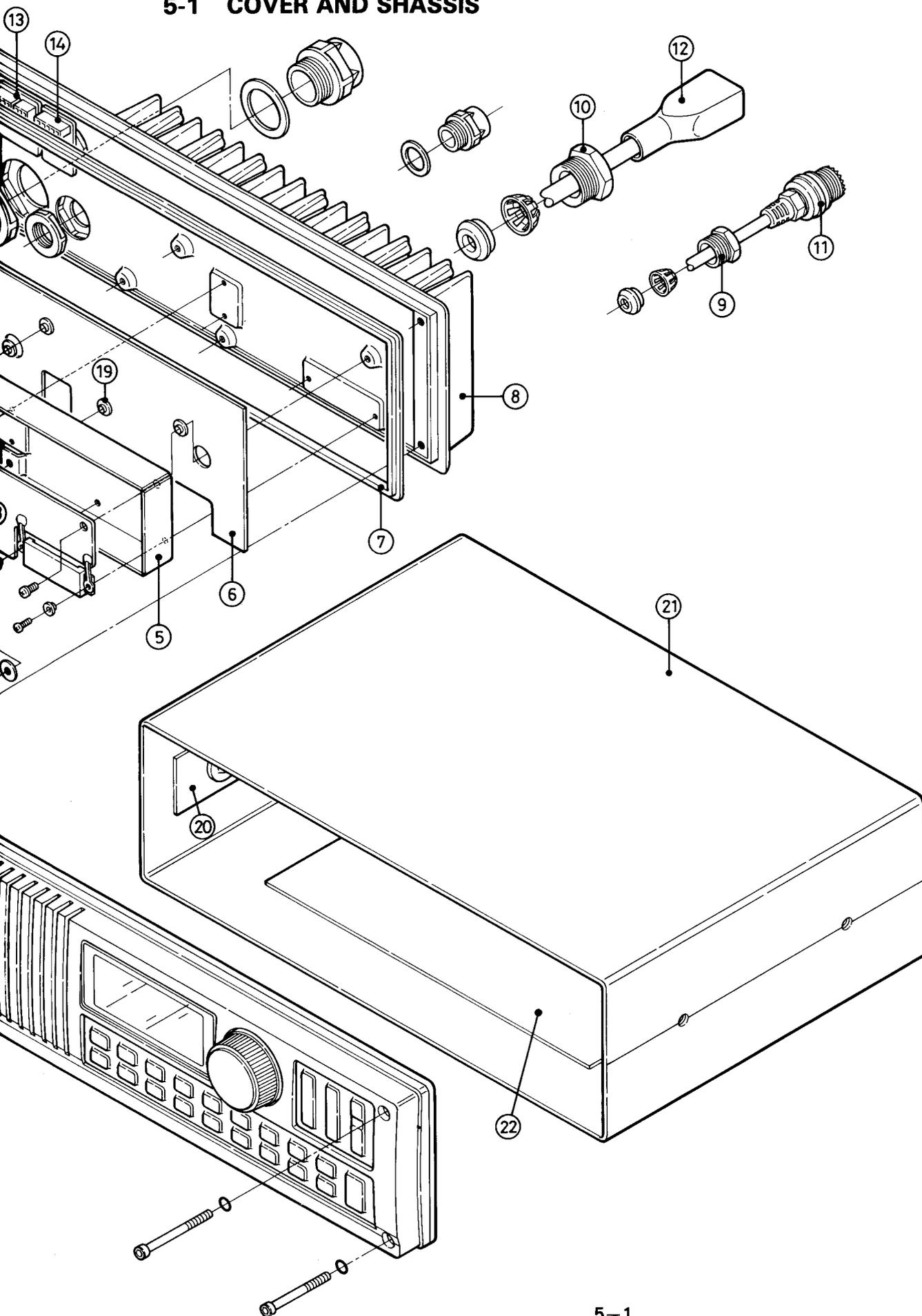






SECTION 5 MECHANICAL PARTS AND DISASSEMBLY

5-1 COVER AND SHASSIS



LABELLED NUMBER	DESCRIPTION	ORDERING NUMBER	QTY.
①	Center Chassis	8010007080	1
②	Front mounting plate	8930012180	2
③	PLL shield casing	8510005020	1
④	PA board	0910017313	1
⑤	PA case	8010007090	1
⑥	Insulating rubber	8010007070	1
⑦	Rubber seal	8010007050	1
⑧	PA heatsink	8410001160	1
⑨	Super lock PG-7	6991000890	1
⑩	Super lock PG-13	6910002300	1
⑪	Antenna connector and cable (assemble) OPC-195	8900002040	1
⑫	Power connector and cable (assemble) OPC-190	8900002010	1
⑬	Mic connector (14RS-8H-MI-AU)	6510007320	1
⑭	ACC connector (14RS-7H-MI-AU)	8510007350	1
⑮	Set screw (A) M3 × 8	8810003170	4
⑯	HS M4 × 8 ZK*	8820000550	4
⑰	Insulating washer (D)	8850001000	4
⑱	Insulating washer (K)	8850000980	4
⑲	Insulating washer (G)	8850000820	4
⑳	Screw seal	8310012480	4
㉑	607 case	8110002010	1
㉒	Unti vibrate sheet (A)	8930012870	1
㉓	PH B0 2 × 10*	8810005010	4
㉔	PH B0 3 × 8*	8810001120	4

*Screw type Self-tapping screw: B0 2 × 10 etc.

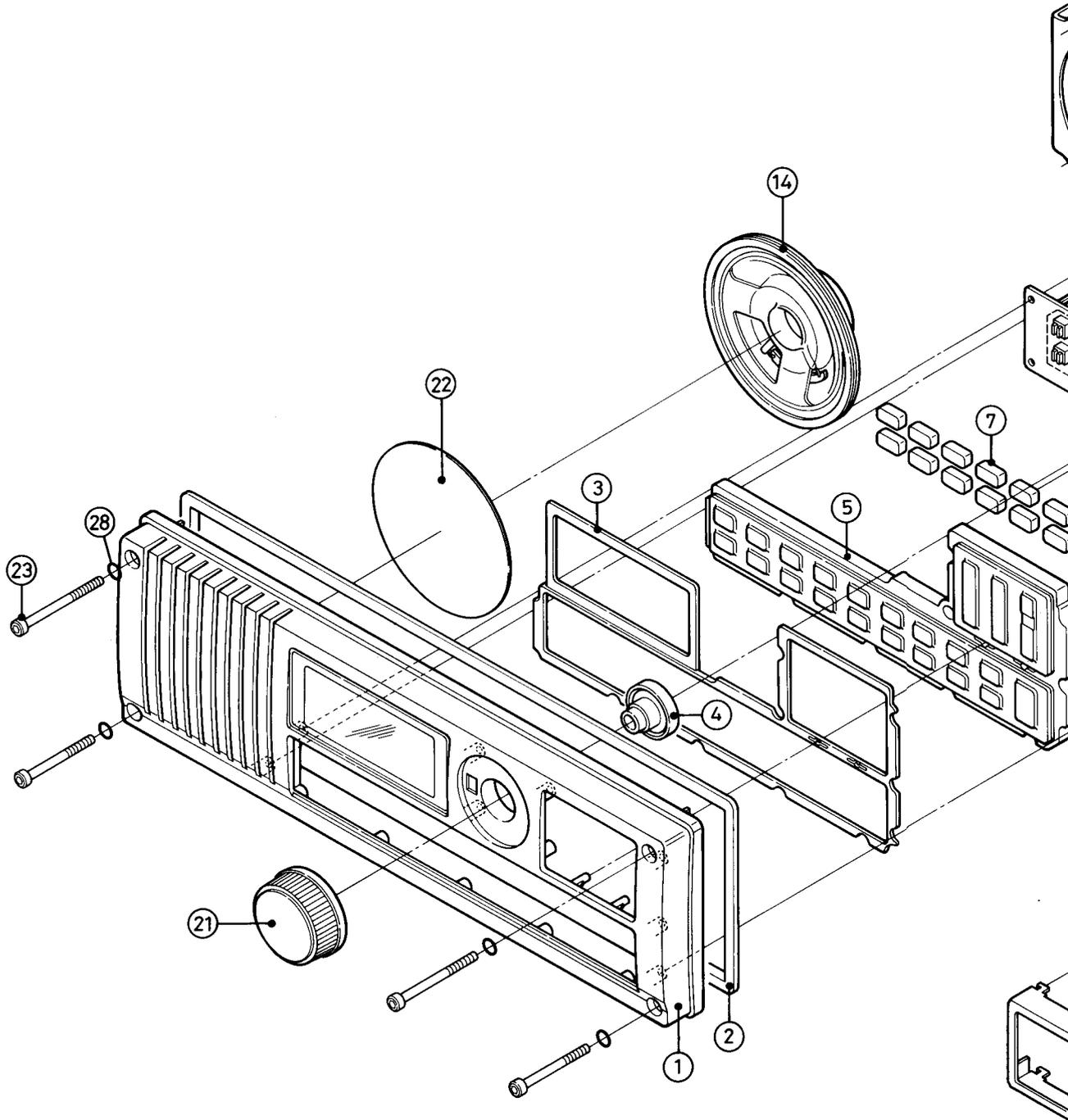
Head type of screw PH: Pan head HS: Hex socket head

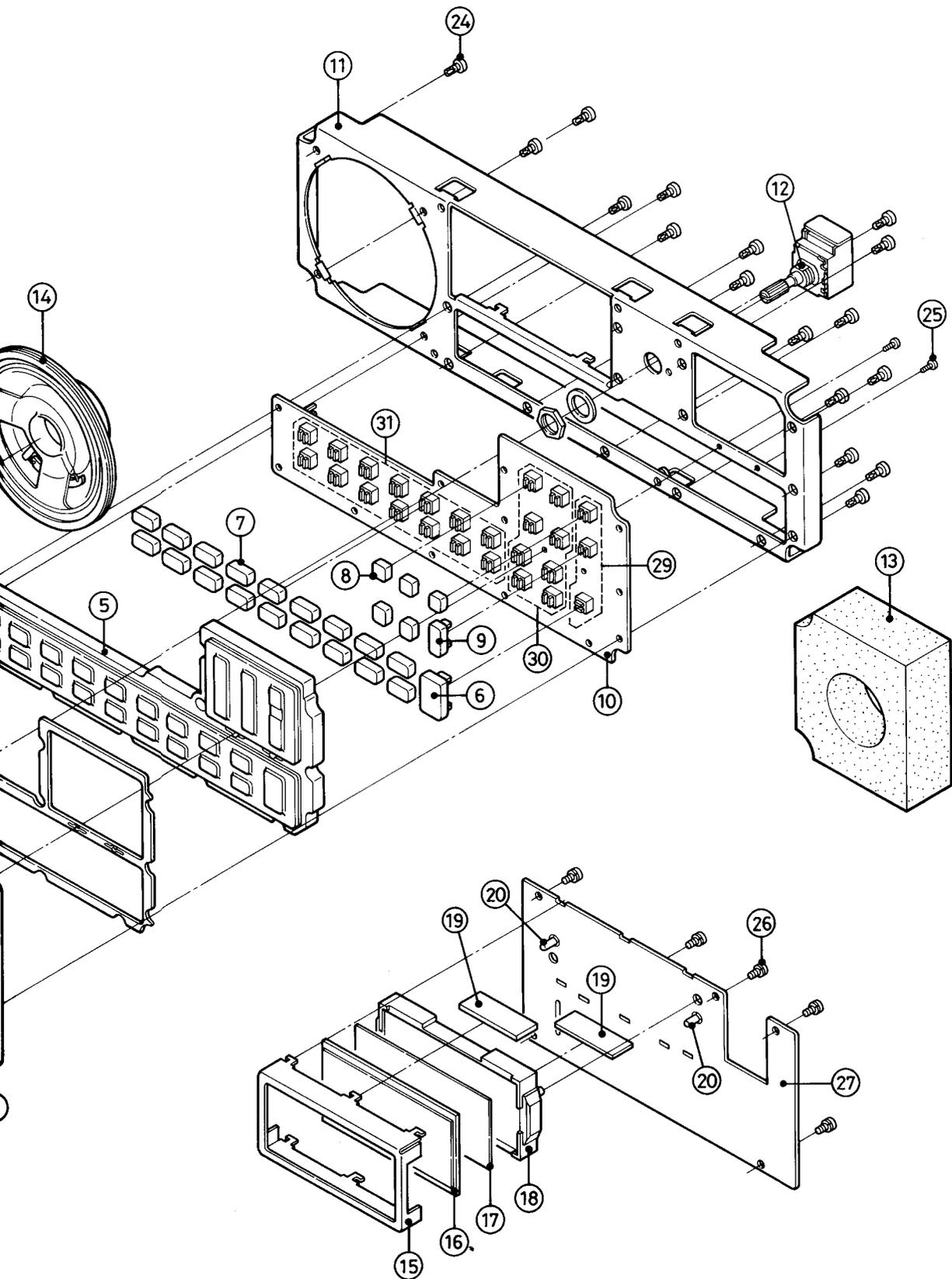
5-2 FRONT PANNEL

LABELLED NUMBER	DESCRIPTION	ORDERING NUMBER	QTY.
①	607 Front panel	8210003070	1
②	Rubber seal	8010007050	1
③	Front seal	8010007060	1
④	Rubber seal (A)	8930002860	1
⑤	Switch spacer (assembled)	8930013220	1
⑥	Button K-111	8610004250	1
⑦	Button K-109	8610004270	1
⑧	Button K-108	8610004280	1
⑨	Button K-110	8610004260	1
⑩	SW-A Board	0910017332	1
⑪	Sub chassis	8010007100	1
⑫	Rotary sensor (SRB181-0025KC)	2250000020	1
⑬	Speaker sponge	8930012860	1
⑭	Speaker (77F60N)	2510000440	1
⑮	LCD holder	8930012260	1
⑯	LCD (LF 7412J)	5030000310	1
⑰	607 filter	8310012250	1
⑱	LCD reflector	8010007020	1
⑲	LCD contact strip (SRCN 607)	8930012890	1
⑳	Lamp (HRS-7219A-G40)	5080000130	1
㉑	Knob N-129	8610004240	1
㉒	607 Speaker net	8930012230	1
㉓	HS M4 × 35 SUS ZK*	8810004880	1
㉔	FH B0 3 × 8*	8810004220	1
㉕	No. 0-3 PH B0 1.4 × 4*	8810001720	1
㉖	Set screw (A) 3 × 6	8810003160	1
㉗	LOGIC Board	0910017444	1
㉘	O ring (F)	8930002790	1
㉙	Switch SKHQFA 018A	2260000850	1
㉚	Switch SKHQFB 015A	2260000860	1
㉛	Switch SKHQFC 013A	2260000870	1

*Screw type Self-tapping screw: B0 1.4 × 4 etc.

Head type of screw PH: Pan head FH: Flat head HS: Hex socket head

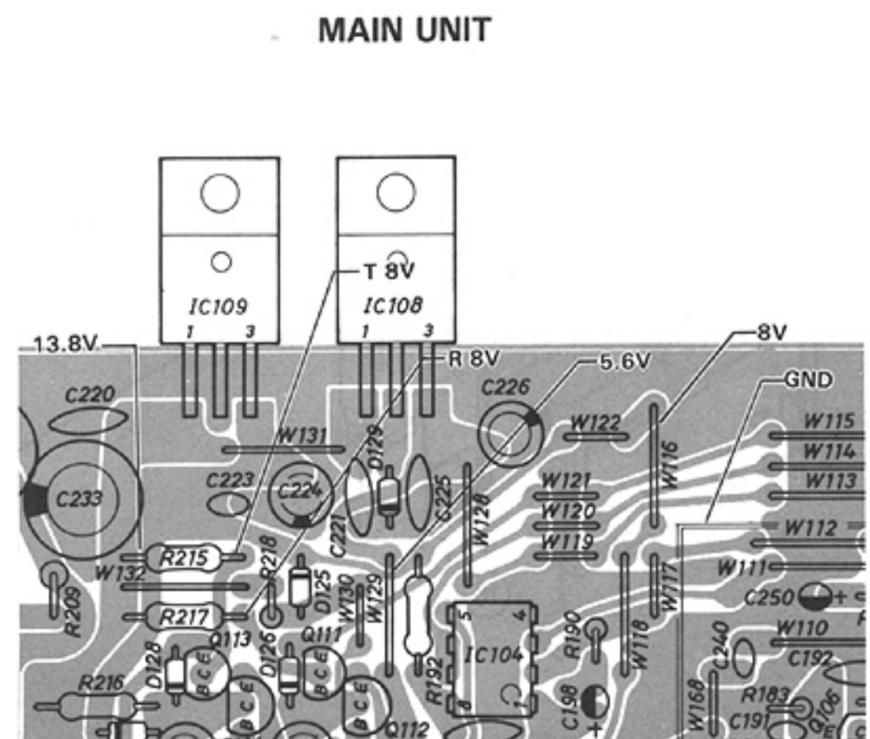
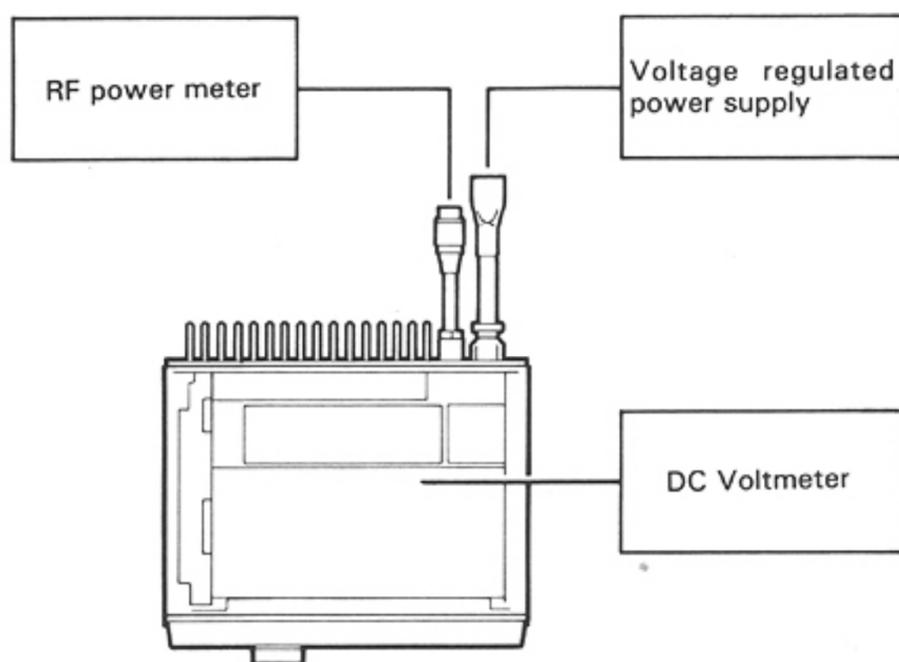




6-1 MEASURING INSTRUMENTS REQUIRED FOR ADJUSTMENTS

INSTRUMENT	GRADE AND RANGE
(1) Voltage regulated power Supply	Output voltage : 13.8 V DC Capacity : 10 A or more
(2) RF power meter (Terminated type)	Measuring range : 5~40W Frequency minimum : At least 170 MHz Impedance : 50 Ω SWR : Less than 1.2:1
(3) DC voltmeter	Input impedance : 50 kΩ DC or better
(4) Distortion meter	Frequency range : 1 kHz ± 10 Hz Measuring range : 1%~100%
(5) Attenuator	Power attenuation : 30 or 40 dB (30 W or more)
(6) Signal generator	Frequency minimum : At least 170 MHz Output level : 0.1 μV ~ 31 mV (-127~17 dBm)
(7) Frequency counter	Frequency minimum : At least 170 MHz Accuracy : 1ppm or better Sensitivity : 100 mV or better
(8) External speaker	Impedance : 4 Ω
(9) FM deviation meter	Frequency minimum : At least 170 MHz Measuring range : 0 ~ ± 10 kHz
(10) Audio generator	Frequency range : 200~200 Hz Output level : 0 ~ 200 mV

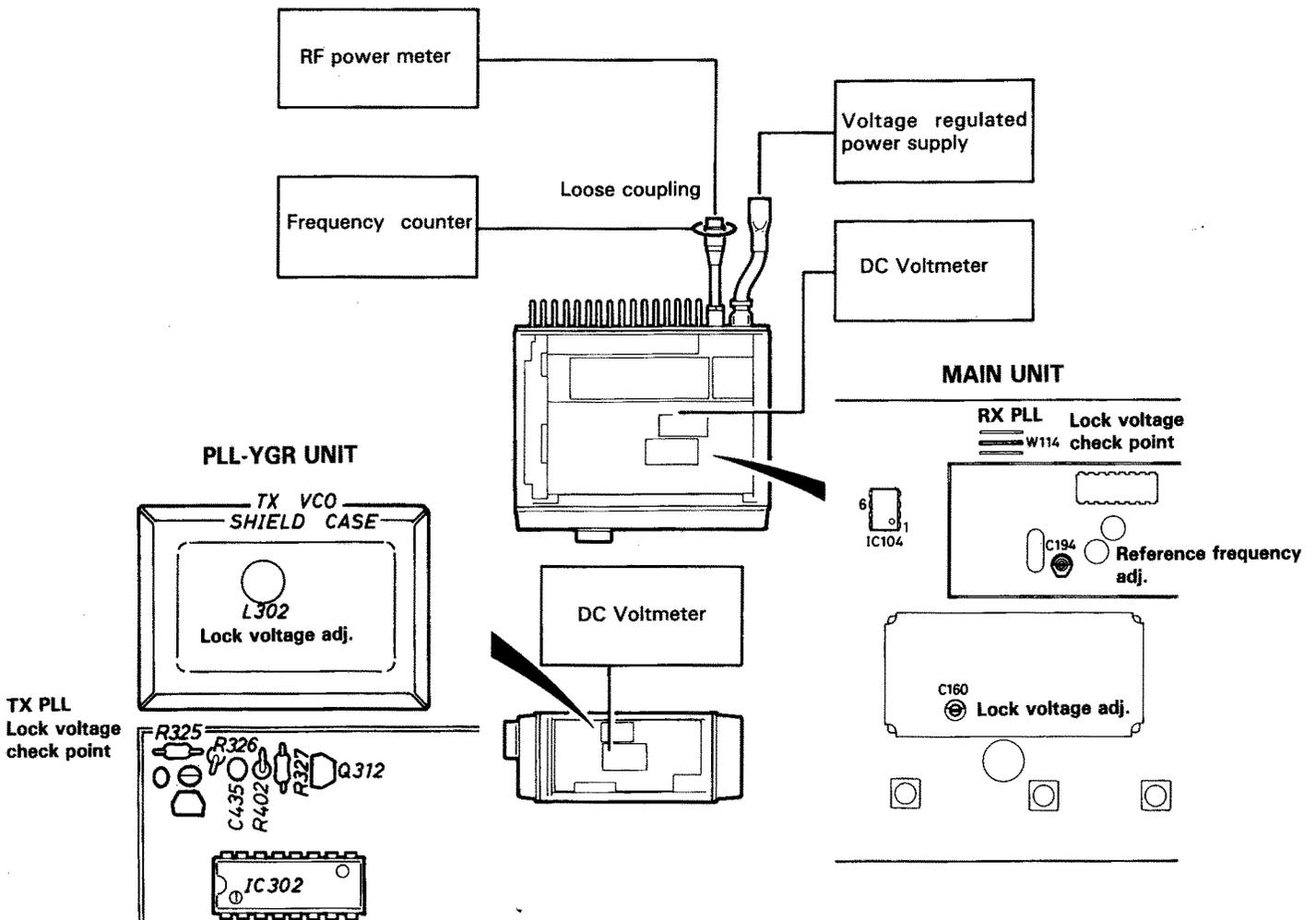
6-2 CHECK THE BASIC VOLTAGES



SECTION 6 MAINTENANCE AND ADJUSTMENT

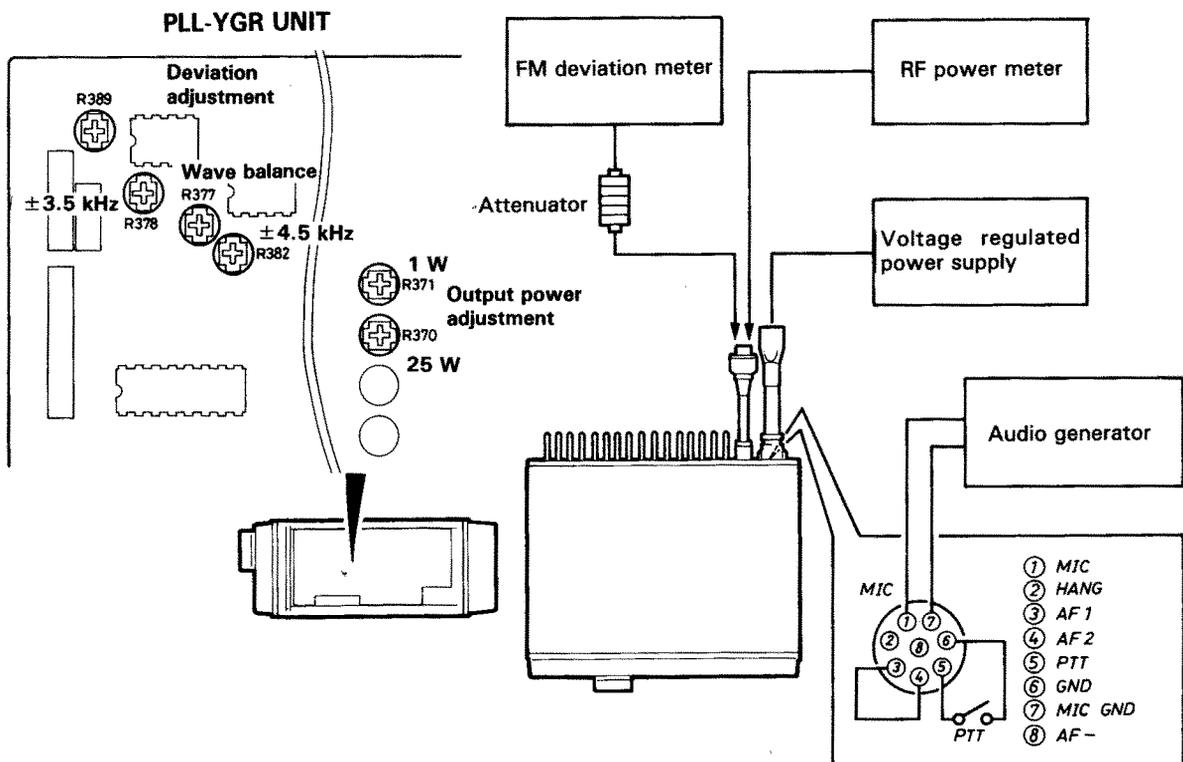
6-3 PLL ADJUSTMENT

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
LOCK VOLTAGE	1 • Operating channel: 16 • Receiving	MAIN	Connect the DC voltmeter to W114.	4.0 V	MAIN (VCO)	C160
	2 • Operating channel: 16 • Transmitting	PLL-YGR	Connect the DC voltmeter to R325 (R326 side)	2.0 V	PLL YGR (VCO)	L302
REFERENCE FREQUENCY	1 • Operating :16 • Transmitting	Rear Panel	Loose couple the frequency counter to the antenna connector.	156.8000 MHz	MAIN	C194



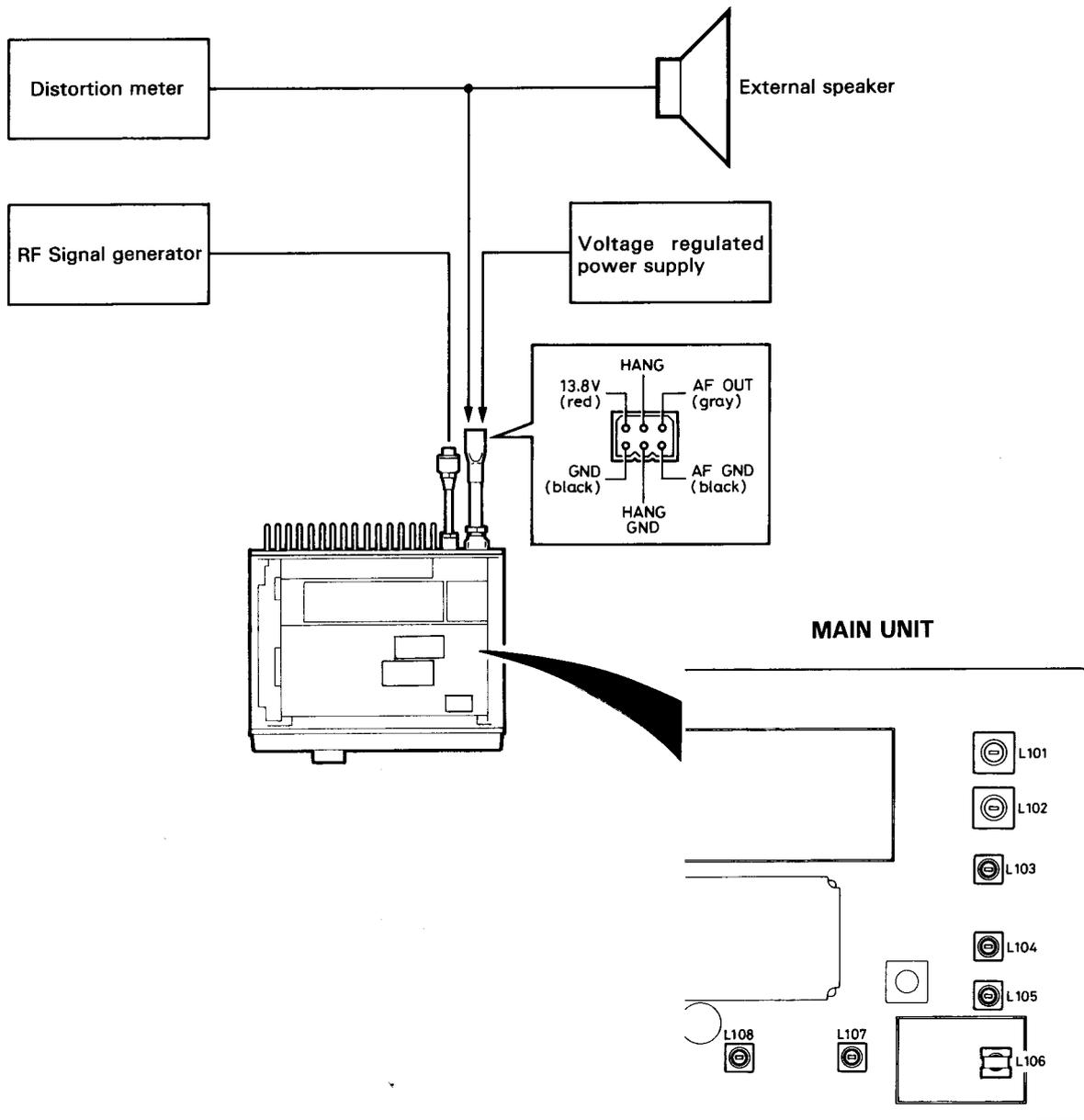
6-4 TRANSMITTER ADJUSTMENT

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
OUTPUT POWER	1 <ul style="list-style-type: none"> Operating channel: 16 Output power : HIGH 	Rear panel	Connect the power meter to the antenna connector.	25 W (Less than 7 A)	PLL-YGR	R370 (Verify)
	2 <ul style="list-style-type: none"> Output power : LOW 			1 W (Less than 2 A)		R371 (Verify)
DEVIATION	1 <ul style="list-style-type: none"> Operating channel: 16 Transmitting Apply an AF signal to the mic connector : 4 mV/1 kHz. Set the deviation meter. <ul style="list-style-type: none"> LPF : 20 kHz HPF : OFF De-emphasis : OFF Detector : (P-P)/2 	Rear panel	Connect the deviation meter to the antenna connector via the attenuator.	± 3.5 kHz	PLL-YGR	R378
	2 <ul style="list-style-type: none"> Apply an AF signal to the mic connector: 40 mV/1 kHz 			± 4.5 kHz		R382
	3 <ul style="list-style-type: none"> Apply an AF signal to the mic connector: 40 mV/1 kHz Set the deviation meter. <ul style="list-style-type: none"> Detector : -P and +P 			Same level at -P and +P		R377
	NOTE: Repeat above adjustment several times.					
DTMF DEVIATION	1 <ul style="list-style-type: none"> Operating channel : 16 Transmitting Apply no signal to the mic connector. Push and hold the [DIM](#) key on the front panel. Set the deviation meter : same as step 1 of DEVIATION adjustment above. 	Rear panel	Connect the deviation meter to the antenna connector via the attenuator.	± 3.5 kHz	PLL-YGR	R389



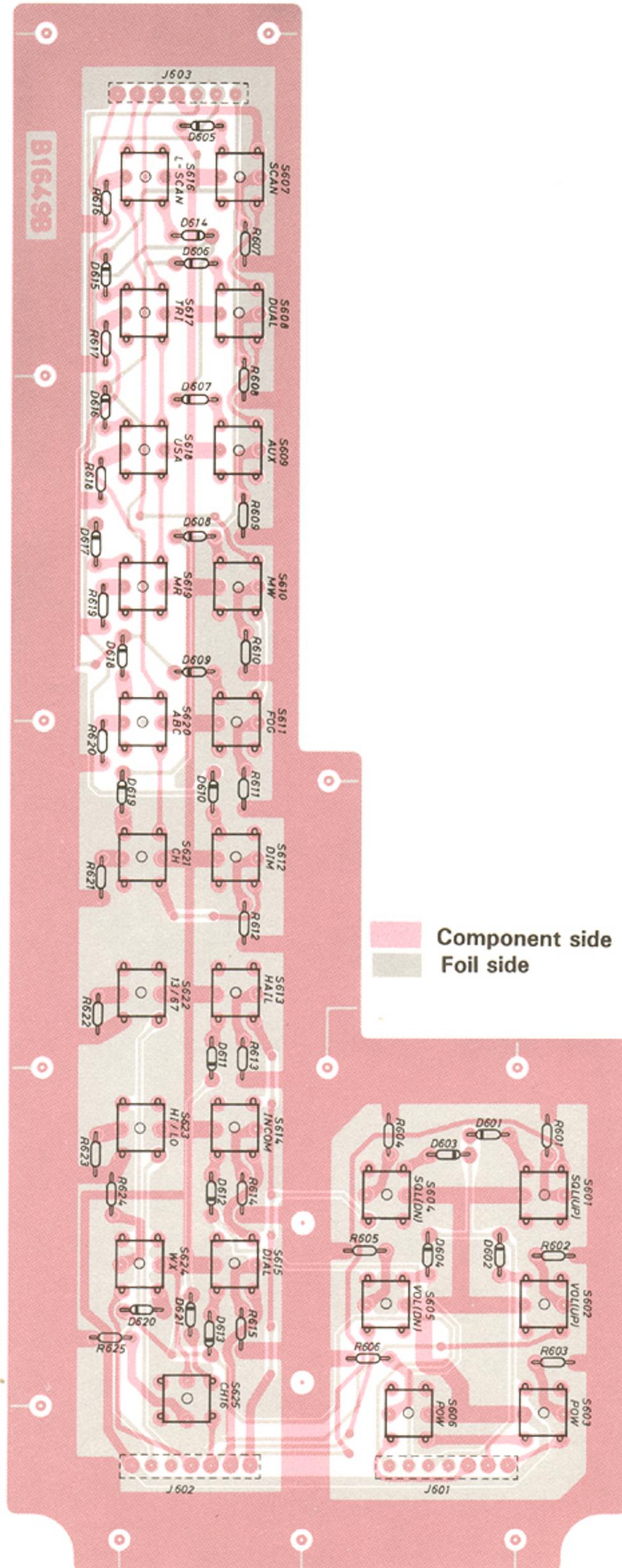
6-5 RECEIVER ADJUSTMENT

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
SENSITIVITY 1	<ul style="list-style-type: none"> Operating channel: 16 Apply an RF signal to the antenna connector. Level: $0.35 \mu V$ (-116 dBm) Mod. : 1 kHz Dev. : $\pm 3.5 \text{ kHz}$ Squelch : open Receiving Remove the microphone from the mic connector. 	Rear panel	Connect the distortion meter as shown in the diagram below.	Minimum distortion level	MAIN	L101 L102 L103 L104 L105 L106 L107 L108

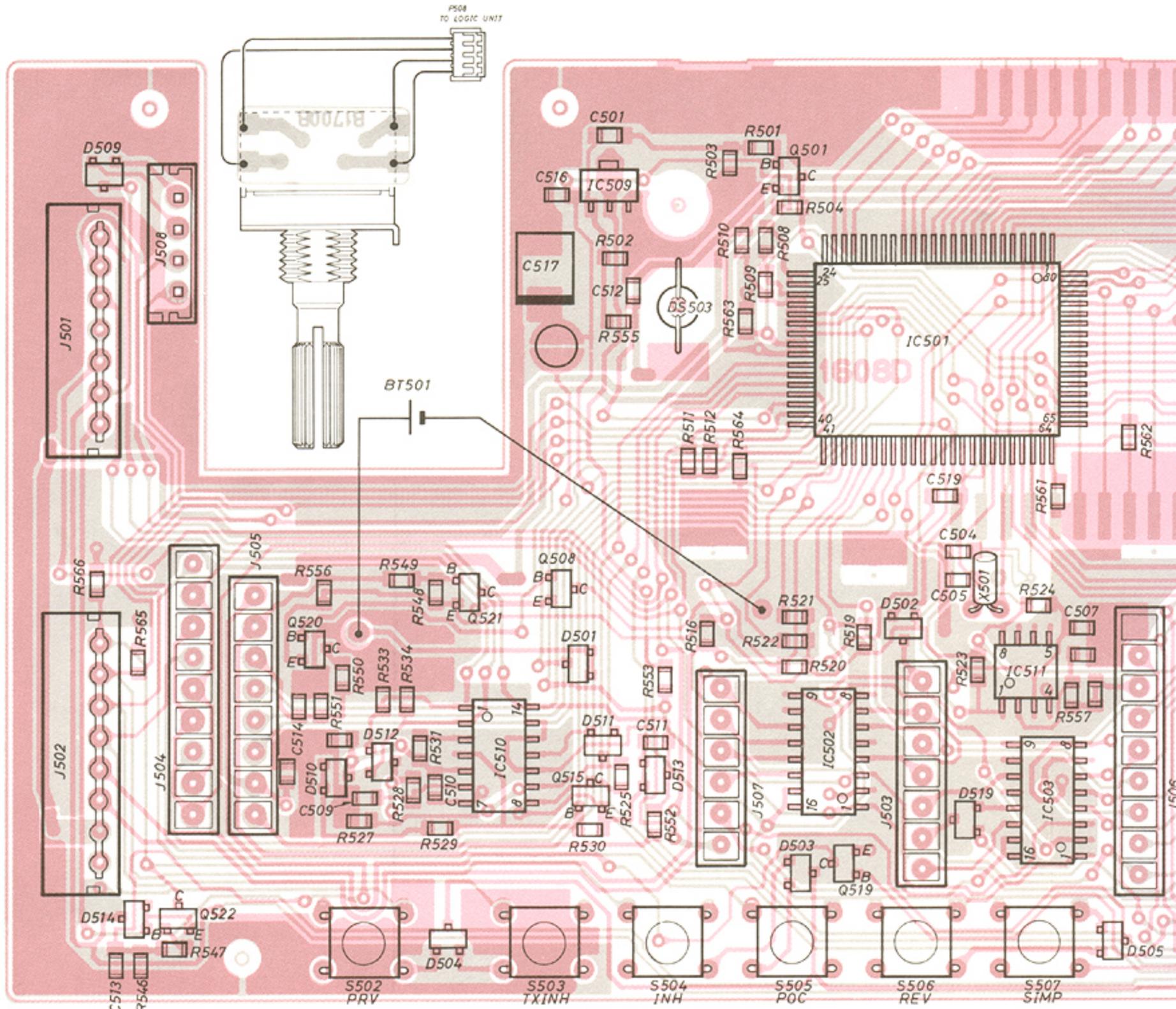


SECTION 7 BOARD LAYOUT

7-1 SWITCH (A) UNIT



7-2 LOGIC UNIT

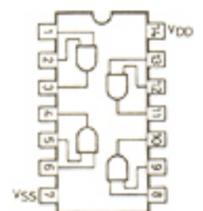
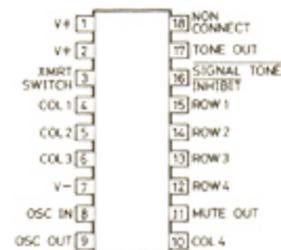
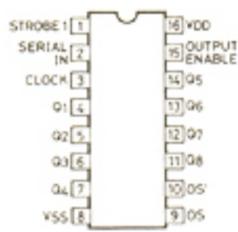
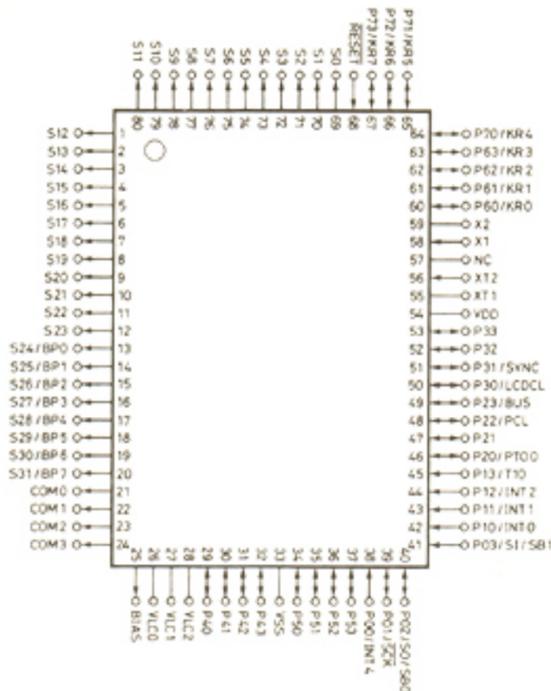


μ PD75308
CPU
IC501

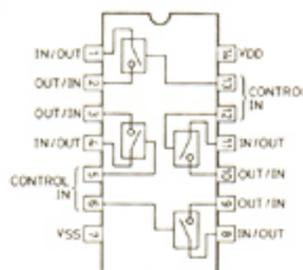
μ PD4094BG
8-STAGE SHIFT AND
STORE BUS RESISTER
IC502, IC503

LR40872
TONE DIARING
IC506

μ PD4081BG
QUAD 2-INPUT AND
GATE
IC510



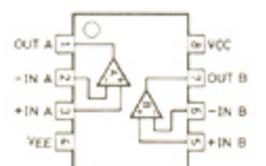
μ PD4066BG
QUAD BILATERAL
SWITCH
IC504
IC505
IC507

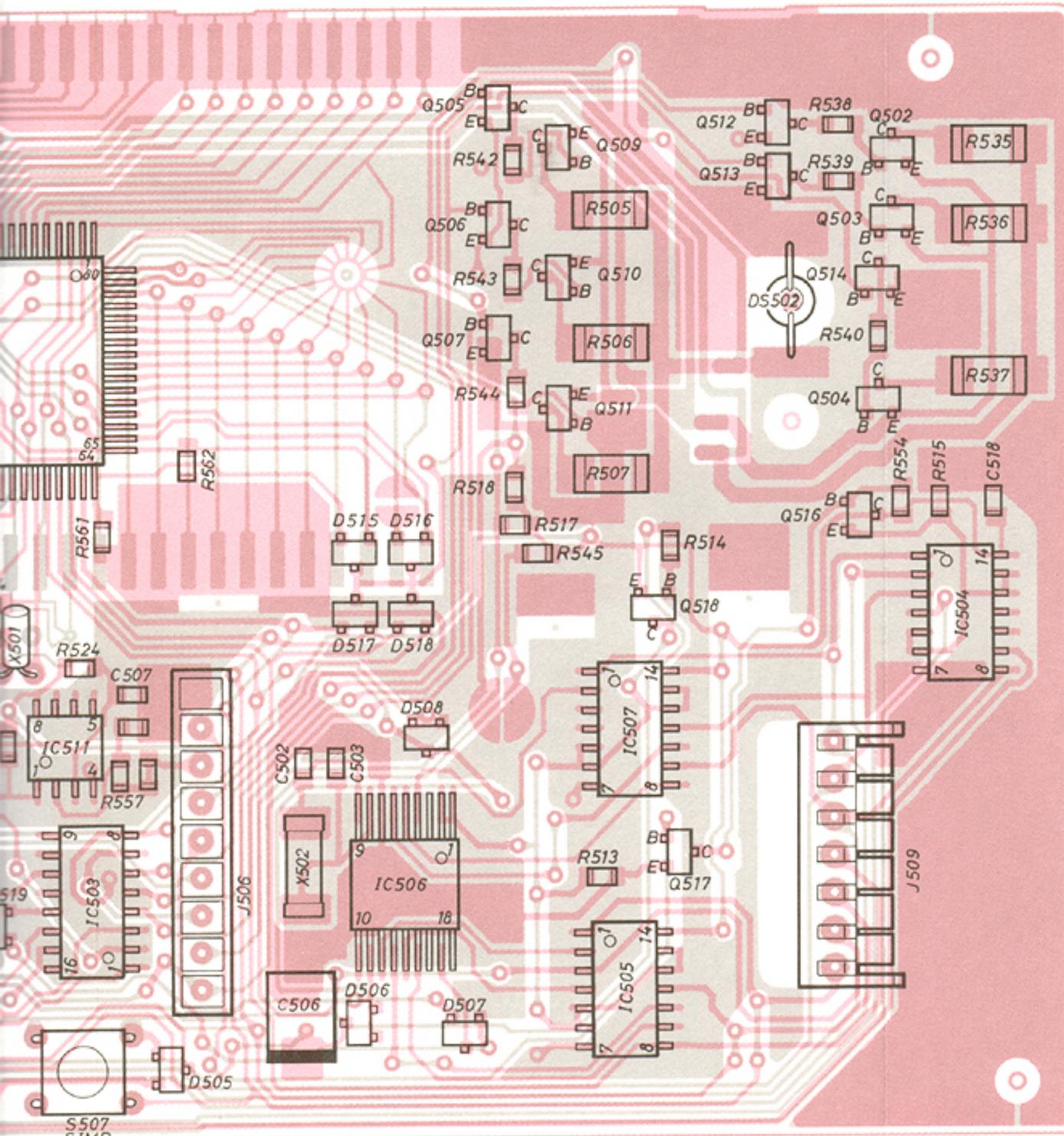


S-8054ALR-LN
RESET IC
IC509



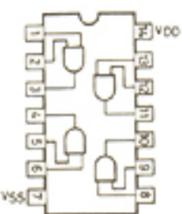
TA75393F
DUAL COMPALATOR
IC511





Component side
 Foil side

μ PD4081BG
 QUAD 2-INPUT AND
 GATE
 IC510

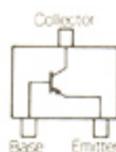


2SC2712Y
 Q501
 Q516
 Q522



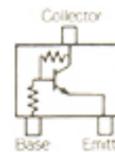
Symbol : LY

2SA1162Y
 Q502
 Q504
 Q518
 Q521



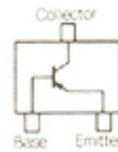
Symbol : SY

2SC3395
 Q505 Q512
 Q508 Q515
 Q517
 Q519



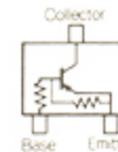
Symbol : BY

2SA1182Y
 Q509
 Q511



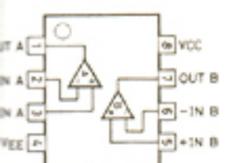
Symbol : ZY

2SA1341
 Q520

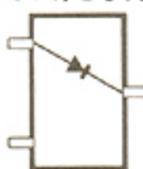


Symbol : BL

75393F
 ANAL COMPALATOR
 IC511



1SS193
 D501, D506
 D508, D510
 D514, D515



Symbol : F3

1SS181
 D502, D507



Symbol : A3

1SS184
 D503, D505
 D509, D512,
 D519



Symbol : B3

1SS196
 D511, D516



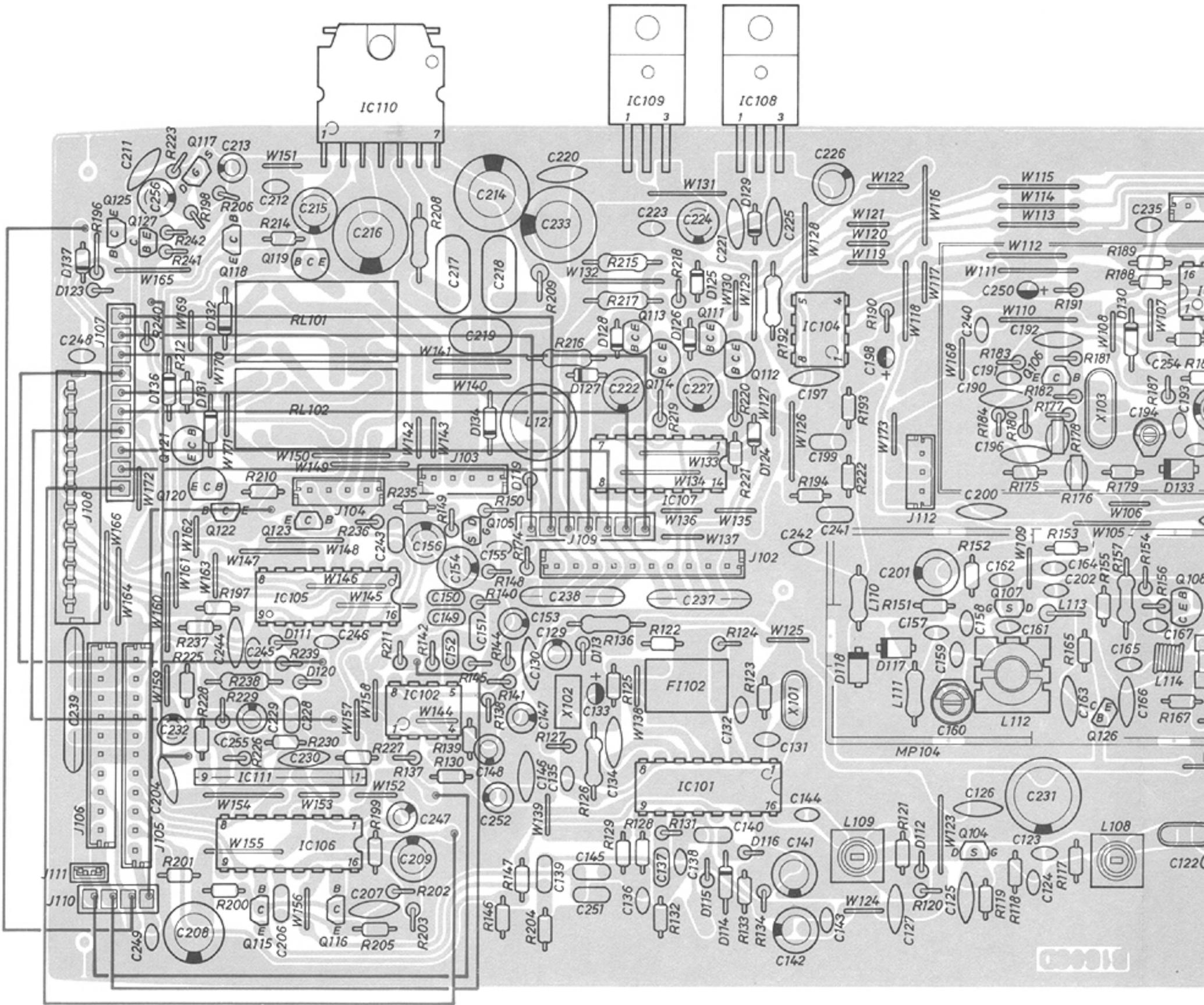
Symbol : G3

RD16MB3
 D513



Symbol : 163

7-3 MAIN UNIT



MC3357P
FM IF IC
IC101

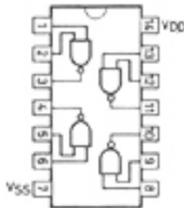
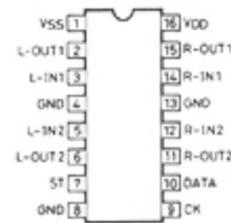
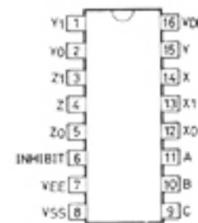
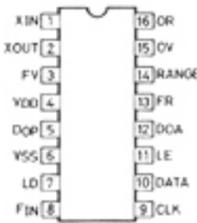
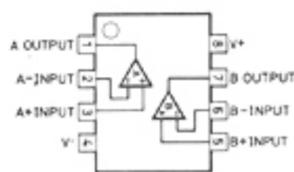
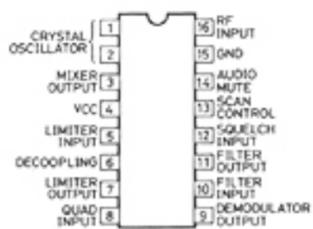
NJM4558D, NJM4560D
DUAL OPERATIONAL
AMPLIFIER
IC102
IC104

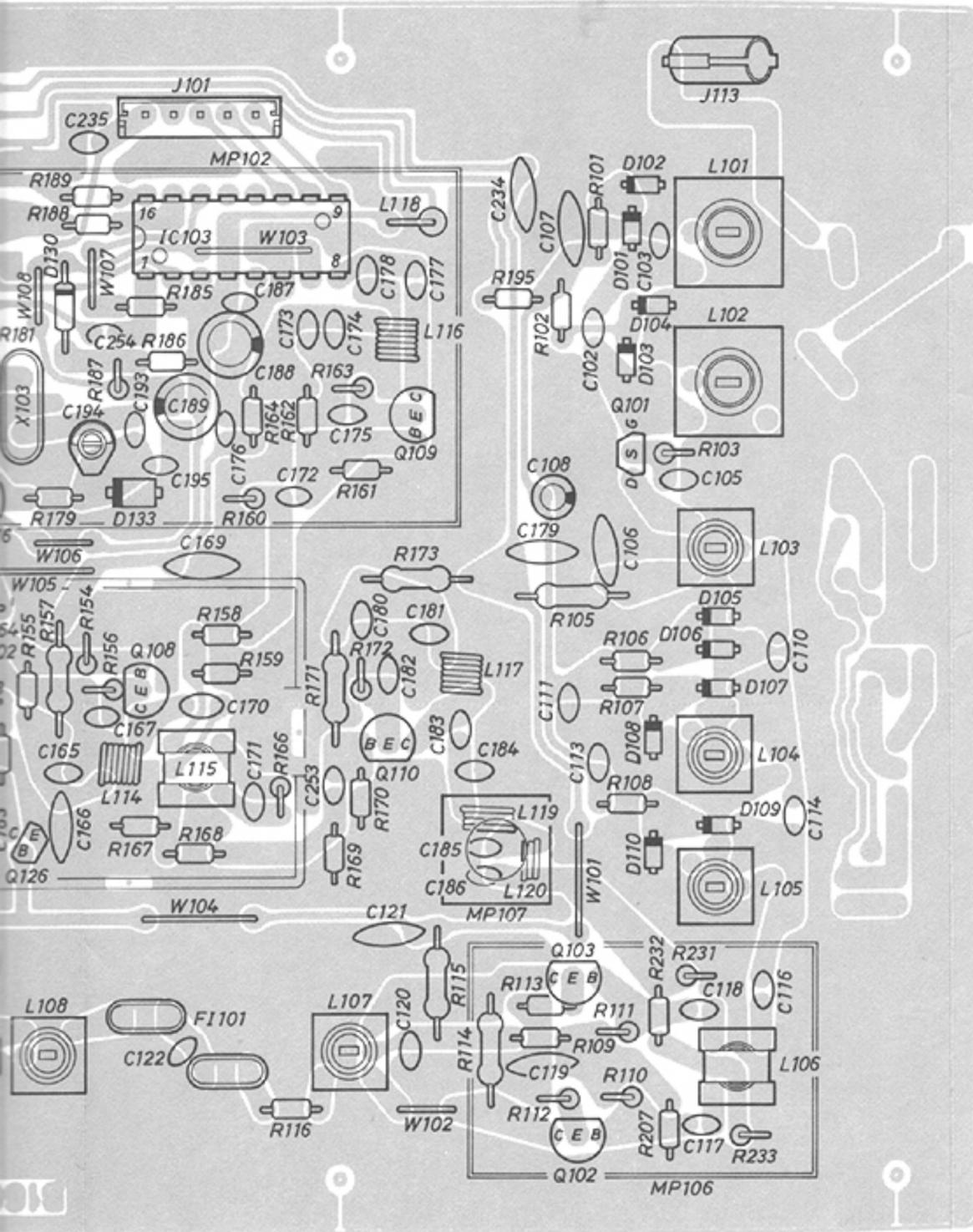
PLL2001
PLL SYNTHESIZER IC
IC103

PD4053BC
TRIPLE 2-CHANNEL
MULTIPLEXER
IC105

TC9154AP
ELECTRONIC
ATTENUATOR
IC106

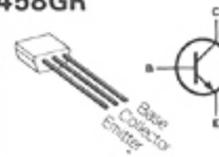
PD4011BG
QUAD 2-INPUT
NAND GATE
IC107





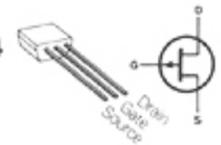
2SC2458GR

Q106
Q115
Q116
Q127



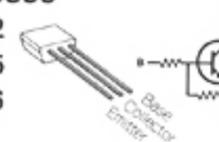
2SK241GR

Q101
Q104



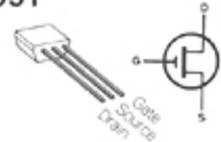
2SC3399

Q122
Q125
Q126



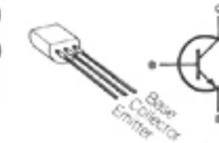
2SJ105Y

Q105
Q117



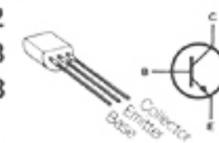
2SC945P

Q119
Q120
Q121



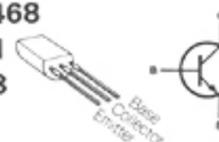
2SC2026

Q102
Q103
Q108
Q110



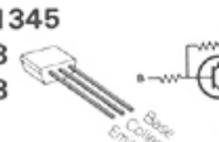
2SD468

Q111
Q113



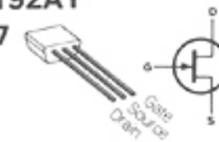
2SA1345

Q118
Q123

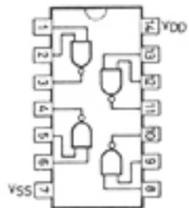


2SK192AY

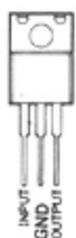
Q107



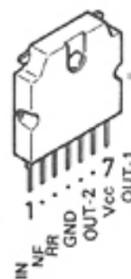
74VHC00
QUAD 2-INPUT
NAND GATE
IC107



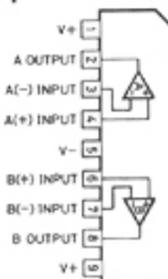
LM7805
5V REGULATOR
LM7808
8V REGULATOR
IC108
IC109



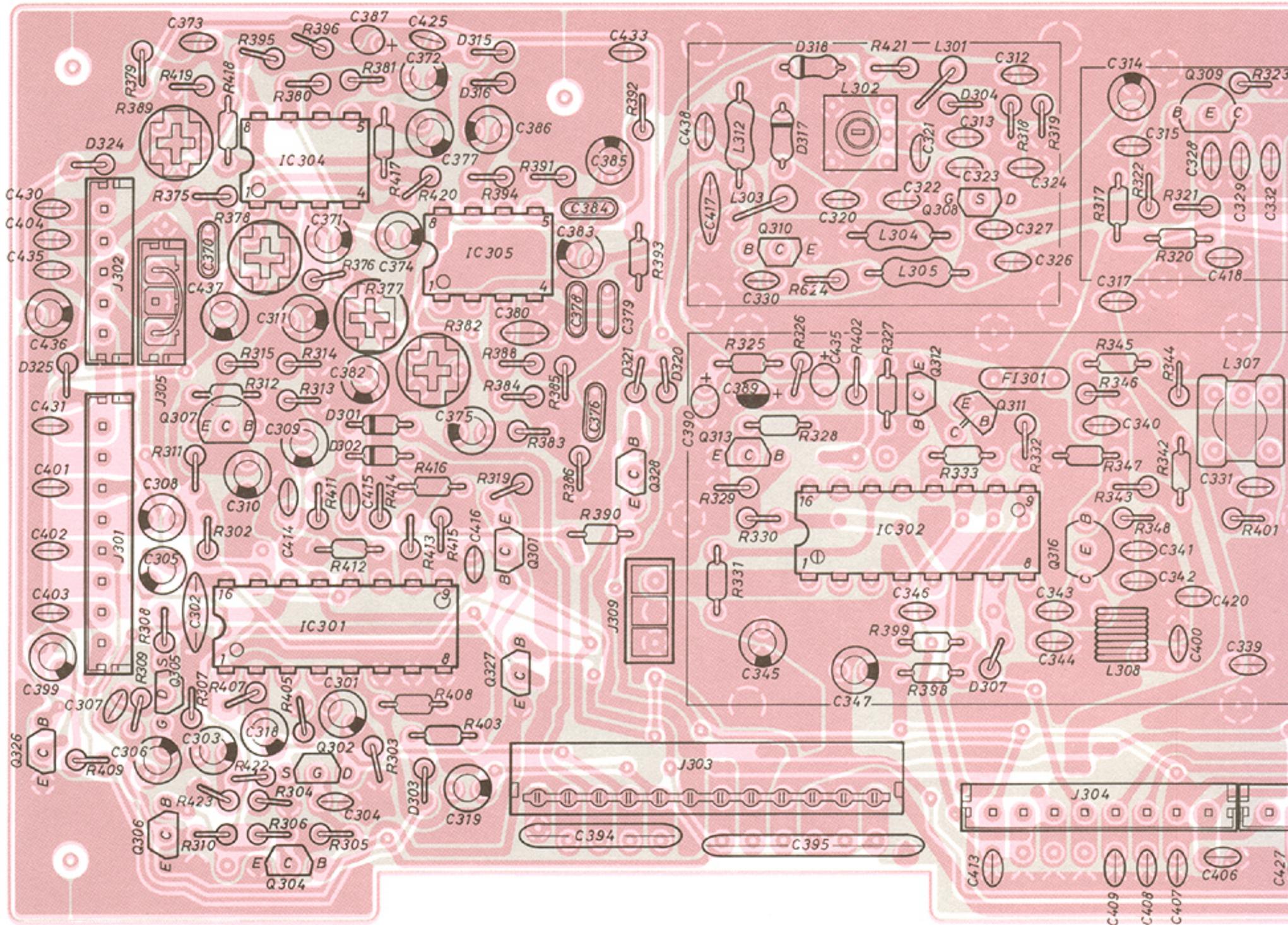
TA7224P
AUDIO POWER
AMPLIFIER
IC110



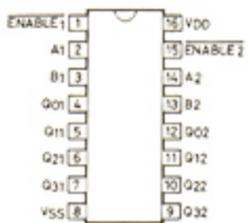
LM4558
DUAL OPERATIONAL
AMPLIFIER
IC111



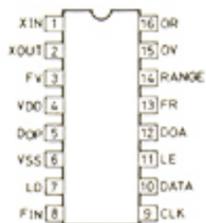
7-4 PLL-YGR UNIT



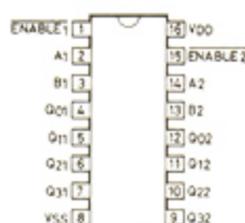
µPD4053BC
IC301



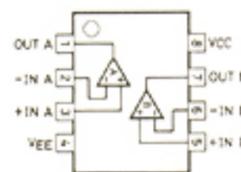
PLL2001
IC302



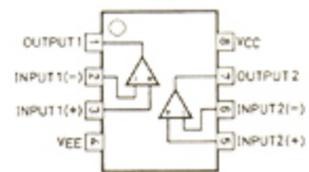
µPD4555BC
DUAL BINARY 104F
IC303

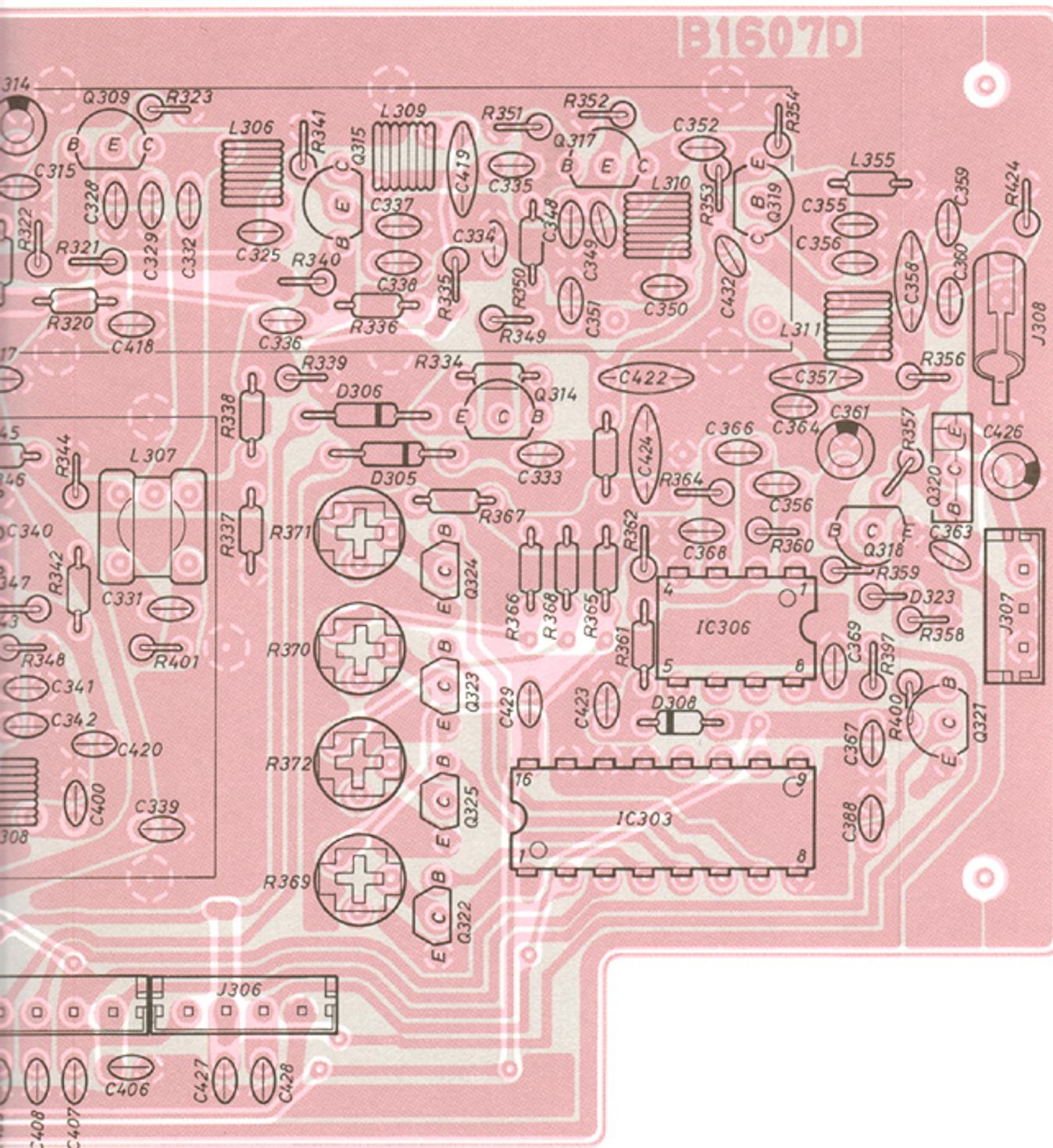


NJM4558D
IC304
IC305



µPC358C
IC306





Component side
 Foil side

2SC945P
Q318
Q321



2SC2458
Q307
Q311
Q313



2SC3399
Q304
Q306
Q310
Q322
 }
Q327



2SC2026
Q309
Q315
 }
Q317
Q319



2SA1048GR
Q312



2SA1345
Q301
Q328



2SA1015Y
Q303
2SB561C
Q314



2SB909M
Q320



2SJ105Y
Q302
Q305

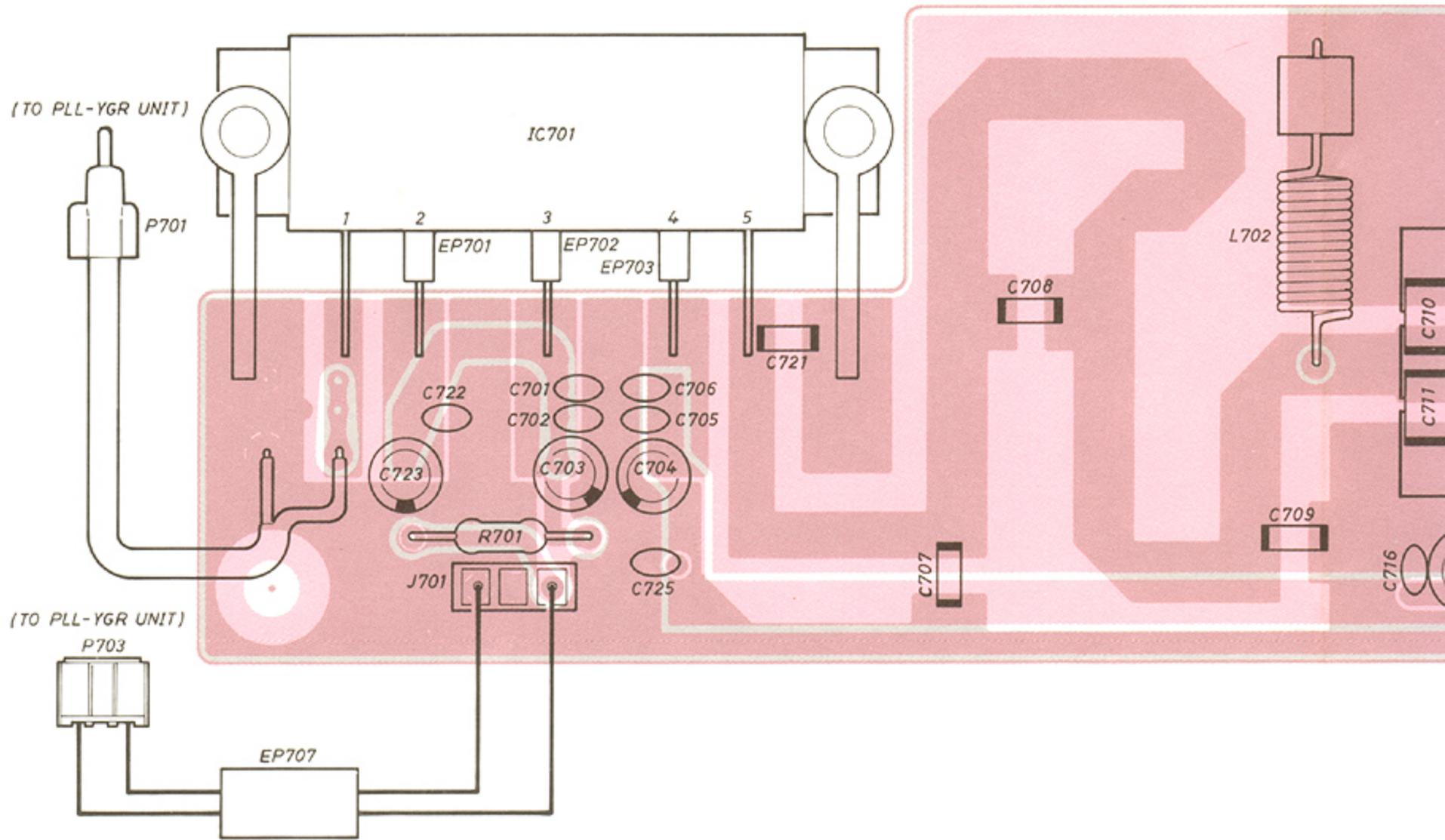


2SK241GR
Q308

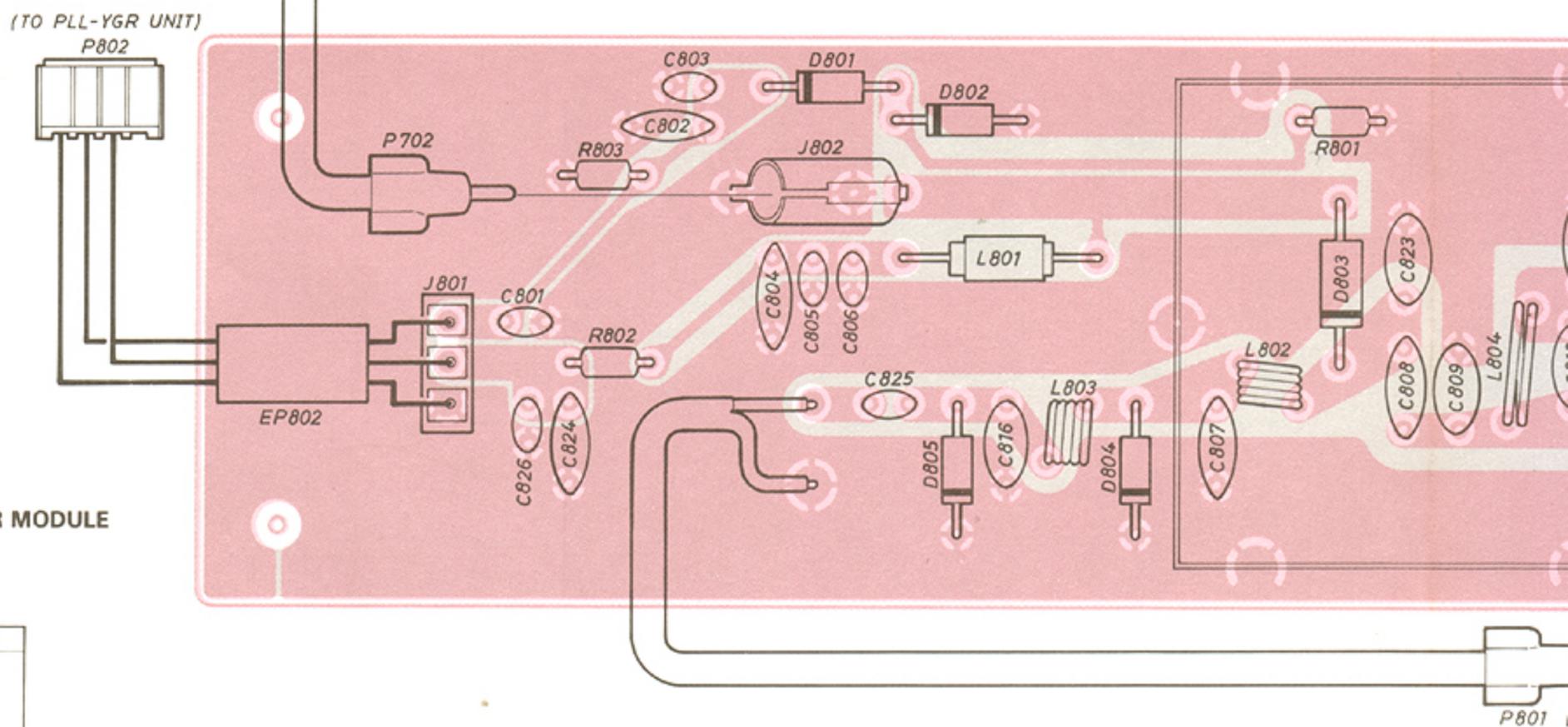


7-5 PA AND FILTER UNIT

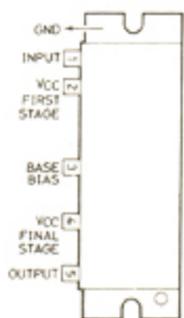
PA UNIT

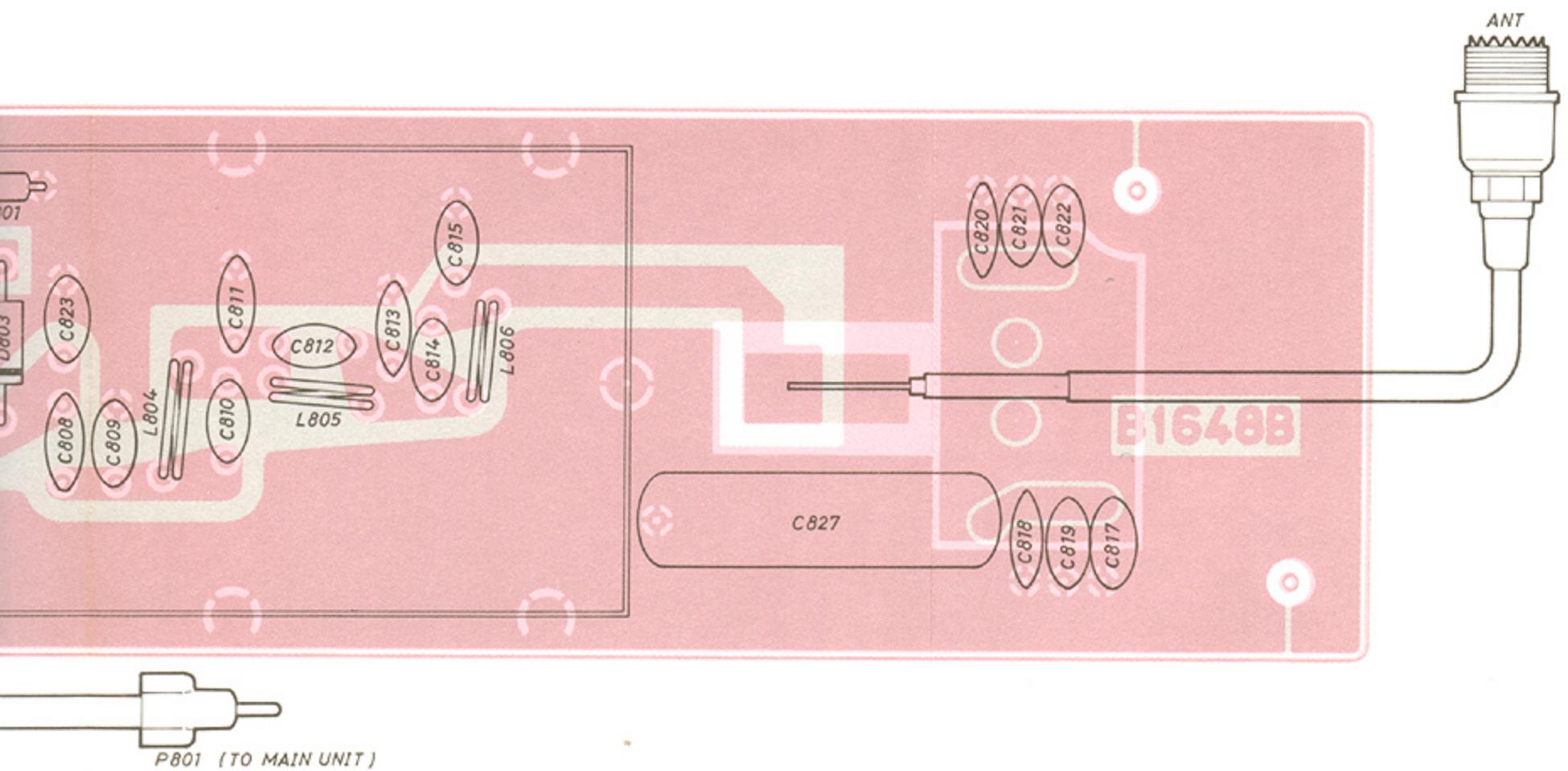
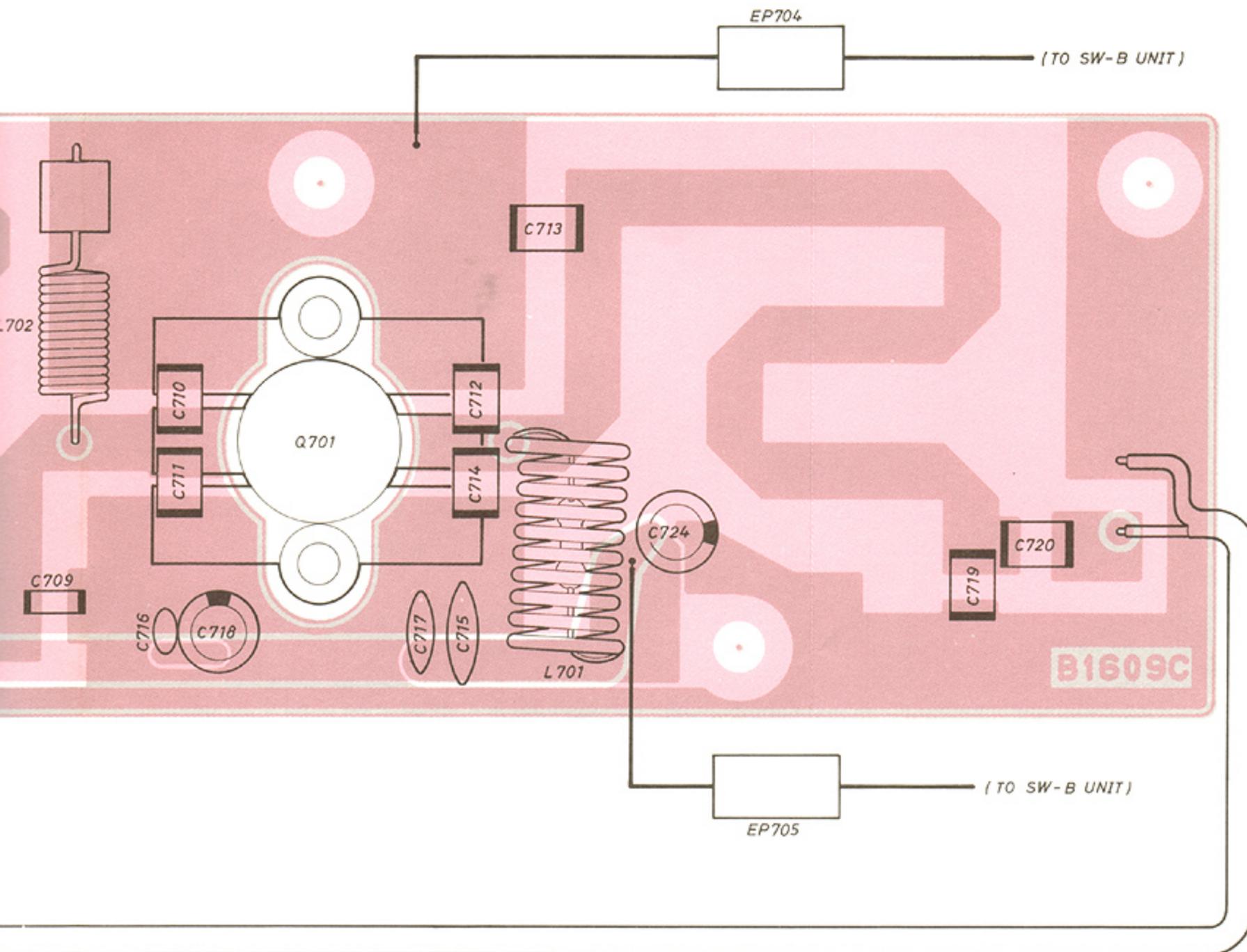


FILTER UNIT



SC-1046
VHF POWER MODULE
IC701

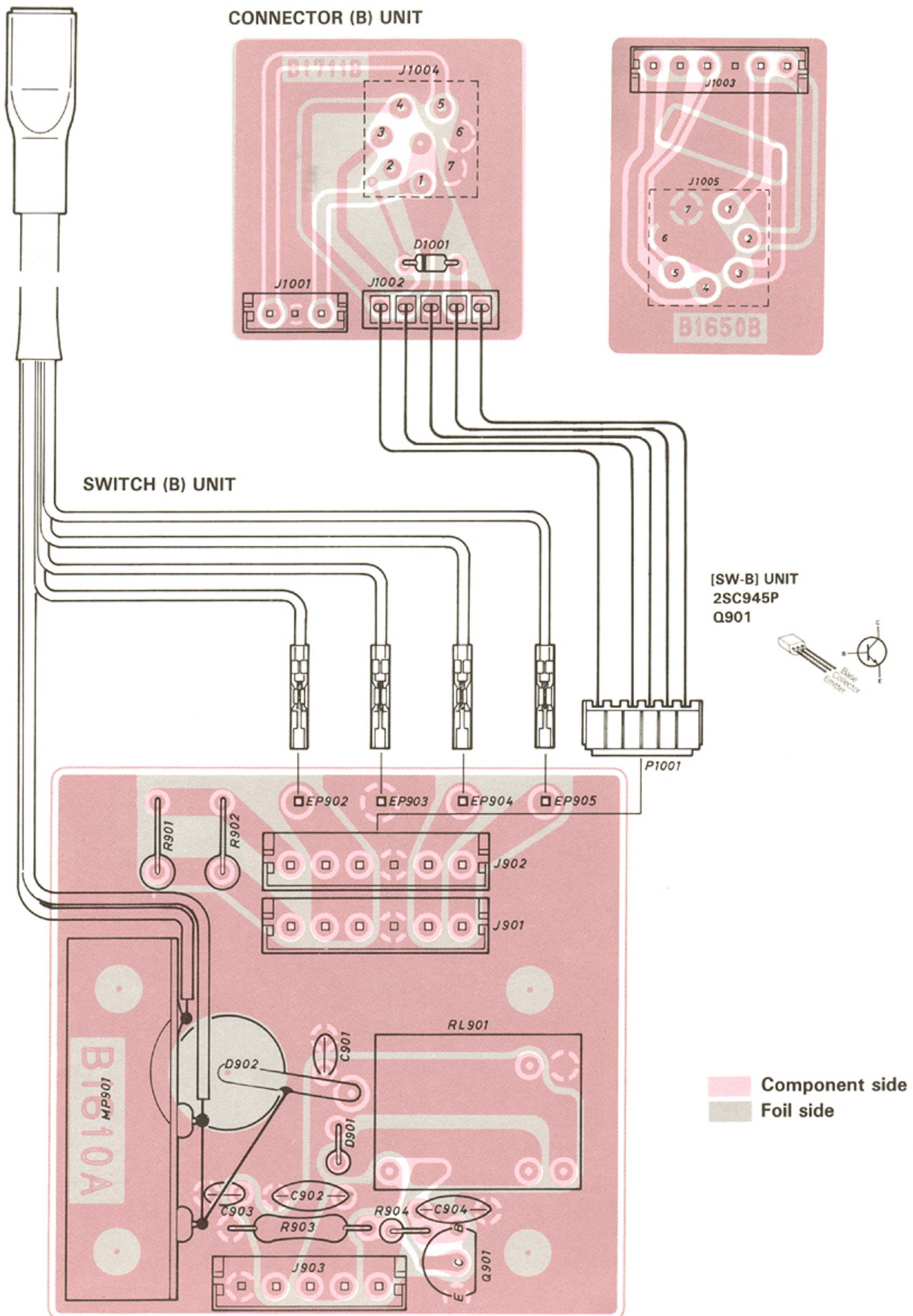




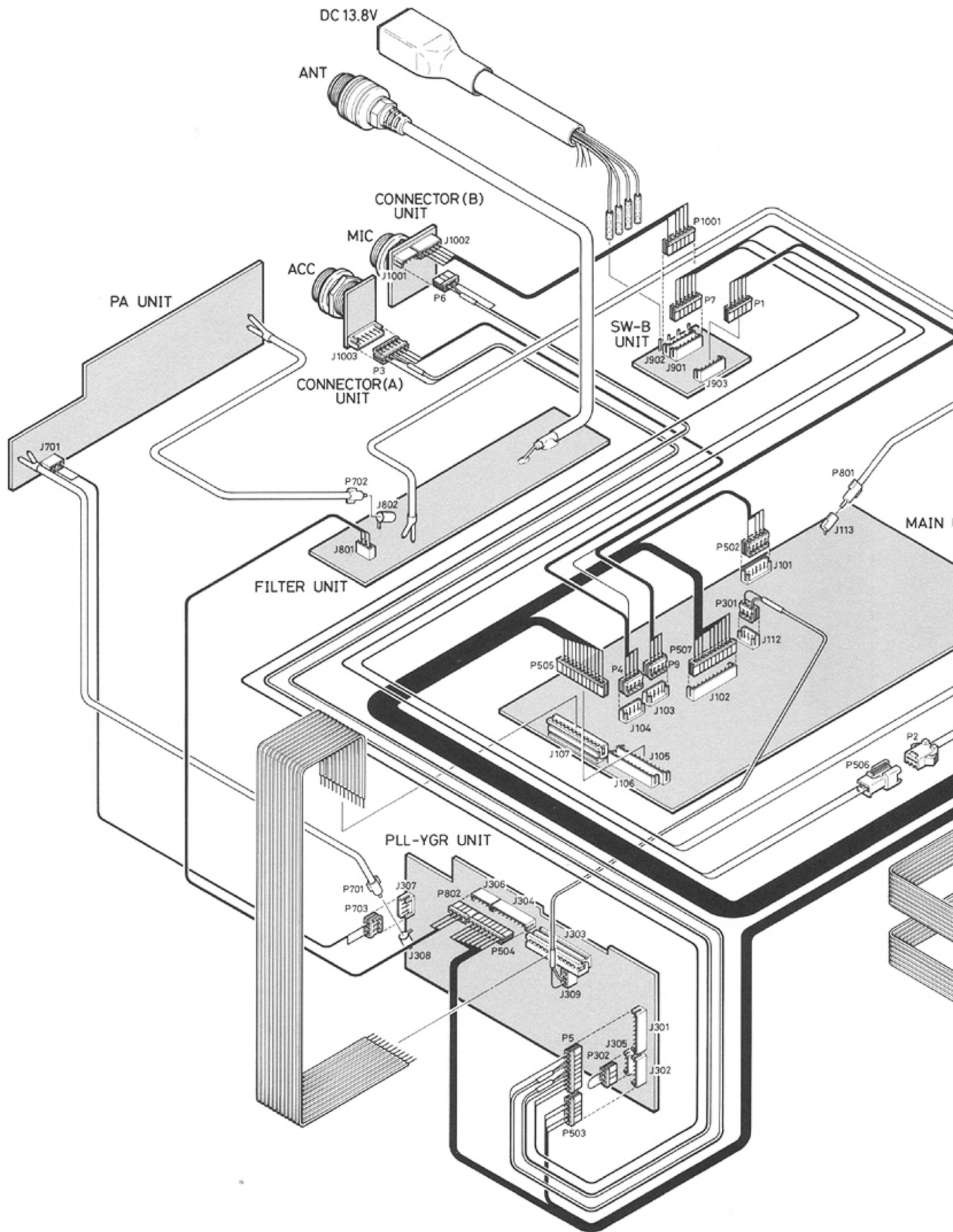
Component side
 Foil side

7-6 SWITCH AND CONNECTOR UNIT

CONNECTOR (A) UNIT



7-7 BOARD CONNECTION CHART



SECTION 8 PARTS LIST

[SW-A] UNIT

REF.NO.	DESCRIPTION	PART NO.
D601	Diode	1SS133
D602	Diode	1SS133
D603	Diode	1SS133
D604	Diode	1SS133
D605	Diode	1SS133
D606	Diode	1SS133
D607	Diode	1SS133
D608	Diode	1SS133
D609	Diode	1SS133
D610	Diode	1SS133
D611	Diode	1SS133
D612	Diode	1SS133
D613	Diode	1SS133
D614	Diode	1SS133
D615	Diode	1SS133
D616	Diode	1SS133
D617	Diode	1SS133
D618	Diode	1SS133
D619	Diode	1SS133
D620	Diode	1SS133
D621	Diode	1SS133
R601	Resistor	1 k Ω R20
R602	Resistor	1 k Ω R20
R603	Resistor	1 k Ω R20
R604	Resistor	1 k Ω R20
R605	Resistor	1 k Ω R20
R606	Resistor	1 k Ω R20
R607	Resistor	1 k Ω R20
R608	Resistor	1 k Ω R20
R609	Resistor	1 k Ω R20
R610	Resistor	1 k Ω R20
R611	Resistor	1 k Ω R20
R612	Resistor	1 k Ω R20
R613	Resistor	1 k Ω R20
R614	Resistor	1 k Ω R20
R615	Resistor	1 k Ω R20
R616	Resistor	1 k Ω R20
R617	Resistor	1 k Ω R20
R618	Resistor	1 k Ω R20
R619	Resistor	1 k Ω R20
R620	Resistor	1 k Ω R20
R621	Resistor	1 k Ω R20
R622	Resistor	1 k Ω R20
R623	Resistor	1 k Ω R20
R624	Resistor	1 k Ω R20
R625	Resistor	1 k Ω R20
J601	Connector	5494-07C
J602	Connector	5494-08C
J603	Connector	SB07P-HVQ-22
S601	Switch	SKHQFB
S602	Switch	SKHQFB
S603	Switch	SKHQFA
S604	Switch	SKHQFB
S605	Switch	SKHQFB
S606	Switch	SKHQFA
S607	Switch	SKHQFC
S608	Switch	SKHQFC
S609	Switch	SKHQFC
S610	Switch	SKHQFC
S611	Switch	SKHQFC

[SW-A] UNIT

REF.NO.	DESCRIPTION	PART NO.
S612	Switch	SKHQFC
S613	Switch	SKHQFB
S614	Switch	SKHQFB
S615	Switch	SKHQFB
S616	Switch	SKHQFC
S617	Switch	SKHQFC
S618	Switch	SKHQFC
S619	Switch	SKHQFC
S620	Switch	SKHQFC
S621	Switch	SKHQFC
S622	Switch	SKHQFB
S623	Switch	SKHQFB
S624	Switch	SKHQFB
S625	Switch	SKHQFA
EP601	P.C.Board	B-1649B (SW-A UNIT)

[LOGIC] UNIT

REF.NO.	DESCRIPTION	PART NO.
IC501	IC	μ PD75308GF-089-3B9
IC502	IC	μ PD4094BG
IC503	IC	μ PD4094BG
IC504	IC	μ PD4066BG
IC505	IC	μ PD4066BG
IC506	IC	LR40872
IC507	IC	μ PD4066BG
IC509	IC	S-8054ALR-LN
IC510	IC	μ PD4081BG
IC511	IC	TA75393F
Q501	Transistor	2SC2712Y
Q502	Transistor	2SA1162Y
Q503	Transistor	2SA1162Y
Q504	Transistor	2SA1162Y
Q505	Transistor	2SC3395
Q506	Transistor	2SC3395
Q507	Transistor	2SC3395
Q508	Transistor	2SC3395
Q509	Transistor	2SA1182Y
Q510	Transistor	2SA1182Y
Q511	Transistor	2SA1182Y
Q512	Transistor	2SC3395
Q513	Transistor	2SC3395
Q514	Transistor	2SC3395
Q515	Transistor	2SC3395
Q516	Transistor	2SC2712Y
Q517	Transistor	2SC3395
Q518	Transistor	2SA1162Y
Q519	Transistor	2SC3395
Q520	Transistor	2SA1341
Q521	Transistor	2SA1162Y
Q522	Transistor	2SC2712Y
D501	Diode	1SS193
D502	Diode	1SS181
D503	Diode	1SS184

[LOGIC] UNIT

REF.NO.	DESCRIPTION	PART NO.
D504	Diode	1SS184
D505	Diode	1SS184
D506	Diode	1SS193
D507	Diode	1SS181
D508	Diode	1SS193
D509	Diode	1SS184
D510	Diode	1SS193
D511	Diode	1SS196
D512	Diode	1SS184
D513	Zener	RD16MB3
D514	Diode	1SS193
D515	Diode	1SS193
D516	Diode	1SS196
D519	Diode	1SS184
X501	Crystal	CR-227
X502	Ceralock	CSAC3.58 MGC300CD
R501	Chip Resistor	1 k Ω MCR10
R502	Chip Resistor	100 k Ω MCR10
R503	Chip Resistor	100 k Ω MCR10
R504	Chip Resistor	100 k Ω MCR10
R505	Chip Resistor	56 Ω MCR50
R506	Chip Resistor	100 Ω MCR50
R507	Chip Resistor	180 Ω MCR50
R508	Chip Resistor	47 k Ω MCR10
R509	Chip Resistor	47 k Ω MCR10
R510	Chip Resistor	47 k Ω MCR10
R511	Chip Resistor	47 k Ω MCR10
R512	Chip Resistor	47 k Ω MCR10
R513	Chip Resistor	47 k Ω MCR10
R514	Chip Resistor	47 k Ω MCR10
R515	Chip Resistor	47 k Ω MCR10
R516	Chip Resistor	47 k Ω MCR10
R517	Chip Resistor	47 k Ω MCR10
R518	Chip Resistor	47 k Ω MCR10
R519	Chip Resistor	47 k Ω MCR10
R520	Chip Resistor	47 k Ω MCR10
R521	Chip Resistor	47 k Ω MCR10
R522	Chip Resistor	47 k Ω MCR10
R523	Chip Resistor	100 k Ω MCR10
R524	Chip Resistor	1.2 M Ω MCR10
R525	Chip Resistor	47 k Ω MCR10
R527	Chip Resistor	47 k Ω MCR10
R528	Chip Resistor	47 k Ω MCR10
R529	Chip Resistor	47 k Ω MCR10
R530	Chip Resistor	47 k Ω MCR10
R531	Chip Resistor	470 k Ω MCR10
R533	Chip Resistor	47 k Ω MCR10
R534	Chip Resistor	47 k Ω MCR10
R535	Chip Resistor	82 Ω MCR50
R536	Chip Resistor	150 Ω MCR50
R537	Chip Resistor	330 Ω MCR50
R538	Chip Resistor	10 k Ω MCR10
R539	Chip Resistor	10 k Ω MCR10
R540	Chip Resistor	10 k Ω MCR10
R542	Chip Resistor	10 k Ω MCR10
R543	Chip Resistor	10 k Ω MCR10
R544	Chip Resistor	10 k Ω MCR10
R545	Chip Resistor	47 k Ω MCR10
R546	Chip Resistor	47 k Ω MCR10
R547	Chip Resistor	47 k Ω MCR10
R548	Chip Resistor	47 k Ω MCR10
R549	Chip Resistor	10 k Ω MCR10
R550	Chip Resistor	100 k Ω MCR10
R551	Chip Resistor	15 k Ω MCR10
R552	Chip Resistor	100 Ω MCR10
R553	Chip Resistor	47 k Ω MCR10
R554	Chip Resistor	10 k Ω MCR10
R555	Chip Resistor	10 k Ω MCR10
R556	Chip Resistor	4.7 k Ω MCR10

[LOGIC] UNIT

REF.NO.	DESCRIPTION	PART NO.
R557	Chip Resistor	47 k Ω MCR10
R561	Chip Resistor	1 M Ω MCR10
R562	Chip Resistor	1 M Ω MCR10
R563	Chip Resistor	1 M Ω MCR10
R564	Chip Resistor	1 M Ω MCR10
R565	Chip Resistor	1 M Ω MCR10
R566	Chip Resistor	1 M Ω MCR10
C501	Ceramic	0.01 μ F GRM40F
C502	Ceramic	30 pF GRM40
C503	Ceramic	30 pF GRM40
C504	Ceramic	22 pF GRM40
C505	Ceramic	22 pF GRM40
C506	Tantalum	22 μ F TESVD1A226M-12L
C507	Ceramic	330 pF GRM40CH
C509	Ceramic	0.1 μ F GRM40F
C510	Ceramic	0.1 μ F GRM40F
C511	Ceramic	0.1 μ F GRM40F
C512	Ceramic	100 pF GRM40
C513	Ceramic	0.001 μ F GRM40
C514	Ceramic	0.001 μ F GRM40
C516	Ceramic	0.1 μ F GRM40F
C517	Tantalum	22 μ F TESVD1A226M-12L
C518	Ceramic	0.1 μ F GRM40F
C519	Ceramic	0.1 μ F GRM40F
J501	Connector	5494-07C
J502	Connector	5494-08C
J503	Connector	TLB-P07H-B1
J504	Connector	TLB-P09H-B1
J505	Connector	TLB-P08H-B1
J506	Connector	TLB-P09H-B1
J507	Connector	TLB-P06H-B1
J508	Connector	B04B-EH-S
J509	Connector	512-07BH
J509	Connector	5124-07BH
P502	Connector	EHR-05
P503	Connector	EHR-05
P504	Connector	EHR-08
P505	Connector	EHR-11
P506	Connector	SMP-03V-B
P507	Connector	EHR-10
P508	Connector	EHR-04
DS501	LCD	LF7412J
DS502	Lamp	HRS-7219A
DS503	Lamp	HRS-7219A
S501	Switch	SRB181-0025Kc
S502	Switch	SKHHAK013A
S503	Switch	SKHHAK013A
S504	Switch	SKHHAK013A
S505	Switch	SKHHAK013A
S506	Switch	SKHHAK013A
S507	Switch	SKHHAK013A
BT501	LITHU M Ω	BR2032-1T2
W501	Wire	23/05/220/C22/B06 (J507-2/P505-10)
W502	Wire	23/01/220/C22/B06 (J507-3/P505-11)
W503	Wire	23/06/320/C22/B06 (J507-4/P507-3)

[LOGIC] UNIT

REF.NO.	DESCRIPTION	PART NO.
W504	Wire	23/09/240/C22/B06 (J507-5/P505-9)
W505	Wire	23/07/200/C22/B02 (J507-6/P506-2)
W506	Wire	23/03/185/C22/B06 (J505-1/P505-1)
W507	Wire	23/01/290/C22/B06 (J505-2/P507-2)
W508	Wire	23/06/190/C22/B06 (J505-3/P503-2)
W509	Wire	23/07/185/C22/B06 (J505-4/P505-2)
W510	Wire	23/02/255/C22/B06 (J505-5/P504-8)
W511	Wire	23/08/390/C22/B06 (J505-6/P502-1)
W512	Wire	23/02/270/C22/B06 (J505-7/P507-8)
W513	Wire	23/01/170/C22/B02 (J505-8/P506-1)
W514	Wire	23/05/175/C22/B06 (J504-1/P505-5)
W515	Wire	23/01/185/C22/B06 (J504-2/P505-3)
W516	Wire	23/06/175/C22/B06 (J504-3/P505-4)
W517	Wire	23/09/390/C22/B06 (J504-4/P502-3)
W518	Wire	23/07/395/C22/B06 (J504-5/P502-5)
W519	Wire	23/06/400/C22/B06 (J504-6/P502-4)
W520	Wire	23/09/260/C22/B06 (J504-7/P504-7)
W521	Wire	23/05/260/C22/B06 (J504-8/P504-5)
W522	Wire	23/04/260/C22/B06 (J504-9/P504-6)
W523	Wire	23/00/350/C22/B06 (J506-1/P507-1)
W524	Wire	23/04/340/C22/B06 (J506-2/P507-6)
W525	Wire	23/01/255/C22/B06 (J506-3/P503-4)
W526	Wire	23/08/335/C22/B06 (J506-4/P507-9)
W527	Wire	23/06/255/C22/B06 (J506-5/P503-5)
W528	Wire	23/07/350/C22/B06 (J506-6/P504-3)
W529	Wire	23/02/270/C22/B06 (J506-7/P505-7)
W530	Wire	23/09/340/C22/B06 (J506-8/P504-1)
W531	Wire	23/03/250/C22/B06 (J506-9/P503-1)
W532	Wire	23/05/335/C22/B06 (J503-1/P507-5)
W533	Wire	23/06/315/C22/B06 (J503-2/P504-2)
W534	Wire	23/09/310/C22/B06 (J503-3/P507-4)
W535	Wire	23/08/240/C22/B06 (J503-5/P505-8)
W536	Wire	23/07/320/C22/B06 (J503-6/P507-10)
W537	Wire	23/01/320/C22/B06 (J503-7/P504-4)
W538	7 wires flat cable	2468 AWG26 VW-1 E4317 (J501/J601)
W539	7 wires flat cable	2468 AWG26 VW-1 E4317 (J502/J603)
W540	Wire	23/06/040/B06/W01 (P508-1)
W541	Wire	23/07/040/B06/W01 (P508-2)
W542	Wire	23/08/050/B06/W01 (P508-3)
W543	Wire	23/09/050/B06/W01 (P508-4)
W544	Wire	12/00/130/W03/W03M (P504)
W545	Jumper	JPW-02A
W546	Jumper	JPW-02A
W547	Wire	23/04/240/C22/B06 (J503-5,P503-3)
EP501	P.C.Board	B-1608D (LOGIC UNIT)
EP502	LCD contact strip	SRCN-607
EP503	P.C.Board	B-1700A (SENSOR UNIT)

[MAIN] UNIT

REF.NO.	DESCRIPTION	PART NO.
IC101	IC	MC3357P
IC102	IC	NJM4558D
IC103	IC	PLL2001
IC104	IC	NJM4560D
IC105	IC	μ PD4053BC
IC106	IC	TC9154AP
IC107	IC	μ PD4011BC
IC108	IC	NJM7805A
IC109	IC	NJM7808A
IC110	IC	TA7274P
IC111	IC	NJM4558S
Q101	FET	2SK241GR
Q102	Transistor	2SC2026
Q103	Transistor	2SC2026
Q104	FET	2SK241GR
Q105	FET	2SJ105Y
Q106	Transistor	2SC2458GR
Q107	FET	2SK192AY
Q108	Transistor	2SC2026
Q109	Transistor	2SC2026
Q110	Transistor	2SC2026
Q111	Transistor	2SD468
Q112	Transistor	2SC945P
Q113	Transistor	2SD468
Q114	Transistor	2SC945P
Q115	Transistor	2SC2458GR
Q116	Transistor	2SC2458GR
Q117	FET	2SJ105Y
Q118	Transistor	2SA1345
Q119	Transistor	2SC945P
Q120	Transistor	2SC945P
Q121	Transistor	2SC945P
Q122	Transistor	2SC3399
Q123	Transistor	2SA1345
Q125	Transistor	2SC3399
Q126	Transistor	2SC3399
Q127	Transistor	2SC2458Y
D101	Varicap	1SV153
D102	Varicap	1SV153
D103	Varicap	1SV153
D104	Varicap	1SV153
D105	Varicap	1SV153
D106	Varicap	1SV153
D107	Varicap	1SV153
D108	Varicap	1SV153
D109	Varicap	1SV153
D110	Varicap	1SV153
D111	Diode	1SS133
D112	Diode	1SS99
D113	Zener	RD6.2EB2
D114	Diode	1S953
D115	Diode	1SS133
D116	Diode	1S953
D117	Varicap	1SV50E(1)
D118	Varicap	1SV50E(1)
D119	Diode	1SS133
D120	Diode	1SS133
D123	Diode	1SS133
D124	Diode	1SS133
D125	Diode	1SS133
D126	Diode	1SS133
D127	Diode	1SS133
D128	Diode	1SS133
D129	Diode	1SS133
D130	Diode	1SS53
D131	Diode	1SS53
D132	Diode	1SS53
D133	Varicap	1SV50E(1)
D134	Diode	1S953

[MAIN UNIT]

REF.NO.	DESCRIPTION	PART NO.
D136	Diode	1SS133
D137	Diode	1SS133
FI101	Crystal	21M15B3
FI102	Ceramic	CFW455E
X101	Crystal	CR-70
X102	Discriminator	CDB455C7A
X103	Crystal	CR-85
L101	Coil	LS-339
L102	Coil	LS-340
L103	Coil	LS-333
L104	Coil	LS-315
L105	Coil	LS-315
L106	Coil	LR-116
L107	Coil	LS-304
L108	Coil	LS-298
L109	Coil	LS-297
L110	Coil	LAL03NA1R2
L111	Coil	LAL03NA4R7
L112	Coil	LB-215
L113	Coil	LAL02KR101K
L114	Coil	LA-237
L115	Coil	LR-116
L116	Coil	LA-237
L117	Coil	LA-237
L118	Coil	LAL03NA100K
L119	Coil	LA-244
L120	Coil	LA-233
L121	Coil	LW-16
R101	Resistor	150 k Ω R20
R102	Resistor	150 k Ω R20
R103	Resistor	18 Ω ELR20
R105	Resistor	100 Ω R25
R106	Resistor	150 k Ω R20
R107	Resistor	150 k Ω R20
R108	Resistor	150 k Ω R20
R109	Resistor	22 k Ω R20
R110	Resistor	330 Ω ELR20
R111	Resistor	330 Ω ELR20
R112	Resistor	22 Ω ELR20
R113	Resistor	22 Ω R20
R114	Resistor	10 k Ω R25
R115	Resistor	100 Ω R25
R116	Resistor	560 Ω R20
R117	Resistor	10 k Ω R20
R118	Resistor	470 k Ω R20
R119	Resistor	100 Ω R20
R120	Resistor	100 Ω ELR20
R121	Resistor	10 k Ω R20
R122	Resistor	220 Ω R20
R123	Resistor	47 k Ω R20
R124	Resistor	1.5 k Ω ELR20
R125	Resistor	1.5 k Ω R20
R126	Resistor	47 k Ω R25
R127	Resistor	1.5 k Ω ELR20
R128	Resistor	470 Ω R20
R129	Resistor	22 k Ω R20
R130	Resistor	10 k Ω R20
R131	Resistor	330 k Ω ELR20
R132	Resistor	5.6 k Ω R20
R133	Resistor	22 k Ω R20
R134	Resistor	2.2 k Ω ELR20
R136	Resistor	100 Ω R25

[MAIN UNIT]

REF.NO.	DESCRIPTION	PART NO.
R137	Resistor	68 k Ω ELR20
R138	Resistor	8.2 k Ω ELR20
R139	Resistor	10 k Ω R20
R140	Resistor	27 k Ω ELR20
R141	Resistor	8.2 k Ω ELR20
R142	Resistor	8.2 k Ω ELR20
R144	Resistor	10 k Ω ELR20
R145	Resistor	560 k Ω ELR20
R146	Resistor	10 k Ω R20
R147	Resistor	1 k Ω R20
R148	Resistor	1 M Ω ELR20
R149	Resistor	1 M Ω ELR20
R150	Resistor	470 k Ω ELR20
R151	Resistor	470 k Ω R20
R152	Resistor	470 k Ω R20
R153	Resistor	100 Ω R20
R154	Resistor	5.6 k Ω ELR20
R155	Resistor	4.7 k Ω R20
R156	Resistor	220 Ω ELR20
R157	Resistor	100 Ω R25
R158	Resistor	56 Ω R20
R159	Resistor	100 Ω R20
R160	Resistor	100 Ω ELR20
R161	Resistor	2.2 k Ω R20
R162	Resistor	3.3 k Ω R20
R163	Resistor	220 Ω ELR20
R164	Resistor	100 Ω R20
R165	Resistor	220 Ω R20
R166	Resistor	47 Ω ELR20
R167	Resistor	330 Ω R20
R168	Resistor	22 Ω R20
R169	Resistor	330 Ω R20
R170	Resistor	2.2 k Ω R20
R171	Resistor	3.3 k Ω R25
R172	Resistor	220 Ω ELR20
R173	Resistor	100 Ω R25
R174	Resistor	470 k Ω ELR20
R175	Resistor	15 k Ω R20
R176	Thermistor	33D28
R177	Resistor	10 k Ω ELR20
R178	Thermistor	33D28
R179	Resistor	10 k Ω R20
R180	Resistor	6.8 k Ω ELR20
R181	Resistor	100 k Ω ELR20
R182	Resistor	100 k Ω ELR20
R183	Resistor	2.2 k Ω ELR20
R184	Resistor	100 Ω ELR20
R185	Resistor	47 k Ω R20
R186	Resistor	390 k Ω R20
R187	Resistor	22 k Ω ELR20
R188	Resistor	6.8 k Ω R20
R189	Resistor	6.8 k Ω R20
R190	Resistor	3.3 k Ω ELR20
R191	Resistor	3.3 k Ω ELR20
R192	Resistor	100 Ω R25
R193	Resistor	15 k Ω R20
R194	Resistor	2.2 M Ω R20
R195	Resistor	10 k Ω R20
R196	Resistor	47 k Ω R20
R197	Resistor	47 k Ω R20
R198	Resistor	2.2 k Ω ELR20
R199	Resistor	100 Ω R20
R200	Resistor	10 k Ω R20
R201	Resistor	10 k Ω R20
R202	Resistor	10 k Ω ELR20
R203	Resistor	10 k Ω ELR20
R204	Resistor	10 k Ω R20
R205	Resistor	10 k Ω R20
R206	Resistor	10 k Ω ELR20
R207	Resistor	1 k Ω R20
R208	Resistor	0.5 Ω R50X
R209	Resistor	0.5 Ω R50X
R210	Resistor	10 k Ω R20
R211	Resistor	33 k Ω ELR20
R212	Resistor	10 k Ω R20

[MAIN UNIT]

REF.NO.	DESCRIPTION	PART NO.	
R214	Resistor	10 k Ω	R20
R215	Resistor	4.7 Ω	R50X
R216	Resistor	1 k Ω	R25
R217	Resistor	4.7 Ω	R50X
R218	Resistor	1 k Ω	ELR20
R219	Resistor	10 k Ω	ELR20
R220	Resistor	4.7 k Ω	ELR20
R221	Resistor	4.7 k Ω	R20
R222	Resistor	8.2 k Ω	R20
R223	Resistor	1 M Ω	ELR20
R225	Resistor	10 k Ω	R20
R226	Resistor	470 k Ω	ELR20
R227	Resistor	100 Ω	R20
R228	Resistor	100 k Ω	R20
R229	Resistor	100 k Ω	ELR20
R230	Resistor	4.7 k Ω	R20
R231	Resistor	330 Ω	ELR20
R232	Resistor	22 Ω	R20
R233	Resistor	330 Ω	ELR20
R235	Resistor	150 k Ω	R20
R236	Resistor	12 k Ω	ELR20
R237	Resistor	1 k Ω	R20
R238	Resistor	47 k Ω	R25
R239	Resistor	47 k Ω	ELR25
R240	Resistor	470 k Ω	ELR20
R241	Resistor	470 k Ω	ELR20
R242	Resistor	4.7 k Ω	ELR20
C102	Ceramic	0.5 pF	50 V
C103	Ceramic	3 pF	50 V
C105	Ceramic	0.001 μ F	50 V
C106	Ceramic	0.0047 μ F	50 V
C107	Ceramic	0.0047 μ F	50 V
C108	Electrolitic	0.1 μ F	50 V MS7
C110	Ceramic	0.5 pF	50 V
C111	Ceramic	0.001 μ F	50 V
C113	Ceramic	0.001 μ F	50 V
C114	Ceramic	0.5 pF	50 V
C116	Ceramic	3 pF	50 V
C117	Ceramic	0.001 μ F	50 V
C118	Ceramic	0.001 μ F	50 V
C119	Ceramic	0.0047 μ F	50 V
C120	Barrier Layer	0.01 μ F	25 V
C121	Ceramic	0.0047 μ F	50 V
C122	Ceramic	7 pF	50 V
C123	Ceramic	82 pF	50 V
C124	Ceramic	68 pF	50 V
C125	Ceramic	0.0047 μ F	50 V
C126	Barrier Layer	0.1 μ F	16 V
C127	Ceramic	0.0047 μ F	50 V
C129	Electrolitic	10 μ F	16 V SS
C130	Ceramic	0.0047 μ F	50 V
C131	Ceramic	120 pF	50 V
C132	Ceramic	68 pF	50 V
C133	Tantalum	0.1 μ F	35 V DN
C134	Barrier Layer	0.1 μ F	16 V
C135	Ceramic	82 pF	50 V
C136	Ceramic	470 pF	50 V
C137	Mylar	0.001 μ F	50 V
C138	Ceramic	33 pF	50 V
C139	Mylar	0.0015 μ F	50 V
C140	Mylar	0.01 μ F	50 V
C141	Electrolitic	0.47 μ F	50 V SS
C142	Electrolitic	2.2 μ F	50 V SS
C143	Ceramic	0.001 μ F	50 V
C144	Ceramic	0.001 μ F	50 V
C145	Mylar	0.0015 μ F	50 V
C146	Barrier Layer	0.1 μ F	16 V
C147	Electrolitic	10 μ F	16 V SS
C148	Electrolitic	0.22 μ F	50 V MS7
C149	Mylar	0.01 μ F	50 V
C150	Mylar	0.001 μ F	50 V
C151	Mylar	0.01 μ F	50 V

[MAIN UNIT]

REF.NO.	DESCRIPTION	PART NO.	
C152	Mylar	0.01 μ F	50 V
C153	Electrolitic	0.22 μ F	50 V MS7
C154	Electrolitic	0.47 μ F	50 V SS
C155	Barrier Layer	0.01 μ F	25 V
C156	Electrolitic	0.47 μ F	50 V SS
C157	Ceramic	33 pF	50 V
C158	Ceramic	10 pF	50 V CH
C159	Ceramic	27 pF	50 V
C160	Trimmer	72pF CV05C1201	
C161	Ceramic	3 pF	50 V
C162	Ceramic	3 pF	50 V
C163	Ceramic	0.0047 μ F	50 V
C164	Ceramic	1 pF	50 V
C165	Ceramic	0.001 μ F	50 V
C166	Ceramic	0.0047 μ F	50 V
C167	Ceramic	0.001 μ F	50 V
C169	Barrier Layer	0.1 μ F	16 V
C170	Ceramic	22 Ω	50 V
C171	Ceramic	47 pF	50 V
C172	Ceramic	0.001 μ F	50 V
C173	Ceramic	0.001 μ F	50 V
C174	Ceramic	470 pF	50 V
C175	Ceramic	0.001 μ F	50 V
C176	Ceramic	0.001 μ F	50 V
C177	Ceramic	18 pF	50 V
C178	Ceramic	18 pF	50 V
C179	Barrier Layer	0.1 μ F	16 V
C180	Ceramic	0.001 μ F	50 V
C181	Ceramic	470 pF	50 V
C182	Ceramic	0.001 μ F	50 V
C183	Ceramic	22 pF	50 V
C184	Ceramic	33 pF	50 V
C185	Ceramic	22 pF	50 V
C186	Ceramic	22 pF	50 V
C187	Ceramic	0.001 μ F	50 V
C188	Electrolitic	47 μ F	16 V SS
C189	Electrolitic	1 μ F	50 V SS
C190	Ceramic	0.0047 μ F	50 V
C191	Ceramic	100 pF	50 V
C192	Ceramic	220 pF	50 V
C193	Ceramic	39 pF	50 V CH
C194	Trimmer	20 pF CV38D2001	
C195	Ceramic	4 pF	50 V CH
C196	Ceramic	0.0047 μ F	50 V
C197	Ceramic	0.0047 μ F	50 V
C198	Electrolitic	1 μ F	50 V BP
C199	Mylar	0.047 μ F	50 V
C200	Barrier Layer	0.1 μ F	16 V
C201	Electrolitic	100 μ F	10V SS
C202	Ceramic	0.001 μ F	50 V
C204	Barrier Layer	0.1 μ F	16 V
C206	Mylar	0.01 μ F	50 V
C207	Barrier Layer	0.1 μ F	16 V
C208	Electrolitic	470 μ F	10 V SS
C209	Electrolitic	100 μ F	10 V SS
C211	Barrier Layer	0.1 μ F	16 V
C212	Ceramic	0.001 μ F	50 V
C213	Electrolitic	0.1 μ F	50 V MS7
C214	Electrolitic	1000 μ F	16 V SS
C215	Electrolitic	4.7 μ F	25 V SS
C216	Electrolitic	470 μ F	16 V SS
C217	Mylar	0.22 μ F	50 V
C218	Mylar	0.22 μ F	50 V
C219	Mylar	0.15 μ F	50 V
C220	Ceramic	0.0047 μ F	50 V
C221	Ceramic	0.0047 μ F	50 V
C222	Electrolitic	0.47 μ F	50 V SS
C223	Ceramic	0.001 μ F	50 V
C224	Electrolitic	100 μ F	16 V SS
C225	Ceramic	0.0047 μ F	50 V
C226	Electrolitic	100 μ F	10 V SS
C227	Electrolitic	0.47 μ F	50 V SS
C228	Mylar	0.01 μ F	50 V
C229	Electrolitic	0.47 μ F	50 V SS
C230	Barrier Layer	0.1 μ F	16 V

[MAIN UNIT]

REF.NO.	DESCRIPTION	PART NO.
C231	Electrolytic	470 μ F 10 V SS
C232	Electrolytic	0.47 μ F 50 V SS
C233	Electrolytic	1000 μ F 16 V SS
C234	Ceramic	0.0047 μ F 50 V
C235	Ceramic	0.001 μ F 50 V
C237	Condenser Array	470 pF X 4 B5RC0123-32N
C238	Condenser Array	470 pF X 4 B5RC0123-32N
C239	Condenser Array	470 pF X 6 B7ZC0717-32N
C240	Ceramic	0.001 μ F 50 V
C241	Mylar	0.0047 μ F 50 V
C242	Ceramic	470 pF 50 V
C243	Mylar	0.01 μ F 50 V
C244	Barrier Layer	0.1 μ F 16 V
C245	Barrier Layer	0.01 μ F 25 V
C246	Barrier Layer	0.01 μ F 25 V
C247	Electrolytic	0.47 μ F 50 V SS
C248	Ceramic	0.001 μ F 50 V
C249	Ceramic	0.001 μ F 50 V
C250	Tantalum	1 μ F 35 V DN
C251	Mylar	0.0018 μ F 50 V
C252	Electrolytic	0.47 μ F 50 V SS
C253	Ceramic	0.001 μ F 50 V
C254	Ceramic	0.001 μ F 50 V
C255	Ceramic	470 pF 50 V
C256	Electrolytic	0.47 μ F 50 V SS
C257	Mylar	0.01 μ F
RL101	RELAY	FBR221D009
RL102	RELAY	FBR221D009
J101	Connector	B05B-EH-S
J102	Connector	B10B-EH-S
J103	Connector	B04B-EH-S
J104	Connector	B04B-EH-S
J105	Connector	B11B-EH-S
J106	Connector	B10B-EH-S
J107	Connector	TLB-P10H-B1
J108	Connector	5494-12C
J109	Connector	TLB-P07H-B1
J110	Connector	TLB-P04H-B1
J111	Connector	IMSA-9201B-2-04-T
J112	Connector	B03B-EH-S
J113	Connector	TMP-J01X-A2
P101	Connector	IMSA-9201-HT
W101	Jumper	IPS-1041-4
W102	Jumper	IPS-1041-2
W103	Jumper	IPS-1041-4
W104	Jumper	IPS-1041-4
W105	Jumper	IPS-1041-4
W106	Jumper	IPS-1041-2
W107	Jumper	IPS-1041-2
W108	Jumper	IPS-1041-2
W109	Jumper	IPS-1041-2
W110	Jumper	IPS-1041-4
W111	Jumper	IPS-1041-4
W112	Jumper	IPS-1041-4
W113	Jumper	IPS-1041-4
W114	Jumper	IPS-1041-4
W115	Jumper	IPS-1041-4
W116	Jumper	IPS-1041-4
W117	Jumper	IPS-1041-2
W118	Jumper	IPS-1041-4
W119	Jumper	IPS-1041-2
W120	Jumper	IPS-1041-2
W121	Jumper	IPS-1041-2

[MAIN UNIT]

REF.NO.	DESCRIPTION	PART NO.
W122	Jumper	IPS-1041-2
W123	Jumper	IPS-1041-4
W124	Jumper	IPS-1041-2
W125	Jumper	IPS-1041-2
W126	Jumper	IPS-1041-4
W127	Jumper	IPS-1041-2
W128	Jumper	IPS-1041-4
W129	Jumper	IPS-1041-4
W130	Jumper	IPS-1041-2
W131	Jumper	IPS-1041-4
W132	Jumper	IPS-1041-4
W133	Jumper	IPS-1041-4
W134	Jumper	IPS-1041-4
W135	Jumper	IPS-1041-2
W136	Jumper	IPS-1041-2
W137	Jumper	IPS-1041-2
W138	Jumper	IPS-1041-2
W139	Jumper	IPS-1041-2
W140	Jumper	IPS-1041-4
W141	Jumper	IPS-1041-4
W142	Jumper	IPS-1041-2
W143	Jumper	IPS-1041-2
W144	Jumper	IPS-1041-2
W145	Jumper	IPS-1041-4
W146	Jumper	IPS-1041-4
W147	Jumper	IPS-1041-4
W148	Jumper	IPS-1041-4
W149	Jumper	IPS-1041-4
W150	Jumper	IPS-1041-4
W151	Jumper	IPS-1041-2
W152	Jumper	IPS-1041-2
W153	Jumper	IPS-1041-2
W154	Jumper	IPS-1041-4
W155	Jumper	IPS-1041-4
W156	Jumper	IPS-1041-2
W157	Jumper	IPS-1041-2
W158	Jumper	IPS-1041-2
W159	Jumper	IPS-1041-2
W160	Jumper	IPS-1041-4
W161	Jumper	IPS-1041-4
W162	Jumper	IPS-1041-2
W163	Jumper	IPS-1041-2
W164	Jumper	IPS-1041-4
W165	Jumper	IPS-1041-4
W166	Jumper	IPS-1041-4
W168	Jumper	IPS-1041-2
W169	Jumper	IPS-1041-2
W170	Jumper	IPS-1041-2
W171	Jumper	IPS-1041-2
W172	Jumper	IPS-1041-2
W173	Jumper	IPS-1041-2
W174	Wire	23/06/100/C22/C22 (J107-2/J109-1)
W175	Wire	23/07/095/C22/C22 (J107-1/J109-2)
W176	Wire	23/09/100/C22/C22 (J107-3/J109-7)
W177	Wire	23/02/080/C22/C22 (J107-5/J109-3)
W178	Wire	23/05/100/C22/C22 (J107-6/J109-6)
W179	Wire	23/04/080/C22/C22 (J107-8/J109-5)
W180	Wire	23/03/080/C22/C22 (J107-9/J109-4)
W191	Wire	23/09/080/C22/C21 (J107-4)
W192	Wire	23/05/110/C22/C21 (J107-7)
W193	Wire	23/03/110/C22/C21 (J107-10)
W194	Wire	23/06/095/C21/C21
W195	Wire	23/06/130/C22/C21 (J110-1)
W196	Wire	23/07/100/C22/C21 (J110-2)
W197	Wire	23/01/070/C22/C21 (J110-4)
W198	Wire	23/04/120/C22/C21 (J110-3)
EP101	P.C.Board	B-1606D (MAIN UNIT)

[PLL-YGR] UNIT

REF.NO.	DESCRIPTION	PART NO.
IC301	IC	μ PD4053BC
IC302	IC	PLL2001
IC303	IC	μ PD4555BC
IC304	IC	NJM4558D
IC305	IC	NJM4558D
IC306	IC	μ PC358C
Q301	Transistor	2SA1345
Q302	FET	2SJ105Y
Q303	Transistor	2SA1015Y
Q304	Transistor	2SC3399
Q305	FET	2SJ105Y
Q306	Transistor	2SC3399
Q307	Transistor	2SC2458GR
Q308	FET	2SK241GR
Q309	Transistor	2SC2026
Q310	Transistor	2SC3399
Q311	Transistor	2SC2458GR
Q312	Transistor	2SA1048GR
Q313	Transistor	2SC2458GR
Q314	Transistor	2SB561C
Q315	Transistor	2SC2026
Q316	Transistor	2SC2026
Q317	Transistor	2SC2026
Q318	Transistor	2SC945P
Q319	Transistor	2SC2026
Q320	Transistor	2SB909M
Q321	Transistor	2SC945P
Q322	Transistor	2SC3399
Q323	Transistor	2SC3399
Q324	Transistor	2SC3399
Q325	Transistor	2SC3399
Q326	Transistor	2SC3399
Q327	Transistor	2SC3399
Q328	Transistor	2SA1345
D301	Diode	1SS133
D302	Diode	1SS133
D303	Diode	1SS133
D304	Diode	1SS265
D305	Zener	RD4.7EB3
D306	Diode	1S953
D307	Diode	1SS133
D308	Diode	1SS99
D315	Diode	1SS99
D316	Diode	1SS99
D317	Varicap	1T25
D318	Varicap	1T25
D319	Diode	1SS133
D320	Diode	1SS133
D321	Diode	1SS133
D323	Diode	1SS133
D324	Diode	1SS99
D325	Diode	1SS133
FI301	Filter	EXC-EMT103DC
L301	Coil	LAL03NA2R2
L302	Coil	LB174
L303	Coil	LAL03NA4R7
L304	Coil	LAL03NA4R7
L305	Coil	LAL03NA4R7
L306	Coil	LA237
L307	Coil	LR116
L308	Coil	LA237
L309	Coil	LA237
L310	Coil	LA237
L311	Coil	LA237
L312	Coil	LAL03NA4R7

[PLL-YGR] UNIT

REF.NO.	DESCRIPTION	PART NO.
R302	Resistor	100 Ω ELR20
R303	Resistor	1 M Ω ELR20
R304	Resistor	1 M Ω ELR20
R305	Resistor	100 k Ω ELR20
R306	Resistor	10 k Ω ELR20
R307	Resistor	1 M Ω ELR20
R308	Resistor	1 M Ω ELR20
R309	Resistor	100 k Ω ELR20
R310	Resistor	10 k Ω ELR20
R311	Resistor	5.6 k Ω ELR20
R312	Resistor	100 k Ω R20
R313	Resistor	22 k Ω ELR20
R314	Resistor	1.2 k Ω ELR20
R315	Resistor	100 Ω ELR20
R317	Resistor	100 Ω R20
R318	Resistor	100 k Ω ELR20
R319	Resistor	470 k Ω ELR20
R320	Resistor	100 Ω R20
R321	Resistor	5.6 k Ω ELR20
R322	Resistor	4.7 k Ω ELR20
R323	Resistor	470 Ω ELR20
R324	Resistor	390 Ω ELR20
R325	Resistor	8.2 k Ω R20
R326	Resistor	1.8 k Ω ELR20
R327	Resistor	47 k Ω R20
R328	Resistor	47 k Ω R20
R329	Resistor	12 k Ω ELR20
R330	Resistor	47 k Ω ELR20
R331	Resistor	47 k Ω R20
R332	Resistor	22 k Ω ELR20
R333	Resistor	56 k Ω R20
R334	Resistor	10 k Ω R20
R335	Resistor	100 Ω ELR20
R336	Resistor	3.3 k Ω R20
R337	Resistor	56 Ω R20
R338	Resistor	560 Ω R20
R339	Resistor	56 Ω ELR20
R340	Resistor	2.2 k Ω ELR20
R341	Resistor	220 Ω ELR20
R342	Resistor	100 Ω R20
R343	Resistor	3.3 k Ω ELR20
R344	Resistor	150 Ω ELR20
R345	Resistor	33 Ω R20
R346	Resistor	150 Ω ELR20
R347	Resistor	2.2 k Ω R20
R348	Resistor	220 Ω ELR20
R349	Resistor	100 Ω ELR20
R350	Resistor	3.3 k Ω R20
R351	Resistor	2.2 k Ω ELR20
R352	Resistor	220 Ω ELR20
R353	Resistor	3.3 k Ω ELR20
R354	Resistor	2.2 k Ω ELR20
R355	Resistor	220 Ω R20
R356	Resistor	100 Ω ELR20
R357	Resistor	10 k Ω ELR20
R358	Resistor	12 k Ω ELR20
R359	Resistor	5.6 k Ω ELR20
R360	Resistor	27 k Ω ELR20
R361	Resistor	10 k Ω R20
R362	Resistor	100 k Ω ELR20
R363	Resistor	47 k Ω R20
R364	Resistor	15 k Ω ELR20
R365	Resistor	10 k Ω R20
R366	Resistor	10 k Ω R20
R367	Resistor	2.2 k Ω R20
R368	Resistor	2.2 k Ω R20
R369	Trimmer	100 k Ω RH0651C15J1UA
R370	Trimmer	100 k Ω RH0651C15J1UA
R371	Trimmer	4.7 k Ω RH0651CS3J2KA
R372	Trimmer	4.7 k Ω RH0651CS3J2KA
R375	Resistor	4.7 k Ω ELR20
R376	Resistor	1.2 k Ω ELR20
R377	Trimmer	10 k Ω RH0651C14J2WA
R378	Trimmer	220 k Ω RH0651CJ5J01A
R379	Resistor	100 Ω ELR20

[PLL-YGR] UNIT

REF.NO.	DESCRIPTION	PART NO.		
R380	Resistor	470 kΩ	ELR20	
R381	Resistor	4.7 kΩ	ELR20	
R382	Trimmer	4.7 kΩ	RH0651CS3J2KA	
R383	Resistor	270 kΩ	ELR20	
R384	Resistor	120 kΩ	ELR20	
R385	Resistor	39 kΩ	ELR20	
R386	Resistor	82 kΩ	ELR20	
R388	Resistor	39 kΩ	ELR20	
R389	Trimmer	10 kΩ	RH0651C14J2WA	
R390	Resistor	100 Ω	R20	
R391	Resistor	1 kΩ	ELR20	
R392	Resistor	10 kΩ	ELR20	
R393	Resistor	10 kΩ	R20	
R394	Resistor	100 kΩ	ELR20	
R395	Resistor	10 kΩ	ELR20	
R396	Resistor	10 kΩ	ELR20	
R397	Resistor	100 Ω	ELR20	
R398	Resistor	22 kΩ	R20	
R399	Resistor	390 kΩ	R20	
R400	Resistor	100 kΩ	ELR20	
R401	Resistor	47 Ω	ELR20	
R402	Resistor	1 kΩ	ELR20	
R403	Resistor	1 kΩ	R20	
R405	Resistor	47 kΩ	ELR20	
R407	Resistor	47 kΩ	ELR20	
R408	Resistor	47 kΩ	R20	
R409	Resistor	1 kΩ	ELR20	
R411	Resistor	47 kΩ	ELR20	
R412	Resistor	1 MΩ	R20	
R413	Resistor	47 kΩ	ELR20	
R414	Resistor	1 MΩ	ELR20	
R415	Resistor	47 kΩ	ELR20	
R416	Resistor	1 MΩ	R20	
R417	Resistor	47 kΩ	R20	
R418	Resistor	470 kΩ	R20	
R419	Resistor	1 kΩ	ELR20	
R420	Resistor	47 kΩ	ELR20	
R421	Resistor	47 kΩ	ELR20	
R422	Resistor	10 kΩ	ELR20	
R423	Resistor	10 kΩ	ELR20	
R424	Resistor	100 Ω	R50X	
R425	Resistor	10 kΩ	R20	
R426	Resistor	10 kΩ	R20	
C301	Electrolytic	0.47 μF	50 V	MS7
C302	Barrier Layer	0.01 μF		
C303	Electrolytic	0.47 μF	50 V	MS7
C304	Barrier Layer	0.01 μF	25 V	
C305	Electrolytic	0.47 μF	50 V	MS7
C306	Electrolytic	0.47 μF	50 V	MS7
C307	Barrier Layer	0.01 μF	25 V	
C308	Electrolytic	4.7 μF	25 V	MS7
C309	Electrolytic	3.3 μF	50 V	SS
C310	Electrolytic	0.47 μF	50 V	SS
C311	Electrolytic	47 μF	25 V	SS
C312	Ceramic	470 pF	50 V	
C313	Ceramic	56 pF	50 V	
C314	Electrolytic	10 μF	16 V	MS7
C315	Ceramic	0.001 μF	50 V	
C317	Ceramic	0.001 μF	50 V	
C318	Electrolytic	0.47 μF	50 V	MS7
C319	Electrolytic	0.47 μF	50 V	MS7
C320	Ceramic	47 pF	50 V	
C321	Ceramic	4 pF	50 V	
C322	Ceramic	18 pF	50 V	
C323	Ceramic	3 pF	50 V	UJ
C324	Ceramic	0.001 μF	50 V	
C325	Ceramic	0.001 μF	50 V	
C326	Ceramic	3 pF	50 V	UJ
C327	Ceramic	1 pF	50 V	
C328	Ceramic	470 pF	50 V	
C329	Ceramic	0.001 μF	50 V	
C330	Ceramic	0.001 μF	50 V	

[PLL-YGR] UNIT

REF.NO.	DESCRIPTION	PART NO.		
C331	Ceramic	10 pF	50 V	
C332	Ceramic	22 pF	50 V	
C333	Ceramic	0.001 μF	50 V	
C334	Ceramic	0.001 μF	50 V	
C335	Ceramic	10 pF	50 V	
C336	Ceramic	0.001 μF	50 V	
C337	Ceramic	470 pF	50 V	
C338	Barrier Layer	0.01 μF	25 V	
C339	Ceramic	0.001 μF	50 V	
C340	Ceramic	0.001 μF	50 V	
C341	Ceramic	470 pF	50 V	
C342	Barrier Layer	0.01 μF	25 V	
C343	Ceramic	18 pF	50 V	
C344	Ceramic	18 pF	50 V	
C345	Electrolytic	47 μF	16 V	SS
C346	Ceramic	0.001 μF	50 V	
C347	Electrolytic	3.3 μF	50 V	SS
C348	Ceramic	470 pF	50 V	
C349	Ceramic	0.001 μF	50 V	
C350	Ceramic	470 pF	50 V	
C351	Ceramic	0.001 μF	50 V	
C352	Ceramic	10 pF	50 V	
C355	Ceramic	470 pF	50 V	
C356	Barrier Layer	0.01 μF	25 V	
C357	Ceramic	0.0047 μF	50 V	
C358	Ceramic	220 pF	50 V	
C359	Ceramic	10 pF	50 V	
C360	Ceramic	10 pF	50 V	
C361	Electrolytic	47 μF	25 V	SS
C363	Barrier Layer	0.01 μF	25 V	
C364	Ceramic	0.001 μF	50 V	
C365	Barrier Layer	0.01 μF	25 V	
C366	Ceramic	470 pF	50 V	
C367	Ceramic	0.001 μF	50 V	
C368	Ceramic	0.001 μF	50 V	
C369	Barrier Layer	0.01 μF	25 V	
C370	Mylar	0.01 μF	50 V	
C371	Electrolytic	10 μF	16 V	MS7
C372	Electrolytic	0.1 μF	50 V	MS7
C373	Barrier Layer	0.01 μF	25 V	
C374	Electrolytic	2.2 μF	50 V	MS7
C375	Electrolytic	4.7 μF	25 V	SS
C376	Mylar	0.0022 μF	50 V	
C377	Electrolytic	0.47 μF	50 V	MS7
C378	Mylar	0.001 μF	50 V	
C379	Mylar	0.01 μF	25 V	
C380	Ceramic	120 pF	50 V	
C382	Electrolytic	4.7 μF	25 V	MS7
C383	Tantalum	1 μF	35 V	DN
C384	Mylar	0.033 μF	50 V	
C385	Electrolytic	10 μF	16 V	MS7
C386	Electrolytic	1 μF	50 V	SS
C387	Tantalum	1 μF	35 V	DN
C388	Barrier Layer	0.01 μF	25 V	
C389	Tantalum	10 μF	16 V	DN
C390	Tantalum	0.1 μF	35 V	DN
C394	Condenser Array	470pF X 4	B5RC0123-32N	
C395	Condenser Array	470pF X 6	B7ZC0717-32N	
C399	Electrolytic	0.47 μF	50 V	MS7
C400	Ceramic	0.001 μF	50 V	
C401	Ceramic	0.001 μF	50 V	
C402	Ceramic	0.001 μF	50 V	
C403	Ceramic	0.001 μF	50 V	
C404	Ceramic	0.001 μF	50 V	
C405	Ceramic	0.001 μF	50 V	
C406	Ceramic	0.001 μF	50 V	
C407	Ceramic	0.001 μF	50 V	
C408	Ceramic	0.001 μF	50 V	
C409	Ceramic	0.001 μF	50 V	
C413	Ceramic	0.001 μF	50 V	
C414	Ceramic	0.001 μF	50 V	
C415	Ceramic	0.001 μF	50 V	
C416	Ceramic	0.001 μF	50 V	
C417	Barrier Layer	0.1 μF	16 V	
C418	Ceramic	0.001 μF	50 V	

[PLL-YGR] UNIT

REF.NO.	DESCRIPTION	PART NO.
C419	Ceramic	0.0047 μ F 50 V
C420	Ceramic	0.001 μ F 50 V
C422	Ceramic	0.0047 μ F 50 V
C423	Ceramic	0.001 μ F 50 V
C424	Barrier Layer	0.047 μ F 16 V
C425	Ceramic	0.001 μ F 50 V
C426	Electrolitic	4.7 μ F 16 V MS5
C427	Ceramic	0.001 μ F 50 V
C428	Ceramic	0.001 μ F 50 V
C429	Ceramic	0.001 μ F 50 V
C430	Ceramic	0.001 μ F 50 V
C431	Ceramic	0.001 μ F 50 V
C432	Ceramic	0.001 μ F 50 V
C433	Ceramic	0.001 μ F 50 V
C435	Tantalum	0.1 μ F 35 V DN
C436	Electrolitic	0.1 μ F 50 V MS7
C437	Electrolitic	4.7 μ F 25 V MS7
C438	Ceramic	0.001 μ F 50 V
J301	Connector	B08B-EH-S
J302	Connector	B05B-EH-S
J303	Connector	5494-12C
J304	Connector	B08B-EH-S
J305	Connector	B03B-EH-S
J306	Connector	B04B-EH-S
J307	Connector	B03B-EH-S
J308	Connector	TMP-J01X-A2
J309	Connector	TLB-P03H-B1
P301	Connector	EHR-03
P302	Connector	EHR-03
W302	Coaxial cable	51/99/220/C22A/B06 A (J309-3/P301-2)
W303	Coaxial cable	08 A A (J309-2/P301-3)
W304	12 wires Flat cable	2468 AWG 26 VW-1 E4317
W305	Wire	23/09/025/B06/B06 (P302-1/P302-3)
EP301	P.C.Board	B-1607D (PLL-YGR UNIT)

[FILTER] UNIT

REF.NO.	DESCRIPTION	PART NO.
C805	Ceramic	0.001 μ F 50 V
C806	Ceramic	470 pF 50 V
C807	Ceramic	39 pF 500 V
C808	Ceramic	0.001 μ F 500 V
C809	Ceramic	22 pF 500 V
C810	Ceramic	6 pF 500 V
C811	Ceramic	39 pF 500 V
C812	Ceramic	6 pF 500 V
C813	Ceramic	33 pF 500 V
C814	Ceramic	8 pF 500 V
C815	Ceramic	15 pF 500 V
C816	Ceramic	20 pF 500 V
C817	Ceramic	0.001 μ F 500 V
C818	Ceramic	470 pF 500 V
C819	Ceramic	470 pF 500 V
C820	Ceramic	0.001 μ F 500 V
C821	Ceramic	470 pF 500 V
C822	Ceramic	470 pF 500 V
C823	Ceramic	22 pF 500 V
C824	Ceramic	220 pF 50 V
C825	Ceramic	0.001 μ F 50 V
C826	Ceramic	0.001 μ F 50 V
C827	Metalliz	ECQ-U2A823MN 250 V
J801	Connector	TLB-P03H-B1
J802	Connector	TMP-J01X-A2
P801	Connector	TMP-P01X-A1
P802	Connector	EHR-04
P803	Pins	RT-01T-1.3B
P804	Pins	RT-01T-1.3B
W801	Wire	23/00/170/C22/B06 (J801-3/P802-1)
W802	Wire	23/01/170/C22/B06 (J801-2/P802-3)
W803	Wire	23/06/170/C22/B06 (J801-1/P802-2)
W804	Coaxial with connector	62/99/320/W13D/C31 (P801/J113)
W805	Coaxial with connector	08 D
EP801	P.C.Board	B-1648B (FILTER UNIT)
EP802	Bead coare	FSOH82RL (W801-3)

[FILTER] UNIT

REF.NO.	DESCRIPTION	PART NO.
D801	Diode	1SS99
D802	Diode	1SS99
D803	Diode	MI407
D804	Diode	MI308
D805	Diode	MI308
L801	Coil	LW-19
L802	Coil	LA-235
L803	Coil	LA-234
L804	Coil	LA-262
L805	Coil	LA-252
L806	Coil	LA-252
R801	Resistor	100 Ω R20
R802	Resistor	100 Ω R20
R803	Resistor	10 k Ω R20
C801	Ceramic	0.001 μ F 50 V
C802	Ceramic	0.0047 μ F 50 V
C803	Ceramic	470 pF 50 V
C804	Barrier Layer	0.1 μ F 16 V

[PA] UNIT

REF.NO.	DESCRIPTION	PART NO.
IC701	IC	SC-1046
Q701	Transistor	2SC3147
L701	Coil	LW-31B
L702	Coil	LW-34
R701	Resistor	47 Ω CRH100
C701	Ceramic	470 pF 50 V
C702	Ceramic	0.001 μ F 50 V
C703	Electrolitic	10 μ F 50 V SS
C704	Electrolitic	10 μ F 50 V SS
C705	Ceramic	0.001 μ F 50 V
C706	Ceramic	470 pF 50 V
C707	Ceramic	18 pF GRM42-6
C708	Ceramic	27 pF GRM42-6
C709	Ceramic	47 pF GRM42-6
C710	Mica	220 pF UC342H

[PA] UNIT

REF.NO.	DESCRIPTION	PART NO.
C711	Mica	220 pF UC342H
C712	Mica	220 pF UC342H
C713	Mica	120 pF UC342H
C714	Mica	220 pF UC342H
C715	Barrier Layer	0.1 μ F 16 V
C716	Ceramic	0.001 μ F 50 V
C717	Ceramic	220 pF 50 V
C718	Electrolytic	100 μ F 16 V SS
C719	Mica	39 pF UC232H
C720	Mica	500 pF UC552H
C721	Ceramic	10 pF GRM42-6
C722	Ceramic	0.001 μ F 50 V
C723	Electrolytic	10 μ F 16 V SS
C724	Electrolytic	100 μ F 16V SS
C725	Ceramic	0.001 μ F 50 V
J701	Connector	TLB-P03H-B1
P701	Connector	TMP-P01X-A1
P702	Connector	TMP-P01X-A1
P703	Connector	EHR-03
W701	Wire	23/00/130/C22/B06 (J701-3/P703-3)
W703	Wire	23/06/130/C22/B06 (J701-1/P703-1)
W704	Coaxial with	62/99/150/W13D/C31 (P701/J308)
W705	connector	08 D
W706	Coaxial with	62/99/280/W13D/C31 (P702/J802)
W707	connector	08 D
W708	Wire	12/02/170/W06/W03
W709	Wire	12/00/170/W03/W03
EP701	Bead core	DL2-OP2.6-3-1.2H (IC701)
EP702	Bead core	DL2-OP2.6-3-1.2H (IC701)
EP703	Bead core	DL2-OP2.6-3-1.2H (IC701)
EP704	Bead core	FSOH082RL (W709)
EP705	Bead core	FSOH082RL (W708)
EP706	P.C.Board	B-1609C (PA UNIT)
EP707	Bead core	FSOH082RL

[SW-B] UNIT

REF.NO.	DESCRIPTION	PART NO.
Q901	Transistor	2SC945P
D901	Diode	1SS53
D902	Diode	15CD11
R901	Resistor	15 Ω CRH200
R902	Resistor	15 Ω CRH200
R903	Resistor	100 k Ω R25
R904	Resistor	10 k Ω ELR20
C901	Ceramic	0.001 μ F 50 V
C902	Ceramic	0.0047 μ F 50 V
C903	Ceramic	0.001 μ F 50 V
C904	Ceramic	0.0047 μ F 50 V
RL901	Relay	MZ-12HG

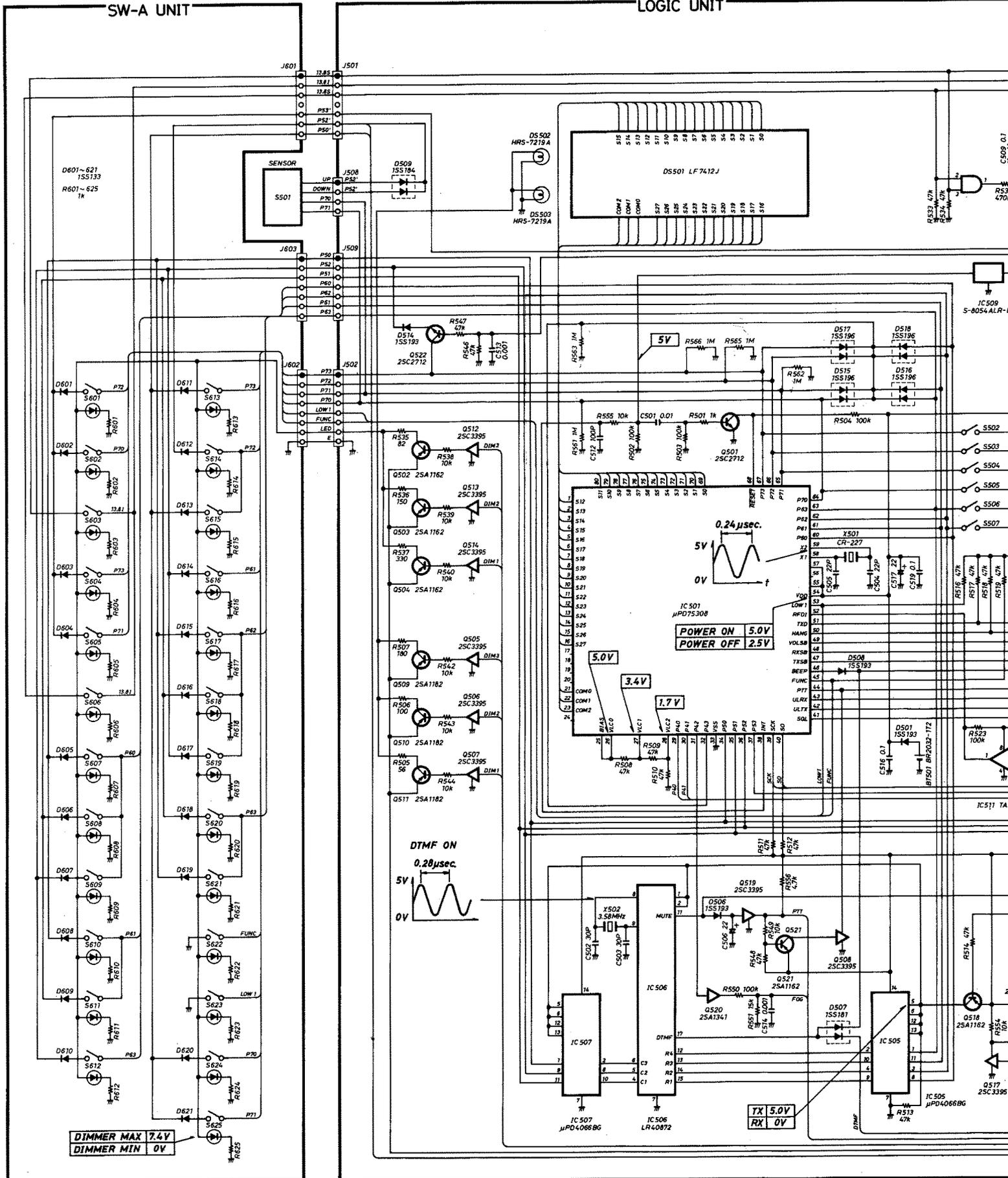
[SW-B] UNIT

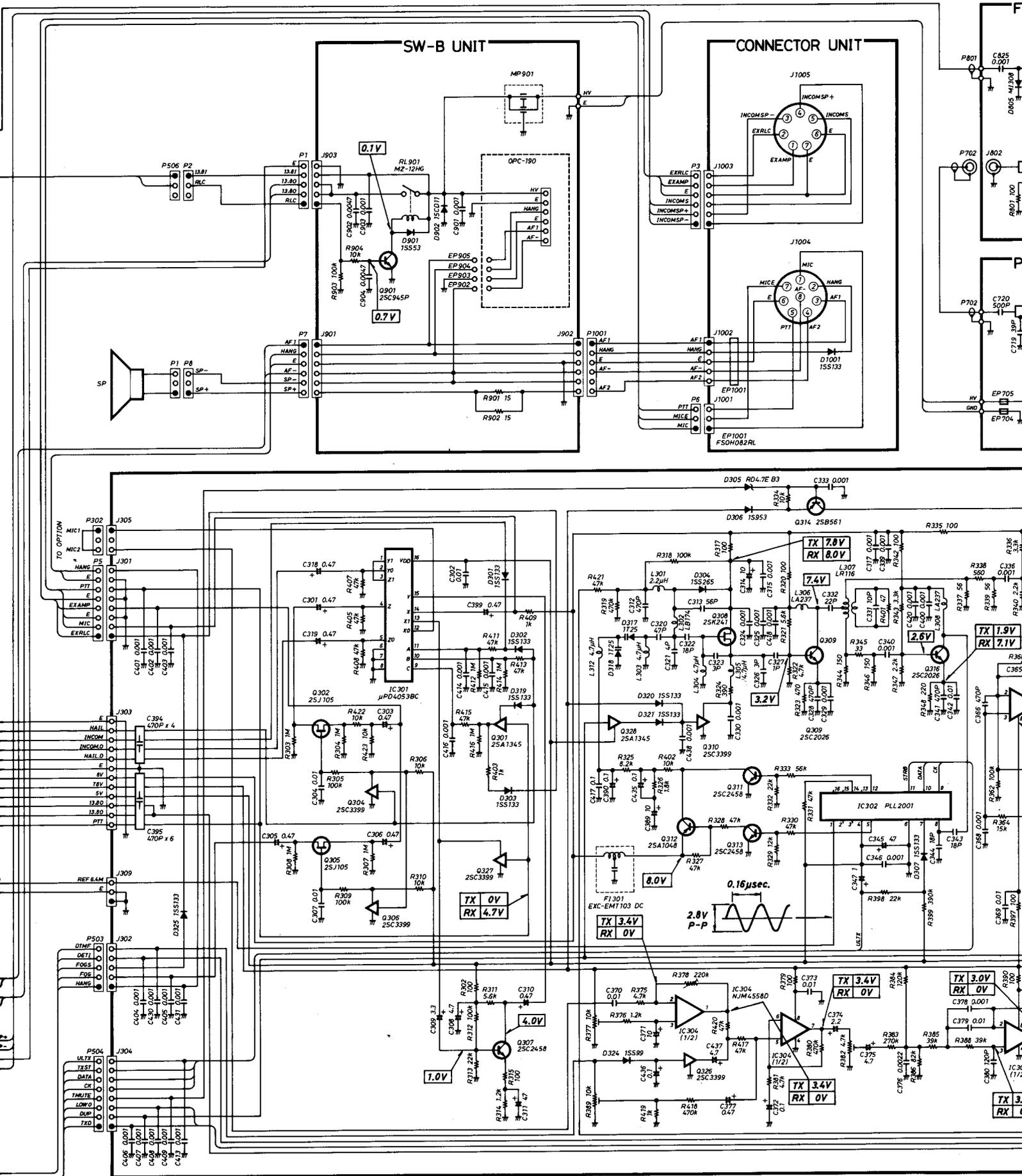
REF.NO.	DESCRIPTION	PART NO.
J901	Connector	B06B-EH-S
J902	Connector	B06B-EH-S
J903	Connector	B05B-EH-S
EP901	P.C.Board	B-1610A
EP902	Pins	RT-01T-1.3B
EP903	Pins	RT-01T-1.3B
EP904	Pins	RT-01T-1.3B
EP905	Pins	RT-01T-1.3B
MP901	Feed through	THE AS300

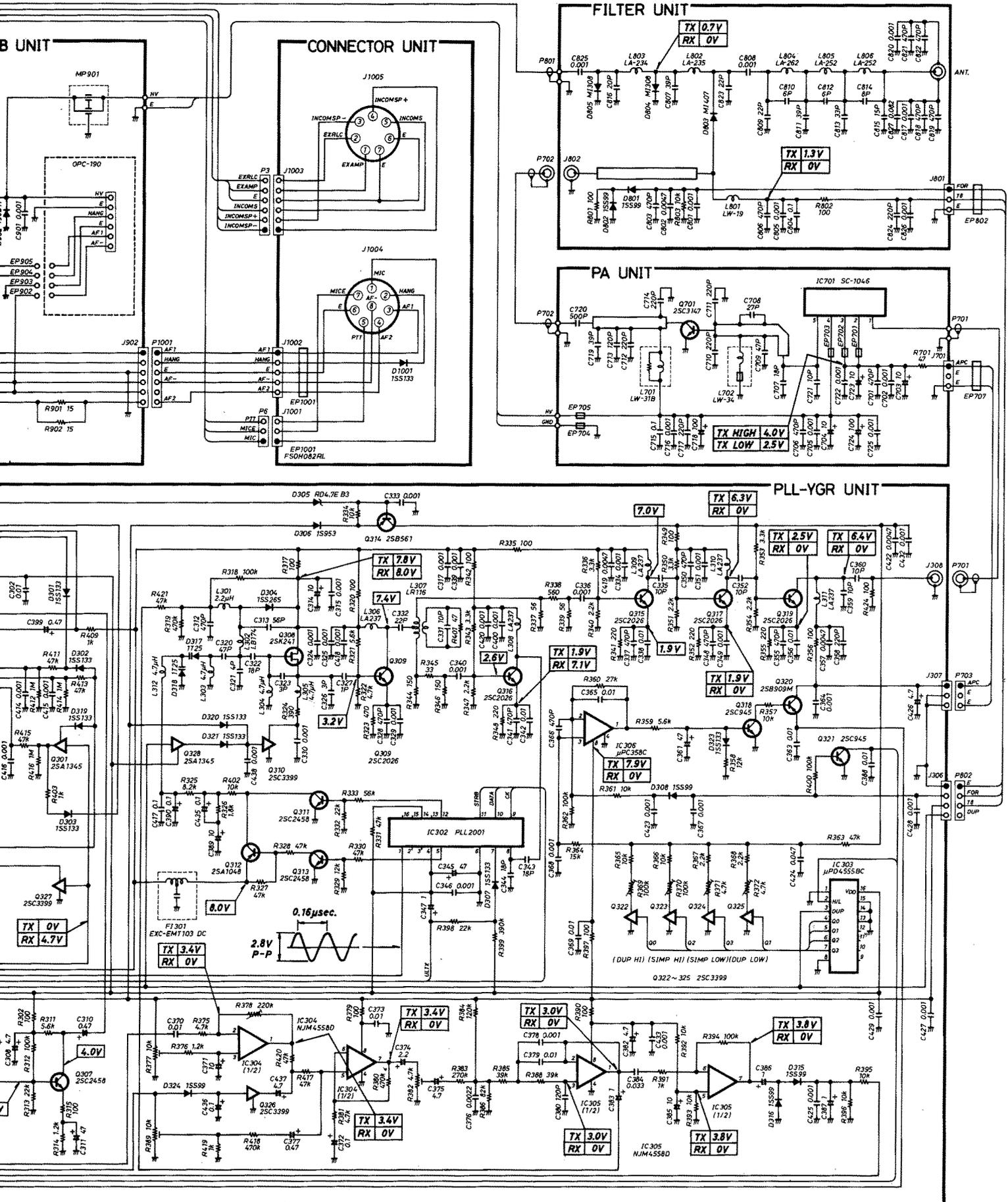
[CONNECTOR] UNIT

REF.NO.	DESCRIPTION	PART NO.
D1001	Diode	1SS133
J1001	Connector	B03B-EH-S
J1002	Connector	TLB-P05H-B1
J1003	Connector	B06B-EH-S
J1004	Connector	14RS-8H-MI-AU
J1005	Connector	14RS-7H-MI-AU
P1001	Connector	EHR-06
W1001	Wire	23/06/130/C22/B06 (J1002-1/P1001-1)
W1002	Wire	23/01/130/C22/B06 (J1002-2/P1001-2)
W1003	Wire	23/00/130/C22/B06 (J1002-3/P1001-3)
W1004	Wire	23/09/130/C22/B06 (J1002-4/P1001-4)
W1005	Wire	23/04/130/C22/B06 (J1002-5/P1001-6)
EP1001	Bead core	FSOH082RL
EP1002	P.C.Board	B-1650A (CONNECTOR-A UNIT)
EP1003	P.C.Board	B-1711B (CONNECTOR-B UNIT)

SECTION 9 VOLTAGE DIAGRAM







Icom Inc.

6-9-16, Kamihigashi, Hirano-ku, Osaka 547, Japan
Phone : (06) 793-5301
Fax : (06) 793-0013
Telex : 0527822 ICOMTR J

Icom America Inc.

<Corporate Headquarters>
2380 116th Avenue N.E., Bellevue, WA 98004, U.S.A.
Phone : (206) 454-8155
Fax : (206) 454-1509
Telex : 152210 ICOM AMER BVUE

<Customer Service>
Phone : (206) 454-7619

<Regional Customer Service Centers>
3150 Premier Drive, Suite 126, Irving, TX 75063, U.S.A.
Phone : (214) 550-7525
Fax : (214) 550-7423

1777 Phoenix Parkway, Suite 201, Atlanta, GA 30349, U.S.A.
Phone : (404) 991-6166
Fax : (404) 991-6327

Icom Canada

A Division of Icom America Inc.
3071 #5 Road, Unit 9, Richmond, B.C., V6X 2T4, Canada
Phone : (604) 273-7400
Fax : (604) 273-1900

Icom (Europe) GmbH

Communication Equipment
Himmelgeister Str. 100, 4000 Düsseldorf 1, W. Germany
Phone : 0211 346047
Fax : 0211 333639
Telex : 8588082 ICOM D

Icom (Australia) Pty. Ltd.

Incorporated In Victoria
7 Duke Street, Windsor, Victoria, 3181, Australia
Phone : 03 529 7582, 03 529 8765
Fax : 03 529 8485
Telex : AA 35521 ICOM AS

Icom (UK) Ltd.

Unit 9, Sea St., Herne Bay, Kent, U.K.
Phone : 0227 363859
Fax : 0227 360155
Telex : 965179 ICOM G

Icom France S.a.

120 Route de Revel, BP4063, 31029 Toulouse Cedex, France
Phone : 61. 20. 31. 49
Fax : 61. 34. 05. 91
Telex : 521515 ICOM FRA

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ManualsPlus.com

Icom Inc.

6-9-16, Kamihigashi, Hirano-ku, Osaka 547, Japan

A-5007S

Printed in Japan

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