SERVICE MANUAL

ICOM275A/E/H

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SCOPE OF THE SERVICE MANUAL

This service manual covers all service information related to the theoretical, physical, mechanical and electrical characteristics of the **IC-275A/E/H** 144MHz ALL MODE TRANSCEIVER.

ASSISTANCE

If you require assistance or further information regarding the operation, capability and servicing of the **IC-275A/E/H**, contact your nearest authorized ICOM Dealer or ICOM Service Center. Addresses are provided on the inside back cover for your convenience.

Eight separate versions of the **IC-275A/E/H** have been designed. This service manual covers every version. When using the manual each model can be referred to by the following assigned version numbers:

IC-275A/E Model

Version Number	Area
#06E	EUROPE
#08A	U.S.A.
#10A	AUSTRALIA
#12E	SWEDEN

IC-275H Model

Version Number	Area
#02H	EUROPE
#03H	U.S.A.
#04H	AUSTRALIA
#05H	SWEDEN

ORDERING REPLACEMENT PARTS

For faster, more efficient service include the following points when ordering parts or requesting information from your ICOM Service Center.

1. Equipment model and serial number
2. Schematic part indentifier or service manual page number
3. Unit name and printed circuit board number (e.g., PA UNIT/B1380B)
4. Component part number and name (e.g., 2SB562 Transistor)
5. Quantity required (e.g., 10pcs)

TABLE OF CONTENTS

SECTION 1 SPECIFICATIONS ..... 1 — 1 ~ 2

SECTION 2 OUTSIDE AND INSIDE VIEWS ..... 2 — 1 ~ 5
- 2 - 1 OUTSIDE VIEWS ..... 2 — 1
- 2 - 2 INSIDE VIEWS ..... 2 — 4

SECTION 3 BLOCK DIAGRAMS ..... 3 — 1

SECTION 4 CIRCUIT DESCRIPTION ..... 4 — 1 ~ 13
- 4 - 1 RECEIVER CIRCUITS ..... 4 — 1
- 4 - 2 TRANSMITTER CIRCUITS ..... 4 — 3
- 4 - 3 STANDBY CONTROL CIRCUIT ..... 4 — 5
- 4 - 4 PLL CIRCUITS ..... 4 — 6
- 4 - 5 LOGIC CIRCUITS ..... 4 — 9
- 4 - 6 SWITCHING REGULATOR CIRCUIT (IC-275A/E ONLY) ..... 4 — 13

SECTION 5 MECHANICAL PARTS AND DISASSEMBLY ..... 5 — 1 ~ 7
- 5 - 1 FRAME DISASSEMBLY ..... 5 — 1
- 5 - 2 FRONT PANEL DISASSEMBLY ..... 5 — 2
- 5 - 3 REAR PANEL DISASSEMBLY ..... 5 — 3
- 5 - 4 FRONT, LOGIC AND PLL UNITS CONNECTOR ASSEMBLY ..... 5 — 4
- 5 - 5 FRONT, MAIN AND RF YGR UNITS CONNECTOR ASSEMBLY ..... 5 — 5
- 5 - 6 PA AND REG UNITS CONNECTOR ASSEMBLY (IC-275A/E) ..... 5 — 6
- 5 - 7 PA, CTRL AND FILTER UNITS CONNECTOR ASSEMBLY (IC-275H) ..... 5 — 7

SECTION 6 MAINTENANCE AND ADJUSTMENT ..... 6 — 1 ~ 23
- 6 - 1 PREPARATION BEFORE SERVICING ..... 6 — 1
- 6 - 2 PLL ADJUSTMENT ..... 6 — 2
- 6 - 3 FREQUENCY AND TONE ADJUSTMENT ..... 6 — 4
- 6 - 4 RECEIVER ADJUSTMENT ..... 6 — 8
- 6 - 5 TRANSMITTER ADJUSTMENT (IC-275H) ..... 6 — 14
- 6 - 6 TRANSMITTER ADJUSTMENT (IC-275A/E) ..... 6 — 20

SECTION 7 BOARD LAYOUTS ..... 7 — 1 ~ 19
- 7 - 1 FRONT UNITS (1) ..... 7 — 1
- 7 - 2 FRONT UNITS (2) ..... 7 — 2
- 7 - 3 LOGIC AND SENSOR UNITS ..... 7 — 4
- 7 - 4 PLL AND DDS UNITS ..... 7 — 6
- 7 - 5 MAIN UNIT ..... 7 — 8
- 7 - 6 RF YGR UNIT ..... 7 — 10
- 7 - 7 REG UNIT (IC-275A/E ONLY) ..... 7 — 12
- 7 - 8 PA UNIT (IC-275A/E) ..... 7 — 13
- 7 - 9 CTRL UNIT (IC-275H ONLY) ..... 7 — 15
- 7 - 10 PA UNIT (IC-275H) ..... 7 — 17
- 7 - 11 FILTER UNIT (IC-275H ONLY) ..... 7 — 19

SECTION 8 VOLTAGE DIAGRAMS ..... **8 — 1 ~ 7**

8 - 1 FRONT UNIT ..... 8 — 1
8 - 2 LOGIC UNIT ..... 8 — 2
8 - 3 PLL UNIT ..... 8 — 3
8 - 4 MAIN UNIT ..... 8 — 4
8 - 5 RF YGR UNIT ..... 8 — 5
8 - 6 REG AND PA UNITS (IC-275A/E ONLY) ..... 8 — 6
8 - 7 CTRL, PA AND FILTER UNITS (IC-275H ONLY) ..... 8 — 7

SECTION 9 PARTS LIST ..... **9 — 1 ~ 19**

The SCHEMATIC DIAGRAM is attached at the end of this service manual.

SECTION 1 SPECIFICATIONS

■ GENERAL

- Frequency coverage : U.S.A. Versions (#08A, #03H) ＊140.1000～150.0000MHz
  Europe Versions (#06E, #02H) 144.0000～146.0000MHz
  Australia Versions (#10A, #04H) 144.0000～148.0000MHz
  Sweden Versions (#12E, #05H) 144.0000～146.0000MHz
  ＊Specifications guaranteed from 143.8000 to 148.2000MHz
- Number of memory channels : 99 channels plus P1, P2 and CALL CHANNEL
- Antenna impedance : 50Ω unbalanced
- Frequency stability : ±5ppm (−10°C～+60°C)
- Power supply requirement : #08A version 117V AC±10%
  #06E, #10A and #12E versions 240V AC±10%
  All versions 13.8V DC±15%
- Current drain (at 13.8V DC) : IC-275A/E

Transmitting	HIGH (25W)	Approx.	6A
	LOW (2.5W)	Approx.	3A
Receiving	At maximum audio output	Approx.	1A
	Squelched	Approx.	0.9A

IC-275H

Transmitting	HIGH (100W)	Approx.	20.0A
	LOW (10W)	Approx.	6.0A
Receiving	At maximum audio output	Approx.	1.0A
	Squelched	Approx.	0.9A

- Dimensions : IC-275A/E
  241(244)mm(W)×95(108)mm(H)×239(295)mm(D)
  IC-275H
  241(244)mm(W)×95(108)mm(H)×239(277)mm(D)
  Bracketed values include projections.
- Weight : IC-275A/E 6.2kg
  IC-275H 6.0kg
- Usable temperature range : −10°C～+60°C

■ TRANSMITTER

- Emission modes : FM (F3), SSB (A3J), CW (A1)
- RF output power : IC-275A/E
  2.5～25W continuously adjustable
  IC-275H
  10～100W continuously adjustable
- Modulation system : FM Variable reactance frequency modulation
  SSB Balanced modulation
- Maximum frequency deviation : ±5kHz (FM mode)
- Spurious output : More than 60dB below peak output power
- Carrier suppression : More than 40dB below peak output power
- Unwanted sideband : More than 40dB down with 1000Hz AF input
- Microphone impedance : 600Ω

■ RECEIVER

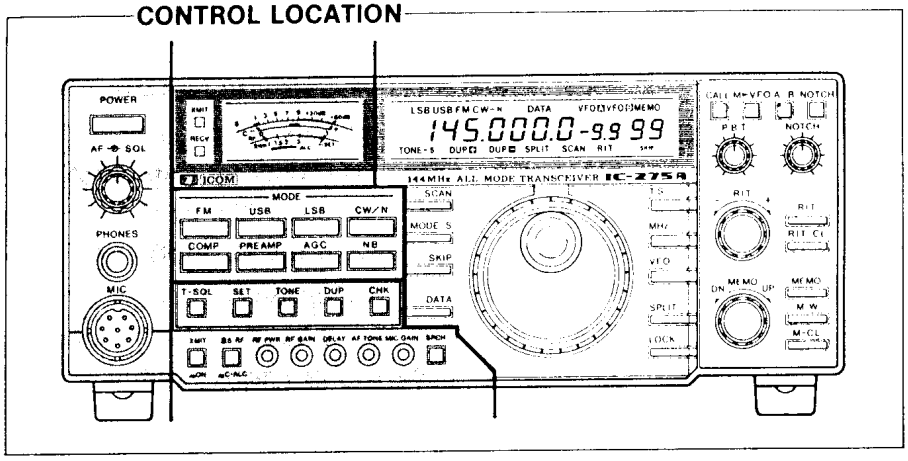
• Receive system	:	Double conversion superheterodyne	
• Receive modes	:	FM (F3), SSB (A3J), CW (A1)	
• Intermediate frequencies	:	1st	10.75MHz (FM, SSB) 10.7491MHz (CW)
		2nd	455kHz (All modes)
• Sensitivity (with a 50Ω load)	:	FM	Less than 0.18μV for 12dB SINAD
			Less than 0.25μV for 20dB NQL
		SSB, CW	Less than 0.1μV for 10dB S/N
• Squelch sensitivity	:	FM	Less than 0.1μV
		SSB	Less than 0.56μV
• Selectivity	:	FM	15.0kHz/6dB 30.0kHz/60dB
		SSB, CW	2.2kHz/6dB 4.2kHz/60dB
• Spurious response rejection	:	More than 70dB	
• Audio output impedance	:	8Ω	
• Audio output power	:	More than 2W at 10% distortion with an 8Ω load	
• RIT variable range	:	±9.99kHz	

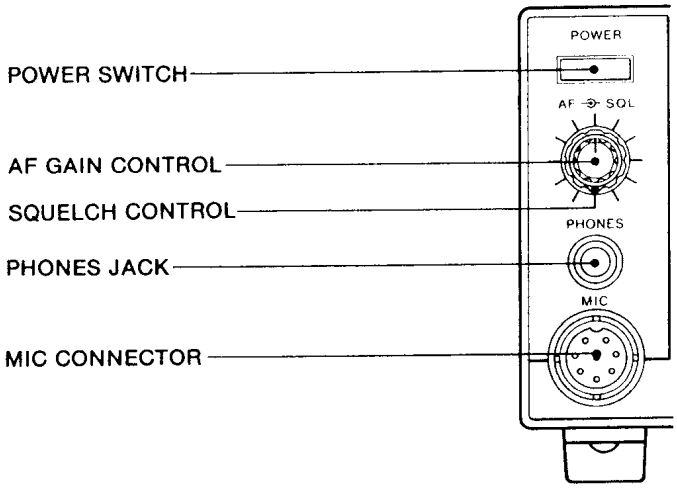
SECTION 2 OUTSIDE AND INSIDE VIEWS

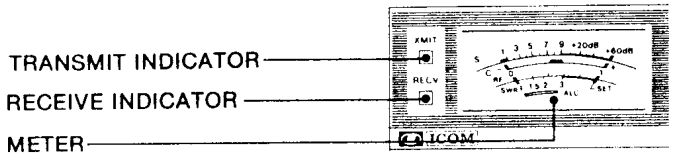
2-1 OUTSIDE VIEWS

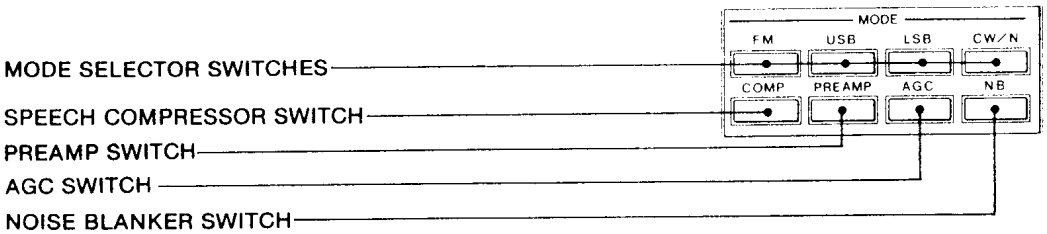
2-1-1 FRONT PANEL

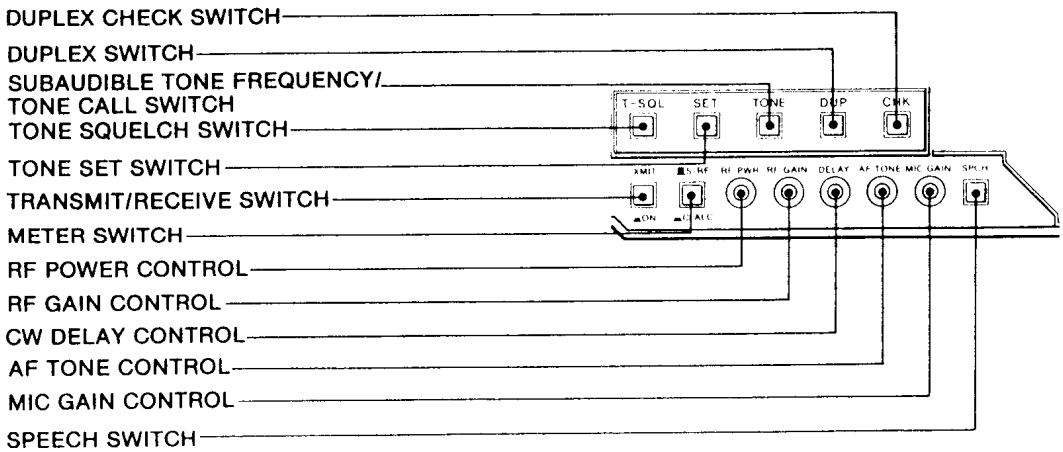
CONTROL LOCATION





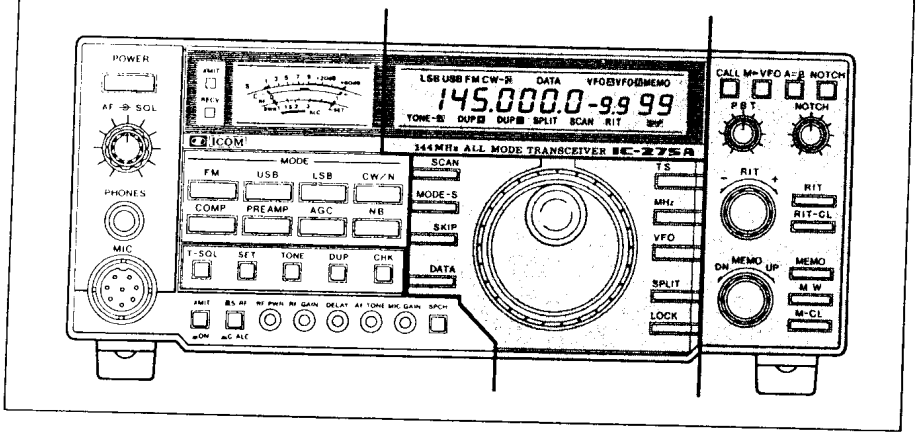




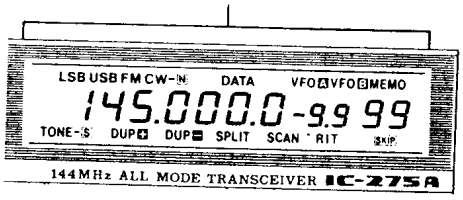


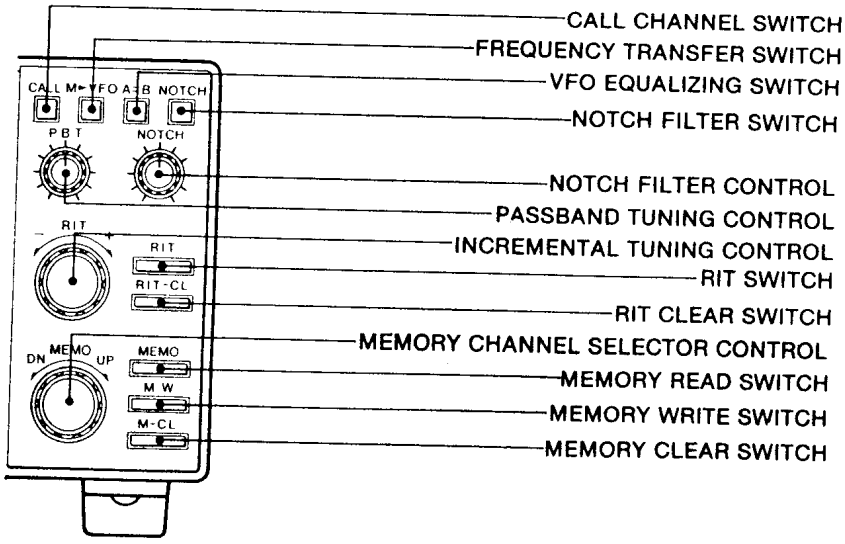
• FRONT PANEL (CONTINUED)

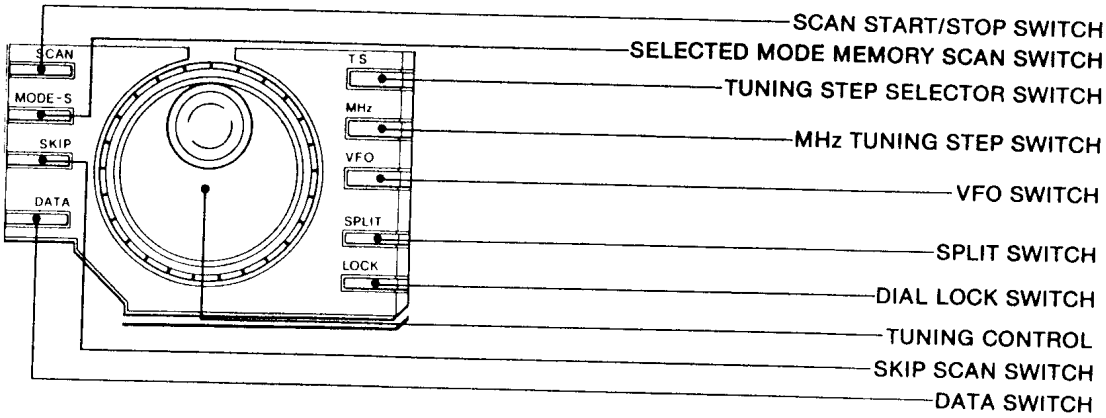
CONTROL LOCATION



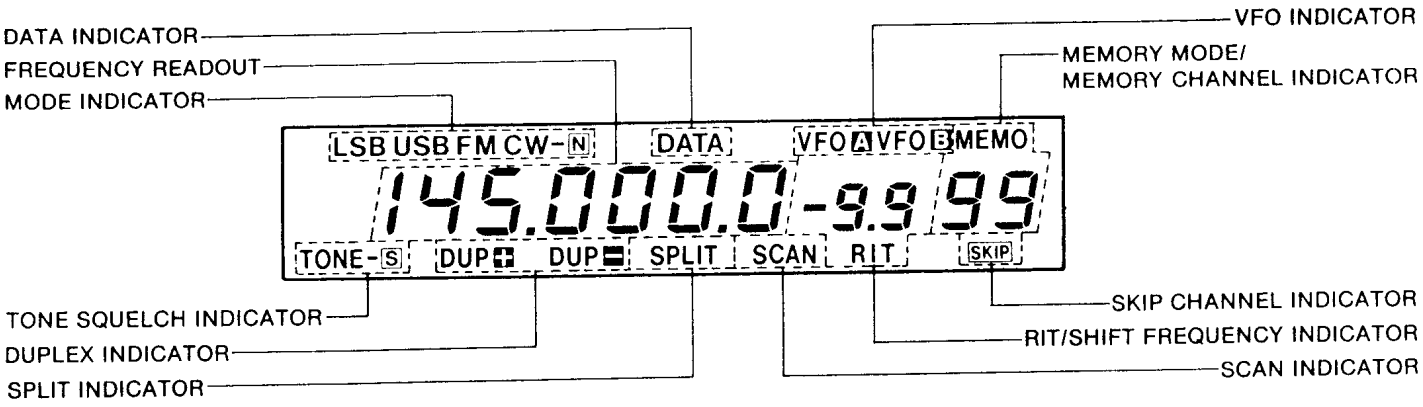
FREQUENCY DISPLAY





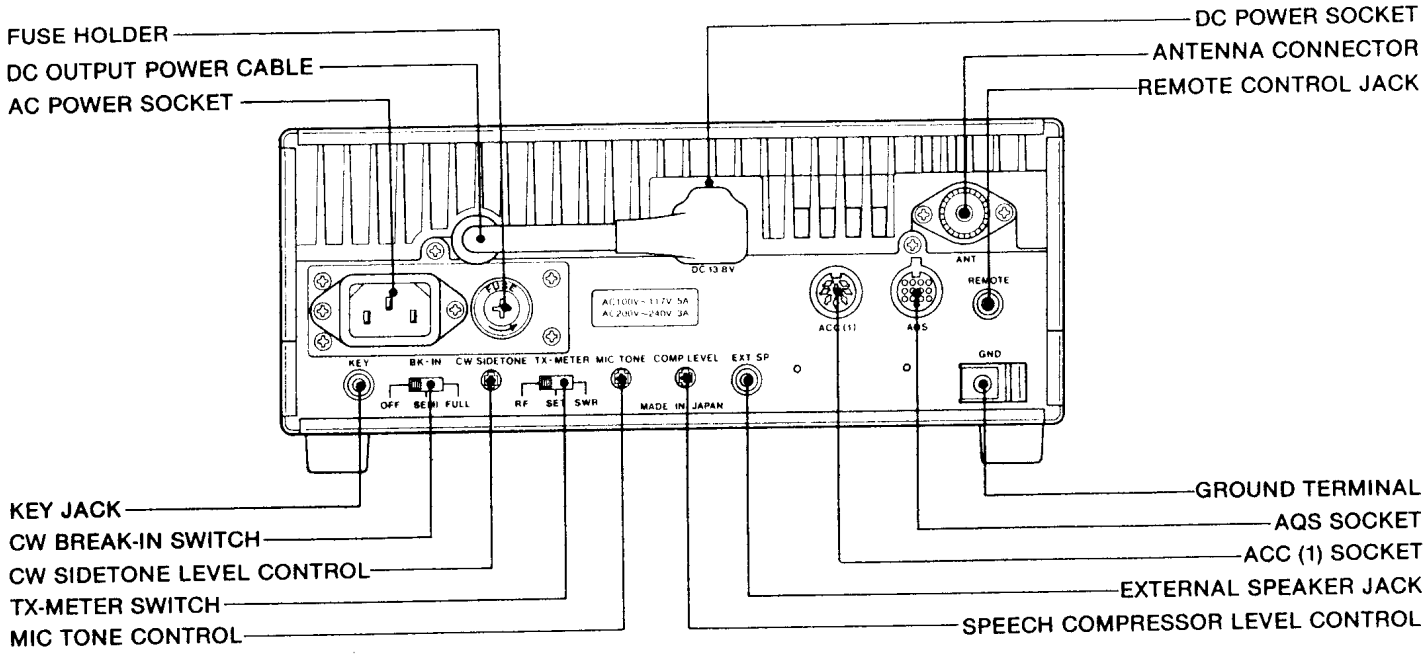


2-1-2 FREQUENCY DISPLAY

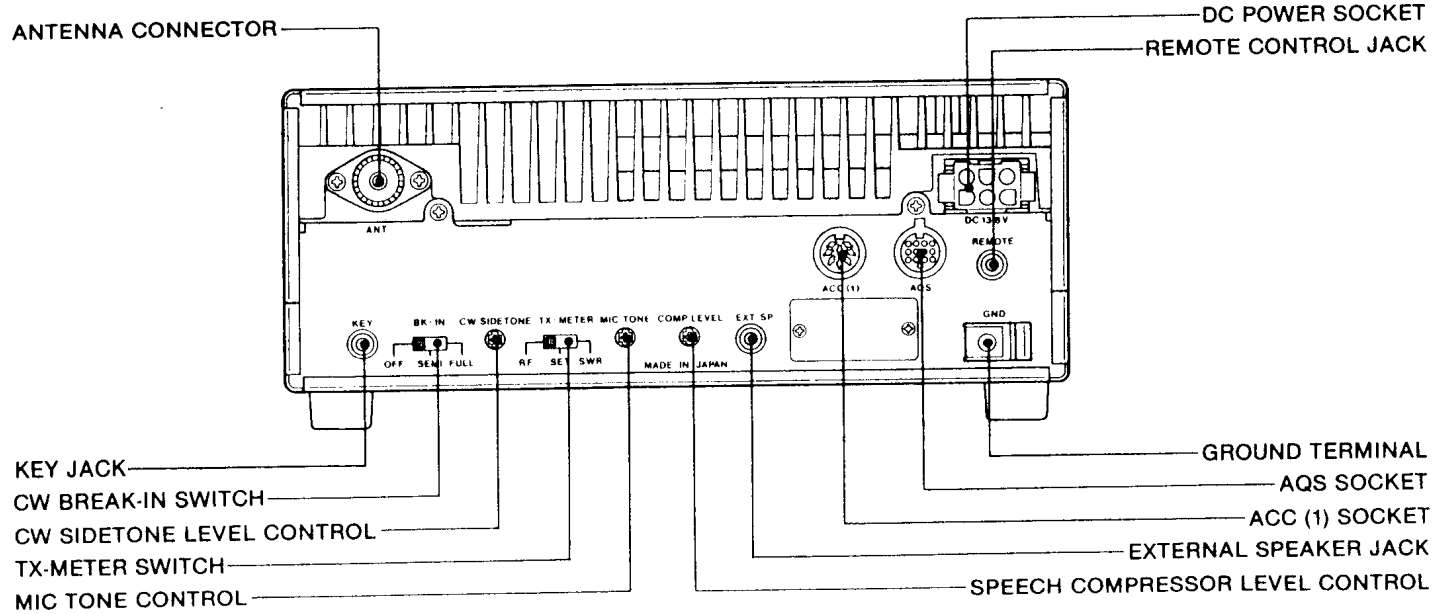


2-1-3 REAR PANEL

• IC-275A/E

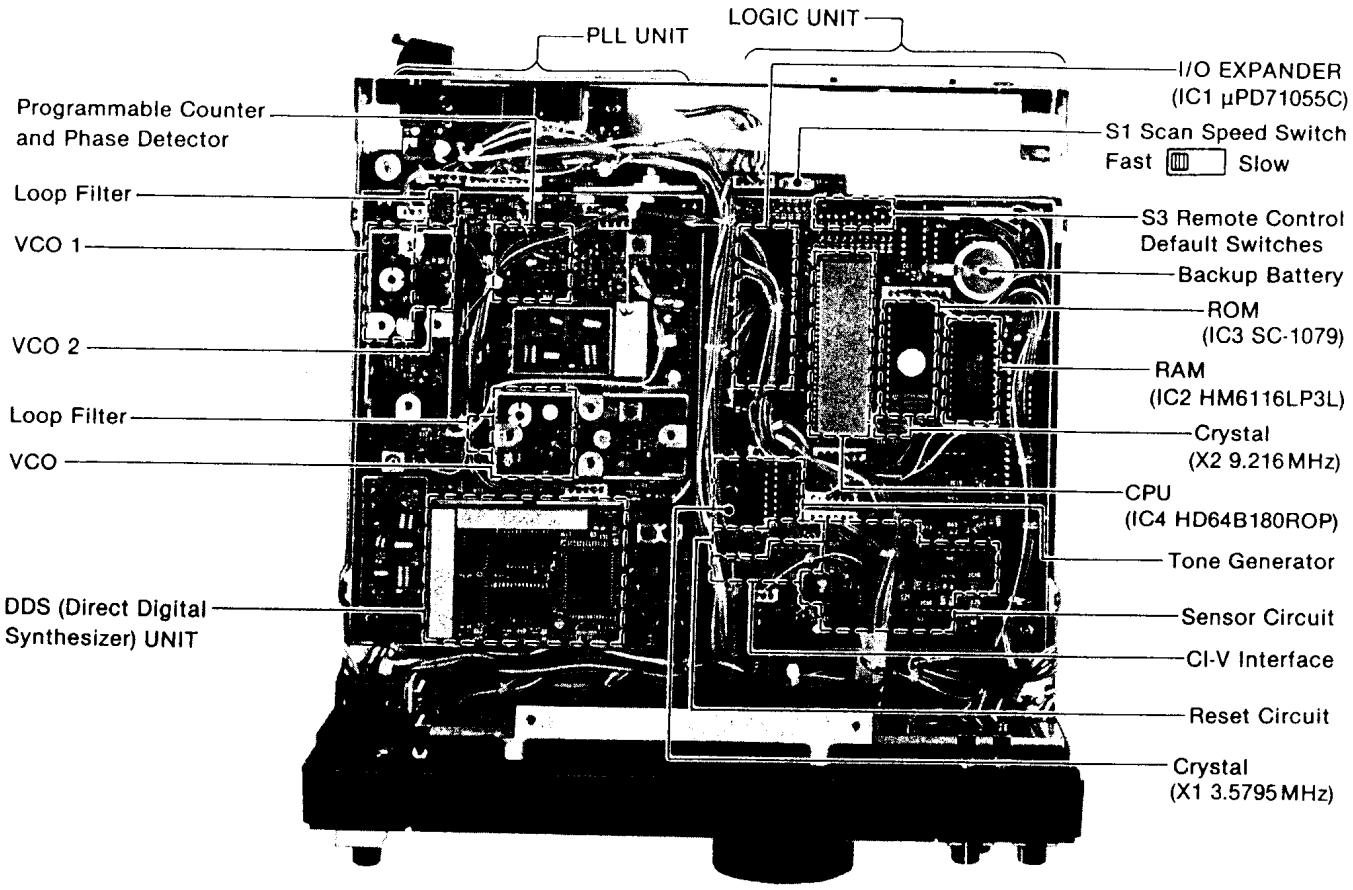


• IC-275H

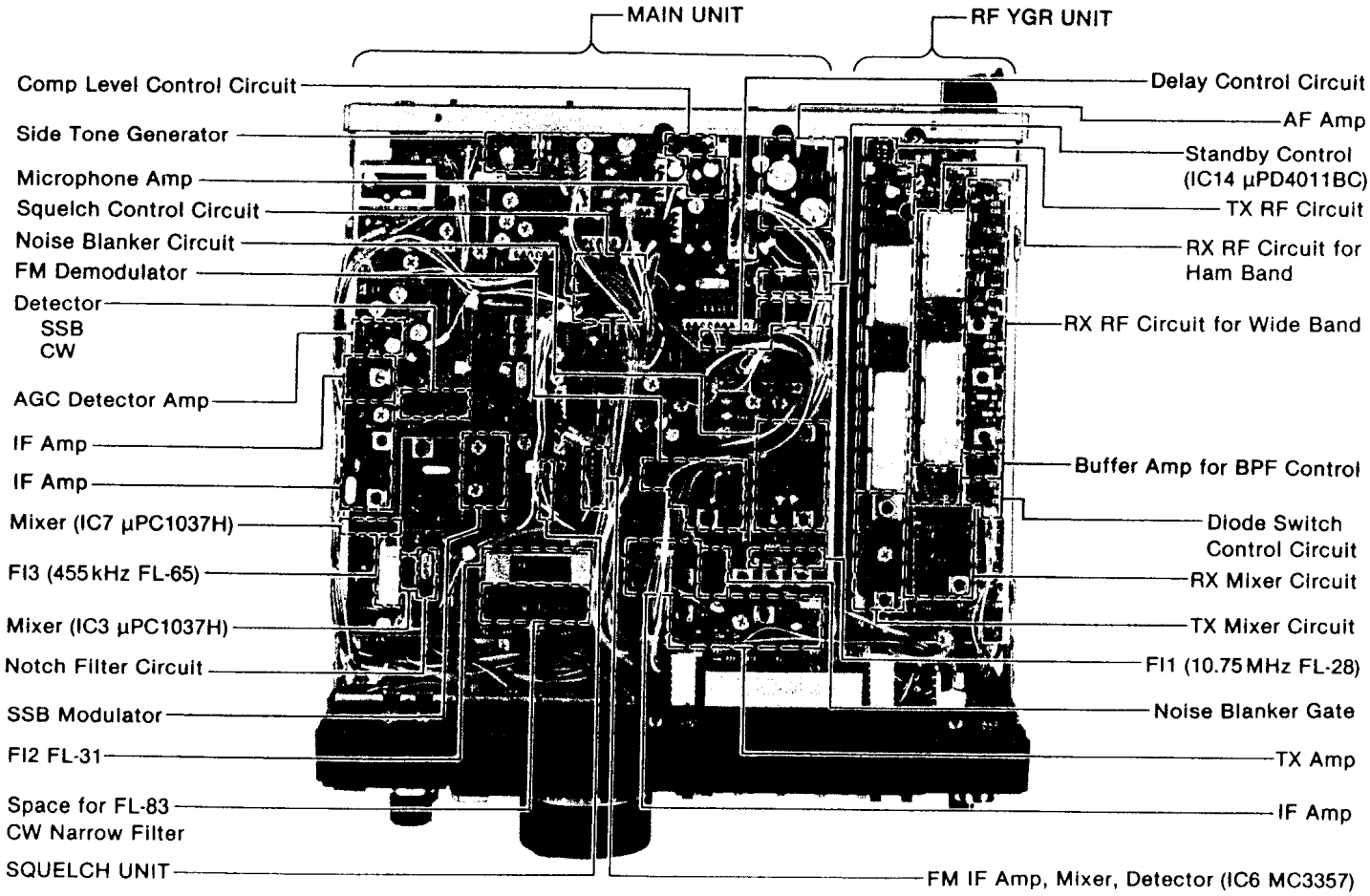


2-2 INSIDE VIEWS

2-2-1 PLL AND LOGIC UNITS

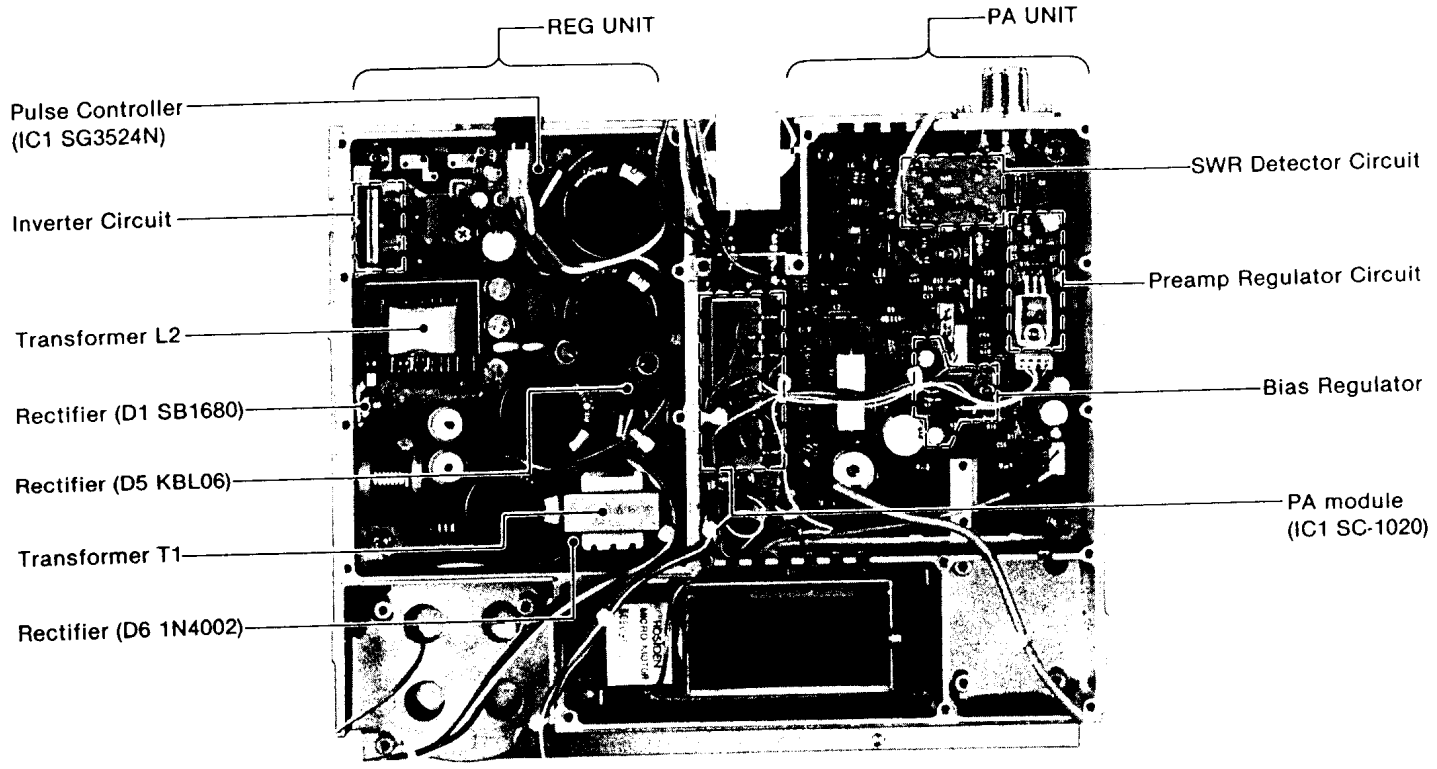


2-2-2 MAIN AND RF YGR UNITS



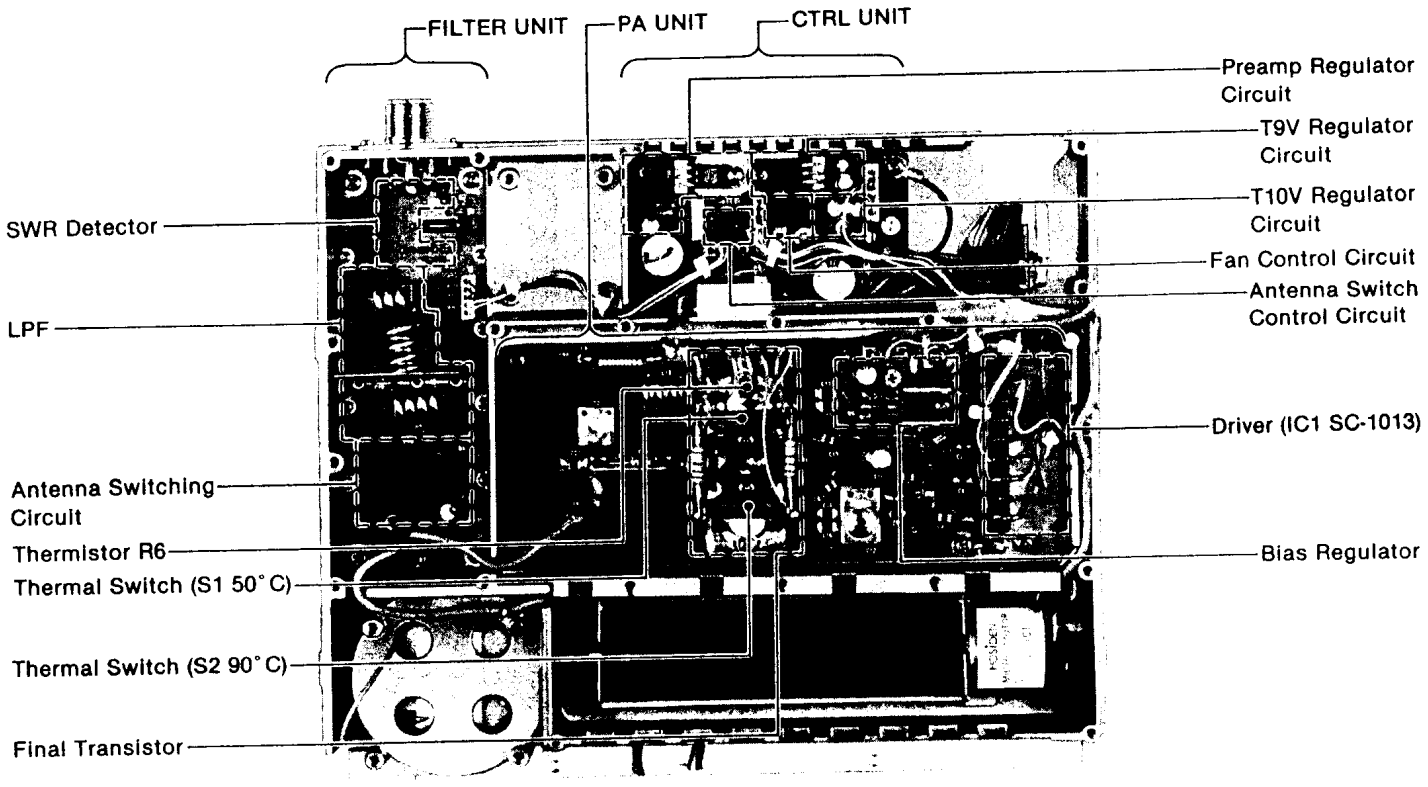
These pictures show the IC-275H model.

2-2-3 PA AND REG UNITS (IC-275A/E)



This picture shows the IC-275A/E model.

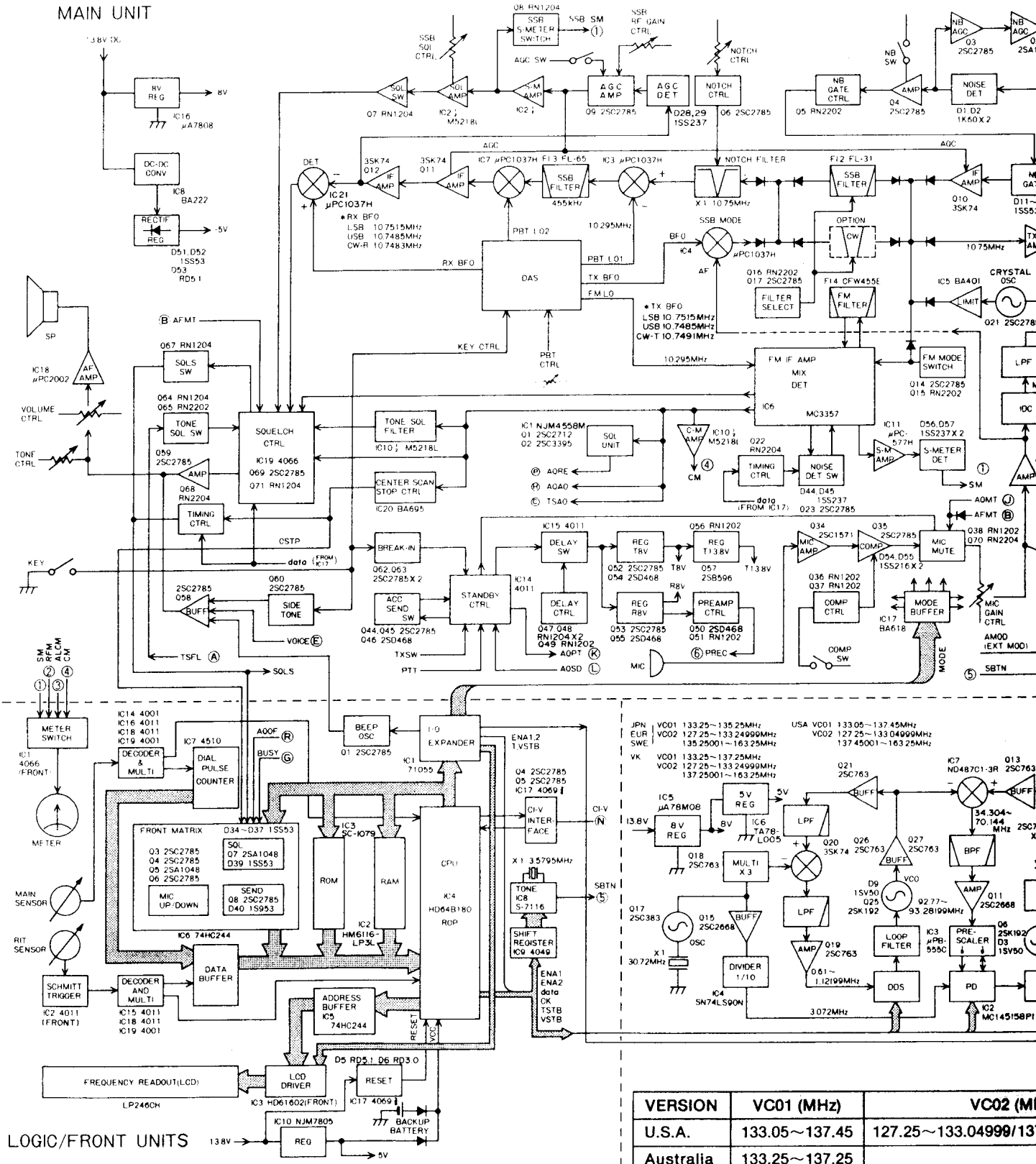
2-2-4 FILTER, CTRL AND PA UNITS (IC-275H)



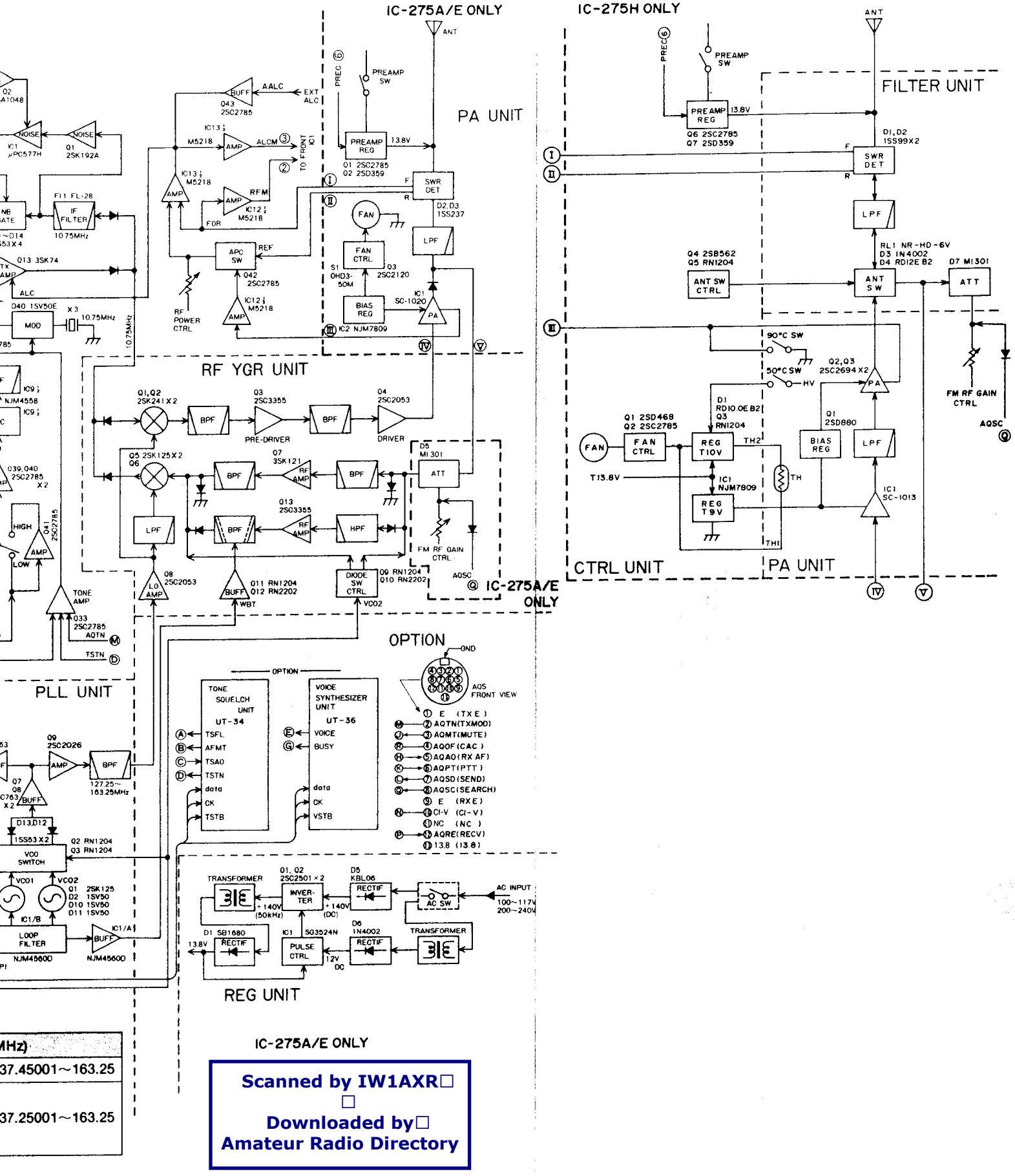
This picture shows the IC-275H model.

SECTION 3 BLOCK DIAGRAMS

• IC-275A/E/H



VERSION	VC01 (MHz)	VC02 (MHz)
U.S.A.	133.05~137.45	127.25~133.04999/137.45001~163.25
Australia	133.25~137.25	
Europe	133.25~135.25	127.25~133.24999/137.25001~163.25
Sweden		



SECTION 4 CIRCUIT DESCRIPTION

4-1 RECEIVER CIRCUITS

4-1-1 ANTENNA~1st MIXER CIRCUIT

This circuitry makes IF signals from receive signals.

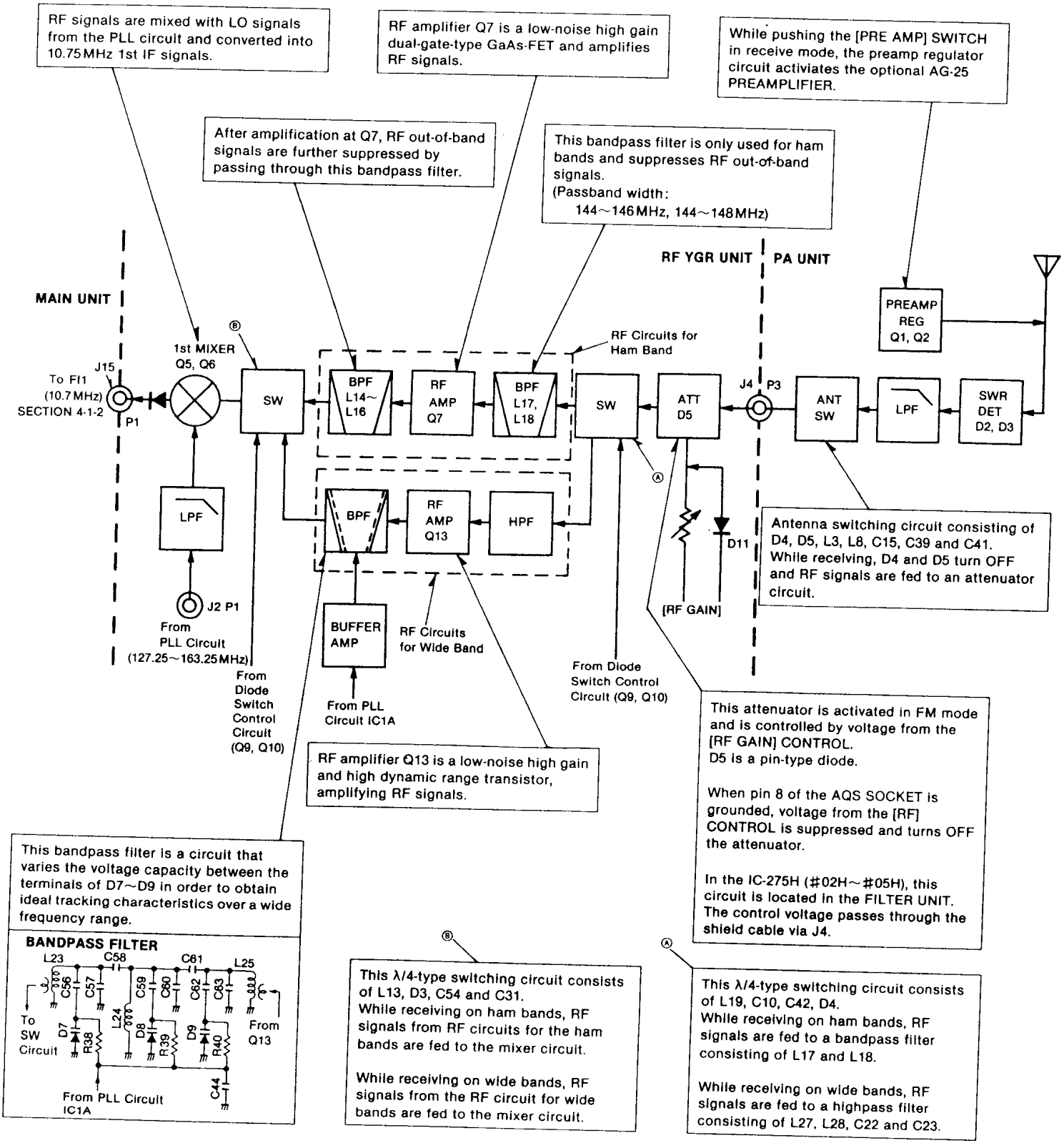


Fig. 1

4-1-2 NOISE BLANKER CIRCUIT~NOTCH FILTER, FM DETECTOR

This circuitry suppresses pulse-type noise from IF signals.
In FM mode, this circuitry makes AF signals from IF signals.

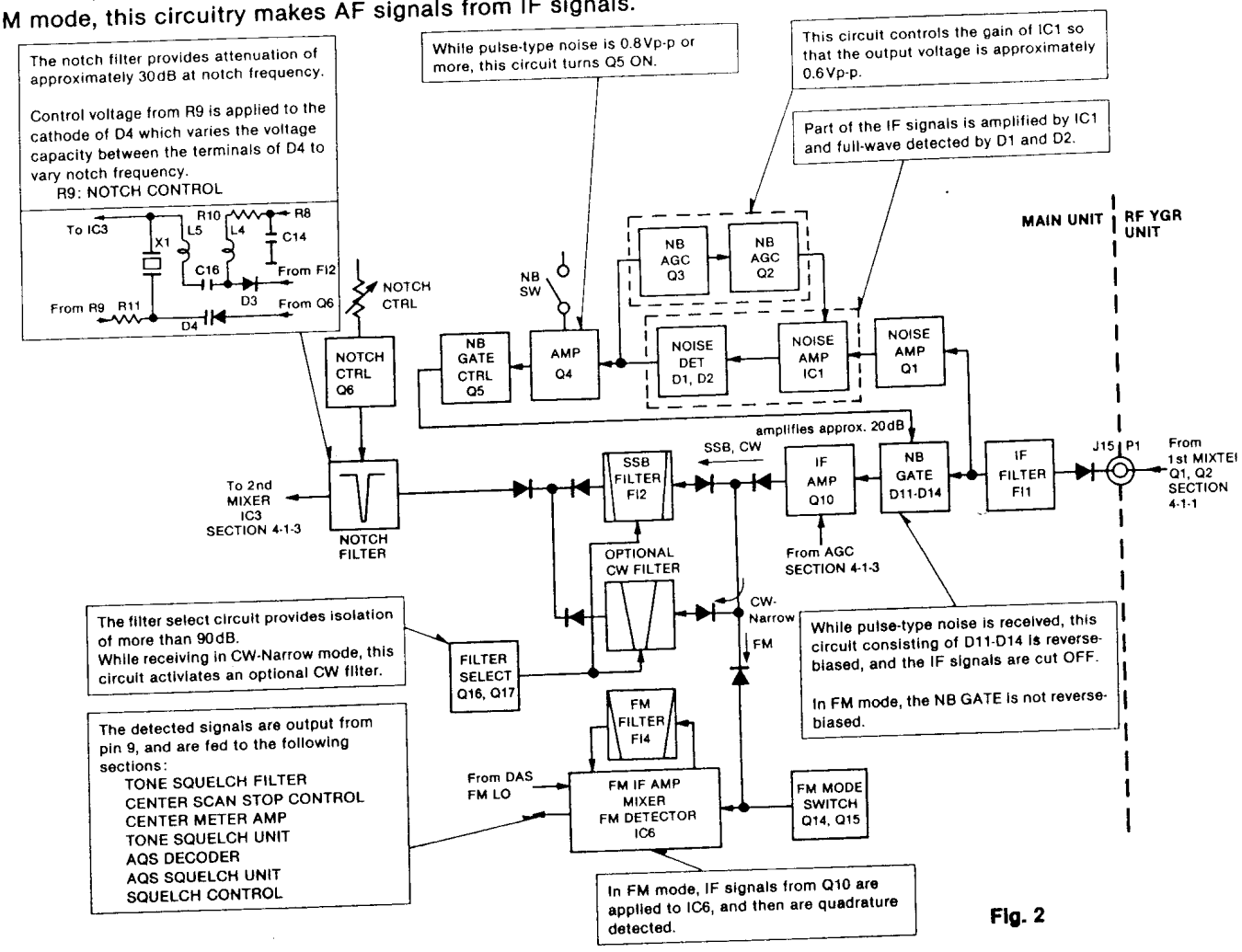


Fig. 2

4-1-3 2nd MIXER CIRCUIT~AF AMP

In SSB or CW mode, this circuitry makes AF signals from IF signals.
In FM mode, AF signals from IC6 are amplified.

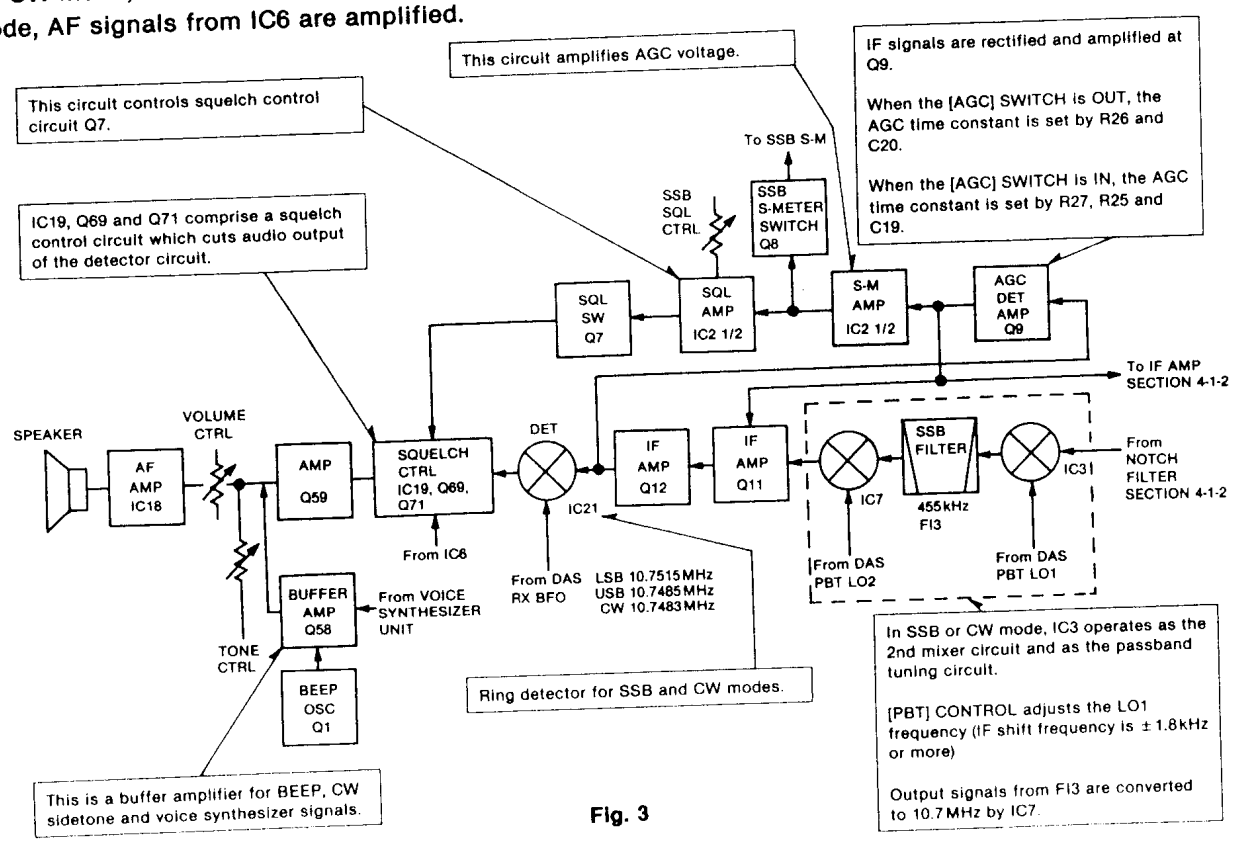


Fig. 3

4-1-4 FM SQUELCH, FM S-METER AND CENTER METER CIRCUITS

In FM mode, this circuitry performs as FM squelch, FM S-meter and center meter drivers.

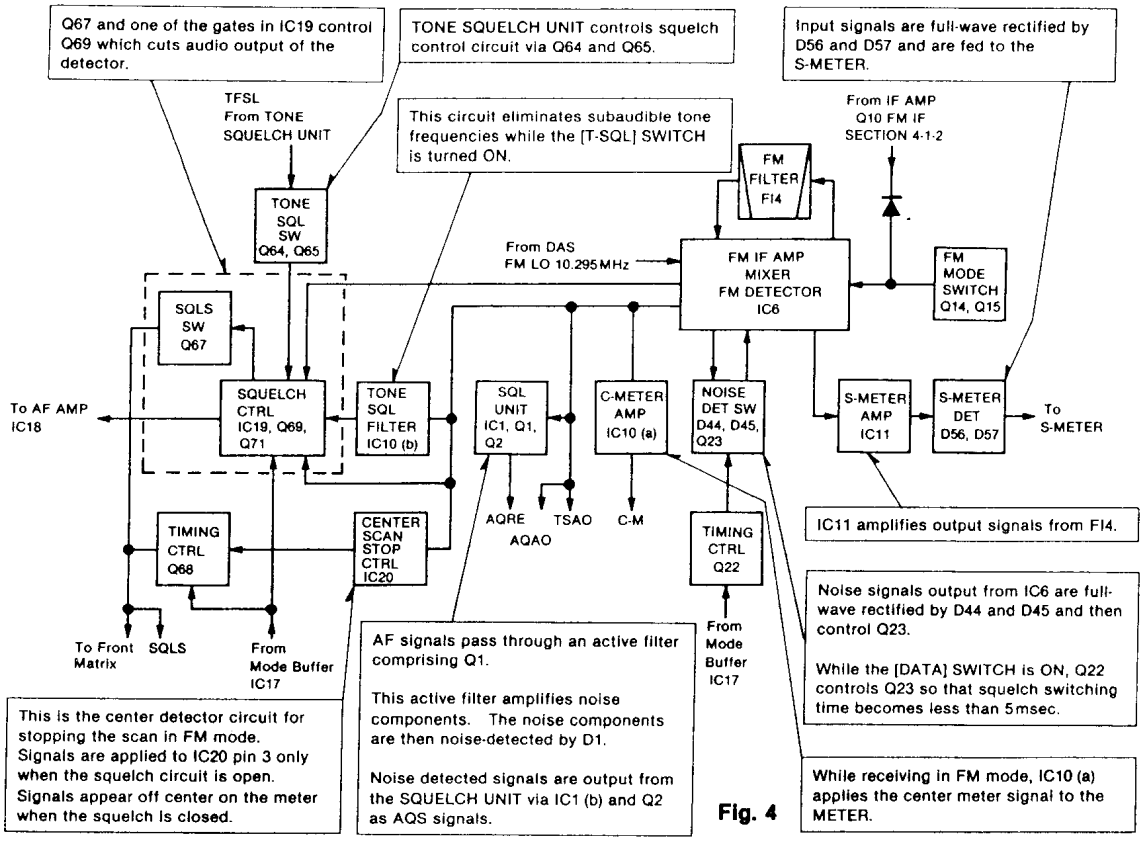


Fig. 4

4-2 TRANSMITTER CIRCUITS

4-2-1 FM, SSB MODE (MICROPHONE~FM MODULATOR, SSB FILTER)

In FM or SSB mode, this circuitry makes transmit IF signals from microphone signals.

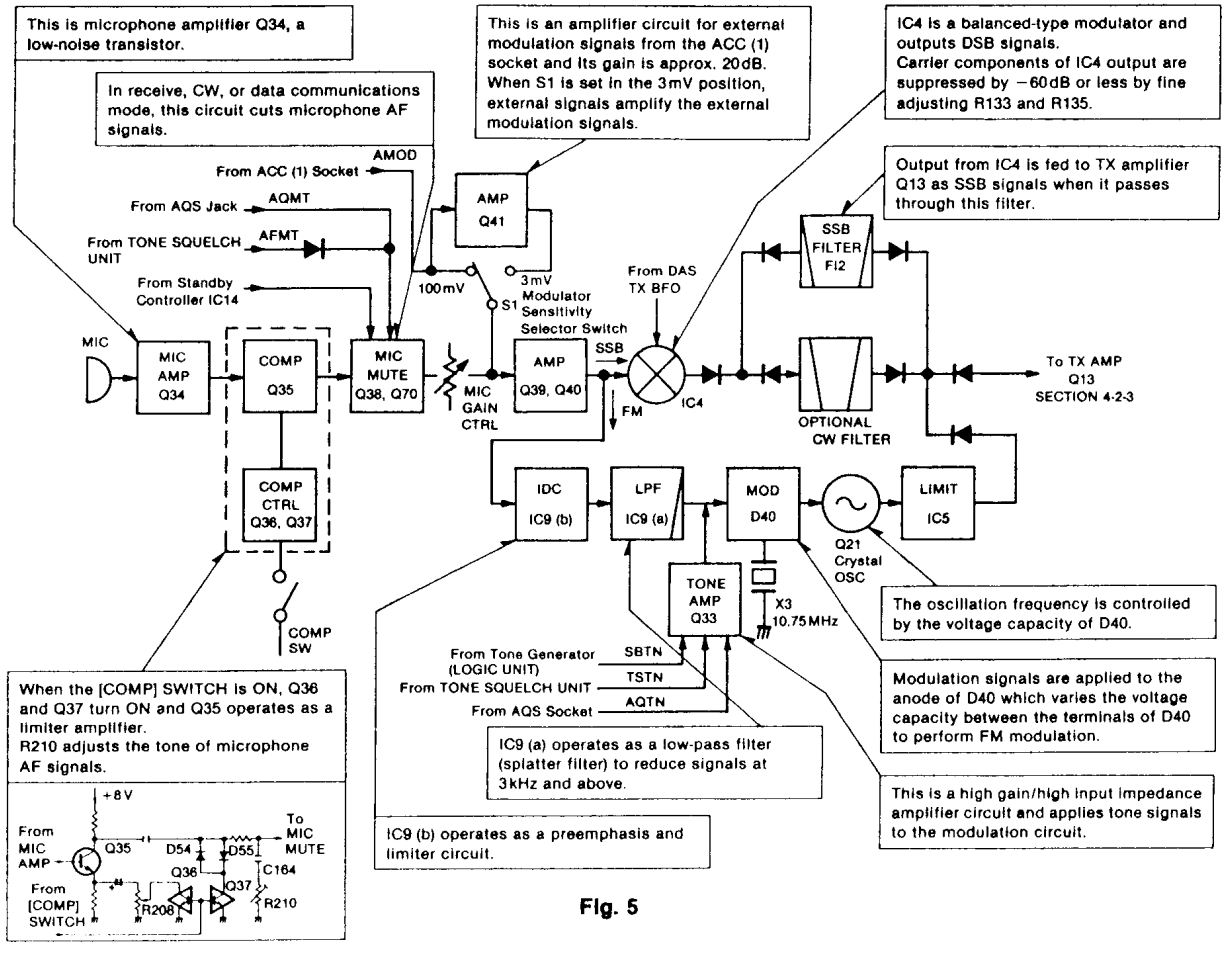


Fig. 5

4-2-2 CW MODE (KEY~CW FILTER, SSB FILTER)

In CW mode, this circuitry makes transmit IF signals from CW keying signals.

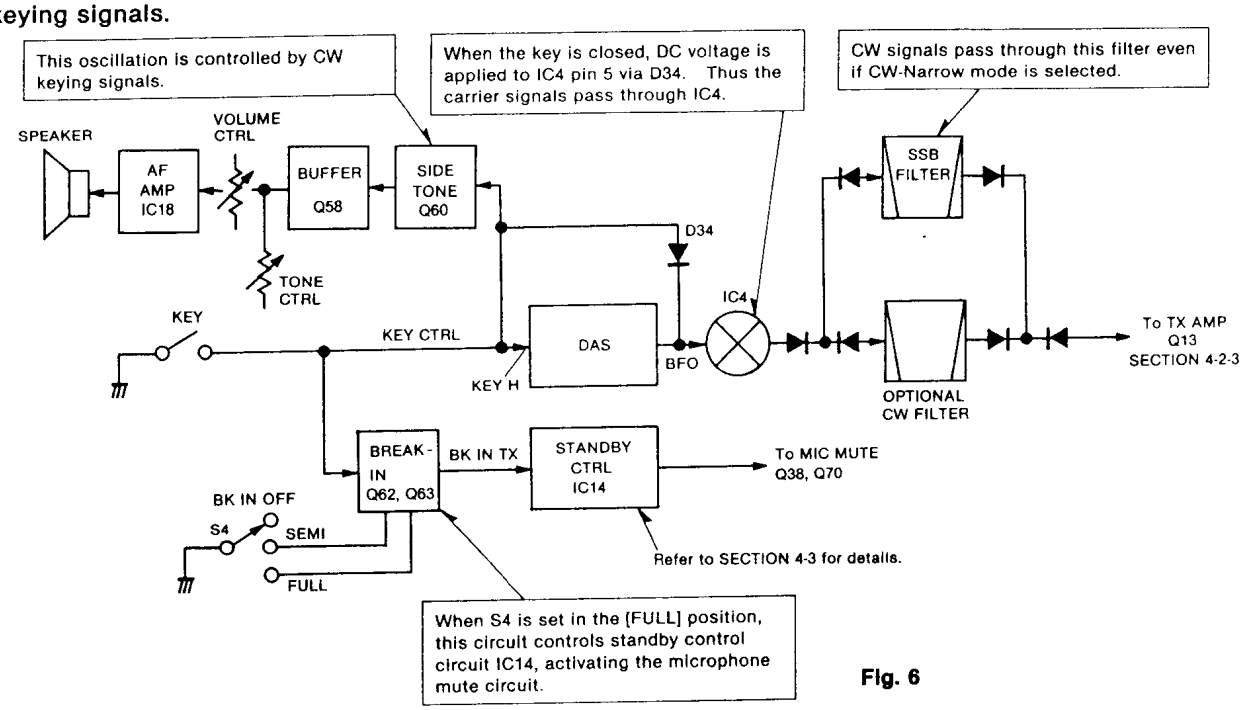


Fig. 6

4-2-3 TX AMP~ANTENNA (IC-275A/E)

This circuitry makes RF signals from transmit IF signals.

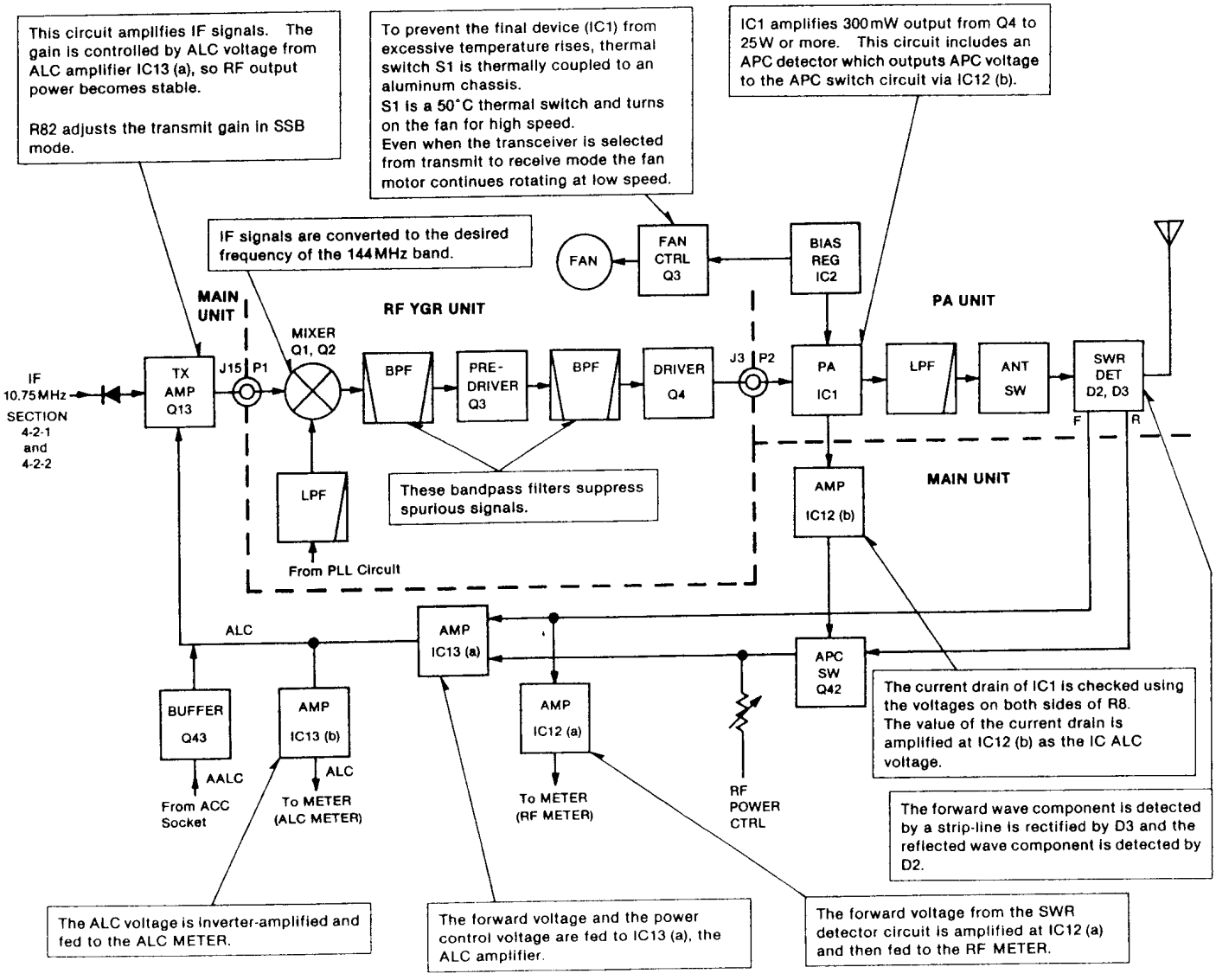
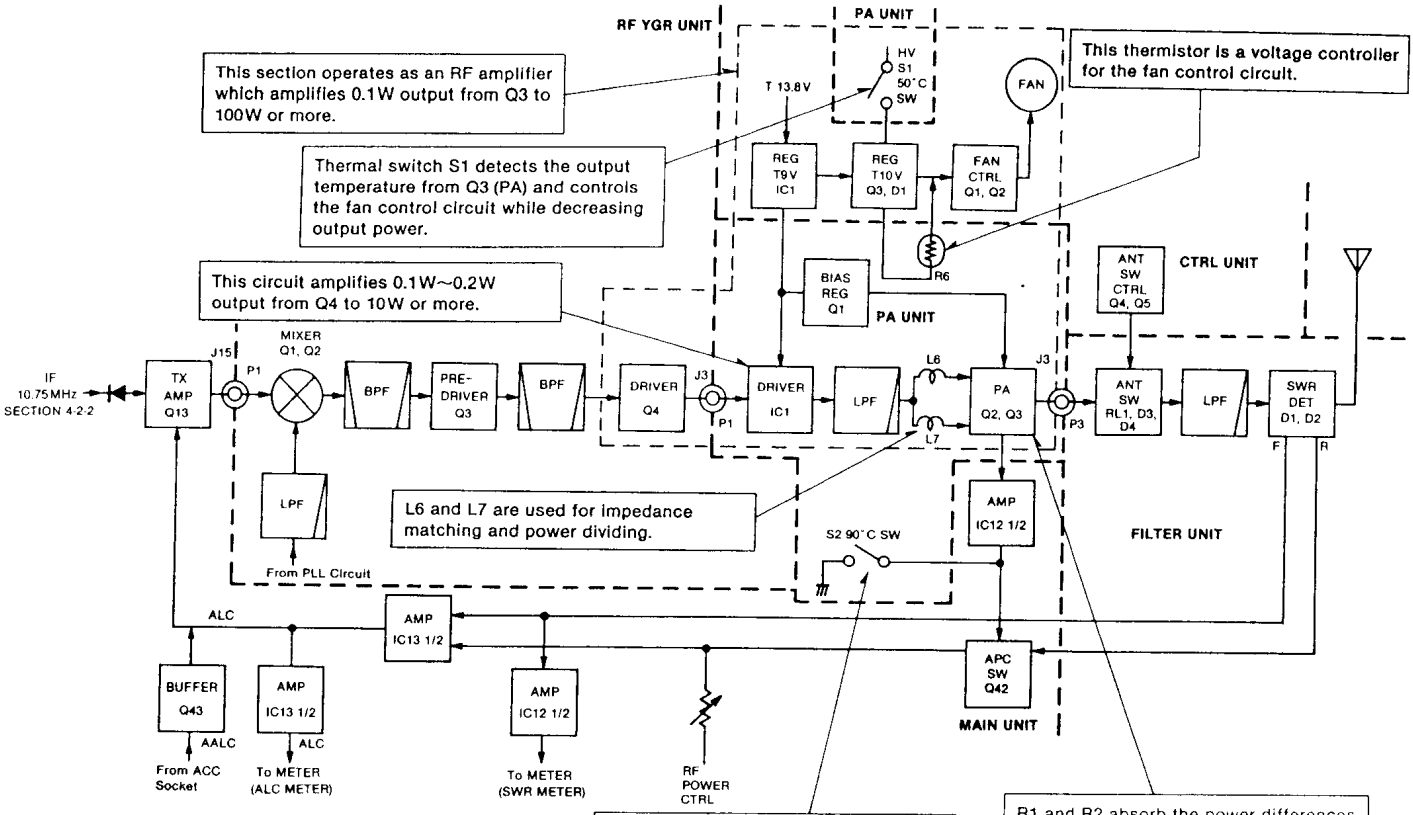


Fig. 7

(IC-275H)



TEMPERATURE (°C)		~50	50~90	90~
THERMAL SWITCH	S1	OFF	ON	ON
	S2	OFF	OFF	ON
FAN SPEED	RECEIVE	OFF	*SLOW~HIGH	
	TRANSMIT	*SLOW~MED		HIGH
TRANSMIT POWER LEVEL		No reduction		50% down

*Fan speed varies by the varying resistance of thermistor R6.

Fig. 8

4-3 STANDBY CONTROL CIRCUIT

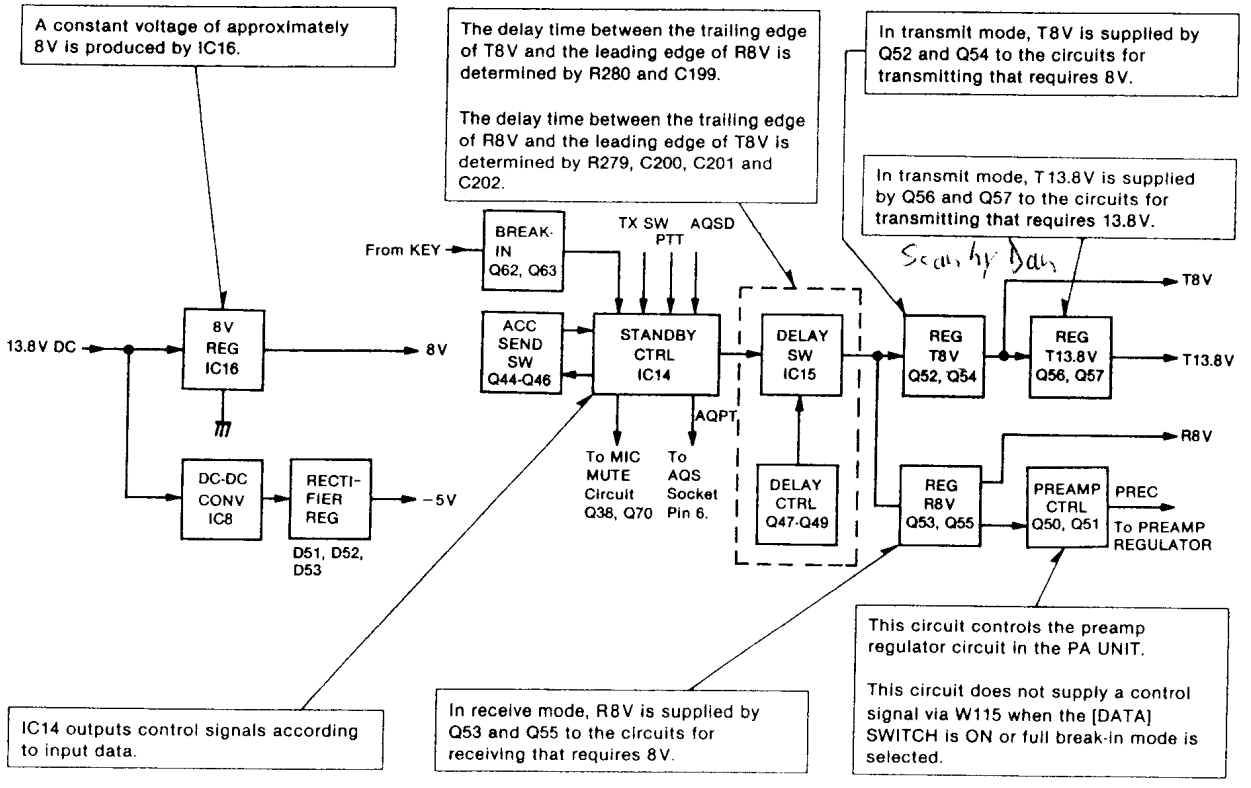


Fig. 9

4-4 PLL CIRCUITS

4-4-1 GENERAL

The PLL UNIT outputs an oscillator signal for the RF YGR UNIT: a variable 1st LO output of 127.25MHz~ 163.25MHz that is necessary for the 1st mixer.

PLL CIRCUITS BLOCK DIAGRAM

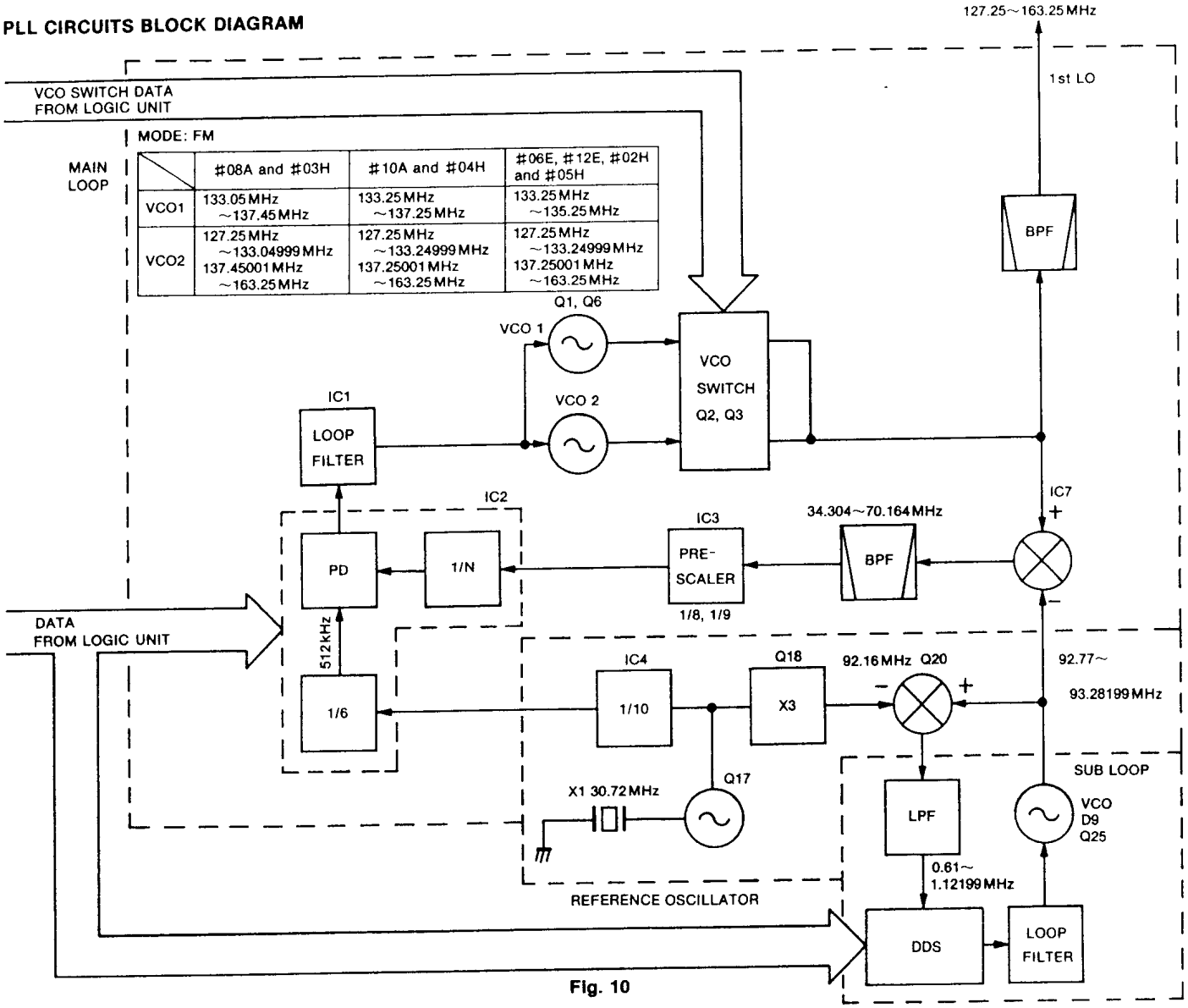


Fig. 10

4-4-2 REFERENCE OSCILLATOR CIRCUIT

The reference oscillator circuit generates a reference frequency for the PLL circuits.

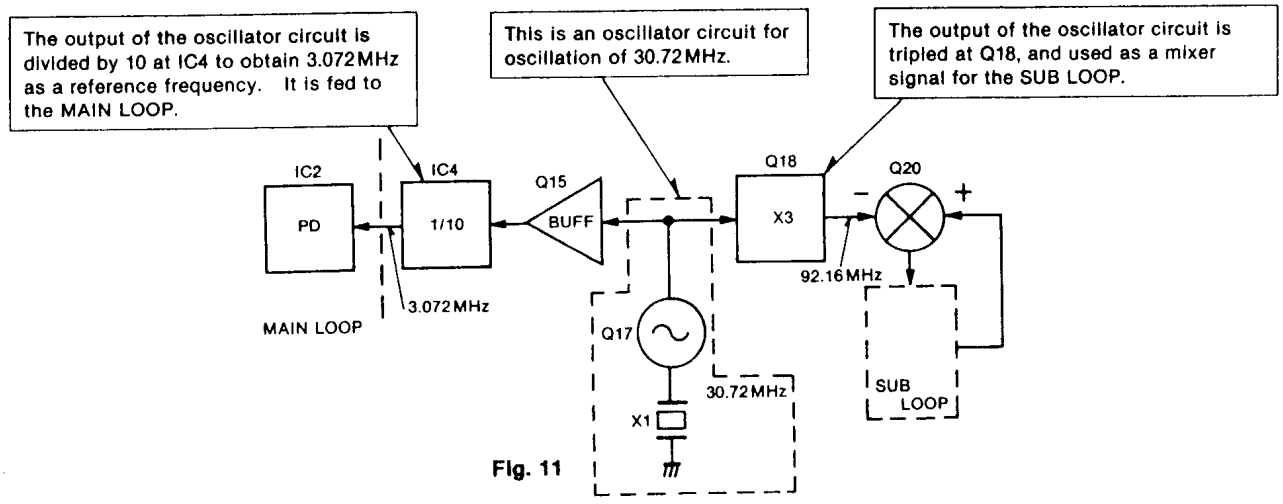


Fig. 11

4-4-3 MAIN LOOP

The main loop forms the PLL loop and supplies the 1st LO output.
It consists of a combination of a pulse swallow system and mixer system.

The VCO output frequency f_{VC1} is given as:

$f_{VC1} = N_1 \times fr + f_{VC2}$

N_1: Main loop N-data
fr: PLL reference frequency
f_{VC2}: Sub loop frequency [MHz]

Frequency changes are made by changing the f_{VC2} and N_1. The reference frequency (fr) is 512kHz, and the VCO is controlled in 512kHz steps by changing the dividing ratio N_1 of the programmable counter.

A frequency between this step (less than 512kHz) is obtained by f_{VC2} which controls VCO output frequency. The f_{VC1} can be changed in 10Hz steps over the 36MHz range.

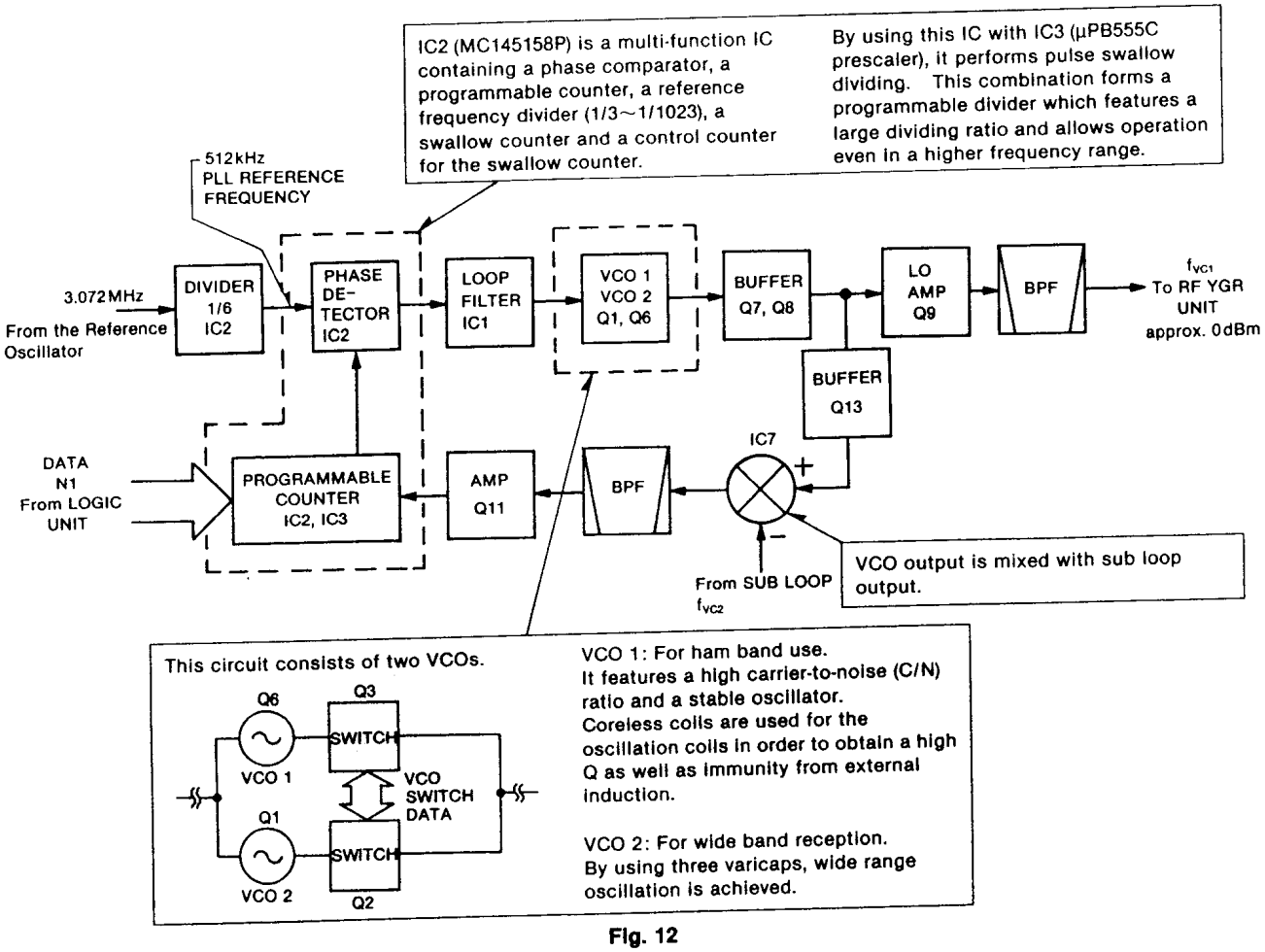


Fig. 12

4-4-4 SUB LOOP

The sub-loop section comprises the DDS UNIT.

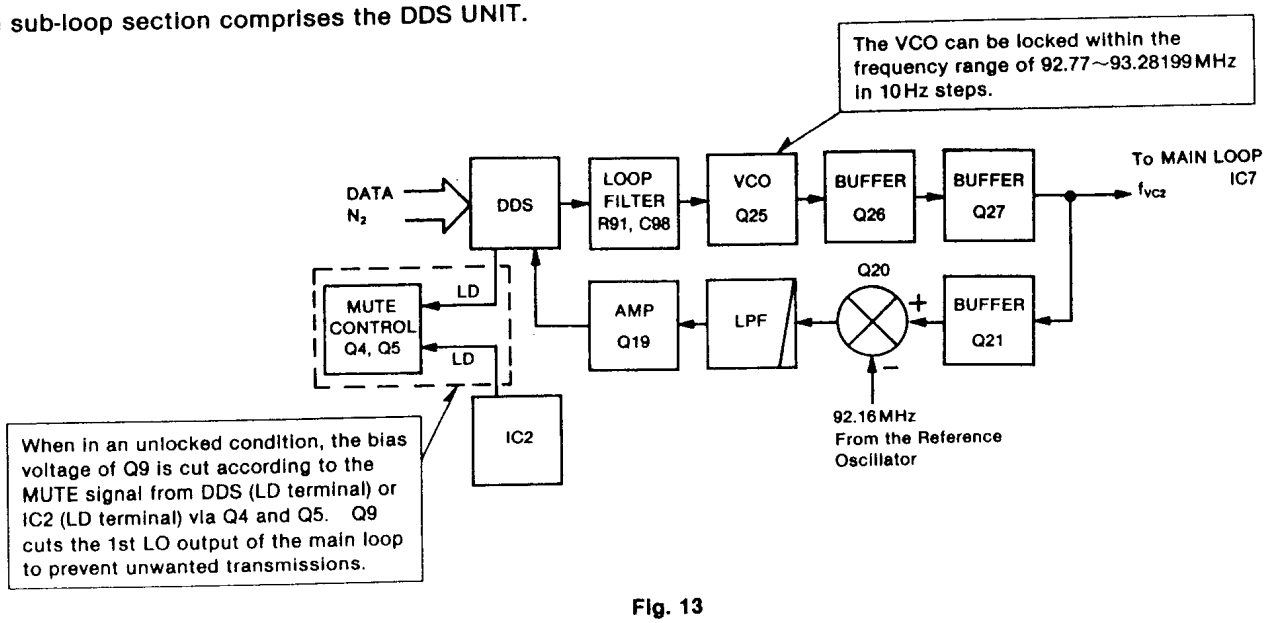


Fig. 13

4-4-5 PLL DATA

Data for setting the dividing ratios N_1 and N_2 of the programmable dividers are sent from the LOGIC UNIT. The data transfer is in binary code.

How to DRIVE N-DATA

Since there are two locked loops, two kinds of N-data are necessary. Even if the output frequencies from the PLL circuits in all modes are the same, the display frequencies are different depending on the operating mode.

For example, if the same frequency is displayed for FM mode, the frequency will be 900Hz lower in CW mode, 1.5kHz higher in USB mode and 1.5kHz lower in LSB mode.

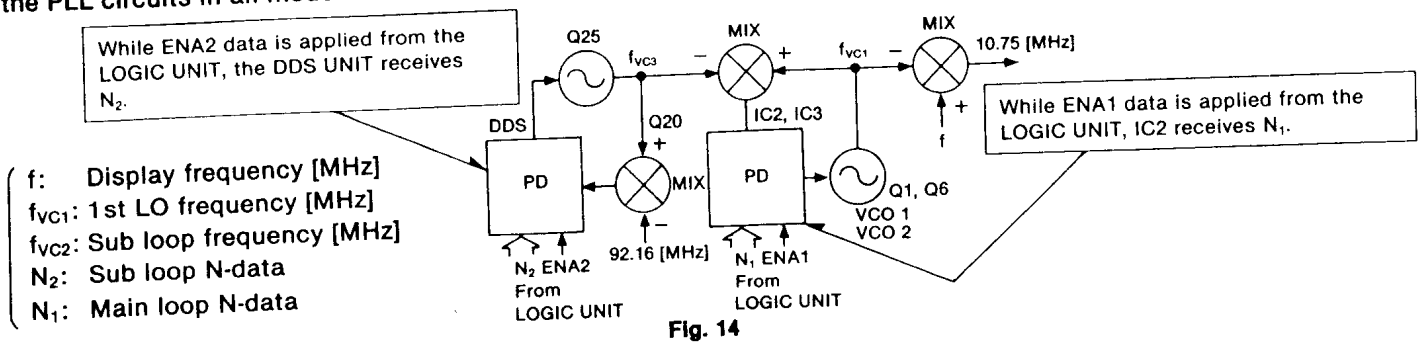


Fig. 14

To obtain N-data from the display frequency (fMHz), calculate using the following formulas.

(a) FM mode

Main loop N-data: N_1

$$\underline{Na} = (f - 103.52) \div 0.512$$

N_1 is the integer part of Na.

Sub loop N-data: N_2

$$\underline{Nb} = (f - 102.91 - 0.512 \times N_1) \times 10^5$$

N_2 is the hexadecimal of Nb.

example: 145.6789MHz
(Display frequency, In FM mode)

Main loop N-data
$Na = (145.6789 - 103.52) \div 0.512 \fallingdotseq 82.3$
$\therefore N_1 = 82$

Sub loop N-data
$Nb = (145.6789 - 102.91 - 0.512 \times 82) \times 10^5$
$= 78490$
$\therefore N_2 = 1329A\ (H)$

(b) CW, LSB or USB mode

Main loop N-data: N_1

$$\underline{Nc} = (f - 103.52 - f_{OFFSET}) \div 0.512$$

N_1 is the integer part of Nc.

Sub loop N-data: N_2

$$\underline{Nd} = (f - 102.91 - 0.512 \times N_1 - f_{OFFSET}) \times 10^5$$

N_2 is the hexadecimal of Nd.

f_{OFFSET} of each mode:
CW mode: 0.9×10^{-3}
LSB mode: 1.5×10^{-3}
USB mode: -1.5×10^{-3}

4-4-6 DIRECT DIGITAL SYNTHESIZER (DDS UNIT)

The DDS circuit consists of 5 ICs.

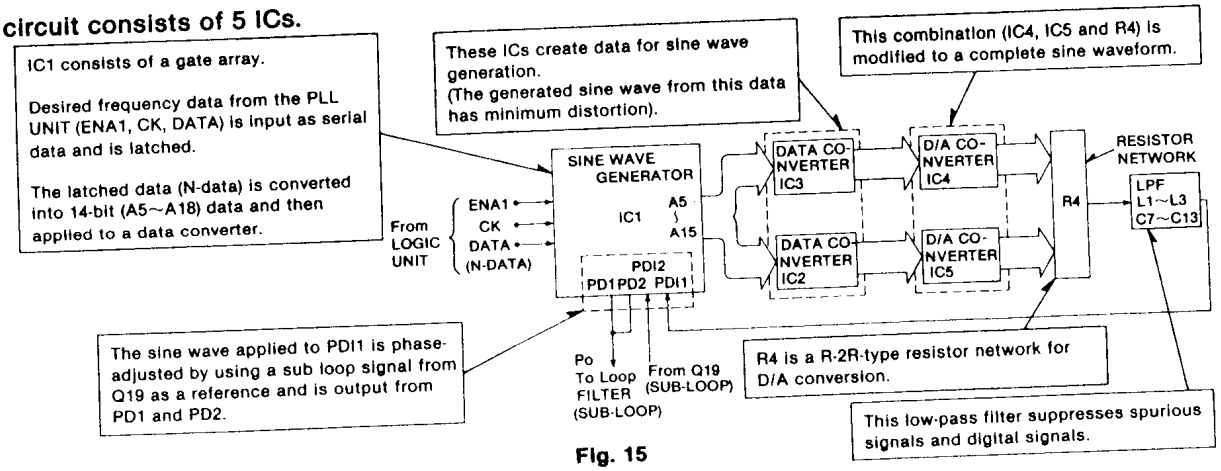


Fig. 15

4-5 LOGIC CIRCUITS

Functions of the LOGIC circuits include the control of frequency, the processing of mode signals, and data output for the PLL UNIT and DISPLAY UNIT. The LOGIC circuits are composed of an 8-bit CMOS CPU, a 2k byte RAM, 28k byte ROM and an I/O expander IC.

4-5-1 CPU

Functions are assigned to the pins of the CPU as shown at right. Pins where no functions are left unconnected.

Addresses are assigned to ROM and RAM and to all the other peripheral devices.

4-5-2 RESET CIRCUIT

The reset circuit is connected as shown below and supplies power from the power supply to reset IC4 and IC1.

The voltages at three points (Ⓑ~Ⓓ) change as shown on the graph below as the voltage from the power supply changes (point Ⓐ).

CPU PORT ALLOCATIONS

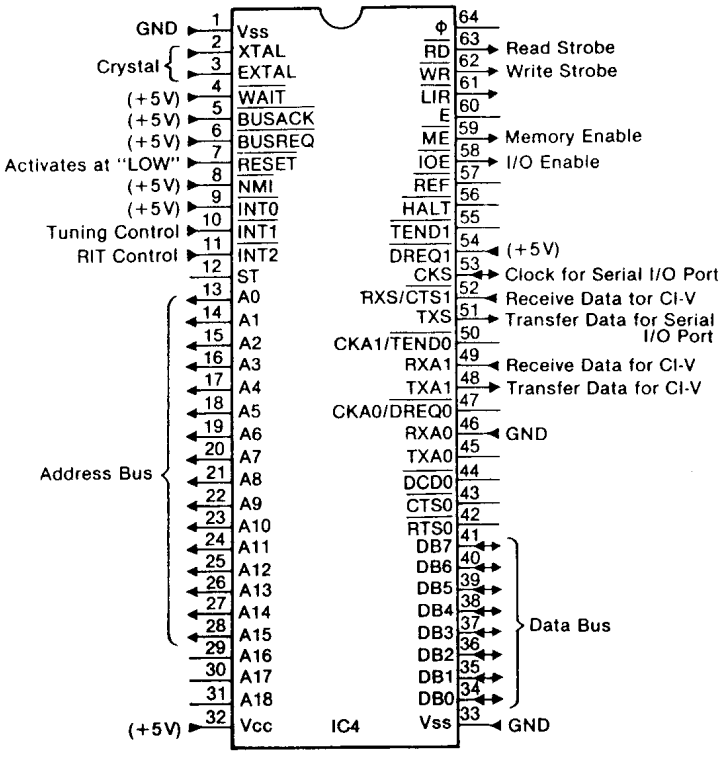


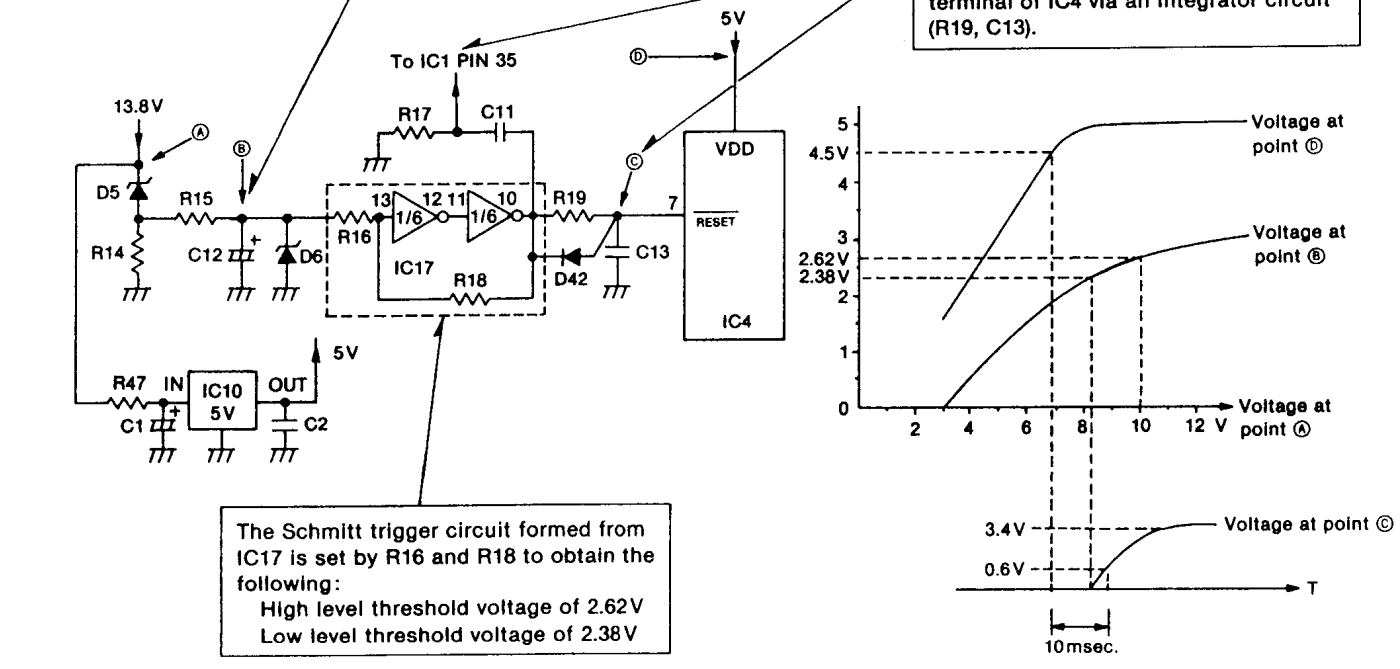
Fig. 16

This is the sequence of the reset circuit operation.

When the voltage at point Ⓑ exceeds the threshold voltage, a Schmitt trigger circuit outputs a "HIGH" Signal.

Output signals from the trigger circuit are applied to the reset terminal of IC1 via a differential circuit (R17, C11).

The signals are then applied to the reset terminal of IC4 via an integrator circuit (R19, C13).



The Schmitt trigger circuit formed from IC17 is set by R16 and R18 to obtain the following:
High level threshold voltage of 2.62V
Low level threshold voltage of 2.38V

Fig. 17

4-5-3 SENSOR CIRCUIT

The sensor circuit performs waveform shaping of the dial pulse from the 250 pulses/revolution sensor. The tuning speed selector section formed from IC17 automatically switches between normal speed and 4 times speed according to the number of generated pulses (varies according to whether the TUNING CONTROL is rotated quickly or slowly).

4-5-4 RIT UP/DOWN SENSOR CIRCUIT

Pulse signals from the RIT SENSOR in the FRONT UNIT are fed to CPU IC4 via IC6 and through an RIT UP/DOWN sensor consisting of IC19 and IC15 with interrupt signals from IC18 at pin 11.

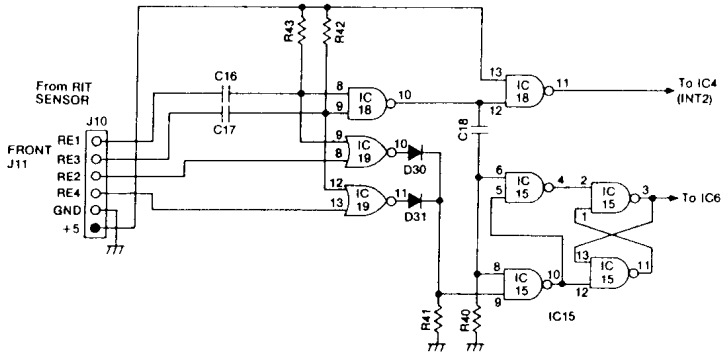


Fig. 18

4-5-5 MATRIX

MATRIX TABLE

	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	
		CALL	Mch UP	LSB	MIC CK	SIMP/DUP	BAND INITIAL 0	CI-V ADDRESS 0	DB0
		VFO A/B	Mch DOWN	USB	MIC U/D	CHECK	1	1	DB1
		MEMORY READ	RIT ON/OFF	CW/N	SKIP	SET	2	2	DB2
		A=B			MODE-S	TONE ON/OFF	3	3	DB3
	PITCH 0	MW	RIT CLEAR		SCAN SPEED	TONE SQL ON/OFF	4	4	DB4
	1	M ▶ VFO	SCAN S/S	FM		LOCK	CI-V DATA LENGTH	5	DB5
	2	M-CLEAR	SQL			SPCH START	CI-V BAUD RATE 0	6	DB6
	3	SPLIT	SEND	DATA	BAND EXPAND (138-174 MHz)	SPCH BUSY	1	CI-V TRANSCEIVE FLAG	DB7

Fig. 19

Y0 → DB4~DB7 (PITCH)
This matrix sets the frequency step tuning rate.

Y1 → DB0 (CALL)
This matrix is used for the [CALL] SWITCH.

Y1 → DB1 (VFO A/B)
This matrix selects VFO A or VFO B via the [VFO] SWITCH.

Y1 → DB2 (MEMORY READ)
This matrix is used for the [MEMORY] SWITCH.

Y1 → DB3 (A=B)
This matrix is used for the [A=B] SWITCH.

Y1 → DB4 (MW)
This matrix is used for the [MW] SWITCH.

Y1 → DB5 (M▶VFO)
This matrix is used for the [M▶VFO] SWITCH.

Y1 → DB6 (M-CLEAR)
This matrix is used for the [M-CL] SWITCH.

Y1 → DB7 (SPLIT)
This matrix is used for selecting the relationship of the two VFO frequencies.

Y2 → DB0, Y2 → DB1 (MEMO CH)
These matrices are used for the [MEMO] CHANNEL SELECTOR CONTROL.

Y2 → DB2 (RIT ON/OFF)
This matrix is used for the [RIT] SWITCH.

Y2 → DB4 (RIT CLEAR)
This matrix is used for the [RIT-CL] SWITCH.

Y2 → DB5 (SCAN START/STOP)
This matrix is used for the [SCAN] SWITCH.

Y2 → DB6 (SQL)
This matrix is for the SCAN TIMER function.

In PROGRAMMED SCAN or MEMORY CHANNEL SCAN mode, this matrix is activated.

When a signal is received, scan stops and then starts again after 3 or 10 seconds. These times depend on the type of signal received.

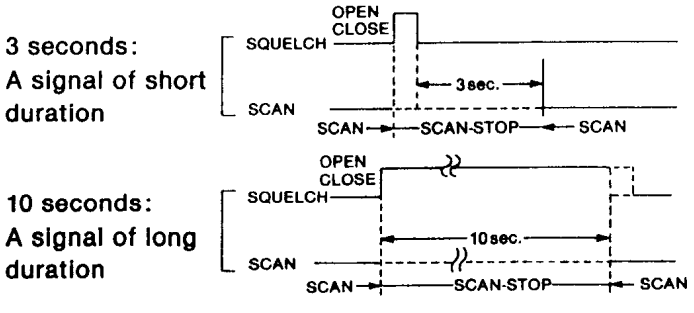


Fig. 20

Y2 → DB7 (SEND)
This matrix is used for switching the transceiver from transmit to receive mode and vice versa.

Y3 → DB0 (LSB)

Y3 → DB1 (USB)

Y3 → DB2 (CW/N)

Y3 → DB5 (FM)
FREQUENCY DIFFERENCES IN VARIOUS MODES

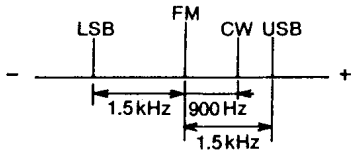


Fig. 21

Y3 → DB7 (DATA)
This matrix is used for the [DATA] SWITCH.
This matrix is for PACKET or AMTOR communications which require rapid receive and transmit switching times. (This matrix does not function in CW mode.)

• Transmit and receive switching time

[DATA] SWITCH	FM mode	SSB, CW mode
OFF	15~20msec.	20~25msec.
ON	approx. 3msec.	approx. 7msec.

Note: While the [DATA] SWITCH is ON, the optional AG-25 PREAMPLIFIER is not activated.

• Squelch close and open switching time
Squelch Close → Open:

[DATA] SWITCH	FM mode	SSB, CW mode
OFF	approx. 40msec.	approx. 15msec.
ON	approx. 4msec.	approx. 5msec.

Squelch Open → Close:

[DATA] SWITCH	FM mode	SSB, CW mode
OFF	approx. 350msec.	*1
ON	approx. 200msec.	

*1 These periods are varied by [AGC] SWITCH setting and receive signal strength.

Above times show time required for squelch to open/close at squelch threshold point.

• MIC MUTE
When the [DATA] SWITCH is turned ON the microphone signals are muted while transmit mode is selected using the [XMIT] SWITCH or the ACC SOCKET SEND line (except when using the microphone PTT SWITCH).

Y4 → DB0 (MIC CK), Y4 → DB1 (MIC UP/DOWN)
These matrices are used for changing frequencies by using the microphone with the UP/DOWN SWITCHES.

When the [DOWN] SWITCH is pushed, the matrix "Y4 → DB0" turns ON. When the [UP] SWITCH is pushed, the matrices "Y4 → DB0" and "Y4 → DB1" turn ON.

Y4 → DB2 (SKIP)
This matrix is used for the [SKIP] SWITCH.

Y4 → DB3 (MODE-S)
This matrix is used for the [MODE-S] SWITCH.

Y4 → DB4 (SCAN SPEED)
This matrix is used for the [SCAN SPEED] SWITCH.

Scan speed switch (S1)	Scan speed
Fast (ON)	20 channels/sec.
Slow (OFF)	10 channels/sec.

Y4 → DB7 (BAND EXPAND)
This matrix sets the bandwidth of the IC-275A/E/H.
When D44 is installed on the LOGIC UNIT, this matrix is in the ON position.

Y5 → DB0 (SIMP/DUP)
This matrix is used for selecting simplex or duplex mode operation.

Y5 → DB1 (CHECK)
This matrix is used for the [CHK] SWITCH.

Y5 → DB2 (SET)
This matrix is used for the [SET] SWITCH.

Y5 → DB3 (TONE ON/OFF)
(#08A, #03H)
This matrix is used for activating the built-in subaudible tone unit.
(#06A, #02H)
This matrix is used for transmitting the 1750Hz tone call.

Y5 → DB4 (TONE-SQL ON/OFF)
This matrix is used for the [T-SQL] SWITCH.

Y5 → DB5 (LOCK)
This matrix is used for the [LOCK] SWITCH.

Y5 → DB6 (SPEECH START), Y5 → DB7 (SPEECH BUSY)
These matrices are used for the [SPCH] SWITCH.

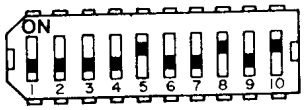
Y6 → DB0~DB4 (BAND INITIAL)
These matrices determine frequency range, initial offset, etc., for each transceiver version.

Y6 → DB5 (CI-V DATA LENGTH)
This matrix is for the ICOM CI-V system.
When D25 is installed on the LOGIC UNIT, this matrix is in the ON position.

Y6 → DB5	CI-V DATA LENGTH
OFF	4 byte
ON	5 byte

Y6 → DB6, DB7 Y7 → DB0~DB7
Transmitters and receivers using the ICOM CI-V System exchange serial information in the PACKET format. The contents of a data PACKET can be changed by using the S3 switches (switches 1 to 10) on the LOGIC UNIT.

S3 SWITCHES (Switches 1~10)



The S3 SWITCHES shown above are located on the LOGIC UNIT.

Fig. 22

Switches 1~7 (For setting an address with the transceiver):
These switches determine the transceiver's address number (00H~7FH).
Matrix configuration: Y7 → DB0~DB6

ICOM Standard address number:

MODEL	ADDRESS NUMBER	MODEL	ADDRESS NUMBER
IC-761	1EH (30)	*IC-751A	1CH (28)
IC-275A/E/H	**10H (16)**	*IC-751	1CH (28)
IC-475A/E/H	14H (20)	*IC-271A/E/H	20H (32)
IC-375A	12H (18)	*IC-471A/E/H	22H (34)
IC-575A/E/H	16H (22)	*IC-1271A/E	24H (36)
IC-735	04H (4)	*IC-R71A/E/D	1AH (26)
IC-R7000	08H (8)		

*Address numbers are fixed by the UX-14.

Bracketed figures ( ) are decimals; figures marked with an H are hexadecimals.

Switch 8 (For setting a transceive flag):
The ON position sets a flag used for sending code data of transceive operations automatically when the frequency is changed. The receive code data is accepted regardless of whether the switch is ON or OFF.
Matrix configuration: Y7 → DB7

Switches 9 and 10 (For setting CI-V baud rate):

Baud	Switch 9	Switch 10
9600	OFF	OFF
4800	ON	OFF
1200	**OFF**	**ON**
300	ON	ON

Matrix configuration: Y6 → DB6
Y6 → DB7

NOTE:
The standard ICOM CI-V baud rate is 1200bps.

4-6 SWITCHING REGULATOR CIRCUIT (IC-275A/E ONLY)

This circuit provides 13.8V DC (8A) output.

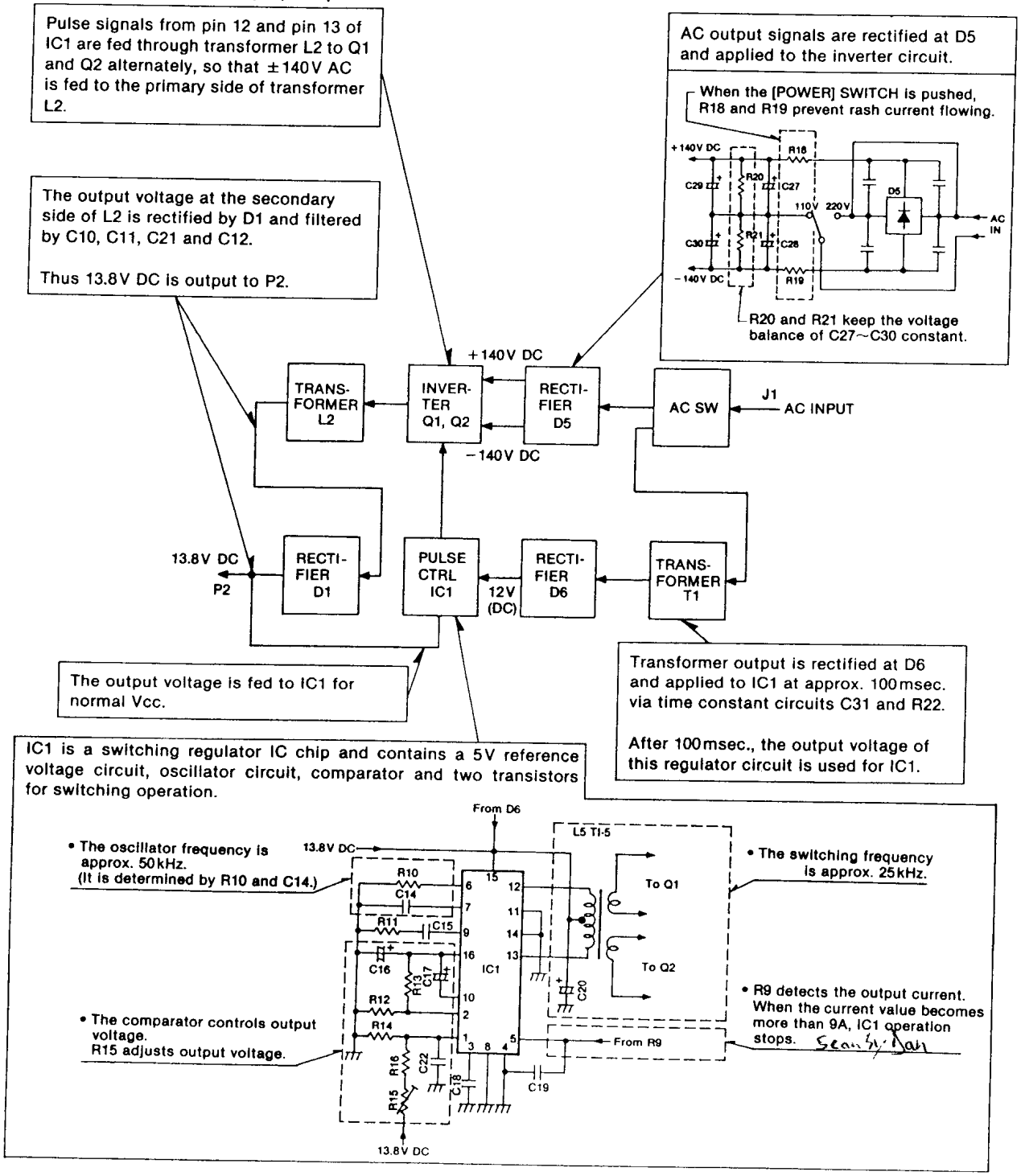
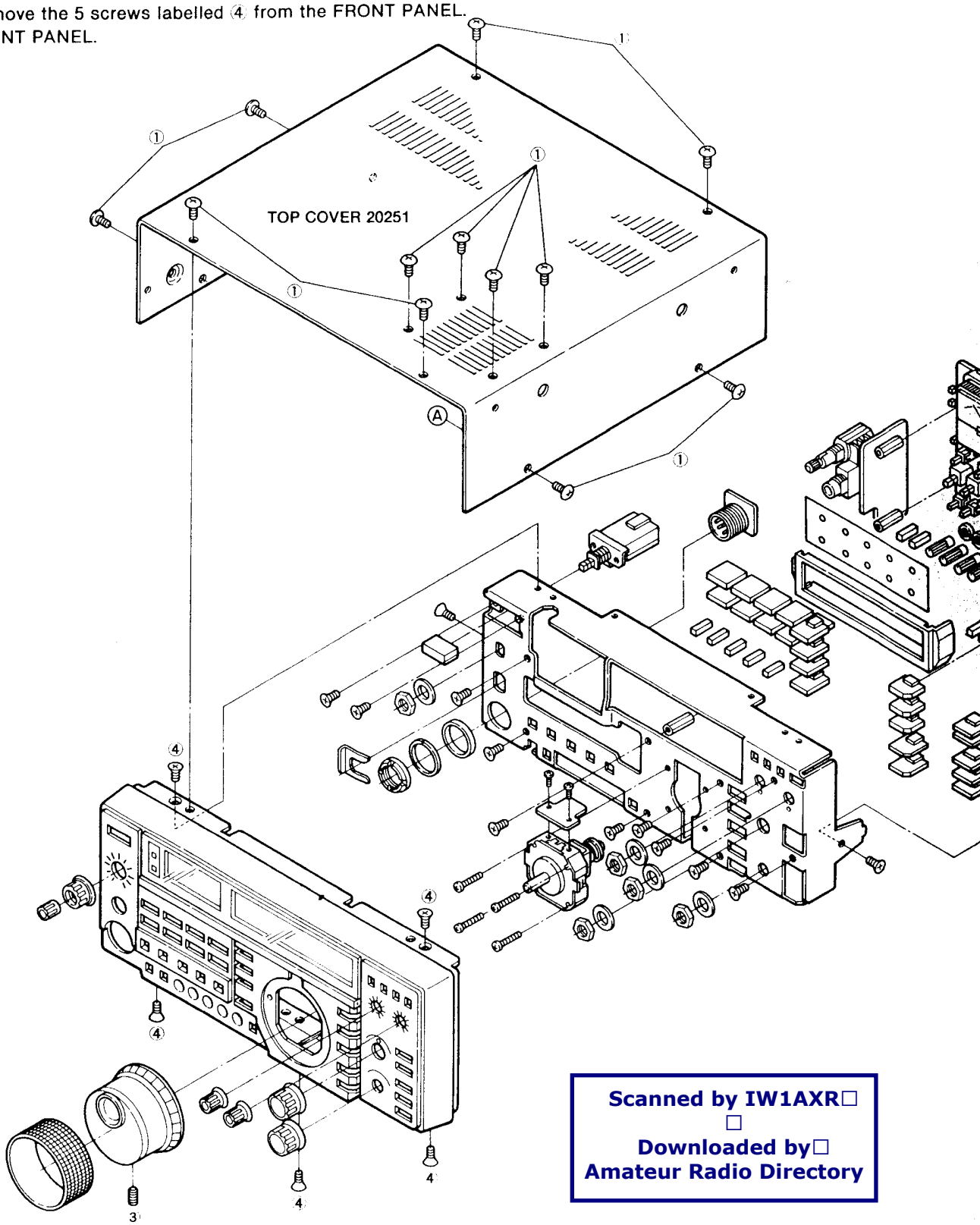


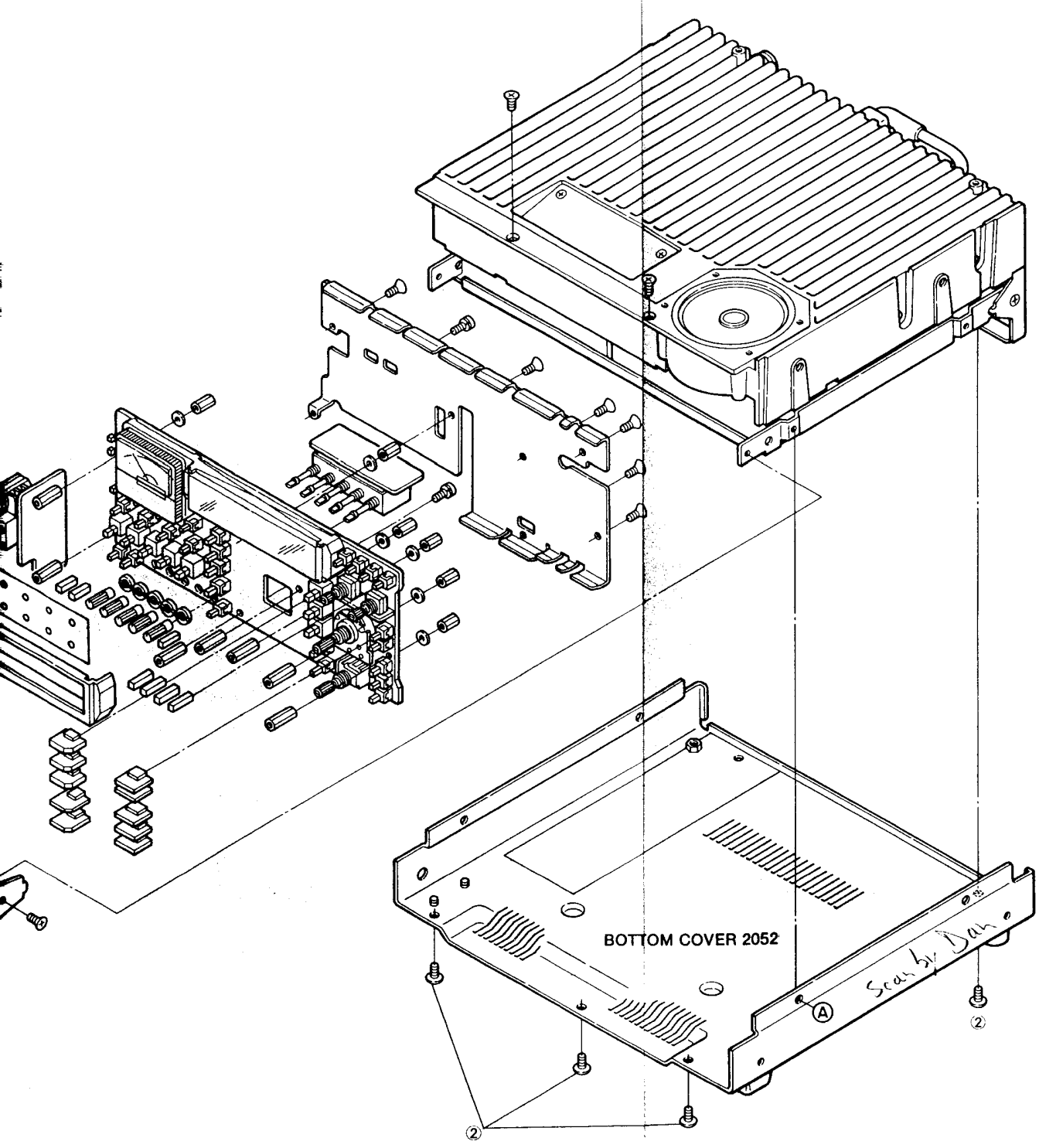
Fig. 23

SECTION 5 MECHANICAL PARTS AND DISASSEMBLY

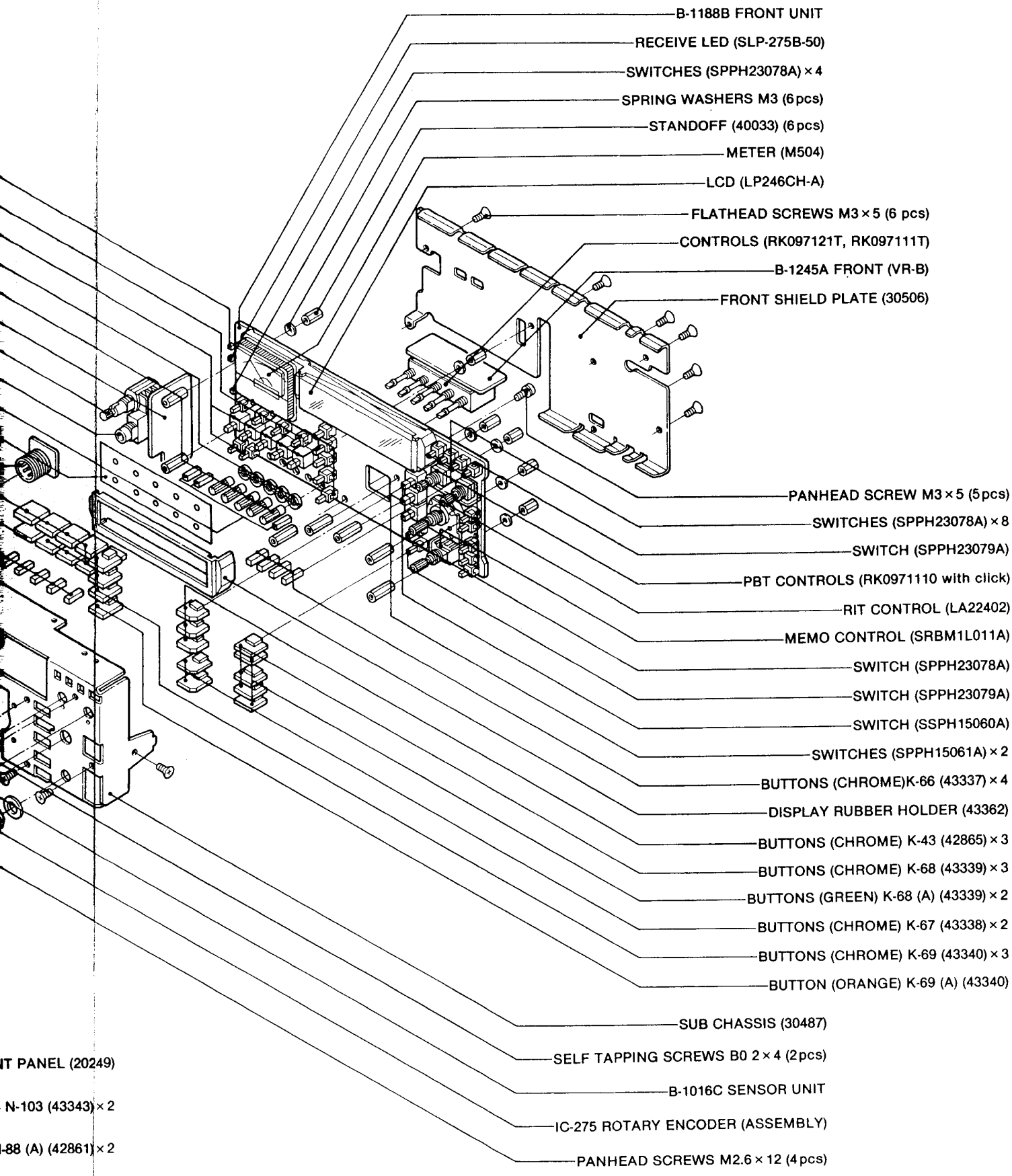
5-1 FRAME DISASSEMBLY

1. Unscrew and remove the 12 screws labelled ① from the TOP COVER.
   Remove the TOP COVER.
2. Unscrew and remove the 5 screws labelled ② from the BOTTOM COVER.
   Remove the BOTTOM COVER.
3. Remove the hex socket screw labelled ③ from the TUNING CONTROL.
   Pull out the forward controls from the FRONT PANEL.
4. Unscrew and remove the 5 screws labelled ④ from the FRONT PANEL.
   Remove the FRONT PANEL.





NOTE: Ⓐ indicates the location where the covers are attached.



NT PANEL (20249)

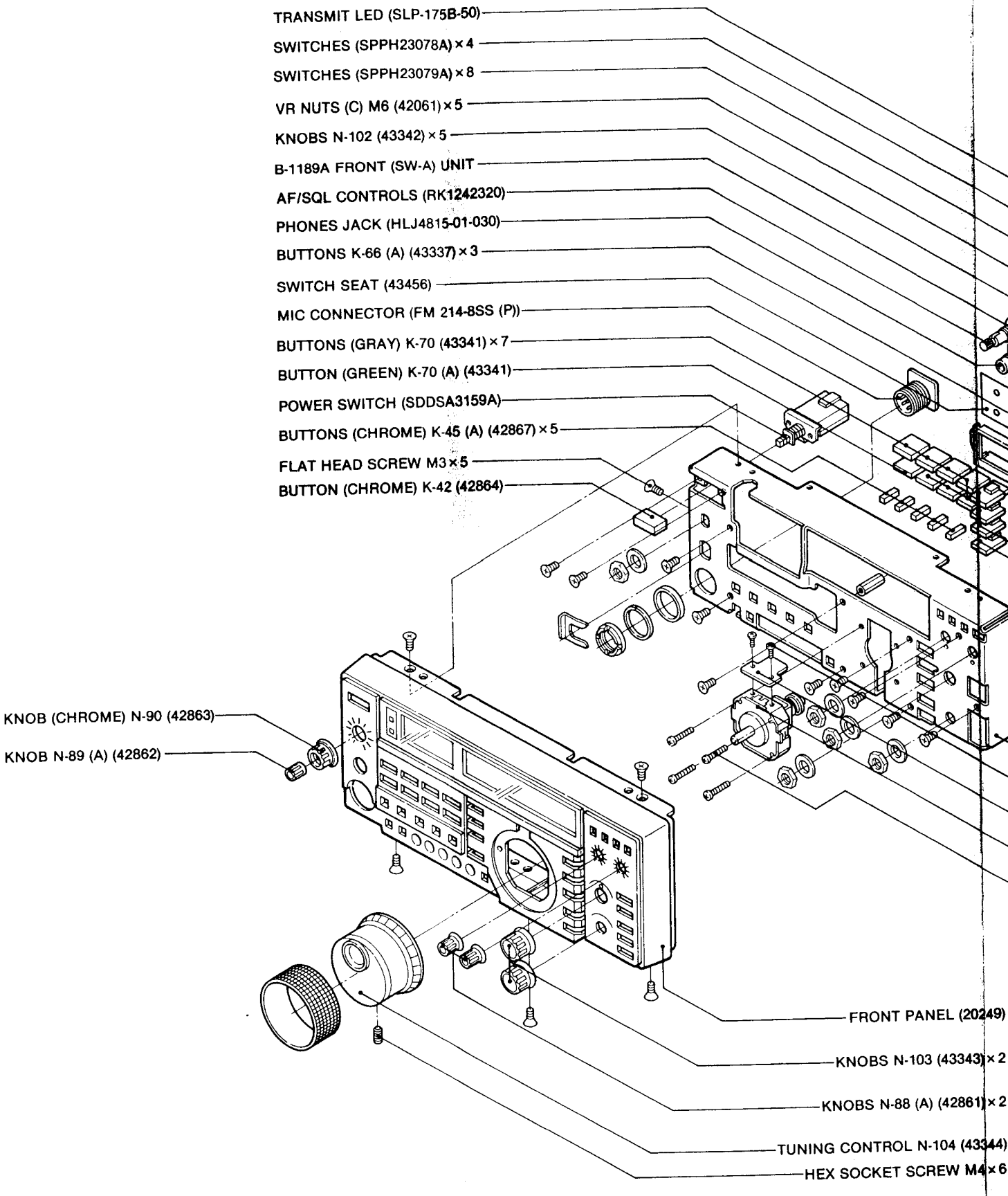
N-103 (43343) × 2

-88 (A) (42861) × 2

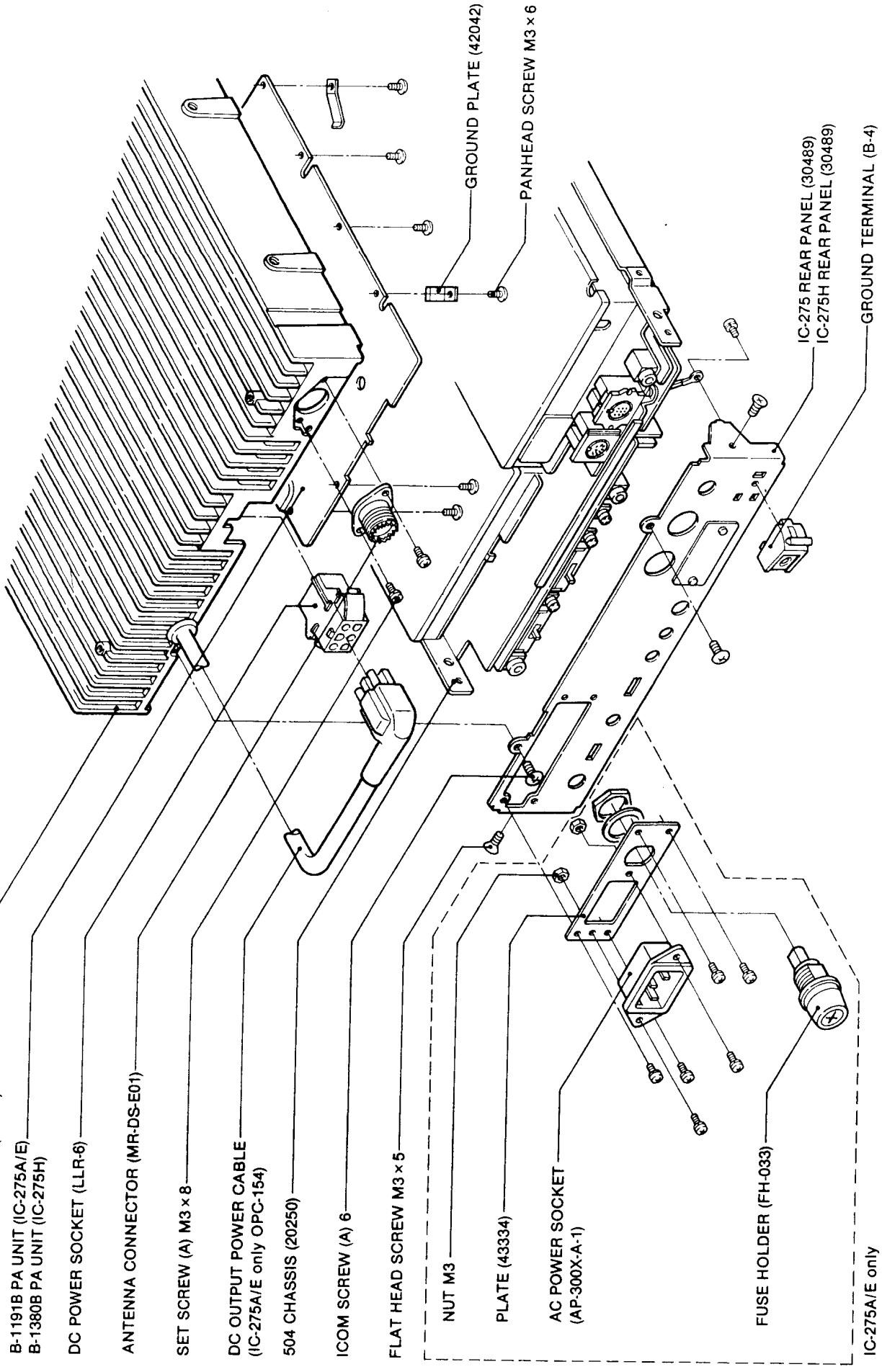
OL N-104 (43344)

T SCREW M4 × 6

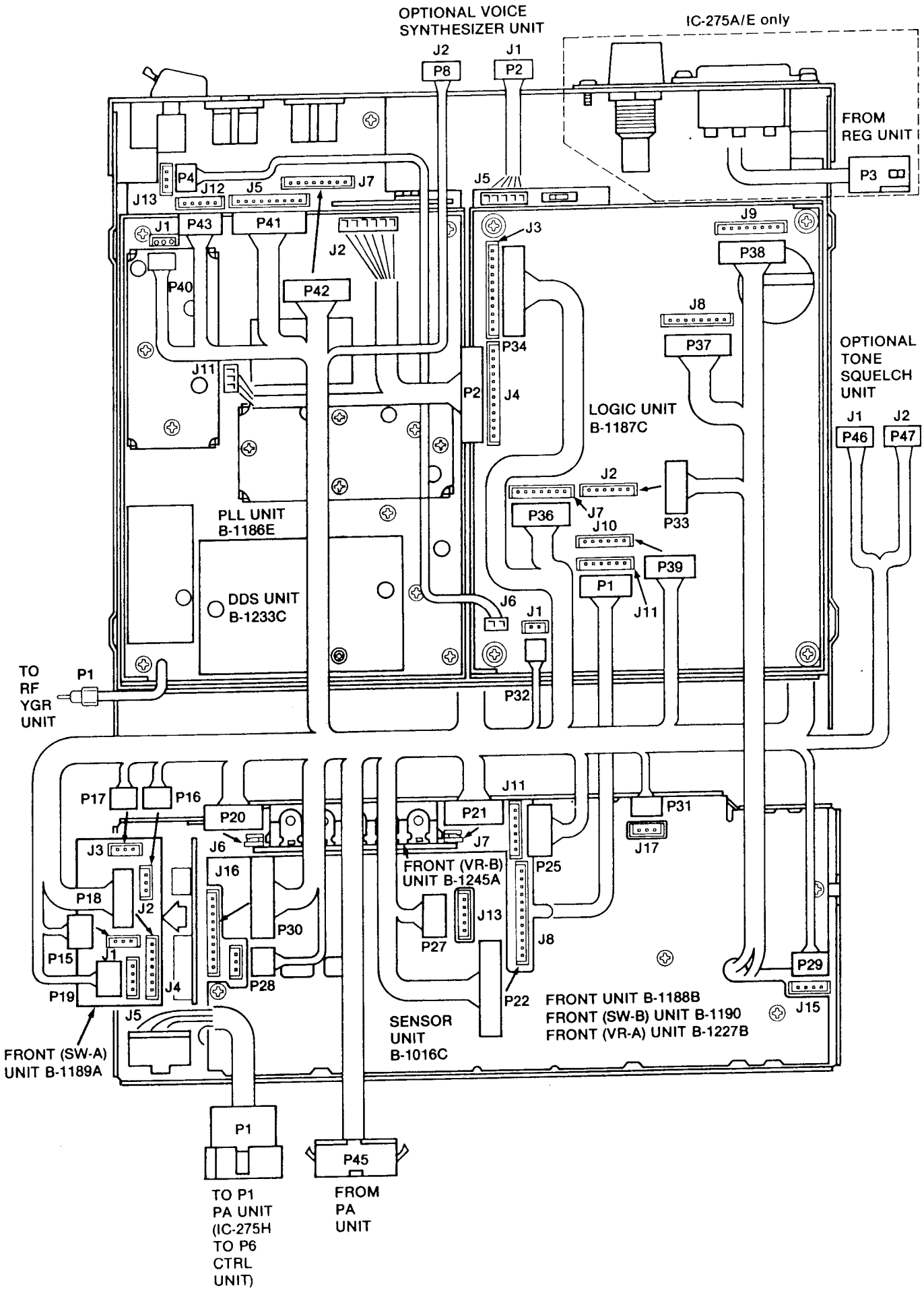
5-2 FRONT PANEL DISASSEMBLY



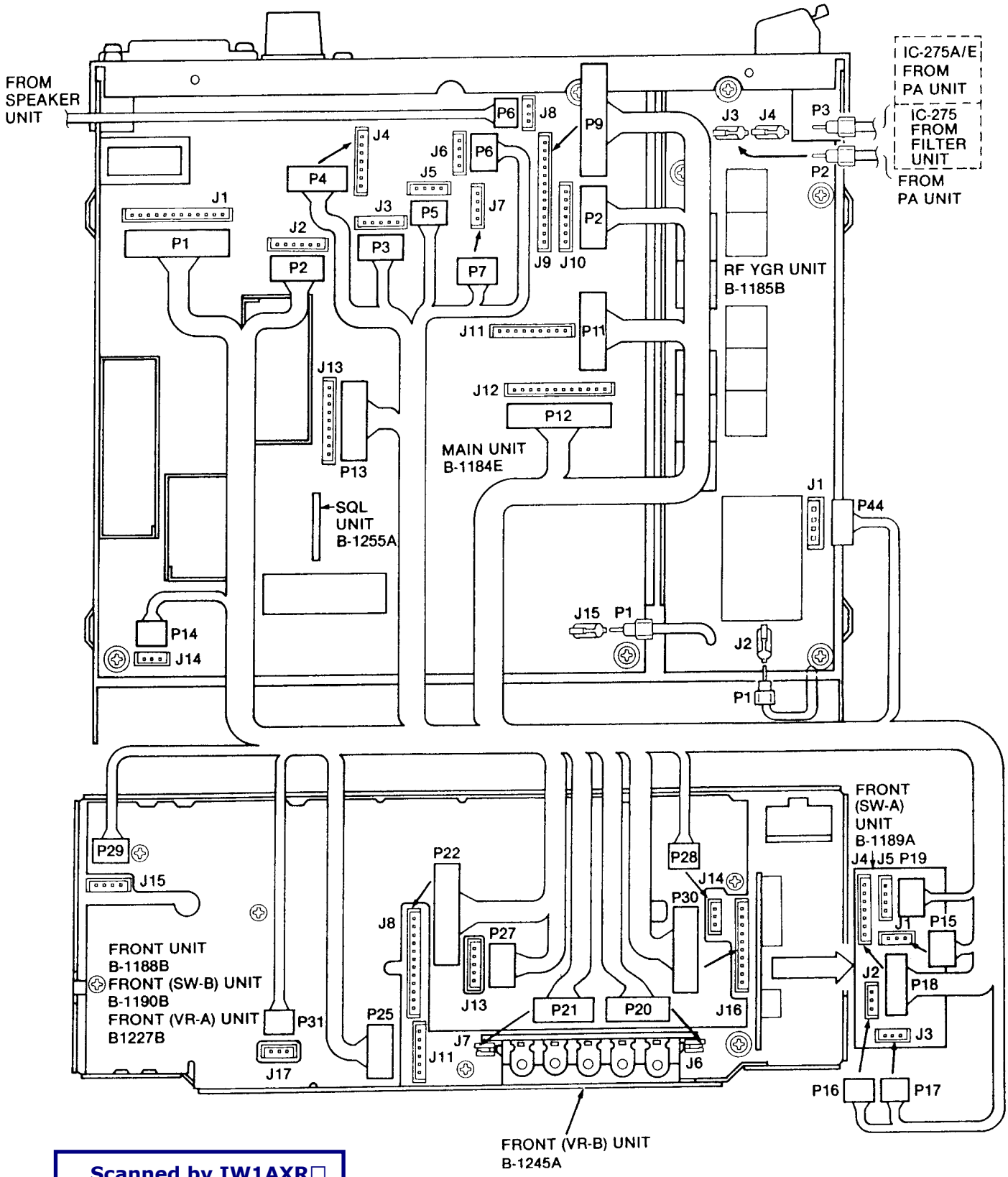
5-3 REAR PANEL DISASSEMBLY



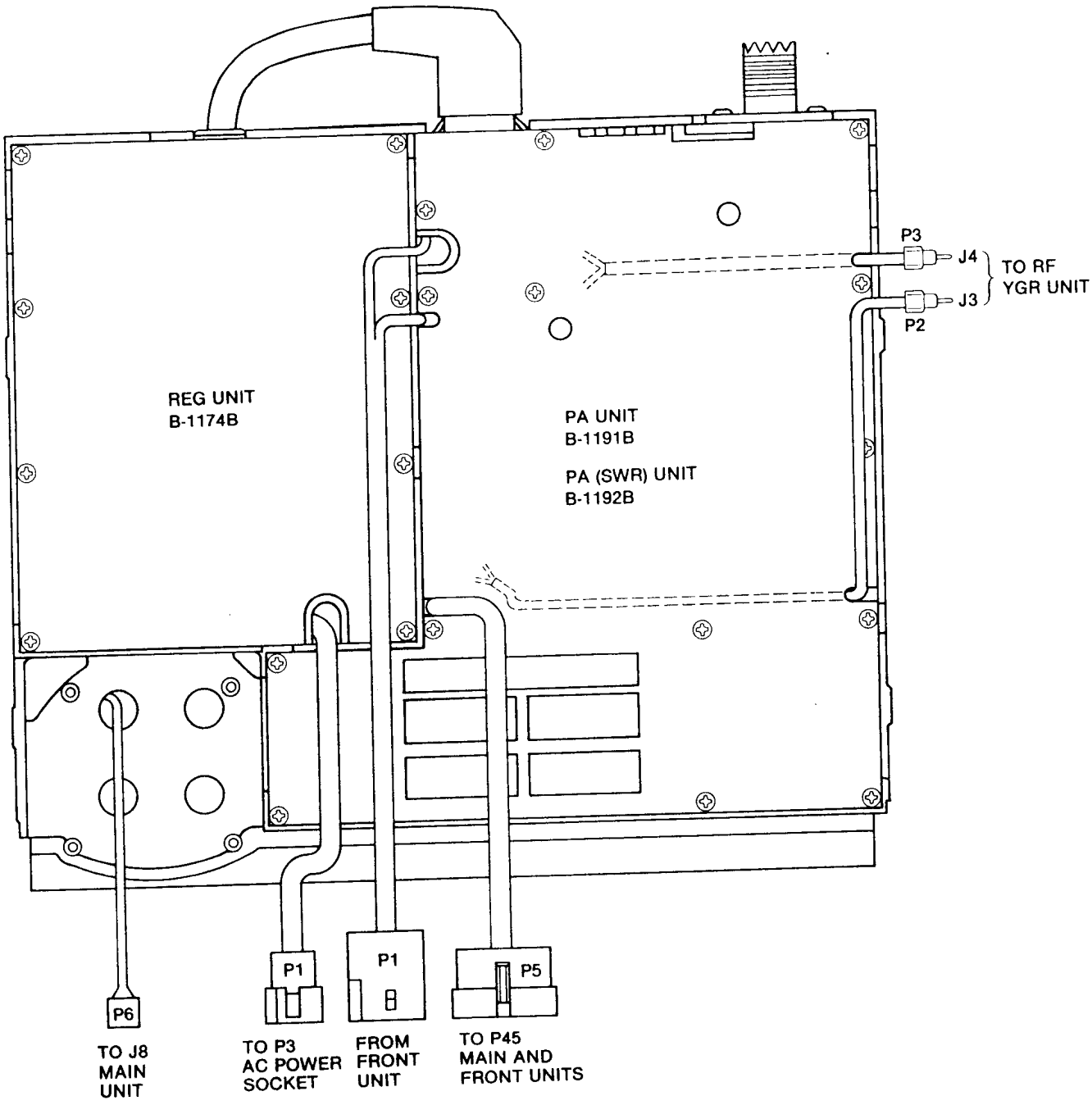
5-4 FRONT, LOGIC AND PLL UNITS CONNECTOR ASSEMBLY



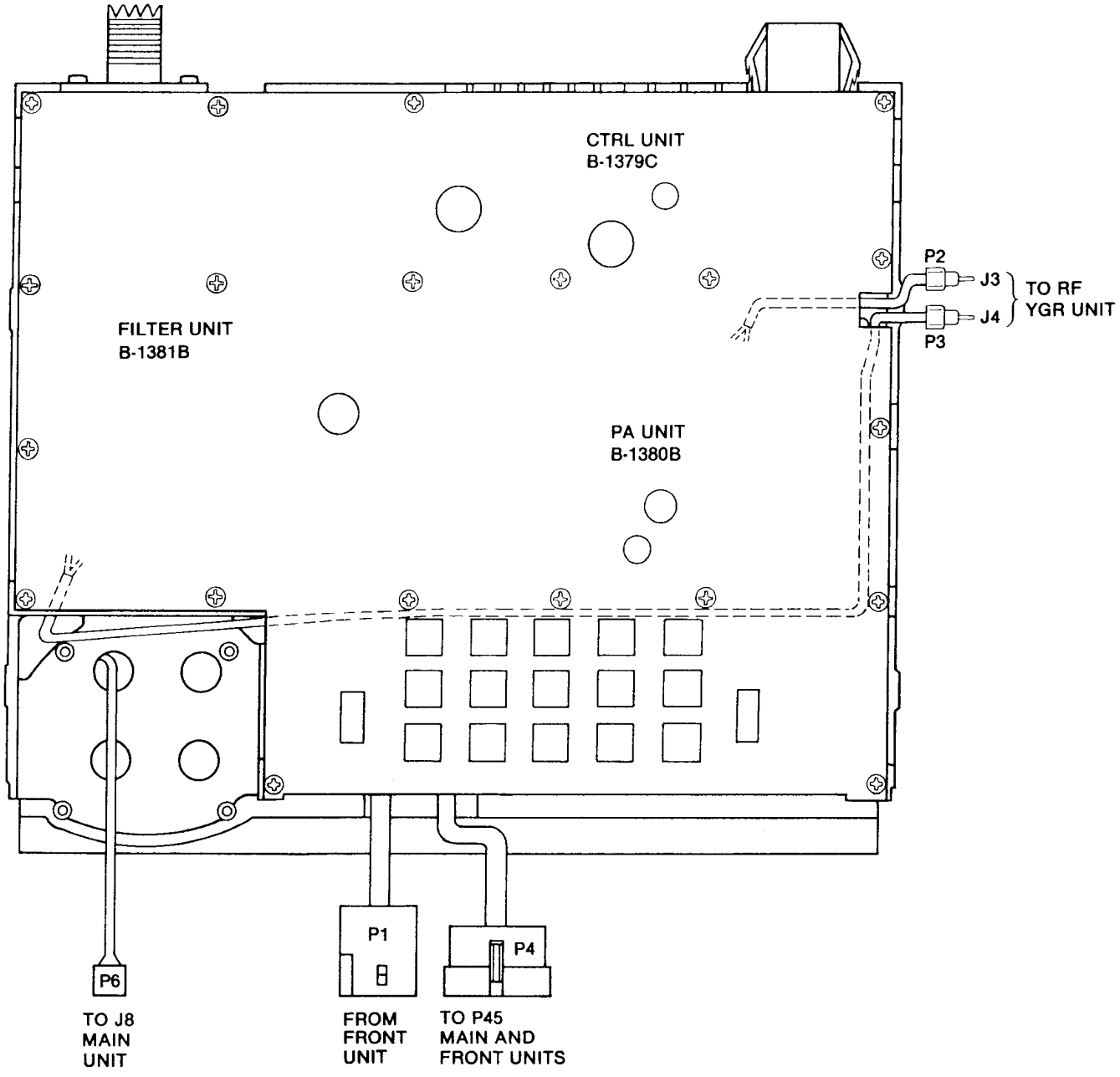
5-5 FRONT, MAIN AND RF YGR UNITS CONNECTOR ASSEMBLY



5-6 PA AND REG UNITS CONNECTOR ASSEMBLY (IC-275A/E)



5-7 PA, CTRL AND FILTER UNITS CONNECTOR ASSEMBLY (IC-275H)



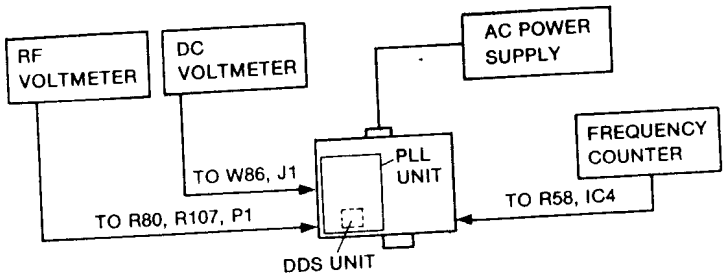
SECTION 6 MAINTENANCE AND ADJUSTMENT

6-1 PREPARATION BEFORE SERVICING

CAUTION: An external AC power supply should be used to connect the transceiver to a power source during testing.

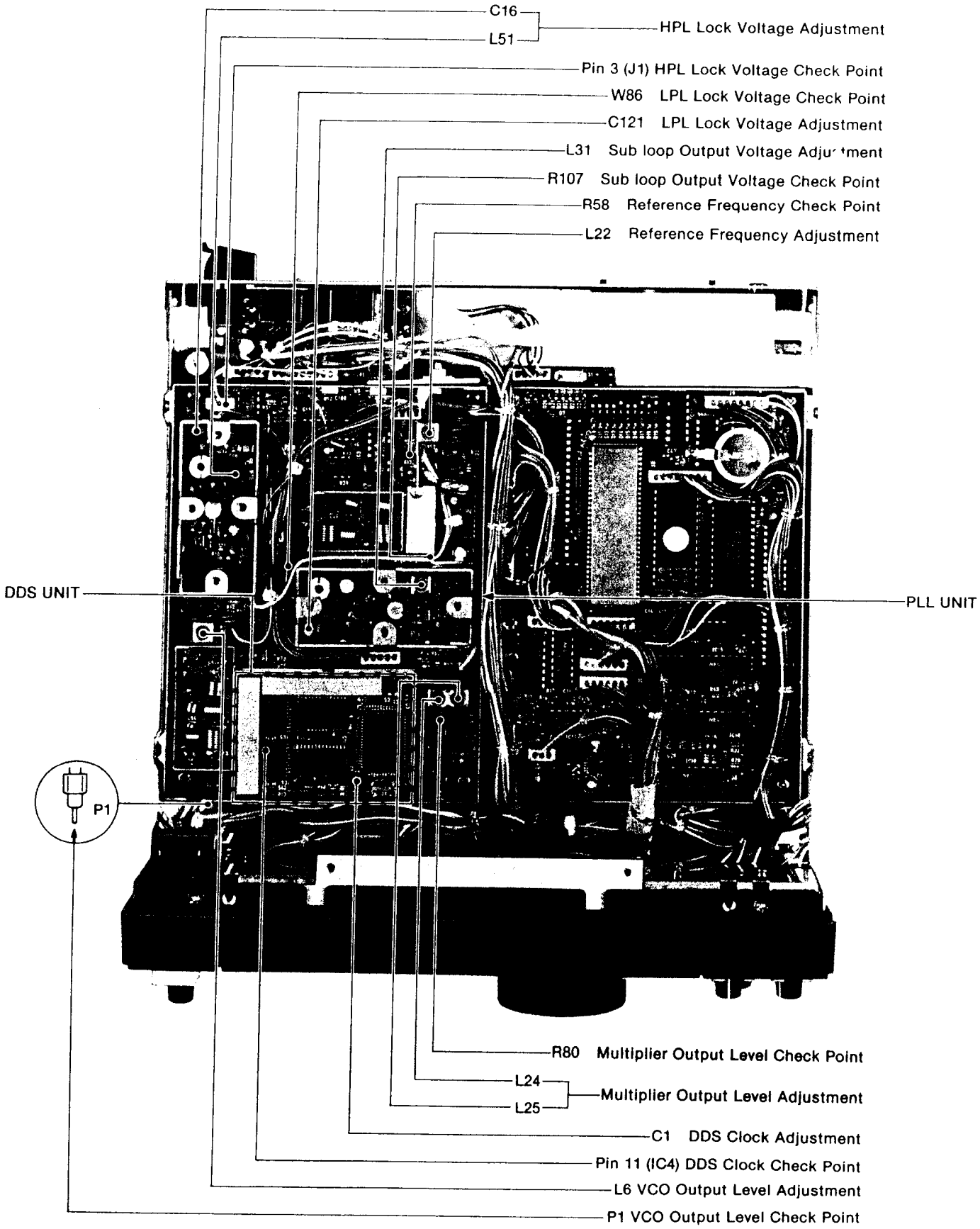
1. Detach the power cord and turn OFF the POWER SWITCH before performing any work on the transceiver.
2. DO NOT turn the [PREAMP] SWITCH ON while a signal generator is connected to the ANTENNA CONNECTOR. DC voltage is generated and may damage the protector fuse of the signal generator.
3. DO NOT short circuit components while making adjustments.
4. Use an insulated tuning tool for all adjustments.
5. DO NOT force any of the variable components. Turn them slowly and smoothly.
6. Follow the instructions exactly. If an indicated result is not obtained, repeat the instruction until the correct result is obtained.
7. Check the condition of connectors, solder joints and screws when adjustments are complete. Make sure components DO NOT touch each other.
8. Confirm defective operation of the transceiver first when checking an out-of-service unit. Verify that external sources DO NOT cause the problem.
9. Use the correct tools and test equipment.
10. Remove the transceiver case as shown in SECTION 5-1.
11. For transmission problems, attach a dummy load to the ANTENNA CONNECTOR. For reception problems, attach an antenna or signal generator to the ANTENNA CONNECTOR. DO NOT transmit into the signal generator.
12. Recheck for the suspected malfunction with the POWER SWITCH ON.
13. Check the defective circuit. Measure the DC voltages of the collector, base and emitter of each transistor.

6-2 PLL ADJUSTMENT

TEST INSTRUMENTS REQUIRED	MEASUREMENT CONNECTION LOCATION
(1) AC POWER SUPPLY • Output voltage : 13.8V DC • Current capacity : 25A or more (2) FREQUENCY COUNTER • Frequency range : 0.1~180MHz • Frequency accuracy : ±1ppm or better • Sensitivity : 100mV or better (3) RF VOLTMETER • Frequency range : 0.1~180MHz • Measuring range : 0.01~10V (4) DC VOLTMETER • Input impedance : 50kΩ/DC or better	

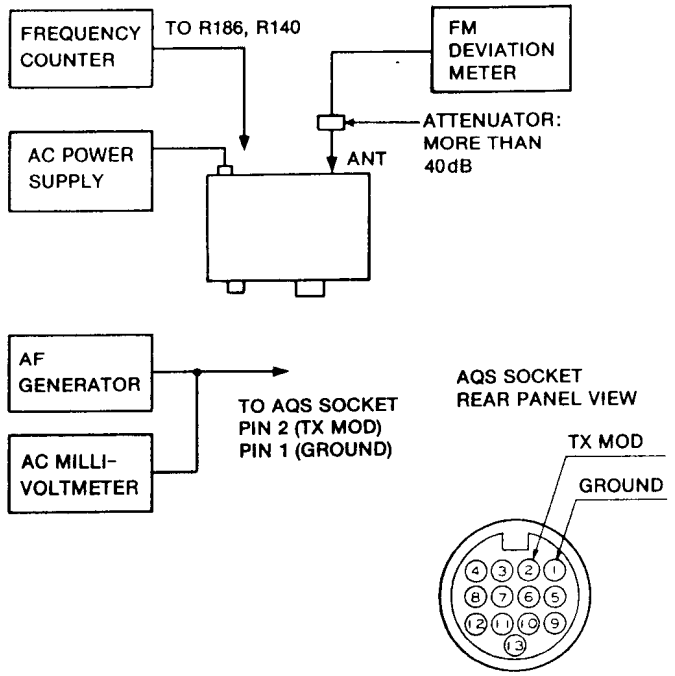
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
REFERENCE FREQUENCY	1	• Frequency display: 145.0000MHz • Receive mode	PLL	Connect a frequency counter to R58.	30.7200MHz	PLL	L22
MULTIPLIER OUTPUT LEVEL	1	• Frequency display: 145.0000MHz • Receive mode	PLL	Connect an RF voltmeter to R80.	Adjust to maximum output. (approx. 400mVp-p, approx. 141mVrms)	PLL	L24, L25
DDS CLOCK	1	• Frequency display: 145.0000MHz • Receive mode	DDS	Connect a frequency counter to IC4, pin 11.	5.24288MHz	DDS	C1
LPL LOCK VOLTAGE	1	• Frequency display: 144.4800MHz • FM mode	PLL	Connect a DC voltmeter to W86.	1V	PLL	C121
	2	• Frequency display: 144.4790MHz • FM mode			approx. 2V		Verify
SUB LOOP OUTPUT VOLTAGE	1	• Frequency display: 145.0000MHz • Receive mode	PLL	Connect an RF voltmeter to C180 side of R107.	Adjust to maximum output. (approx. 1Vp-p, approx. 0.35Vrms)	PLL	L31
HPL LOCK VOLTAGE (HAM BAND)	1	• Frequency display: 144.0000MHz • FM mode	PLL	Connect a DC voltmeter to J1, pin 3.	3V	PLL	C16
(WIDE BAND)	2	• Frequency display: 138.0000MHz • FM mode			2.2V		L51
VCO OUTPUT LEVEL	1	• Frequency display: 145.0000MHz • FM mode	PLL	Terminate P1 to ground with a 50Ω resistor. Connect an RF voltmeter to P1.	Adjust to maximum output. (0dBm or more)	PLL	L6
		NOTE: After completing the adjustment, return P1 to its original condition.					

PLL AND DDS UNITS



This picture shows the IC-275H model.

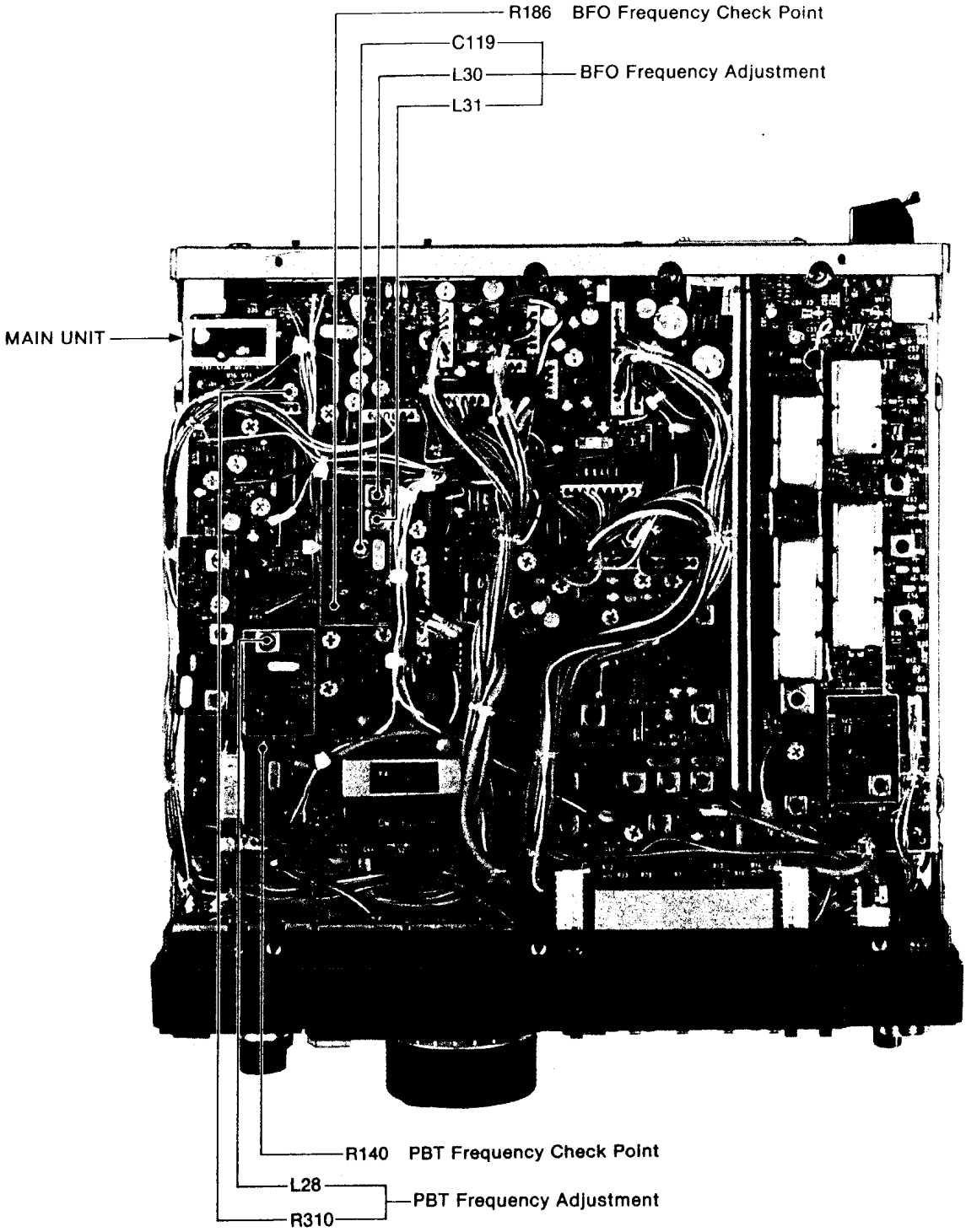
6-3 FREQUENCY AND TONE ADJUSTMENT

TEST INSTRUMENTS REQUIRED	MEASUREMENT CONNECTION LOCATION
(1) AC POWER SUPPLY • Output voltage : 13.8V DC • Current capacity : 25A or more (2) FREQUENCY COUNTER • Frequency range : 0.1~180MHz • Frequency accuracy : ±1ppm or better • Sensitivity : 100mV or better (3) AF GENERATOR (AG) • Frequency range : 200~3000Hz • Output level : 0~300mV (4) AC MILLI-VOLTMETER • Measuring range : 2~50mV (5) FM DEVIATION METER • Frequency minimum : 150MHz • Measuring range : 0~±5kHz	

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
BFO FREQUENCY	1	• Frequency display: 145.0000MHz • LSB mode • Receive mode	MAIN	Connect a frequency counter to R186.	10.75150MHz	MAIN	C119
	2	• CW mode • Transmit mode • Connect a key to the KEY JACK and key down.			10.74910MHz		L31
	3	• USB mode • Receive mode			10.74850MHz		L30
	4	• CW mode • Receive mode			10.74830MHz (±150Hz)		Verify
PBT FREQUENCY	1	• USB mode • PBT CONTROL: Center position • Receive mode	MAIN	Connect a frequency counter to R140.	10.29500MHz	MAIN	L28
	2	• PBT CONTROL: Max. CW			10.29670MHz or higher		Verify
	3	• PBT CONTROL: Max. CCW			10.29330MHz or lower		
	4	• PBT CONTROL: Center position • FM mode			10.29500MHz		R310

CW: Clockwise CCW: Counterclockwise

MAIN UNIT

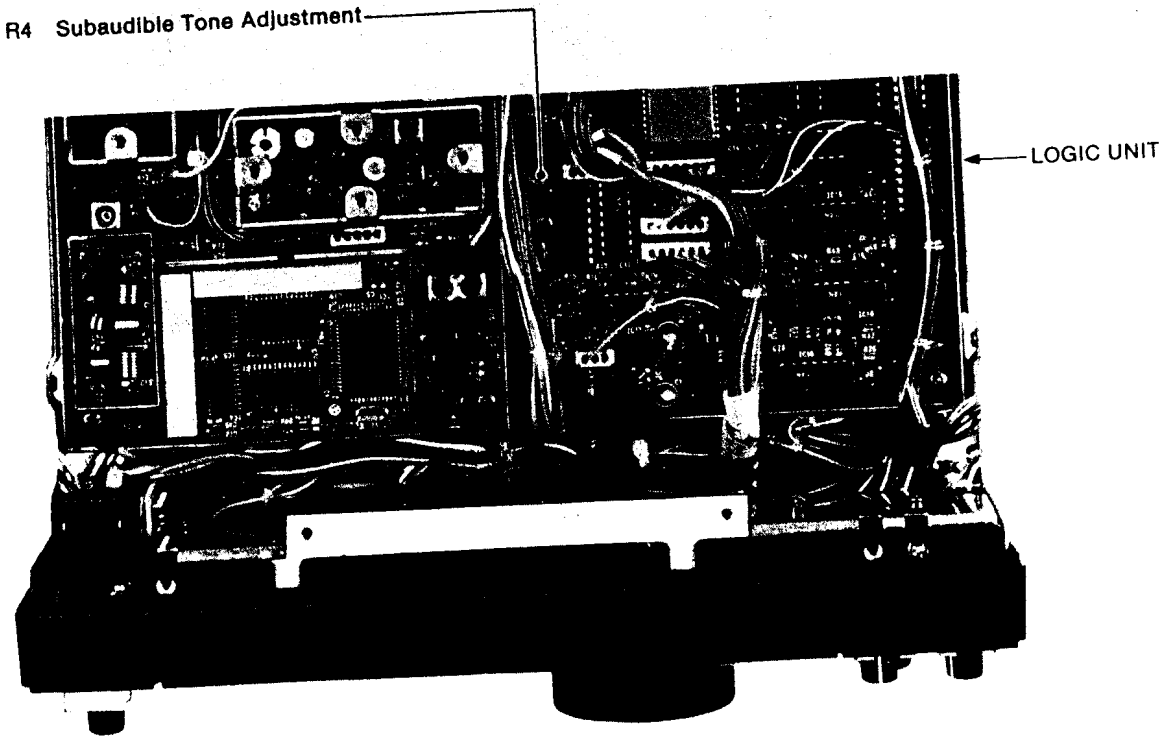


This picture shows the IC-275H model.

FREQUENCY AND TONE ADJUSTMENT (CONTINUED)

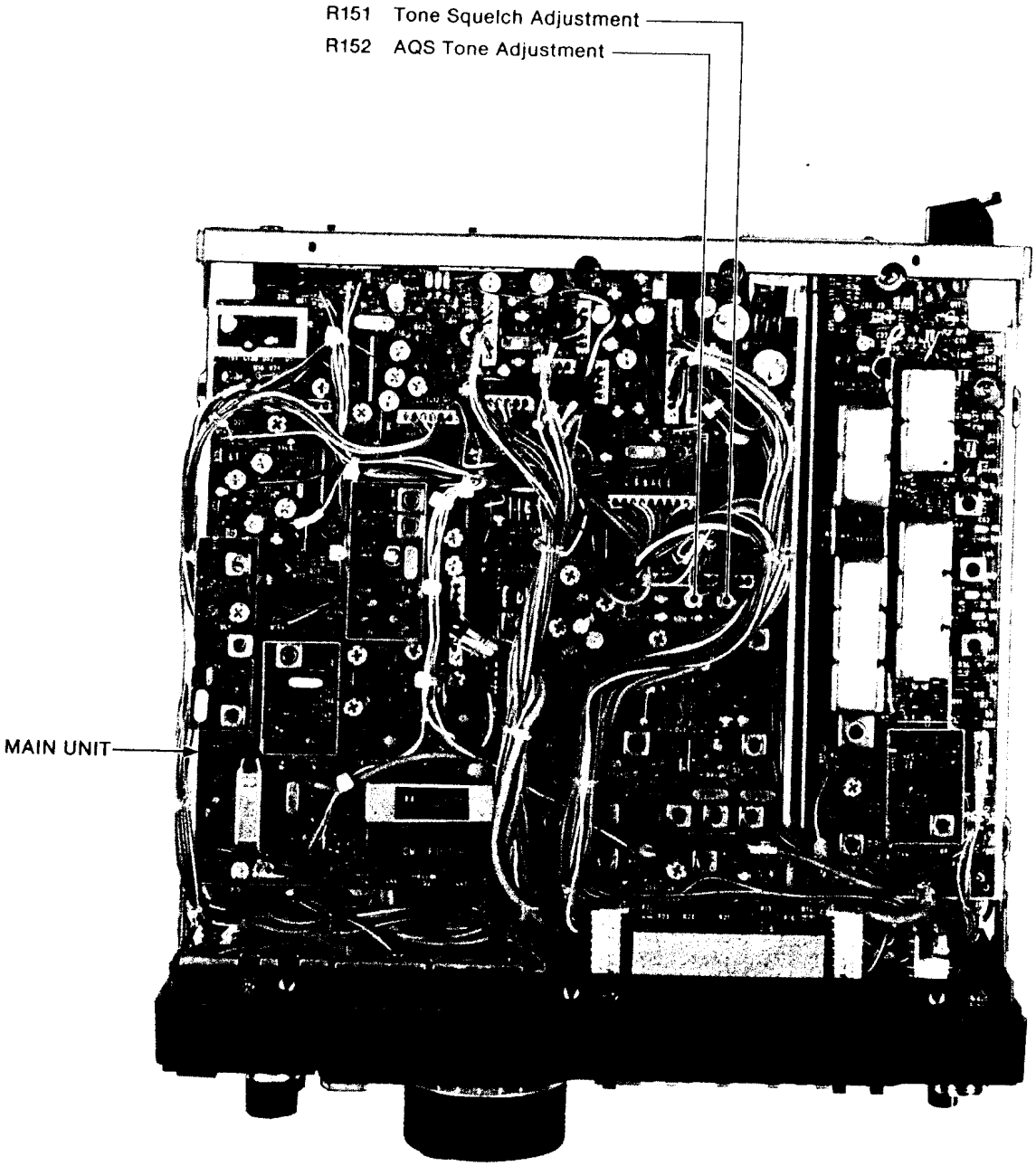
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
SUBAUDIBLE TONE	1	• Frequency display: 145.0000 MHz • FM mode • Transmit mode • Apply no AF signal to the MIC CONNECTOR. • TONE SWITCH: ON • TONE FREQUENCY: 67.0 Hz	REAR PANEL	Connect an FM deviation meter to the ANTENNA CONNECTOR through an attenuator.	Dev.: ±0.5 kHz (#08A, #10A, #03H, #04H) Dev.: ±3.5 kHz (#06E, #02H)	LOGIC	R4
AQS TONE	1	• FM mode • Transmit mode • Apply no AF signal to the MIC CONNECTOR. • Apply an AF signal to the AQS SOCKET, pin 2: 1.2 kHz, 300 mV (pin 1 is ground).	REAR PANEL	Connect an FM deviation meter to the ANTENNA CONNECTOR through an attenuator.	Dev.: ±4 kHz	MAIN	R152
TONE SQUELCH	1	• FM mode • Apply no AF signal to the MIC CONNECTOR. • Connect P46 and P47 to UT-34 (option). • TONE SQUELCH SWITCH: ON • TONE FREQUENCY: 67.0 Hz	REAR PANEL	Connect an FM deviation meter to the ANTENNA CONNECTOR through an attenuator.	Dev.: ±0.5 kHz	MAIN	R151

LOGIC UNIT



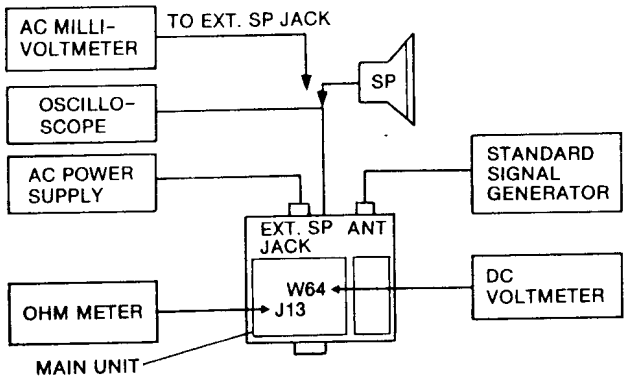
This picture shows the IC-275H model.

MAIN UNIT



This picture shows the IC-275H model.

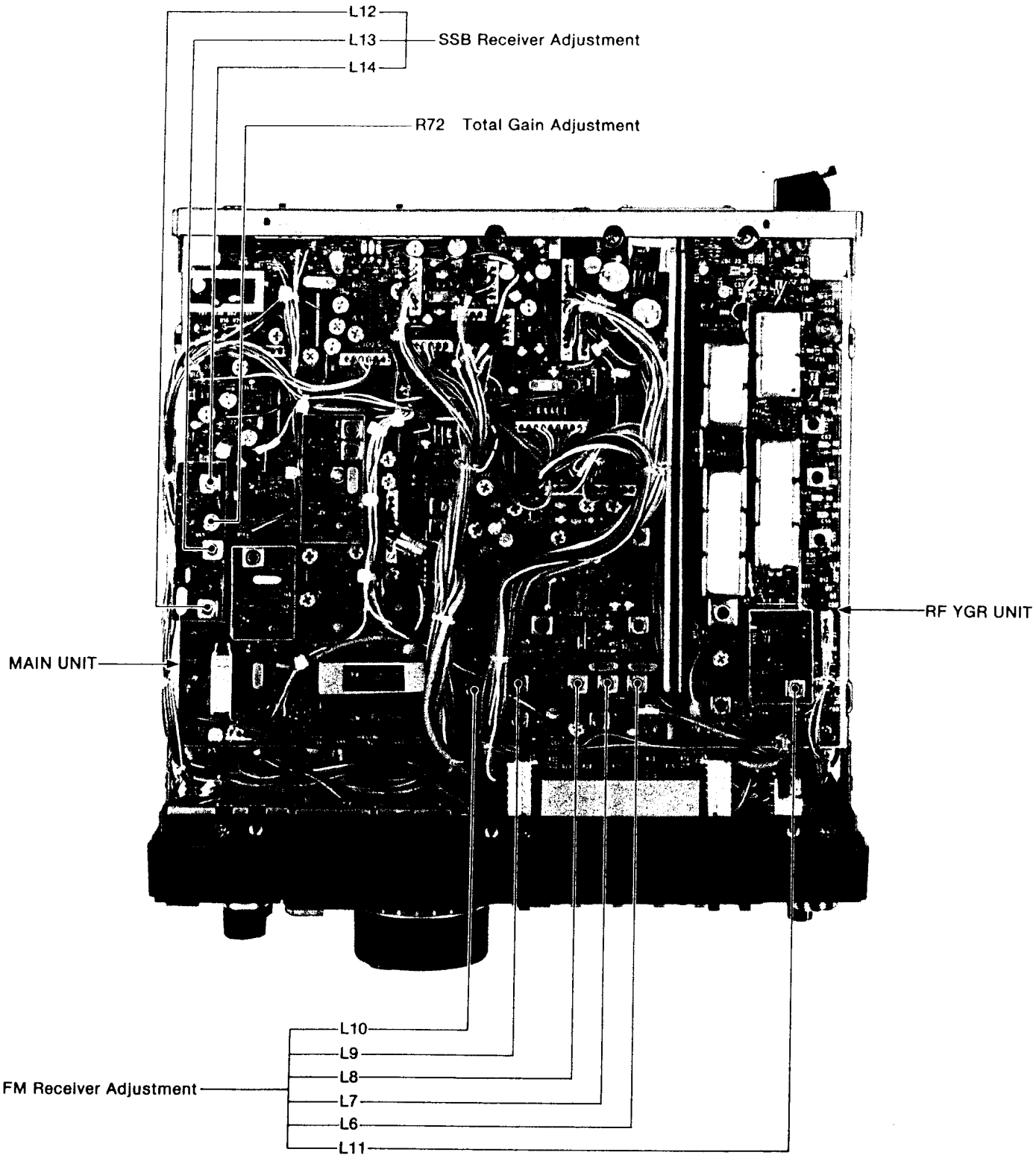
6-4 RECEIVER ADJUSTMENT

TEST INSTRUMENTS REQUIRED	MEASUREMENT CONNECTION LOCATION
(1) AC POWER SUPPLY • Output voltage : 13.8V DC • Current capacity : 25A or more (2) STANDARD SIGNAL GENERATOR (SSG) • Frequency range : 0.1~180MHz • Output level : −127~−17dBm (0.1μV~32mV) (3) DC VOLTMETER • Input impedance : 50kΩ/DC or better (4) AC MILLI-VOLTMETER • Measuring range : 10mV~10V (5) EXTERNAL SPEAKER • Impedance : 8Ω (6) OHM METER (7) OSCILLOSCOPE • Frequency range : DC~20MHz • Measuring range : 0.01~10V	

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
FM RECEIVER	1	• Frequency display: 145.0000MHz (#06E, #12E, #02H, #05H) 146.0000MHz (#08A, #10A, #03H, #04H) • FM mode • Receive mode • RF GAIN CONTROL: Max. CW • PREAMP: OFF • NOTCH FILTER SWITCH: OFF • PBT CONTROL: Center position • AF TONE CONTROL: Center position • SQUELCH CONTROL: Max. CCW • Apply an RF signal to the ANTENNA CONNECTOR. Level: −97dBm (3.2μV) Dev. : ±5kHz Mod. : 1kHz	FRONT PANEL	METER	Maximum	RF YGR MAIN	L11 L6, L7, L8, L9, L10
SSB RECEIVER	1	• USB mode • Apply an RF signal to the ANTENNA CONNECTOR. Level: −127dBm (0.1μV) Mod. : OFF	REAR PANEL	Connect an AC milli-voltmeter with an 8Ω load to the EXT. SP JACK.	Max. audio output	MAIN	L12, L13, L14,
TOTAL GAIN	1	• USB mode • Apply an RF signal to the ANTENNA CONNECTOR. Level: −127dBm (0.1μV) Mod. : OFF	REAR PANEL	Connect an AC milli-voltmeter with an 8Ω load to the EXT. SP JACK.	Max. audio output	FRONT PANEL	TUNING CONTROL
	2	• Apply an RF signal to the ANTENNA CONNECTOR. Level: −97dBm (3.2μV) Mod. : OFF --- • Apply no signal to the ANTENNA CONNECTOR.			20dB S/N ratio	MAIN	R72

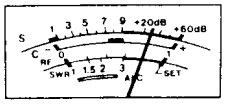
CW: Clockwise CCW: Counterclockwise

MAIN AND RF YGR UNITS



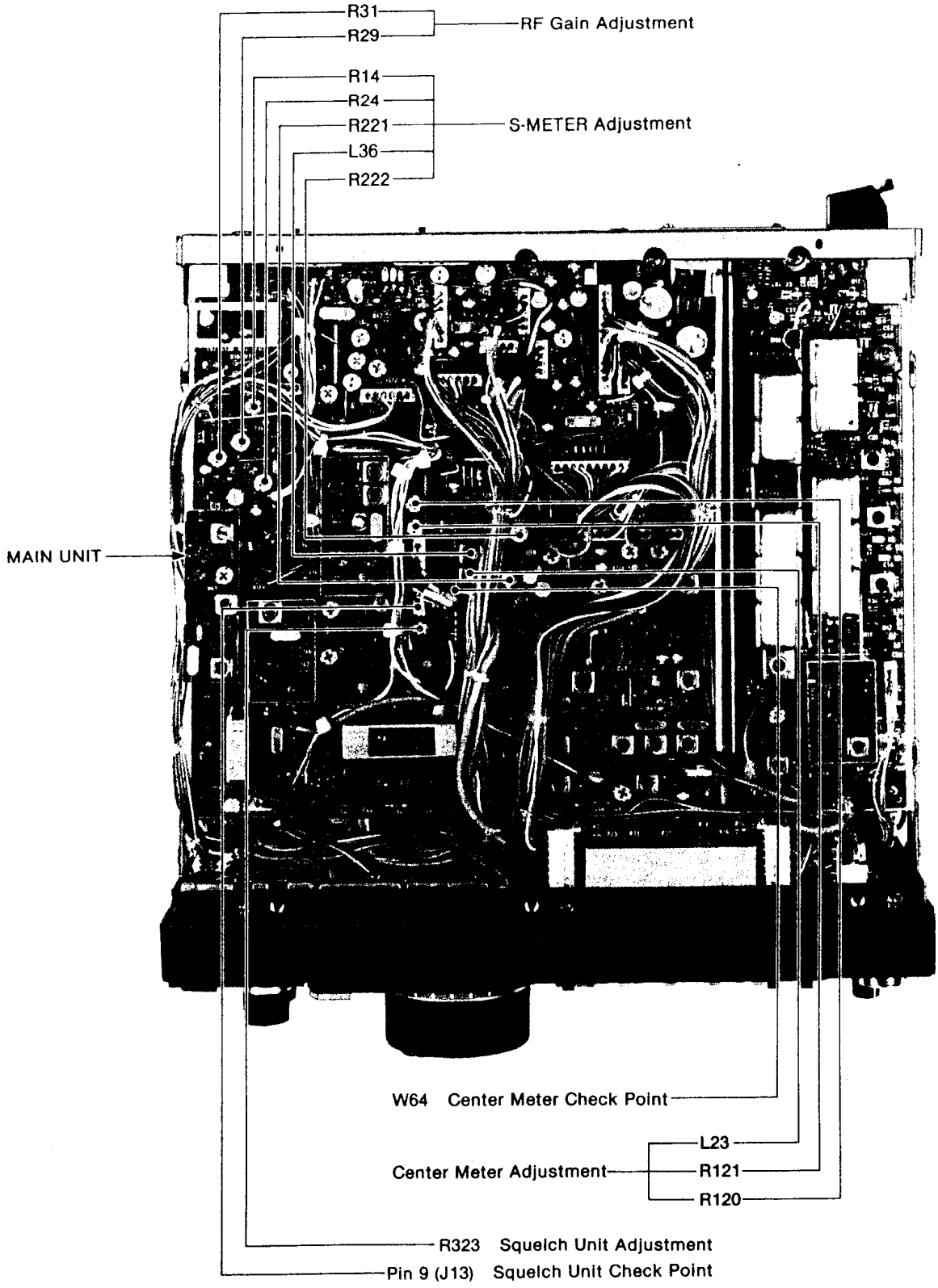
This picture shows the IC-275H model.

RECEIVER ADJUSTMENT (CONTINUED)

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
CENTER METER	1	• FM mode • Apply an RF signal to the ANTENNA CONNECTOR. Level: −77dBm (32μV) Mod. : OFF	MAIN	Connect a DC voltmeter to W64.	3V	MAIN	L23
	2	• Apply an RF signal to the ANTENNA CONNECTOR. Level: −97dBm (3.2μV) Dev. : ±3.5kHz Mod. : 1kHz • METER SWITCH: C • ALC • Adjust the applied frequency (approx. +4kHz) to the maximum meter value.	FRONT PANEL	METER	80% of full scale 		R121
	3	• Apply no signal to the ANTENNA CONNECTOR.			Center		R120
		NOTE: Repeat adjustments 1 through 3 several times. Verify that the meter movement becomes 20%~80% when the applied frequency changes.					
S-METER	1	• USB mode • Apply an RF signal to the ANTENNA CONNECTOR. Level: −97dBm (3.2μV) Mod. : OFF	FRONT PANEL	METER	S9 (S-scale)	MAIN	R24
	2	• Apply an RF signal to the ANTENNA CONNECTOR. Level: −47dBm (1mV)			Full scale		R14
	3	• FM mode • Apply an RF signal to the ANTENNA CONNECTOR. Level: −107dBm (1μV)			Maximum (S-scale)		L36
	4				S5 (S-scale)		R221
	5	• Apply an RF signal to the ANTENNA CONNECTOR. Level: −67dBm (0.1mV)			Full scale		R222
RF GAIN	1	• USB mode • Apply no signal to the ANTENNA CONNECTOR. • RF GAIN CONTROL: Max. CCW	FRONT PANEL	METER	Full scale	MAIN	R29
	2	• FM mode • Apply an RF signal to the ANTENNA CONNECTOR. Level: −77dBm (32μV) Dev. : ±3.5kHz Mod. : 1kHz • RF GAIN CONTROL: Max. CCW			S9 (S-scale)		R31
SQUELCH UNIT	1	• FM mode • Apply an RF signal to the ANTENNA CONNECTOR. Level: −125dBm (0.13μV) Mod. : OFF	MAIN	Connect an ohm meter between J13, pin 9 and ground.	0Ω	MAIN	R323
	2	• Apply no signal to the ANTENNA CONNECTOR.			∞		Verify

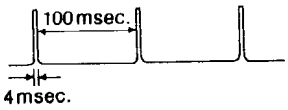
CCW: Counterclockwise

MAIN UNIT

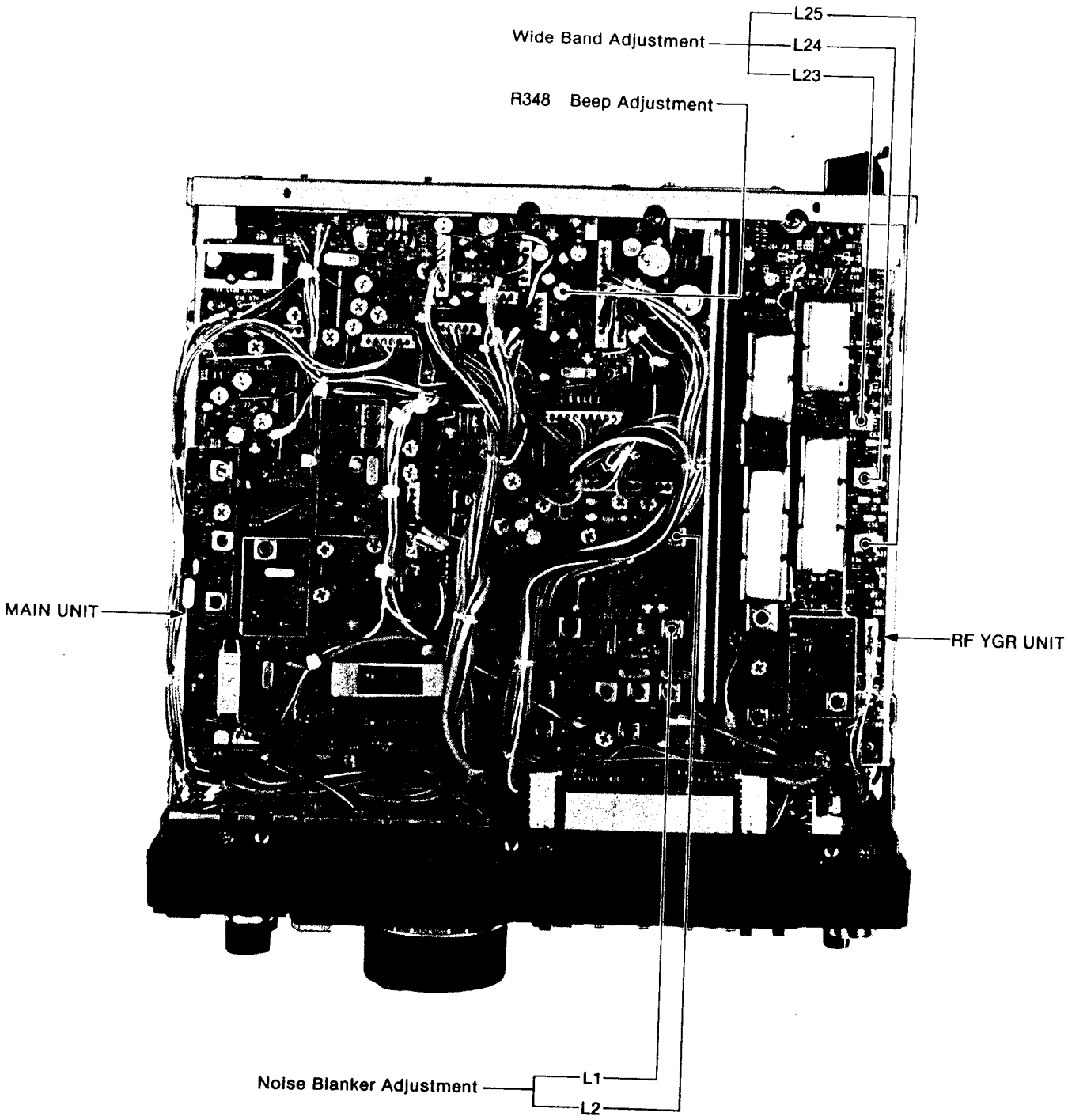


This picture shows the IC-275H model.

RECEIVER ADJUSTMENT (CONTINUED)

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
NOISE BALANKER	1	• USB mode • Apply an RF signal including the following pulse-type noise to the ANTENNA CONNECTOR.  	REAR PANEL	Connect an oscilloscope with an 8Ω load to the EXT. SP JACK.	Adjust to minimum waveform on the oscilloscope.	MAIN	L1, L2
BEEP	1	• Push any switch which activates the beep sound.	TOP COVER	Speaker	Verify that the level of beep sound is adjustable.	MAIN	R348
		NOTE: Set R348 to center position after verification.					
WIDE BAND	1	• Frequency display: 143.0000 MHz • FM mode • Apply an RF signal to the ANTENNA CONNECTOR. Level: −97 dBm (3.2 μV) Dev. : ±3.5 kHz Mod. : 1 kHz	FRONT PANEL	METER	Maximum	RF YGR	L25, L24, L23
		NOTE: Repeat adjustment 1 several times.					

MAIN AND RF YGR UNITS



This picture shows the IC-275H model.

6-5 TRANSMITTER ADJUSTMENT (IC-275H)

TEST INSTRUMENTS REQUIRED

(1) AC POWER SUPPLY
- Output voltage : 13.8V DC
- Current capacity : 25A or more

(2) FREQUENCY COUNTER
- Frequency range : 0.1~180MHz
- Frequency accuracy : ±1ppm or better
- Sensitivity : 100mV or better

(3) RF POWER METER (TERMINATED TYPE)
- Measuring range : 10~200W
- Frequency range : 138~174MHz
- Impedance : 50Ω
- SWR : Less than 1:1.2

(4) AMMETER
- Measurement capability : 1A and 30A

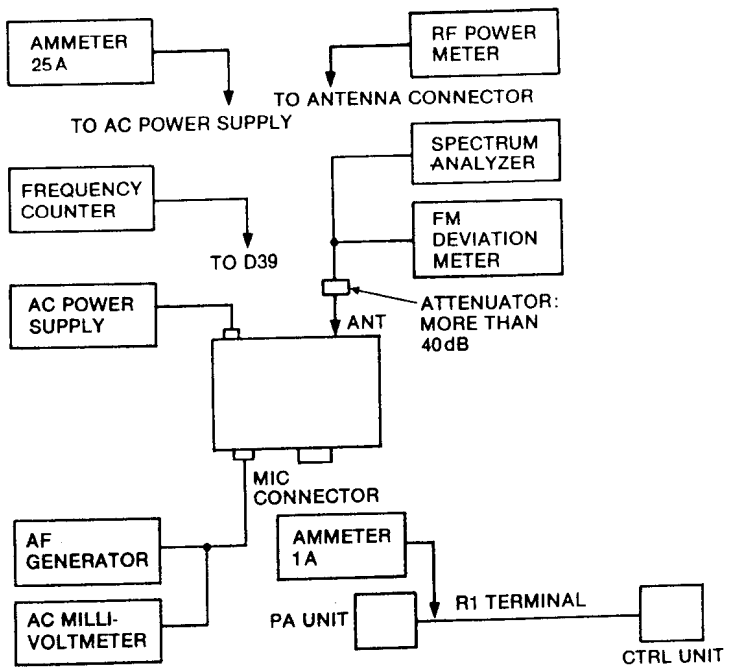
(5) AF GENERATOR (AG)
- Frequency range : 200~2000Hz
- Output level : 0~50mV

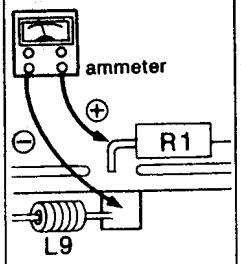
(6) AC MILLI-VOLTMETER
- Measuring range : 2~50mV

(7) FM DEVIATION METER
- Frequency minimum : 150MHz
- Measuring range : 0~±5kHz

(8) SPECTRUM ANALYZER

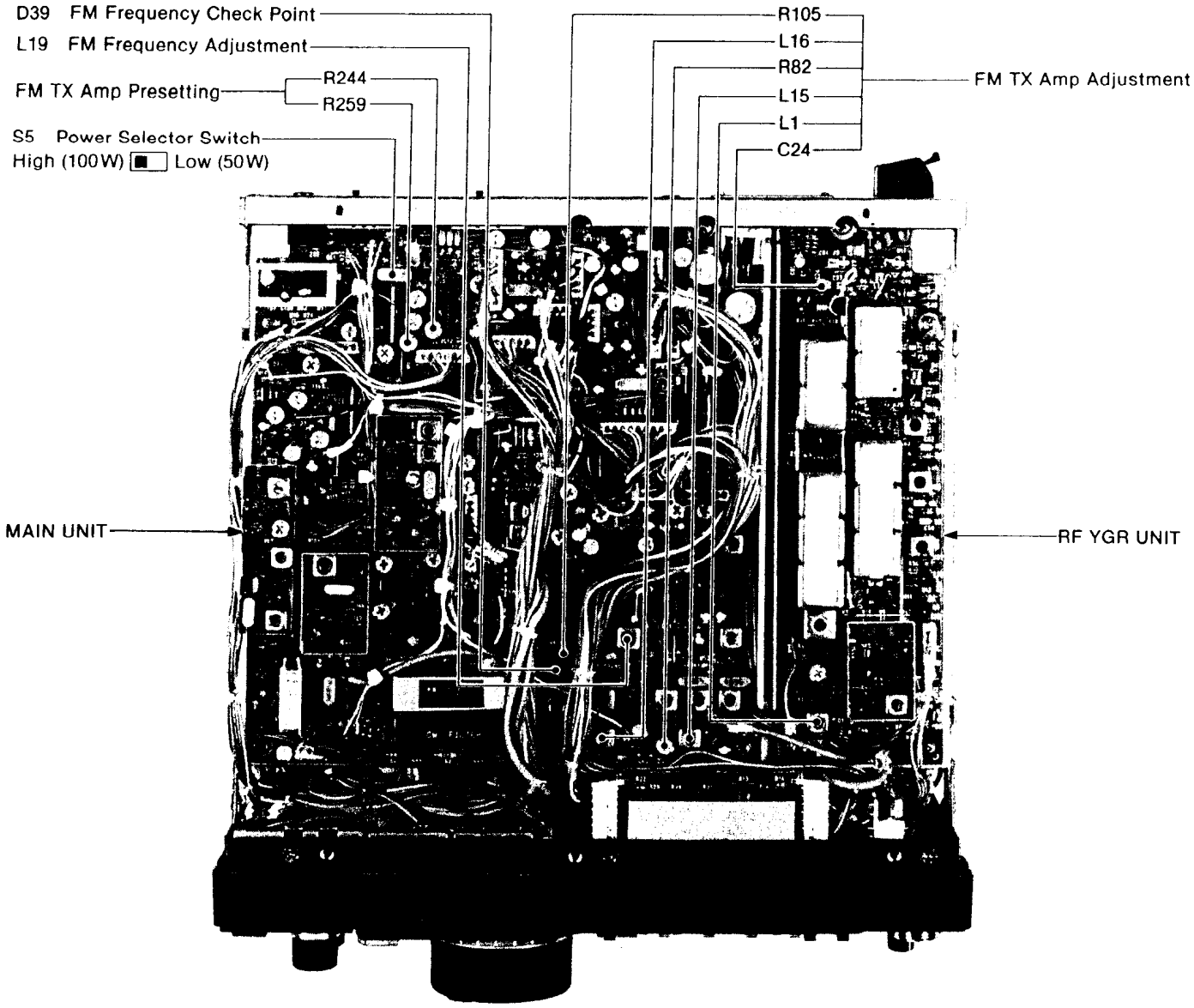
MEASUREMENT CONNECTION LOCATION



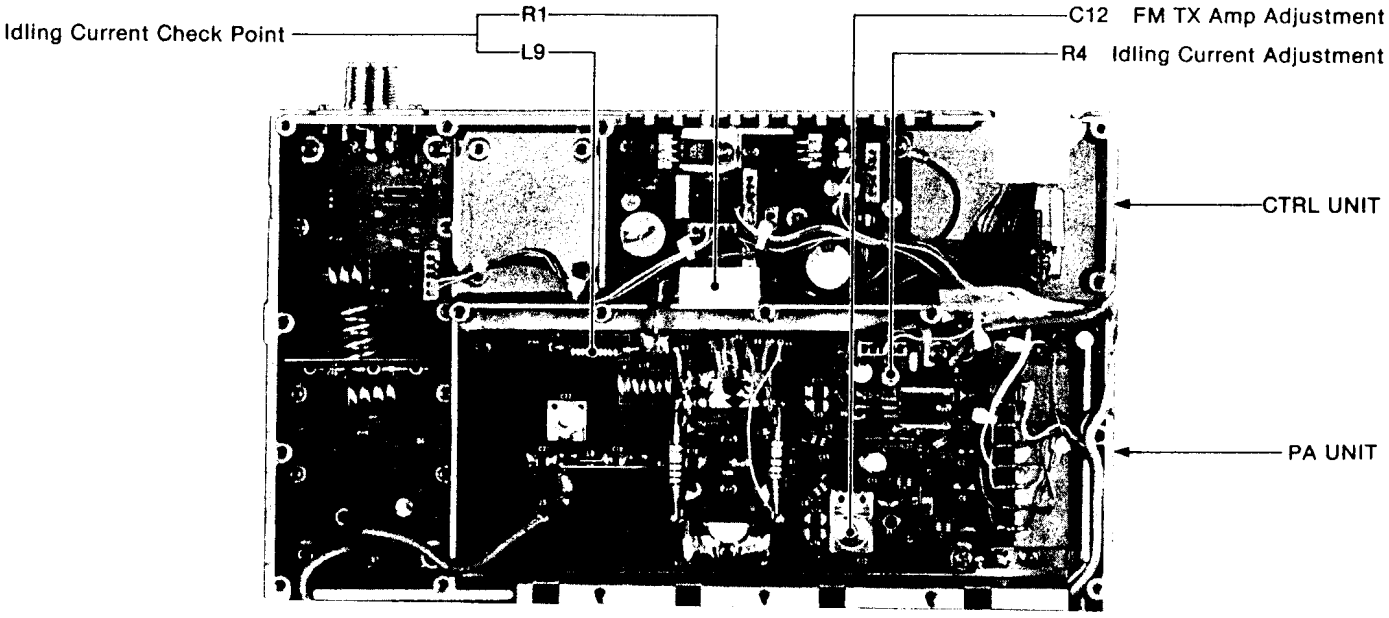
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT UNIT	MEASUREMENT LOCATION	VALUE	ADJUSTMENT POINT UNIT	ADJUSTMENT POINT ADJUST
IDLING CURRENT	1	• USB mode • Transmit mode • MIC GAIN CONTROL: Max. CCW	PA	Desolder R1 (CTRL) and connect an ammeter between R1 and L9 (PA). 	500mA	PA	R4
		NOTE: Resolder after making adjustment.					
FM FREQUENCY	1	• FM mode • Transmit mode • R105 (MAIN): Max. CW	MAIN	Connect a frequency counter to the cathode of D39.	10.7500MHz	MAIN	L19
FM OUTPUT POWER ⓐ FM TX AMP	1	• Frequency display: 145.0000MHz (#02H, #05H) 146.0000MHz (#03H, #04H) • FM mode • Transmit mode • S5 Power Selector Switch: High • RF POWER CONTROL: Max. CW • R244 (MAIN): Max. CW • R259 (MAIN): Max. CCW	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR. Connect an ammeter between the AC power supply and IC-275H.	Adjust to maximum output.	MAIN RF YGR PA	L16, R82 L15, R105 L1, C24 C12
	2				Less than 25A		Verify

CW: Clockwise CCW: Counterclockwise

MAIN AND RF YGR UNITS

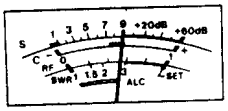


PA AND CTRL UNITS

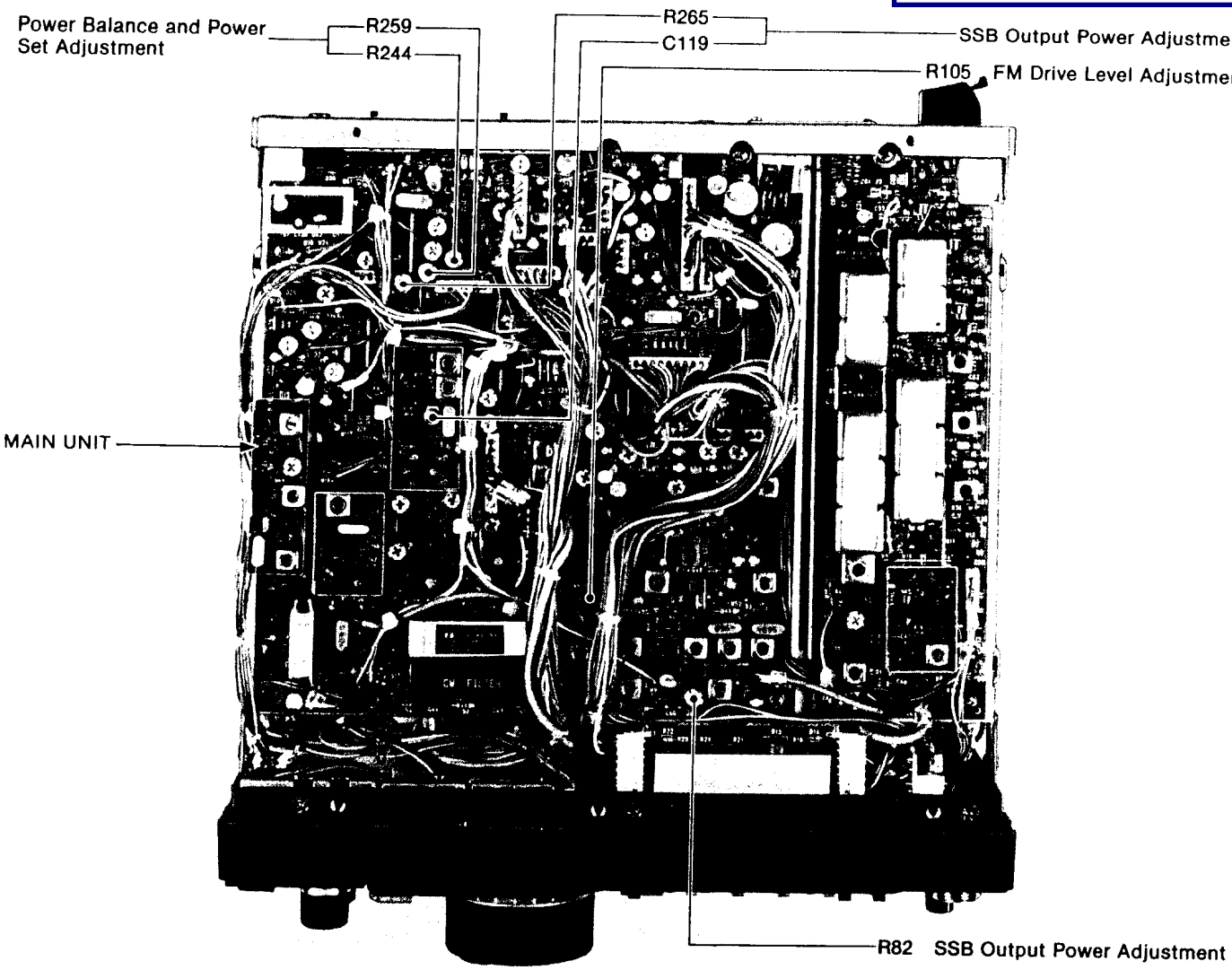


These pictures show the IC-275H model.

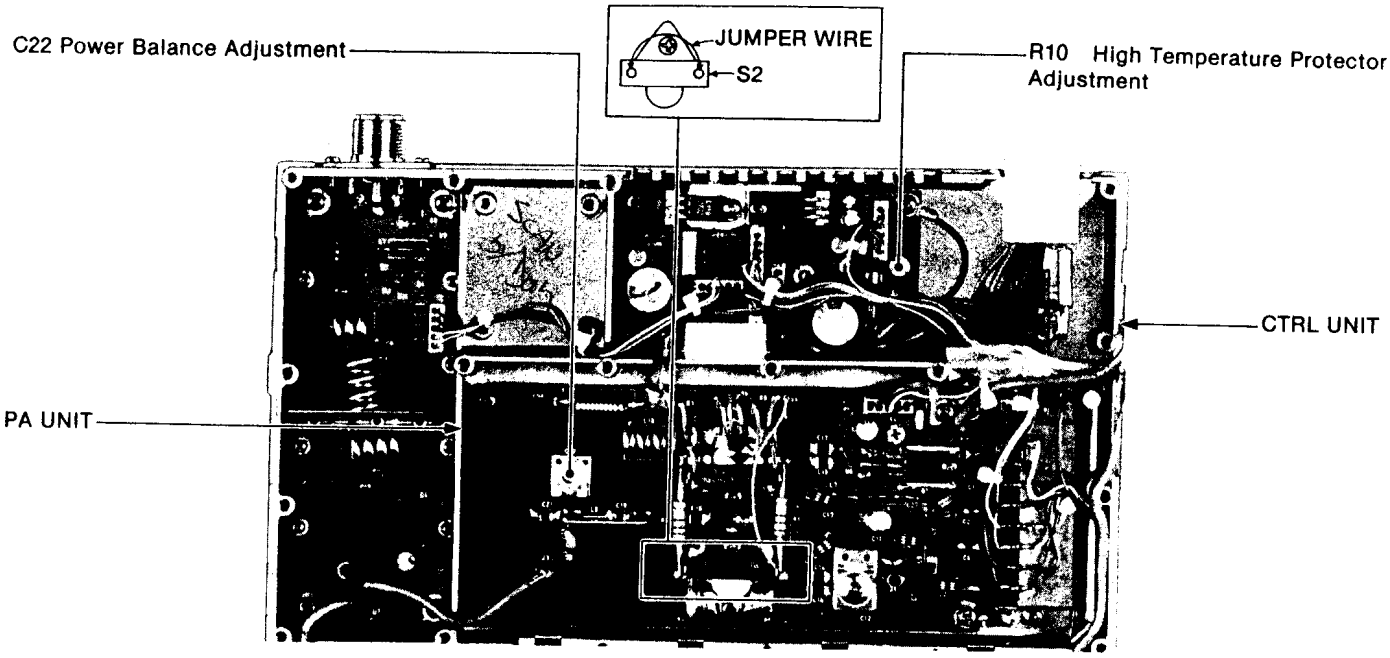
TRANSMITTER ADJUSTMENT (IC-275H) (CONTINUED)

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
FM OUTPUT POWER ⓑ POWER BALANCE	2	• Frequency display: 145.0000MHz (#02H, #05H) 146.0000MHz (#03H, #04H)	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR. Connect an ammeter between the AC power supply and IC-275H.	The point 10W down from maximum output.	MAIN	R259
	3	• Frequency display: 144.0000MHz			20A		R244
	4	• Frequency display: 144.0000MHz			Adjust to same output level on both band edges.	PA	C22
		• Frequency display: 146.0000MHz (#02H, #05H) 148.0000MHz (#03H, #04H)					
ⓒ POWER SET	5	NOTE: Verify the currents are less than 19A at adjustments 5 and 6.					
		• Frequency display: 146.0000MHz (#02H, #05H) 148.0000MHz (#03H, #04H)	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR. Connect an ammeter between the AC power supply and IC-275H.	100W	MAIN	R259
	6	• Frequency display: 144.0000MHz			100W		R244
	7	• Frequency display: 145.0000MHz (#02H, #05H) 146.0000MHz (#03H, #04H)			100W±10%		Verify
HIGH TEMPERATURE PROTECTOR	1	• FM mode • S2 (PA): Connect a jumper wire to both terminals of S2. • Transmit mode	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	50W	CTRL	R10
		NOTE: After adjustment, remove the jumper wire from S2.					
SSB OUTPUT POWER	1	• Frequency display: 145.0000MHz (#02H, #05H) 146.0000MHz (#03H, #04H) • USB mode • Transmit mode • MIC TONE CONTROL: Center position • MIC GAIN CONTROL: Center position • Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 2mV.	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	50W	MAIN	R82
(BALANCE)	2	• Apply an AF signal to the MIC CONNECTOR: 300Hz, 2mV. • USB and LSB modes			Adjust to same output level on both modes.	MAIN	C119
(ALC)	3	• Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 10mV.	FRONT PANEL	METER	100% (ALC scale) 	MAIN	R265
FM DRIVE LEVEL	1	• Frequency display: 145.0000MHz (#02H, #05H) 146.0000MHz (#03H, #04H) • FM mode • Transmit mode	FRONT PANEL	METER	100% (ALC scale)	MAIN	R105
		NOTE: Verify output power again. If output power is less than 100W, adjust item ⓒ POWER SET again.					

MAIN UNIT

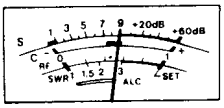
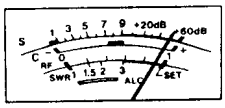
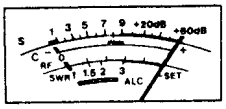


PA AND CTRL UNITS



These pictures show the IC-275H model.

TRANSMITTER ADJUSTMENT (IC-275H) (CONTINUED)

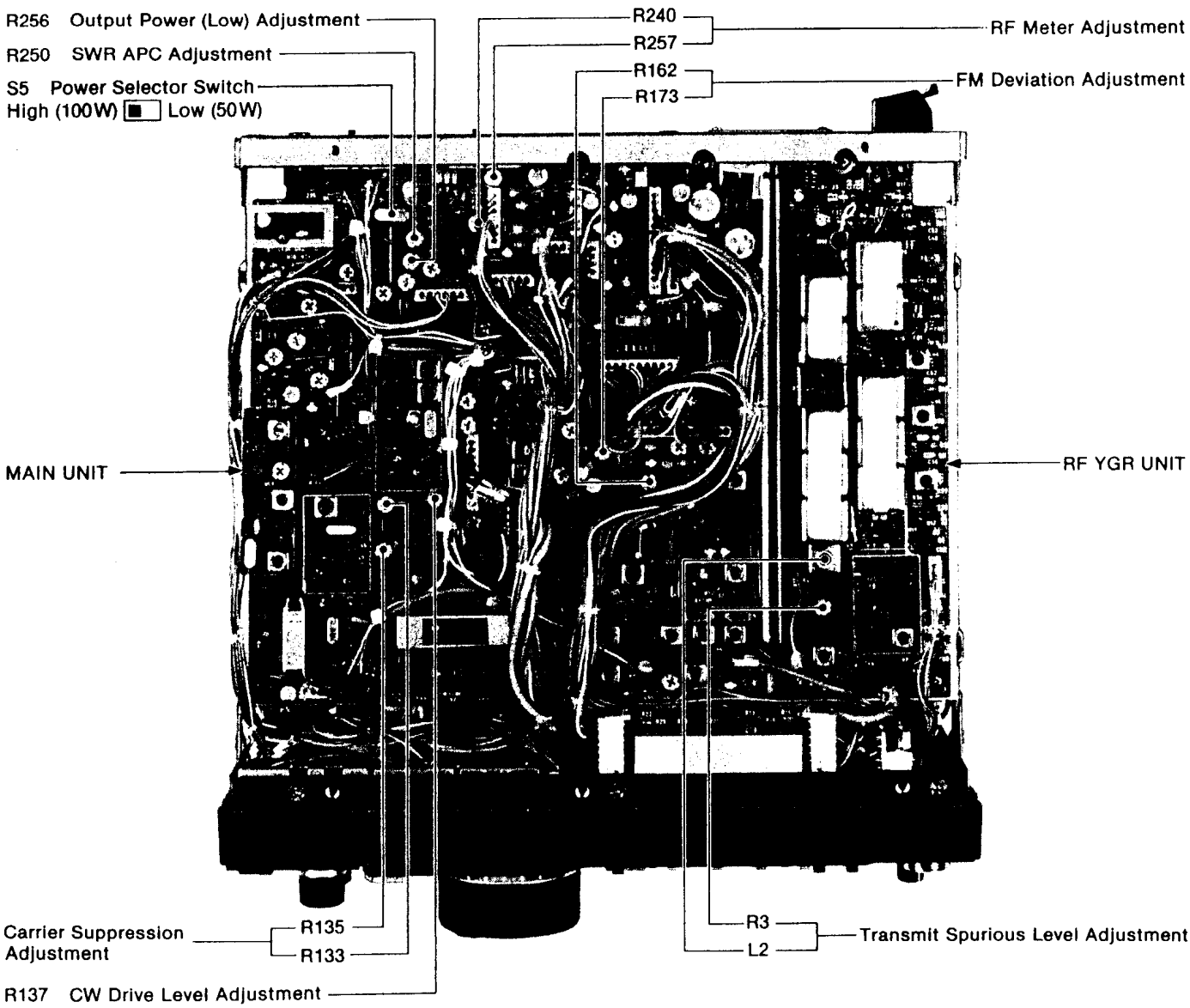
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
CW DRIVE LEVEL	1	• CW mode • Transmit mode • Connect a key to the KEY JACK and key down. • METER SWITCH: C • ALC	FRONT PANEL	METER	100% (ALC scale) 	MAIN	R137
OUTPUT POWER (LOW)	1	• FM mode • Transmit mode • RF POWER CONTROL: Max. CCW	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	10W	MAIN	R256
RF METER (RF)	1	• FM mode • Transmit mode • RF POWER CONTROL: Max. CW • METER SWITCH: S • RF • TX-METER SWITCH: RF	FRONT PANEL	METER	90% (RF scale) 	MAIN	R257
(SET)	2	• FM mode • Transmit mode	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	25W	FRONT PANEL	RF POWER CONTROL
	3	• TX-METER SWITCH: SET	FRONT PANEL	METER	SWR SET position 	MAIN	R240
(SWR)	4	• TX-METER SWITCH: SWR	FRONT PANEL	METER	Less than 1.2 (SWR scale)		Verify
SWR APC	1	• FM mode • Transmit mode • RF POWER CONTROL:Max. CW • Remove any connection from the ANTENNA CONNECTOR.	REAR PANEL	Connect an ammeter between the AC power supply and IC-275H.	10A	MAIN	R250
COMP LEVEL	1	• USB mode • Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 20mV.	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	50W	FRONT PANEL	MIC GAIN CONTROL
	2	• Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 6.3mV. (10dB down) • COMP SWITCH: ON			50W	REAR PANEL	COMP LEVEL
FM DEVIATION	1	• FM mode • Transmit mode • MIC TONE CONTROL: Center position • MIC GAIN CONTROL: Center position • Apply an AF signal to the MIC CONNECTOR: 1kHz, 20mV.	REAR PANEL	Connect an FM deviation meter to the ANTENNA CONNECTOR through an attenuator.	Dev.: ±4.8kHz	MAIN	R162
	2	• Apply an AF signal to the MIC CONNECTOR: 1kHz, 2mV.			Dev.: ±3.5kHz		R173

TRANSMITTER ADJUSTMENT (IC-275H) (CONTINUED)

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
TRANSMIT SPURIOUS LEVEL	1	• Frequency display: 144.0000 MHz • FM mode • Apply no AF signal to the MIC CONNECTOR. • RF POWER CONTROL: Max. CW • S5 Power Selector Switch: High • Transmit mode	REAR PANEL	Connect a spectrum analyzer to the ANTENNA CONNECTOR through an attenuator.	Minimum spurious level of carrier frequency ±10.75 MHz.	RF YGR	L2, R3
		NOTE: Repeat adjustment 1 several times.					
CARRIER SUPPRES-SION	1	• USB mode • Apply no AF signal to the MIC CONNECTOR. • Transmit mode • Select USB and LSB mode alternately.	REAR PANEL	Connect a spectrum analyzer to the ANTENNA CONNECTOR through an attenuator.	Minimum carrier level (Less than −40 dB) Same carrier level (USB and LSB mode)	MAIN	R133, R135

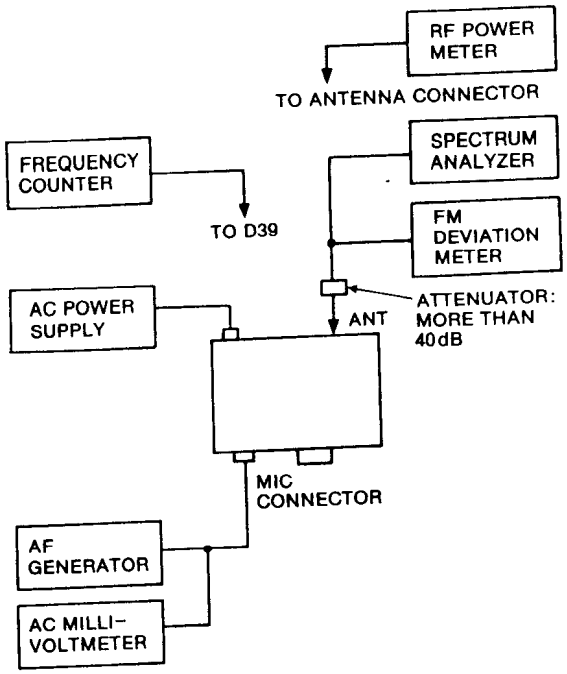
CW: Clockwise CCW: Counterclockwise

MAIN AND RF YGR UNITS



This picture shows the IC-275H model.

6-6 TRANSMITTER ADJUSTMENT (IC-275A/E)

TEST INSTRUMENTS REQUIRED	MEASUREMENT CONNECTION LOCATION
(1) AC POWER SUPPLY • Output voltage : 13.8V DC • Current capacity : 10A or more (2) FREQUENCY COUNTER • Frequency range : 0.1~180MHz • Frequency accuracy : ±1ppm or better • Sensitivity : 100mV or better (3) RF POWER METER (TERMINATED TYPE) • Measuring range : 10~50W • Frequency range : 138~174MHz • Impedance : 50Ω • SWR : Less than 1:1.2 (4) AF GENERATOR (AG) • Frequency range : 200~2000Hz • Output level : 0~50mV (5) AC MILLI-VOLTMETER • Measuring range : 2~50mV (6) FM DEVIATION METER • Frequency minimum : 150MHz • Measuring range : 0~±5kHz (7) SPECTRUM ANALYZER	

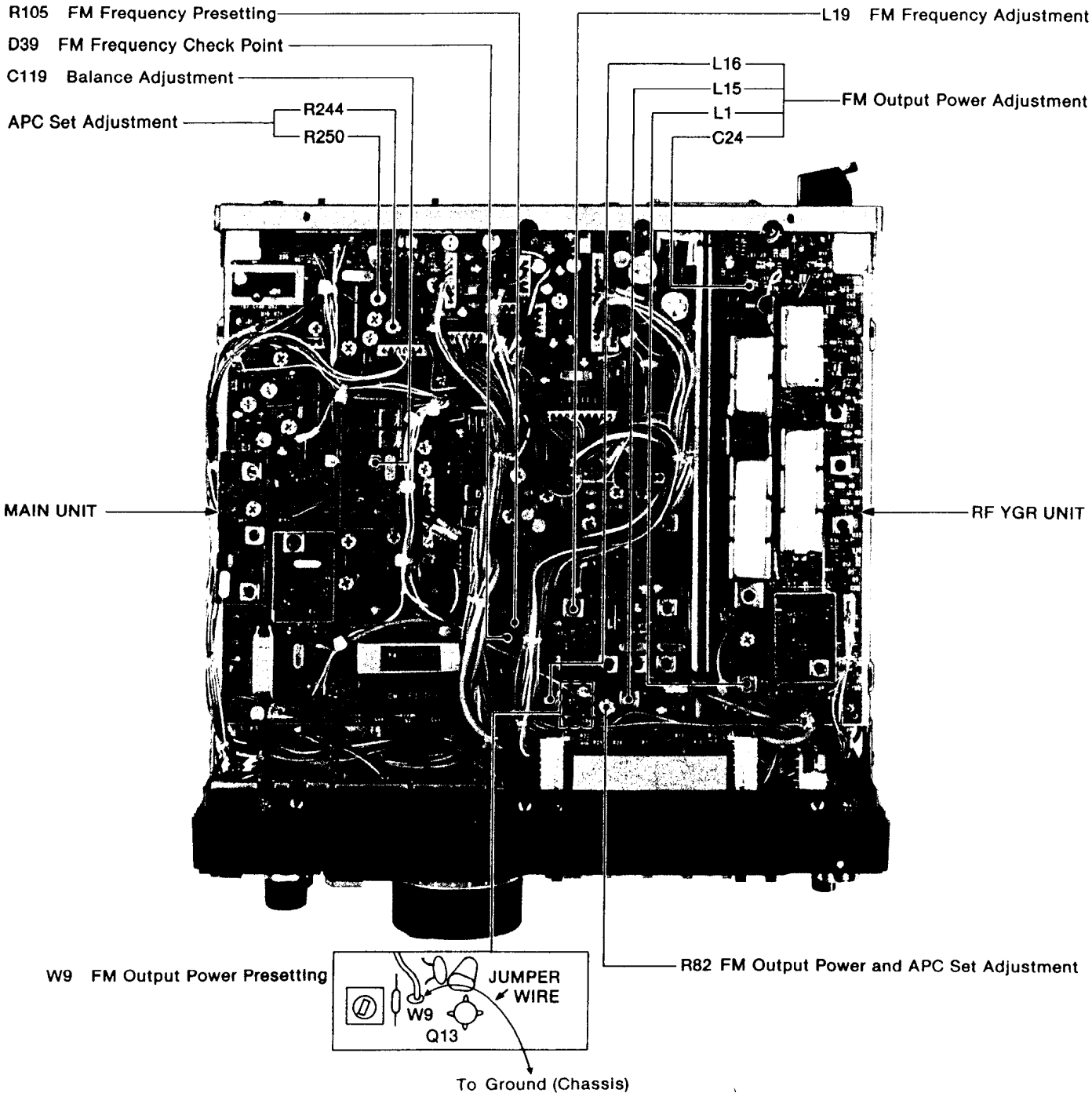
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
FM FREQUENCY	1	• FM mode • Transmit mode • R105 (MAIN): Max. CW	MAIN	Connect a frequency counter to the cathode of D39.	10.7500MHz	MAIN	L19
FM OUTPUT POWER	1	• Frequency display: 145.0000MHz (#06E, #10E) 146.0000MHz (#08A, #12A) • FM mode • Transmit mode • RF POWER CONTROL: Max. CW • W9 (MAIN): Connect a jumper wire between W9 and ground.	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	Adjust to maximum output.	MAIN RF YGR	L16, R82 L15 L1, C24
		NOTE: After adjustment, remove the jumper wire from W9.					
APC SET	1	• Frequency display: 145.0000MHz (#06E, #10E) 146.0000MHz (#08A, #12A) • USB mode • Transmit mode • MIC TONE CONTROL: Center position • MIC GAIN CONTROL: Center position • Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 2mV.	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	12.5W	MAIN	R82
	2	• Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 20mV. • R259: Center position • R256: Center position			Adjust to minimum output.		R244
	3				12.5W		R250
	4				30W		R244

TRANSMITTER ADJUSTMENT (IC-275A/E) (CONTINUED)

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
BALANCE	1	• Frequency display: 145.0000MHz (#06E, #10E) 146.0000MHz (#08A, #12A) • USB and LSB modes • Transmit mode • Apply an AF signal to the MIC CONNECTOR: 300Hz, 2mV.	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	Adjust to same output level on both modes.	MAIN	C119

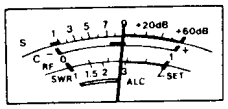
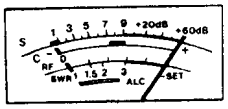
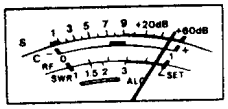
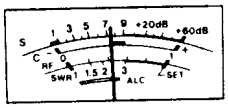
CW: Clockwise

MAIN AND RF YGR UNITS



This picture shows the IC-275H model.

TRANSMITTER ADJUSTMENT (IC-275A/E) (CONTINUED)

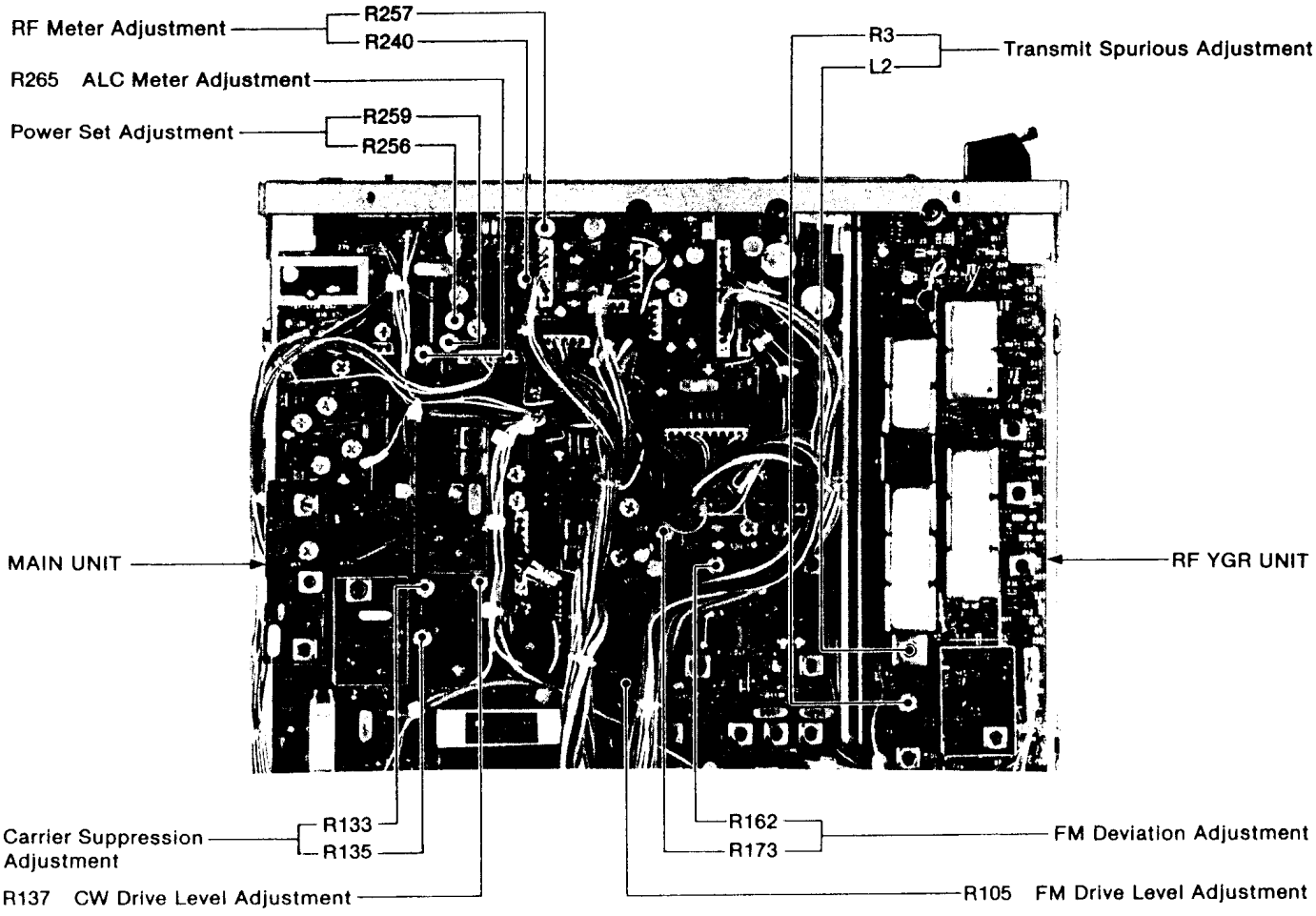
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
POWER SET	1	• Frequency display: 145.0000MHz (#06E, #10E) 146.0000MHz (#08A, #12A) • USB mode • Transmit mode • MIC TONE CONTROL: Center position • MIC GAIN CONTROL: Center position • Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 20mV. • RF POWER CONTROL: Max. CW	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	25W	MAIN	R259
	2	• RF POWER CONTROL: Max. CCW			2.5W		R256
ALC METER	1	• USB mode • Transmit mode • Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 10mV. • METER SWITCH: C • ALC	FRONT PANEL	METER	100% (ALC scale) 	MAIN	R265
RF METER (SET)	1	• FM mode • Transmit mode • Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 20mV. • METER SWITCH: S • RF • TX-METER SWITCH: SET	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	10W	FRONT PANEL	RF POWER CONTROL
	2		FRONT PANEL	METER	SWR SET position 	MAIN	R240
(SWR)	3	• TX-METER SWITCH: SWR	FRONT PANEL	METER	Less than 1.2 (SWR scale)		Verify
(RF)	4	• TX-METER SWITCH: RF • RF POWER CONTROL: Max. CW	FRONT PANEL	METER	90% (RF scale) 		R257
COMP LEVEL	1	• USB mode • Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 20mV.	REAR PANEL	Connect an RF power meter to the ANTENNA CONNECTOR.	12.5W	FRONT PANEL	MIC GAIN CONTROL
	2	• Apply an AF signal to the MIC CONNECTOR: 1.5kHz, 6.3mV. (10dB down) • COMP SWITCH: ON			12.5W	REAR PANEL	COMP LEVEL
FM DRIVE LEVEL	1	• Frequency display: 145.0000MHz (#06E, #10E) 146.0000MHz (#08A, #12A) • FM mode • Transmit mode • Apply no AF signal to the MIC CONNECTOR. • METER SWITCH: C • ALC	FRONT PANEL	METER	80% (ALC scale) 	MAIN	R105
CW DRIVE	1	• CW mode • Transmit mode • Connect a key to the KEY JACK and key down.	FRONT PANEL	METER	80% (ALC scale)	MAIN	R137

TRANSMITTER ADJUSTMENT (IC-275A/E) (CONTINUED)

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
FM DEVIATION	1	• FM mode • Transmit mode • MIC TONE CONTROL: Center position • MIC GAIN CONTROL: Center position • Apply an AF signal to the MIC CONNECTOR: 1kHz, 20mV.	REAR PANEL	Connect an FM deviation meter to the ANTENNA CONNECTOR through an attenuator.	Dev.: ±4.8kHz	MAIN	R162
	2	• Apply an AF signal to the MIC CONNECTOR: 1kHz, 2mV.			Dev.: ±3.5kHz		R173
TRANSMIT SPURIOUS LEVEL	1	• Frequency display: 144.0000MHz • FM mode • Apply no AF signal to the MIC CONNECTOR. • RF POWER CONTROL: Max. CW • Transmit mode	REAR PANEL	Connect a spectrum analyzer to the ANTENNA CONNECTOR through an attenuator.	Minimum spurious level of carrier frequency ±10.75MHz.	RF YGR	L2, R3
		NOTE: Repeat adjustment 1 several times.					
CARRIER SUPPRES-SION	1	• USB mode • Apply no AF signal to the MIC CONNECTOR. • Transmit mode • Select USB and LSB mode alternately.	REAR PANEL	Connect a spectrum analyzer to the ANTENNA CONNECTOR through an attenuator.	Minimum carrier level (Less than −40dB) Same carrier level (USB and LSB mode)	MAIN	R133, R135

CW: Clockwise CCW: Counterclockwise

MAIN AND RF YGR UNITS

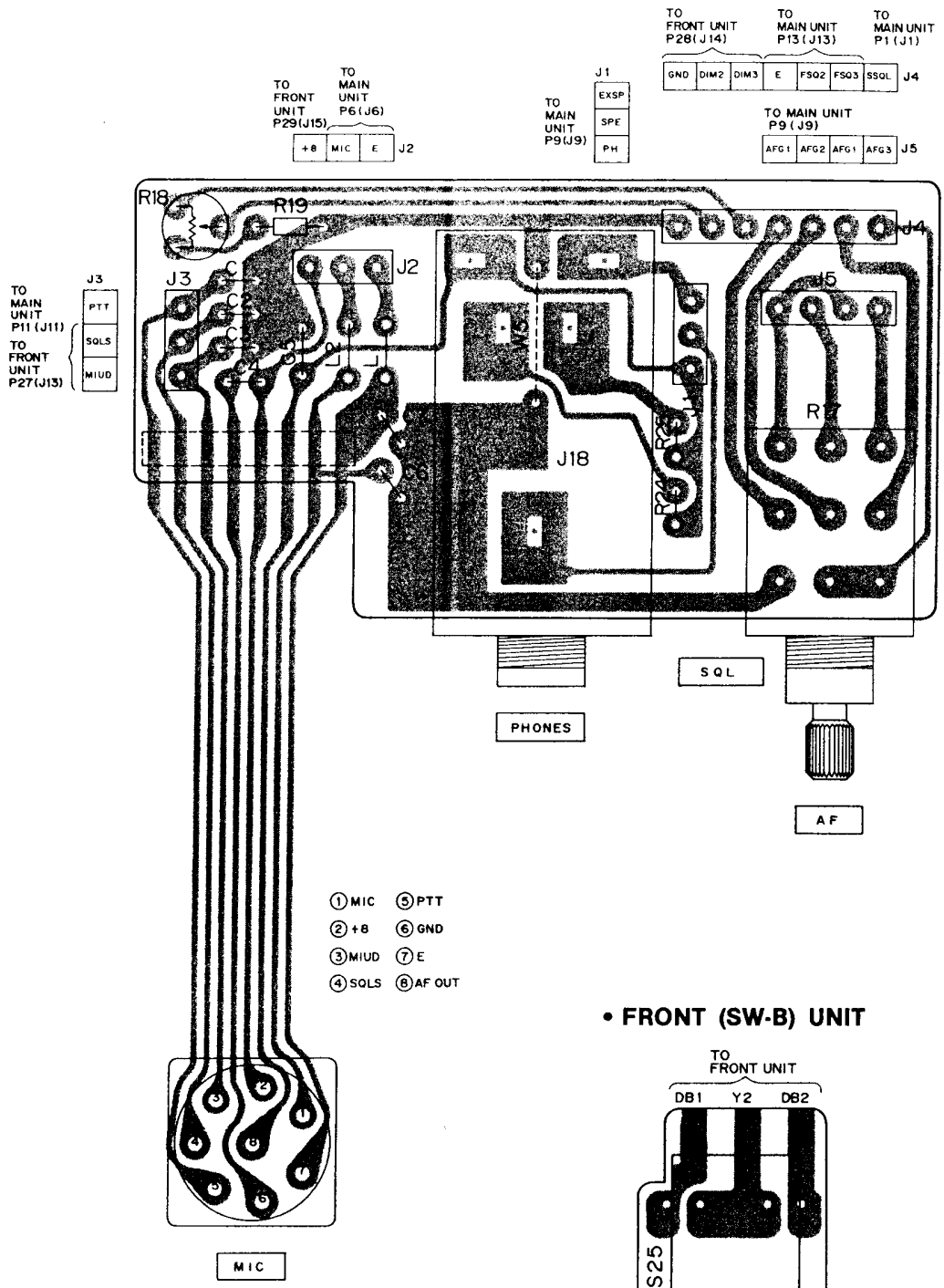


This picture shows the IC-275H model.

SECTION 7 BOARD LAYOUTS

7-1 FRONT UNITS (1)

• FRONT (SW-A) UNIT



• FRONT (SW-B) UNIT

• FRONT

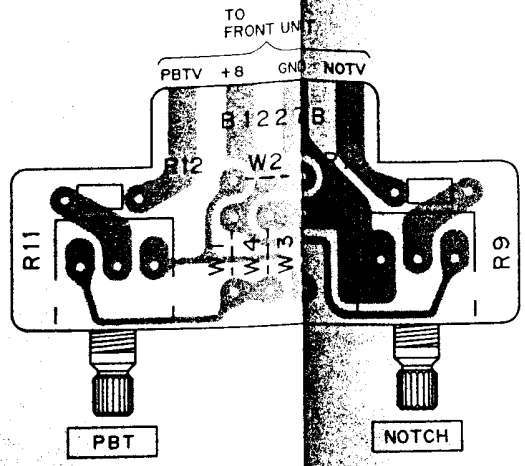
TO MAIN UNIT P1 (J1)

TO MAIN UNIT P9(J9)

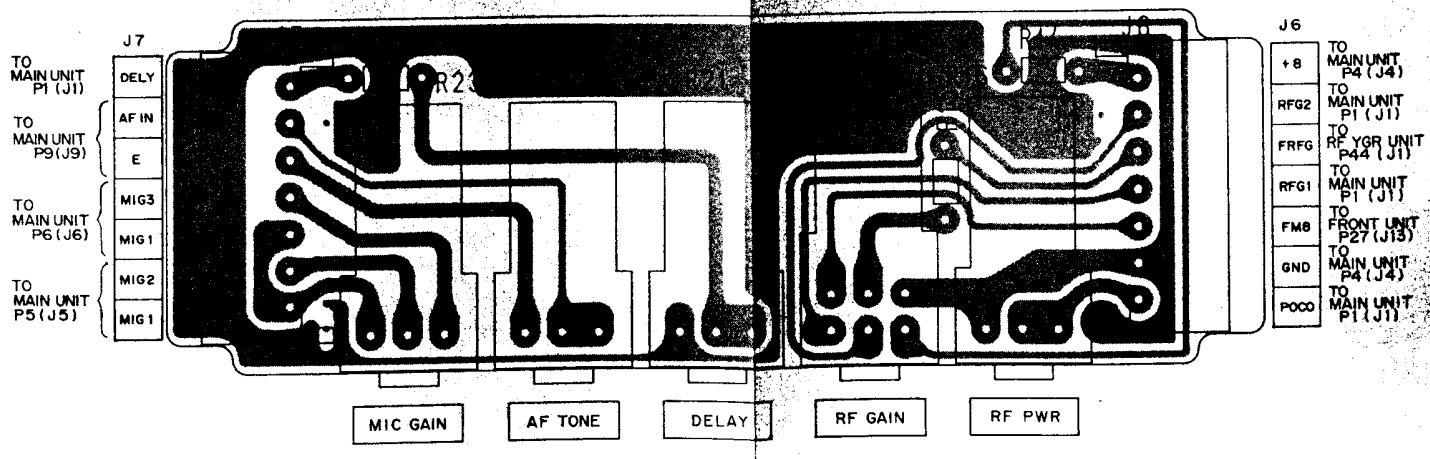
TO MAIN UNIT P6 (J6)

TO MAIN UNIT P5 (J5)

• FRONT (VR-A) UNIT

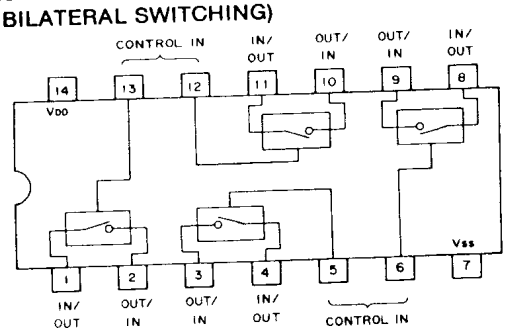


• FRONT (VR-B) UNIT

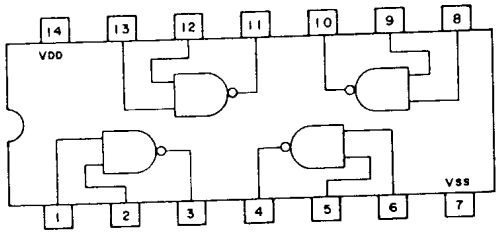


7-2 FRONT UNIT (2)

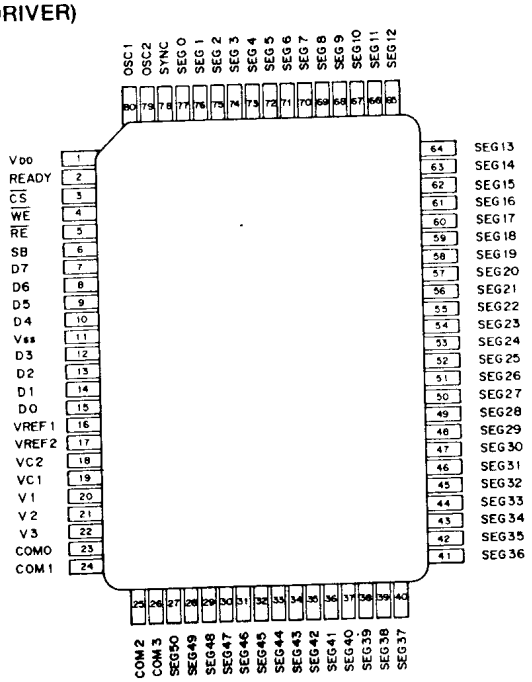
μPD4066BC IC1
(QUAD BILATERAL SWITCHING)



μPD4011BC IC2
(QUAD 2-INPUT POSITIVE NAND GATE)

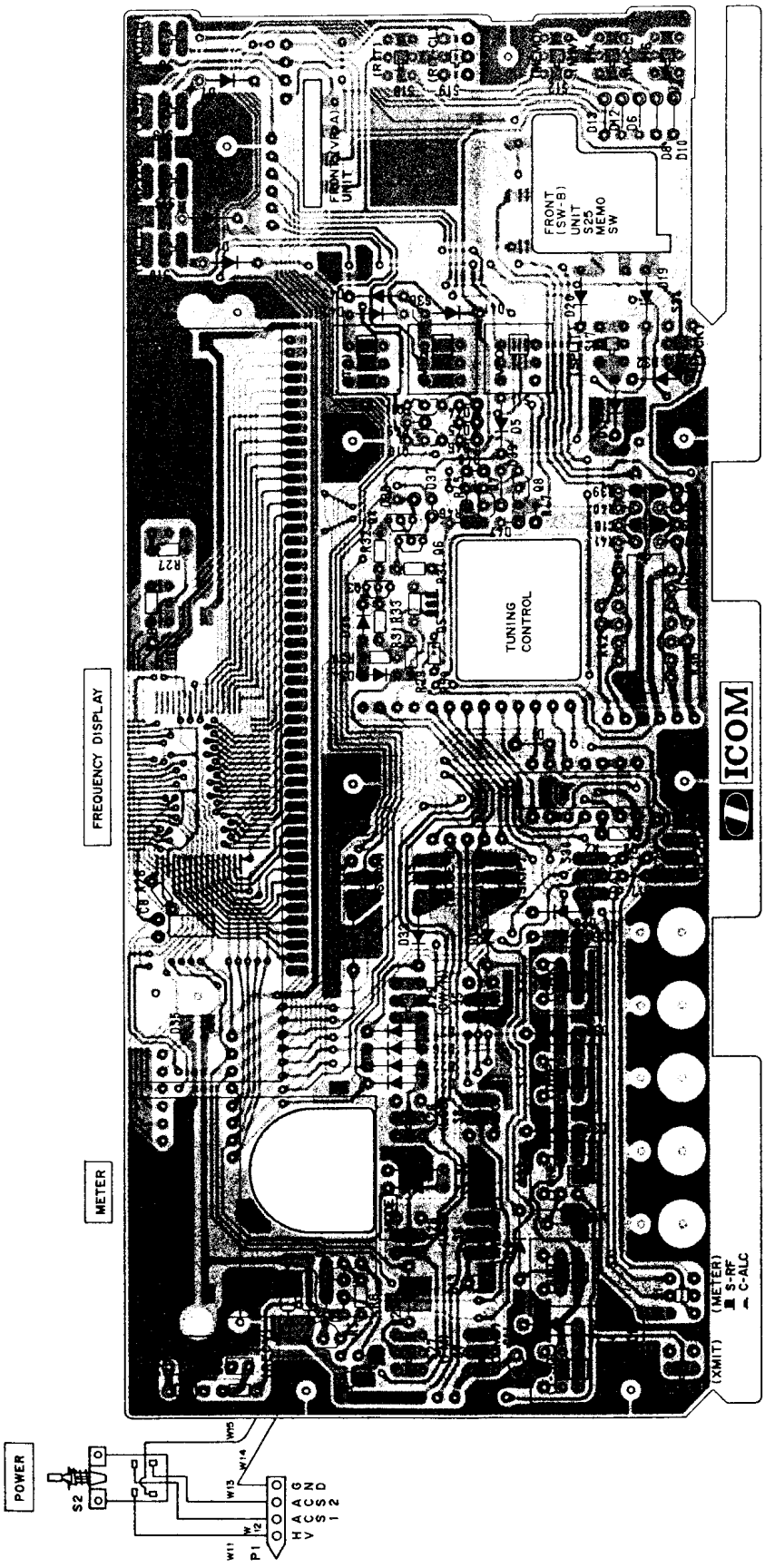


HD61602 IC3
(LCD DRIVER)

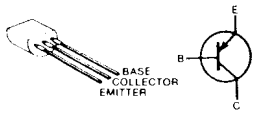


• FRONT UNIT

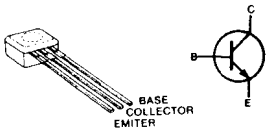
COMPONENTS SIDE



2SB562
Q1

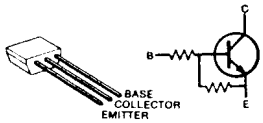


2SC2785
Q2, Q3, Q4, Q6, Q8, Q11

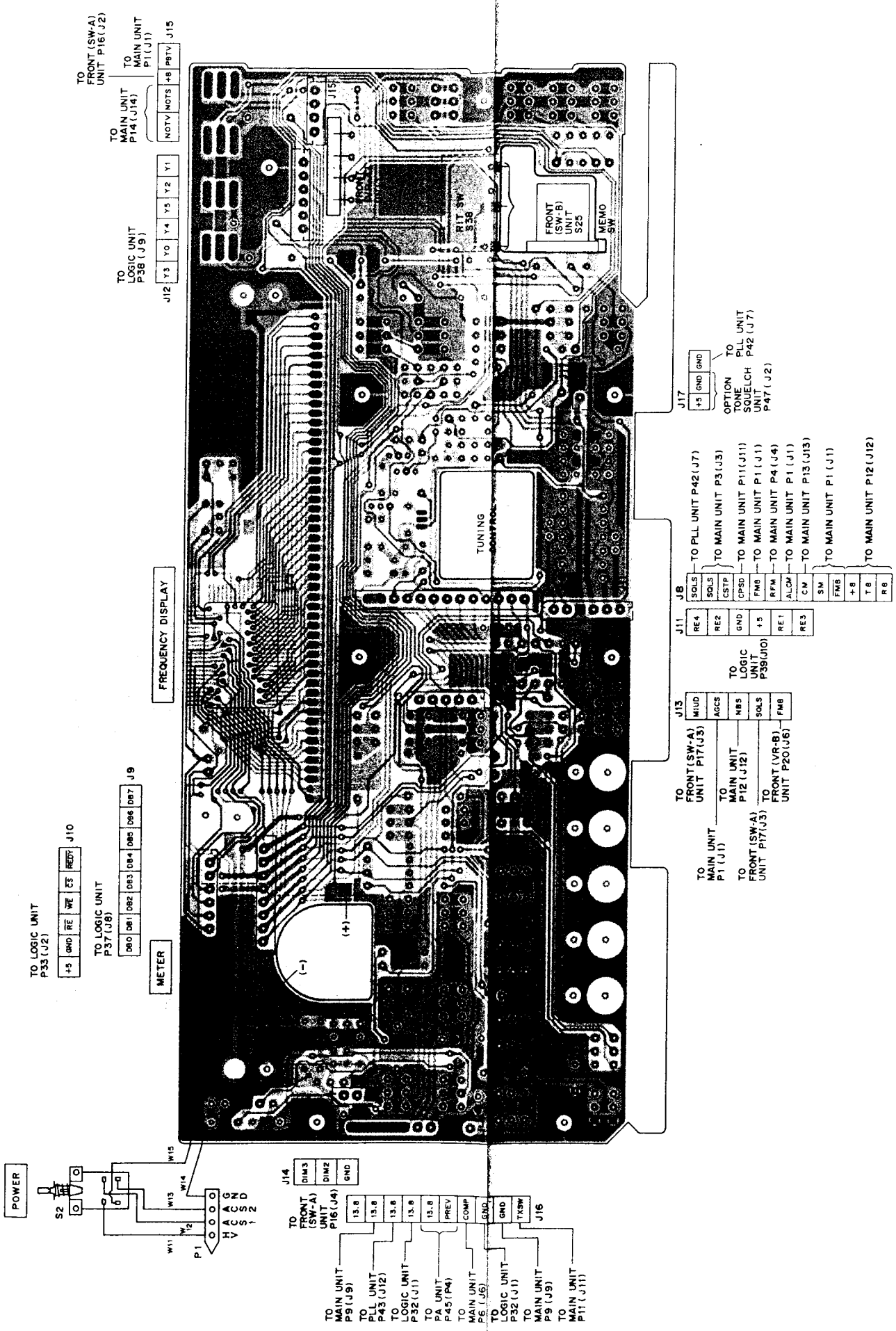


2SA1048
Q5, Q7

RN1204
Q10

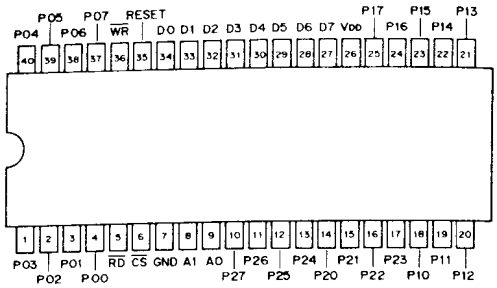


FOIL SIDE

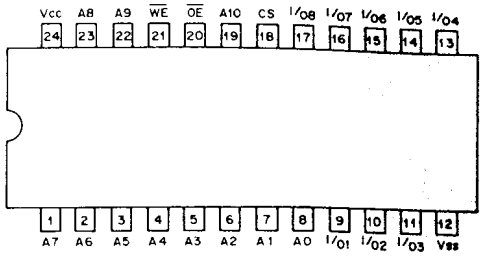

TO FRONT (SW-A) UNIT P16 (J2)
TO MAIN UNIT P1 (J1)
J15
NOTV NOTS +8 P8TV
TO MAIN UNIT P14 (J14)
TO LOGIC UNIT P38 (J9)
J12
Y3 Y0 Y4 Y5 Y2 Y1
RIT SW S38
FRONT (SW-B) UNIT S25
MEMO SW
TUNING CONTROL
FREQUENCY DISPLAY
METER
(+)
(-)
TO LOGIC UNIT P33 (J2)
J10
+5 GND RE WE CS RESET
TO LOGIC UNIT P37 (J8)
J9
D80 D81 D82 D83 D84 D85 D86 D87
J17
+5 GND GND
TO PLL UNIT P42 (J7)
OPTION TONE SQUELCH UNIT P47 (J2)
J8
SQLS SQLS CSTP CPSD FMB RFM ALCM CM SM FMB +8 T8 R8
TO PLL UNIT P42 (J7)
TO MAIN UNIT P3 (J3)
TO MAIN UNIT P11 (J11)
TO MAIN UNIT P1 (J1)
TO MAIN UNIT P4 (J4)
TO MAIN UNIT P1 (J1)
TO MAIN UNIT P13 (J13)
TO MAIN UNIT P1 (J1)
TO MAIN UNIT P12 (J12)
J11
RE4 RE2 GND +5 RE1 RE3
TO LOGIC UNIT P39 (J10)
J13
MIUD AGCS NBS SQLS FMB
TO FRONT (SW-A) UNIT P17 (J3)
TO MAIN UNIT P12 (J12)
TO FRONT (VR-B) UNIT P20 (J6)
TO MAIN UNIT P1 (J1)
TO FRONT (SW-A) UNIT P17 (J3)
POWER
S2
W15
W14
W13
W12
W11
P1
H A A G N D
V C S D
1 2
J14
DIM3 DIM2 GND
TO FRONT (SW-A) UNIT P16 (J4)
13.8 13.8 13.8 13.8 13.8 PREV COMP GND
GND TXSW
J16
TO MAIN UNIT P9 (J9)
TO PLL UNIT P43 (J12)
TO LOGIC UNIT P32 (J1)
TO PA UNIT P45 (P4)
TO MAIN UNIT P6 (J6)
TO LOGIC UNIT P32 (J1)
TO MAIN UNIT P9 (J9)
TO MAIN UNIT P11 (J11)

7-3 LOGIC AND SENSOR UNITS

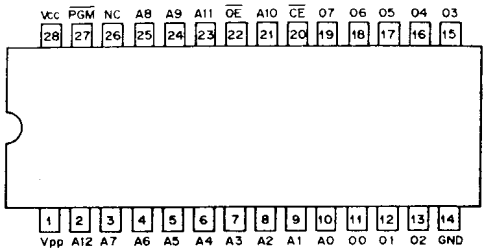
μPD71055C IC1
(I/O EXPANDER)



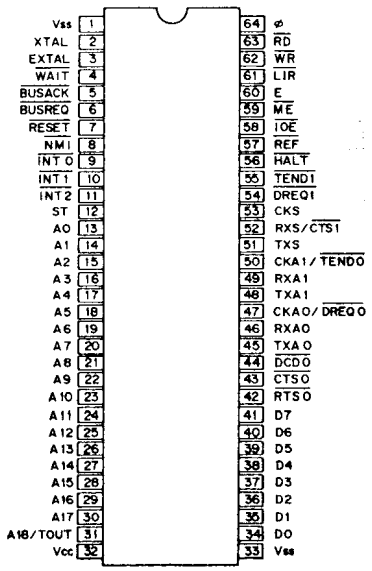
HM6116LP3L IC2
(RAM)



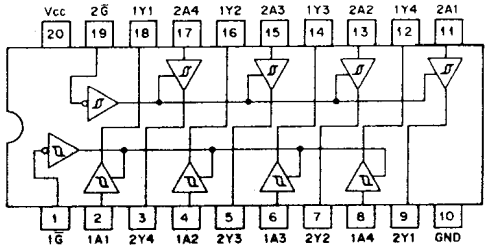
SC-1079 IC3
(ROM)



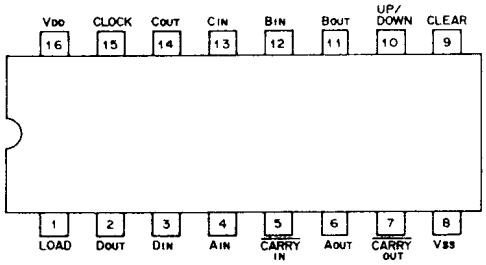
HD64B180ROP IC4
(CPU)



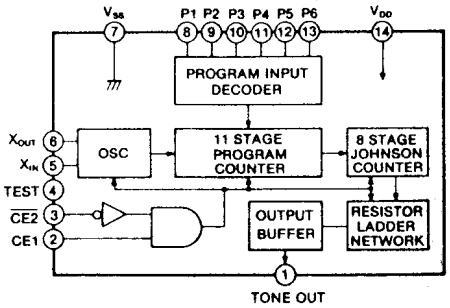
TC74HC244 IC5, IC6
(OCTAL 3-STATE BUS DRIVER)



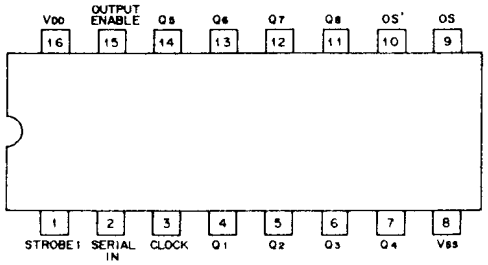
TC4510 IC7
(BCD UP/DOWN COUNTER)



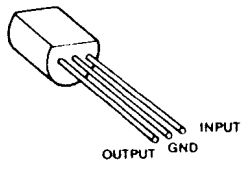
S-7116A IC8
(PROGRAMMABLE TONE GENERATOR)



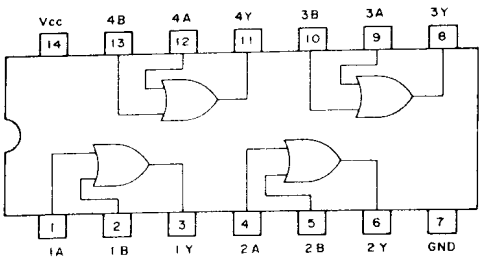
μPD4094BC IC9
(8-STAGE SHIFT AND STORE BUS REGISTER)



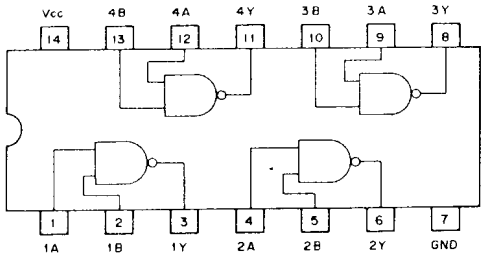
TA78L005AP IC10
(3-TERMINAL 5V REGULATOR)



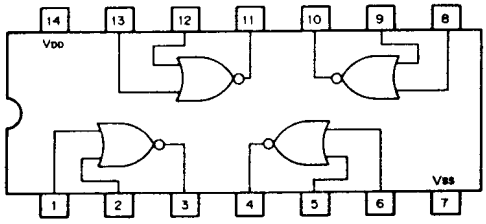
TC74HC32 IC11, IC12
(QUAD 2-INPUT POSITIVE OR GATE)



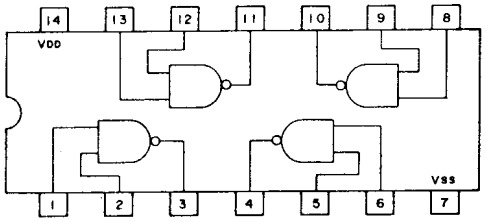
TC74HC00 IC13
(QUAD 2-INPUT NAND GATE)



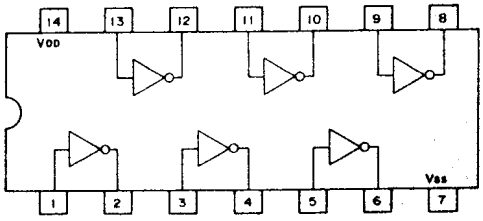
µPD4001BC IC14, IC19
(QUAD 2-INPUT POSITIVE NOR GATE)



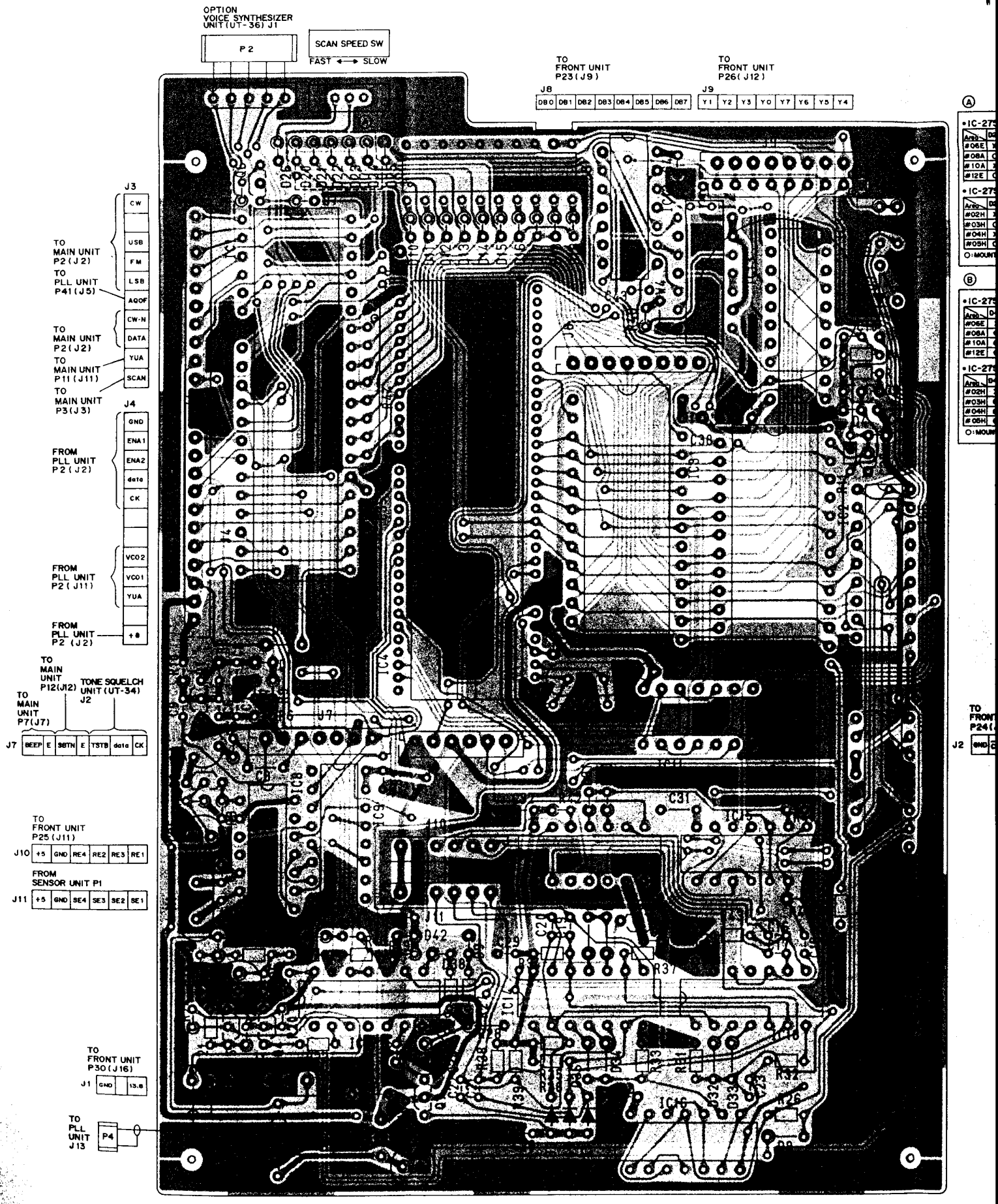
µPD4011BC IC15, IC16, IC18
(QUAD 2-INPUT POSITIVE NAND GATE)

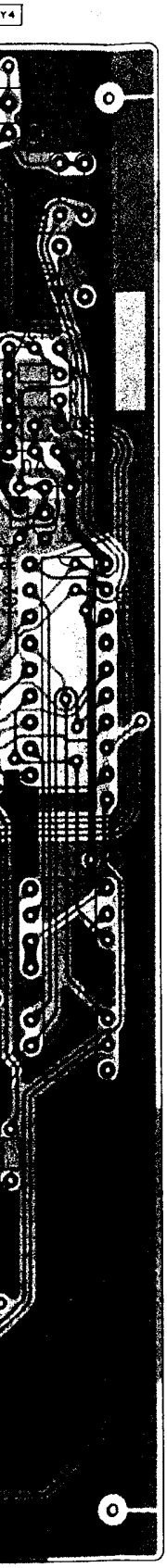


µPD4069UBC IC17
(HEX INVERTER)



• LOGIC UNIT


OPTION
VOICE SYNTHESIZER
UNIT (UT-36) J1
P2
SCAN SPEED SW
FAST ◄—► SLOW
TO
FRONT UNIT
P23 (J9)
J8
DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7
TO
FRONT UNIT
P26 (J12)
J9
Y1 Y2 Y3 Y0 Y7 Y6 Y5 Y4
J3
CW
USB
FM
LSB
AGOF
CW-N
DATA
YUA
SCAN
TO
MAIN UNIT
P2 (J2)
TO
PLL UNIT
P41 (J5)
TO
MAIN UNIT
P2 (J2)
TO
MAIN UNIT
P11 (J11)
TO
MAIN UNIT
P3 (J3)
J4
GND
ENA1
ENA2
data
CK
VCO2
VCO1
YUA
+8
FROM
PLL UNIT
P2 (J2)
FROM
PLL UNIT
P2 (J11)
FROM
PLL UNIT
P2 (J2)
TO
MAIN
UNIT
P12(J12)
TONE SQUELCH
UNIT (UT-34)
J2
TO
MAIN
UNIT
P7(J7)
J7
BEEP E SBTN E TSTB data CK
TO
FRONT UNIT
P25 (J11)
J10
+5 GND RE4 RE2 RE3 RE1
FROM
SENSOR UNIT P1
J11
+5 GND SE4 SE3 SE2 SE1
TO
FRONT UNIT
P30 (J16)
J1
GND 13.8
TO
PLL
UNIT
J13
P4
Ⓐ
Ⓑ
TO
FRONT
P24
J2
GND



Ⓐ

• IC-275A/E

Area	D20	D21	D22	D23	D24
#06E	X	X	O	X	O
#08A	O	X	X	X	X
#10A	X	O	X	X	X
#12E	O	O	X	X	O

• IC-275H

Area	D20	D21	D22	D23	D24
#02H	X	X	O	X	O
#03H	O	X	X	X	X
#04H	X	O	X	X	X
#05H	O	O	X	X	O

O: MOUNTING X: NO MOUNTING

Ⓑ

• IC-275A/E

Area	D43	D44
#06E	X	O
#08A	O	X
#10A	O	O
#12E	O	O

• IC-275H

Area	D43	D44
#02H	X	O
#03H	O	X
#04H	O	O
#05H	O	O

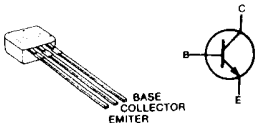
O: MOUNTING X: NO MOUNTING

TO
FRONT UNIT
P24 (J10)

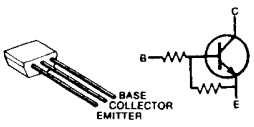
J2

GND	$\overline{CS}$	+5	WE	$\overline{RE}$	READY

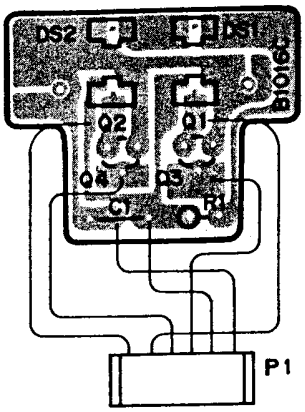
2SC2785
Q1, Q2, Q3, Q4, Q5, Q6, Q7



RN1204
Q8

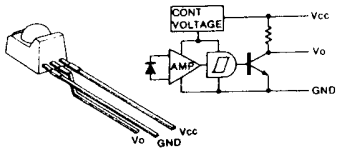


• SENSOR UNIT

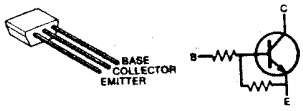


TO
LOGIC UNIT
J11

IS-433
Q1, Q2



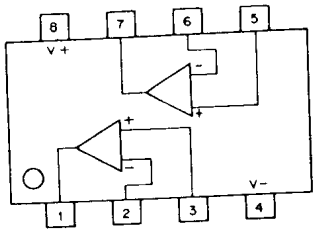
RN1204
Q3, Q4



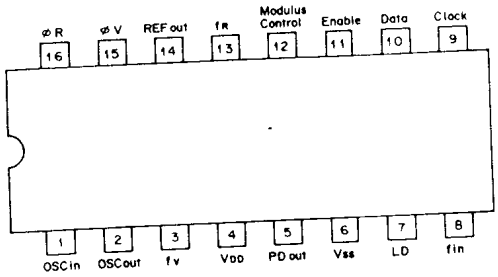
7-4 PLL AND DDS UNITS

• PLL UNIT

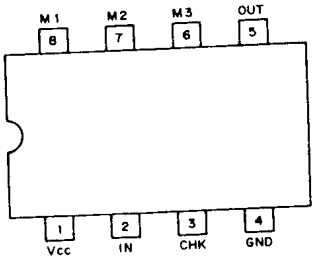
NJM4560DD IC1
(DUAL OPERATIONAL AMPLIFIER)



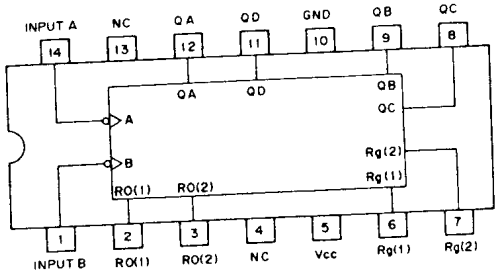
MC145158P1 IC2
(SERIAL INPUT PLL FREQUENCY SYNTHESIZER)



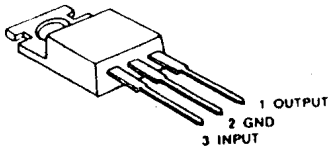
µPB555C IC3
(2-MODULUS PRESCALER)



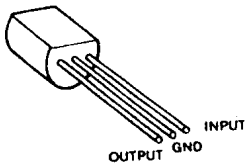
SN74LS90N IC4
(DECADE COUNTERS)



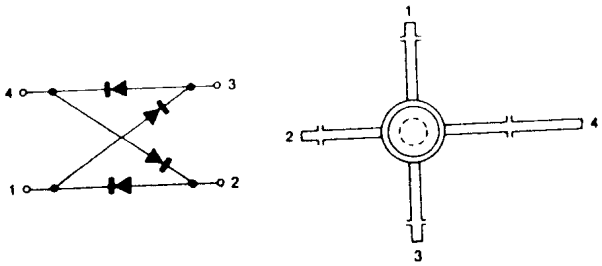
µA78M08UC IC5
(3-TERMINAL 8V REGULATOR)



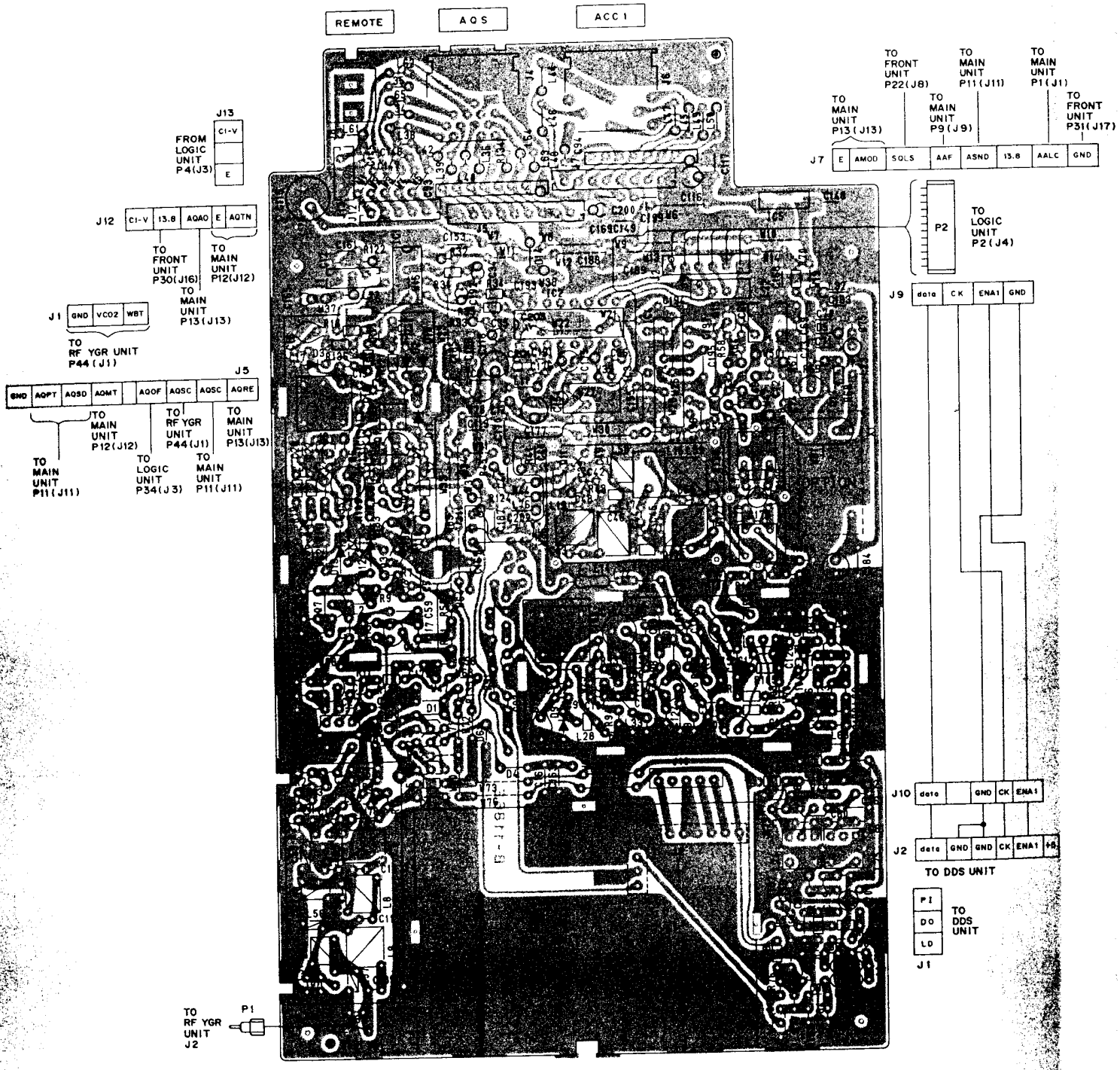
TA78L005AR IC6
(3-TERMINAL 5V REGULATOR)



ND487C1-3R IC7
(SCHOTTKY BARRIER DIODE QUAD)



• PLL UNIT


REMOTE
AQS
ACC1
J13
CI-V
FROM LOGIC UNIT P4(J3)
E
J12
CI-V
13.8
AQAO
E
AQTN
TO FRONT UNIT P30(J16)
TO MAIN UNIT P12(J12)
TO MAIN UNIT P13(J13)
J1
GND
VCO2
WBT
TO RF YGR UNIT P44(J1)
J5
GND
AQPT
AQSD
AQMT
AQOF
AQSC
AQSC
AQRE
TO MAIN UNIT P12(J12)
TO RF YGR UNIT P44(J1)
TO MAIN UNIT P13(J13)
TO MAIN UNIT P11(J11)
TO LOGIC UNIT P34(J3)
TO MAIN UNIT P11(J11)
TO FRONT UNIT P22(J8)
TO MAIN UNIT P11(J11)
TO MAIN UNIT P1(J1)
TO MAIN UNIT P13(J13)
TO MAIN UNIT P9(J9)
TO FRONT UNIT P31(J17)
J7
E
AMOD
SQLS
AAF
ASND
13.8
AALC
GND
P2
TO LOGIC UNIT P2(J4)
J9
data
CK
ENA1
GND
J10
data
GND
CK
ENA1
J2
data
GND
GND
CK
ENA1
+8
TO DDS UNIT
PI
DO
LD
TO DDS UNIT
J1
TO RF YGR UNIT J2
P1

• DDS UNIT

TO MAIN UNIT P1 (J1)

TO FRONT UNIT P31 (J17)

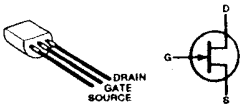
AALC | GND

ND

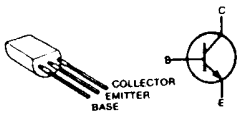
ENA1

ENA1 | +5

2SK125
Q1



2SC2026
Q9

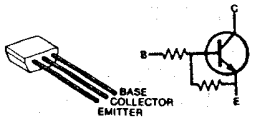


FROM PLL UNIT

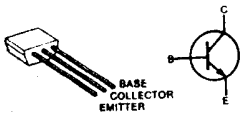
+5 | ENA1 | CK | GND | GND | DO | LD

P1 J1

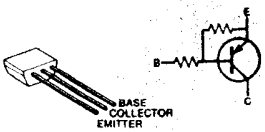
RN1204
Q2, Q3



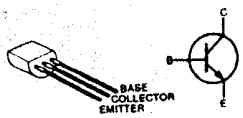
2SC2668
Q11, Q15



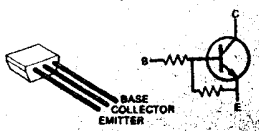
RN2204
Q4



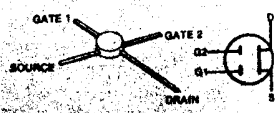
2SC383TM
Q17



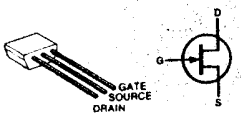
RN1202
Q5, Q29



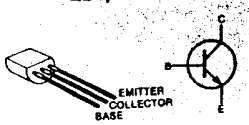
3SK74M
Q20

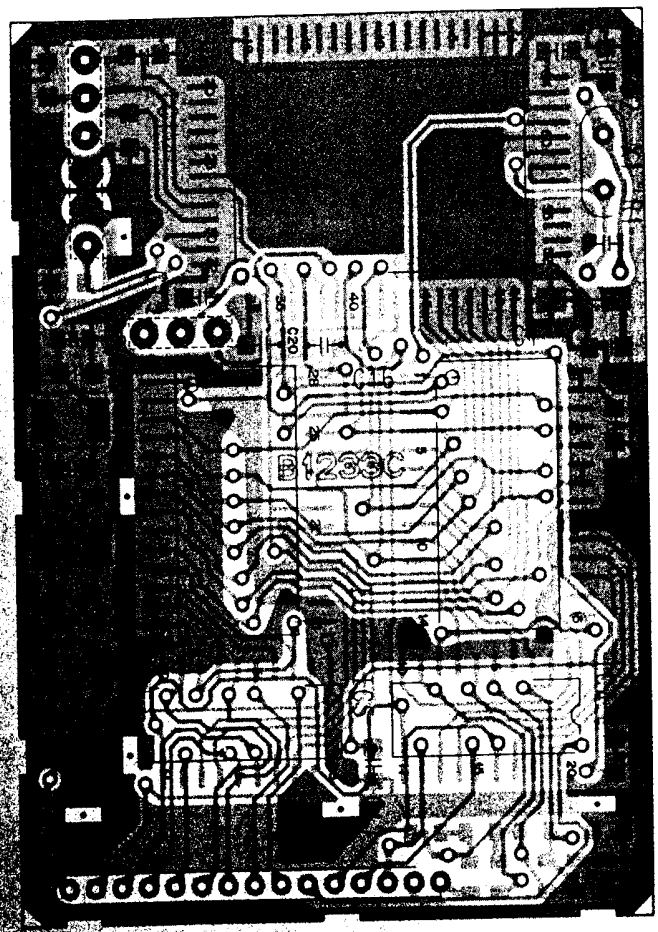


2SK192A
Q6, Q25



2SC763C
Q7, Q8, Q13,
Q18, Q19, Q21,
Q26, Q27

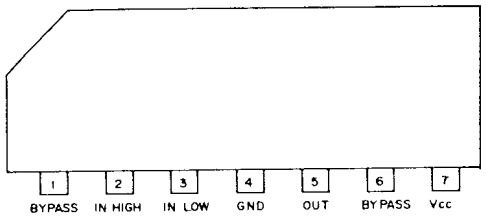




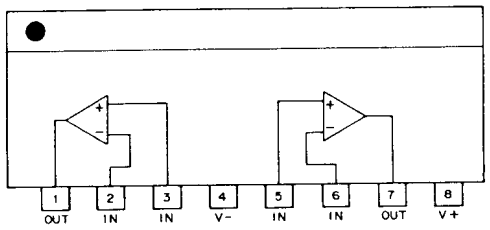
7-5 MAIN UNIT

• MAIN UNIT

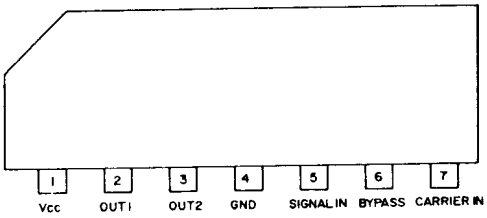
μPC577H IC1, IC11
(FM IF AMPLIFIER)



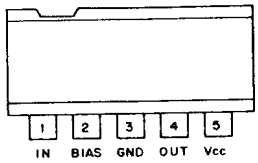
M5218L IC2, IC10, IC12, IC13
(LOW NOISE DUAL OPERATIONAL AMPLIFER)



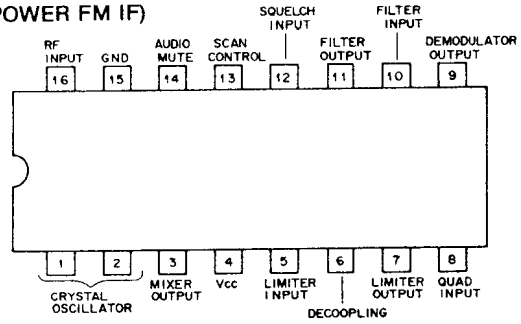
μPC1037H IC3, IC4, IC7, IC21
(DOUBLE BALANCED MIXER)



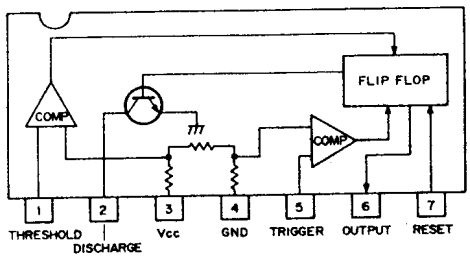
BA401 IC5
(LIMITER AMPLIFIER)



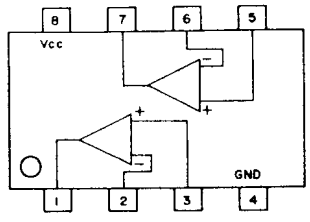
MC3357P IC6
(LOW POWER FM IF)



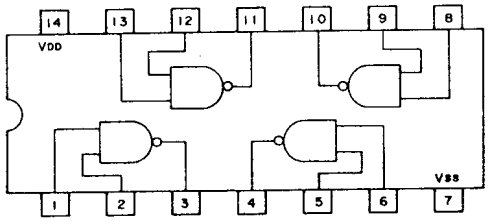
BA222 IC8
(MONOLITHIC TIMER)



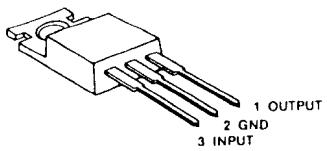
NJM4558D IC9
(LOW NOISE DUAL OPERATIONAL AMPLIFER)



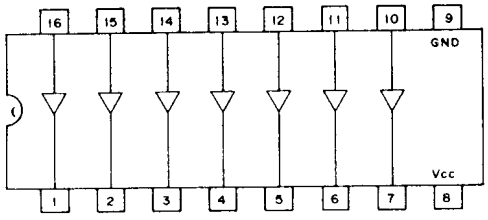
μPD4011BC IC14, IC15
(QUAD 2-INPUT POSITIVE NAND GATE)



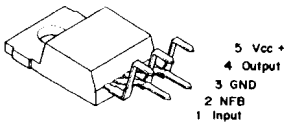
μA7808 IC16
(3-TERMINAL 8V REGULATOR)



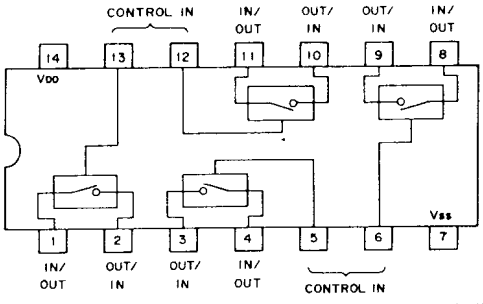
BA618 IC17
(DRIVER)



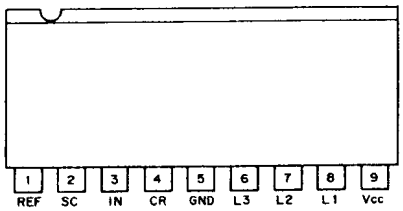
μPC2002H IC18
(AUDIO POWER AMPLIFIER)



μPD4066BC IC19
(QUAD BILATERL SWITCHING)

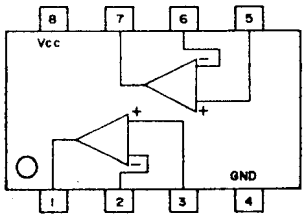


BA695 IC20
(CENTER SCAN STOP CONTROLER)

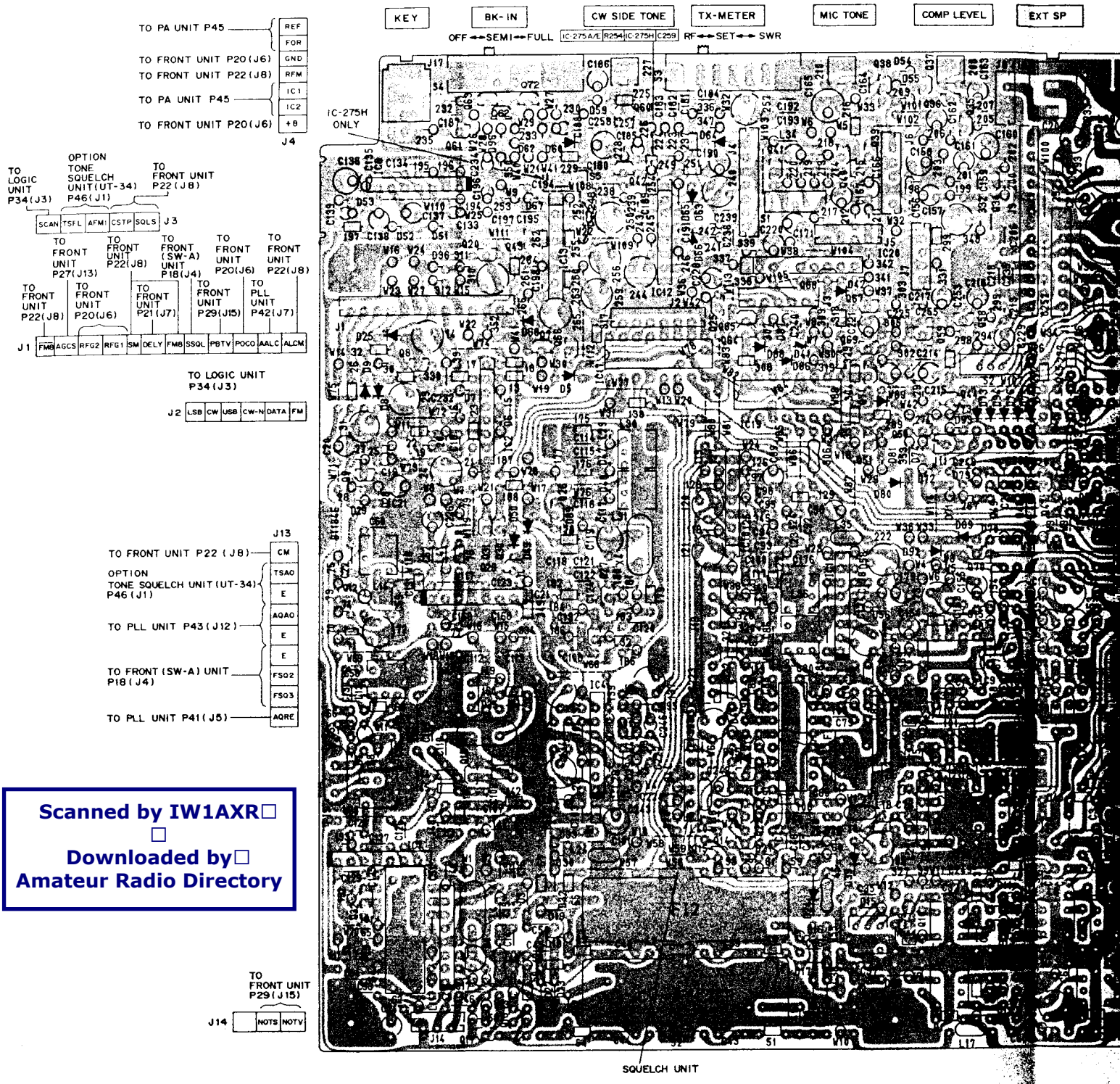


• SQUELCH UNIT

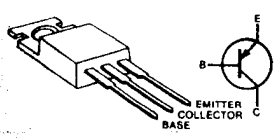
NJM4558M IC1
(LOW NOISE DUAL OPERATIONAL AMPLIFIER)



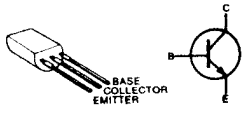
• MAIN UNIT



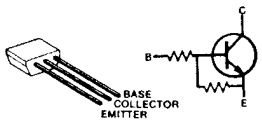
2SB596
Q57



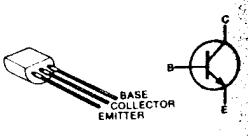
2SD468
Q46, Q50, Q54, Q55



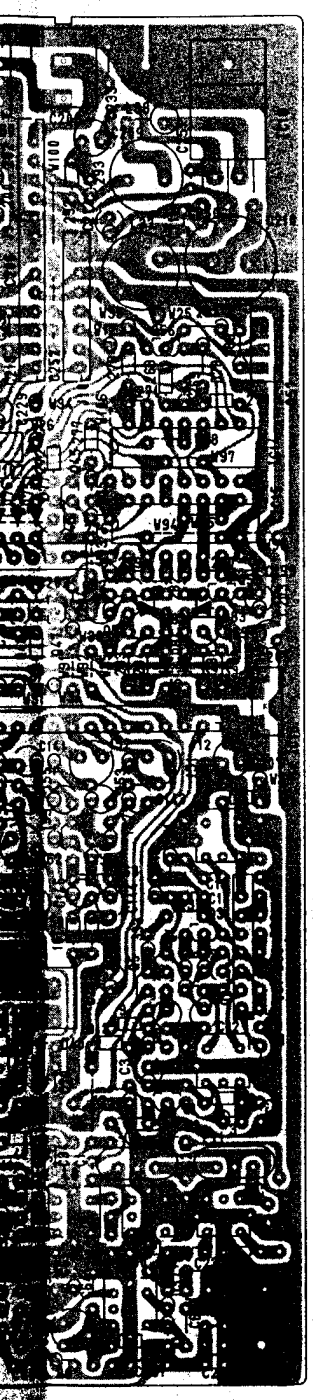
RN1202
Q36, Q37, Q38, Q49, Q51, Q56, Q71



2SC1571
Q34



EXT SP



J8
FROM SPEAKER UNIT P6
SP
E

J6
MIG3
MIG1
COMP
E
MIC
TO FRONT (SW-A) UNIT P19 (J5)
TO FRONT UNIT P30 (J16)
TO FRONT (SW-A) P16 (J2)

J9
EXSP
PH
SPE
AFG2
AFG1
GND
GND
13.6
T13
AFTN
E
AFG3
AAF
TO FRONT (SW-A) UNIT P19 (J5)
TO FRONT (SW-A) UNIT P15 (J1)
TO FRONT (SW-A) P19 (J5)
TO PA UNIT P45
TO FRONT UNIT P30 (J16)
TO PA UNIT P45
TO FRONT (VR-B) UNIT P21 (J7)
TO PLL UNIT P42 (J7)
TO FRONT (SW-A) UNIT P19 (J5)
TO PLL UNIT P42 (J7)

J10
GND
T13
T8
AGC
+8
R8
FROM RF YGR UNIT P2

TO PLL UNIT P42 (J1)
TO FRONT (VR-B) P21 (J7)
J5
E
AMOD
MIG1
MIG2

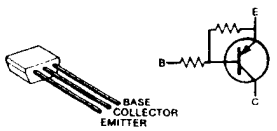
J7
E
BEEP
E
VOIC
TO LOGIC UNIT P36 (J7)
OPTION VOICE SYNTESIZER UNIT (UT-36) P8 (J2)

TO PA UNIT P45
TO FRONT (SW-A) UNIT P17 (J3)
TO FRONT UNIT P30 (J16)
TO PLL UNIT P42 (J7)
TO PLL UNIT P41 (J5)
TO LOGIC UNIT P34 (J3)
TO PLL UNIT P41 (J5)
TO FRONT UNIT P22 (J8)
J11
PREC
AQPT
PTT
YUA
TX SW
AQSD
AQSC
ASND
CPSD

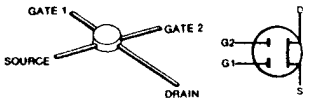
TO PLL UNIT P41 (J5)
TO PLL UNIT P43 (J12)
TO PA UNIT P45
TO FRONT UNIT P27 (J13)
J12
AQMT
SBTN
E
AQTN
E
TSTN
E
T8
T8
R8
+8
NBS
TO LOGIC UNIT P36 (J7)
OPTION TONE SQUELCH UNIT (UT-34) P46 (J1)
TO FRONT UNIT P22 (J8)

P1
FROM RF YGR UNIT

RN2204
Q22, Q68, Q70

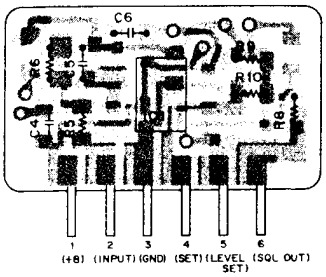


3SK74M
Q10, Q11, Q12, Q13

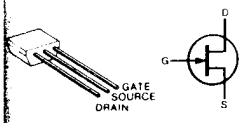


• SQUELCH UNIT

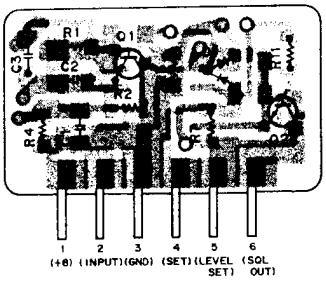
COMPONENTS SIDE



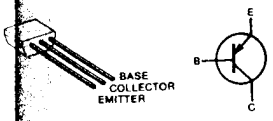
2SK192A
Q1



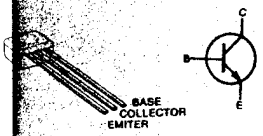
FOIL SIDE



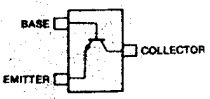
2SA1048
Q2, Q43, Q61



2SC2785
Q3, Q4, Q6, Q9, Q14, Q17, Q18, Q19, Q21, Q23, Q27, Q28, Q32, Q33, Q35, Q39, Q40, Q41, Q42, Q44, Q45, Q52, Q53, Q58, Q59, Q60, Q62, Q69

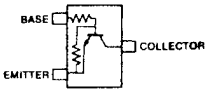


2SC2712
Q1



Symbol: LY

2SC3395
Q2



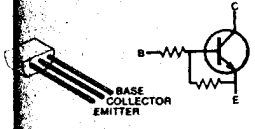
Symbol: BY

HSM88AS
D1

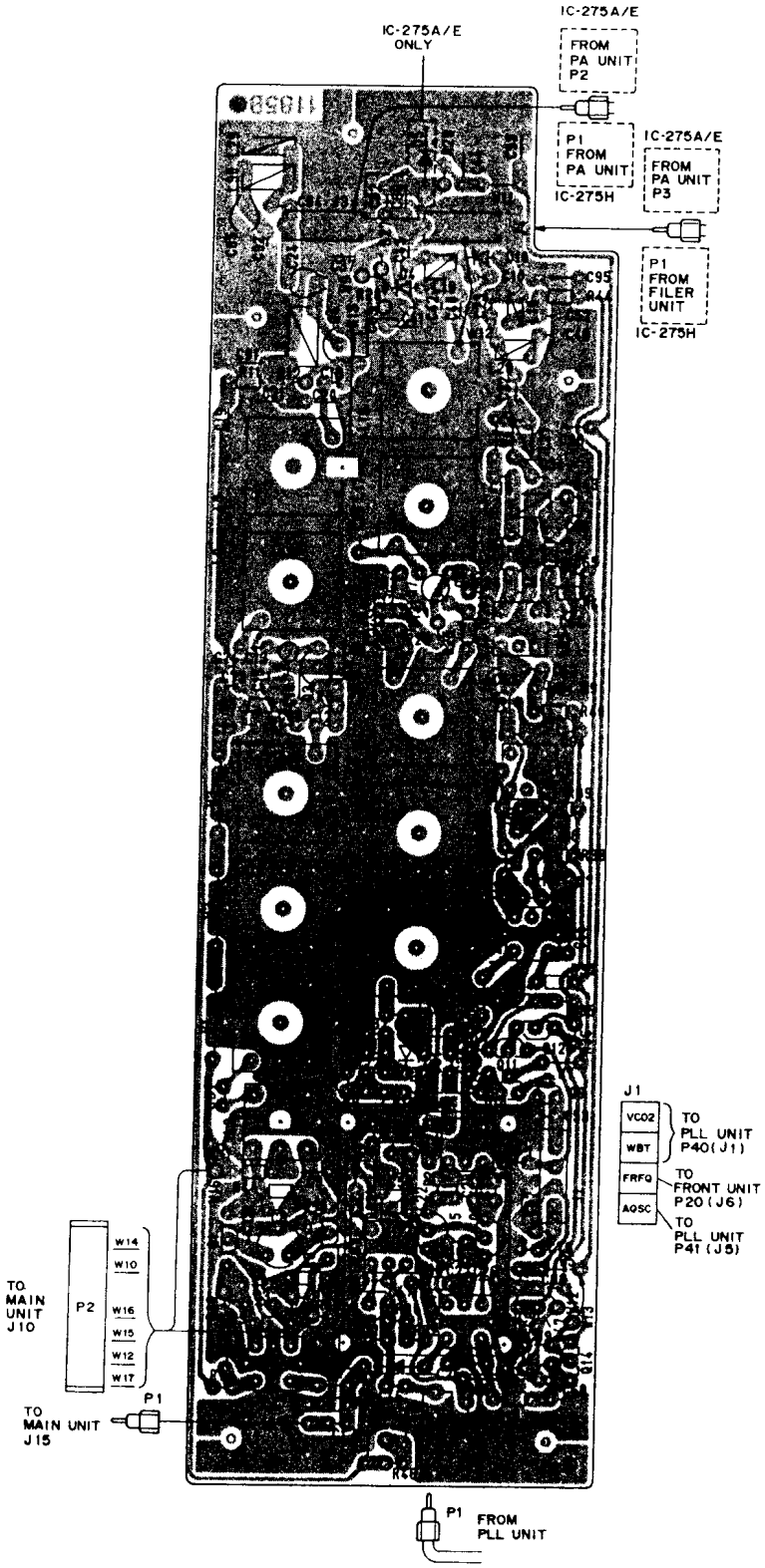
Symbol: C1

RN2202
Q5, Q15, Q16, Q65, Q72

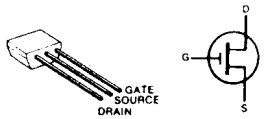
RN1204
Q7, Q8, Q20, Q25, Q26, Q29, Q30, Q31, Q47, Q48, Q63, Q64, Q66, Q67



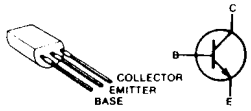
7-6 RF YGR UNIT



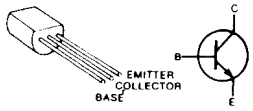
2SK241
Q1, Q2



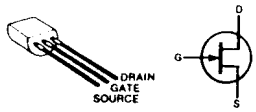
2SC3355
Q3, Q13



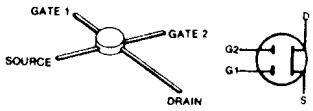
2SC2053
Q4, Q8



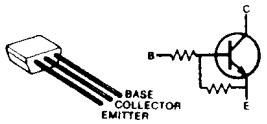
2SK125
Q5, Q6



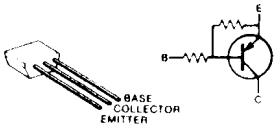
3SK121
Q7



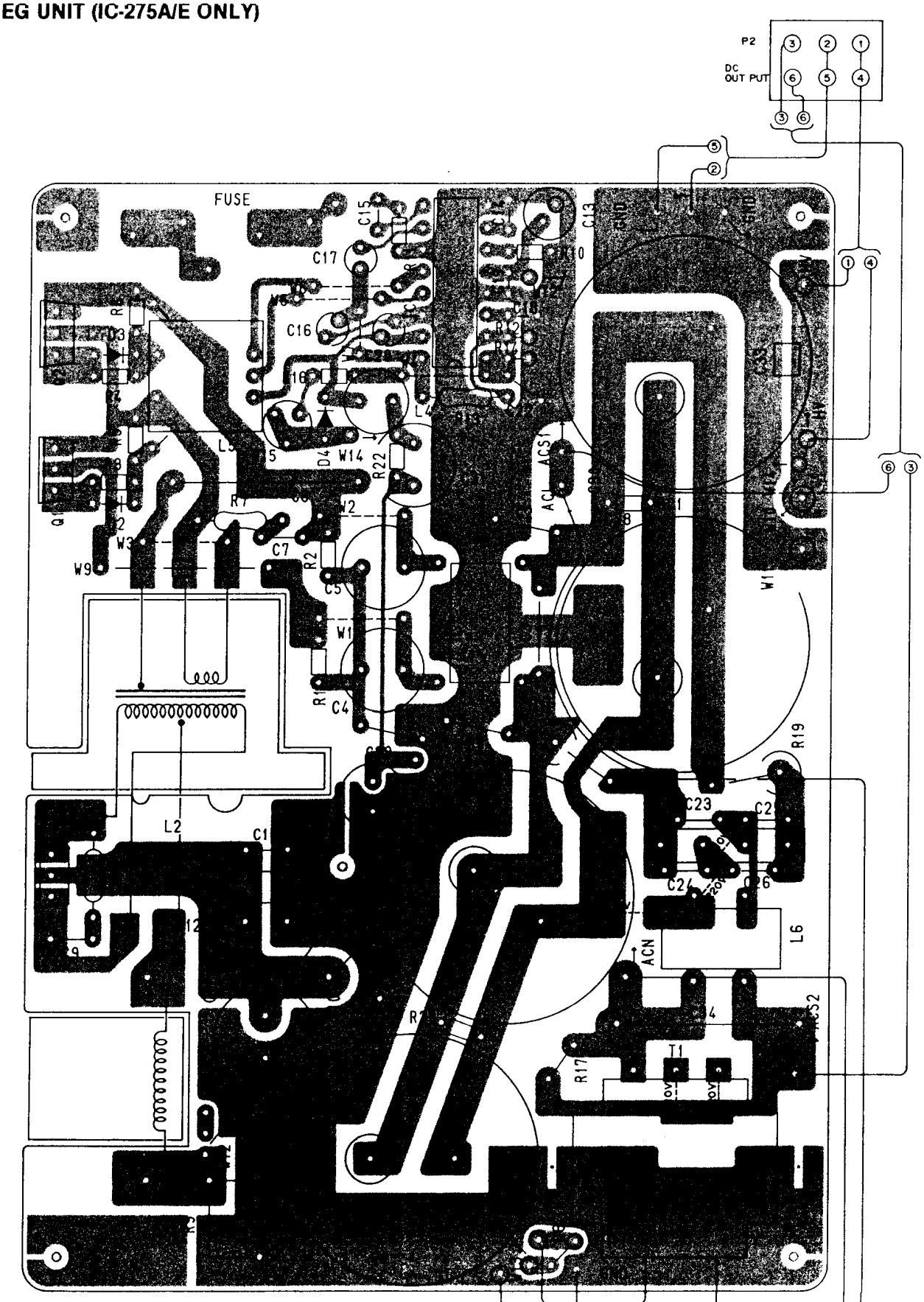
RN1204
Q9, Q11



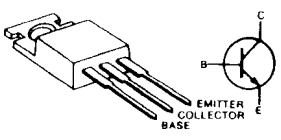
RN2202
Q10, Q12, Q14

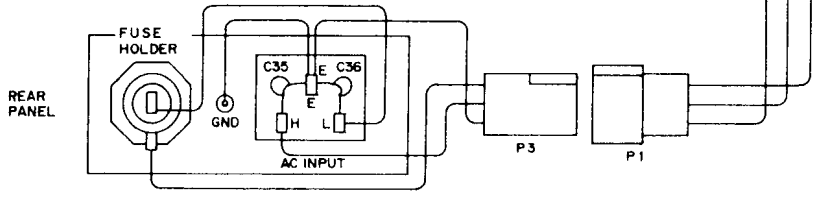


• REG UNIT (IC-275A/E ONLY)



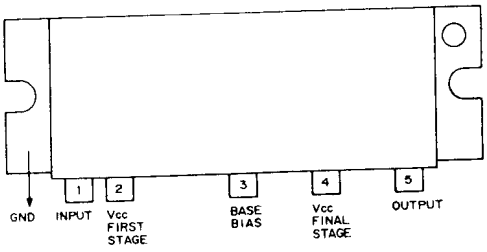
2SC2501
Q1, Q2



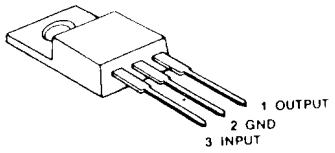


7-8 PA UNIT (IC-275A/E)

SC-1020 IC1
(POWER MODULE)

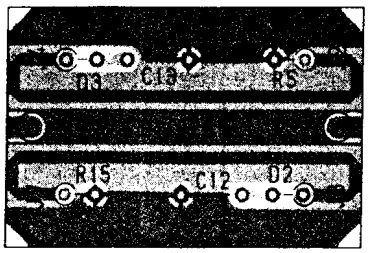


NJM7809A IC2
(3-TERMINAL 9V REGULATOR)

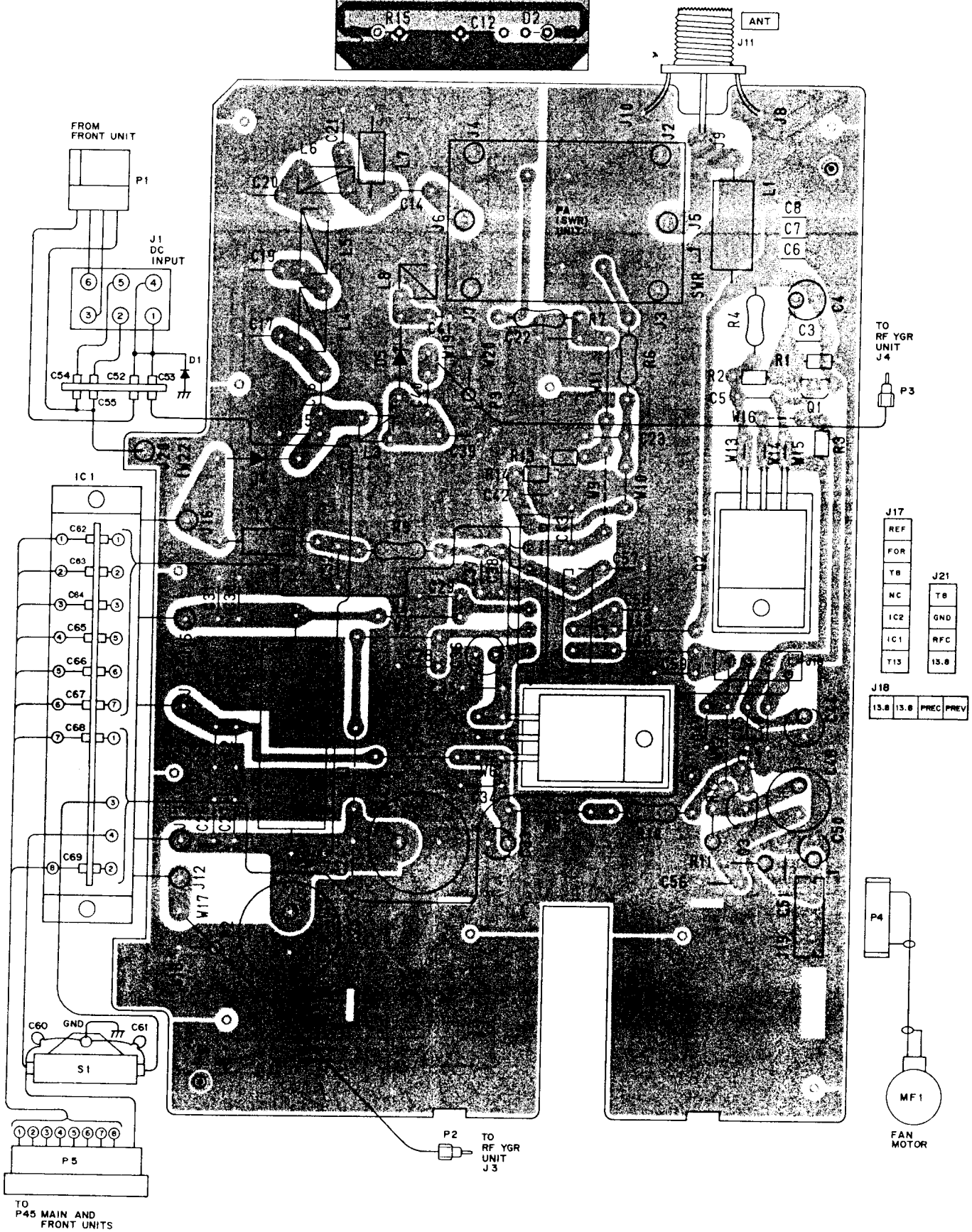


Scan by Dan

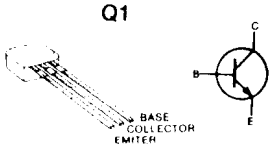
• PA (SWR) UNIT



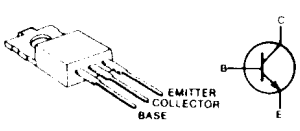
• PA UNIT



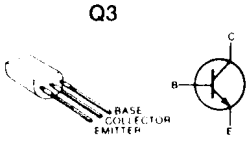
2SC2785
Q1



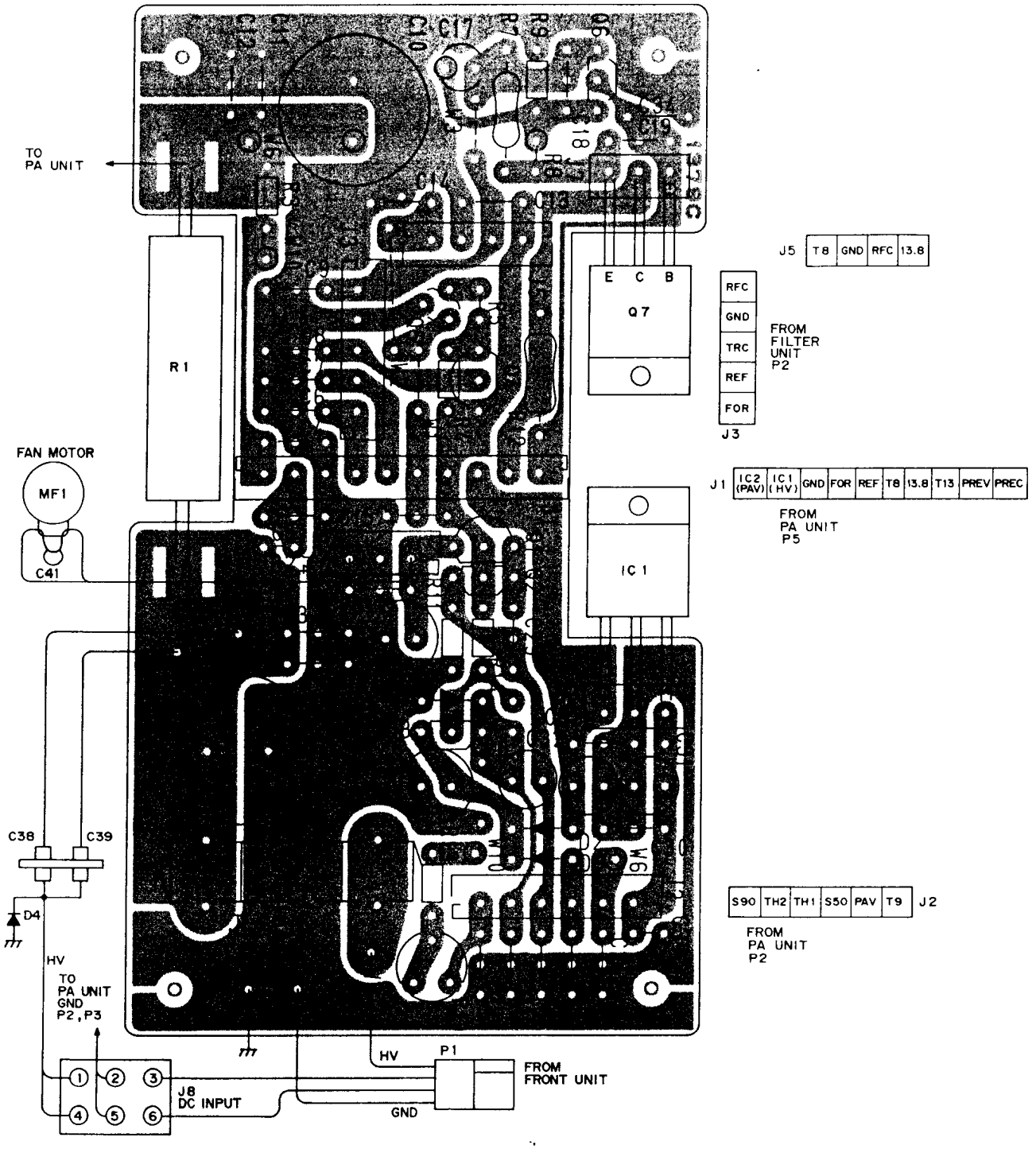
2SD359
Q2



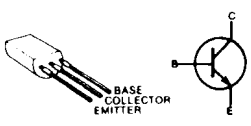
2SC2120
Q3



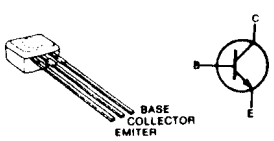
• CTRL UNIT (IC-275H ONLY)



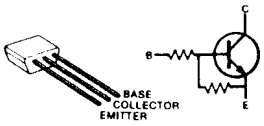
2SD468
Q1



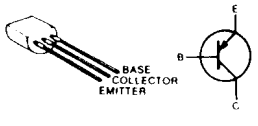
2SC2785
Q2, Q6



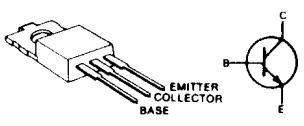
RN1204
Q3, Q5



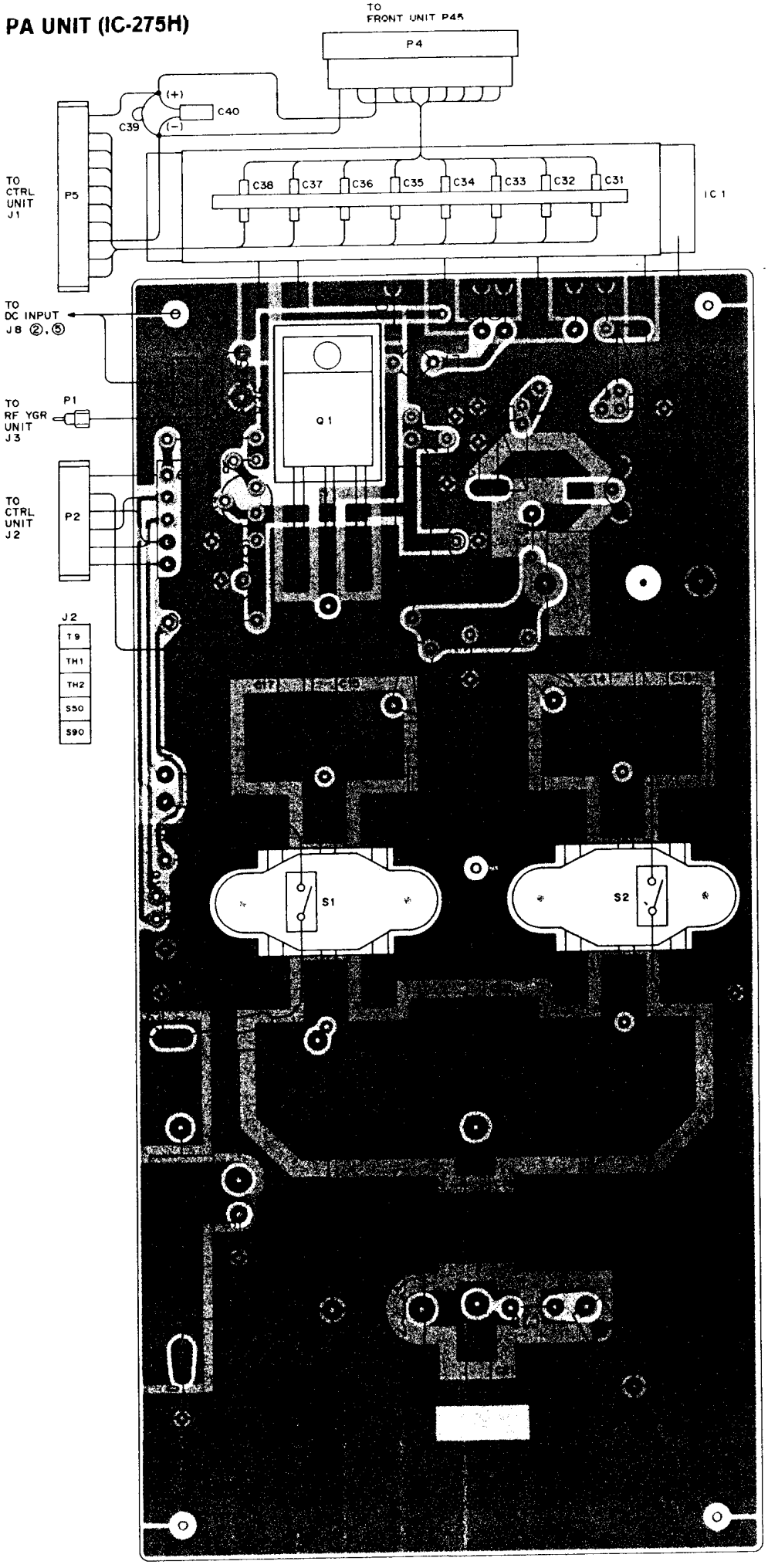
2SB562
Q4



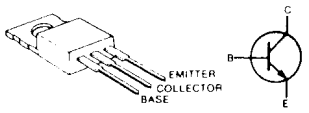
2SD359
Q7



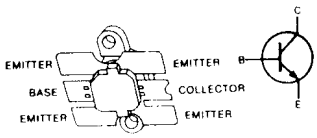
• PA UNIT (IC-275H)



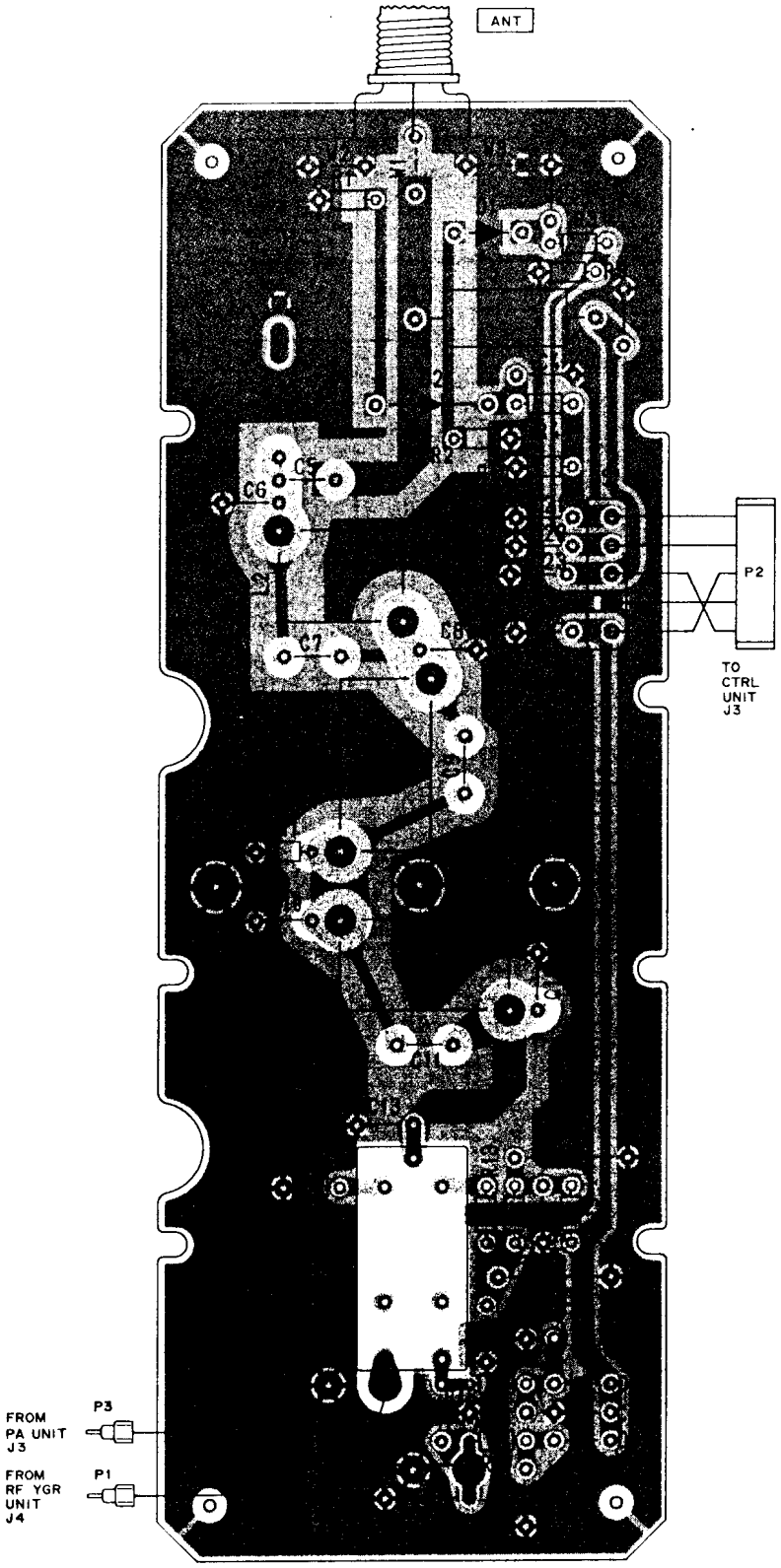
2SD880
Q1



2SC2694
Q2, Q3

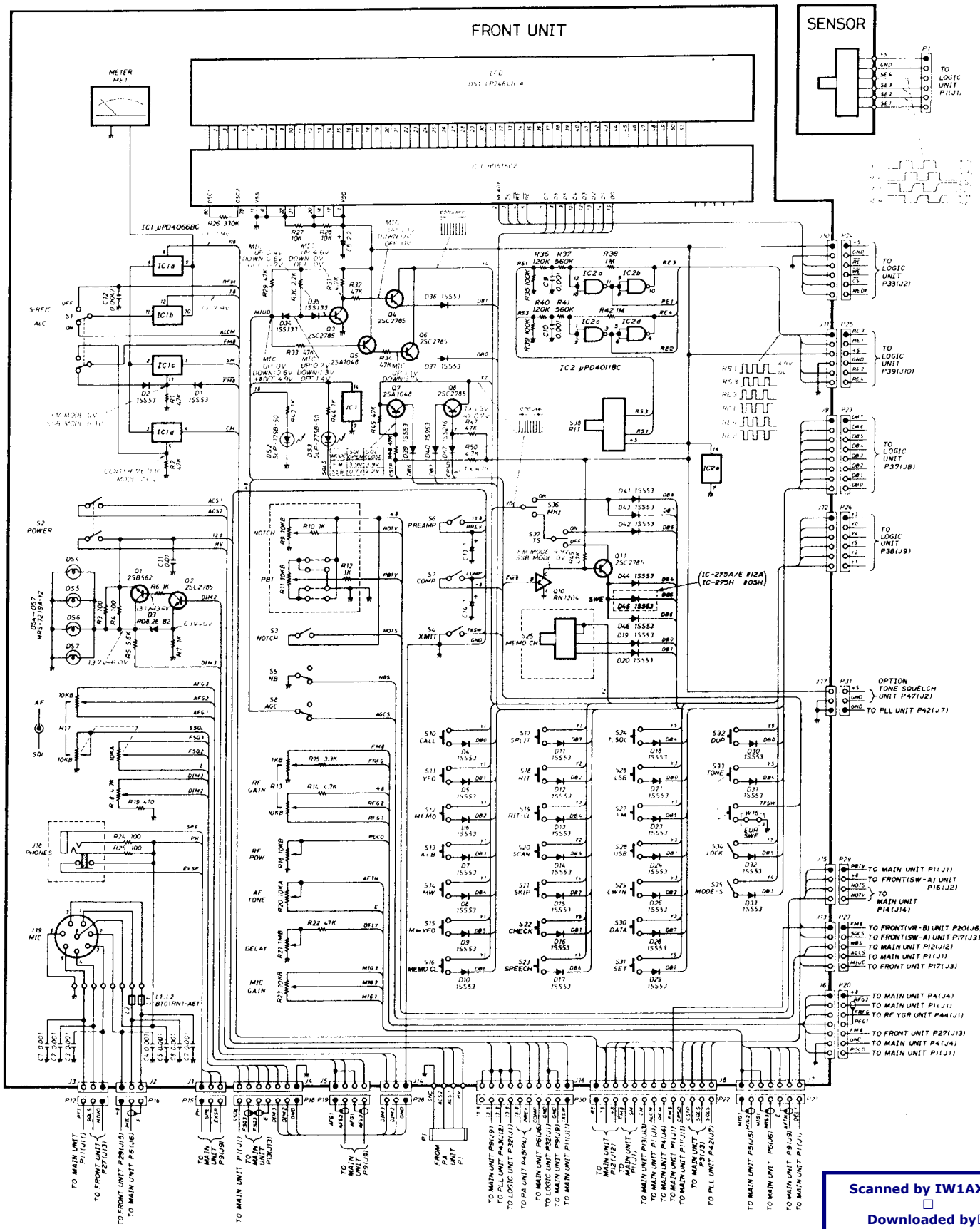


7-11 FILTER UNIT (IC-275H ONLY)

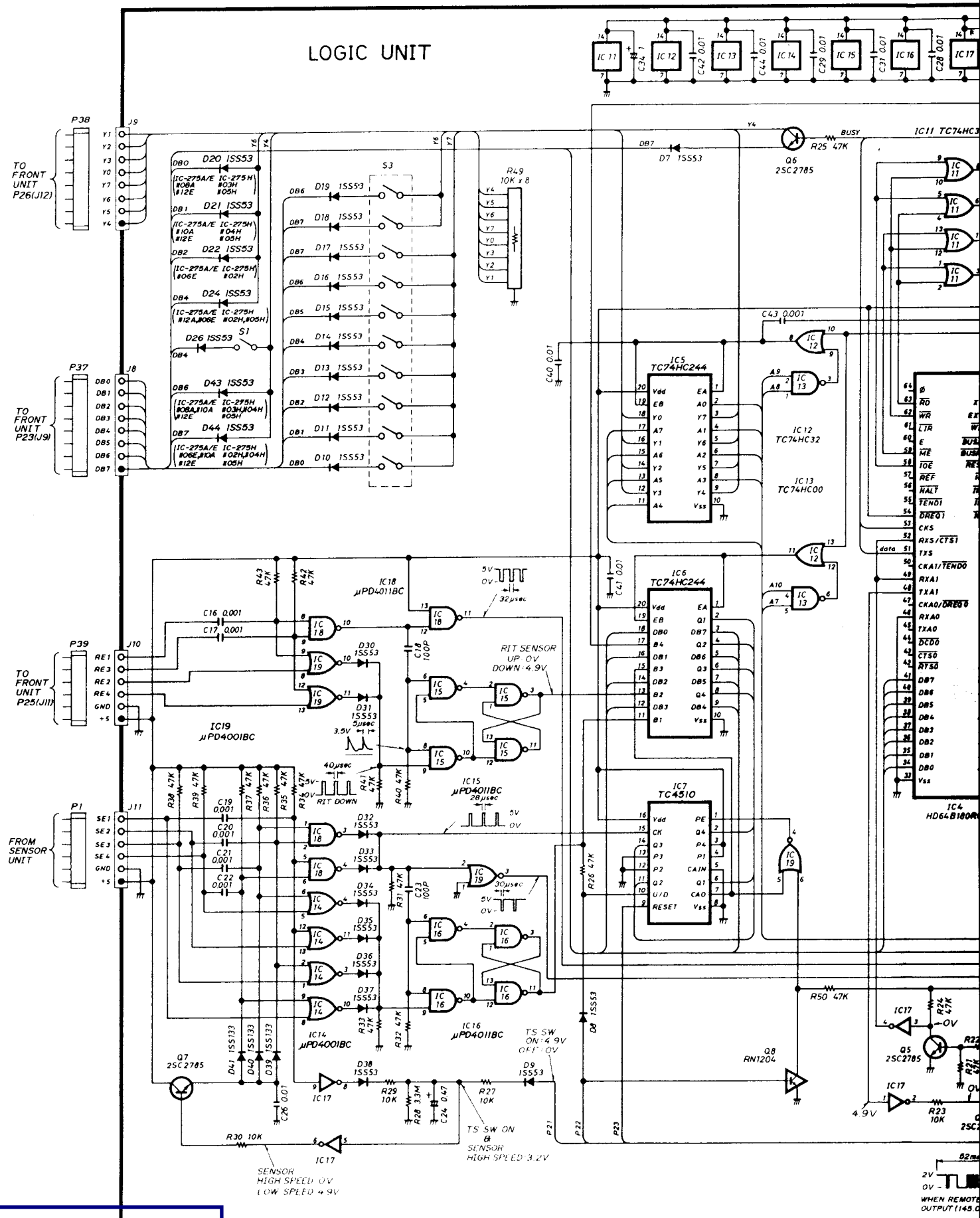


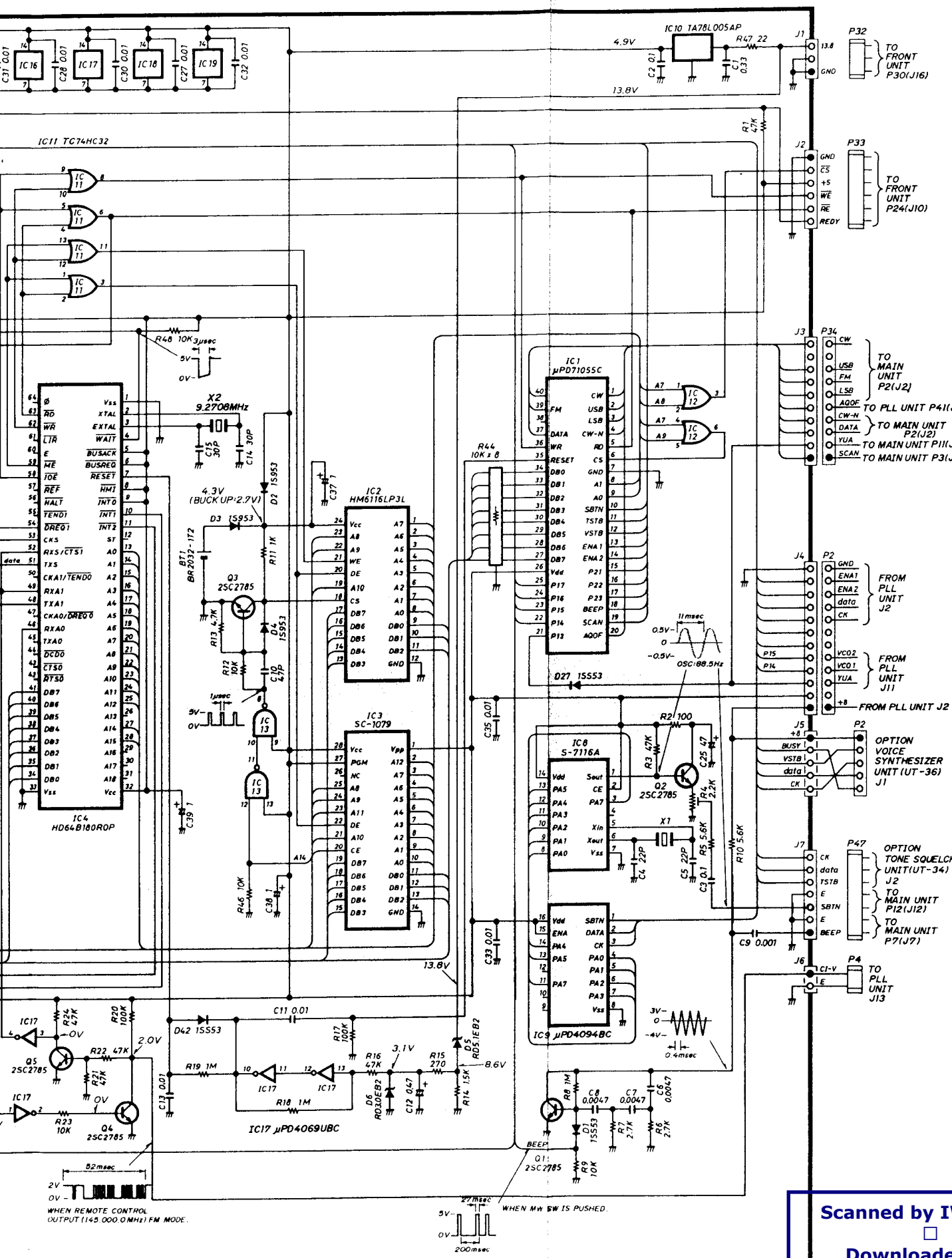
SECTION 8 VOLTAGE DIAGRAMS

8-1 FRONT UNIT

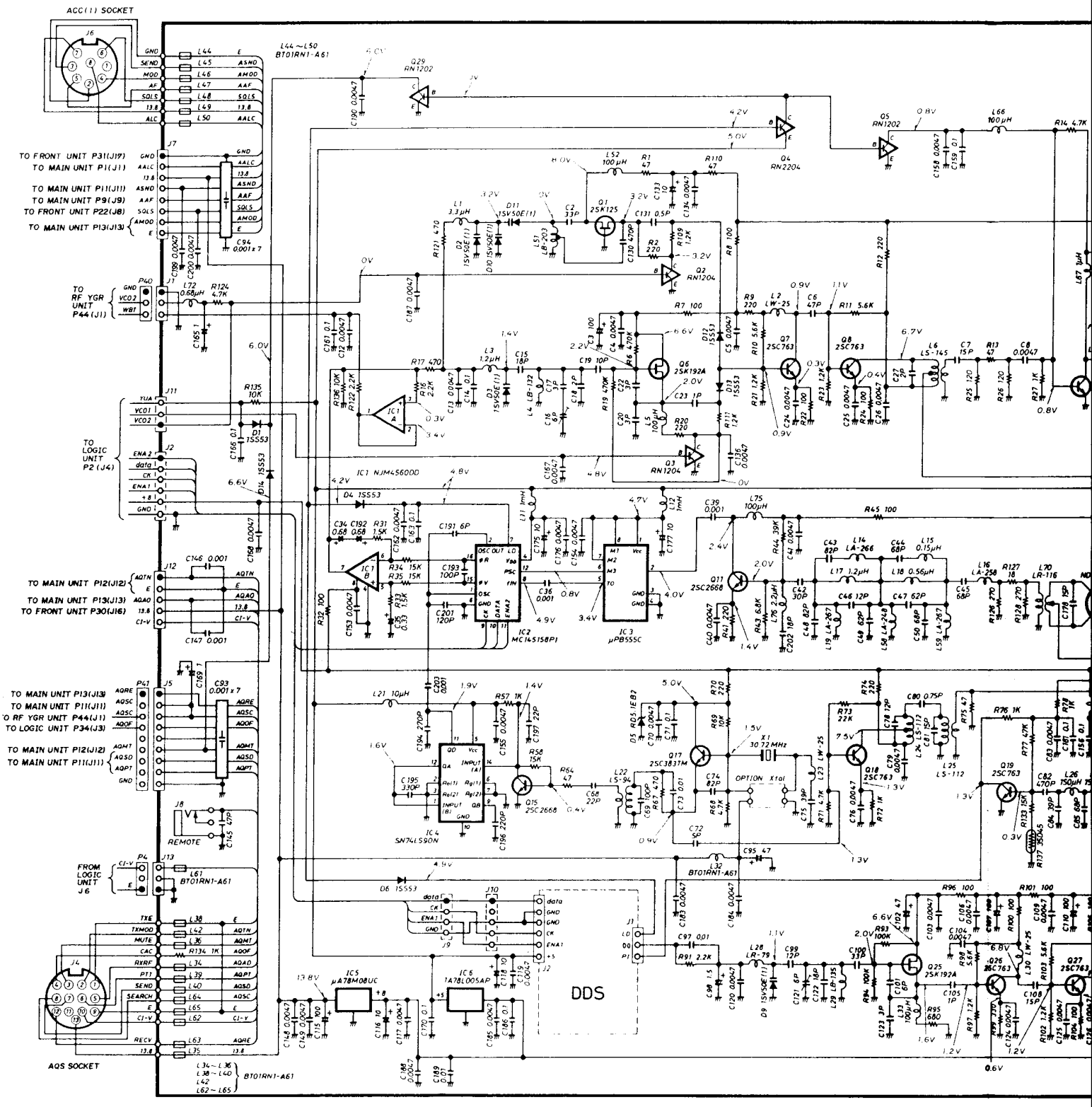


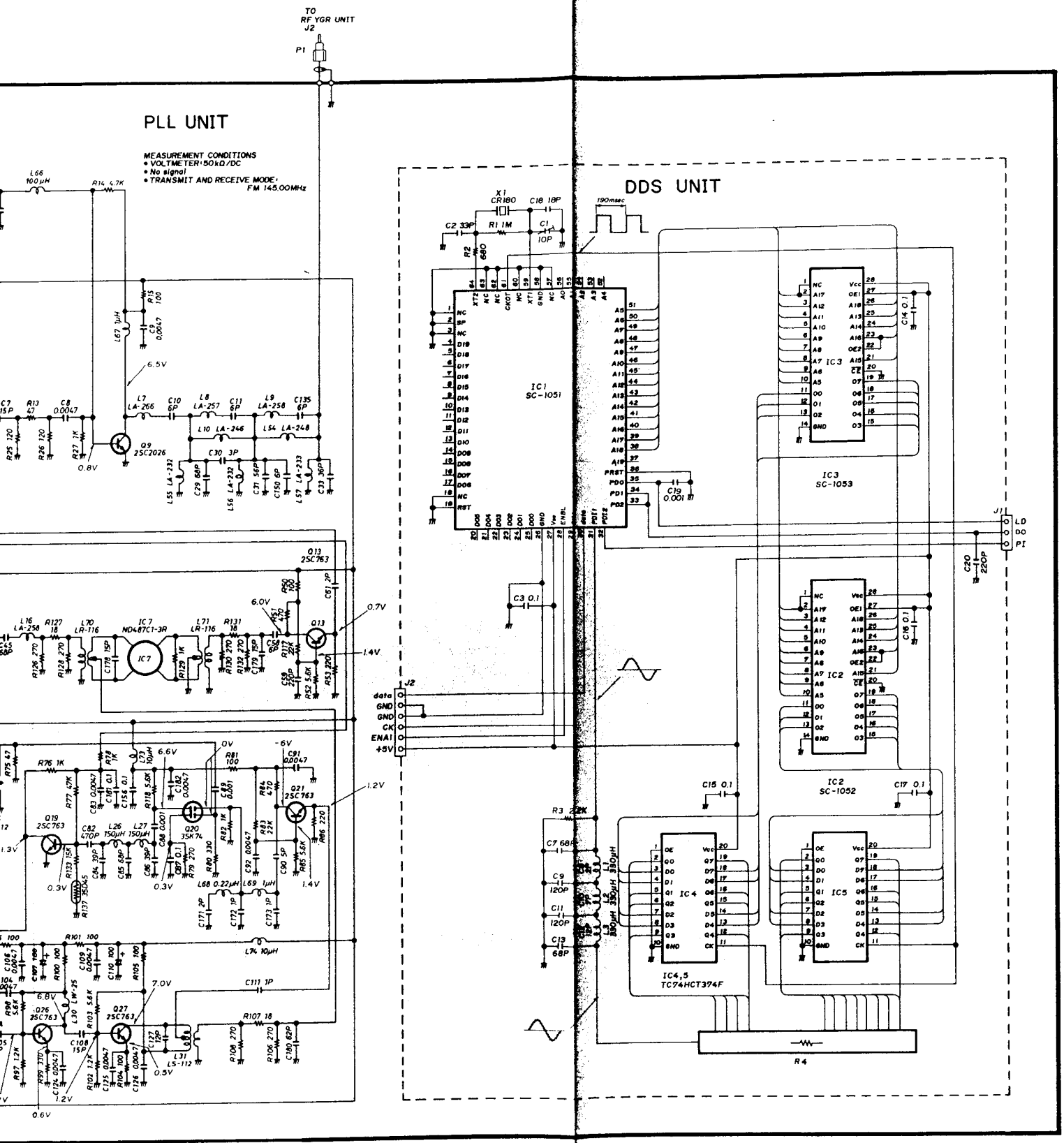
8-2 LOGIC UNIT



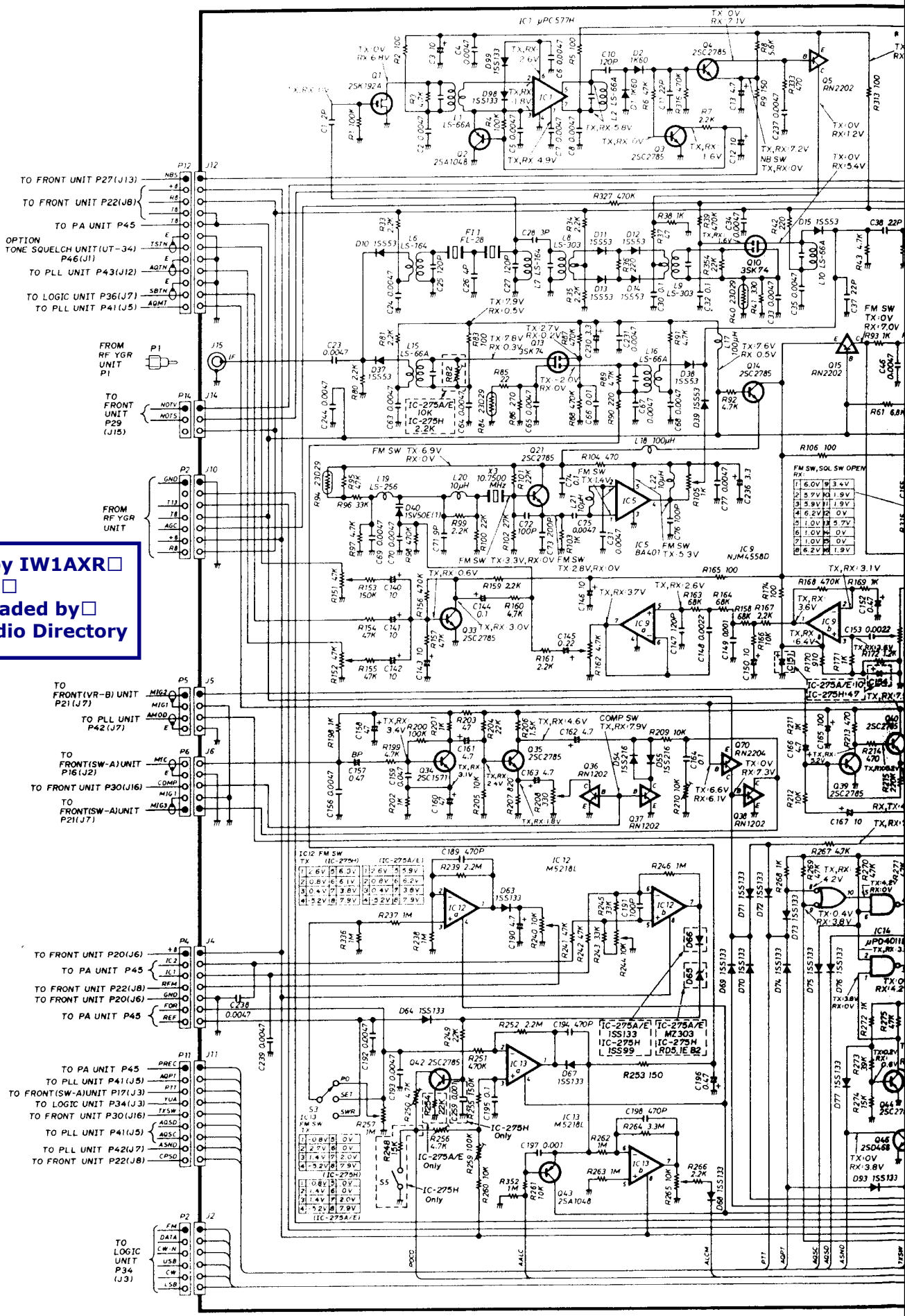


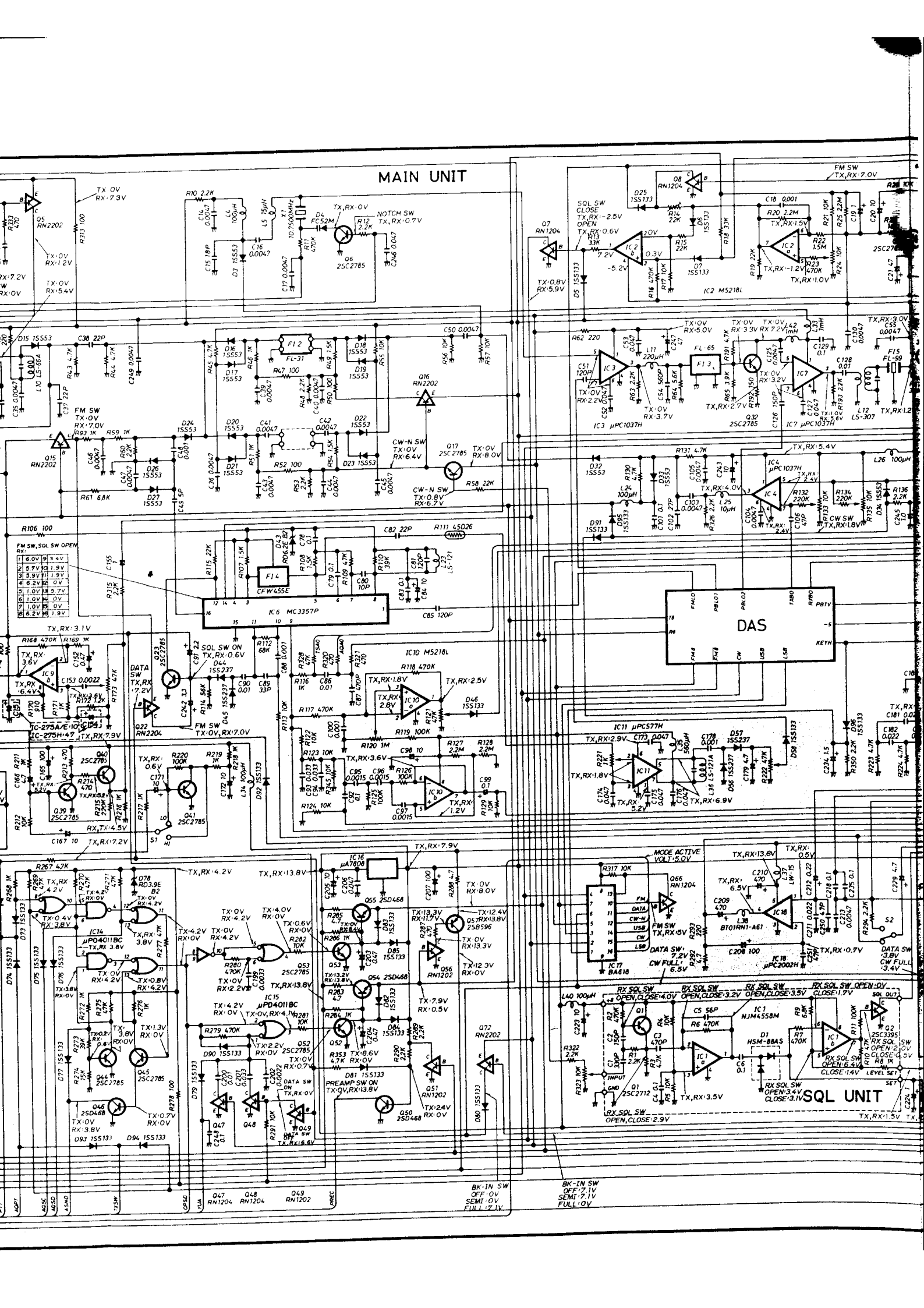
8-3 PLL UNIT

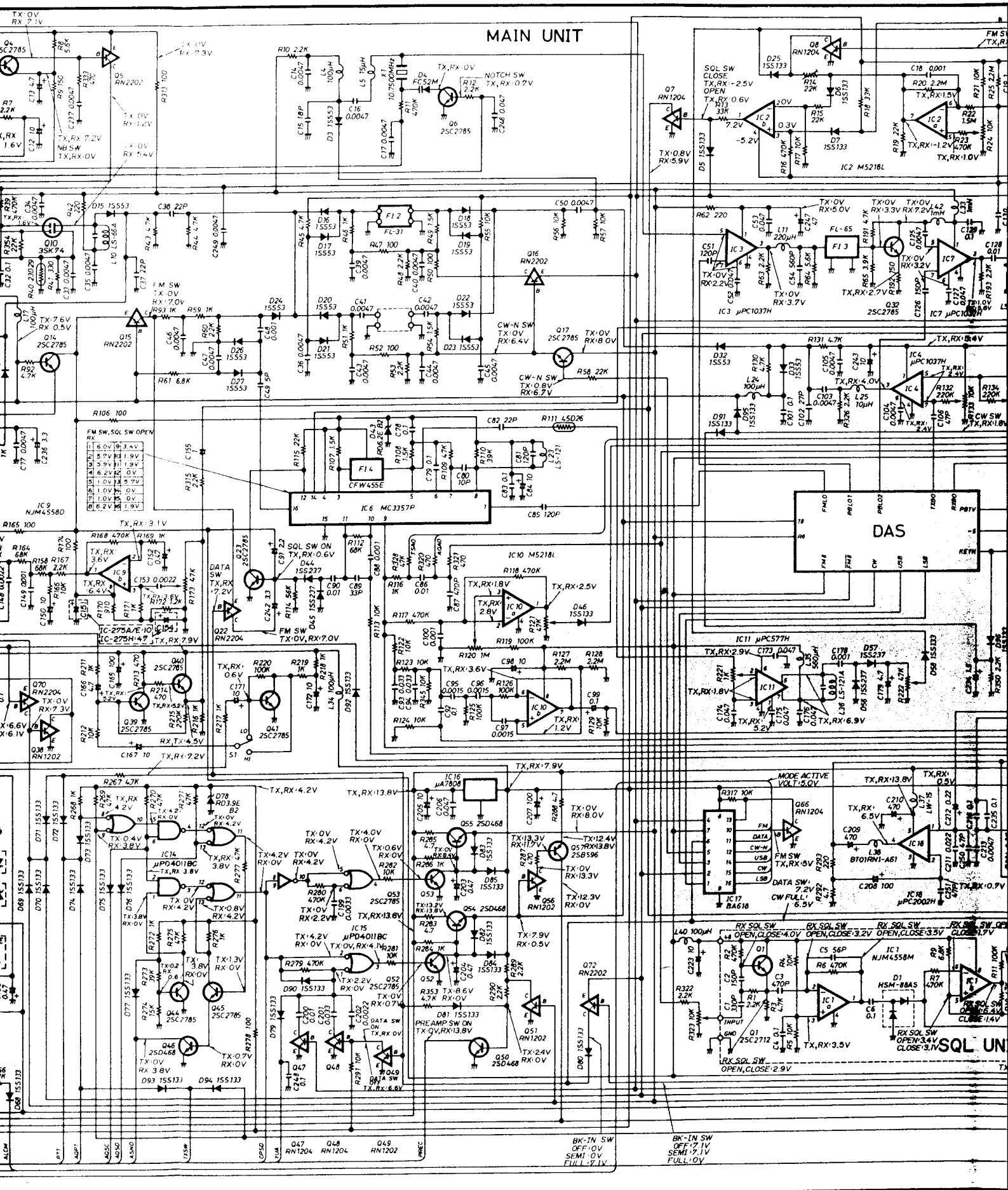


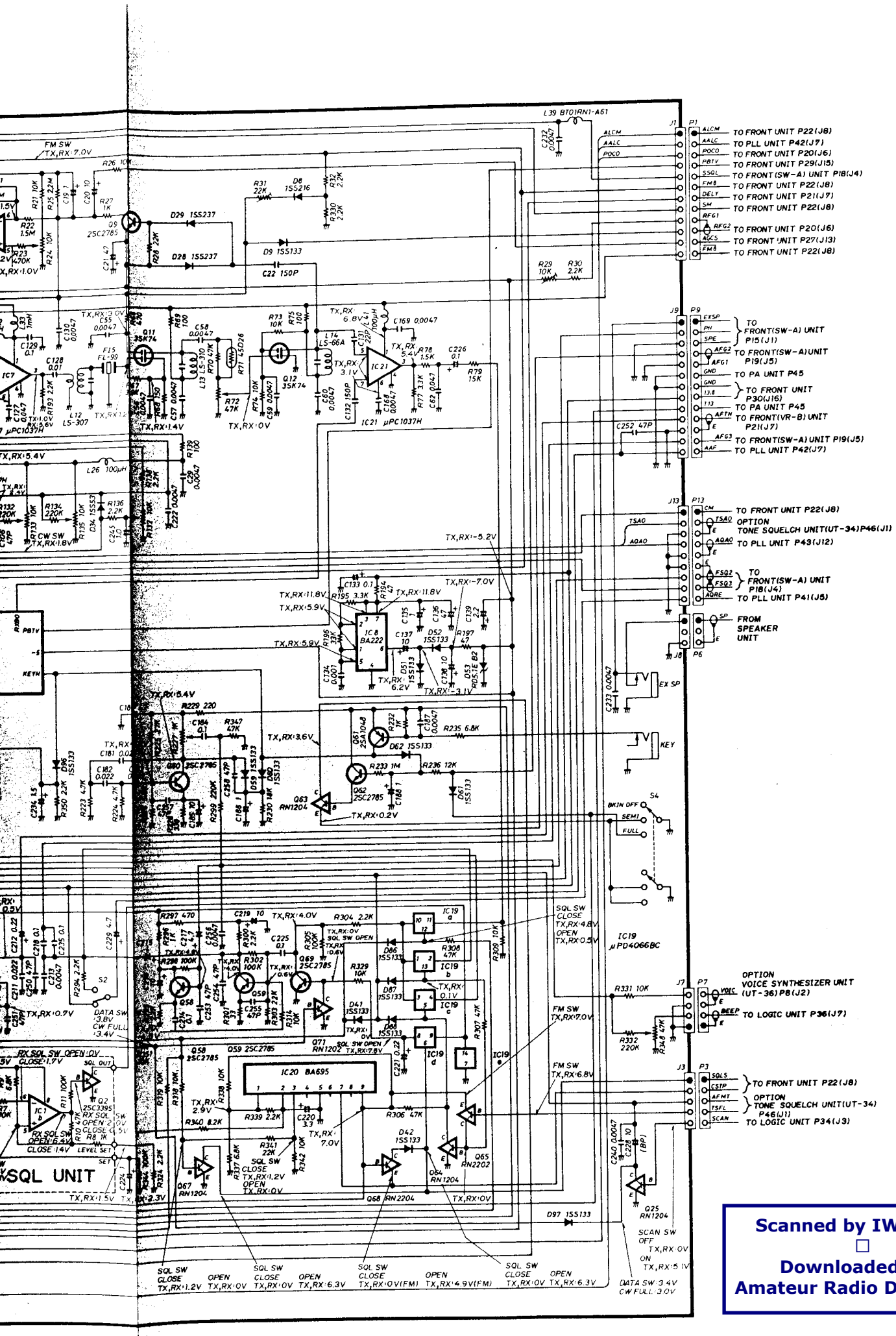


8-4 MAIN UNIT

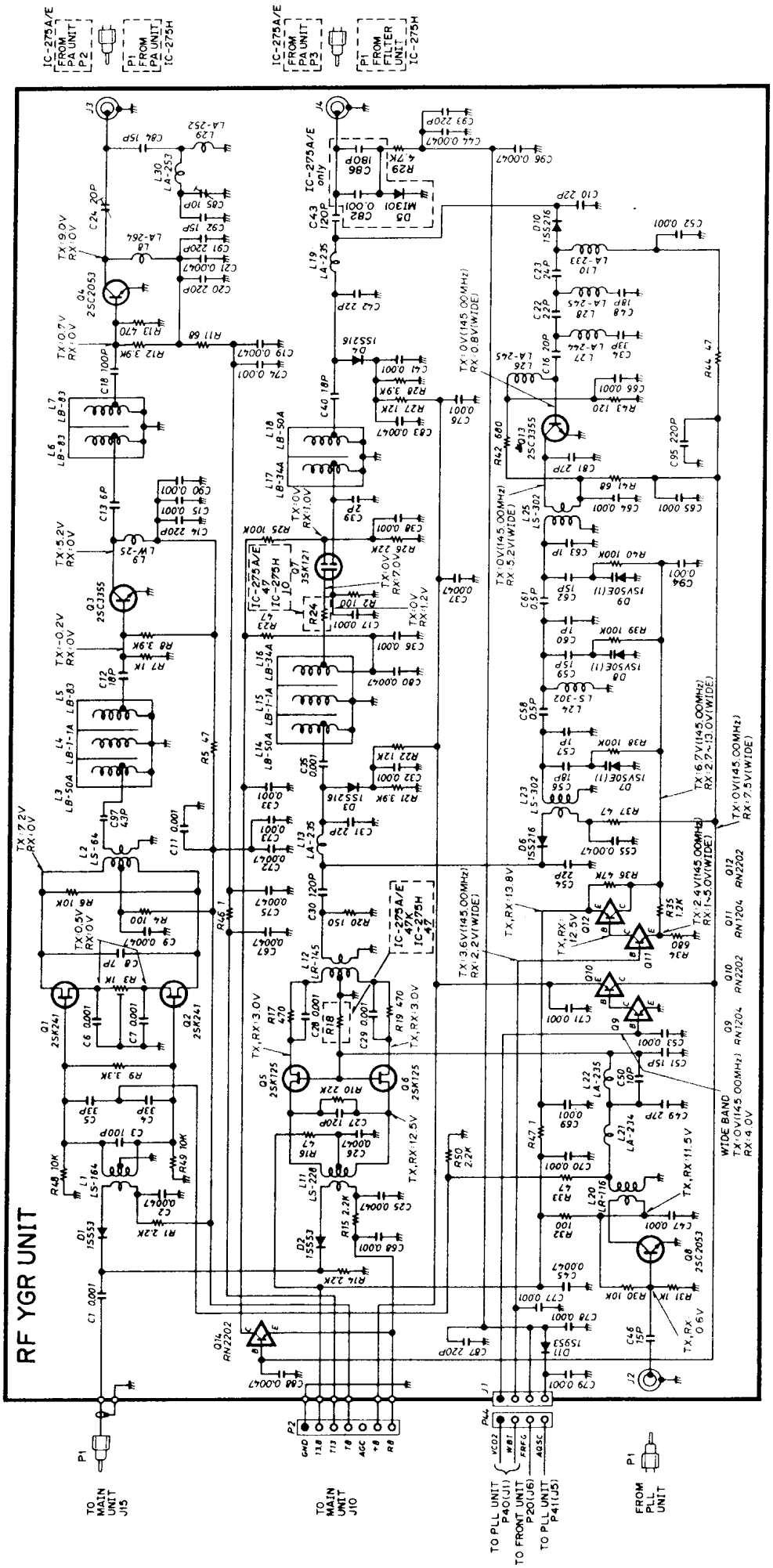



MAIN UNIT
SQL UNIT
DAS
IC1 NJM4558M
IC2 M5218L
IC3 μPC1037H
IC4 μPC1037H
IC6 MC3357P
IC7 μPC1037H
IC9 BA6209
IC10 M5218L
IC11 μPC577H
IC14 μPD4011BC
IC15 μPD4011BC
IC16 μA7808
IC17 BA618
IC18 μPC2002H
FM SW
SQL SW
DATA SW
CW-N SW
NOTCH SW
BK-IN SW
MODE ACTIVE
RX SQL SW
PREAMP SW ON
CFW455E
FL-31
FL-65
FL-99
LS-121
LS-307
LS-66A
BT01RN1-A61
HSM-88AS
2SC2712
2SC3395
2SC2785
2SD468
2SB596
RN1202
RN1204
RN2202
1SS133
1SS237
RD3.9E B2
RD6.2E B2

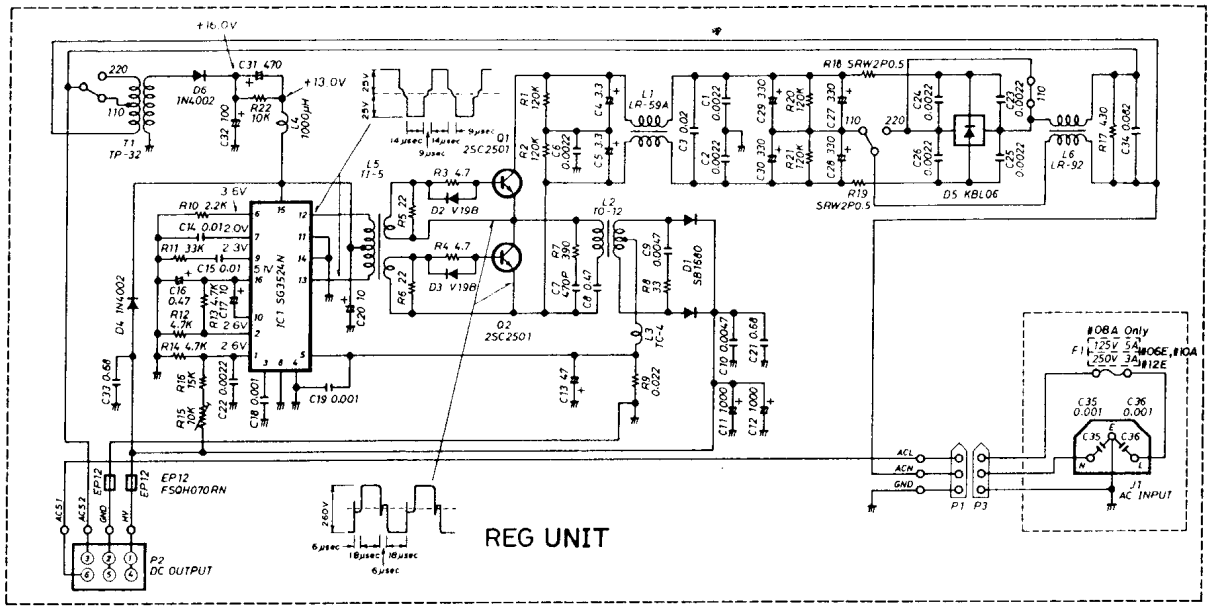

MAIN UNIT
DAS
IC1 NJM4558M
IC2 M5218L
IC3 μPC1037H
IC4 μPC1037H
IC6 MC3357P
IC7 μPC1037H
IC9 NJM4558D
IC10 M5218L
IC11 μPC577H
IC14 μPD4011BC
IC15 μPD4011BC
IC16 μA7808
IC17 BA618
IC18 μPC2002H
FM SW
SQL SW
DATA SW
CW-N SW
NOTCH SW
BK-IN SW
MODE ACTIVE
RX SQL SW
SQL UN

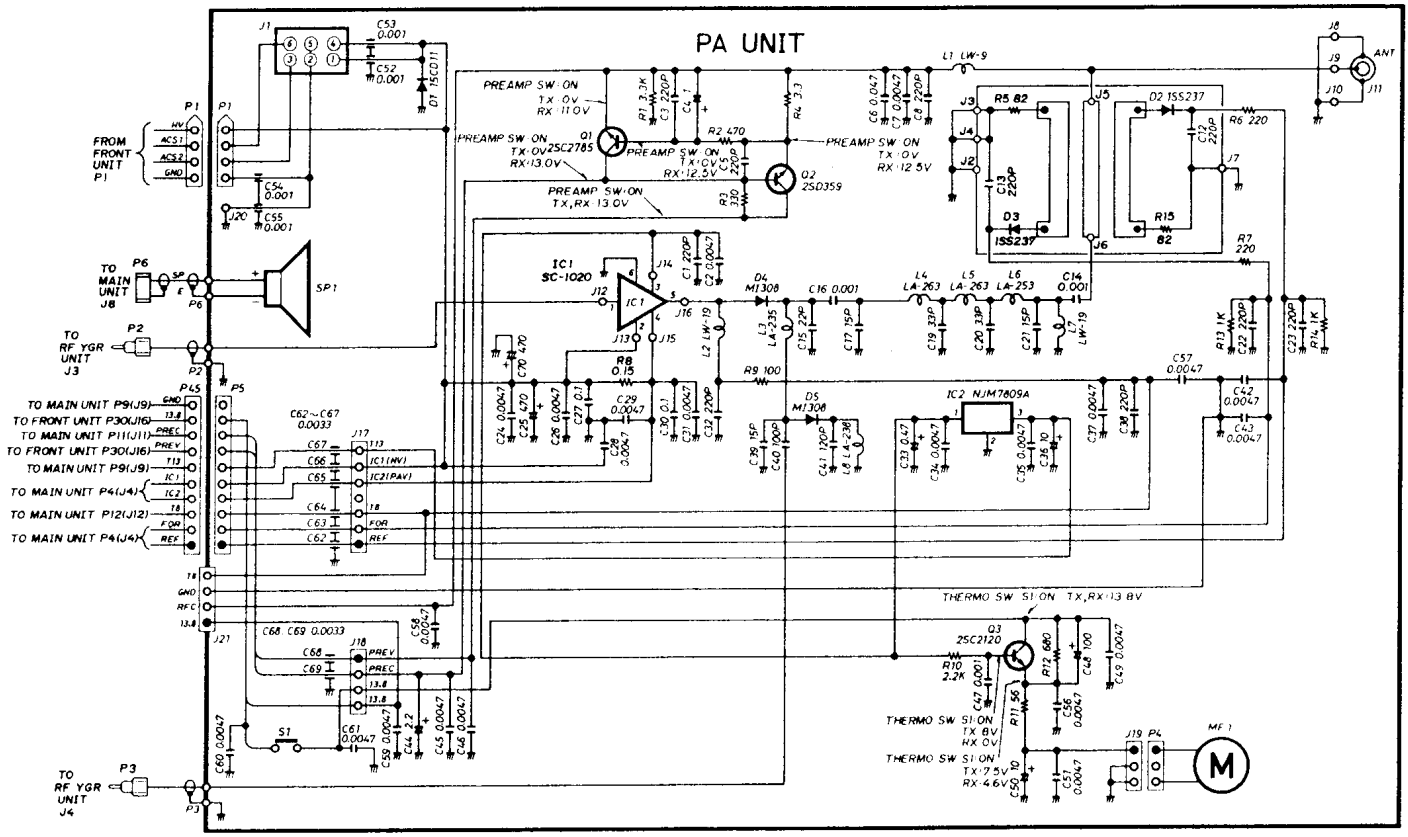


8-5 RF YGR UNIT

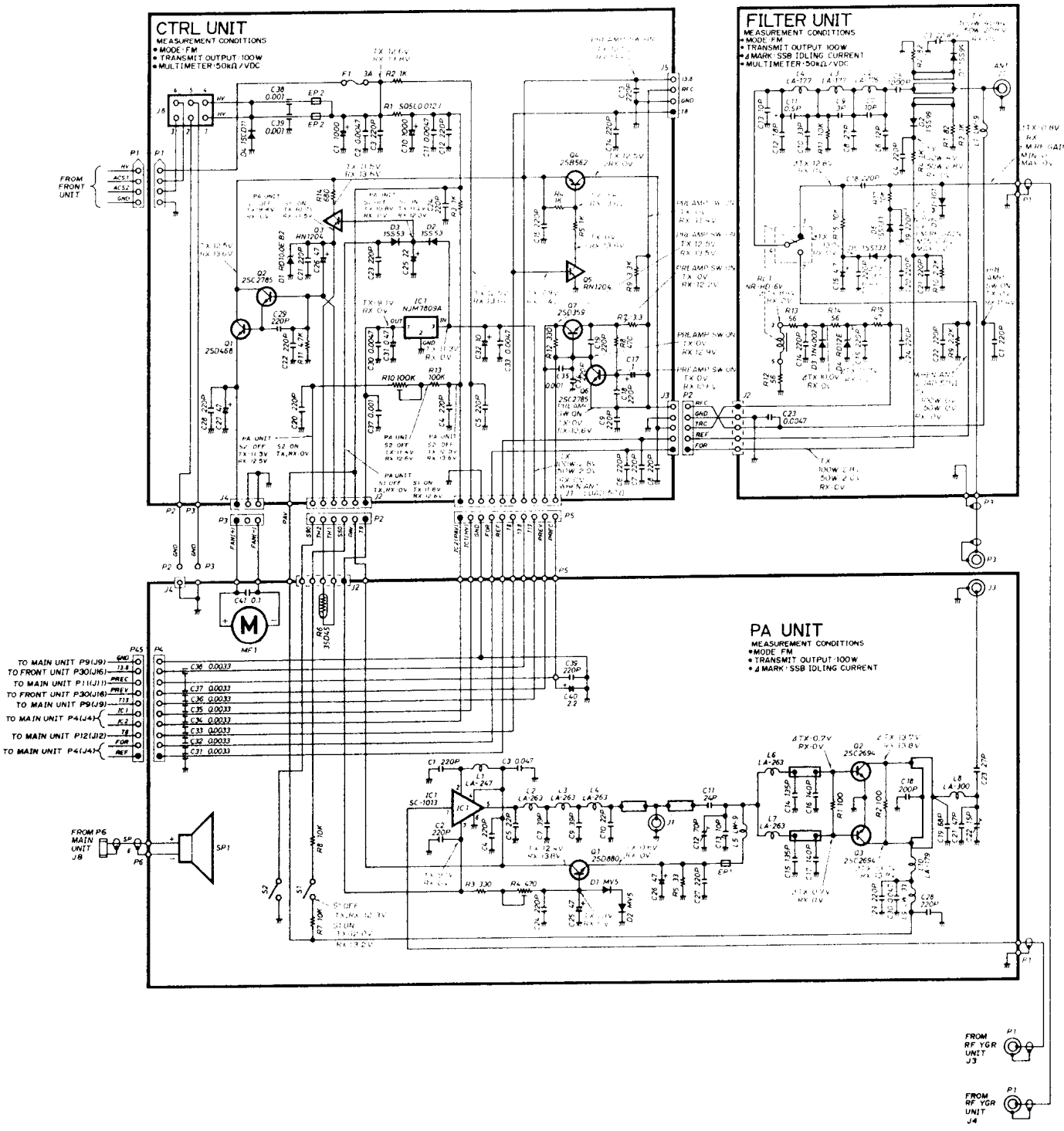


8-6 REG AND PA UNITS (IC-275A/E ONLY)

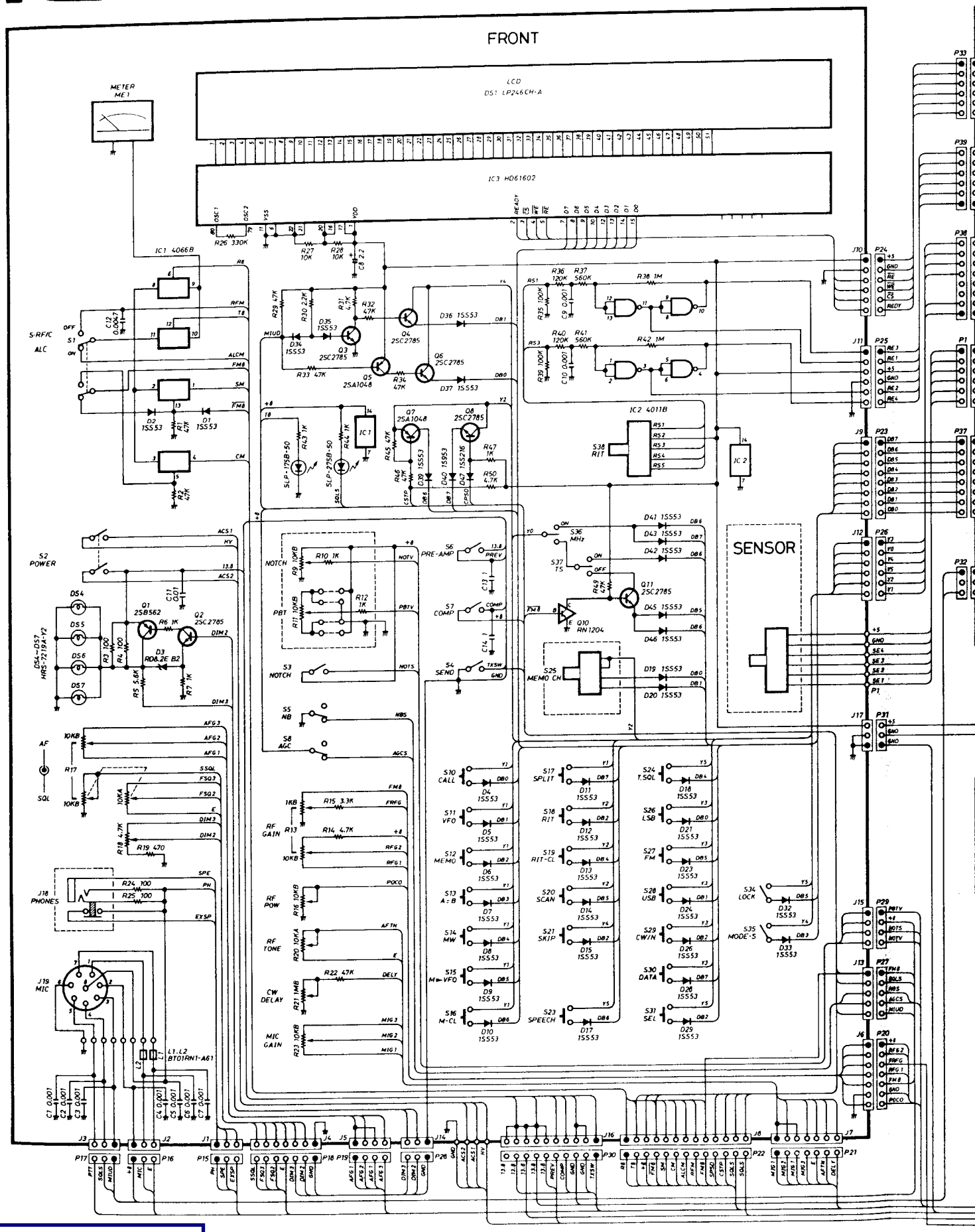




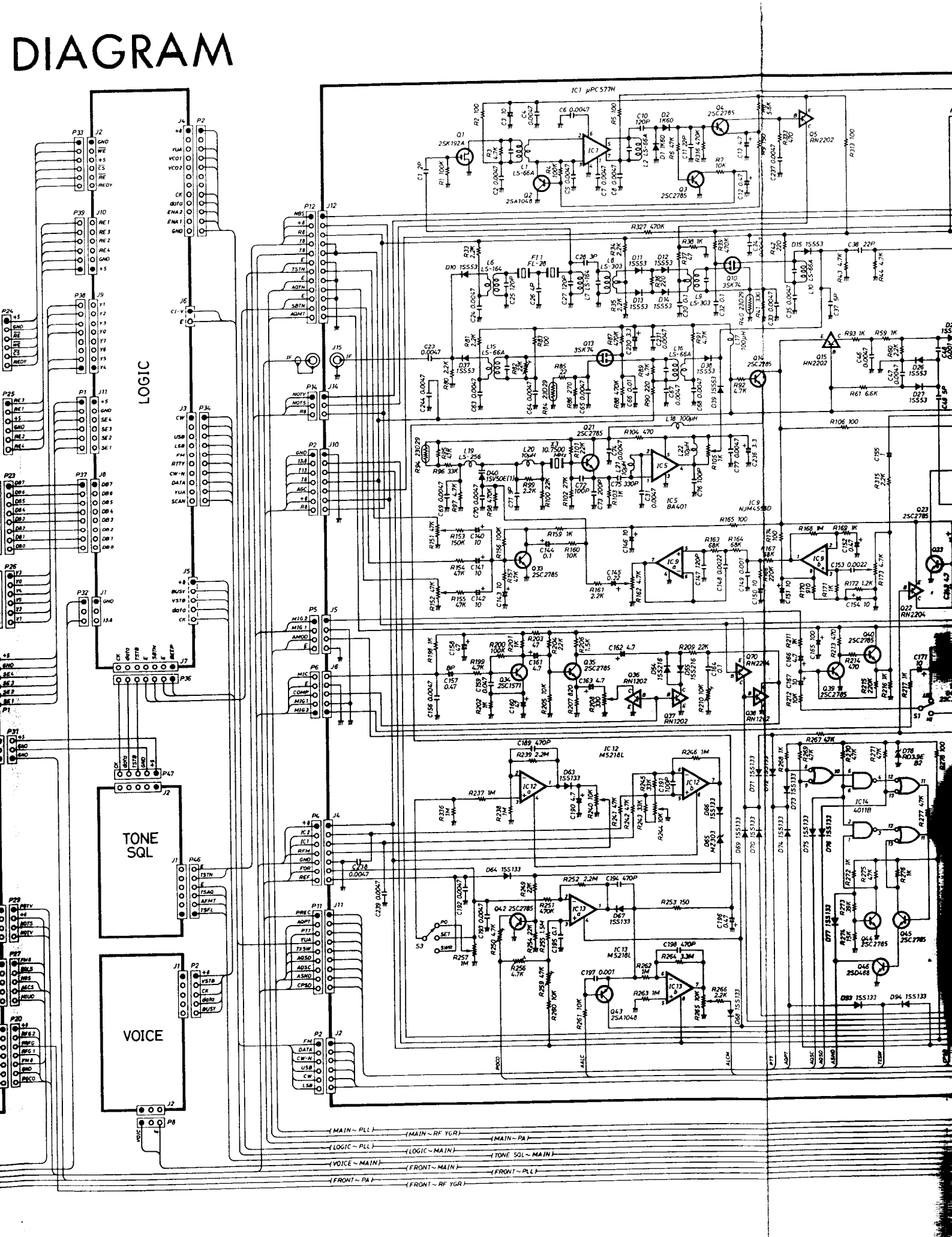
8-7 CTRL, PA AND FILTER UNITS (IC-275H ONLY)

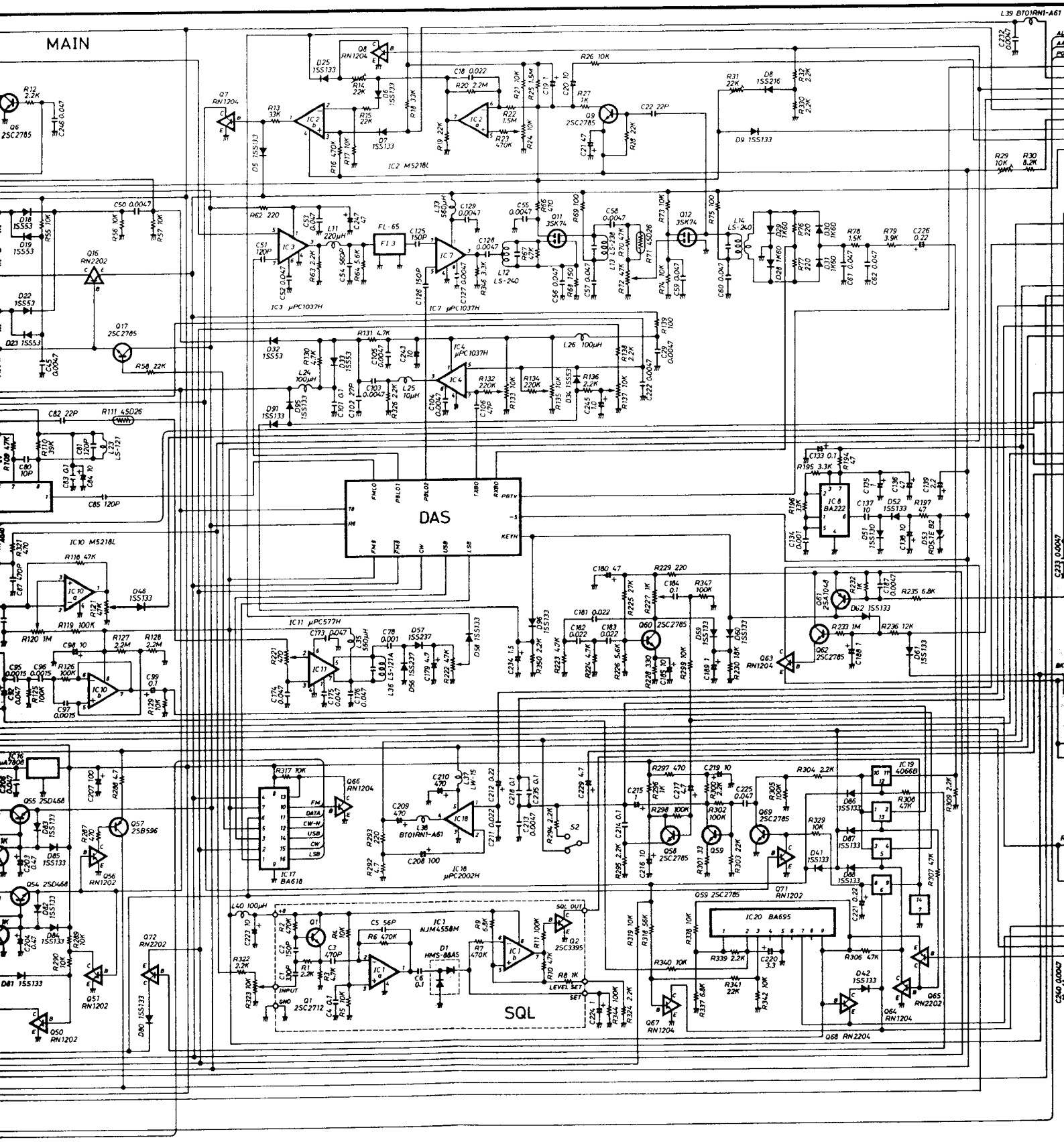


IC-275A/E SCHEMATIC DIA

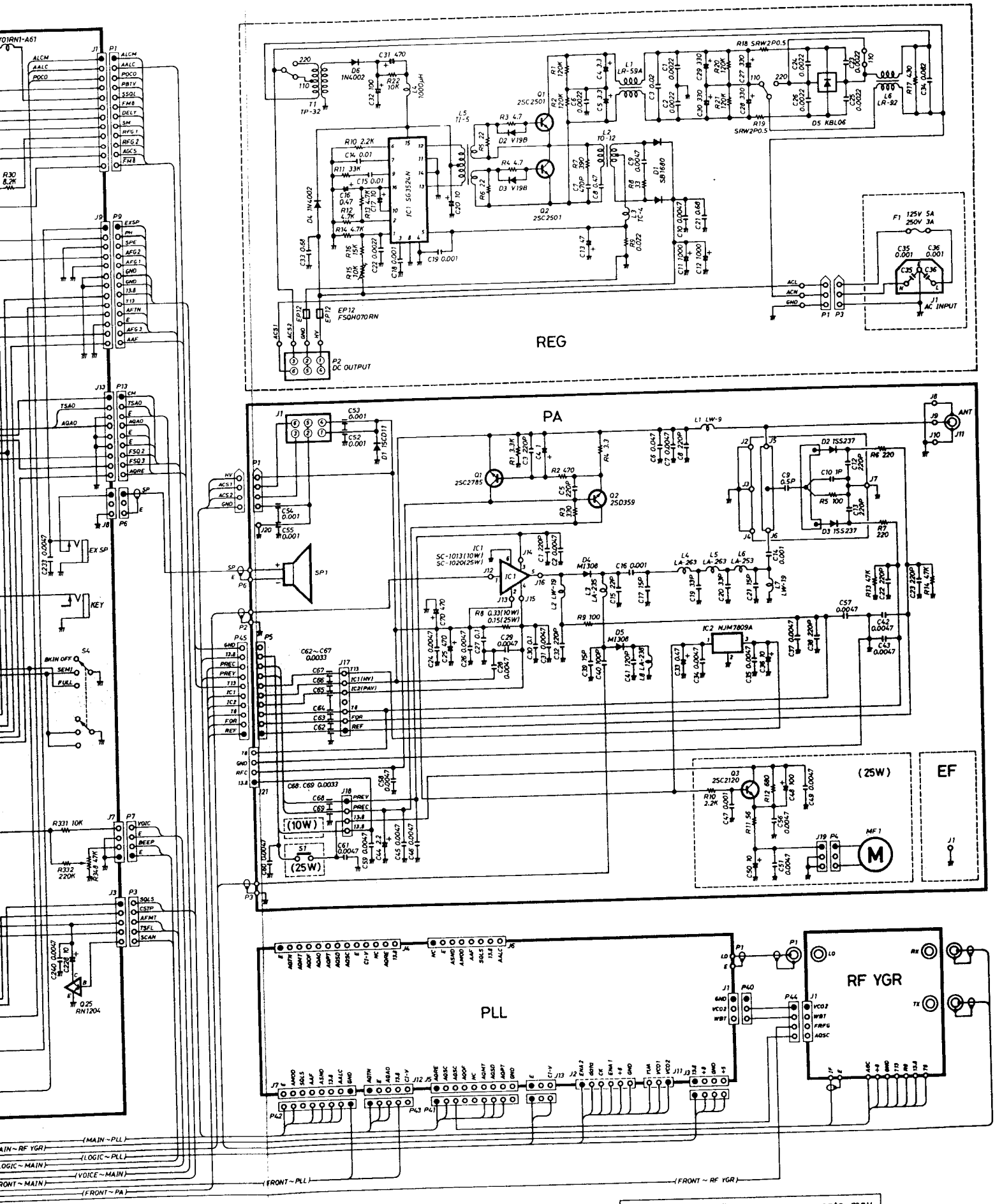


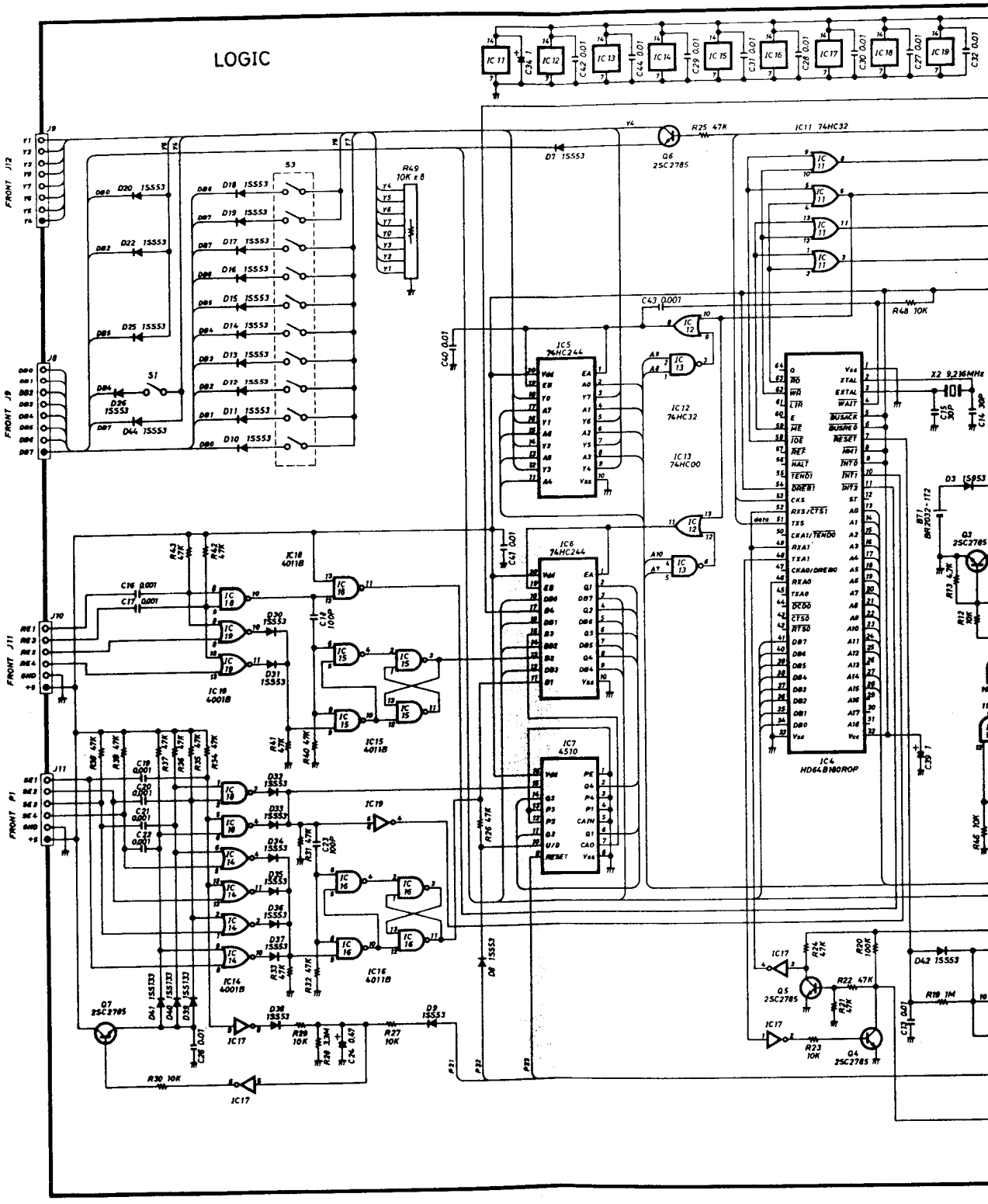
DIAGRAM

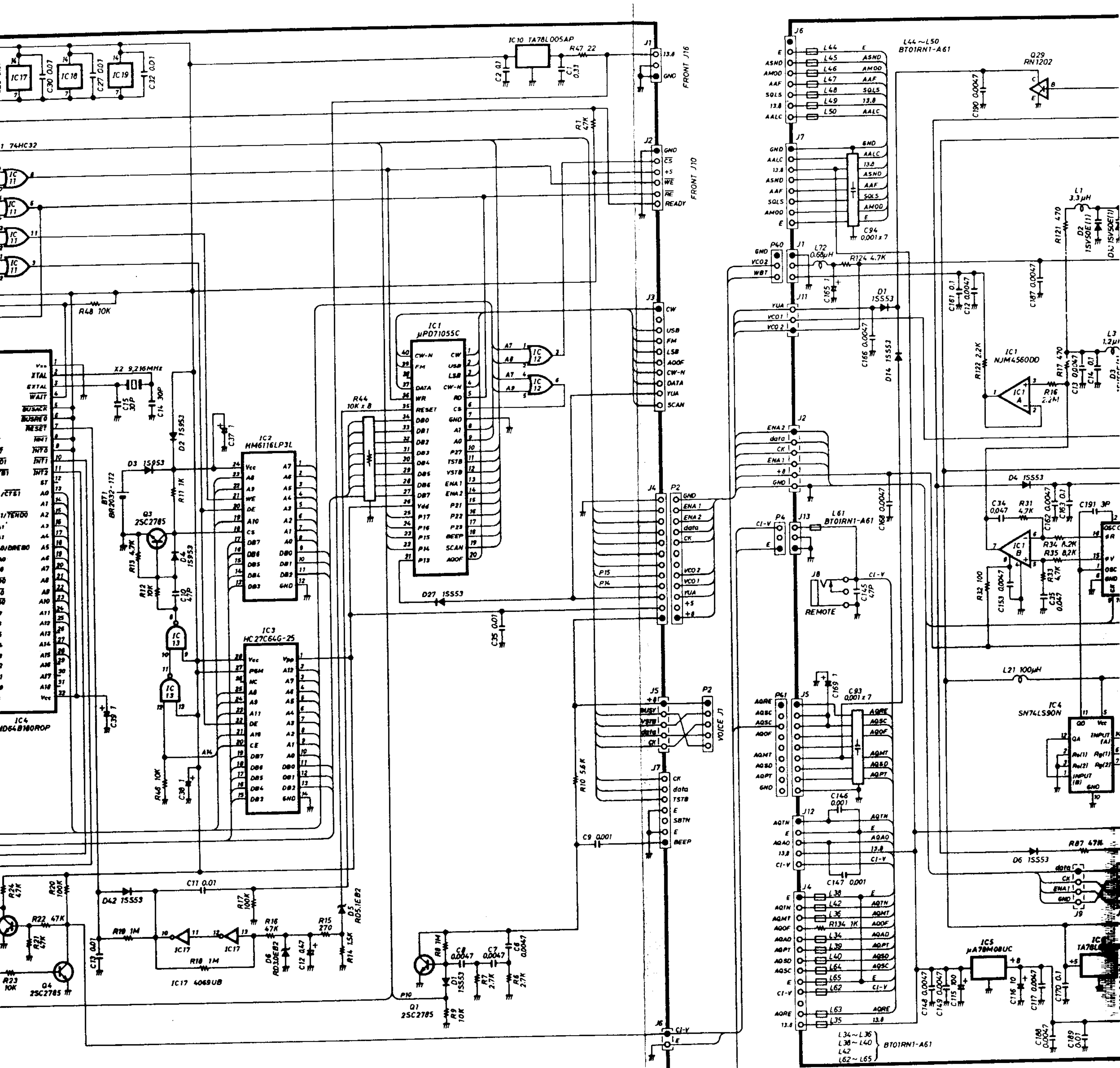

LOGIC
TONE SQL
VOICE
IC1 μPC577H
IC5 BA401
IC9 NJM4558D
IC12 M5218L
IC13 M5218L
IC14 4011B
(MAIN ~ PLL)
(MAIN ~ RF YGR)
(MAIN ~ PA)
(LOGIC ~ PLL)
(LOGIC ~ MAIN)
(TONE SQL ~ MAIN)
(VOICE ~ MAIN)
(FRONT ~ MAIN)
(FRONT ~ PLL)
(FRONT ~ PA)
(FRONT ~ RF YGR)



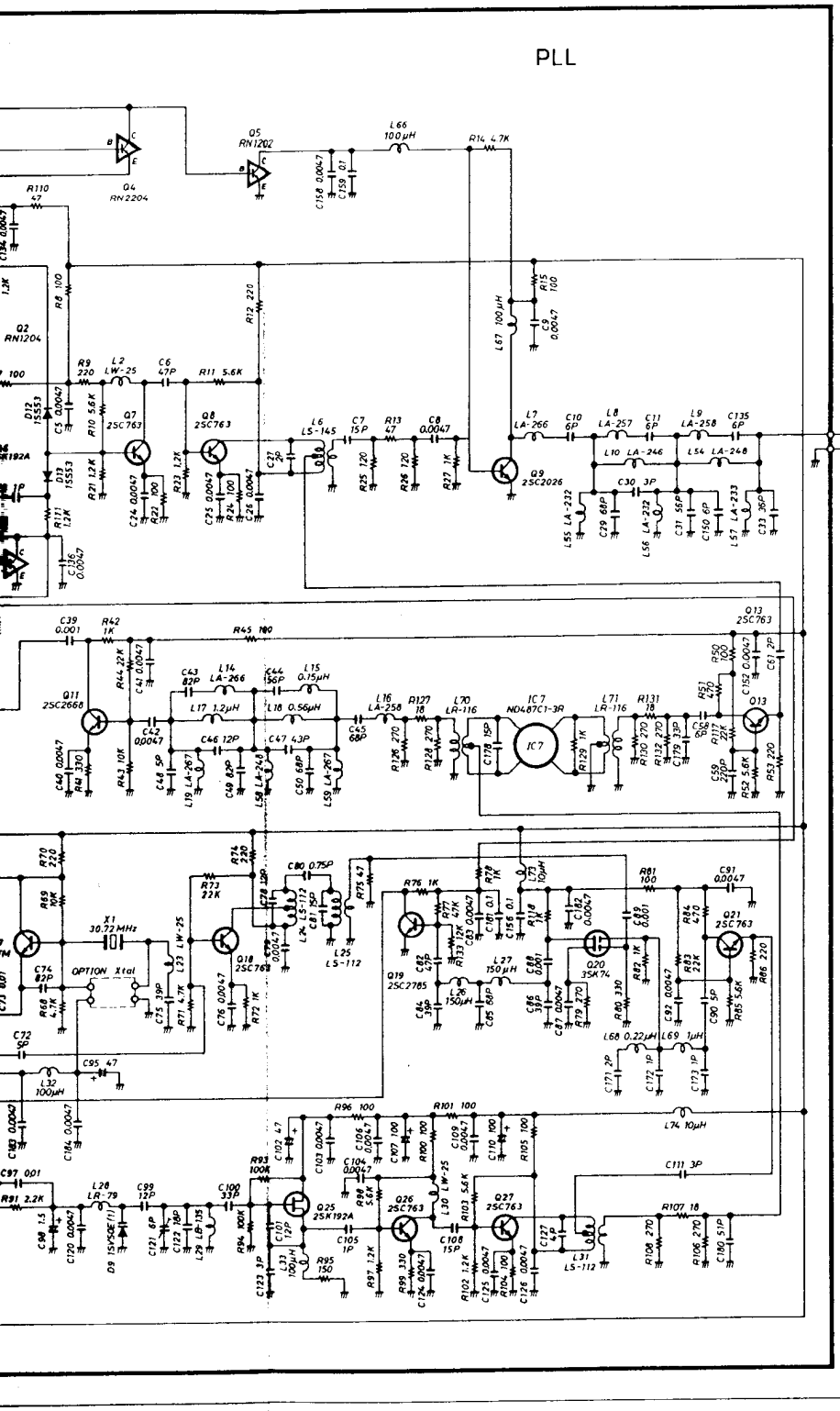
{MAIN ~ PA}
{MAIN ~ RF YGR}
{LOGIC ~ MAIN}
{TONE SQL ~ MAIN}
{FRONT ~ MAIN}

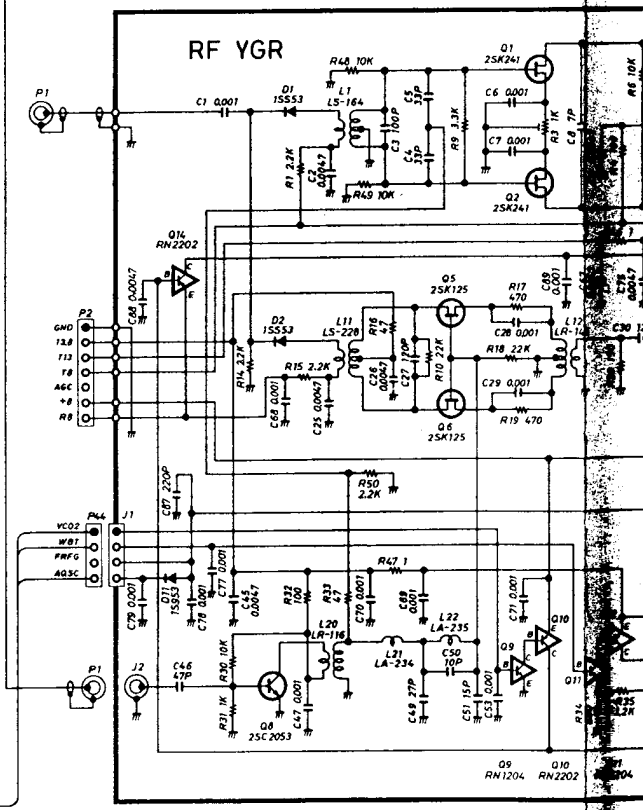

REG
PA
PLL
RF YGR
EF
(25W)
(10W)
(MAIN ~ PLL)
(LOGIC ~ PLL)
(VOICE ~ MAIN)
(FRONT ~ PLL)
(FRONT ~ RF YGR)
(FRONT ~ PA)

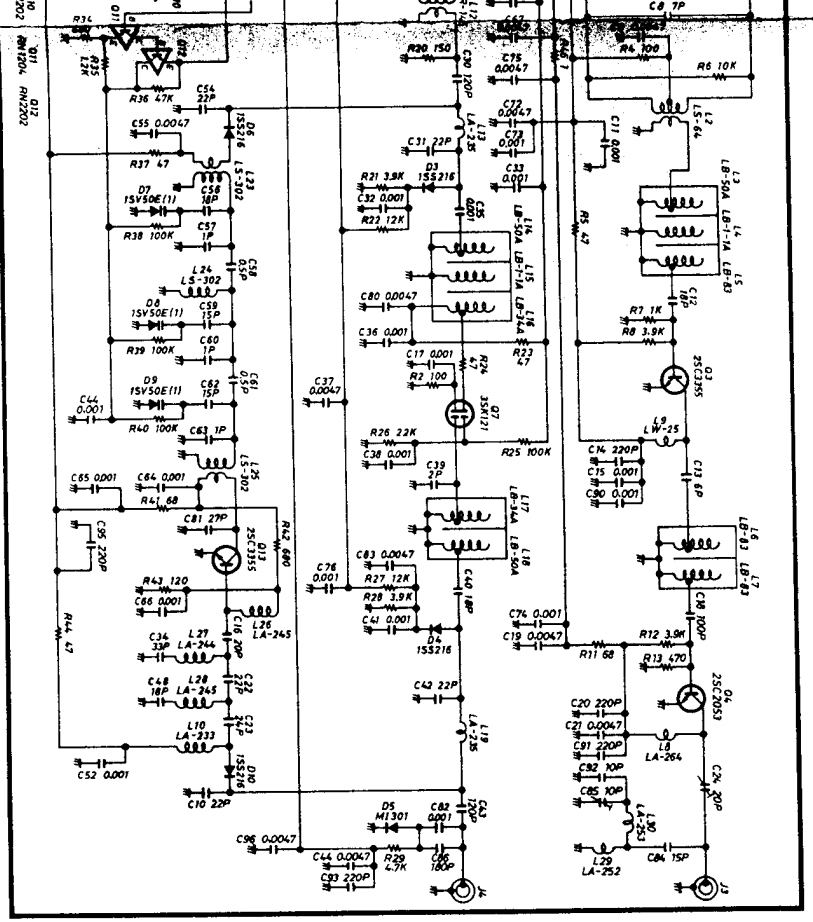




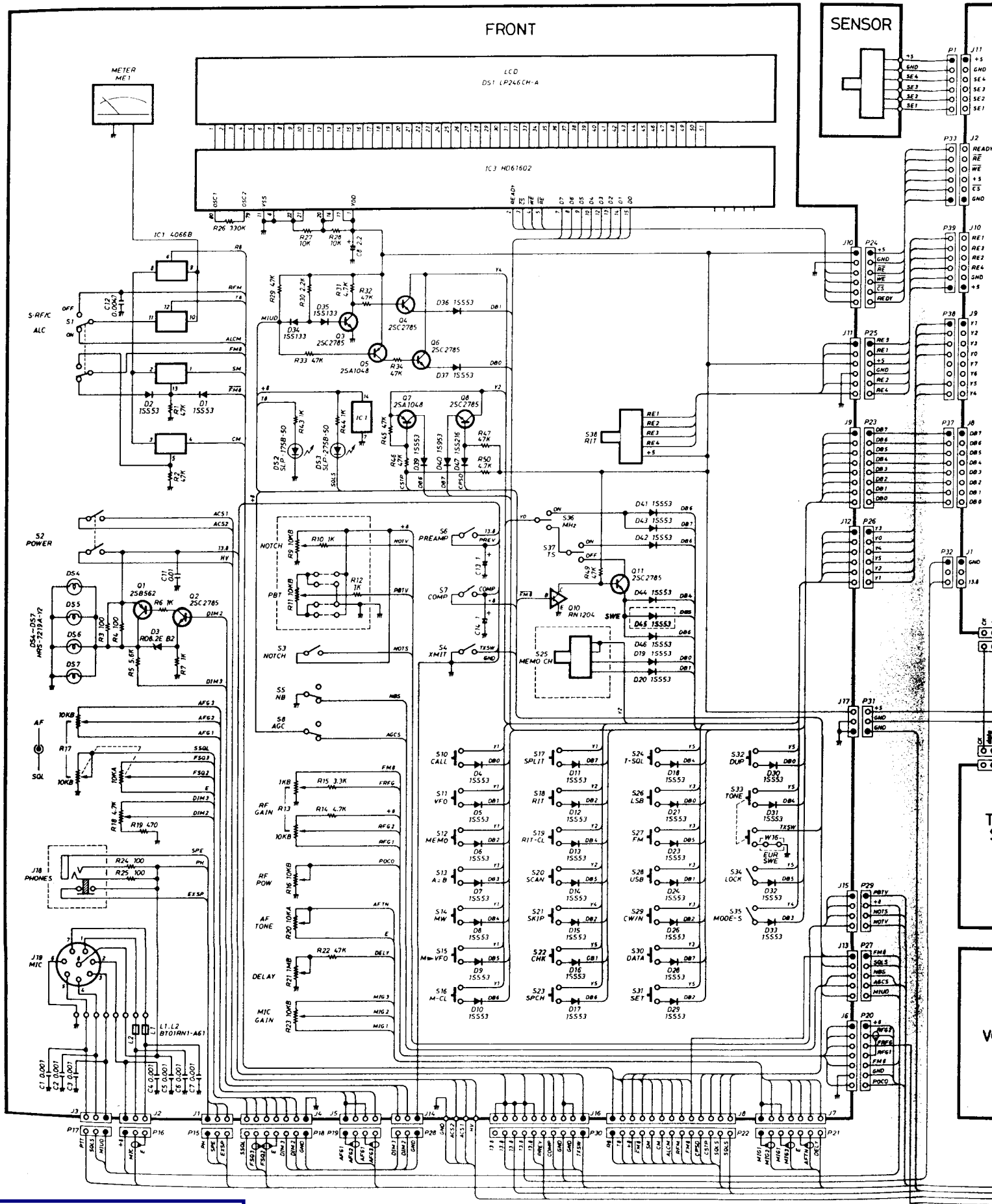
IC17
IC18
IC19
C30 0.01
C27 0.01
C32 0.01
74HC32
IC10 TA78L005AP
R47 22
C2 0.1
C1 0.33
J1
13.8
GND
FRONT J16
R1 47K
J2
GND
CS
+5
WE
RE
READY
FRONT J10
R48 10K
X2 9.216MHz
C15 30P
C14 30P
D2 1SS53
D3 1SS53
BT1 BR2032-1T2
Q3 2SC2785
R11 1K
R13 4.7K
R12 10K
D4 1SS53
C10 47P
IC2 HM6116LP3L
IC3 HC27C64G-25
IC4
HD64B180ROP
R44 10K x 8
IC1 µPD71055C
J3
CW
USB
FM
LSB
AQOF
CW-N
DATA
YUA
SCAN
J4
P2
ENA 1
ENA 2
data
CK
VCO 2
VCO 1
P15
P14
D27 1SS53
C35 0.01
J5
+8
BUSY
VSTB
data
CK
VOICE J1
J7
TSTB
E
SBTN
BEEP
R10 5.6K
C9 0.001
C11 0.01
D42 1SS53
R19 1M
R18 1M
IC17 4069UB
R17 100K
R16 47K
R15 270
R14 1.5K
D5 RD5.1EB2
D6 RD3.0EB2
C12 0.47
R24 47K
R20 100K
R22 47K
R21 47K
R23 10K
Q4 2SC2785
C13 0.01
Q1 2SC2785
R8 1M
C8 0.0047
C7 0.0047
C6 0.0047
D1 1SS53
R7 2.7K
R6 2.7K
R9 10K
P10
J6
C1-V
E
J6
L44 ~ L50
BT01RN1-A61
ASND
AMOD
AAF
SQLS
13.8
AALC
L44
L45
L46
L47
L48
L49
L50
C190 0.0047
Q29
RN1202
J7
C94
0.001 x 7
P40
GND
VCO2
WBT
L72
0.68µH
R124 4.7K
C165 1
J11
YUA
VCO1
VCO 2
D1
1SS53
C166 0.0047
D14 1SS53
R121 470
L1
3.3µH
D2
1SV50E(1)
C187 0.0047
C161 0.1
C12 0.0047
R122 2.2K
IC1
NJM4560DD
R16
2.2M
R17 470
C13 0.0047
C16 0.1
L3
1.2µH
ENA 2
ENA 1
D4 1SS53
C34
0.047
R31
4.7K
C162 0.0047
C163 0.1
C191 3P
R34 8.2K
R35 8.2K
R33 4.7K
R32 100
C153 0.0047
C25 0.047
P4
J13
L61
BT01RN1-A61
C168 0.0047
J8
REMOTE
C145
47P
L21 100µH
IC4
SN74LS90N
P41
AQRE
AQSC
AQOF
AQMT
AQSD
AQPT
J5
C169 1
C93
0.001 x 7
C146
0.001
J12
AQTN
AQAO
C147 0.001
R87 47K
D6 1SS53
J9
L38
L42
L36
R134 1K
L34
L39
L40
L64
L65
L62
L63
L35
L34 ~ L36
L38 ~ L40
L42
L62 ~ L65
BT01RN1-A61
IC5
µA78M08UC
C148 0.0047
C149 0.0047
C115 100
C116 10
C117 0.0047
C170 0.1
C188 0.0047
C189 0.01



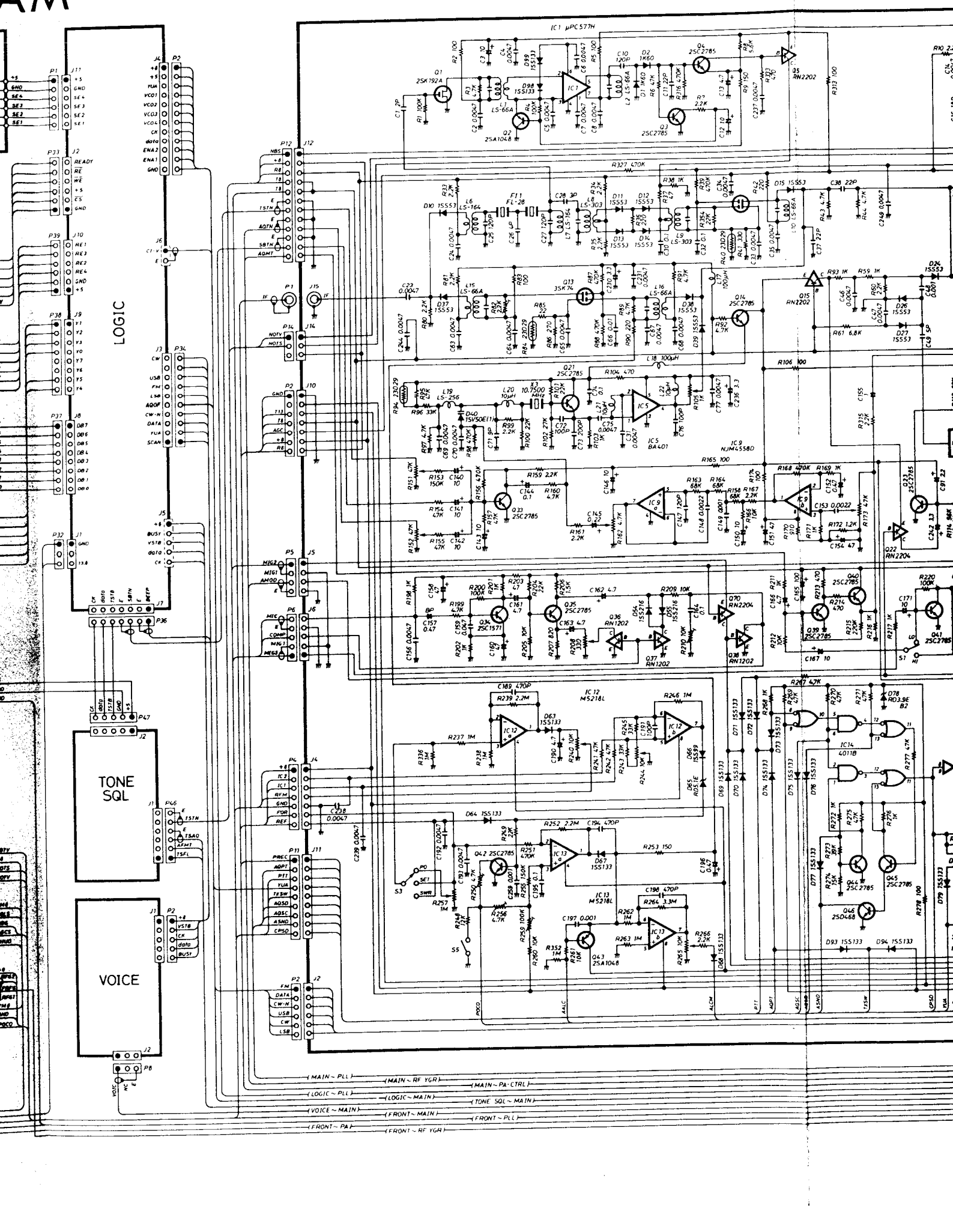


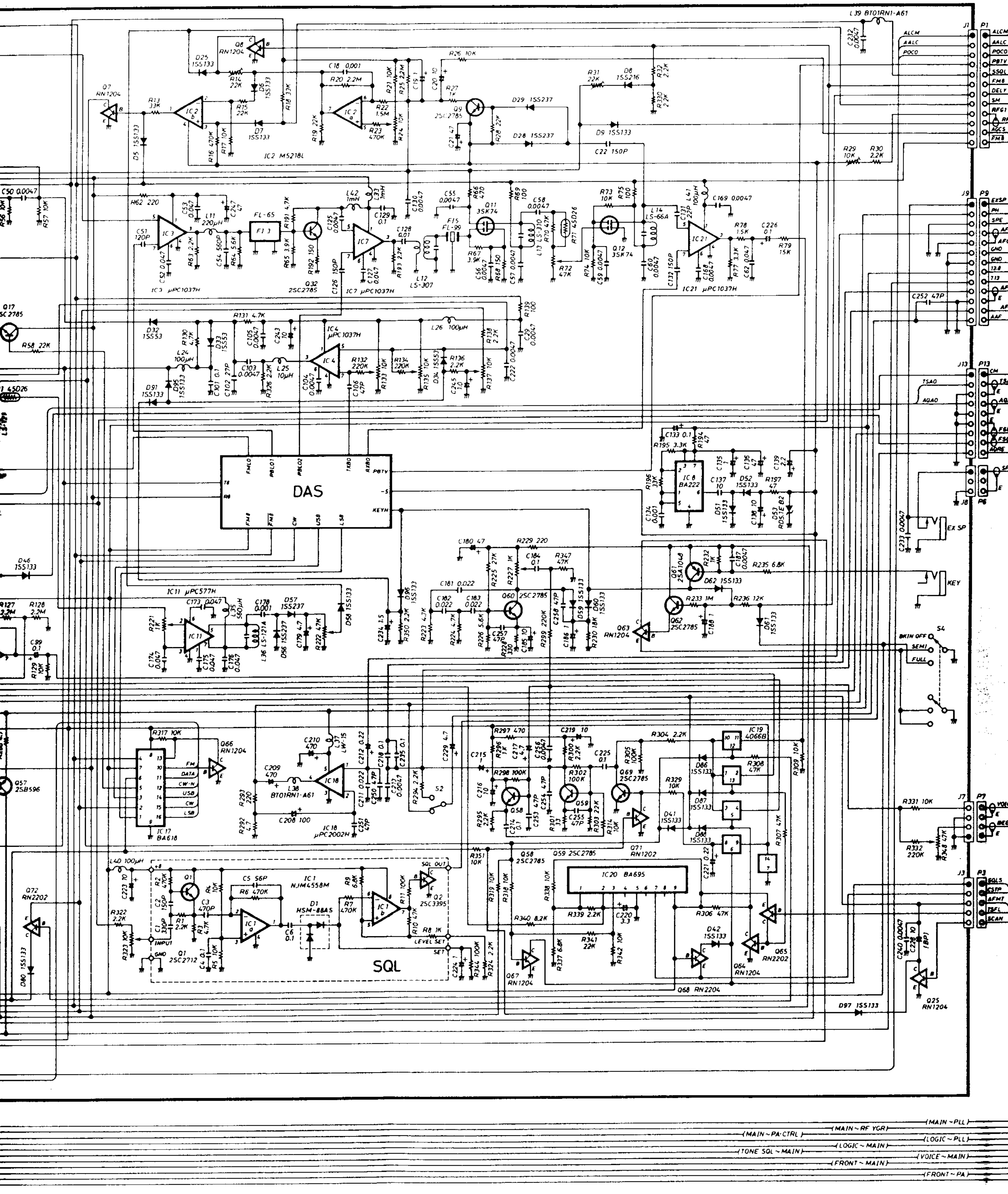


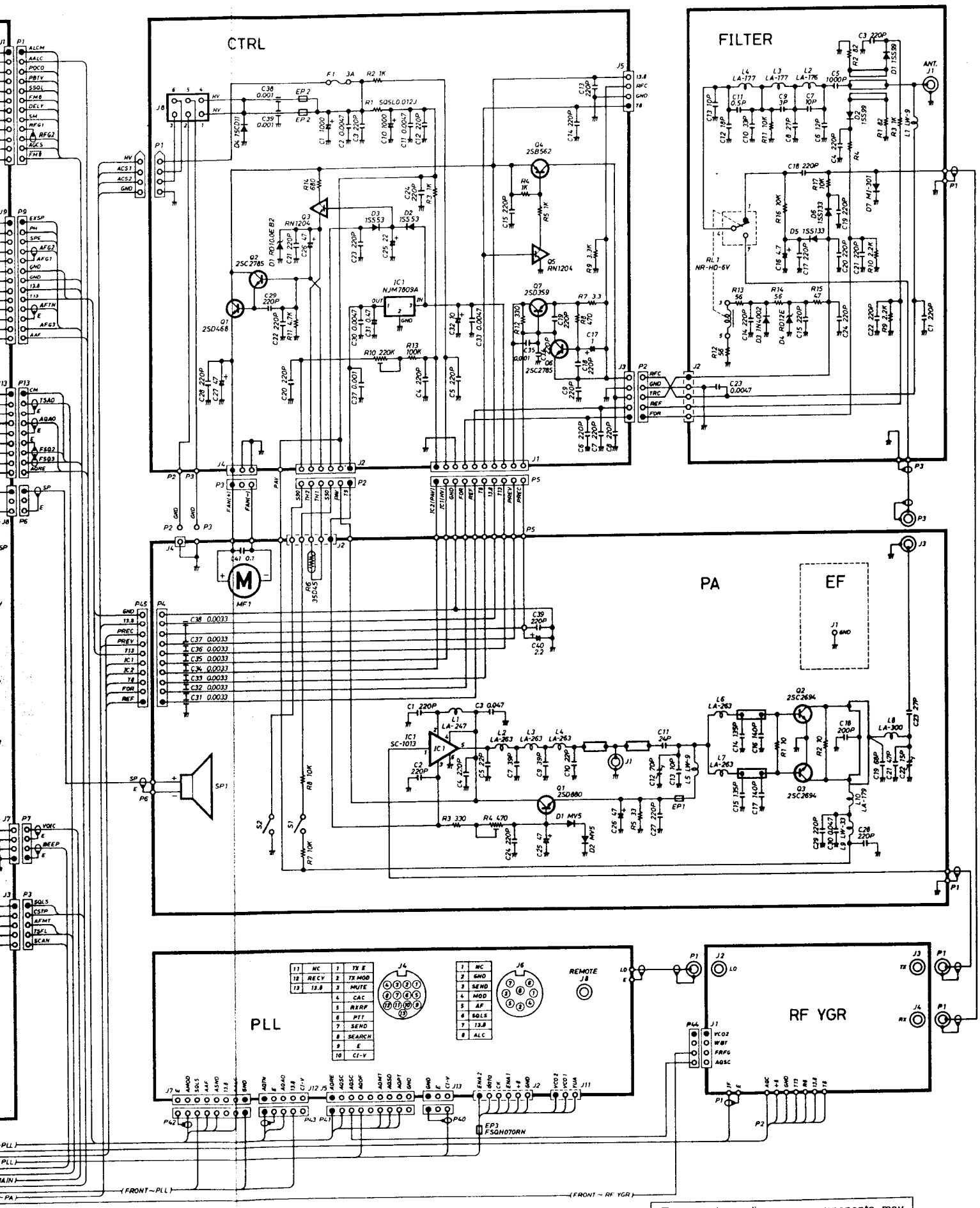
IC-275H SCHEMATIC DIAGRAM



AM


LOGIC
TONE SQL
VOICE
IC1 μPC577H
IC5 BA401
IC9 NJM4558D
IC12 M5218L
IC13 M5218L
IC14 4011B
(MAIN ~ PLL)
(MAIN ~ RF YGR)
(MAIN ~ PA CTRL)
(LOGIC ~ PLL)
(LOGIC ~ MAIN)
(TONE SQL ~ MAIN)
(VOICE ~ MAIN)
(FRONT ~ MAIN)
(FRONT ~ PLL)
(FRONT ~ PA)
(FRONT ~ RF YGR)


DAS
SQL
IC2 M5218L
IC3 μPC1037H
IC7 μPC1037H
IC21 μPC1037H
IC4 μPC1037H
IC11 μPC577H
IC8 BA222
IC17 BA618
IC18 μPC2002H
IC1 NJM4558M
IC19 4066B
IC20 BA695
(MAIN ~ PLL)
(MAIN ~ RF YGR)
(MAIN ~ PA·CTRL)
(LOGIC ~ PLL)
(LOGIC ~ MAIN)
(TONE SQL ~ MAIN)
(VOICE ~ MAIN)
(FRONT ~ MAIN)
(FRONT ~ PA)



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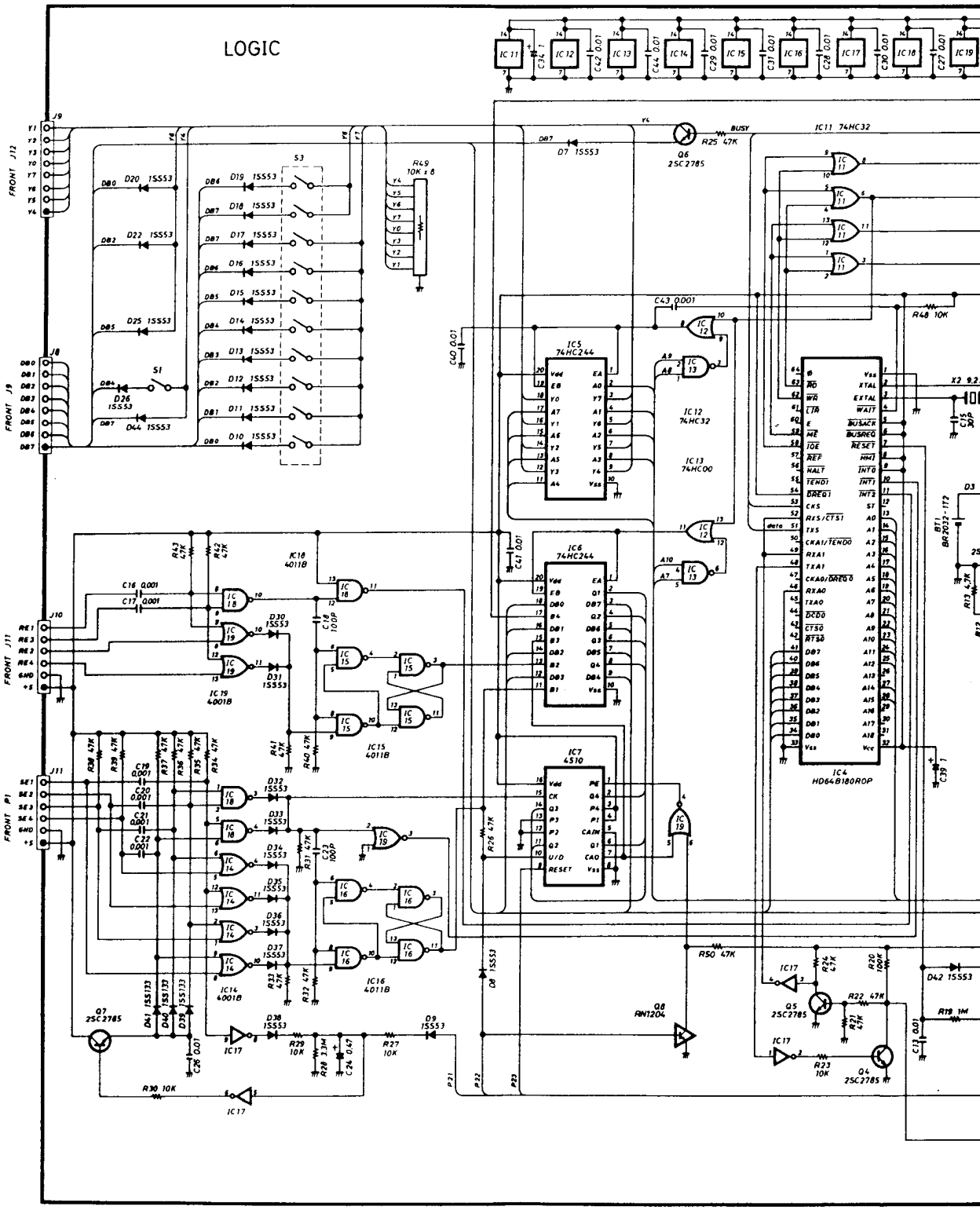
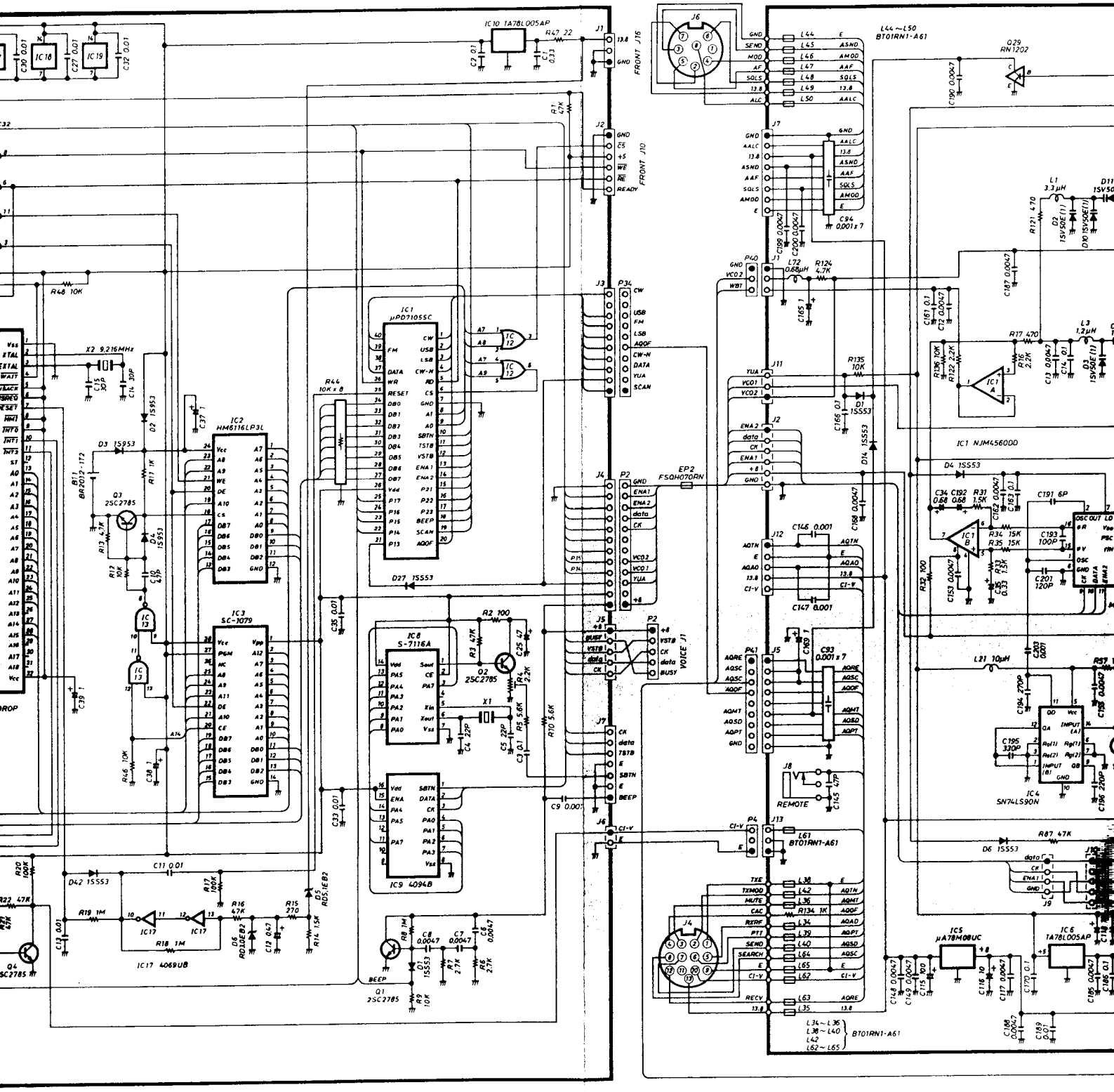
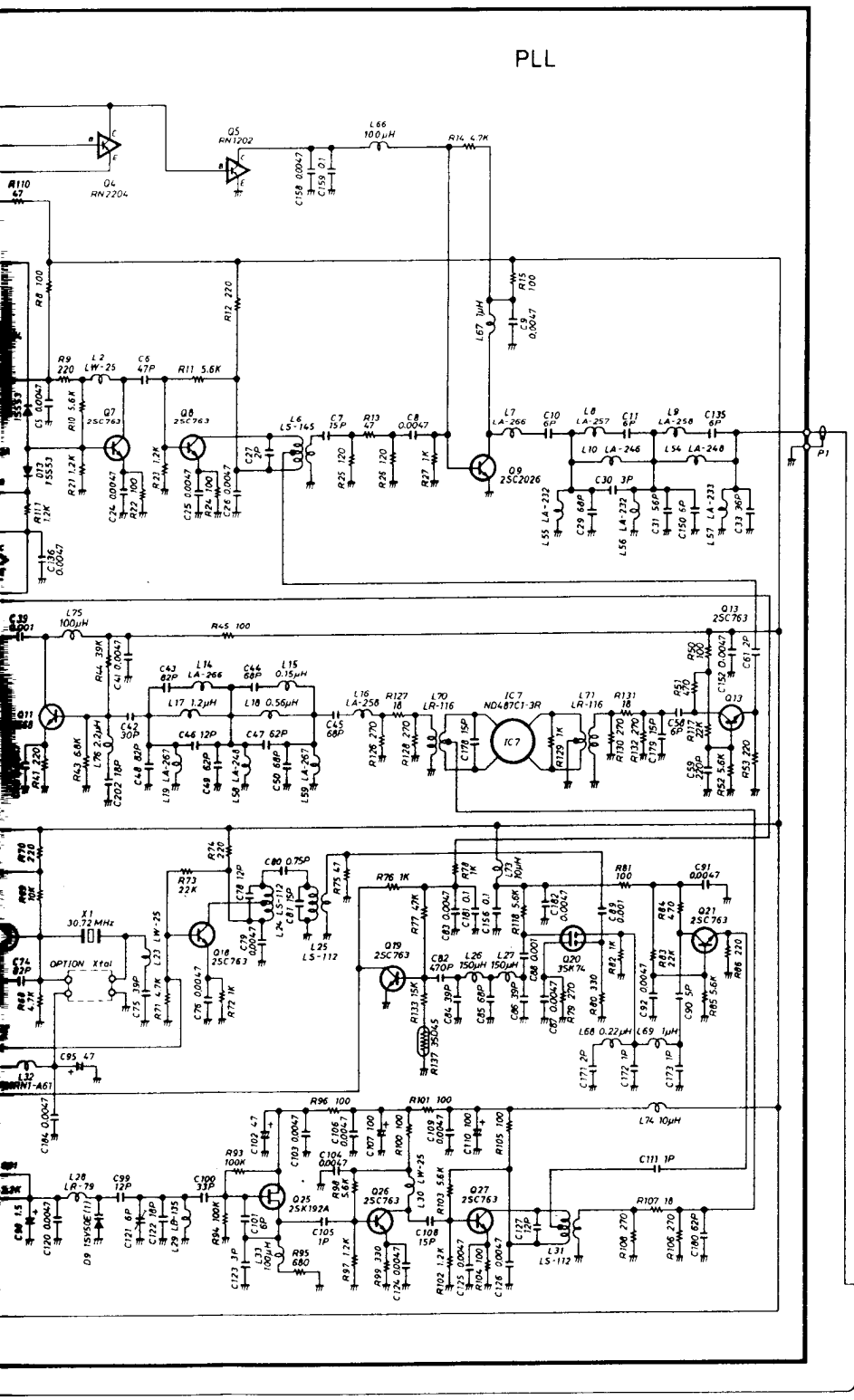
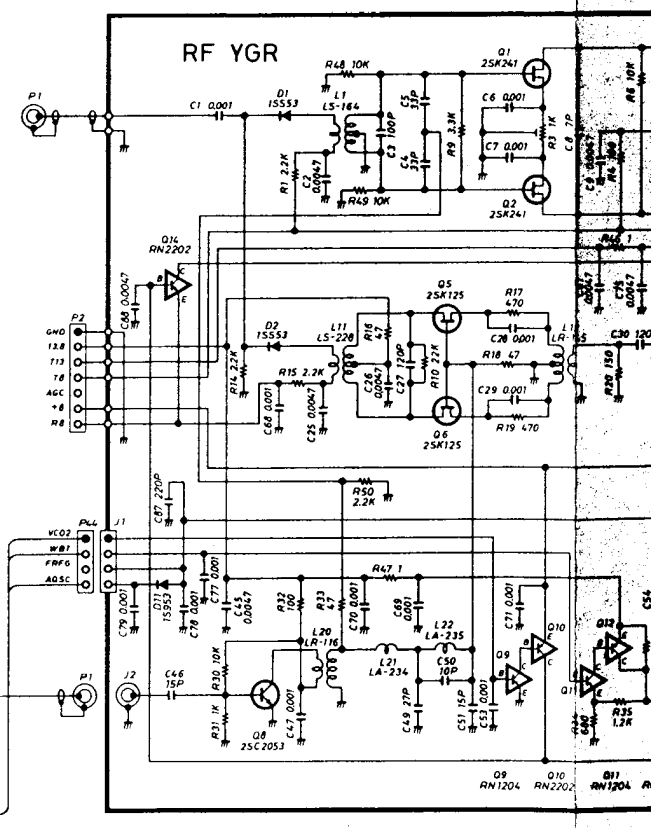
To upgrade quality, some components may be subject to change without notice.

A-0950




IC10 TA78L005AP
IC1 μPD71055C
IC2 HM6116LP3L
IC3 SC-1079
IC8 S-7116A
IC9 4094B
IC17 4069UB
IC1 NJM4560DD
IC4 SN74LS90N
IC5 μA78M08UC
IC6 TA78L005AP
REMOTE
FRONT J16
FRONT J10
VOICE J1
EP2 FSOH07ORN
BT01RN1-A61
X1 9.216MHz
X2 9.216MHz
BEEP


PLL


RF YGR