



WIDE BAND RECEIVER AX700E/ES SERVICE MANUAL

STANDARD COMMUNICATIONS
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I. GENERAL INFORMATION

This section provides general information on the AX700E/ES VHF/UHF wideband receiver AX700E/ES.

- Indicated frequency is divided into the following four (4) band zone by B1, B2, B3, and BU terminals of tuners (P053).

B1 50.00 to 87.75 MHz
B2 95.75 to 215.75 MHz
B3 221.75 to 473.75 MHz
BU 475.75 to 904.995 MHz

- The following three modes have been programmed into the demodulator, from which one mode can be selected.

RM-W (wide),
FM-N (narrow)
AM

- There are six channel steps: 5 (AJ = Fine Adjustable), 1 (UP/DOWN key), 10, 12.5, 20, and 25 kHz.

- Reception systems are as follows:

FM-W Double conversion superheterodyne system
First IF 46 MHz
Second IF 10.7 MHz
Third IF 455 KHz

FM-N/AM Triple conversion superheterodyne system
First IF 46 MHz
Second IF 10.7 MHz
Third IF 455 kHz

- The spectrum level on the band scope (spectrum analyzer) is displayed by the digital conversion of the level detection output. The adjustment of the signal intensity (S) on the bandscope for the maximum level "0V" (S11) is based on the intensity of an incoming signal of 60 dB μ V. The display width of the bandscope can be set to 1 MHz, 250 (260) kHz, or 100 kHz.

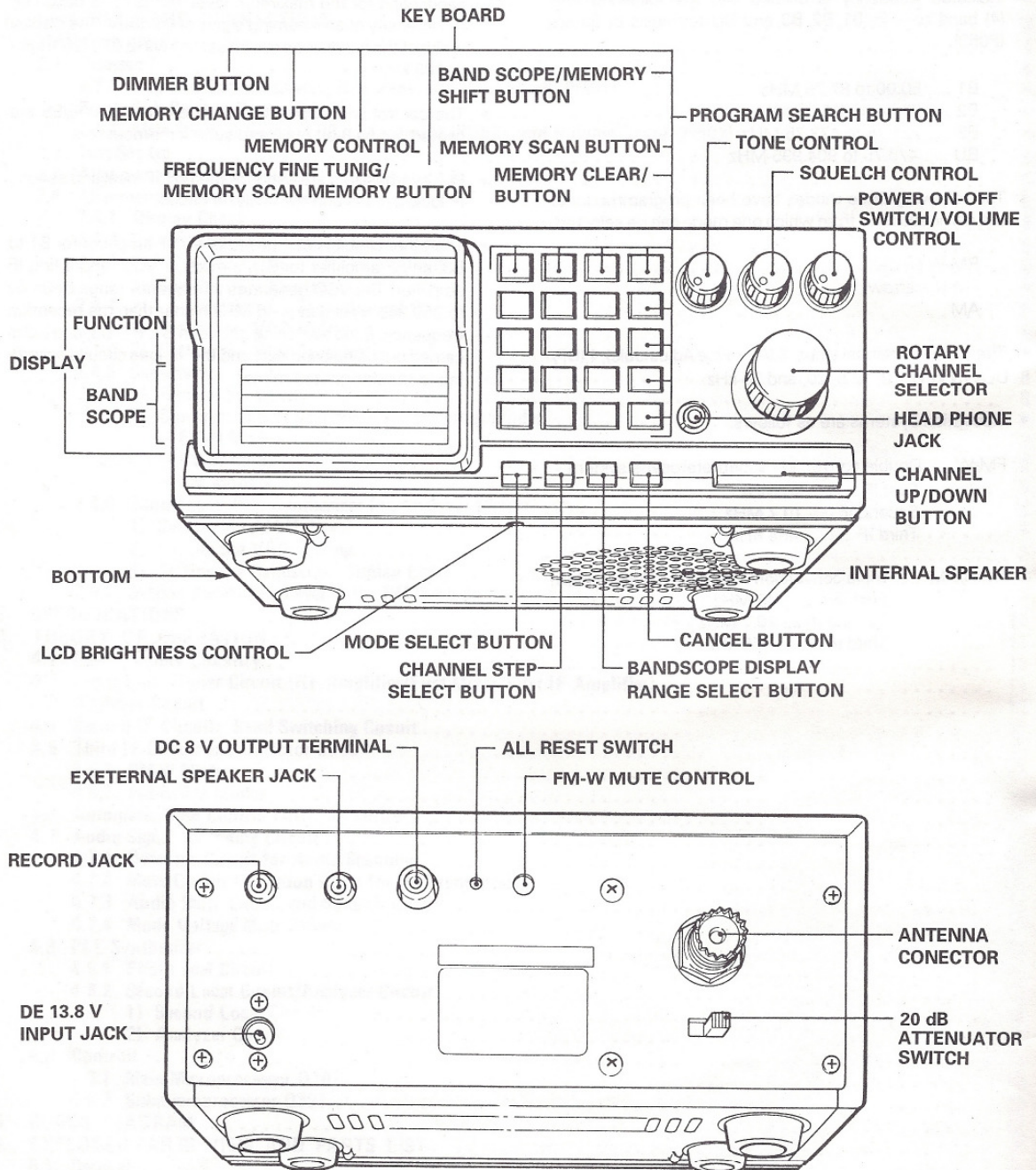
- The control and display functions of the AX700E/ES are carried out by 8-bit main and submicroprocessors.

- PLL synthesizers are used for the first IF local and second IF local circuits and the analyzer circuit.

- The tuner circuit is composed of an RF amplifier for B1 to B3, an RF amplifier for BU, a mixer, a VCO, and a first IF amplifier. The VCO generates a frequency range of 96.00 to 950.995 MHz that is 46 MHz higher than the reception frequency. Band switching between B1, B2, B3, and BU is carried out using band data and the various circuits according to the designated mode.



1. CONTROLS AND CONNECTIONS



2. MAINTENANCE

2.1 Disassembly

Before starting the adjustment procedures, be sure that the power switch of the receiver is turned off, and that the power supply and other connection cords are removed. Special care must be taken not to damage wiring or soldered parts when boards are removed.

2.1.1 Top and Bottom Covers, Rear Panel and Main Board (PM01)

- Remove the four screws (A) securing the upper cover and the five screws (A) securing the bottom cover. The bottom cover can be removed by pulling it directly away from the unit. To remove the upper cover, slide it backward.
- Remove the four screws (B) and remove the rear panel.
- Remove the four screws (C) and remove the main board.

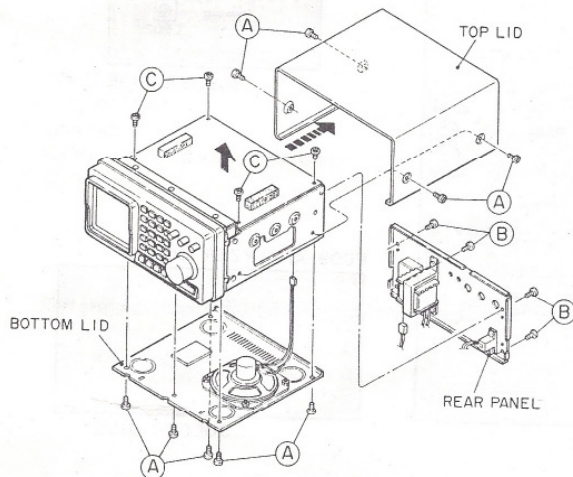


Figure 2-1

2.1.2 Sub-Control Board (PD03)

- Remove the four screws (D) and remove the front panel.
- Remove the six screws (E). Open the shield case slightly by 2-3 cm and confirm that there are three connectors. Loosen the connectors and pull out the wiring board.
- Remove the two screws (F) and the five screws (G) and remove the sub-control board.

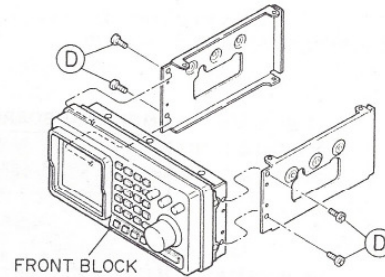


Figure 2-2

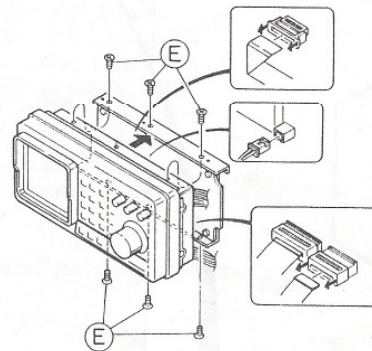


Figure 2-3

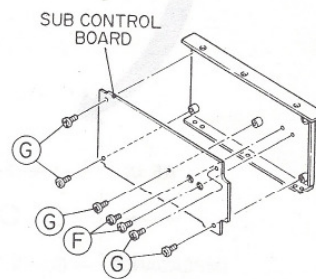


Figure 2-4

2.1.3 Main Control Board (PD01), Keyboard (PD02), and Volume Board (PM02)

- Remove the upper and lower covers and rear panel as described in section 2.1.1 (a) and (b).
- Remove the rotary channel selector assembly **D** and the two screws **E** and remove the front case.
- Remove the six screws **F** and remove the main control board.
- Remove the seven screws **G** and remove the keyboard.
- Remove the three rubber caps **H** and the three special screws and remove the volume board.

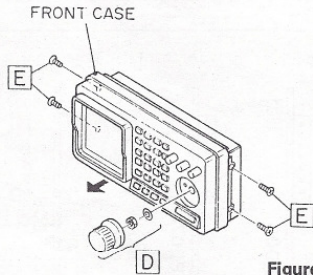


Figure 2-5

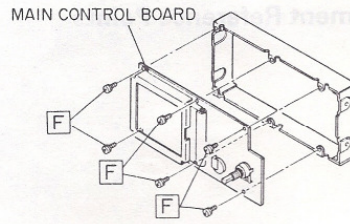


Figure 2-6

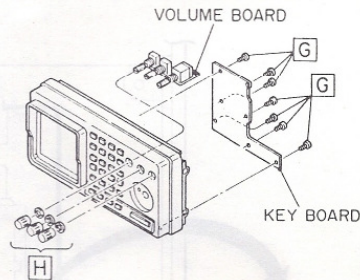


Figure 2-7

2.2 Test Set Up

For proper adjustment, the test equipment must be kept calibrated and maintained. Turn on the power supply and ensure that the test equipment is stable before starting performance test and adjustment procedures.

Conditions

Supply voltage 13.8 V DC
 AF dummy load 8Ω
 Audio output 500 mW
 Adjustment frequency 145.500 MHz

Standard modulation FM-N ±3.5 kHz with 1 kHz
 FM-W ±75.0 kHz with 1 kHz
 AM 30% with 1 kHz
 Other conditions..... Attenuator switch OFF

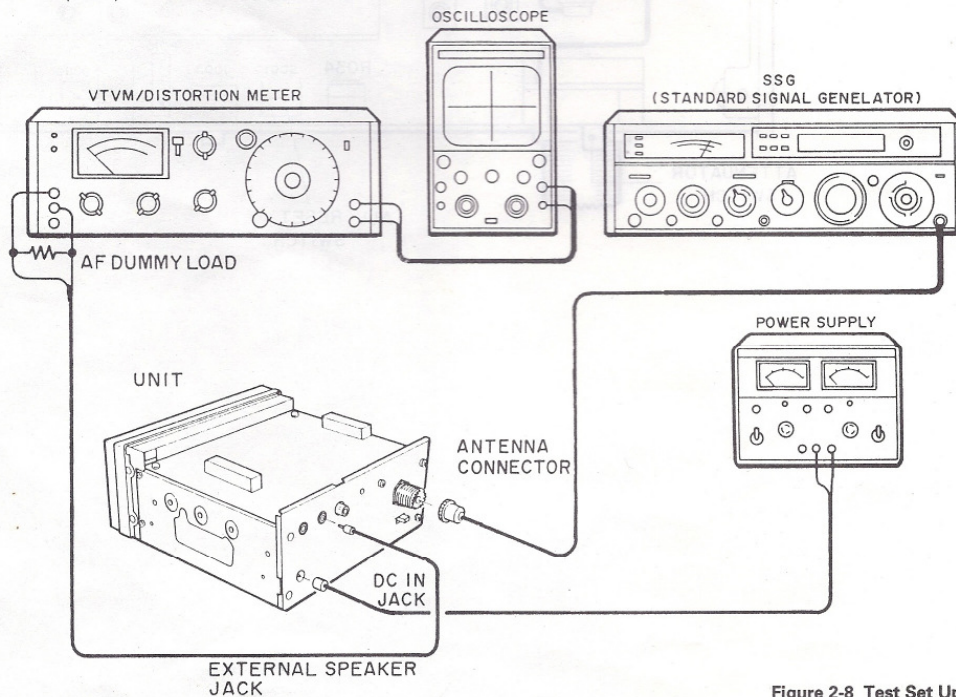
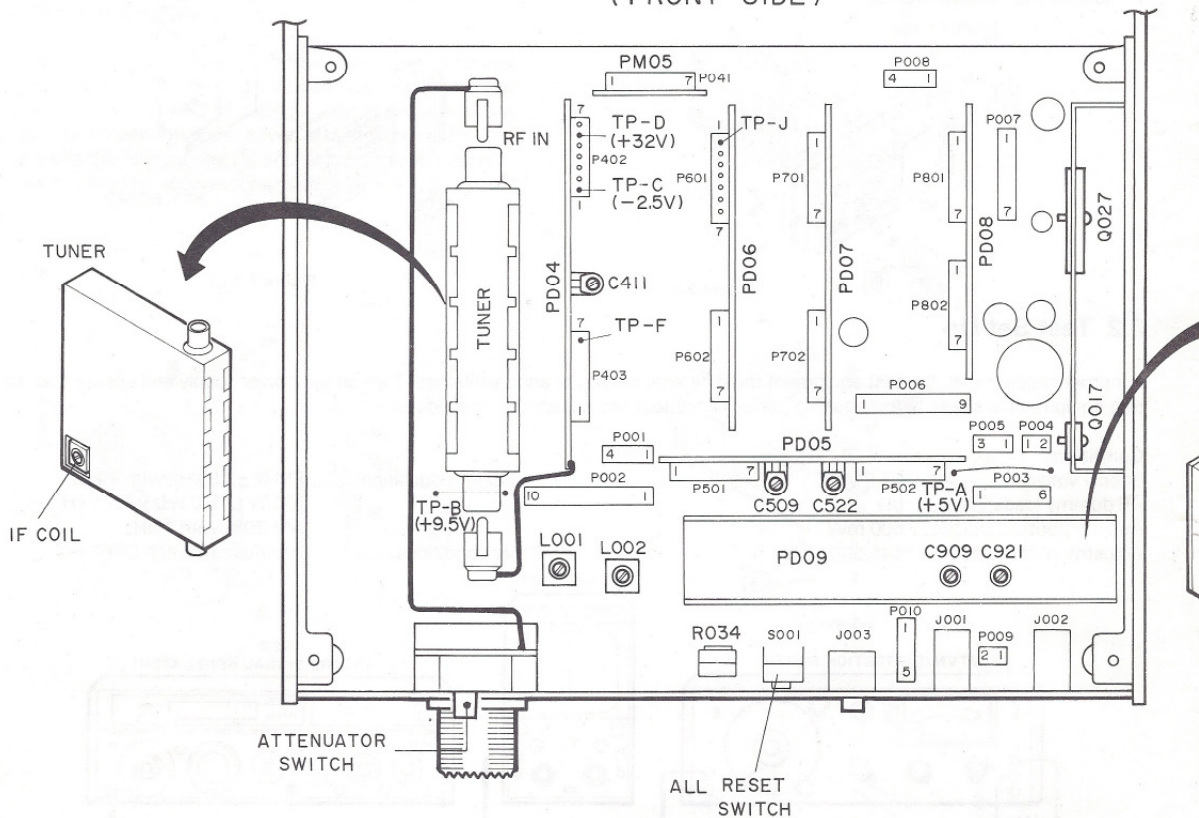


Figure 2-8 Test Set Up

2.3 Alignment Reference Points

BOTTOM VIEW
(FRONT SIDE)



2.4 Alignment/Performance Check

A voltmeter and frequency counter with sufficiently high impedance must be used for adjustment purposes.

Be sure to first perform the "Display Check" before proceeding to any adjustment.

After the adjustments, press the All Reset switch while the power of the unit is ON to reset the unit.

2.4.1 Display Check

- With the All Reset switch held depressed, press the Power ON-OFF switch to ON.
- Press the "1" key (AX700E) or "7" key (AX700ES) on the keyboard three times and check that all of the function display elements on the bandscope are lit. Otherwise, return to step a).
- Press the Power ON-OFF switch to OFF, and proceed to the following adjustments.

2.4.2 Current Drain and Voltage Level Checks

- Turn the Volume control of the unit to the fully counter-clockwise position.
- Press the Power ON-OFF switch of the unit to ON, then check that the current flowing in the unit is no more than 750 mA.
- To confirm the voltage levels, connect a voltmeter to TP-A for 4.5 to 5.5 V, TP-B for 8.5 to 10.5 V, TP-C for -3.0 to -2.0 V, and TP-D for 31.0 to 32.0 V.

2.4.3 PLL Synthesizer for First Local Circuit

Setting the VCO Frequency

- Connect a frequency counter to TP-F (first local frequency of pin 7 of P403).
- Set the displayed frequency of the receiver to 854.000 MHz.
- Adjust the trimmer C411 until the frequency at TP-F falls within 900.000 MHz \pm 50 Hz.

2.4.4 PLL Synthesizer for Second Local Circuit

NOTE: Remove the rear panel and then the analyzer board (PD09) from the main board (PM01) before starting the adjustment of the second local circuit. After adjustment, the analyzer board must be replaced in its original position.

1) Setting the VCO Voltage

- Pull out the core of L503 until the upper surface of the coil.
- Connect a voltmeter to TP-G (hot side of the C525).
- Adjust the trimmer C509 until the voltage at TP-G falls about 2.5 V.
- Adjust L503 to maximize the voltage of C525.
- Adjust trimmer C509 so that the voltage of C525 falls 2.5 V.

2) Setting the VCO Frequency

- Connect a standard signal generator (SSG) to the antenna connector.
- Set the SSG frequency to 145.500 MHz and 80 dBu without modulation.
- Connect a frequency counter to TP-H (10.7 MHz IF at pin 4 of P501).
- Adjust trimmer C522 until the frequency as read on the frequency counter falls within the range of 10.7000 MHz \pm 100 Hz.
- Connect a frequency counter to TP-J (455 kHz IF at pin 1 of P601).
- Check that the frequency counter reads 455 kHz \pm 50 Hz. If the frequency counter reading is out of this range, adjust trimmer C522.

2.4.5 Sensitivity

Connect a SSG to the antenna connector.

1) General Sensitivity

- Set the SSG frequency to 145.500 MHz \pm 3.5 kHz deviation and modulate for a 1 kHz tone FM.
- Set the reception frequency of the receiver to 145.500 MHz and select the AM mode by pressing the mode selection button.
- Adjust the IF output coil of the tuner and the L001 and L002 so that the best SINAD with the maximum wave form and the minimum distortion is obtained on the oscilloscope.
- While observing the oscilloscope, adjust L501 and L502 so that the best SINAD available (with maximized waveform and minimum distortion) is obtained.

2) Confirmation of Sensitivity for Different Modes

- FM-N Mode -

- Set the SSG frequency to 145.500 MHz \pm 3.5 kHz deviation and modulate for a 1 kHz tone FM.
- Set the reception frequency of the receiver to 145.500 MHz and set to the FM-N mode by pressing the mode selection button.
- Measure the 12 dB SINAD and confirm that the output level of the SSG does not exceed 0.63 μ V.

- FM-W Mode -

- Set the SSG frequency to 145.500 MHz \pm 75 kHz deviation and modulate for 1 kHz tone FM.
- Set the reception frequency of the receiver to 145.500 MHz and set to the FM-W mode by pressing the mode selection button.
- Measure the 12 dB SINAD and confirm that the output level of the SSG does not exceed 1.26 μ V.

- AM Mode -

- Set the SSG frequency to 145.500 MHz and modulate for 30% AM.
- Set the reception frequency of the receiver to 145.500 MHz and set to the AM mode by pressing the mode selection button.
- Measure to 10 dB S/N and confirm that the output level of the SSG does not exceed 1.0 μ V.

2.4.6 Bandscope: PLL Synthesizer for Analyzer Circuit

NOTE: Remove the rear panel before starting the adjustment of the analyzer circuit.

1) Setting the AM-IF Level

- a) Pull out the core of L903 until the upper surface of the coil.
- b) Set the SSG frequency to 145.500 MHz and 10 dB μ , with 30% AM modulation.
- c) Set the reception frequency to 145.500 MHz and set the Mode select button to the AM mode.
- d) Connect a voltmeter to TP-E pin 3 of P053, and adjust R041 so that the voltage reading is lower by 0.4 V than the voltage when the SSG output is switched OFF.

2) Setting the VCO Voltage

- a) Remove SSG from the antenna connector.
- b) Set the reception frequency to 145.500 MHz and set to the FM-N mode by pressing the mode selection button. Press the bandscope display level selection button to set the scroll width of the bandscope to 100 kHz.
- c) Connect a voltmeter to TP1 on the analyzer board.
- d) Confirm the variation range of voltage. Adjust trimmer C909 until the center voltage is about 2.2 V.
- e) Adjust L903 to maximize the voltage at TP1.
- f) Adjust C909 so that the voltage at TP1 falls 2.2 V.
- g) Set the SSG frequency to 145.500 MHz and 57 dB μ without modulation.
Check that the S meter display level attains the 0 V line in any mode (FM-W, FM-N, AM).
- h) Set the SSG frequency to 659.000 MHz and 57 dB μ without modulation.
- i) Set the displayed frequency of the unit to the same as the set frequency of the SSG. With this conditioned, check that the S meter display level attains the "S9" line in any mode (FM-W, FM-N, AM).

3) Setting the Bandscope Display Level

- a) Connect a SSG to the antenna connector.
- b) Set the SSG frequency to 145.500 MHz and 10 dB μ without modulation.
- c) Adjust trimmer C921 for the maximum display level at a receive frequency of 145.500 MHz.
- d) Adjust L902, L905, and L906 in this order for the maximum display level.
- e) Set the SSG frequency to 145.500 MHz and 47 dB μ without modulation. Turn R039 to the fully counterclockwise position, and adjust resistor R035 until the display level is "0 V" (S11).
- f) Set the SSG frequency to 145.500 MHz and 7 dB μ without modulation. Adjust resistor R039 until the display level is "S7".

2.4.7 Setting the Muting Level in the FM-W Mode

- a) Set the SSG frequency to 50.000 MHz and -1 dB μ , with 1 kHz \pm 75 kHz tone FM modulation.
- b) Set the displayed frequency of the unit to 50.000 MHz, and set the Mode select button to the FM-W mode.
- c) Turn R034 to the fully clockwise position, and adjust R036 so that the monitored sound can be heard from the speaker.
- d) Set the SSG frequency to 50.000 MHz and -3 dB μ , with 1 kHz \pm 75 kHz tone FM modulation. With this condition, check that the monitored sound is not heard from the speaker.
- e) Set the SSG frequency to 50.000 MHz and 1 dB μ , with 1 kHz \pm 75 kHz tone FM modulation. With this condition, check that the monitored sound is heard from the speaker.
- f) Set the SSG frequency to 94.000 MHz and -3 dB μ , with 1 kHz \pm 75 kHz tone FM modulation.
- g) Set the displayed frequency of the unit to the same as the set frequency of the SSG, and set the Mode select button to the FM-W mode. With this condition, check that the monitored sound is not heard from the speaker.
- h) Set the SSG frequency to 94.000 MHz and 1 dB μ , with 1 kHz \pm 75 kHz tone FM modulation. With this condition, check that the monitored sound is heard from the speaker.
- i) Set the SSG frequency to 145.000 MHz and -3 dB μ , with 1 kHz \pm 75 kHz tone FM modulation.
- j) Set the displayed frequency of the unit to the same as the set frequency of the SSG. With this condition, check that the monitored sound is not heard from the speaker.
- k) Set the SSG frequency to 145.000 MHz and 1 dB μ , with 1 kHz \pm 75 kHz tone FM modulation.
- l) Set the displayed frequency of the unit to the same as the set frequency of the SSG, and set the Mode select button to the FM-W mode. With this condition, check that the monitored sound is heard from the speaker.

3. SPECIFICATIONS

Frequency Range	50.000 to 904.995 MHz (Specification gurantee range for Model AX700E) 144.000 to 145.995 MHz 430.000 to 439.995 MHz (Specification gurantee range for Model AX700ES) 50.000 to 904.995 MHz (Range indicated in LCD display for Model AX700ES)
Antenna Impedance	50 Ω
Frequency Step	10, 12.5, 20, and 25 kHz (AJ MODE 5 kHz, UP/DOWN BUTTON 1 kHz)
Number of Memory Channels	100 channels
Number of Program Search Memory Bands	10 bands
Sensitivity	AM (10 dB SINAD): 3 μ V or less FM-N (12 dB SINAD): 1.5 μ V or less FM-W (12 dB SINAD): 1 μ V or less at 83 MHz
Squelch Sensitivity (FM-N Mode)	0.2 μ V or less
Audio Power Output	External Speaker Terminal: 1.8 W or more, 8 Ω , 10% distortion, Input signal of FM 1 kHz \pm 3.5 DEV Recorder Terminal: 30 mW (load of 100 k Ω)
8 V Output Terminal	8 V 40 mA maximum
Power Supply	DC 13.8 V \pm 15%
Current Drain	1 A (audio output 2 W)
Ground	Negative Grounding
Operating Temperature Range	0 – 50°C
Dimensions	75-H x 180-W x 180-D mm (excluding projections)
Weight	2.1 kg (including the antenna stand)

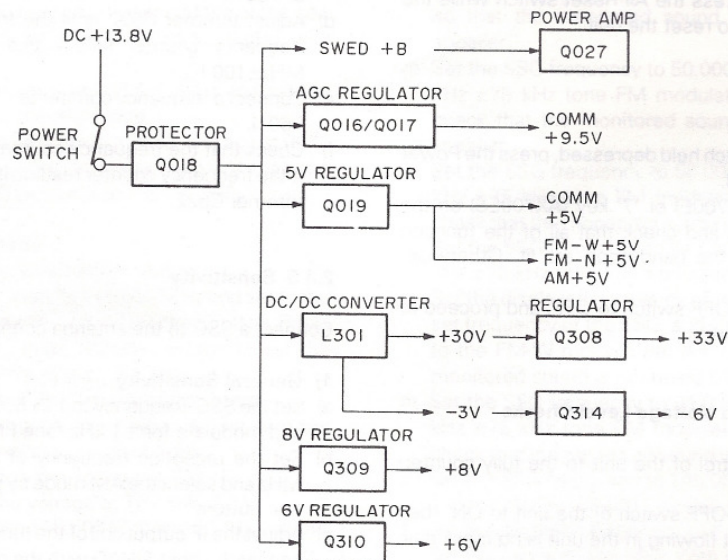
Performance specifications are nominal, Unless otherwise indicated, and are subject to change without notice.

4. THEORY OF OPERATION

4.1 Power Supply Circuitry

The following voltage levels are used for the AX700E/ES:

Table 4-1 Voltage



4.2 Front End: Tuner Circuit (RF Amplifier/First Mixer/First IF Amplifier)

The signal picked up by the rod antenna is passed through the 20 dB attenuator circuit (R051 and R052), and applied to the RF input terminal of the tuner circuit P053. The tuner circuit contains an RF amplifier for the B1-3 and BU bands, mixer, VCO, and first IF amplifier. The VCO generates the first local frequency of 96.00-950.995 MHz, which is 46 MHz higher than the incoming signal, over all the bands. The signal input to the tuner circuit is amplified by the RF amplifier and passed through the mixer and IF amplifier. This signal comes out of the IF output terminal and is converted to the 46 MHz first IF signal. The 46 MHz first IF signal is passed through the diode IF switch Q001, analyzer circuit, Q001 buffer Q005, and band switching circuit Q006-Q009, after which the signal is applied to the second IF circuit.

B1, B2, B3, and BU on the tuner are bias terminals for their corresponding bands. These bands are controlled by applying band data from the main microprocessor Q101 to pins 1 and 2 of band selector Q407 and controlling Q407 output terminal pins 12-15. Pins 12-15 are connected to the two-stage band switch, after which they are connected to the bias terminal for each band. Bias voltage is +9.5 V. Voltage of +0.5 to +9.5 V is applied to the VT terminal for each band to control the frequency (first local frequency) of the VCO located inside the tuner.

The first local frequency is output from the first local output terminal, passed through amplifier Q416 and Q401, and applied to the PLL prescaler for the first local Q402.

Band Selector Q407 Function List Table 4-2

Pin No.	Input		Output			
	1	2	15	14	13	12
Level	L	L	H	L	L	L
	H	L	L	H	L	L
	L	H	L	L	H	L
	H	H	L	L	L	H

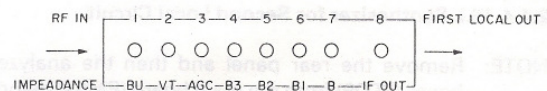


Figure 4-1 Tuner Jack (P053)

4.3 Analyzer Circuit

The analyzer circuit is designed to convert the incoming signal to DC voltage to pick up the level detection output. This output is converted to a digital signal by the A/D converter Q302, and displayed as a spectrum level on the bandscope by common and column drivers Q107–Q109.

The 46 MHz first IF signal is passed through the diode IF switch Q001, after which the input level is adjusted by resistor R037, and the signal is applied to pin 1 of the second IF IC Q901 of the analyzer circuit. Q901 is composed of an amplifier, mixer and VCO. Pin 6 outputs the 10.7 MHz second IF signal. This signal is passed through the crystal filter F901, applied to the third mixer Q907, and heterodyned with the 10.245 MHz signal on the third local oscillator. The 455 kHz third IF signal created by Q907 is passed through the tuning circuit L906 and ceramic filter F902, and applied to pin 1 of IF IC Q909. Q909 contains an amplifier and detector, and outputs the level detection signal to pin 3. The level detection output in proportion to the field strength of the incoming signal is adjusted for the display level by resistor R035 on the rear panel, and applied to pin 2 of the A/D converter Q302 of the sub-controller. Q302 outputs the detection signal, which was converted to a digital signal, from pins 4–9, 11, and 12 to the sub-microprocessor Q301. The digital signal is displayed on the LCD through the common driver Q107 and column drivers Q108 and Q109.

4.4 Second IF Circuit: Band Switching Circuit

The 46 MHz first IF signal is passed through the diode IF switch Q001 buffer Q005, and applied to band switching circuits Q006 and Q008 or Q007 and Q009 by setting the receiver to the desired mode. When the receiver is set to the FM-N or AM mode, band switching circuits Q006 and Q008 are forward biased. The 46 MHz IF signal is passed through the band pass filter F001 and coupled with pin 1 of the second IF IC Q501.

When the receiver is set to the FM-W mode, band switching circuits Q007 and Q009 are forward biased, and the 46 MHz IF signal is coupled with pin 1 of Q501.

Q501 contains an amplifier, mixer, and VCO. Pin 6 outputs the 10.7 MHz second IF signal. The VCO output frequency of pin 7 of Q501 is applied to pin 3 of the PLL IC Q503.

4.5 Third IF Circuit and Detector Circuit

The 10.7 MHz second IF signal on pin 6 of Q501 is passed through the IFT L502, and applied to the detector circuit Q702 for FM-W/AM modes and the third IF circuit Q602.

- FM-W mode
The second IF signal is detected by the detector circuit Q702 for FM-W and AM modes to obtain a voice signal.
- FM-N mode
The second IF signal is converted to 455 kHz by the third IF circuit Q602 and detected to obtain a voice signal.
- AM mode
The second IF signal is converted to 455 kHz by the third IF circuit Q602, and input to and detected by the detector circuit Q702 for FM-W and AM modes to obtain a voice signal.

4.5.1 FM-W Mode

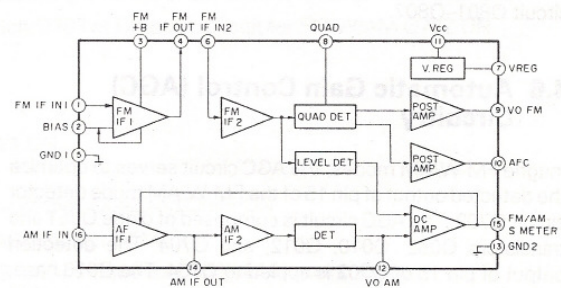


Figure 4-2 FM/AM IC Q702

In FM-W mode, the second IF signal is passed through the IF amplifier Q701 and crystal filter F701 and applied to pin 1 of the FM IF input terminal of detector circuit Q702 for FM-W/AM modes. This signal is then passed through the internal amplifier, the crystal filter F703, which has been connected externally to pins 4 and 6, the quadrature detector, and the amplifier. The FM-W detection signal is output to pin 9.

The 455 kHz third IF signal, which passed the band pass filter F703, is applied from pin 5 of the third IF circuit Q602 to Q702 AM IF input terminal pin 16. During the FM-W mode, the 455 kHz third IF signal is not input to Q702 AM IF input terminal pin 16 because of FM-W +5 V being supplied to the base of the AM IF switch Q703, which creates ground potential.

4.5.2 FM-N/AM Modes

In FM-N mode, the 10.7 MHz second IF signal is passed through the buffer amplifier Q601 and a pair of crystal filters F601 and input to pin 16 of the third IF circuit Q602. Q602 contains an amplifier, mixer, 10.245 MHz local oscillator, limiter circuit, detector circuit, and peripheral circuits. the FM-N detection signal is output from pin 9 of Q602. This signal is passed through the de-emphasis circuit R610, C613, R611, and C624, and applied to the audio signal switching circuit. Part of the 455 kHz third IF signal on pin 5 is passed through the buffer amplifier Q606 and band pass filter F703 and input to AM IF input terminal pin 16 of detector circuit Q702 for FM/AM modes.

In AM mode, AM +5 V is applied to the buffer amplifiers. Q601 and Q606 and the 455 kHz third IF signal is input to AM IF input terminal pin 16 of detector circuit Q702. This signal is passed through the second stage of the internal amplifier and AM detector, which outputs the AM detection signal to pin 12. The AM detection signal is passed through the de-emphasis circuit R711 and C720 and applied to the audio signal switching circuit Q801–Q807.

4.6 Automatic Gain Control (AGC) Circuitry

In the FM-W/AM modes, the AGC circuit serves to optimize the detected output of pin 15 of the FM-W/AM mode detector circuit Q702. The AGC circuit is composed of diode Q051 and transistors Q052, Q010, Q012, and Q704. The detection output of pin 15 of Q702 is applied to Q704. The Q010 base, Q011 collector, and Q012 base are connected to the Q704 emitter.

SWED+B is a constant voltage circuit consisting of Q016 and Q017 and stabilized at +9.5 V. a voltage of +9.5 V is divided into +6.5 V by resistors R017 and R018 of the AGC circuit. This reference voltage of +6.5 V is applied to the AGC circuit Q012 collector, pin 3 AGC terminal of the tuner circuit P053, and the amplifier Q052 base.

The detected output of pin 15 of Q702 is in proportion to the intensity of the incoming signal. The reference voltage of +6.5 V is reduced through Q012 until the detected voltage of pin 15 of Q702 is optimized.

4.7 Audio Signal Switching Circuit

The audio signal switching circuit applies mode data on pin 13 of the interface Q102 (AM), pin 14 (FM-N), and pin 15 (FM-W) to the base of the DC switch Q022 for the AM mode, Q021 for the FM-N mode, and Q020 for the FM-W mode, and is switched among these modes according to the mode selected on the receiver. Table 4-3 shows the active circuits for different modes. The voice signal passed through the audio signal switching circuit is applied to the audio scanning circuit Q808 and mute circuits Q805 and Q807.

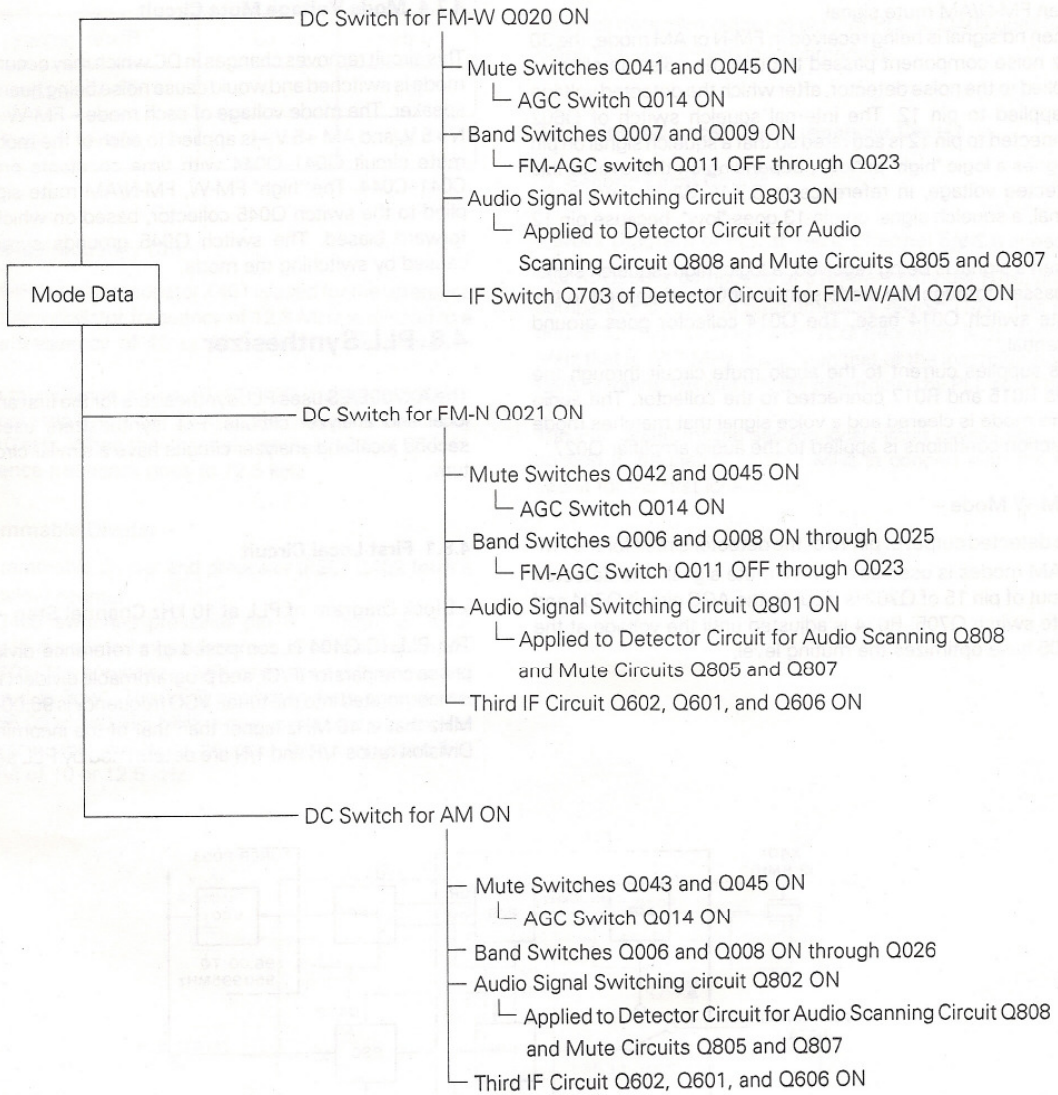
4.7.1 Detector Circuit for Audio Scanning

When the audio scan mode (AF.SCAN) is selected from the various scan modes, the voice signal input to the detector circuit for audio scanning is passed through the amplifier Q808. This signal is converted to DC voltage by the voltage doubler rectifier Q809 and Q810 and applied to the switch Q811. Q811 goes "low" when a voice signal is present. This Q811 collector output is fed to pin 63 of the main microprocessor Q101 and acts as a control signal for audio scanning. When pin 63 of Q101 is low, the PLL circuit is controlled to stop scanning temporarily. When pin 63 goes high, scanning is resumed.

4.7.2 Mute Circuit Operation Chart for Different Modes

The following chart shows the activation of mute circuits for different modes:

Table 4-3 Active Circuits for Different Modes



4.7.3 Audio Mute Circuit and Squelch Circuit

When no signal is being received in any of the FM-W, FM-N, and AM modes, a voice signal in these modes is muted because of reverse biased mute switch Q014 that controls audio mute circuits R816, R815, and Q805, R819, R818, and Q806.

– FM-N/AM Modes –

A squelch signal on pin 13 of the third IF circuit Q602 is used as an FM-N/AM mute signal.

When no signal is being received in FM-N or AM mode, the 30 kHz noise component passed through the noise amplifier is applied to the noise detector, after which the detected voltage is applied to pin 12. The internal squelch switch of Q602 connected to pin 12 is activated so that a squelch signal on pin 13 goes a logic "high" or "low", depending on the level of this detected voltage, in reference to 0.7 V. When there is no signal, a squelch signal on pin 13 goes "low", because pin 12 exceeds 0.7 V.

When a signal is being received, a logic "high" squelch signal is passed through the diode switch Q603 and applied to the mute switch Q014 base. The Q014 collector goes ground potential.

This supplies current to the audio mute circuit through the lines R015 and R017 connected to the collector. The audio mute mode is cleared and a voice signal that matches mode selection conditions is applied to the audio amplifier Q027.

– FM-W Mode –

The detected output of pin 15 of the detector circuit for the FM-W/AM modes is used as a FM-W mute signal. The detected output of pin 15 of Q702 is input to the AGC circuit Q704 and mute switch Q705. R034 is adjusted until the voltage at the Q705 base optimizes the muting level.

When a signal is being received, the mute switch Q705 collector goes ground potential and the next stage mute switch for the FM-W mode Q804 is reverse biased. A voltage of FM-W +5 V is applied to the Q804 collector. This voltage forward biases the diode switch Q806 and mute switch Q014. This forms ground potential at the Q804 collector. The audio mute mode is cleared as with the "FM-N/AM modes", and the FM-W mode voice signal is applied to the audio amplifier Q027.

4.7.4 Mode Voltage Mute Circuit

This circuit removes changes in DC which may occur when the mode is switched and would cause noise being heard from the speaker. The mode voltage of each mode – FM-W +5 V, FM-N +5 V, and AM +5 V – is applied to each of the mode voltage mute circuit Q041–Q044 with time constants provides by C041–C044. The "high" FM-W, FM-N/AM mute signal is applied to the switch Q045 collector, based on which Q045 is forward biased. The switch Q045 grounds surge voltage caused by switching the mode.

4.8 PLL Synthesizer

The AX700E/ES uses PLL synthesizers for the first and second local and analyzer circuits. PLL synthesizers used for the second local and analyzer circuits have a similar circuit structure.

4.8.1 First Local Circuit

– Block Diagram of PLL at 10 kHz Channel Step –

The PLL IC Q404 is composed of a reference divider (1/R), phase comparator (P/C), and programmable divider (1/N). VCO is incorporated into the tuner. VCO frequency is 96.00–950.995 MHz that is 46 MHz higher than that of the incoming signal. Division ratios 1/R and 1/N are determined by PLL serial data.

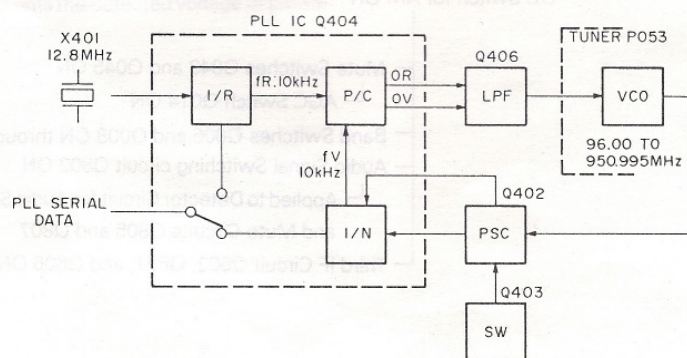


Figure 4-3 PLL Block Diagram

– Equation for Calculating the N Number –

$$N = \frac{\text{Reception frequency} + \text{First IF (46)}}{\text{Channel step (0.01)}} [\text{MHz}]$$

Relationship Between fR/fV and OR/OV Table 4-4

fR/fV Combination	Output	
	OV	OR
Leading fV>fR	Lo	Hi
Lagging fV>fR	Hi	Lo
Lock fV=fR	Hi	Hi

– Reference Frequency (fR) –

The 12.8 MHz crystal resonator X401 is used for the reference oscillator. An oscillator frequency of 12.8 MHz is divided to a reference frequency of 10 or 12.5 MHz by the reference divider.

There are four channel steps: 10, 12.5, 20, and 25 kHz. When the channel step is at 10 or 20 kHz, the reference frequency goes to 10 kHz. When the channel step is at 12.5 or 25 kHz, the reference frequency goes to 12.5 kHz.

– Programmable Divider –

The programmable divider and prescaler (PSC) Q402 form a pulse swallow counter.

Switch Q403 switches prescaler pin 6 to "high" or "low" according to the control signal from pin 25 of main microprocessor Q101. The prescaler is 1/64 when pin 6 is "high", and 1/128 when it is "low". The VCO oscillation frequency in the range of 96.00 to 950.995 MHz is processed by the prescaler and programmable divider to become the comparison frequency (fV) of 10 or 12.5 kHz.

– Phase Comparator/Low Pass Filter –

The phase comparator compares the phase of fR from the reference divider with that of fV from the programmable divider. Phase comparison output is output to pins 15 (OV) and 16 (OR) and applied to the low pass filter Q406 (1/2). The differential low pass filter converts the OR-OV relation to the shift voltage that is applied to VCO and determines the direction in which the VCO frequency shifts.

– Unlock Signal –

The lock detection output of pin 7 of PLL IC Q404 goes "low" when PLL is unlocked (asynchronous).

4.8.2 Second Local Circuit/Analyzer Circuit

1) Second Local Circuit

– Block Diagram of PLL at 1-kHz Channel Step –

PLL IC Q503 is composed of a reference divider (1/R), phase comparator (P/C), and programmable divider (1/N). The second IF IC Q501 VCO is used. VCO frequency is 35.3 ± 0.005 MHz that is 10.7 MHz lower than that of the incoming signal. Division ratios 1/R and 1/N are determined by PLL serial data.

The PLL circuit for the second local circuit always obtains a second IF frequency of 10.7 MHz in concert with the PLL circuit for the first local circuit.

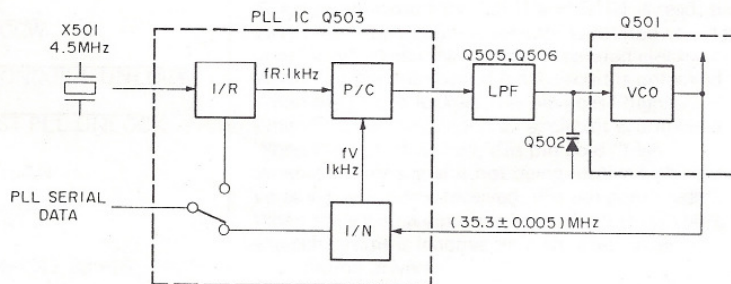


Figure 4-4 PLL Block Diagram

– Equation for Calculating the N Number –

$$N = \frac{\text{First IF frequency (46±0.005)} - \text{Second IF frequency (10.7)}}{\text{Channel step (0.001)}} \text{ [MHz]}$$

– Reference Frequency (1/R) –

The 4.5 MHz crystal resonator X501 is used for a reference oscillator, and its frequency is divided into a reference frequency of 1 kHz by the reference divider built into the PLL IC Q503.

– Programmable Divider (1/N) –

A VCO frequency of 35.3±0.005 MHz is passed through the programmable divider and converted to a comparison frequency of 1 kHz.

– Phase Comparator (P/C) –

The phase comparator compares the phase of a reference frequency of 1 kHz with that of a comparison frequency of 1 kHz. The output pin 10 of the phase comparator generates the following three output signals at the phase of signal 2:

- Advanced phase "High"
- Delayed phase "Low"
- Lock (synchronous) High impedance

– Unlock Signal –

The lock detection output of pin 11 of PLL IC Q503 goes "high" when PLL is locked. It goes "low" when PLL is unlocked.

– Low Pass Filter –

The phase detection output of pin 10 is converted to DC current (shift voltage) by the PLL loop filter Q505 and Q506. The shift voltage is applied to the variable capacitor diode Q502 and then pin 8 of Q501 and controls the frequency of the internal VCO of Q501.

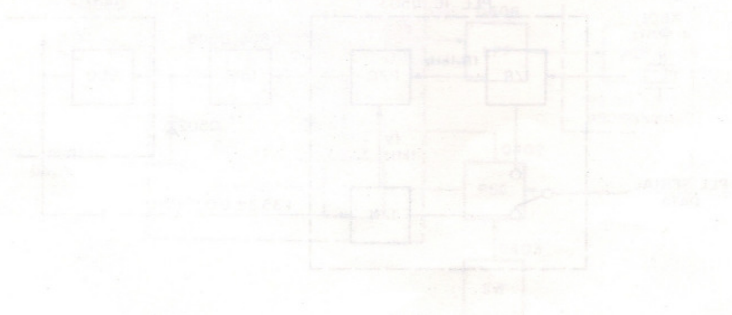
– VCO –

The VCO generates a frequency of 35.3±0.005 MHz that is 10.7 MHz lower than the first IF frequency.

2) Analyzer Circuit

The reference frequency goes to 10 kHz when the channel step is 10 or 20 kHz and 12.5 kHz when the channel step is 12.5 or 25 kHz.

When a bandscope display level of 1 MHz is selected, the VCO frequency is 35.3±0.5 MHz. In this case, the main microprocessor activates the analyzer circuit PLL circuit for scanning the frequency of the microprocessor clock at a channel step of 10 or 12.5 kHz in reference to 35.3 MHz.



4.9 Control

The functions of the I/O port are summarized in the table given below.

4.9.1 Main Microprocessor Q101

Table 4-5

Pin No.	I/O	Symbol	Description
1~9	O	SEGMENT 8~0	LCD segment terminal
10~13	O	COMMON 3~0	LCD common terminal
14~16	I	VL1~VL3	Vcc is divided by R109~R112. LCD contrast that provides a reference voltage for the LCD bias is adjusted by R112.
17	—	Vcc	(+5±0.5)V DC
18	O	BUZZER	Rectangular output is rectified for waveform and adjusted for level.
19	O	PLL ENABLE	With this pin, "high" indicates that data transmission to the PLL for the first/second local circuits is completed.
20	O	PLL CLOCK	Synchronous clock for PLL for the first/second local circuits.
21	O	PLL DATA	Data to be sent to PLL for the first/second local circuits.
22	O	MUTE	When this pin goes "low", it acts as a test terminal (unused).
23	O	PLL SELECT	When this pin goes "low", PLL serves for the first local circuit. When this pin goes "high", PLL serves for the second local circuit.
24	I	ROT CH SELE CLK	This pin is inputted when the "low" rotary channel selector is rotated.
25	O	128/64	"Low/high" reception frequency is output to the PLL for the first local circuit.
26	O	RESET	When this pin goes "low", the detected low voltage is output and all ICs are reset.
27	I	POWER LOW	When Vcc falls to +4.5 V in the voltage detector circuit (Q305–Q307), this pin goes "low".
28	—	Vss	Ground
29	I	RESET	Resets Q101 while the delay circuit C102, Q116, and R106 keeps the microprocessor "low" for more than 10 msec after turning on the power switch.
30	I	X IN	Clock input terminal (frequency: 4.0 MHz)
31	O	X OUT	Clock output terminal (frequency: 4.0 MHz)
32	—	Vss	Ground.
33~40	I/O	MAIN DATA 7~0	NOTE 1
41	O	READ/WRITE	When this pin goes "low", data is written to Q102 or Q103. When this pin goes "high", data is read from Q102 or Q103.
42	O	PIO E	Synchronous signal for writing data to Q102 or reading data from Q102.
43	O	RAM CS	When this pin is "low", data is read from RAM Q103.
44	O	PIO CS	When this pin is "low", data is read from PIO Q102.
45	O	KEY READ	When this pin is "low", a signal from the keyboard is read.
46~53	O	ADDRESS 10~3	Addressing signal for writing data to Q103 or reading data from Q103.
54~56	O	ADDRESS 2~0	Output data for key scan to Q201 (NOTE 2).
57	I	CONV. SENSI.	Present when converter is "Lo", not present when converter is "Hi".
58	I	ALL RESET	When the ALL RESET key is pressed, this pin goes "low". When the key is not pressed, this pin goes "high".
59	I	ACK	When a command from Q301 and Q101 is read, this pin goes "low".
60	I	CW/CCW	When the rotary channel selector is rotated counterclockwise, this pin goes "low". When the selector is rotated clockwise, this pin goes "high".
61	I	SECOND PLL UNLOCK	When PLL for the second local circuit is unlocked, this pin goes "low". When the PLL is locked, this pin goes "high".
62	I	FIRST PLL UNLOCK	When PLL for the second local circuit is unlocked, this pin goes "low". When the PLL is locked, this pin goes "high".
63	I	AF SCAN	When no voice signal is not being received, this pin goes "low". When a voice signal is being received, this pin goes "high".
64	I	SQUELCH	When the squelch circuit is activated, this pin goes "low". When the squelch circuit is inactive, this pin goes "high".
65~72	O	SEGMENT 23~16	For column drivers.
73	—	Vss	Ground.
74	—	SEGMENT 15	Unused.
75~80	O	SEGMENT 14~9	For column drivers.

4.9.2 Submicroprocessor Q301

Table 4-6

Pin No.	I/O	Symbol	Description
1	O	V _{ss}	Ground.
2	O	X OUT	Clock output terminal (frequency: 4.0 MHz)
3	I	X IN	Clock input terminal (frequency: 4.0 MHz)
4, 5	I	MP 0, MP 1	When connected to VCC and Q301 is set to the single chip mode, these pins go "high".
6	I	$\overline{\text{RESET}}$	Resets Q301 while the delay circuit C102, Q116, and R106 keeps the microprocessor "low" for more than 10 msec after the power switch is turned on.
7	I	STANDBY	Unused. Connected to Vcc to keep the high status.
8	I	NMI	Unused. Connected to Vcc to keep the high status.
9	O	ACK	When Q101 completes reading command from Q301, this pin goes "low".
10	O	P21	Unconnected.
11	O	ANALYZER PLL CLK	Synchronous clock for analyzer PLL (Q304 reverses the high and low states of the clock; pin 4 of J303 outputs clock.)
12	O	ANA. PLL RESET	When data transmission to the analyzer PLL is completed, this pin goes "high" (Q304 reverses the high and low states of the clock; pin 5 of J303 outputs clock).
13	O	ANALYZER PLL SI	Outputs data to the analyzer PLL (reversed at Q304; pin 5 of J303 outputs clock).
14	I	P25	Unused. Connected to Vcc through R313 to keep the high state.
15	O	A/D CLK	Clock for activating Q302 (clock frequency, about 125 kHz). Outputs when Q301 reads data from Q302.
16		P27	Unused. Left open.
17	I	OBF	When Q101 sends a command to Q301, this pin goes "low".
18	I	INTR	When Q302 informs the completion of A/D conversion to Q101, this pin goes "low".
19, 20	I	P52, P53	Unused. Connected to Vcc to keep high status.
21		P54	Unused. Left open.
22	I	$\overline{\text{ANALYZER UNLOCK}}$	When the analyzer PLL is unlocked, this pin goes "low". When the analyzer PLL is locked, this pin goes "high".
23, 24		P56, P57	Unused. Left open.
25~32	I/O	P60~P67	NOTE 3 (+5±0.5)V DC
33		Vcc	
34~38	O	SUB ADD. 15~11	NOTE 4
39~41		P42~P40	Unused. Left open.
42		V _{ss}	Ground.
43~49		P17~P11	Unused. Left open.
50	O	D/I	When this pin goes "low", pins 51~58 of Q301 control the mode and frequency of Q108 and Q109. When this goes "high", pins 51~58 of Q301 read data displayed on the bandscope.
51~58	I/O	SUB DATA 7~0	NOTE 5
59, 60		P74, P73	Unused. Left open.
61	O	$\overline{\text{READ/WRITE}}$	When data is written to Q108 and Q109, this pin goes "low". When data is read from Q108 and Q109, this pin goes "high".
62	O	$\overline{\text{WR}}$	When voltage on pin 2 of Q301 is A/D converted, this pin goes "low".
63	O	$\overline{\text{RD}}$	When pins 51~58 of Q301 read data from Q302, this pin goes "low".
64	O	E	Synchronous clock for data exchange between Q301 and Q108 and Q109 (clock frequency: 1.0 MHz). Writes data to Q108 and Q109 at the emergency of a signal and reads data from Q108 and Q109 while this pin is "high".

NOTE 1

1) **Data Exchange Between Pins 33–40 of Q101 and Q102**
 These pins control the dimmer circuit Q112, R104, V101, and V102, mode data, FM-W, FM-N, and AM, and band data, B1–3 and BU, and send commands to Q301.

• **Writing Conditions**

Data on pins 33–40 of Q101 is output to Q102. Writing the data to Q102 is instructed with pin 41 of Q101 "low", and pin 44 of Q101 goes "low" before writing to Q102.

• **Reading Conditions**

Reading data from Q102 is instructed with pin 41 of Q101 "high", and pin 44 of Q101 goes "low" before pins 33–40 of Q101 read data from Q102.

2) **Data Exchange Between Pins 33–40 of Q101 and Q103**
 Q103 keeps information stored in the receiver in concert with the backup circuit B101, C101, Q115, and R105.

• **Writing Conditions**

Pins 46–56 of Q101 provide the address for writing output data from pins 33–40 of Q101 to Q103; and writing the data to Q103 is instructed with pin 41 of Q101 "low". Pin 43 of Q101 goes "low" before writing the data to Q103.

• **Reading Conditions**

Pins 46–56 of Q101 provide the address for reading, and data is read from Q103 with pin 41 of Q101 "high". Pin 43 of Q101 goes "low" before pins 33–40 of Q101 read the data from Q103.

3) **Reading Data from the Keyboard**

• **Reading Conditions**

Pins 12–15 of Q201 output a key scan signal addressed by pins 54–56 of Q101. Pin 45 of Q101 goes "low" before pins 33–40 of Q101 read the key scanned.

NOTE 2

These pins provide the address for when Q101 writes data to Q103 or reads data from Q103. These pins also send data for key scanning from Q101 to Q102.

Table 4-7

Address			*Key scan	Key symbol
02	01	00		
L	L	L	KS0	MODE, DIMM, 1, 4, 7
L	L	H	KS1	Step, MC, 2, 5, 8, 0
L	H	L	KS2	Wid, MR, 3, 6, 9, ENT/MW, DOWN
L	H	H	KS3	CCL, AJ/MS.M, BS/M.SFT, P.SER, M.SCN, M.CL/BUZZ, UP
H	L	L	–	DIODE FLAG: Q206 to Q213

NOTE 3

Q301 judges that Q101 sent a command when pin 17 goes "low" and pins 25–32 of Q301 read the command. When reading is completed, pin 9 of Q301 goes "low" to indicate to Q101 that its command has been read.

NOTE 4

These pins send address data to determine which one of Q302, Q108, and Q109 should be accessed.

Table 4-8

Sub address					Access
15	14	13	12	11	
L	L	L	H	L	Q302
L	L	H	L	L	Q108
L	H	L	L	L	Q109

NOTE 5

These pins have the following functions: 1) reading digital data converted by Q302; 2) writing control data to Q108 and Q109; 3) writing and reading display data. They synchronize with the clock of pin 64 of Q301 when they exchange data with Q108 and Q109.

• **Conditions for Reading Digital Data from Q302**

Pins 34–38 send address data to Q303 to access Q302. Pin 63 of Q301 goes "low" before pins 51–58 of Q301 read digital data.

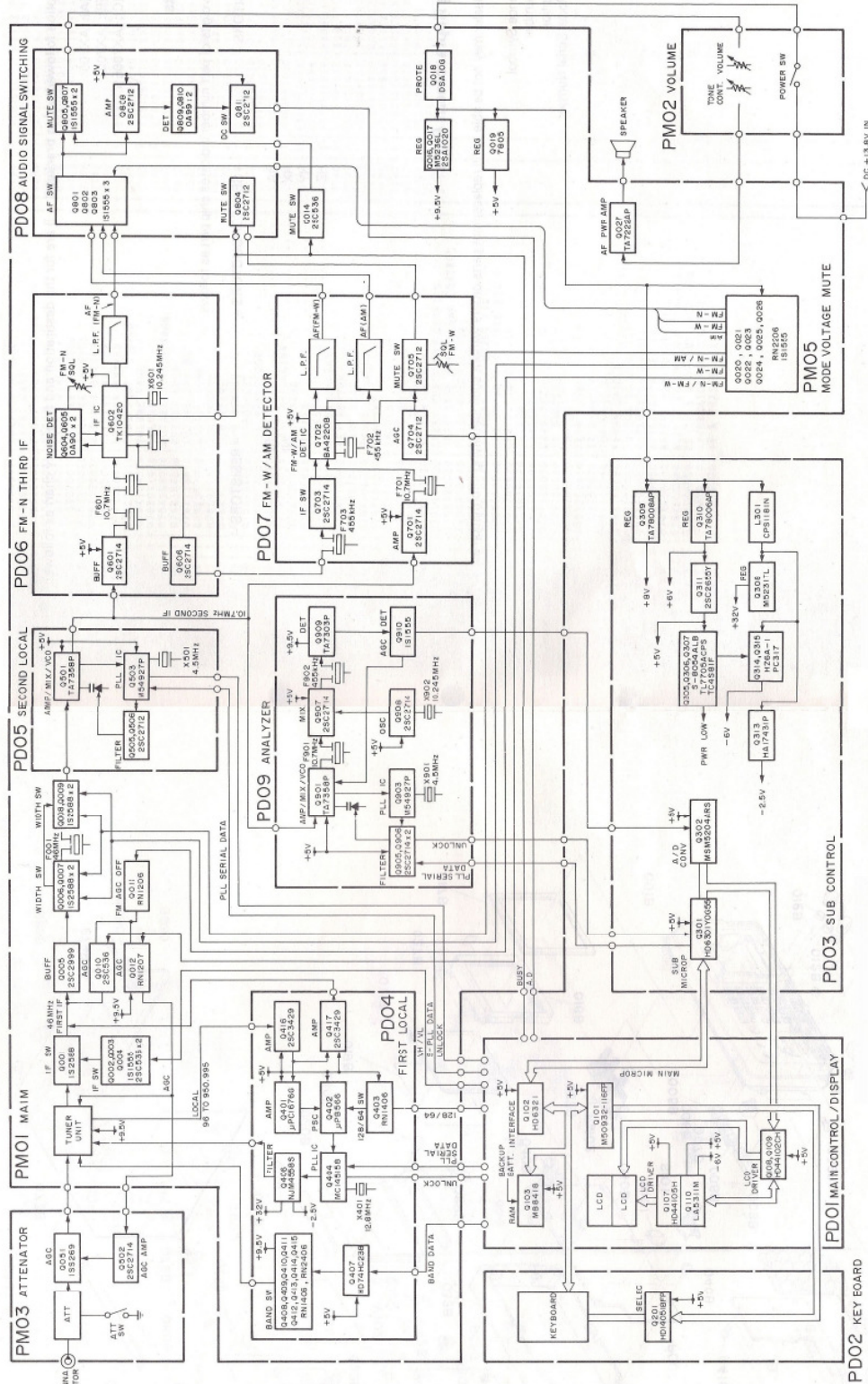
• **Conditions for Reading Data from Q108 and Q109**

Pins 34–38 of Q301 goes send address data to Q303 to access Q108 and Q109. Pin 61 of Q301 goes "high" before pins 51–58 of Q301 read data.

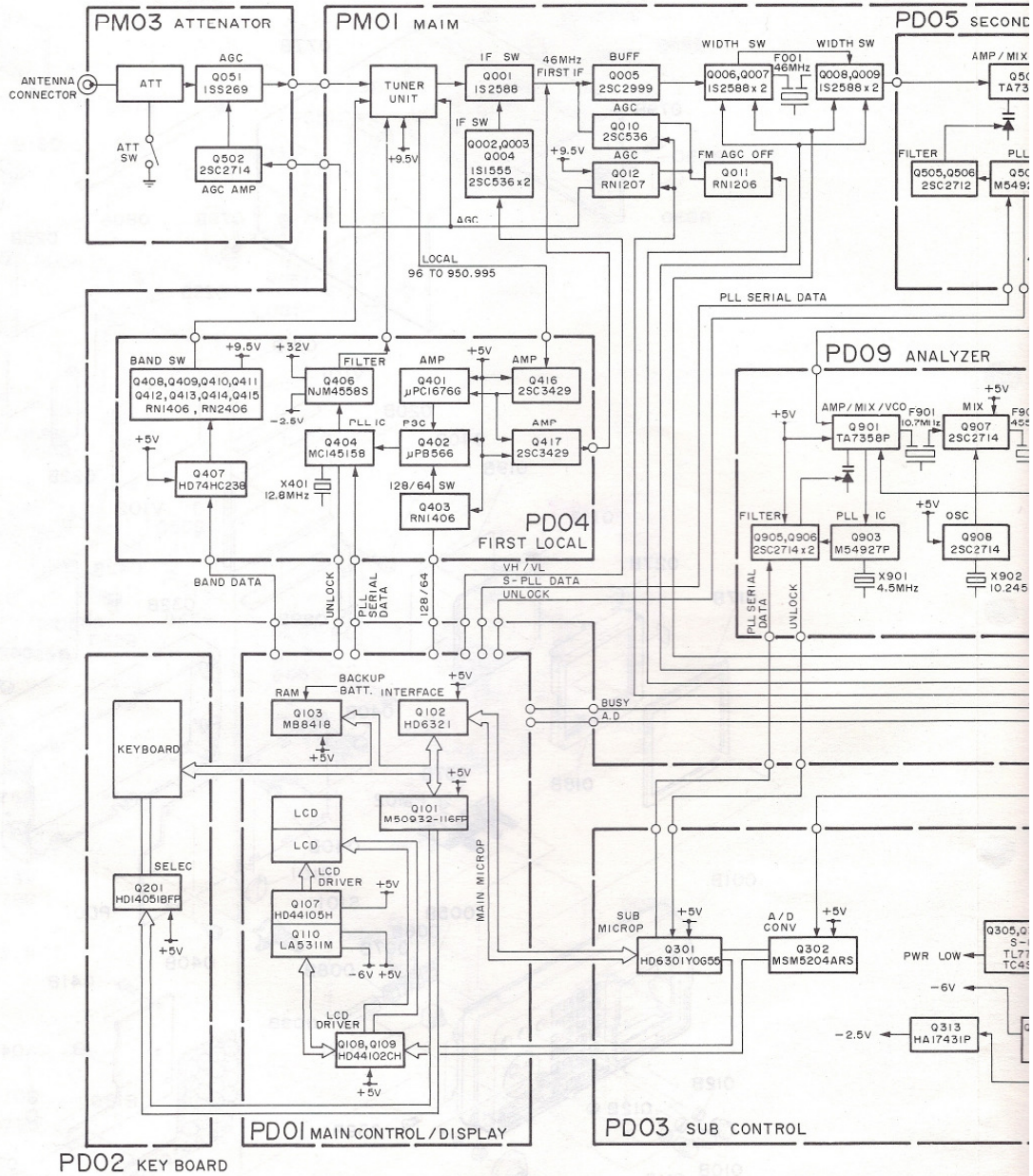
• **Conditions for Writing Data to Q108 and Q109**

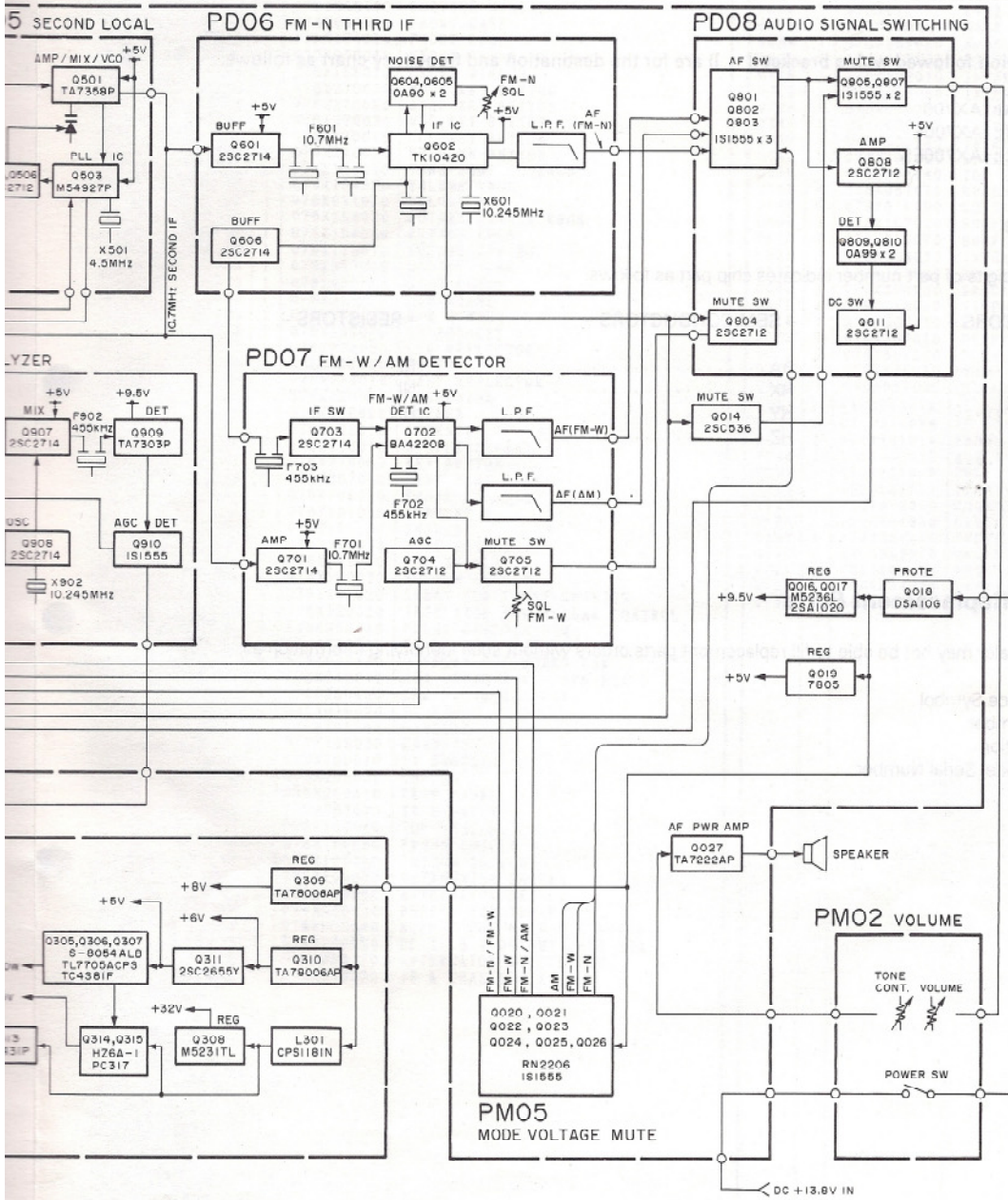
Pins 34–38 of Q301 send address data to Q303 to access Q108 and Q109. Pin 61 of Q301 goes "low" before pins 51–58 of Q301 write data.

5. BLOCK DIAGRAM



5. BLOCK DIAGRAM





6. EXPLODED PARTS VIEW AND PARTS LIST

6.1 General

Information on most electrical and mechanical parts is included in the parts list. The parts are listed by reference symbols in alpha-numeric order.

NOTE: 1) Description followed with a bracket ([]) are for the destination and frequency chart as follows:

[A]: AX700
[B]: AX700E
[C]: AX700ES

6.2 Chip Parts

First through fourth digits of part number indicates chip part as follows:

– CAPACITORS –

DD4
DD5
DD9
DK4
DK5
DK9
DF9
EY

– SEMICONDUCTORS –

BA
HX
HY
HZ

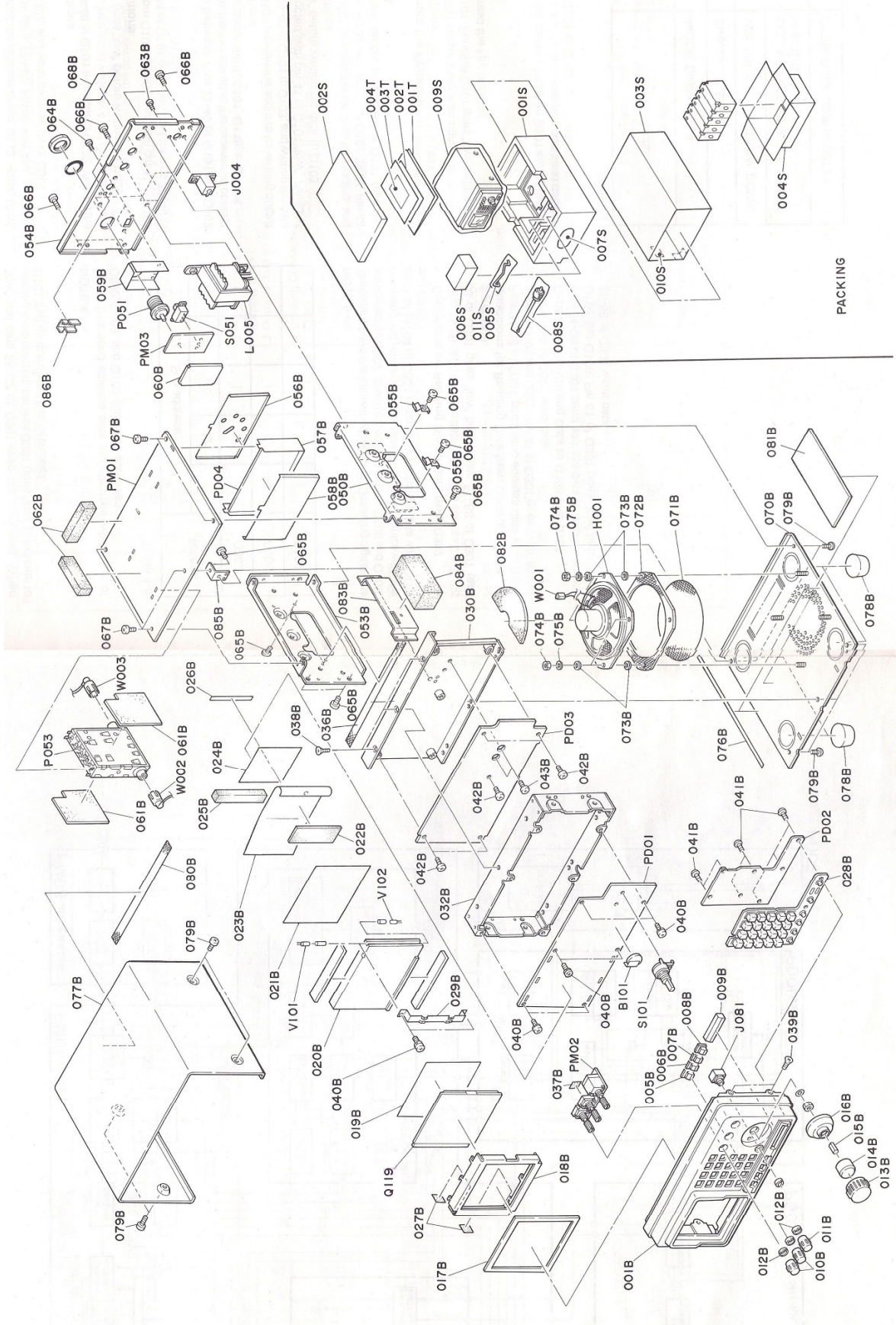
– RESISTORS –

RI
NI
NN

6.3 Ordering Replacement Parts

Please note that dealer may not be able to fill replacement parts orders without such identifying information as:

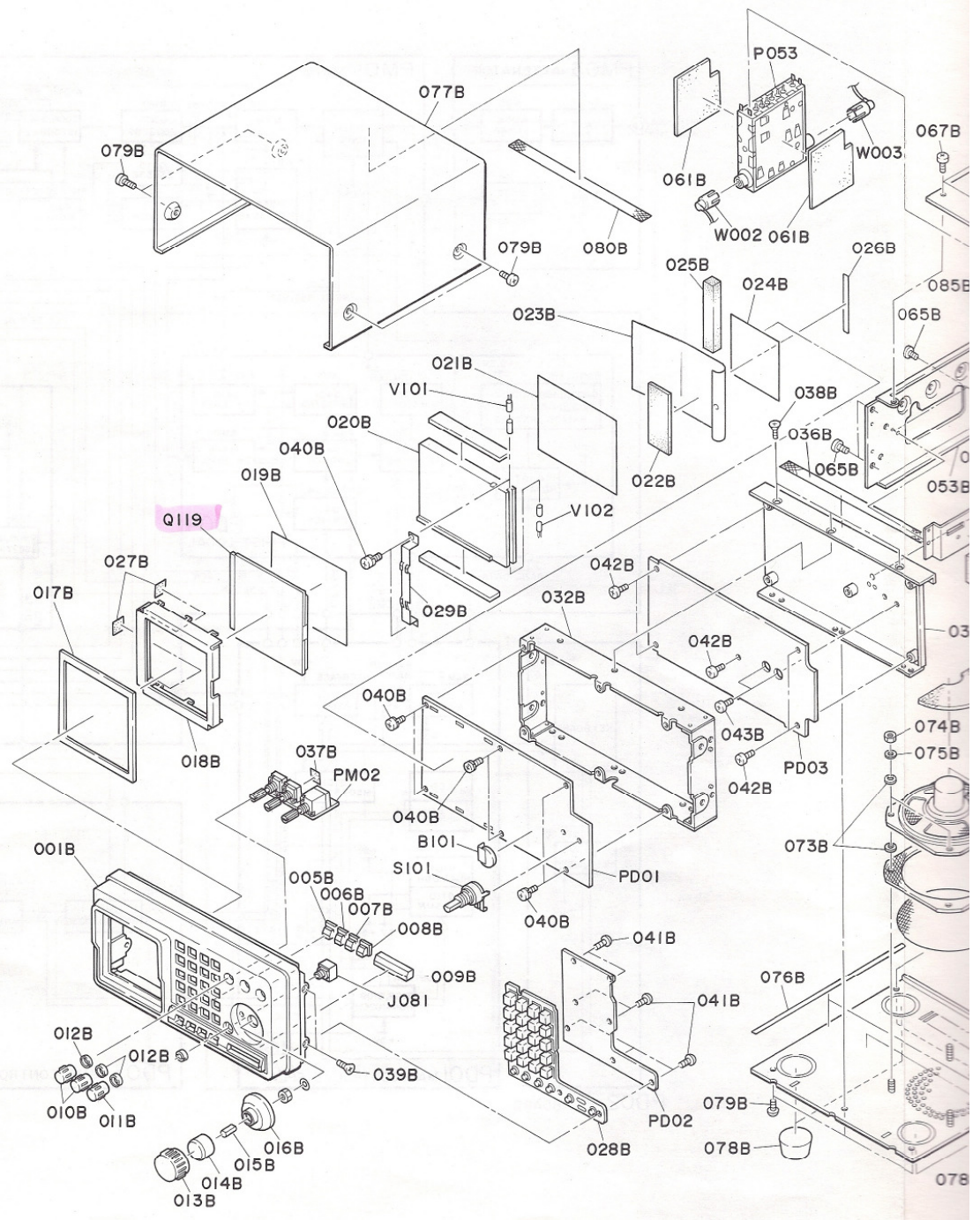
- Reference Symbol
- Part Number
- Description
- Unit Model Serial Number

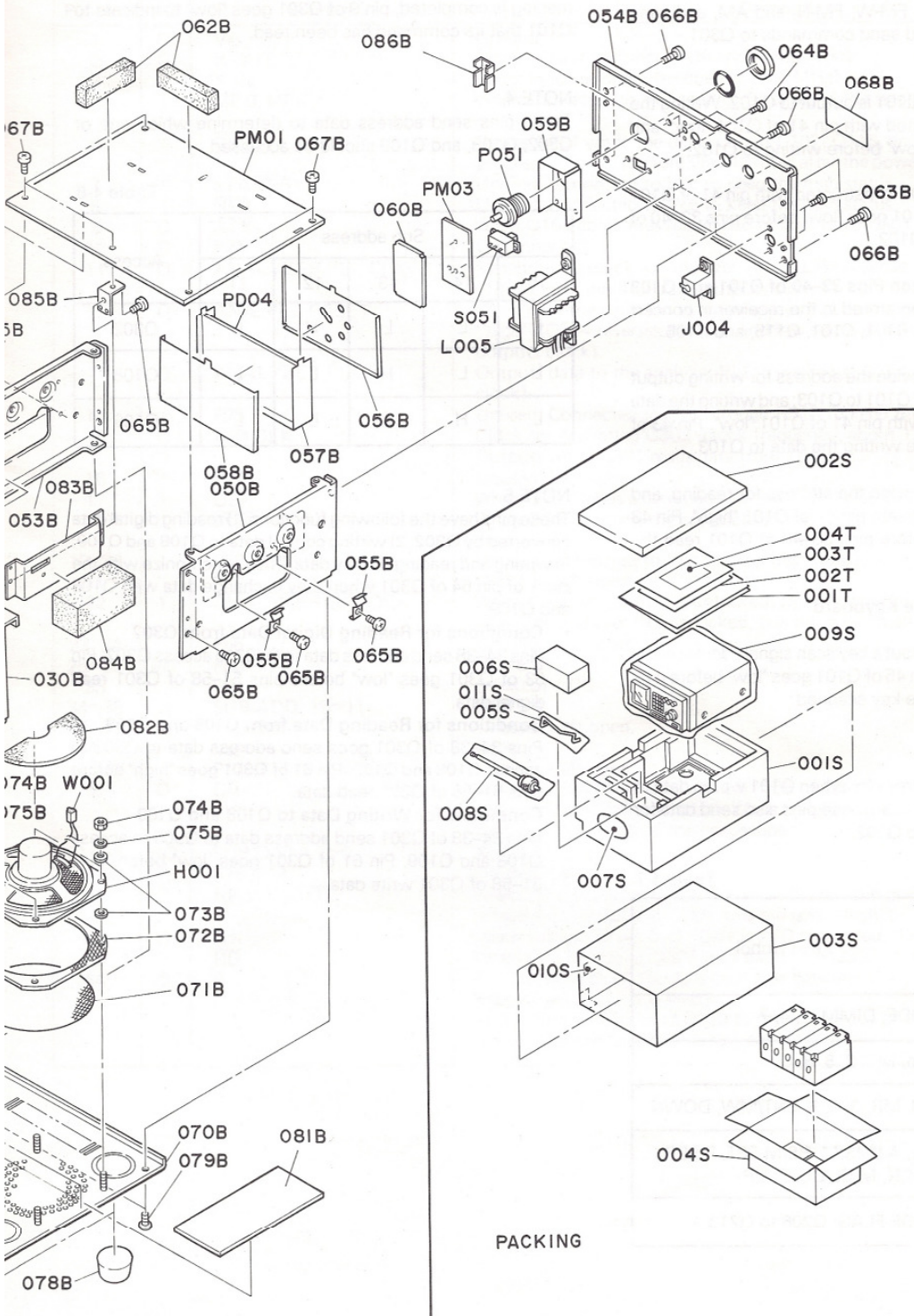


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EXPLOSION VIEW DIAGRAM





REF. DESIG.	QTY	PART NO.	DESCRIPTION		REF. DESIG.	QTY	PART NO.	DESCRIPTION
0001	1	076X855110	SERVICE MANUAL	[A]	066B	7	076X010060	REAR PANEL FIX
001B	1	076X084500	FRONT CASE		067B	5	51100304E9	MAIN P.C.BOARD FIX
002B	1	076X084010	FRONT CASE		068B	1	076X861020	MODEL NAME LABEL
003B	1	076X053010	FRONT COVER		070B	1	076X053030	BOTTOM COVER
004B	1	076X158010	FRONT WINDOW		071B	1	076X202010	INTERNAL SPEAKER NET
005B	1	076X270010	MODE KEY BUTTON		072B	1	076X056050	INTERNAL SPEAKER BUFFER
006B	1	076X270020	STEP KEY BUTTON		073B	8	076X056060	INTERNAL SPEAKER FIX
007B	1	076X270030	WID KEY BUTTON		074B	4	53110301A9	INTERNAL SPEAKER FIX
008B	1	076X270040	CCL KEY BUTTON		075B	4	54010300A0	INTERNAL SPEAKER FIX
009B	1	076X270050	UP/DOWN BUTTON		076B	2	076X107030	SHEET FOR BOTTOM COVER
010B	2	076X154010	TONE/SQUELCH KNOB		077B	1	076X053040	TOP COVER
011B	1	076X154020	VOLUME KNOB		078B	4	076X057010	RUBBER LEG
012B	3	076X011010	VOLUME NUT		079B	9	076X010050	COVER FIX
013B	1	076X154030	ROTARY RUBBER KNOB		080B	1	076X107020	BUFFER FOR TOP COVER
014B	1	076X154040	ROTARY KNOB		081B	1	076X056070	BUFFER FOR BOTTOM COVER
015B	1	076X115010	ROTARY SPRING		082B	1	076X056080	INTERNAL SPEAKER BUFFER
016B	1	076X353010	ROTARY RING		083B	1	076X160040	BRACKET
017B	1	076X056010	DUST COVER		086B	1	076X160030	BRACKET
018B	1	076X053020	LCD FRAME		087B	1	076X118020	WINDOW SPACER
019B	1	076X158020	M/W WINDOW		001S	1	076X809010	CUSHION
020B	1	076X151010	INTRODUCER		002S	1	076X807010	REINFORCE
021B	1	076X274020	LCD REFLECTOR		003S	1	076X804010	SLEEVE CASE
022B	1	076X107010	SHEET		004S	5	076X805010	MASS CARTON
023B	1	076X274010	LAMP REFLECTOR		005S	1	076X057020	STAND
024B	1	076X120010	INSULATOR		006S	1	AA1001301R	AC ADAPTOR [A]
025B	1	076X056020	BUFFER		006S	1	AA2201202R	AC ADAPTOR [B/C]
026B	1	076X122010	ADHESIVE		007S	2	076X861010	LABEL
027B	2	076X118010	SPACER (ZEBRA)		008S	1	YR0606003R	ROD ANTENNA
028B	1	076X270060	KEY BUTTON		009S	1	076X811010	POLYETHY BAG FOR SET
029B	1	076X267010	LAMP HEAT SINK		010S	1	9523019010	SERIAL NO. CARD
030B	1	076X105010	FRONT CHASSIS		011S	1	076X811020	POLYETHY BAG FOR STAND
031B	5	076X101010	SUPPORT		012S	1	228C861030	LABEL FOR SLEEVE [B/C]
032B	1	076X109500	SHIELD		001T	1	076X851010	ONERS MANUAL [A]
033B	2	076X109010	SIDE SHIELD		001T	1	076X851110	ONERS MANUAL [A]
034B	1	076X109020	TOP SHIELD		002T	1	9611000042	USER'S CARD [A]
035B	1	076X109030	BOTTOM SHIELD		003T	1	006C854010	WARRANTY [A]
036B	1	076X107020	SHEET FOR FRONT CHASSIS		004T	1	9650000136	S. STATION CARD [A]
037B	1	076X120020	INSULATOR FOR VOLUME CONTROL					
038B	6	51042604A0	FRONT CHASSIS FIX					
039B	4	51040305A9	FRONT CASE FIX					
040B	6	51440204A0	DISPLAY P.C.BOARD FIX					
041B	7	076X010010	KEY BOARD P.C.BOARD FIX					
042B	5	51062604A0	CPU P.C.BOARD FIX					
043B	2	076X010020	TR FIX					
050B	1	076X105500	CHASSIS					
051B	1	076X105020	CHASSIS					
052B	1	076X160010	TR BRACKET					
053B	1	076X105030	CHASSIS					
054B	1	076X250010	REAR PANEL					
055B	2	076X267020	TR CLAMPER					
056B	1	076X109040	TOP SHIELD					
057B	1	076X109050	FRAME SHIELD					
058B	1	076X109060	BOTTOM SHIELD					
059B	1	076X109070	ATTENUATOR SHIELD					
060B	1	076X109080	ATTENUATOR SHIELD					
061B	2	076X056030	BUFFER FOR TUNER					
062B	2	076X056040	BUFFER FOR MAIN P.C.BOARD					
063B	2	51062606E0	DC 13.8 V OUTPUT JACK FIX					
064B	2	51060203E0	ATTENUATOR SWITCH FIX					
065B	7	076X010020	TR & CHASSIS FIX					

REF. DESIG.	QTY	PART NO.	DESCRIPTION	REF. DESIG.	QTY	PART NO.	DESCRIPTION
B101	1	ZB0902001R	LITHIUM BATTERY	C113	1	DK56103300	0.01 UF +-10%
C001	1	DS17223010	0.022 UF +-20%	C114	1	DK56103300	0.01 UF +-10%
C002	1	DD15330370	33 PF SL +-5%	C115	1	DK56103300	0.01 UF +-10%
C003	1	DS17223010	0.022 UF +-20%	C116	1	DK56103300	0.01 UF +-10%
C004	1	DS17223010	0.022 UF +-20%	C117	1	DD51100300	10 PF CH +-0.5 PF
C005	1	DS17102010	0.001 UF +-20%	C118	1	DK56103300	0.01 UF +-10%
C006	1	DS17102010	0.001 UF +-20%	C119	1	DD51100300	10 PF CH +-0.5 PF
C007	1	DD15560370	56 PF SL +-5%	C120	1	DD51100300	10 PF CH +-0.5 PF
C008	1	DD15560370	56 PF SL +-5%	C121	1	DD51100300	10 PF CH +-0.5 PF
C009	1	DS17102010	0.001 UF +-20%	C122	1	DD51100300	10 PF CH +-0.5 PF
C010	1	DS17223010	0.022 UF +-20%	C123	1	DD51100300	10 PF CH +-0.5 PF
C011	1	DS17223010	0.022 UF +-20%	C124	1	DK56103300	0.01 UF +-10%
C012	1	DS17102010	0.001 UF +-20%	C125	1	DK56103300	0.01 UF +-10%
C013	1	DS17223010	0.022 UF +-20%	C126	1	DD51100300	10 PF CH +-0.5 PF
C014	1	DS17223010	0.022 UF +-20%	C127	1	DK56103300	0.01 UF +-10%
C015	1	EJ47601610	47 UF/16 V ELECT CAP	C128	1	DD51100300	10 PF CH +-0.5 PF
C017	1	DS17103010	0.01 UF +-20%	C129	1	DD51100300	10 PF CH +-0.5 PF
C018	1	EJ10601610	10 UF/16 V ELECT CAP	C130	1	DD51100300	10 PF CH +-0.5 PF
C019	1	DS17102010	0.001 UF +-20%	C131	1	DD51100300	10 PF CH +-0.5 PF
C020	1	DS17103010	0.01 UF +-20%	C132	1	DD51100300	10 PF CH +-0.5 PF
C021	1	EA33802510	3300 UF/25 V ELECT CAP	C133	1	DK56103300	0.01 UF +-10%
C022	1	DS17103010	0.01 UF +-20%	C134	1	DK56103300	0.01 UF +-10%
C023	1	EJ10601610	10 UF/16 V ELECT CAP	C135	1	DK56103300	0.01 UF +-10%
C024	1	EJ10601610	10 UF/16 V ELECT CAP	C136	1	DK56103300	0.01 UF +-10%
C025	1	DS17103010	0.01 UF +-20%	C137	1	DK56103300	0.01 UF +-10%
C026	1	EJ10601610	10 UF/16 V ELECT CAP	C138	1	DK56103300	0.001 UF +-10%
C027	1	DF15473310	0.047 UF +-5%	C139	1	DD51100300	10 PF CH +-0.5 PF
C028	1	EA10701610	100 UF/16 V ELECT CAP	C140	1	DD51100300	10 PF CH +-0.5 PF
C029	1	EJ47601610	47 UF/16 V ELECT CAP	C141	1	DK56102300	0.001 UF +-10%
C030	1	DS17223010	0.022 UF +-20%	C142	1	DK56102300	0.001 UF +-10%
C031	1	EJ10601610	10 UF/16 V ELECT CAP	C143	1	DK56102300	0.001 UF +-10%
C032	1	DF15224310	0.22 UF +-5%	C144	1	DK56102300	0.001 UF +-10%
C033	1	EJ47601610	47 UF/16 V ELECT CAP	C145	1	DK56102300	0.001 UF +-10%
C034	1	EA10701610	100 UF/16 V ELECT CAP	C146	1	DK56102300	0.001 UF +-10%
C035	1	EJ10505010	1 UF/50 V ELECT CAP	C147	1	DK56102300	0.001 UF +-10%
C036	1	EY10601610	10 UF/16 V TANTAL CAP	C148	1	DK56102300	0.001 UF +-10%
C037	1	EY10601610	10 UF/16 V TANTAL CAP	C149	1	DD51100300	10 PF CH +-0.5 PF
C038	1	DS17102010	0.001 UF +-20%	C150	1	DD51100300	10 PF CH +-0.5 PF
C039	1	DS17102010	0.001 UF +-20%	C151	1	DD51100300	10 PF CH +-0.5 PF
C040	1	EJ10505010	1 UF/50 V ELECT CAP	C152	1	DD51100300	10 PF CH +-0.5 PF
C041	1	EJ10601610	10 UF/16 V ELECT CAP	C153	1	DD51100300	10 PF CH +-0.5 PF
C042	1	EJ10601610	10 UF/16 V ELECT CAP	C154	1	DD51100300	10 PF CH +-0.5 PF
C043	1	EJ10601610	10 UF/16 V ELECT CAP	C155	1	DD51100300	10 PF CH +-0.5 PF
C044	1	EJ33601610	33 UF/16 V ELECT CAP	C156	1	DD51100300	10 PF CH +-0.5 PF
C051	1	DK56102300	0.001 UF +-10%	C157	1	DD51100300	10 PF CH +-0.5 PF
C052	1	DK56102300	0.001 UF +-10%	C158	1	DD51100300	10 PF CH +-0.5 PF
C053	1	DK56102300	0.001 UF +-10%	C159	1	DK56102300	0.001 UF +-10%
C054	1	DK56102300	0.001 UF +-10%	C160	1	DD51100300	10 PF CH +-0.5 PF
C101	1	KC076X001R	47 UF/10 V TANTAL CAP	C161	1	DK56102300	0.001 UF +-10%
C102	1	EY10501610	1 UF/16 V TANTAL CAP	C162	1	DK56102300	0.001 UF +-10%
C103	1	DK56103300	0.01 UF +-10%	C163	1	DK56102300	0.001 UF +-10%
C104	1	EY47402510	0.47 UF/25 V TANTAL CAP	C164	1	DK56102300	0.001 UF +-10%
C105	1	DK56103300	0.01 UF +-10%	C165	1	DD51100300	10 PF CH +-0.5 PF
C106	1	DK56103300	0.01 UF +-10%	C166	1	DK56561300	560 PF CH +-10%
C107	1	DK56103300	0.01 UF +-10%	C167	1	DD51100300	10 PF CH +-0.5 PF
C108	1	DD55750300	75 PF CH +-5%	C168	1	DD51100300	10 PF CH +-0.5 PF
C109	1	DD55330300	33 PF CH +-5%	C169	1	DD51100300	10 PF CH +-0.5 PF
C110	1	DK56103300	0.01 UF +-10%	C170	1	DD51100300	10 PF CH +-0.5 PF
C111	1	DK56103300	0.01 UF +-10%	C171	1	DD51100300	10 PF CH +-0.5 PF
C112	1	DK56103300	0.01 UF +-10%	C172	1	DD51100300	10 PF CH +-0.5 PF

REF. DESIG.	QTY	PART NO.	DESCRIPTION
C173	1	DD51100300	10 PF CH +-0.5 PF
C174	1	DD51100300	10 PF CH +-0.5 PF
C175	1	DD51100300	10 PF CH +-0.5 PF
C176	1	DD51100300	10 PF CH +-0.5 PF
C177	1	DD51100300	10 PF CH +-0.5 PF
C178	1	DD51100300	10 PF CH +-0.5 PF
C179	1	DD51100300	10 PF CH +-0.5 PF
C201	1	DK56103300	0.01 UF +-10%
C301	1	EA33702510	330 UF/25 V ELECT CAP
C302	1	KC076X004R	220 UF/16 V TANTAL CAP
C303	1	EA33702510	330 UF/25 V ELECT CAP
C304	1	EJ10701010	100 UF/10 V ELECT CAP
C305	1	EA10605010	10 UF/50 V ELECT CAP
C306	1	EA10702510	100 UF/25 V ELECT CAP
C307	1	EA10702510	100 UF/25 V ELECT CAP
C308	1	EA22605010	22 UF/50 V ELECT CAP
C309	1	EA47601610	47 UF/16 V ELECT CAP
C310	1	EA10605010	10 UF/50 V ELECT CAP
C311	1	EA22605010	22 UF/50 V ELECT CAP
C312	1	EJ47405010	0.47 UF/50 V ELECT CAP
C313	1	EA47505010	4.7 UF/50 V ELECT CAP
C314	1	EA47505010	4.7 UF/50 V ELECT CAP
C315	1	EA47505010	4.7 UF/50 V ELECT CAP
C316	1	EY10403510	0.1 UF/35 V TANTAL CAP
C317	1	KC076X003R	0.1 UF +80%, -20%
C318	1	KC076X003R	0.1 UF +80%, -20%
C319	1	KC076X003R	0.1 UF +80%, -20%
C320	1	KC076X003R	0.1 UF +80%, -20%
C321	1	KC076X003R	0.1 UF +80%, -20%
C322	1	KC076X003R	0.1 UF +80%, -20%
C323	1	KC076X003R	0.1 UF +80%, -20%
C324	1	KC076X003R	0.1 UF +80%, -20%
C325	1	KC076X003R	0.1 UF +80%, -20%
C326	1	KC076X003R	0.1 UF +80%, -20%
C327	1	KC076X002R	0.001 UF
C328	1	KC076X003R	0.1 UF +80%, -20%
C329	1	KC076X003R	0.1 UF +80%, -20%
C330	1	KC076X003R	0.1 UF +80%, -20%
C331	1	DK56103300	0.01 UF +-10%
C332	1	DK56103300	0.01 UF +-10%
C333	1	DF15104310	0.1 UF +-5%
C334	1	DK56103300	0.01 UF +-10%
C335	1	DK56103300	0.01 UF +-10%
C336	1	DD55151300	150 PF CH +-5%
C337	1	DD55750300	75 PF CH +-5%
C338	1	DD55750300	75 PF CH +-5%
C339	1	DD55330300	33 PF CH +-5%
C340	1	DD55221300	220 PF CH +-5%
C341	1	DK58104200	0.1 UF +80, -20%
C342	1	DK56103300	0.01 UF +-10%
C343	1	DD55330300	33 PF CH +-5%
C344	1	DD55330300	33 PF CH +-5%
C345	1	DD55330300	33 PF CH +-5%
C346	1	DD55330300	33 PF CH +-5%
C347	1	DD55330300	33 PF CH +-5%
C348	1	DK56103300	0.01 UF +-10%
C349	1	DD55330300	33 PF CH +-5%
C350	1	DD55330300	33 PF CH +-5%
C351	1	DK56103300	0.01 UF +-10%
C352	1	DD55330300	33 PF CH +-5%

REF. DESIG.	QTY	PART NO.	DESCRIPTION
C353	1	DD55750300	75 PF CH +-5%
C354	1	DD55750300	75 PF CH +-5%
C355	1	DD55750300	75 PF CH +-5%
C356	1	DD55750300	75 PF CH +-5%
C357	1	DD55750300	75 PF CH +-5%
C358	1	DD55750300	75 PF CH +-5%
C359	1	DD55750300	75 PF CH +-5%
C360	1	DD55560300	56 PF CH +-5%
C361	1	DD55560300	56 PF CH +-5%
C362	1	DD55560300	56 PF CH +-5%
C363	1	DD55560300	56 PF CH +-5%
C364	1	DD55560300	56 PF CH +-5%
C365	1	DD55560300	56 PF CH +-5%
C366	1	DD55560300	56 PF CH +-5%
C367	1	DD55560300	56 PF CH +-5%
C368	1	DD55750300	75 PF CH +-5%
C369	1	DD55750300	75 PF CH +-5%
C370	1	DD55330300	33 PF CH +-5%
C371	1	DD55330300	33 PF CH +-5%
C372	1	DD55330300	33 PF CH +-5%
C373	1	DD55330300	33 PF CH +-5%
C374	1	DD55330300	33 PF CH +-5%
C375	1	DD55330300	33 PF CH +-5%
C376	1	DD55330300	33 PF CH +-5%
C377	1	DD55330300	33 PF CH +-5%
C378	1	DD55330300	33 PF CH +-5%
C379	1	DD55330300	33 PF CH +-5%
C380	1	DK56102300	0.001 UF +-10%
C381	1	DK56102300	0.001 UF +-10%
C401	1	DK56102300	0.001 UF +-10%
C402	1	DK56102300	0.001 UF +-10%
C403	1	DK56223300	0.022 UF +-10%
C404	1	DK56102300	0.001 UF +-10%
C405	1	DK56102300	0.001 UF +-10%
C406	1	DK56102300	0.001 UF +-10%
C407	1	DK56103300	0.01 UF +-10%
C408	1	DK56223300	0.022 UF +-10%
C409	1	DD55330300	33 PF CH +-5%
C410	1	DD55220300	22 PF CH +-5%
C411	1	CT1100024R	10 PF TRIMMING CAP
C413	1	EA47600610	47 UF/6.3 V ELECT CAP
C414	1	DK56103300	0.01 UF +-10%
C415	1	DK56102300	0.001 UF +-10%
C416	1	DF16474520	0.47 UF +-10%
C417	1	DF16474520	0.47 UF +-10%
C418	1	EJ10601610	10 UF/16 V ELECT CAP
C419	1	EJ10603510	10 UF/35 V ELECT CAP
C421	1	DK56223300	0.022 UF +-10%
C422	1	EJ10601610	10 UF/16 V ELECT CAP
C423	1	DK56102300	0.001 UF +-10%
C424	1	DK56102300	0.001 UF +-10%
C425	1	DD50020300	2 PF CK +-0.25 PF
C426	1	DK56102300	0.001 UF +-10%
C427	1	DK56102300	0.001 UF +-10%
C428	1	EJ33601610	33 UF/16 V ELECT CAP
C501	1	DK56102300	0.001 UF +-10%
C502	1	DK56102300	0.001 UF +-10%
C503	1	DD50020370	2 PF SL +-0.25 PF
C504	1	DD50030370	3 PF SL +-0.25 PF
C505	1	DK56103300	0.01 UF +-10%

REF. DESIG.	QTY	PART NO.	DESCRIPTION
C506	1	DK56103300	0.01 UF +-10%
C507	1	EJ47600610	47 UF/6.3 V ELECT CAP
C508	1	DD51080330	8 PF RH +-0.5 PF
C509	1	CT1200021R	20 PF TRIMMING CAP
C510	1	DD55680370	68 PF SL +-5%
C511	1	DK56330300	33 PF CH +-10%
C512	1	DK56103300	0.01 UF +-10%
C513	1	DK56103300	0.01 UF +-10%
C514	1	DK56103300	0.01 UF +-10%
C515	1	DK56103300	0.01 UF +-10%
C516	1	DK56103300	0.01 UF +-10%
C517	1	DK56103300	0.01 UF +-10%
C518	1	DK56103300	0.01 UF +-10%
C519	1	EJ47600610	47 UF/6.3 V ELECT CAP
C520	1	DK56103300	0.01 UF +-10%
C521	1	DD55220320	22 PF PH +-5%
C522	1	CT1200021R	20 PF TRIMMING CAP
C523	1	EJ10601610	10 UF/16 V ELECT CAP
C524	1	EV22503560	2.2 UF/35 V TANTAL CAP
C525	1	EV10403560	0.1 UF/35 V TANTAL CAP
C526	1	EJ47600610	47 UF/6.3 V ELECT CAP
C527	1	DK56103300	0.01 UF +-10%
C528	1	EV10502560	1 UF/25 V TANTAL CAP
C601	1	DK56103300	0.01 UF +-10%
C602	1	DK56223300	0.022 UF +-10%
C603	1	DD50020370	2 PF SL +-0.25 PF
C604	1	DK56103300	0.01 UF +-10%
C605	1	DK56103300	0.01 UF +-10%
C606	1	DD55270370	27 PF SL +-5%
C607	1	DD55270370	27 PF SL +-5%
C608	1	EV10503560	1 UF/35 V TANTAL CAP
C609	1	EV10503560	1 UF/35 V TANTAL CAP
C610	1	DK58473300	0.047 UF +80,-20%
C611	1	DD55221370	220 PF SL +-5%
C612	1	DK56102300	0.001 UF +-10%
C613	1	DK58104200	0.1 UF +80,-20%
C614	1	EV10403560	0.1 UF/35 V TANTAL CAP
C615	1	DK58473300	0.047 UF +80,-20%
C616	1	DK56223300	0.022 UF +-10%
C617	1	DK58473300	0.047 UF +80,-20%
C618	1	EJ10601610	10 UF/16 V ELECT CAP
C619	1	DD55820370	82 PF SL +-5%
C621	1	DK56103300	0.01 UF +-10%
C622	1	DK56223300	0.022 UF +-10%
C623	1	DK56103300	0.01 UF +-10%
C624	1	DK56223300	0.022 UF +-10%
C625	1	EV47601060	47 UF/16 V TANTAL CAP
C701	1	DK56103300	0.01 UF +-10%
C702	1	DK56223300	0.022 UF +-10%
C703	1	DK56223300	0.022 UF +-10%
C704	1	DK56223300	0.022 UF +-10%
C705	1	DK56223300	0.022 UF +-10%
C706	1	DK56223300	0.022 UF +-10%
C707	1	EJ47600610	47 UF/6.3 V ELECT CAP
C709	1	DK56103300	0.01 UF +-10%
C710	1	DK56103300	0.01 UF +-10%
C711	1	EJ33601610	33 UF/16 V ELECT CAP
C712	1	DD55121370	120 PF SL +-5%
C713	1	DK56223300	0.022 UF +-10%
C714	1	EJ47600610	47 UF/6.3 V ELECT CAP

REF. DESIG.	QTY	PART NO.	DESCRIPTION
C715	1	DK56223300	0.022 UF +-10%
C716	1	DK56103300	0.01 UF +-10%
C717	1	EJ10505010	1 UF/50 V ELECT CAP
C718	1	DK56103300	0.01 UF +-10%
C719	1	EJ10505010	1 UF/50 V ELECT CAP
C720	1	DK58104200	0.1 UF +80,-20%
C721	1	EV10403560	0.1 UF/35 V TANTAL CAP
C722	1	DD55120300	12 PF CH +-5%
C801	1	EJ10601610	10 UF/16 V ELECT CAP
C802	1	EJ10601610	10 UF/16 V ELECT CAP
C803	1	EJ10601610	10 UF/16 V ELECT CAP
C804	1	DK56103300	0.01 UF +-10%
C805	1	DK56103300	0.01 UF +-10%
C806	1	EJ10505010	1 UF/50 V ELECT CAP
C807	1	EJ10601610	10 UF/16 V ELECT CAP
C808	1	EJ10505010	1 UF/50 V ELECT CAP
C809	1	EJ10601610	10 UF/16 V ELECT CAP
C810	1	EV10403560	0.1 UF/35 V TANTAL CAP
C811	1	EJ10505010	1 UF/50 V ELECT CAP
C812	1	EJ10601610	10 UF/16 V ELECT CAP
C813	1	EJ10505010	1 UF/50 V ELECT CAP
C814	1	EJ47600610	47 UF/6.3 V ELECT CAP
C901	1	DD55220330	22 PF RH +-5%
C902	1	DK56102300	0.001 UF +-10%
C903	1	DD50010370	1 PF SL +-0.25 PF
C904	1	DD50030370	3 PF SL +-0.25 PF
C905	1	DK56103300	0.01 UF +-10%
C907	1	EJ47600610	47 UF/6.3 V ELECT CAP
C908	1	DD55101300	100 PF CH +-5%
C909	1	CT1200021R	20 PF TRIMMING CAP
C910	1	DK56102300	0.001 UF +-10%
C911	1	DK56103300	0.01 UF +-10%
C912	1	DK56103300	0.01 UF +-10%
C913	1	DK56103300	0.01 UF +-10%
C914	1	DK56103300	0.01 UF +-10%
C915	1	DK56103300	0.01 UF +-10%
C916	1	DK56103300	0.01 UF +-10%
C917	1	DK56103300	0.01 UF +-10%
C918	1	EJ47600610	47 UF/6.3 V ELECT CAP
C919	1	DK56103300	0.01 UF +-10%
C920	1	DD55220360	22 PF UJ +-5%
C921	1	CT1200021R	20 PF TRIMMING CAP
C922	1	EJ10601610	10 UF/16 V ELECT CAP
C923	1	EV10503560	1 UF/35 V TANTAL CAP
C924	1	EV10403560	0.1 UF/35 V TANTAL CAP
C925	1	EJ47600610	47 UF/6.3 V ELECT CAP
C926	1	DK56103300	0.01 UF +-10%
C927	1	DD55161370	160 PF SL +-5%
C928	1	DK56102300	0.001 UF +-10%
C929	1	DK56103300	0.01 UF +-10%
C930	1	DD55270370	27 PF SL +-5%
C931	1	DD55270370	27 PF SL +-5%
C932	1	DD55470370	47 PF SL +-5%
C933	1	DK56103300	0.01 UF +-10%
C934	1	DK56223300	0.022 UF +-10%
C935	1	DK58104200	0.1 UF +80,-20%
C936	1	EJ10601610	10 UF/16 V ELECT CAP
C937	1	DK56103300	0.01 UF +-10%
C938	1	DK56103300	0.01 UF +-10%
C939	1	DK56103300	0.01 UF +-10%

REF. DESIG.	QTY	PART NO.	DESCRIPTION	REF. DESIG.	QTY	PART NO.	DESCRIPTION
C940	1	EJ10601610	10 UF/16 V ELECT CAP	P002	1	YP0690176R	10 PIN PLUG
C941	1	DD55120370	12 PF SL +-5%	P003	1	YP0690174R	6 PIN PLUG
C942	1	DD55120330	12 PF RH +-5%	P004	1	YP0690169R	2 PIN PLUG
C943	1	DD55510330	51 PF RH +-5%	P005	1	YP0690172R	3 PIN PLUG
F001	1	XU246000H2	CRYSTAL FILTER 46.0 MHZ <i>46M20A</i>	P006	1	YP0690177R	9 PIN PLUG
F301	1	FC9004002R	FERRITE CORE	P007	1	YP0690168R	7 PIN PLUG
F302	1	FC9004002R	FERRITE CORE	P008	1	YP0690175R	4 PIN PLUG
F303	1	FC9004002R	FERRITE CORE	P009	1	YP0690169R	2 PIN PLUG
F304	1	FC9004002R	FERRITE CORE	P010	1	YP0690170R	5 PIN PLUG
F601	1	XU210700H5	CRYSTAL FILTER 10.7 MHZ <i>10M15B</i>	P041	1	YP0700301R	7 PIN PLUG
F602	1	FG455304E0	CERAMIC FILTER 455 KHZ <i>CFU455E</i>	P051	1	YJ10001560	ANTENNA CONNECTOR
F701	1	FF1107070R	CERAMIC FILTER 10.7 MHZ <i>10.7MAS</i>	P052	1	YP0690173R	3 PIN PLUG
F702	1	FF1107070R	CERAMIC FILTER 10.7 MHZ <i>10.7MAS</i>	P053	1	AW0100101R	TUNER
F703	1	FG455304H0	CERAMIC FILTER 455 KHZ <i>CFU455H2</i>	P401	1	YP0690178R	8 PIN PLUG
F901	1	XU210700H1	CRYSTAL FILTER 10.7 MHZ <i>10M15A</i>	P402	1	YP0690171R	7 PIN PLUG
F902	1	FG455306HR	CERAMIC FILTER 455 KHZ <i>CFW455HT</i>	P403	1	YP0700301R	7 PIN PLUG
H001	1	QK0077804R	INTERNAL SPEAKER	P404	1	YP0700301R	7 PIN PLUG
J001	1	YJ0100294R	EXTERNAL SPEAKER JACK	P501	1	YP0700301R	7 PIN PLUG
J002	1	YJ0100294R	RECORD JACK	P502	1	YP0700301R	7 PIN PLUG
J003	1	YJ0601060R	DC 8.0 V OUTPUT JACK	P601	1	YP0700301R	7 PIN PLUG
J004	1	YJ0400156R	DC 13.8 V INPUT JACK	P602	1	YP0700301R	7 PIN PLUG
J081	1	YJ0100295R	HEADPHONE JACK	P701	1	YP0700301R	7 PIN PLUG
J101	1	YJ0700366R	9 PIN JACK	P702	1	YP0700301R	7 PIN PLUG
J102	1	YJ0700367R	11 PIN JACK	P801	1	YP0700301R	7 PIN PLUG
J103	1	YJ0700368R	14 PIN JACK	P802	1	YP0700301R	7 PIN PLUG
J104	1	YJ0700368R	14 PIN JACK	P901	1	YP0700301R	7 PIN PLUG
J105	1	YP0700302R	13 PIN PLUG	P902	1	YP0700301R	7 PIN PLUG
J106	1	YP0700303R	8 PIN PLUG	PD01	1	WZ076X0010	MAIN CONT/DISPLAY P.C.BOARD
J107	1	YP0700304R	11 PIN PLUG	PD02	1	WZ076X0020	KEY BOARD P.C.BOARD
J108	1	YP0690167R	2 PIN PLUG	PD03	1	WZ076X0030	SUB CONTROL P.C.BOARD
J301	1	YP0690180R	2 PIN PLUG	PD04	1	WZ076X0040	FIRST LOCAL P.C.BOARD
J302	1	YJ0700367R	11 PIN JACK	PD05	1	WZ076X0050	SECOND LOCAL P.C.BOARD
J303	1	YP06004730	13 PIN PLUG	PD06	1	WZ076X0060	FM-N THIRD IF P.C.BOARD
L001	1	LA5501810R	ANTENNA COIL	PD07	1	WZ076X0070	FM-W/AM P.C.BOARD
L002	1	LA5501810R	ANTENNA COIL	PD08	1	WZ076X0080	AUDIO SIGNAL SWITCHING P.C.BOARD
L003	1	LC1103015R	10 UH CHOKE COIL	PD09	1	WZ076X0090	ANALYZER P.C.BOARD
L004	1	LC1103015R	10 UH CHOKE COIL	PM01	1	WZ076X0102	MAIN P.C.BOARD
L005	1	LC2173001R	17 UH CHOKE COIL	PM02	1	WZ076X0110	VOLUME P.C.BOARD
L301	1	KA076X001R	DC/DC CONVERTER CPS1181N	PM03	1	WZ076X0120	ATTENUATOR P.C.BOARD
L302	1	LC1366001R	36 MH CHOKE COIL	PM05	1	WZ076X0140	MODE/VOLTAGE/MUTE P.C.BOARD
L303	1	LC1366001R	36 MH CHOKE COIL	Q001	1	HD2000109R	DIODE 1S2588
L304	1	LC1472009R	4.7 UH CHOKE COIL	Q002	1	HD20011050	DIODE 1S1555
L305	1	LC1472009R	4.7 UH CHOKE COIL	Q003	1	HD20011050	DIODE 1S1555
L306	1	LC1472009R	4.7 UH CHOKE COIL	Q004	1	HT305360F0	2SC536SP(F)
L307	1	LC1472009R	4.7 UH CHOKE COIL	Q005	1	HT329991ER	2SC2999E
L401	1	LC1103015R	10 UH CHOKE COIL	Q006	1	HD2000109R	DIODE 1S2588
L501	1	LA5501807R	ANTENNA COIL	Q007	1	HD2000109R	DIODE 1S2588
L502	1	LA5501811R	ANTENNA COIL	Q008	1	HD2000109R	DIODE 1S2588
L503	1	LA5501808R	ANTENNA COIL	Q009	1	HD2000109R	DIODE 1S2588
L504	1	LC1103015R	10 UH CHOKE COIL	Q010	1	HT305360F0	2SC536SP(F)
L701	1	LC1682015R	6.8 UH CHOKE COIL	Q011	1	BA2000605R	DIGITAL TRANSISTOR RN1206
L702	1	LC11050090	1000 UH CHOKE COIL	Q012	1	BA2000705R	DIGITAL TRANSISTOR RN1207
L901	1	LA5501807R	ANTENNA COIL	Q013	1	HD20011050	DIODE 1S1555
L902	1	LA5501811R	ANTENNA COIL	Q014	1	HT305360F0	2SC536SP(F)
L903	1	LA5501808R	ANTENNA COIL	Q016	1	HT310201AR	2SC1020(Y)
L904	1	LC1103015R	10 UH CHOKE COIL	Q017	1	HC9102520R	REGULATOR M5236L
L905	1	LA5501809R	ANTENNA COIL	Q018	1	HD2000822R	DIODE SR1M-4
L906	1	LI5501803R	I.F.T. 455 KHZ	Q019	1	HC1024005R	REGULATOR TA78005AP
L907	1	LC1222008R	0.22 UH CHOKE COIL	Q020	1	BA1000605R	DIGITAL TRANSISTOR RN2206
P001	1	YP0690175R	4 PIN PLUG	Q021	1	BA1000605R	DIGITAL TRANSISTOR RN2206

REF. DESIG.	QTY	PART NO.	DESCRIPTION
Q022	1	BA1000605R	DIGITAL TRANSISTOR RN2206
Q023	1	HD20011050	DIODE 1S1555
Q024	1	HD20011050	DIODE 1S1555
Q025	1	HD20011050	DIODE 1S1555
Q026	1	HD20011050	DIODE 1S1555
Q027	1	HC1023905R	AF POWER AMP TA7220AP
Q028	1	HD2000822R	DIODE SR1M-4
Q041	1	BA1000605R	DIGITAL TRANSISTOR RN2206
Q042	1	BA1000605R	DIGITAL TRANSISTOR RN2206
Q043	1	BA1000605R	DIGITAL TRANSISTOR RN2206
Q044	1	BA1000605R	DIGITAL TRANSISTOR RN2206
Q045	1	BA2000705R	DIGITAL TRANSISTOR RN1207
Q051	1	HZ2002405R	DIODE 1SS269
Q052	1	HX327121C0	2SC2712(Y)
Q101	1	HC1008320R	MAIN MICROPROCESSOR M50932-116FP
Q102	1	HC1008301R	INTERFACE HD6321-FP
Q103	1	HC1003818R	RAM MB8418-20L
Q104	1	HC700420Z0	INVERTER HD74HC04FP
Q105	1	HC405300Z0	SELECTOR HD14053BFP
Q106	1	HC10182050	AND GATE TC4S81F
Q107	1	HC1008601R	COMMON DRIVER HD44105H
Q108	1	HC1008701R	COLUMN DRIVER HD44102CH
Q109	1	HC1008701R	COLUMN DRIVER HD44102CH
Q110	1	HC1025503R	VOLTAGE DIVIDER LA5311M
Q111	1	BA20001050	DIGITAL TRANSISTOR RN1409
Q112	1	BA1000705R	DIGITAL TRANSISTOR RN2406
Q113	1	HX113621AR	2SA1362(GR)
Q114	1	HX329821AR	2SC2982(B)
Q115	1	HZ20009050	DIODE 1SS184
Q116	1	HZ20012050	DIODE 1SS272
Q117	1	HZ20008050	DIODE 1SS181
Q118	1	HZ2002305R	DIODE 1SS193
Q119	1	KZ0500200R	LCD DISPLAY
Q201	1	HC1008801R	SELECTOR HD14051BFP
Q202	1	HZ20012050	DIODE 1SS272
Q203	1	HZ20012050	DIODE 1SS272
Q204	1	HZ20012050	DIODE 1SS272
Q205	1	HZ2002305R	DIODE 1SS193
Q207	1	HZ2002305R	DIODE 1SS193
Q210	1	HZ2002305R	DIODE 1SS193 [C]
Q301	1	HC1008001R	SUB MICROPROCESSOR HD6301Y0G55
Q302	1	HC1002426R	A/D CONVERTER MSM5204ARS
Q303	1	HC713900Z0	ADDRESS SELECTOR HD74HC238
Q304	1	HC700420Z0	INVERTER HD74HC04FP
Q305	1	HC10010530	VOLTAGE DETECTOR S-8054ALB
Q306	1	HC10053370	IC TL7705ACPS
Q307	1	HC10182050	AND GATE TC4S81F
Q308	1	HC1008220R	REGULATOR M5231TL
Q309	1	HC1023705R	REGULATOR TA78008AP
Q310	1	HC1023805R	REGULATOR TA78006AP
Q311	1	HT328551AR	2SC2855(Y)
Q312	1	HC1008201R	HA17431P
Q313	1	HC1008201R	HA17431P
Q314	1	HD30036010	ZENNER DIODE HZ6A-1
Q315	1	HC1002532R	PHOTO COUPLER PC317
Q316	1	BA2000505R	DIGITAL TRANSISTOR RN1406
Q401	1	HC1201006R	AMP UPC1676G
Q402	1	HC10101060	PRESCALER IC UPB566AC
Q403	1	BA2000505R	DIGITAL TRANSISTOR RN1406
Q404	1	HC1003717R	PLL IC MC145158-P1

REF. DESIG.	QTY	PART NO.	DESCRIPTION
Q406	1	HC10014090	L.P.F NJM4558S
Q407	1	HC723801FR	BAND SELECTOR HD74HC238
Q408	1	BA2000505R	DIGITAL TRANSISTOR RN1406
Q409	1	BA2000505R	DIGITAL TRANSISTOR RN1406
Q410	1	BA2000505R	DIGITAL TRANSISTOR RN1406
Q411	1	BA2000505R	DIGITAL TRANSISTOR RN1406
Q412	1	BA1000705R	DIGITAL TRANSISTOR RN2406
Q413	1	BA1000705R	DIGITAL TRANSISTOR RN2406
Q414	1	BA1000705R	DIGITAL TRANSISTOR RN2406
Q415	1	BA1000705R	DIGITAL TRANSISTOR RN2406
Q416	1	HX3342901R	2SC3429
Q417	1	HX3342901R	2SC3429
Q501	1	HC10097050	MIX/AMP/VCO TA7358P
Q502	1	HD40006090	DIODE 1S2139B
Q503	1	HC1008120R	PLL IC M54927P
Q504	1	HD20011050	DIODE 1S1555
Q505	1	HX327121C0	2SC2712(Y)
Q506	1	HX327121C0	2SC2712(Y)
Q601	1	HX327141B0	2SC2714(O)
Q602	1	HC10007420	THIRD IF IC TK10420D
Q603	1	HD20011050	DIODE 1S1555
Q604	1	HD10002020	DIODE 0A90A
Q605	1	HD10002020	DIODE 0A90A
Q606	1	HX327141B0	2SC2714(O)
Q701	1	HX327141B0	2SC2714(O)
Q702	1	HC1009421R	FM-W/AM DETECTOR IC BA4220B
Q703	1	HX327141B0	2SC2714(O)
Q704	1	HX327121C0	2SC2712(Y)
Q705	1	HX327121C0	2SC2712(Y)
Q801	1	HD20011050	DIODE 1S1555
Q802	1	HD20011050	DIODE 1S1555
Q803	1	HD20011050	DIODE 1S1555
Q804	1	HX327121C0	2SC2712(Y)
Q805	1	HD20011050	DIODE 1S1555
Q806	1	HD20011050	DIODE 1S1555
Q807	1	HD20011050	DIODE 1S1555
Q808	1	HX327121C0	2SC2712(Y)
Q809	1	HD10002020	DIODE 0A90A
Q810	1	HD10002020	DIODE 0A90A
Q811	1	HX327121C0	2SC2712(Y)
Q901	1	HC10097050	MIX/AMP/VCO TA7358P
Q902	1	HD40006090	VARI-CAP DIODE 1S2139B
Q903	1	HC1008120R	PLL IC M54927P
Q904	1	HD20011050	DIODE 1S1555
Q905	1	HX327121C0	2SC2712(Y)
Q906	1	HX327121C0	2SC2712(Y)
Q907	1	HX327141B0	2SC2714(O)
Q908	1	HX327141B0	2SC2714(O)
Q909	1	HC1023605R	AMP/DETECTOR TA7303P
Q910	1	HD20011050	DIODE 1S1555
R001	1	GD05102140	1 KOHM 1/4W +-5%
R002	1	GD05222140	2.2 KOHM 1/4W +-5%
R003	1	GD05103140	10 KOHM 1/4W +-5%
R004	1	GD05000140	0 OHM 1/4W
R005	1	GD05102160	1 KOHM 1/6W +-5%
R006	1	GD05334160	330 KOHM 1/6W +-5%
R007	1	GD05471140	470 OHM 1/4W +-5%
R008	1	GD05151160	150 OHM 1/6W +-5%
R009	1	GD05222160	2.2 KOHM 1/6W +-5%
R010	1	GD05221160	220 OHM 1/6W +-5%

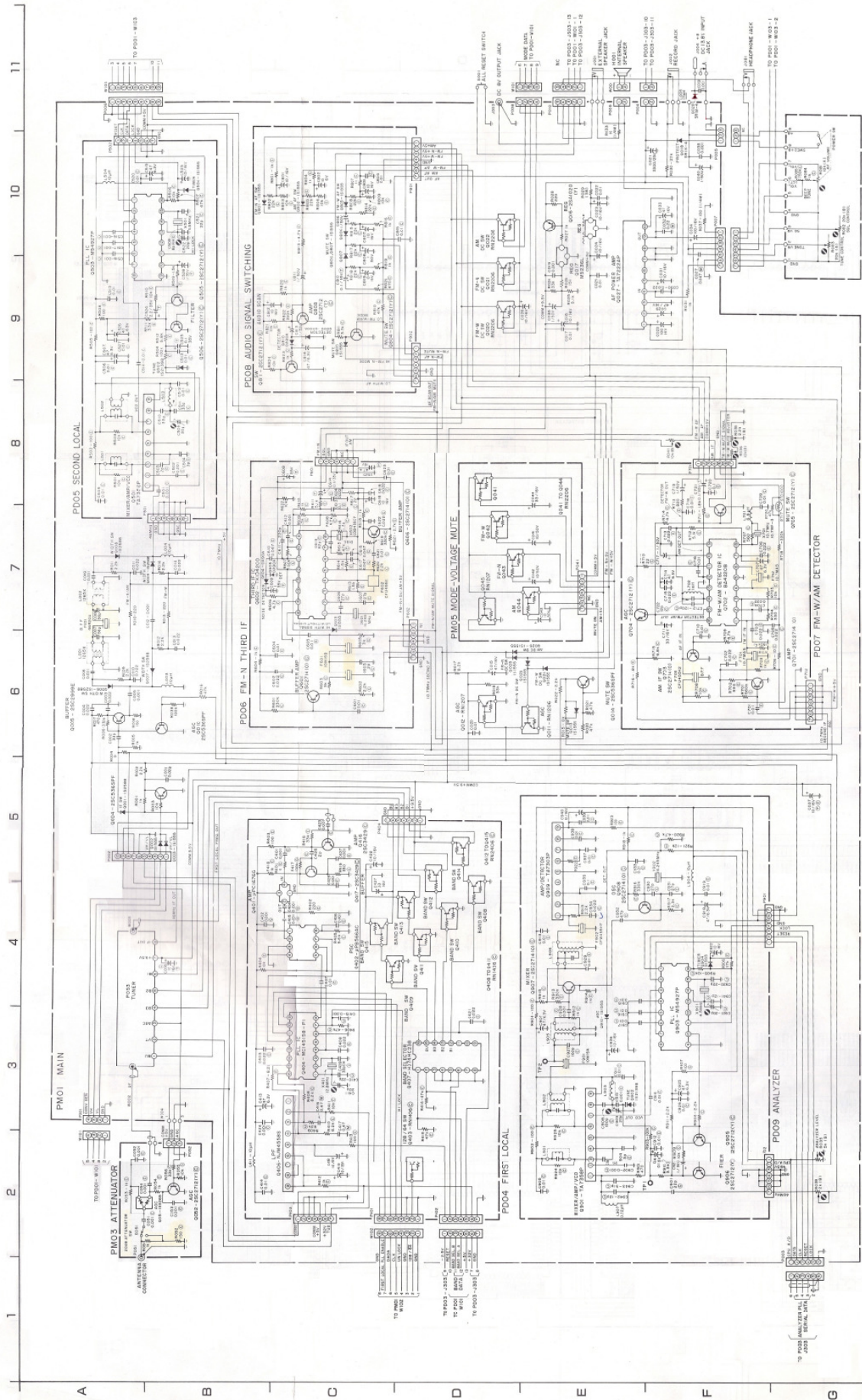
REF. DESIG.	QTY	PART NO.	DESCRIPTION
R011	1	GD05222160	2.2 KOHM 1/6W +-5%
R012	1	GD05222160	2.2 KOHM 1/6W +-5%
R013	1	GD05221160	220 OHM 1/6W +-5%
R014	1	GD05222160	2.2 KOHM 1/6W +-5%
R015	1	GD05103160	10 KOHM 1/6W +-5%
R016	1	GD05473160	47 KOHM 1/6W +-5%
R017	1	GD05822160	8.2 KOHM 1/6W +-5%
R018	1	GD05333160	33 KOHM 1/6W +-5%
R020	1	GD05473160	47 KOHM 1/6W +-5%
R021	1	GD05473160	47 KOHM 1/6W +-5%
R022	1	GD05222160	2.2 KOHM 1/6W +-5%
R024	1	GD05333160	33 KOHM 1/6W +-5%
R025	1	GD0551216R	5.1 KOHM 1/6W +-5%
R026	1	GD05153160	15 KOHM 1/6W +-5%
R027	1	GD05102160	1 KOHM 1/6W +-5%
R028	1	GD05221160	220 OHM 1/6W +-5%
R029	1	KR076X001R	180 OHM 3W
R030	1	GD05223160	22 KOHM 1/6W +-5%
R031	1	GD05102140	1 KOHM 1/4W +-5%
R033	1	GD05160140	16 OHM 1/4W +-5%
R034	1	RA02220700	VARIABLE RESISTOR 2.2 KOHM
R035	1	RA0502040R	VARIABLE RESISTOR 5 KOHM
R036	1	RA0103073R	VARIABLE RESISTOR 10 KOHM
R037	1	GD05101140	100 OHM 1/4W +-5%
R038	1	GD05104160	100 KOHM 1/6W +-5%
R039	1	RA0202027R	VARIABLE RESISTOR 2 KOHM
R041	1	RA02230900	VARIABLE RESISTOR 20 KOHM
R051	1	GD05102160	1 KOHM 1/6W +-5%
R052	1	NI05151110	150 OHM 1/10W +-5%
R053	1	NI05102110	1 KOHM 1/10W +-5%
R054	1	NI05102110	1 KOHM 1/10W +-5%
R055	1	NI05103110	10 KOHM 1/10W +-5%
R056	1	NI05333110	33 KOHM 1/10W +-5%
R081	1	BR1103002R	ROTARY CHANNEL SELECTOR
R082	1	RB0203027R	VARIABLE RESISTOR 20 KOHM
R083	1	RB0203028R	VARIABLE RESISTOR 20 KOHM
R084	1	NI05102110	1 KOHM 1/10W +-5%
R085	1	NI0575411R	750 OHM 1/10W +-5%
R101	1	BW0510413R	RESISTOR ARRAY HM16B104J
R102	1	RA01030760	VARIABLE RESISTOR 10 KOHM
R103	1	HH0000301R	THERMISTOR TMD1510H
R104	1	GJ05622020	6.2 KOHM 2W +-5%
R105	1	NI05221110	220 OHM 1/10W +-5%
R106	1	NI05104110	100 KOHM 1/10W +-5%
R107	1	NI05472110	4.7 KOHM 1/10W +-5%
R108	1	NI05104110	100 KOHM 1/10W +-5%
R109	1	NI0268211R	6.8 KOHM 1/10W +-2%
R110	1	NI0268211R	6.8 KOHM 1/10W +-2%
R111	1	NI0268211R	6.8 KOHM 1/10W +-2%
R112	1	NI0215211R	1.5 KOHM 1/10W +-2%
R113	1	NI05104110	100 KOHM 1/10W +-5%
R114	1	NI05753110	75 KOHM 1/10W +-5%
R115	1	NI05105110	1 MOHM 1/10W +-5%
R116	1	NI05104110	100 KOHM 1/10W +-5%
R117	1	NI05104110	100 KOHM 1/10W +-5%
R118	1	NI05104110	100 KOHM 1/10W +-5%
R119	1	NI05102110	1 KOHM 1/10W +-5%
R120	1	NI05103110	10 KOHM 1/10W +-5%
R121	1	NI05823110	82 KOHM 1/10W +-5%
R122	1	NI05474110	470 KOHM 1/10W +-5%

REF. DESIG.	QTY	PART NO.	DESCRIPTION
R123	1	NI05474110	470 KOHM 1/10W +-5%
R124	1	NI05883110	68 KOHM 1/10W +-5%
R125	1	NI05103110	10 KOHM 1/10W +-5%
R126	1	NI05474110	470 KOHM 1/10W +-5%
R127	1	NI05104110	100 KOHM 1/10W +-5%
R129	1	NI0239311R	39 KOHM 1/10W +-2%
R130	1	NI05270110	27 OHM 1/10W +-5%
R131	1	NI05270110	27 OHM 1/10W +-5%
R132	1	NI05270110	27 OHM 1/10W +-5%
R133	1	NI05270110	27 OHM 1/10W +-5%
R134	1	NI05270110	27 OHM 1/10W +-5%
R135	1	NI05270110	27 OHM 1/10W +-5%
R136	1	NI01683110	68 KOHM 1/10W +-1%
R137	1	NI05272110	2.7 KOHM 1/10W +-5%
R138	1	NI05753110	75 KOHM 1/10W +-5%
R140	1	NI05473110	47 KOHM 1/10W +-5%
R141	1	NI05333110	33 KOHM 1/10W +-5%
R142	1	NI05104110	100 KOHM 1/10W +-5%
R301	1	BW05104040	RESISTOR ARRAY 100 KOHM 1/8W
R302	1	BW05104080	RESISTOR ARRAY 100 KOHM 1/8W
K303	1	GD05331140	330 OHM 1/4W +-5%
R304	1	GD05103140	10 KOHM 1/4W +-5%
R305	1	GD05752140	7.5 KOHM 1/4W +-5%
R306	1	KR076X002R	59 KOHM 1/4W +-1%
R307	1	GD05332140	3.3 KOHM 1/4W +-5%
R308	1	GD05681140	680 OHM 1/4W +-5%
R309	1	GD05102140	1 KOHM 1/4W +-5%
R310	1	GD05103140	10 KOHM 1/4W +-5%
R311	1	GD05433140	43 KOHM 1/4W +-5%
R312	1	NI05103110	10 KOHM 1/10W +-5%
R313	1	NI05104110	100 KOHM 1/10W +-5%
R314	1	NI05104110	100 KOHM 1/10W +-5%
R315	1	NI05104110	100 KOHM 1/10W +-5%
R316	1	NI05104110	100 KOHM 1/10W +-5%
R317	1	GD05471140	470 OHM 1/4W +-5%
R318	1	GJ05332010	3.3 KOHM 1W +-5%
R401	1	NI05000110	0 OHM 1/10W
R402	1	NI05221110	220 OHM 1/10W +-5%
R403	1	NI05101110	100 OHM 1/10W +-5%
R404	1	NI05103110	10 KOHM 1/10W +-5%
R405	1	NI05562110	5.6 KOHM 1/10W +-5%
R406	1	NI05473110	47 KOHM 1/10W +-5%
R407	1	NI05822110	8.2 KOHM 1/10W +-5%
R408	1	NI05822110	8.2 KOHM 1/10W +-5%
R409	1	NI05822110	8.2 KOHM 1/10W +-5%
R410	1	NI05822110	8.2 KOHM 1/10W +-5%
R411	1	NI05103110	10 KOHM 1/10W +-5%
R412	1	NI05102110	1 KOHM 1/10W +-5%
R413	1	NI05101110	100 OHM 1/10W +-5%
R414	1	NI05473110	47 KOHM 1/10W +-5%
R415	1	NI05473110	47 KOHM 1/10W +-5%
R416	1	NI05333110	33 KOHM 1/10W +-5%
R417	1	NI05104110	100 KOHM 1/10W +-5%
R418	1	NI05102110	1 KOHM 1/10W +-5%
R419	1	NI05331110	330 OHM 1/10W +-5%
R501	1	NI05103110	10 KOHM 1/10W +-5%
R502	1	NI05101110	100 OHM 1/10W +-5%
R503	1	NI05103110	10 KOHM 1/10W +-5%
R504	1	NI05104110	100 KOHM 1/10W +-5%
R505	1	NI05101110	100 OHM 1/10W +-5%

REF. DESIG.	QTY	PART NO.	DESCRIPTION
R506	1	NI05103110	10 KOHM 1/10W +-5%
R507	1	NI05473110	47 KOHM 1/10W +-5%
R508	1	NI05101110	100 OHM 1/10W +-5%
R509	1	NI05152110	1.5 KOHM 1/10W +-5%
R510	1	NI05103110	10 KOHM 1/10W +-5%
R511	1	NI05332110	3.3 KOHM 1/10W +-5%
R512	1	NI05682110	6.8 KOHM 1/10W +-5%
R601	1	NI05334110	330 KOHM 1/10W +-5%
R602	1	NI05222110	2.2 KOHM 1/10W +-5%
R603	1	NI0530211R	3 KOHM 1/10W +-5%
R604	1	NI05102110	1 KOHM 1/10W +-5%
R605	1	NI0530211R	3 KOHM 1/10W +-5%
R606	1	NI05472110	4.7 KOHM 1/10W +-5%
R607	1	NI05154110	150 KOHM 1/10W +-5%
R608	1	NI05472110	4.7 KOHM 1/10W +-5%
R609	1	NI05152110	1.5 KOHM 1/10W +-5%
R610	1	NI05102110	1 KOHM 1/10W +-5%
R611	1	NI0551211R	5.1 KOHM 1/10W +-5%
R613	1	NI05152110	1.5 KOHM 1/10W +-5%
R614	1	NI05152110	1.5 KOHM 1/10W +-5%
R615	1	NI05473110	47 KOHM 1/10W +-5%
R616	1	NI05152110	1.5 KOHM 1/10W +-5%
R617	1	NI05220110	22 OHM 1/10W +-5%
R618	1	NI05102110	1 KOHM 1/10W +-5%
R619	1	NI05334110	330 KOHM 1/10W +-5%
R620	1	NI05222110	2.2 KOHM 1/10W +-5%
R621	1	NI05272110	2.7 KOHM 1/10W +-5%
R622	1	NI05103110	10 KOHM 1/10W +-5%
R701	1	NI05564110	560 KOHM 1/10W +-5%
R702	1	NI05331110	330 OHM 1/10W +-5%
R703	1	NI05102110	1 KOHM 1/10W +-5%
R704	1	NI05331110	330 OHM 1/10W +-5%
R705	1	NI05103110	10 KOHM 1/10W +-5%
R706	1	NI05100110	10 OHM 1/10W +-5%
R707	1	NI05561110	560 OHM 1/10W +-5%
R708	1	NI05103110	10 KOHM 1/10W +-5%
R709	1	NI05472110	4.7 KOHM 1/10W +-5%
R710	1	NI05220110	22 OHM 1/10W +-5%
R711	1	NI05182110	1.8 KOHM 1/10W +-5%
R712	1	NI0551211R	5.1 KOHM 1/10W +-5%
R713	1	NI05821110	820 OHM 1/10W +-5%
R714	1	NI05472110	4.7 KOHM 1/10W +-5%
R715	1	NI05682110	6.8 KOHM 1/10W +-5%
R716	1	NI05182110	1.8 KOHM 1/10W +-5%
R717	1	HH0001003R	THERMISTOR STD1000
R718	1	GD05334160	330 KOHM 1/6W +-5%
R719	1	NI05154110	150 KOHM 1/10W +-5%
R720	1	NI05473110	47 KOHM 1/10W +-5%
R801	1	NI05102110	1 KOHM 1/10W +-5%
R802	1	NI05223110	22 KOHM 1/10W +-5%
R803	1	NI05103110	10 KOHM 1/10W +-5%
R804	1	NI05102110	1 KOHM 1/10W +-5%
R805	1	NI05223110	22 KOHM 1/10W +-5%
R806	1	NI05103110	10 KOHM 1/10W +-5%
R807	1	NI05102110	1 KOHM 1/10W +-5%
R808	1	NI05223110	22 KOHM 1/10W +-5%
R809	1	NI05103110	10 KOHM 1/10W +-5%
R810	1	NI05473110	47 KOHM 1/10W +-5%
R811	1	NI05332110	3.3 KOHM 1/10W +-5%
R813	1	NI05472110	4.7 KOHM 1/10W +-5%

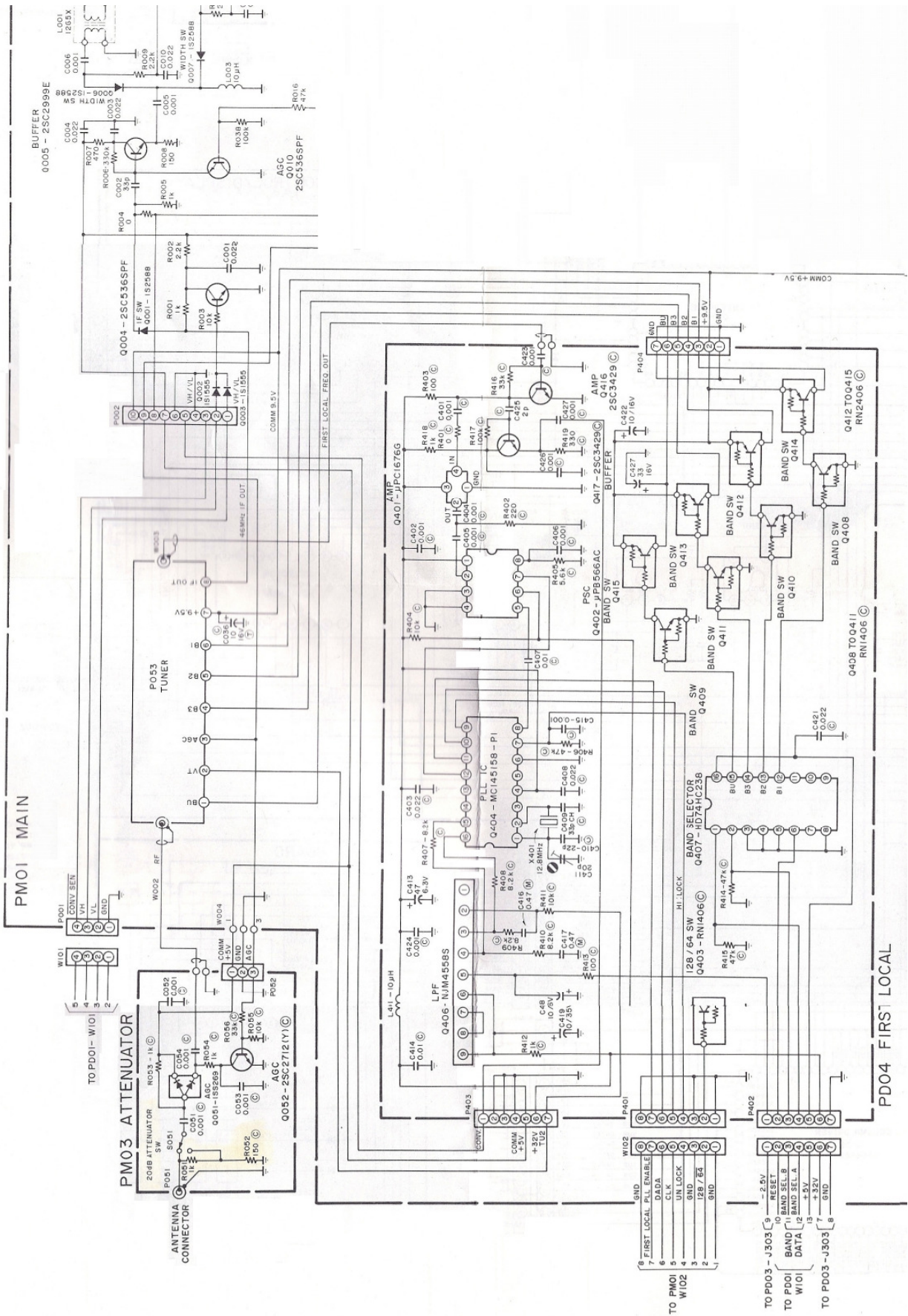
REF. DESIG.	QTY	PART NO.	DESCRIPTION
R814	1	NI05223110	22 KOHM 1/10W +-5%
R815	1	NI05223110	22 KOHM 1/10W +-5%
R816	1	NI05102110	1 KOHM 1/10W +-5%
R817	1	NI05223110	22 KOHM 1/10W +-5%
R818	1	NI05223110	22 KOHM 1/10W +-5%
R819	1	NI05102110	1 KOHM 1/10W +-5%
R820	1	NI05102110	1 KOHM 1/10W +-5%
R821	1	NI05103110	10 KOHM 1/10W +-5%
R822	1	NI05394110	390 KOHM 1/10W +-5%
R823	1	NI05102110	1 KOHM 1/10W +-5%
R824	1	NI05103110	10 KOHM 1/10W +-5%
R825	1	NI05471110	470 OHM 1/10W +-5%
R901	1	NI05471110	470 OHM 1/10W +-5%
R902	1	NI05101110	100 OHM 1/10W +-5%
R903	1	NI05104110	100 KOHM 1/10W +-5%
R904	1	NI05101110	100 OHM 1/10W +-5%
R905	1	NI05103110	10 KOHM 1/10W +-5%
R906	1	NI05473110	47 KOHM 1/10W +-5%
R907	1	NI05101110	100 OHM 1/10W +-5%
R908	1	NI05222110	2.2 KOHM 1/10W +-5%
R909	1	NI05103110	10 KOHM 1/10W +-5%
R910	1	NI05332110	3.3 KOHM 1/10W +-5%
R911	1	NI05222110	2.2 KOHM 1/10W +-5%
R912	1	NI05102110	1 KOHM 1/10W +-5%
R913	1	NI05334110	330 KOHM 1/10W +-5%
R914	1	NI05102110	1 KOHM 1/10W +-5%
R915	1	NI05102110	1 KOHM 1/10W +-5%
R916	1	NI05334110	330 KOHM 1/10W +-5%
R917	1	NI05332110	3.3 KOHM 1/10W +-5%
R918	1	NI05102110	1 KOHM 1/10W +-5%
R919	1	NI05222110	2.2 KOHM 1/10W +-5%
R920	1	NI05472110	4.7 KOHM 1/10W +-5%
R921	1	NI05123110	12 KOHM 1/10W +-5%
R922	1	NI05102110	1 KOHM 1/10W +-5%
R923	1	NI05101110	100 OHM 1/10W +-5%
R924	1	NI05103110	10 KOHM 1/10W +-5%
R925	1	NI05103110	10 KOHM 1/10W +-5%
S001	1	SP0101131R	ALL RESET SWITCH
S051	1	SS0202114R	SLIDE SWITCH
S101	1	SR0125001R	ROTARY CHANNEL SELECTOR
TP01	1	YL0901033R	TERMINAL
TP02	1	YL0901033R	TERMINAL
V101	1	IN1008093R	LAMP HRS-4120A
V102	1	IN1008093R	LAMP HRS-4120A
W001	1	YB0014060R	CONNECTIVE CORD
W002	1	YB0015100R	CONNECTIVE CORD
W003	1	YB0004023R	CONNECTIVE CORD
W004	1	YB0013056R	CONNECTIVE CORD
W019	1	YU0108001R	LEAD
W103	1	YB0016067R	11 PIN CONNECTIVE CORD
W201	1	WE076X0140	KEYBOARD-SUB FLEXIBLE P.C. BOARD
W301	1	WE076X0110	MAIN-SUB FLEXIBLE P.C. BOARD
W302	1	WE076X0120	MAIN-SUB FLEXIBLE P.C. BOARD
W303	1	WE076X0130	MAIN-SUB FLEXIBLE P.C. BOARD
X101	1	FQ0400404R	CERAMIC RESONATOR 4.0 MHZ
X301	1	FQ04004010	CERAMIC RESONATOR 4.0 MHZ
X401	1	JX1200311R	CRYSTAL 12.8 MHZ
X501	1	JX0400610R	CRYSTAL 4.5MHZ
X601	1	JX1000111R	CRYSTAL 10.245MHZ
X602	1	FH455301B0	CERAMIC DISCRI 455 KHZ
X701	1	FH107501BR	CERAMIC DISCRI 10.7 MHZ
X901	1	JX0400610R	CRYSTAL 4.5MHZ
X902	1	JX1000111R	CRYSTAL 10.245MHZ

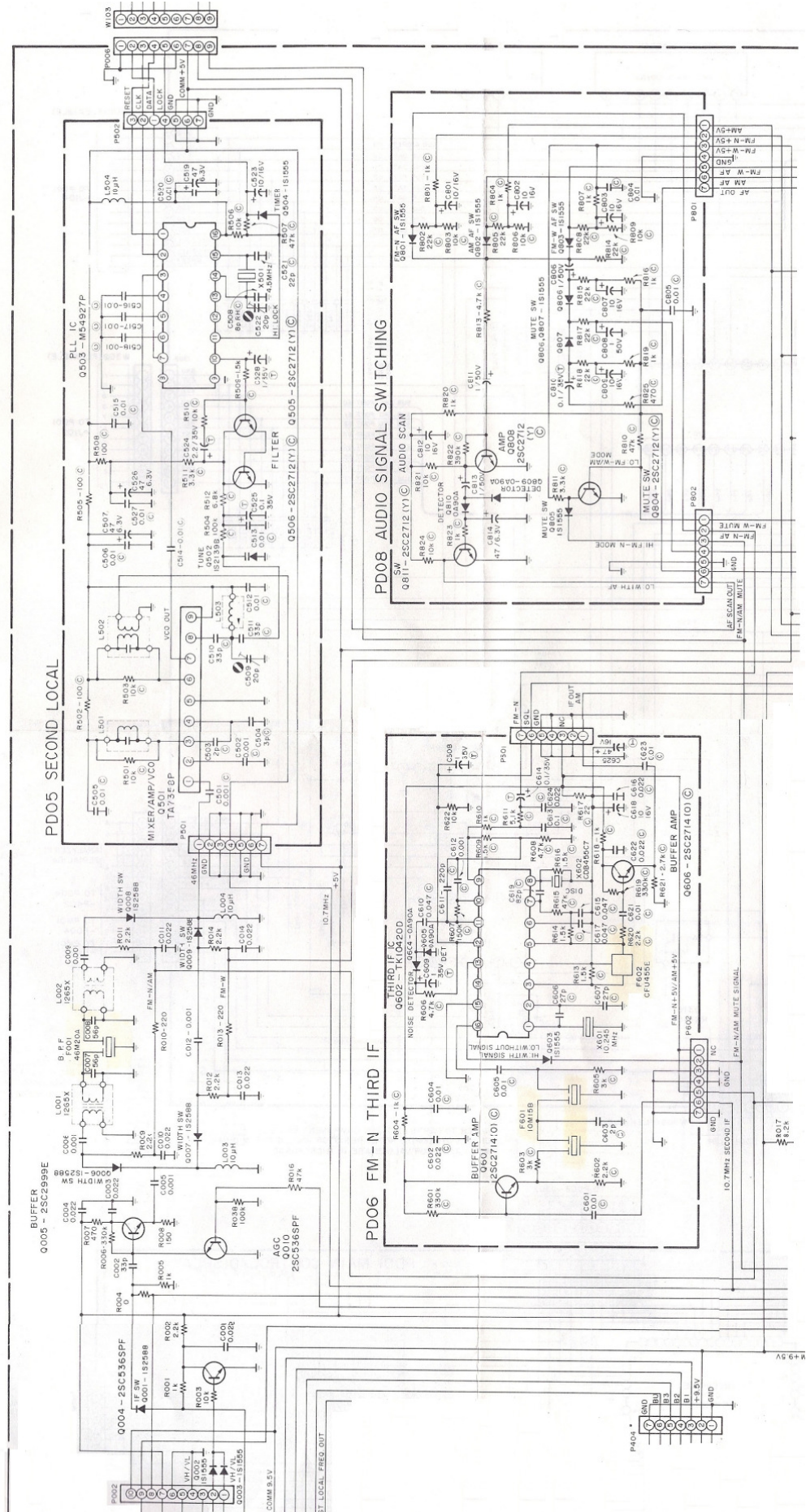
7. SCHEMATIC DIAGRAM

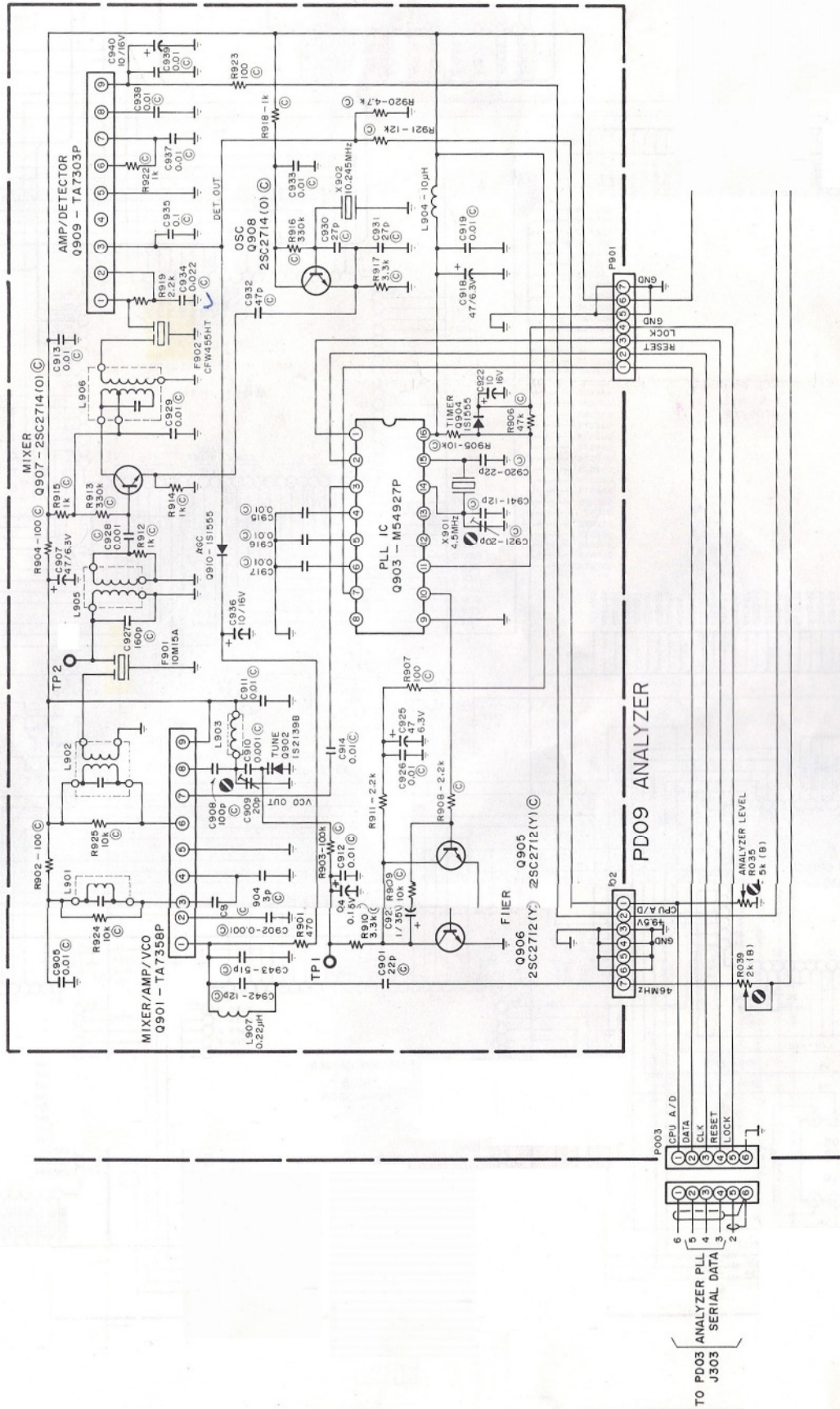


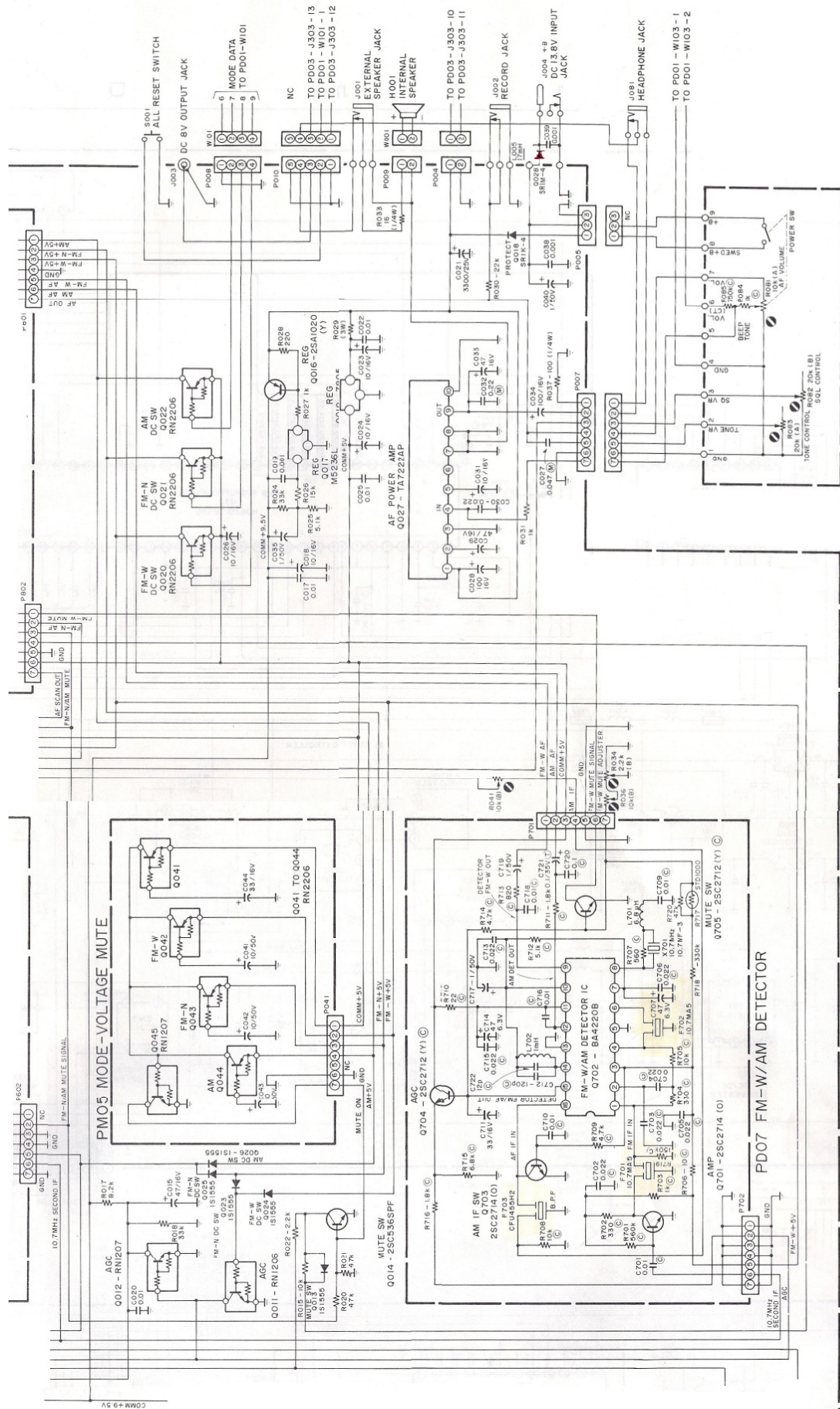
NOTE: 1. VALUES IN PARENTS ARE APPROXIMATE VALUES.
 2. VALUES IN CHEVRONS ARE DESIGN VALUES.
 3. VALUES IN SQUARES ARE COMPONENT VALUES IN
 INTERFACES.

PM03 VOLUME 9 Δ <0007>

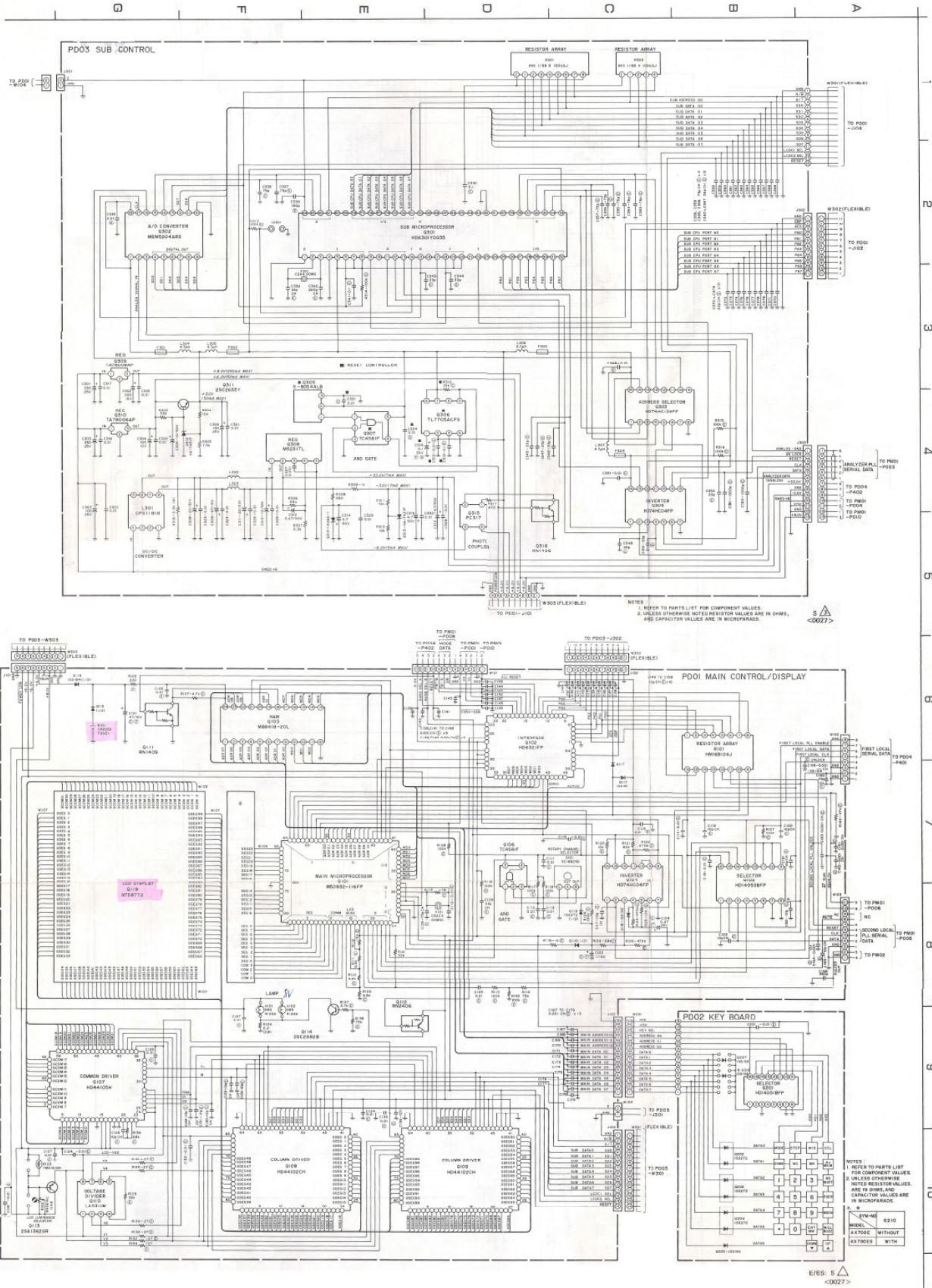


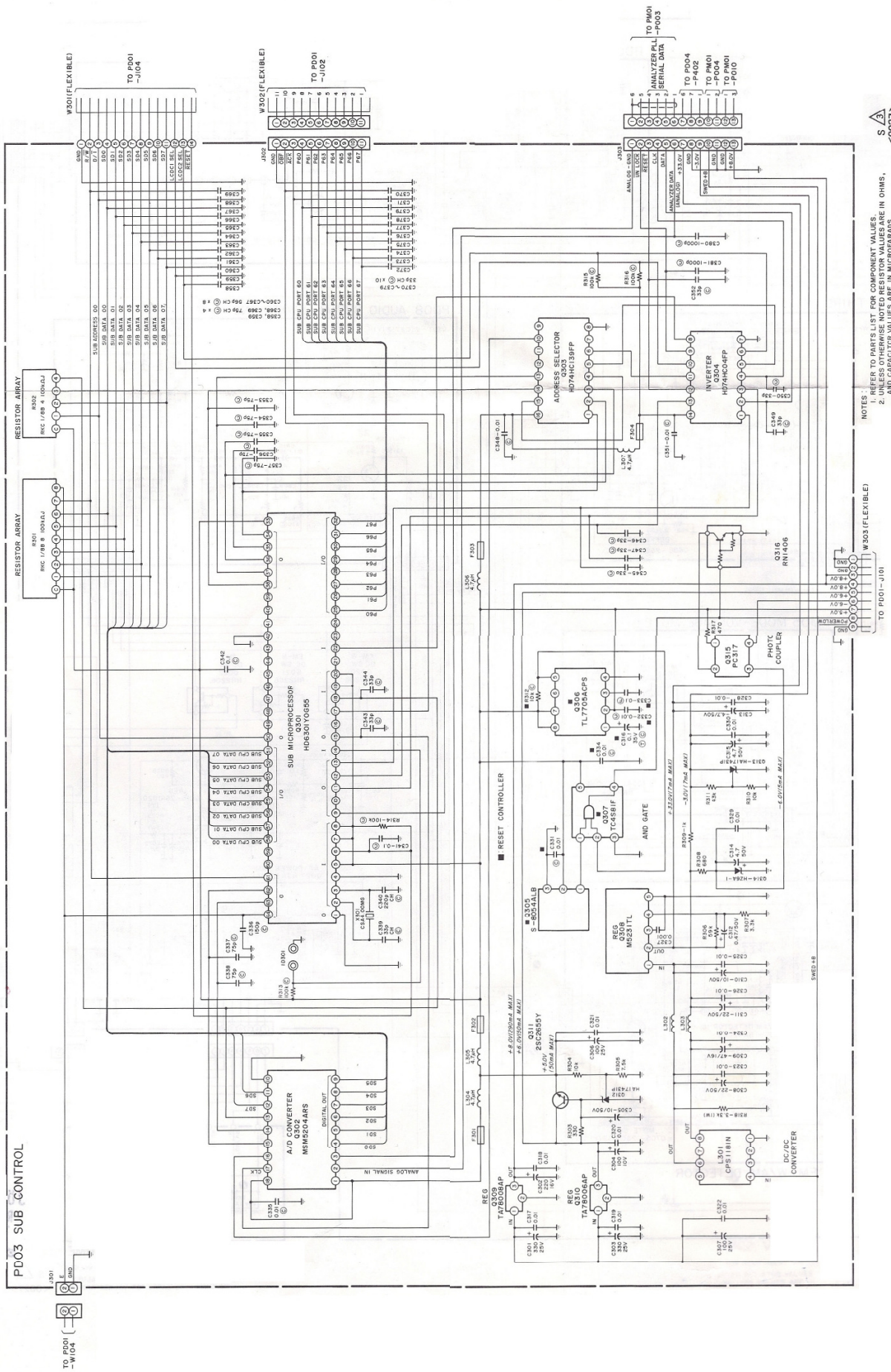






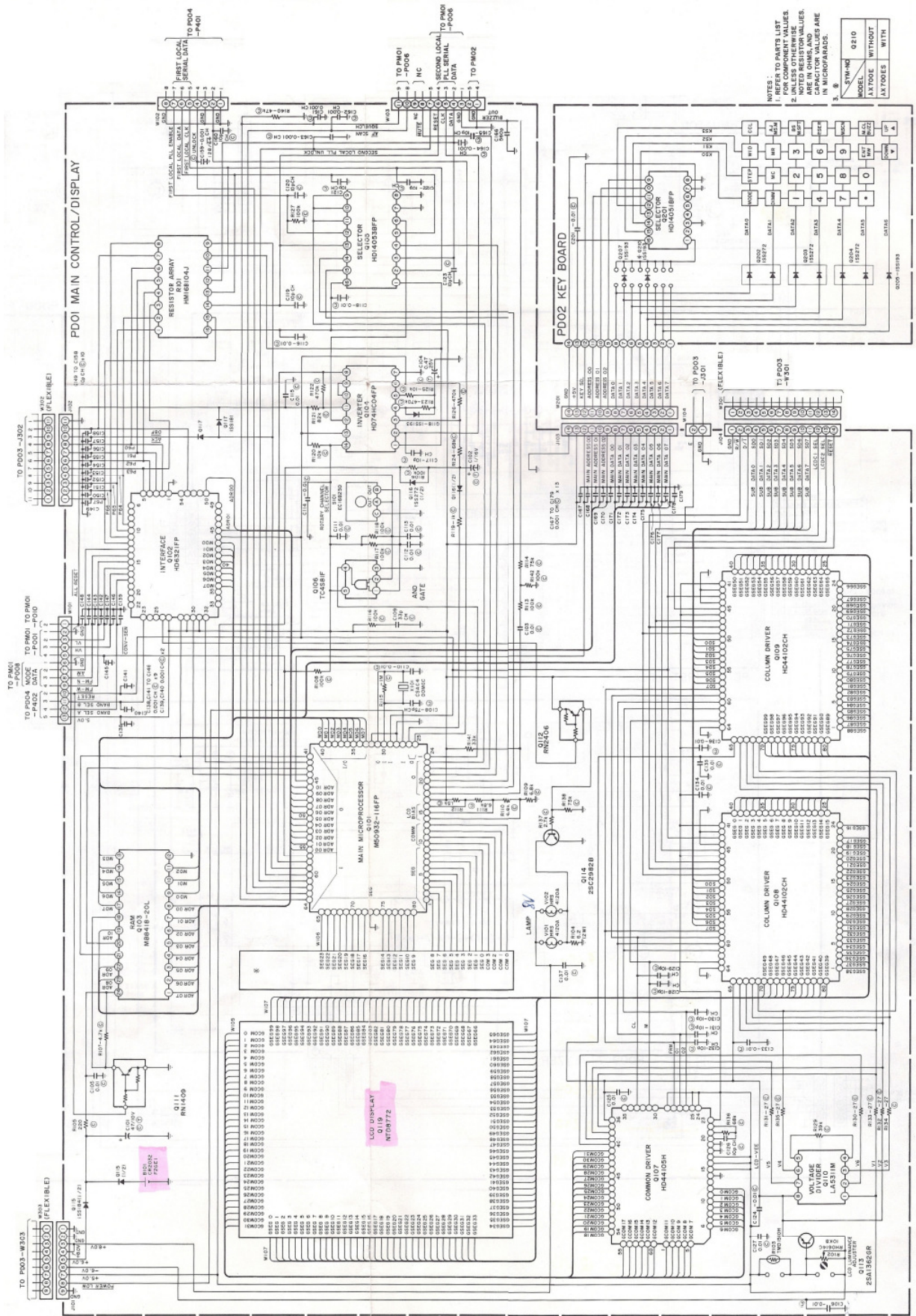
NOTES:
 1. REFER TO PARTS LIST FOR COMPONENT VALUES.
 2. UNLESS OTHERWISE NOTED, RESISTOR VALUES ARE IN OHMS, AND CAPACITOR VALUES ARE IN MICROFARADS.





S/A
 <0027 >

NOTES
 1. REFER TO PARTS LIST FOR COMPONENT VALUES.
 2. UNLESS OTHERWISE NOTED RESISTOR VALUES ARE IN OHMS,
 AND CAPACITOR VALUES ARE IN MICROFARADS.

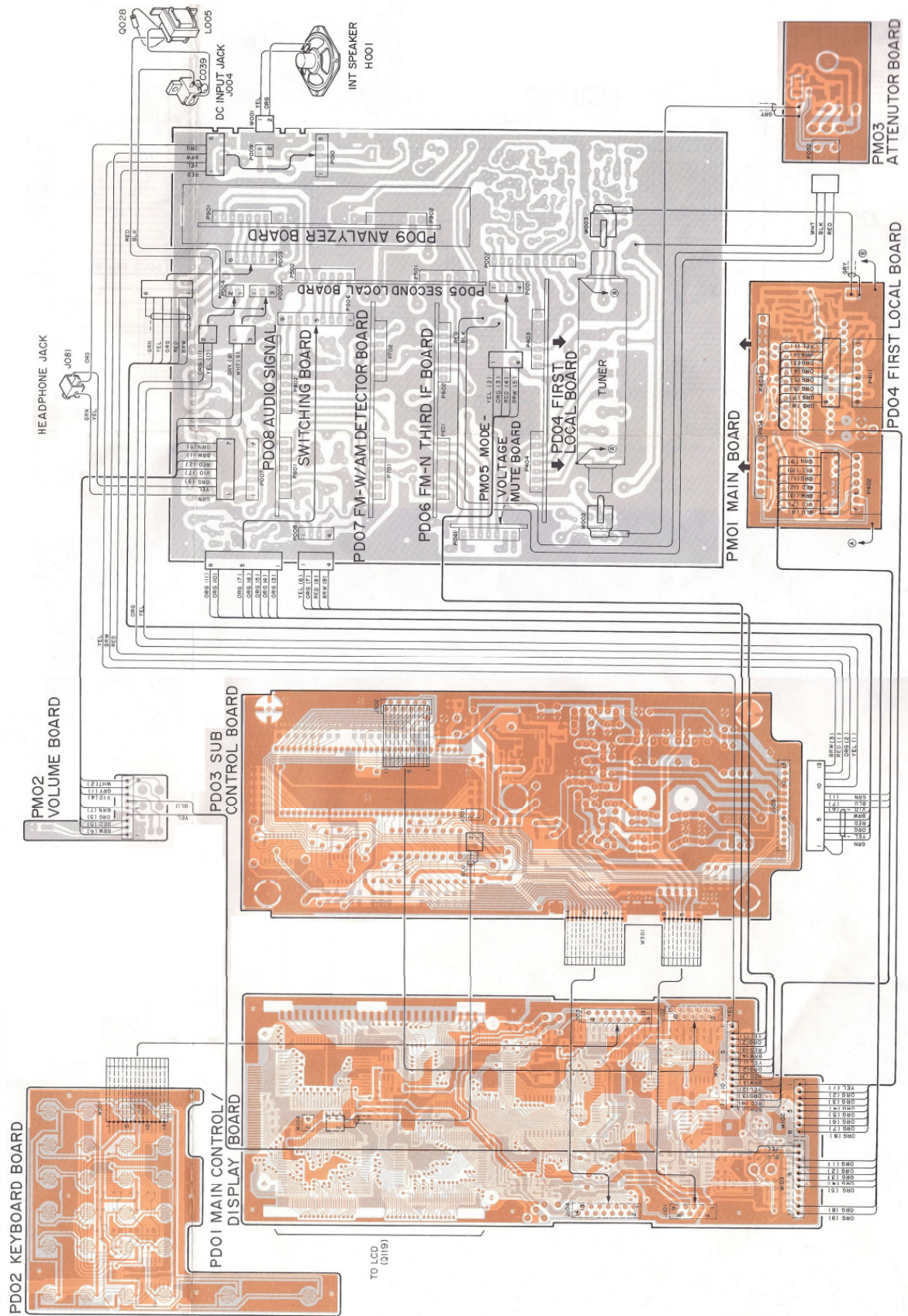


NOTES:
 1. REFER TO PARTS LIST FOR COMPONENT VALUES.
 2. UNLESS OTHERWISE NOTED, RESISTOR VALUES ARE IN OHMS, AND CAPACITOR VALUES ARE IN MICROFARADS.
 3. & 4.

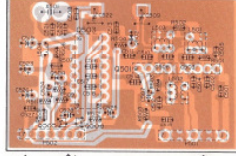
SYM-NO	Q210
MODEL	WITHOUT
AX CODE	WITHOUT
AX CODES	WITH

E/FES: S <0027>

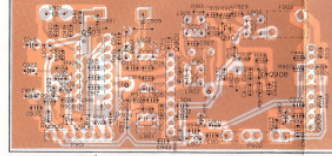
8. COMPONENT OVERLAY



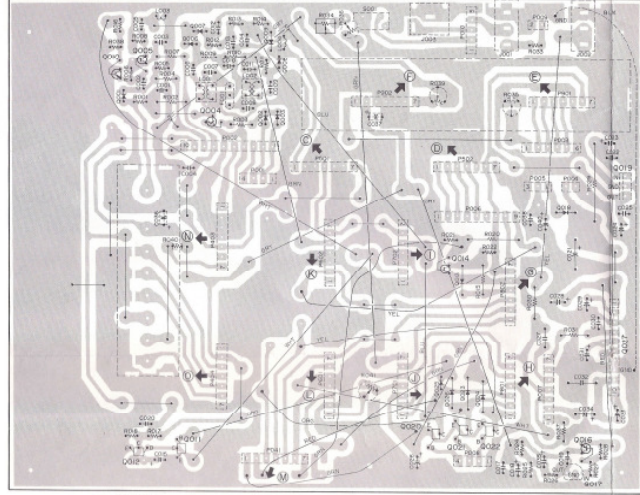
PD05 SECOND LOCAL BOARD



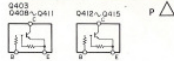
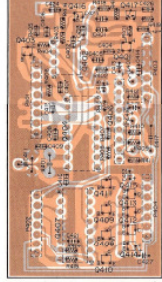
PD09 ANALYZER BOARD



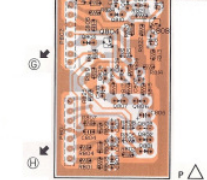
PM01 MAIN BOARD



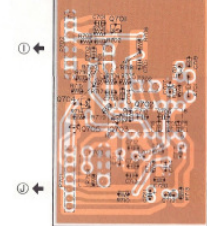
PD04 FIRST LOCAL BOARD



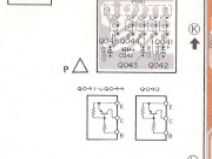
PD08 AUDIO SIGNAL SWITCHING BOARD



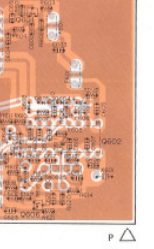
PD07 FM-W/AM DETECTOR BOARD



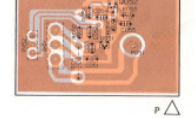
PM05 MODE-VOL VOLTAGE MUTE BOARD



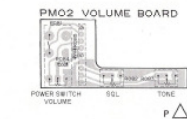
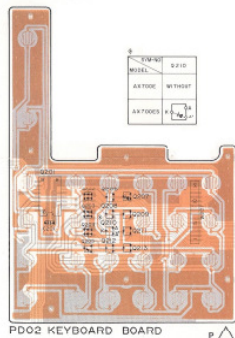
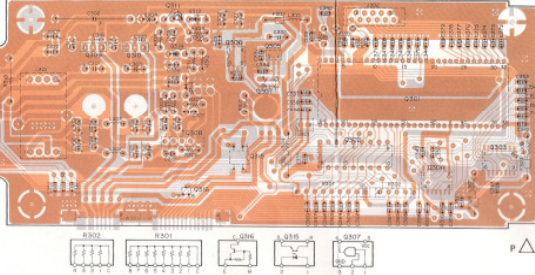
PD06 FM-N THIRD IF BOARD



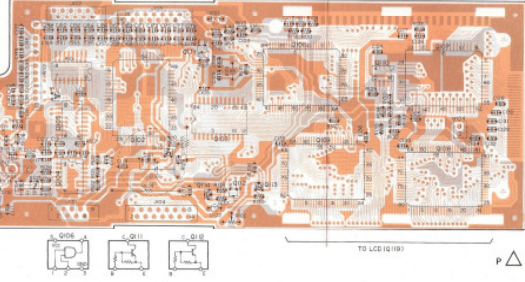
PM03 ATTENUATOR BOARD



PD03 SUB CONTROL BOARD



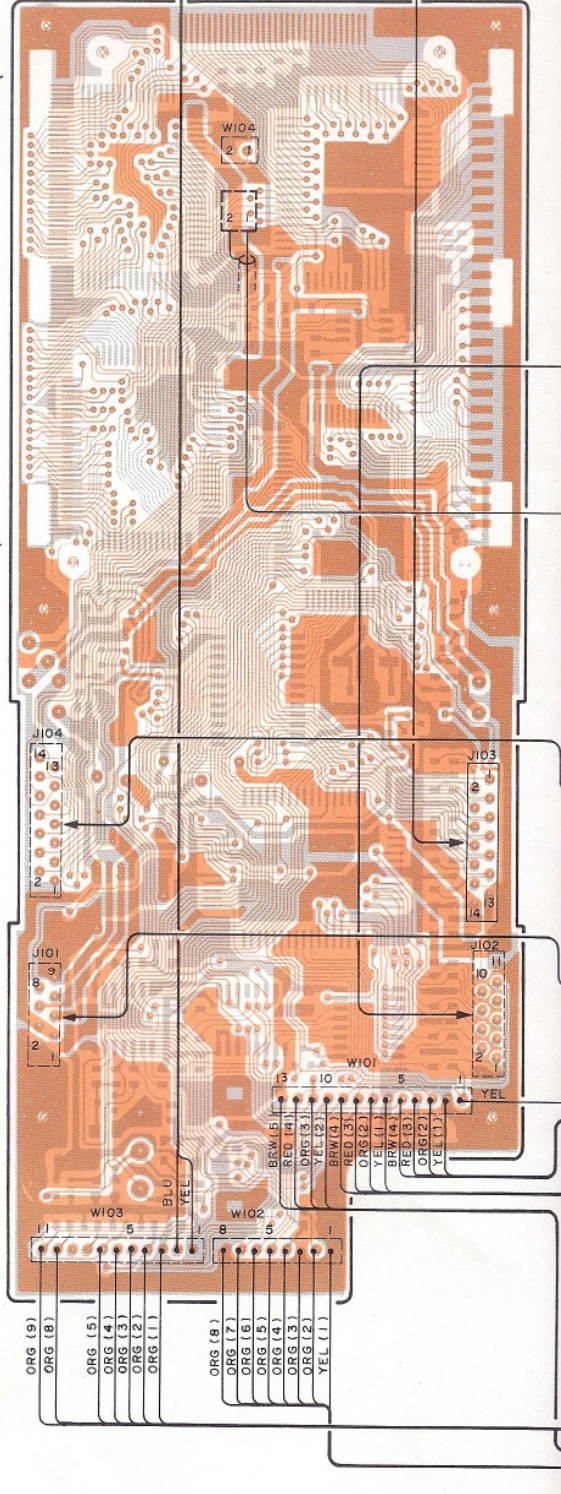
PD01 MAIN CONTROL / DISPLAY BOARD



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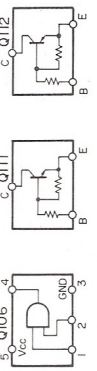
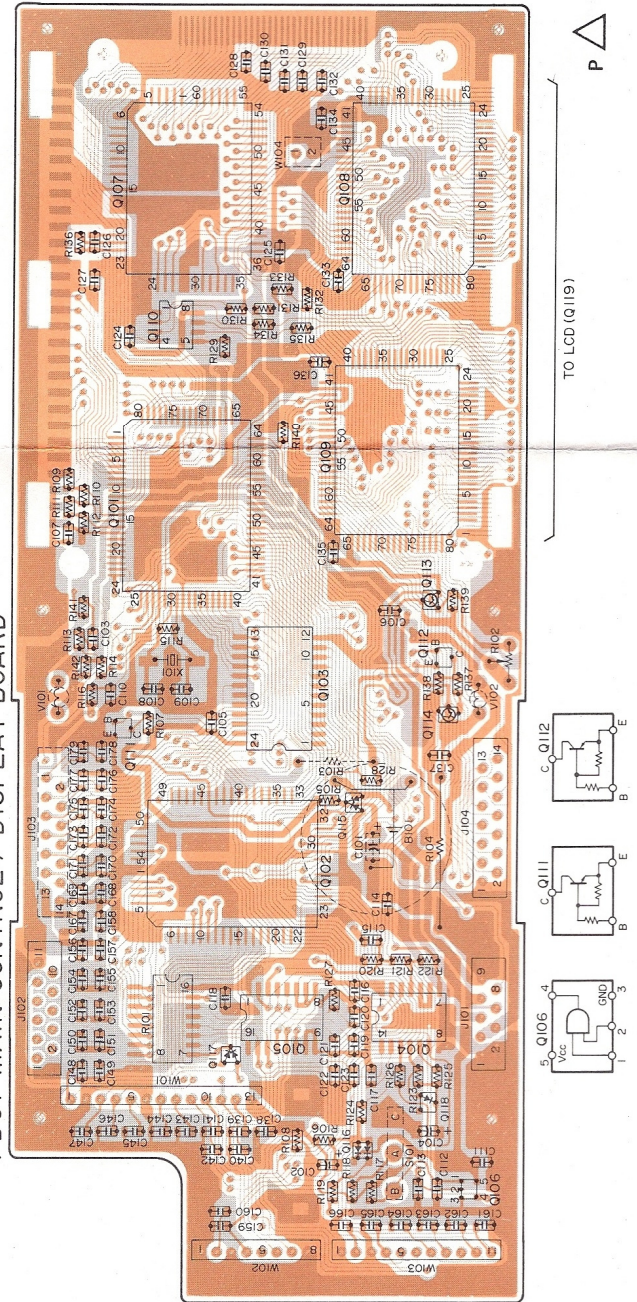
PDO1 MAIN CONTROL / DISPLAY BOARD

TO LCD
(Q119)



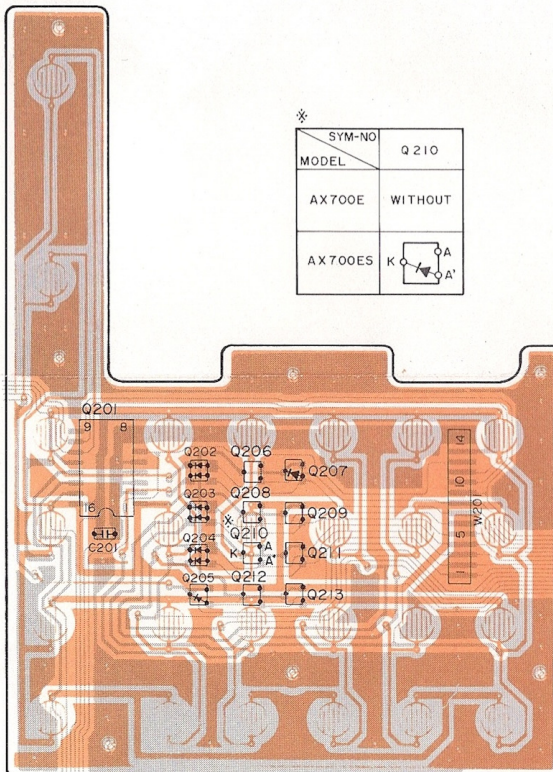
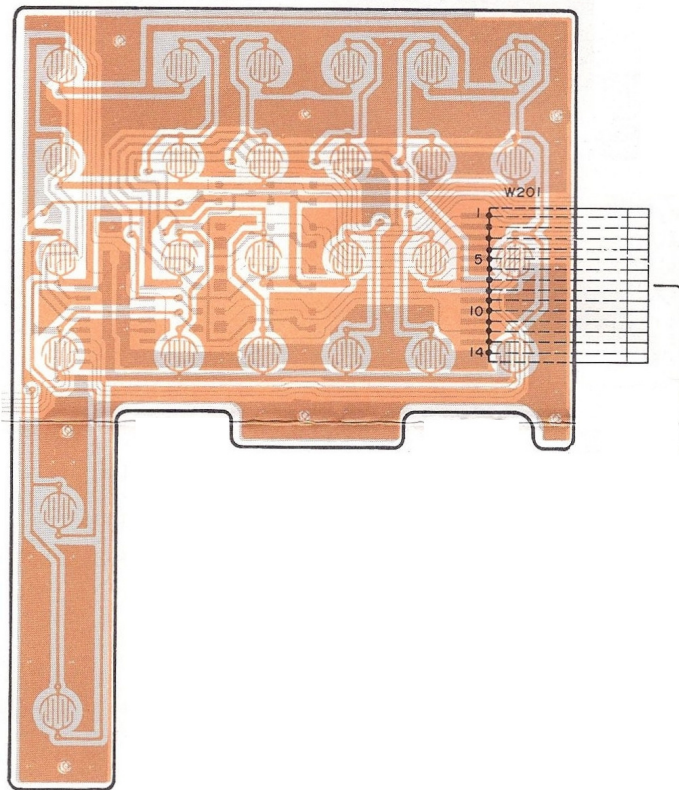
PDO1 MAIN CONTROL / DISPLAY BOARD

TO LCD (Q119)



P Δ

PD02 KEYBOARD BOARD

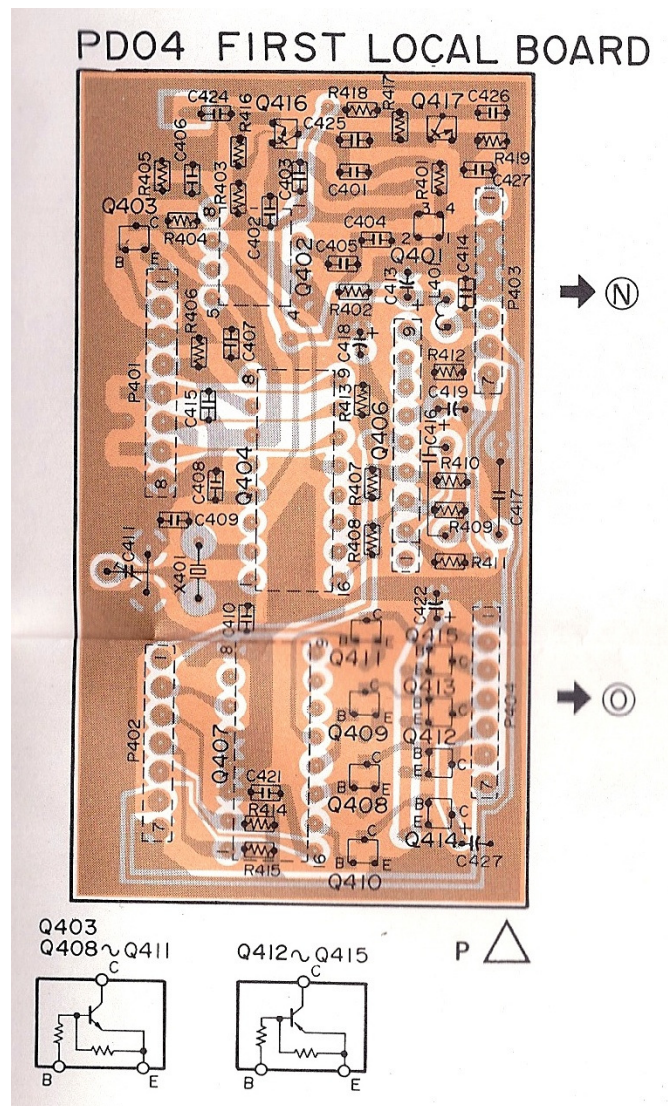
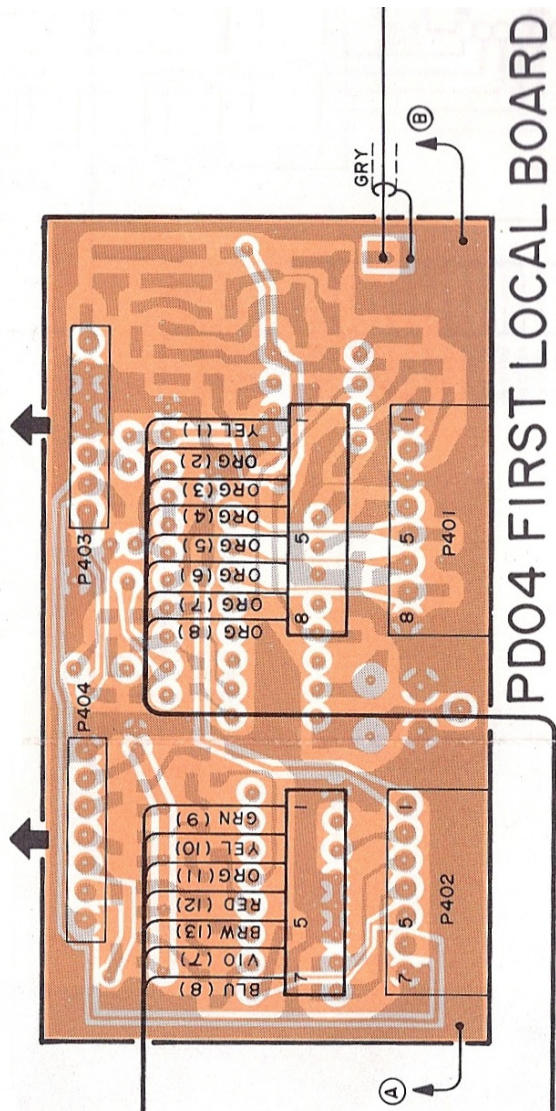


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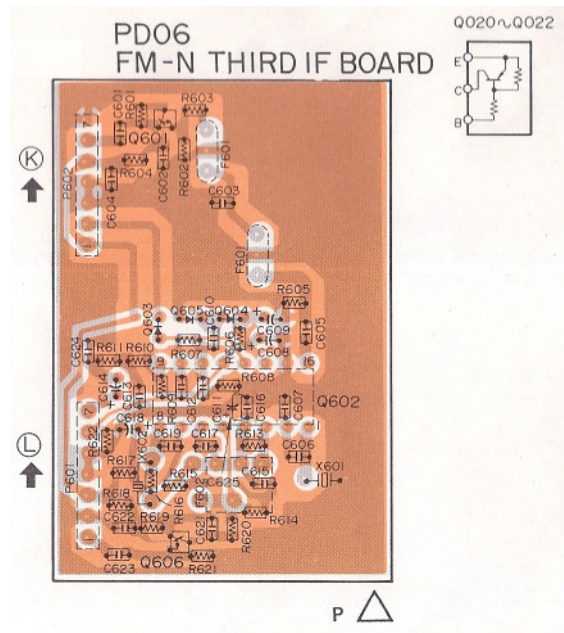
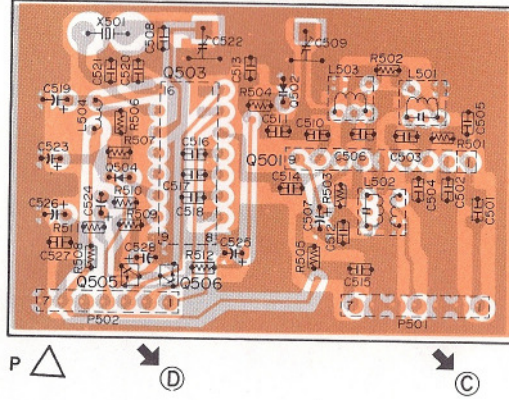
SYM-NO	Q 210
MODEL	
AX 700E	WITHOUT
AX 700ES	

PD02 KEYBOARD BOARD

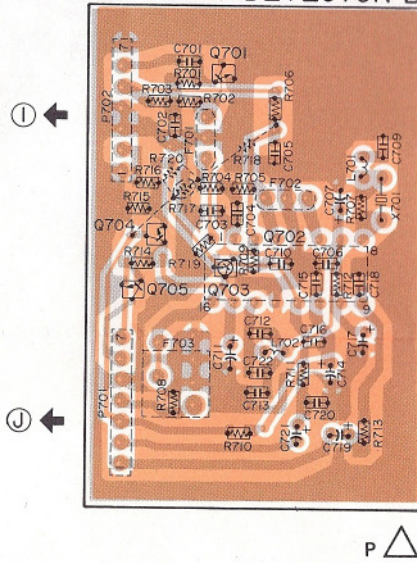
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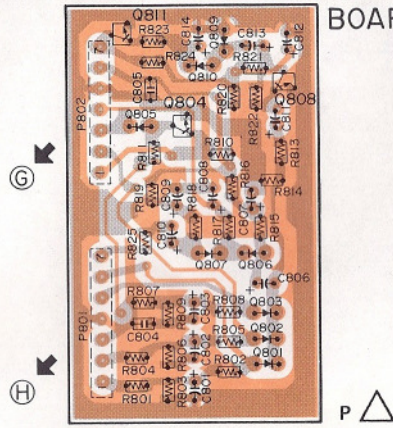
PD05 SECOND LOCAL BOARD



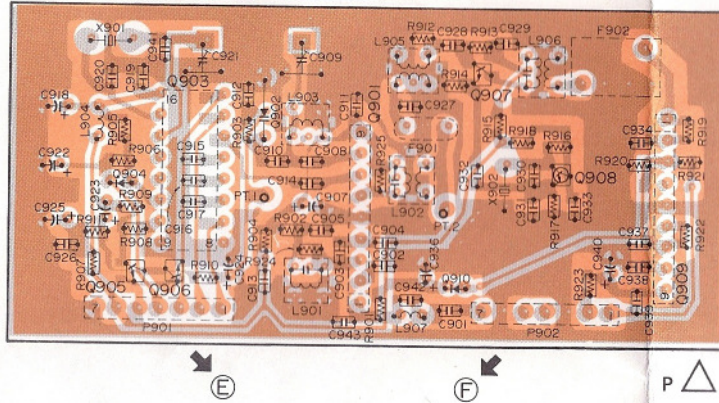
PDO7 FM-W/AM DETECTOR BOARD

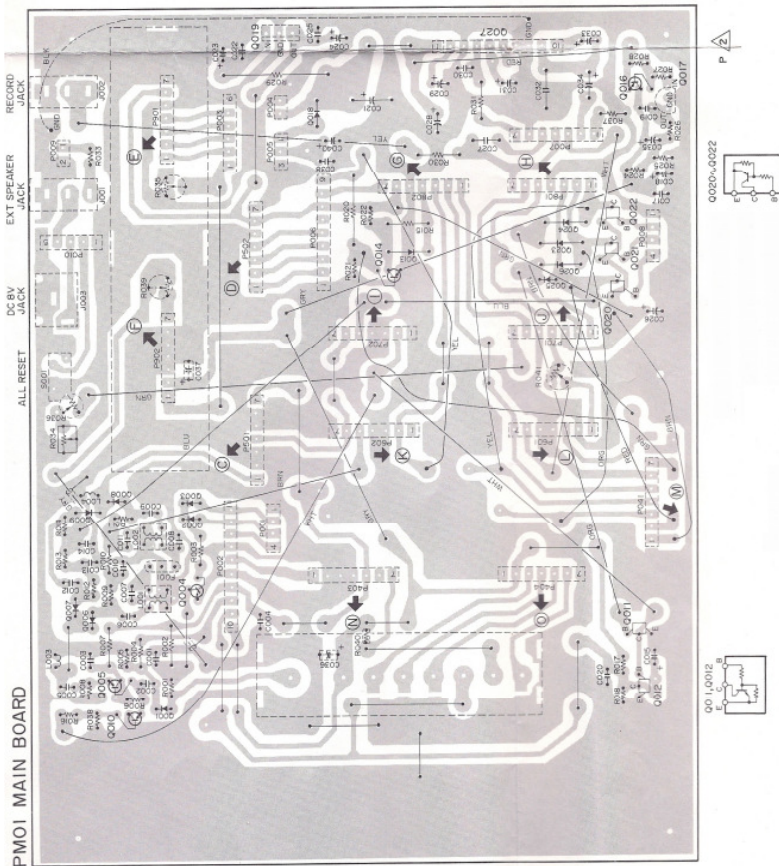
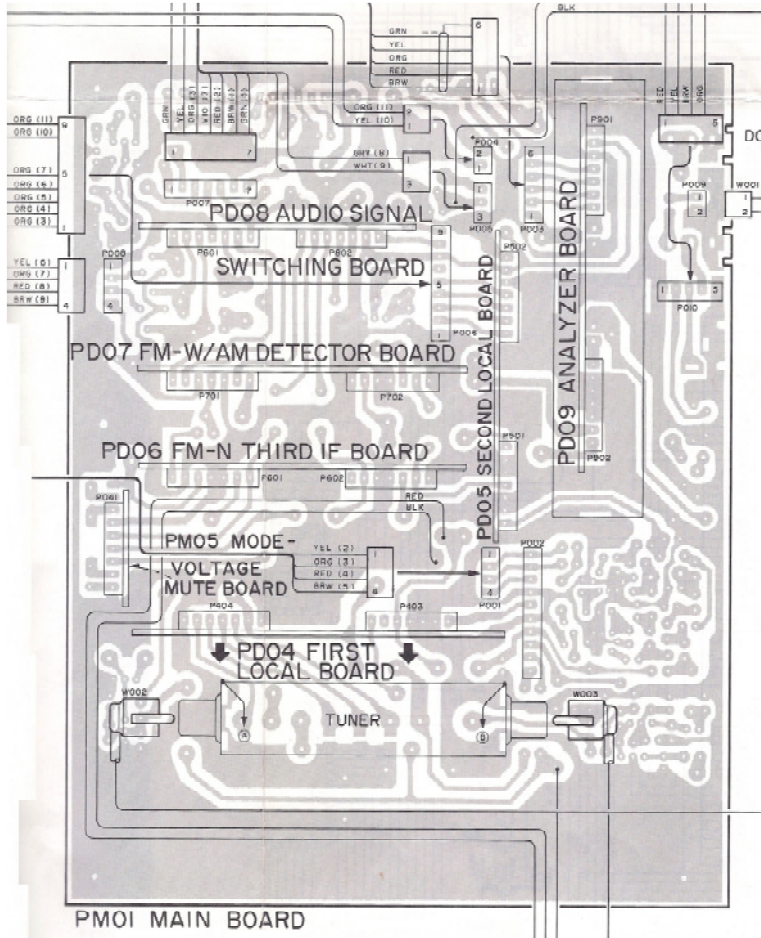


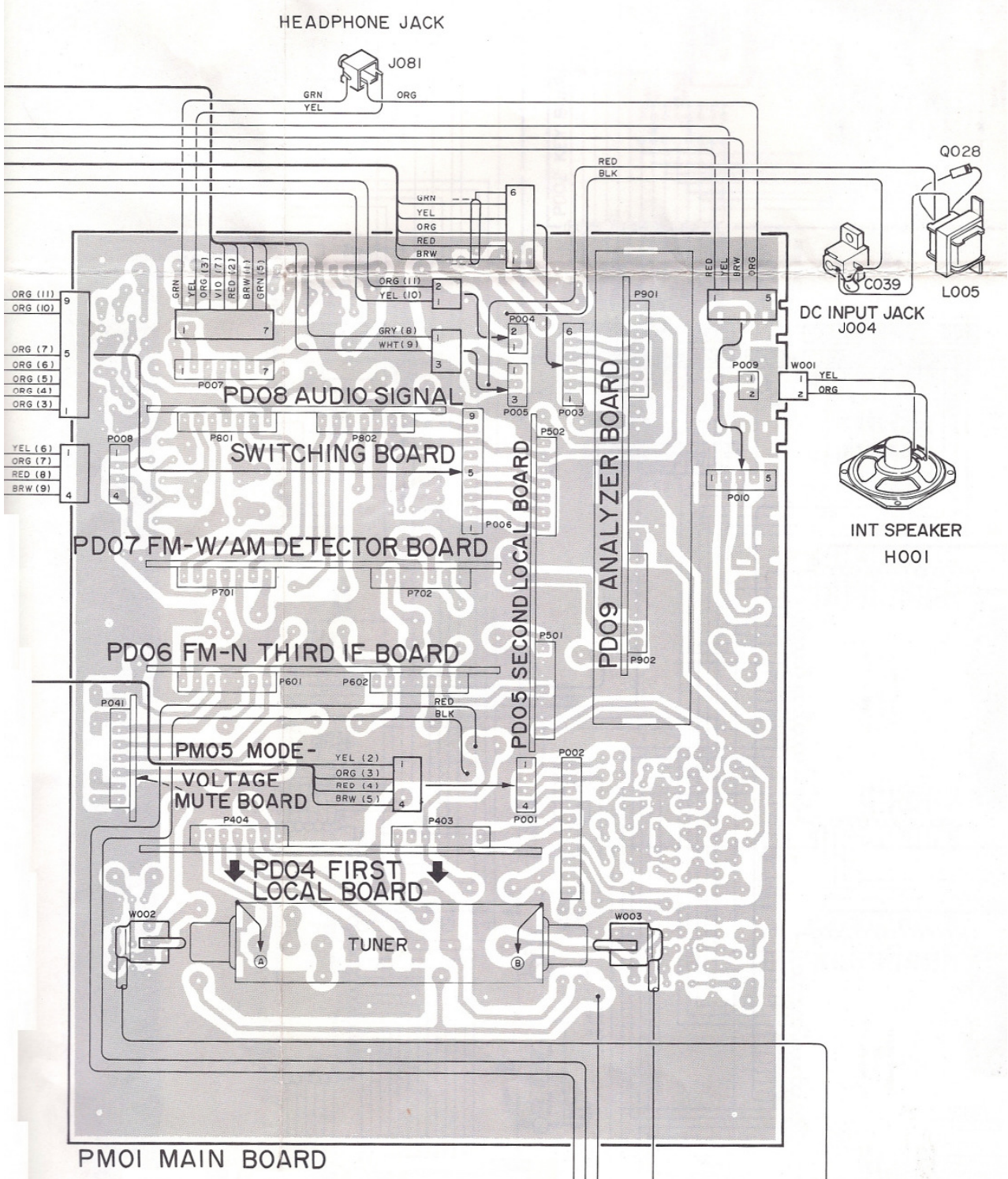
PDO8 AUDIO SIGNAL SWITCHING BOARD



PDO9 ANALYZER BOARD

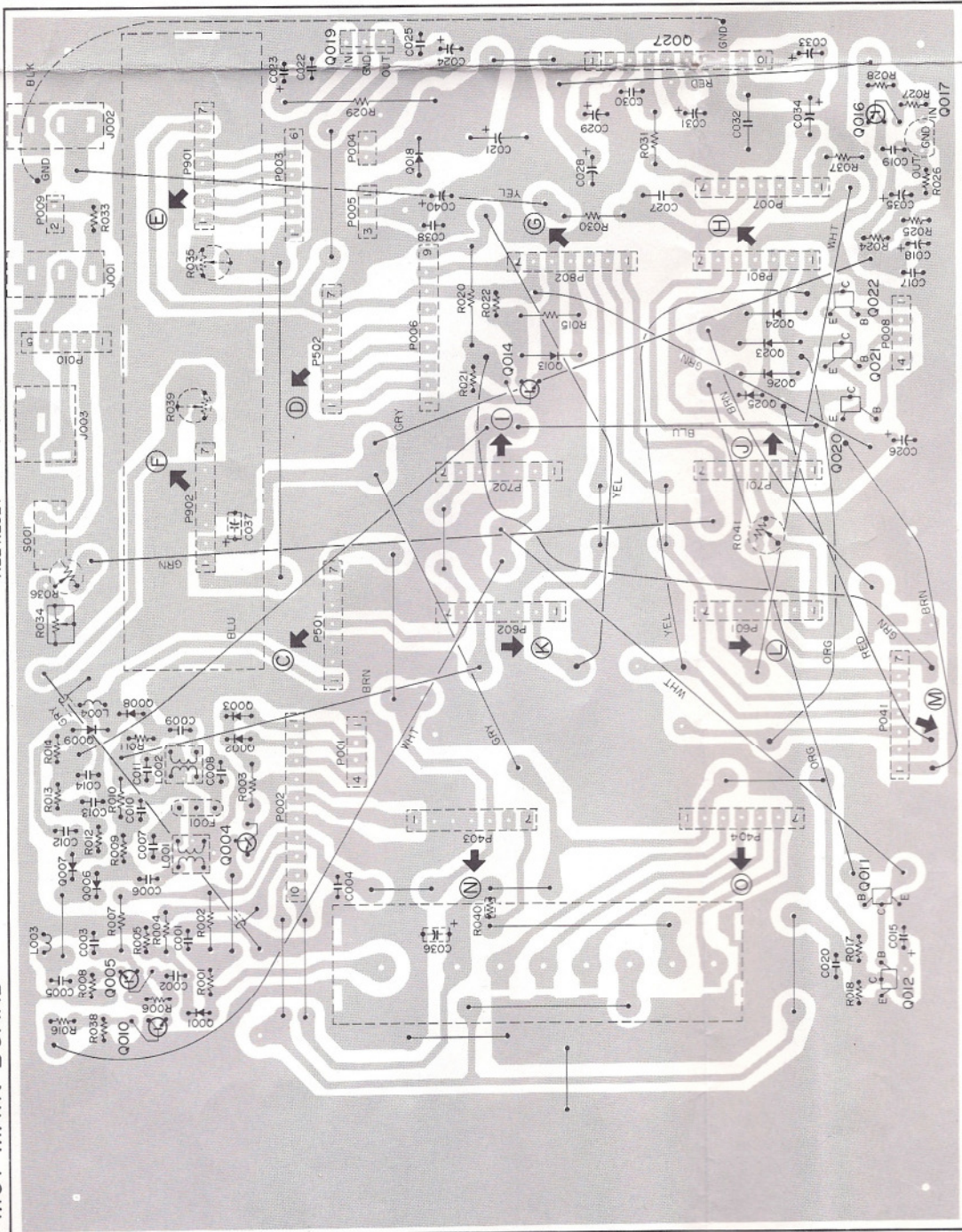






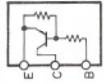
PM01 MAIN BOARD

RECORD JACK
EXT. SPEAKER JACK
DC 8V JACK
ALL RESET



P 2

Q020~Q022



Q011, Q012

