



5020



marantz

model 5020

Stereo Cassette Deck

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INTRODUCTION

The service manual was prepared for use by Authorized Warranty Stations and contains service information for the Marantz Model 5020 Stereo Cassette Deck.

Servicing information and voltage data included in this manual are intended for use by the knowledgeable and experienced technician only. All instructions should be read carefully. No attempt should be made to proceed without a good understanding of the operation in the Cassette Deck.

The parts list furnishes information by which replacement parts may be ordered from the Marantz Company. A simple description is included for parts which can be usually obtained through local suppliers.

1. SERVICE NOTE

As can be seen from the circuit diagram, the chassis of Model 5020 consists of following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

- | | |
|----------------------|-----------------------------|
| 1. Pre-Amp. | mounted on P.W. Board, P100 |
| 2. Power Supply | mounted on P.W. Board, P400 |
| 3. Switch | mounted on P.W. Board, P500 |
| 4. Volume | mounted on P.W. Board, P600 |
| 5. Lamp | mounted on P.W. Board, P650 |
| 6. Terminals | mounted on P.W. Board, P700 |
| 7. Dolby | mounted on P.W. Board, P800 |

2. TEST EQUIPMENT REQUIRED FOR SERVICING REPLACEMENT

For measuring or checking the Model 5020, the following instruments and materials are necessary.

VTVM

Audio Oscillator (af OSC)

Attenuator (600 Ω)

Oscilloscope

Bandpass Filters (1kHz, 500Hz)

Wow and Flutter Meter

Torque Meter

Blank Tapes

Digital Frequency Counter

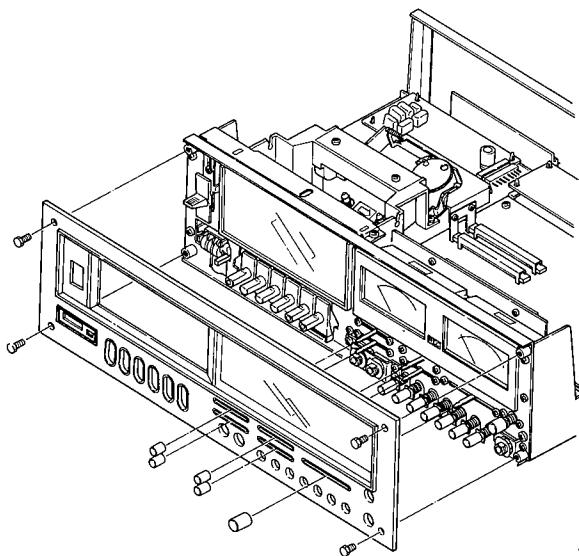
Distortion Meter

Test Tapes

3. DISASSEMBLING INSTRUCTIONS FOR MODEL 5020

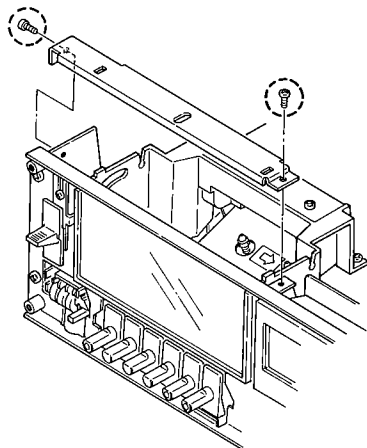
1. Demounting the Front Panel

Remove the five knobs. Unscrew the four hexagon bolts. The front panel, then, will be removed as illustrated in the line drawing right.

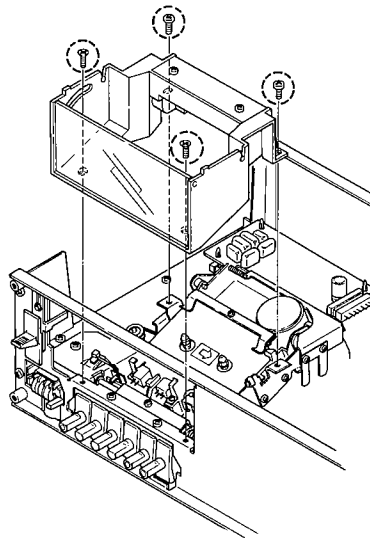


2. Demounting the Cassette Compartment for Repairing Around Head

2-1. Unscrew the two screws. Remove the upper supporting plate as illustrated below.

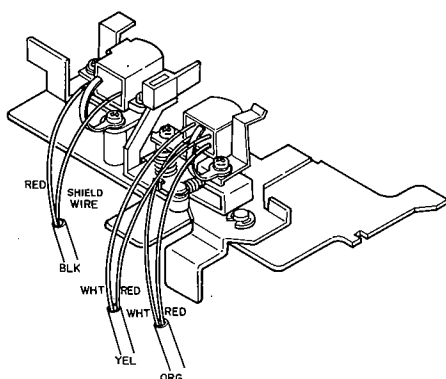


2-2. Unscrew the four screws holding the cassette compartment. The cassette compartment, then, will be removed as illustrated below.



3. Demounting the Tape Mechanism Block

- 3-1. Disconnect the head lead wires as illustrated below.



- 3-2. Turn the recorder body upside down, and remove the connector located on the bottom of the recorder body (Fig. A).

Put the recorder body light again and remove the six screws holding the tape mechanism block. The block, then, will be removed from the recorder body as illustrated in Fig. B.

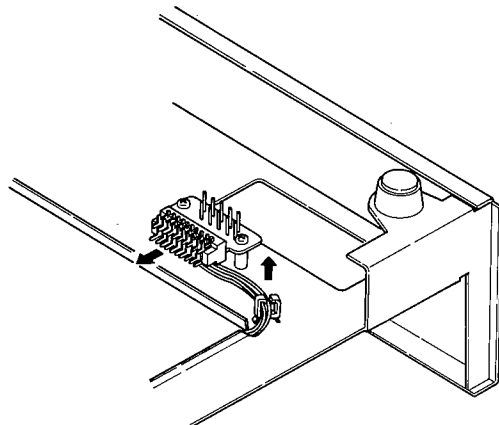


Fig. A

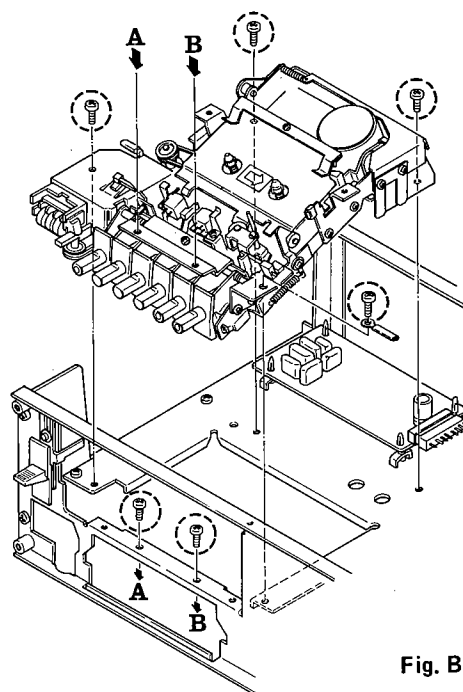
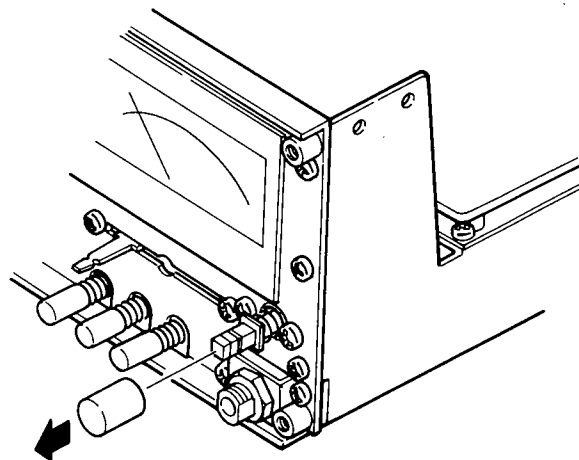


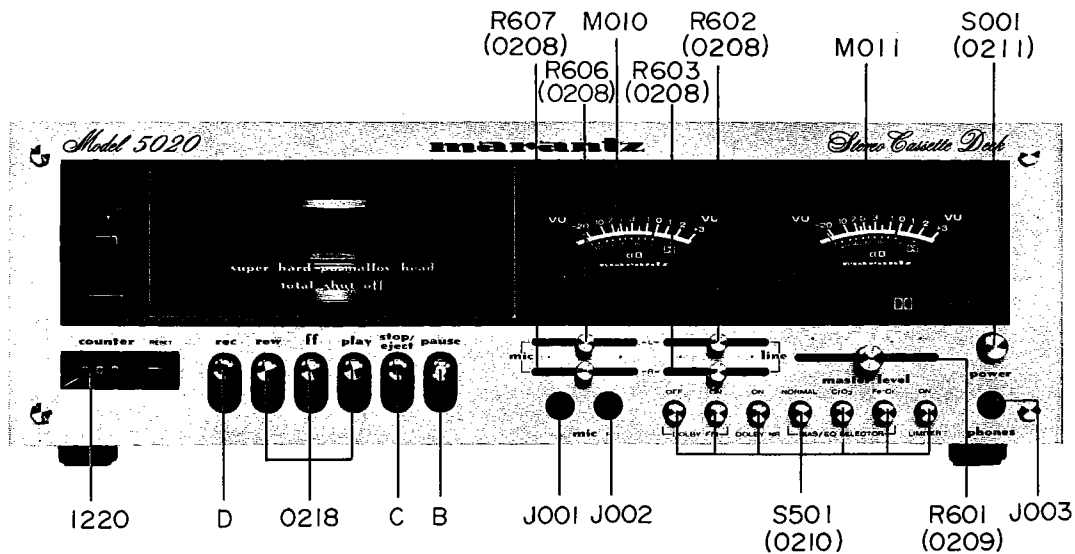
Fig. B

4. Replacing the Push-Switch Knob

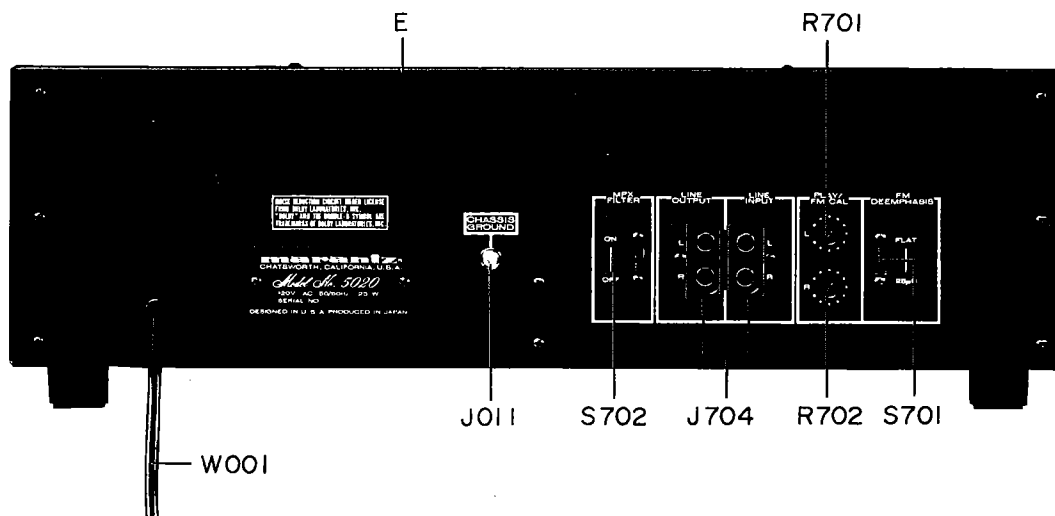
Set the push switch in the "off" state. Forcibly pull the knob in the arrow direction as illustrated right. The knob, then, will be removed.



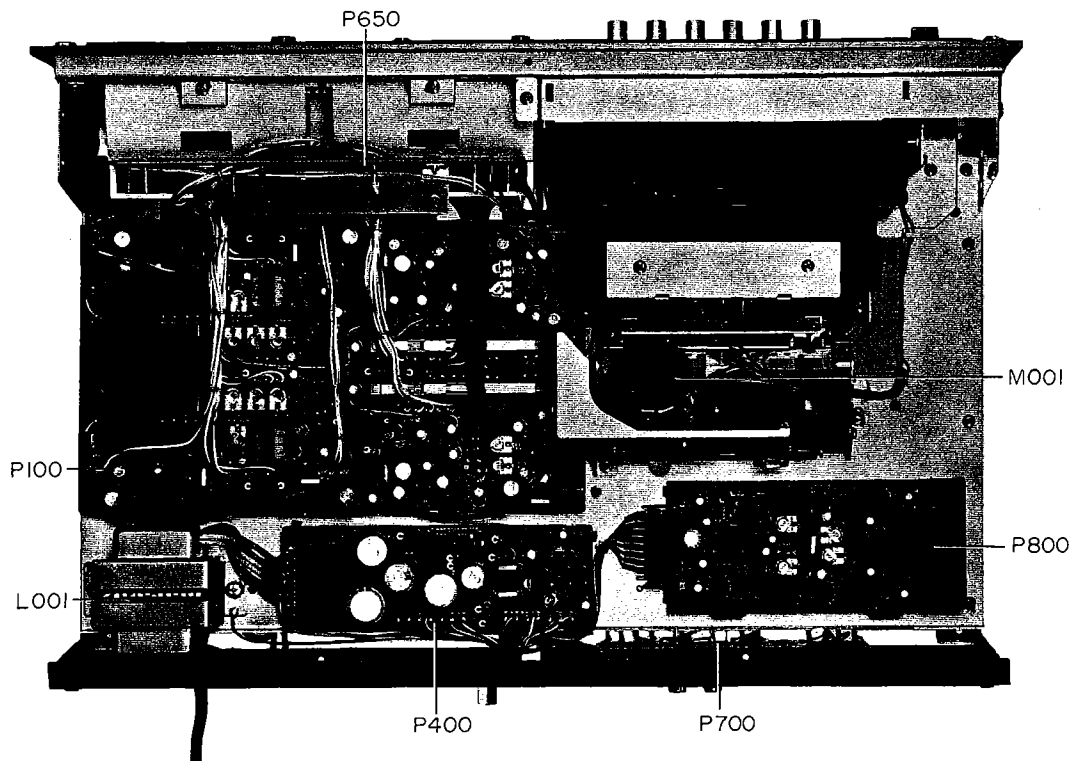
4. MAJOR PARTS LOCATIONS



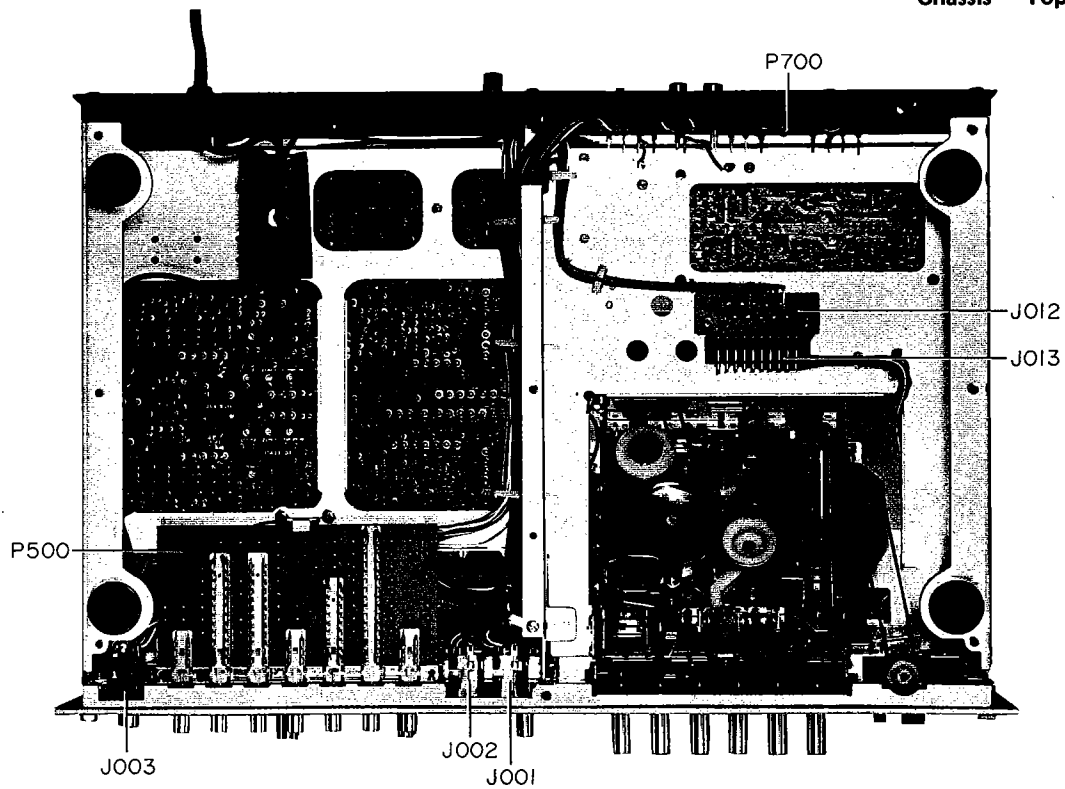
— Front View —



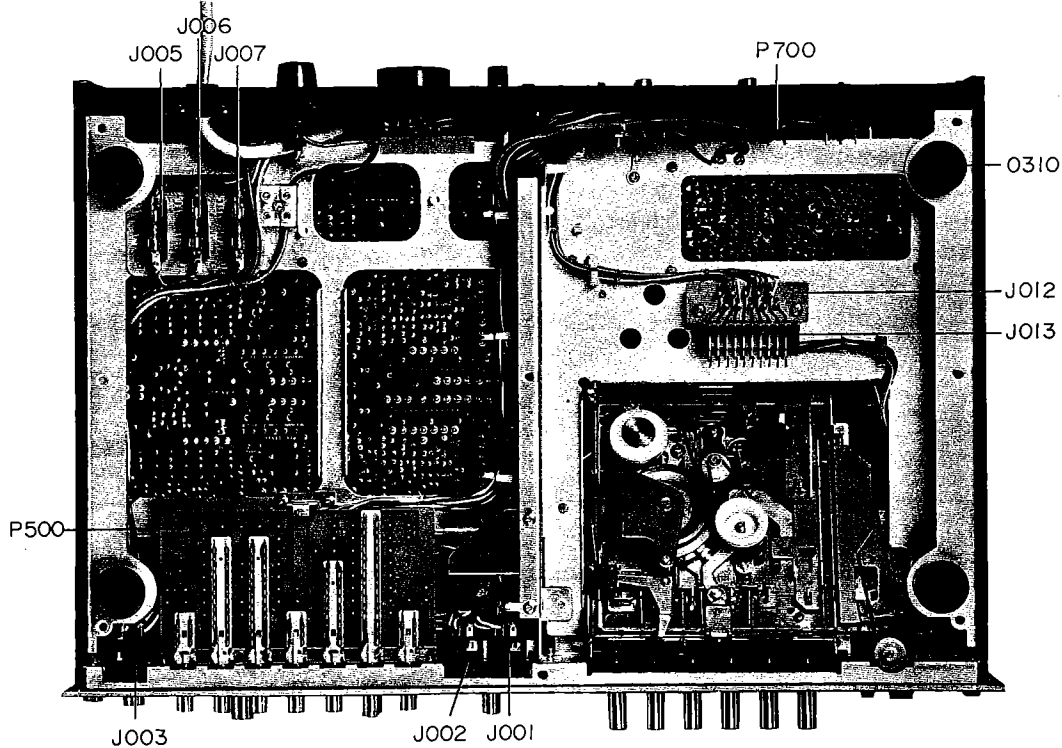
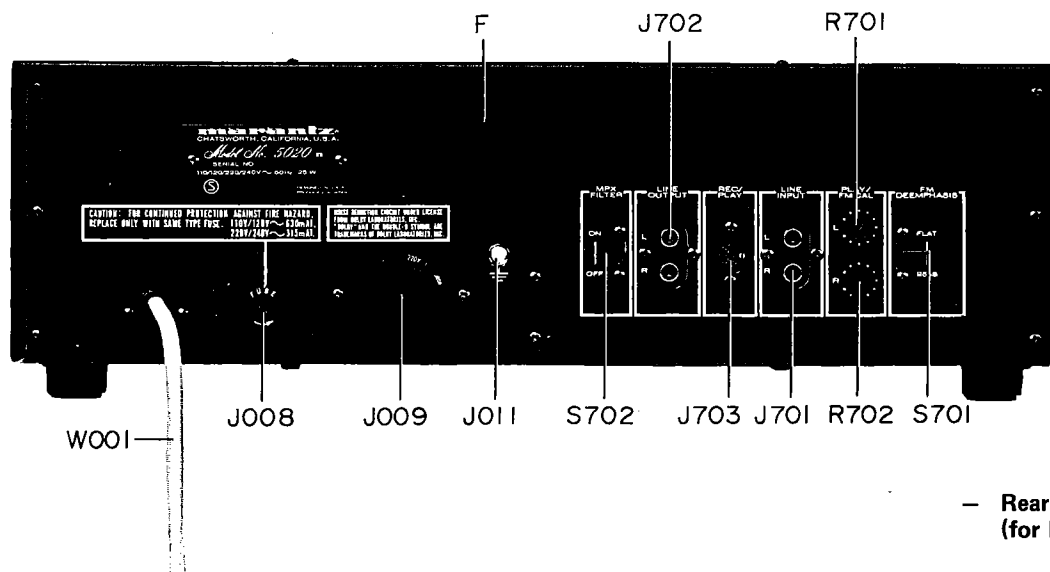
— Rear View —



Chassis — Top View —



Chassis — Back View —

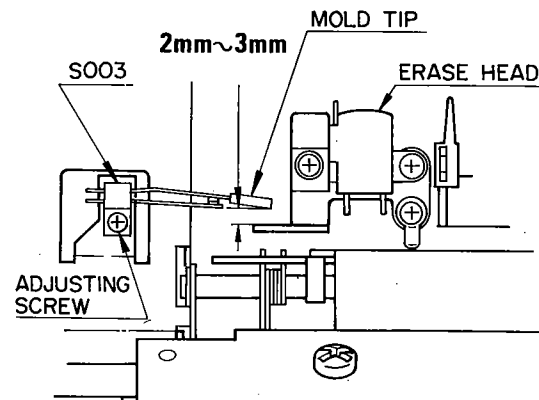


5. ADJUSTMENT PROCEDURES

5-1. MECHANICAL ADJUSTMENTS

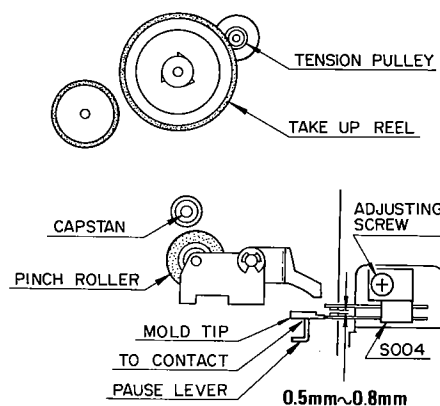
Adjusting the PLAY muting switch

In the stop state, loosen the adjusting screw at the PLAY muting switch (S003) and align the switch until there becomes 2 to 3mm gap between the mold tip at its end and its play operating arm, then tighten the screw to fix it.



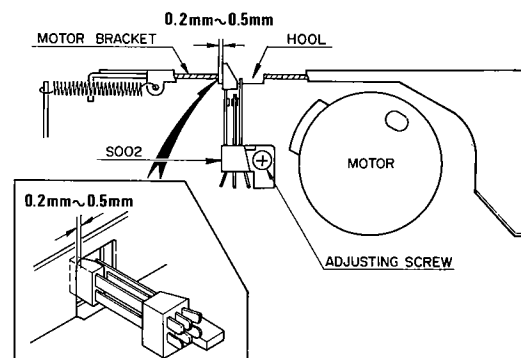
Adjusting the PAUSE muting switch

In the stop state, loosen the adjusting screw at the PAUSE muting switch (S004) and align the switch until the mold tip at its end comes in light contact with its pause operating lever and its contacts are separated 0.5 to 0.8mm, then tighten the screw to fix it.



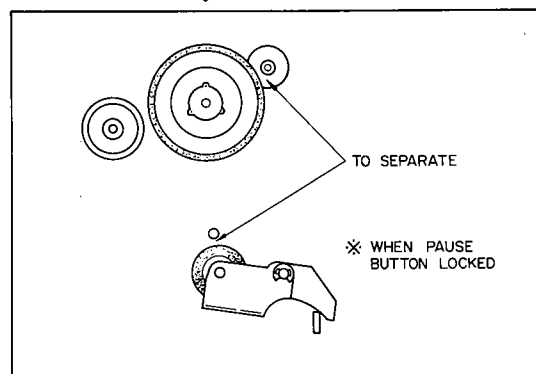
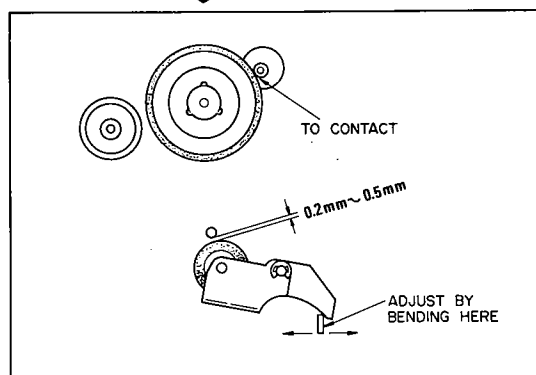
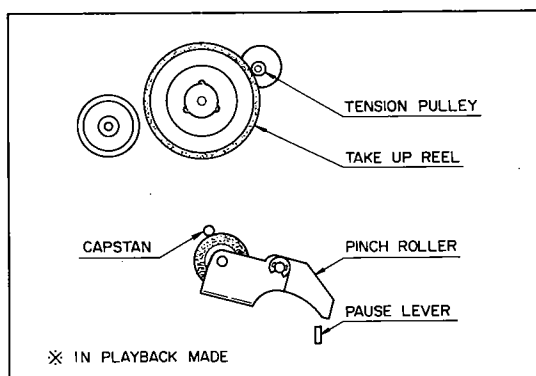
Adjusting the RECORD muting switch

Loose the adjusting screw at the RECORD muting switch (S002) and align the switch until there becomes 0.2 to 0.5mm gap between the mold tip at its end and motor bracket, then tighten the screw to fix it.



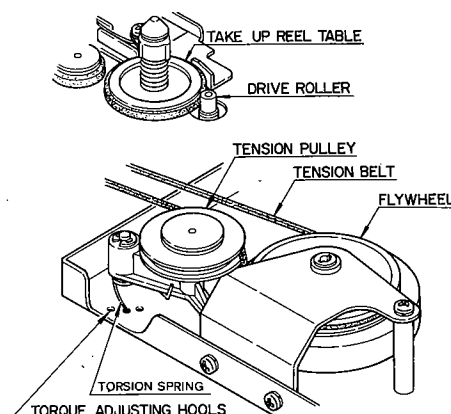
Adjusting the PAUSE timing

Pause Lever should be so adjusted by bending with a pair of pliers that the Pinch Roller and the Capstan are disengaged before the Tension Pulley and then the Tension Pulley and Take Up Reel are disengaged when Pause button is depressed in Playback mode.



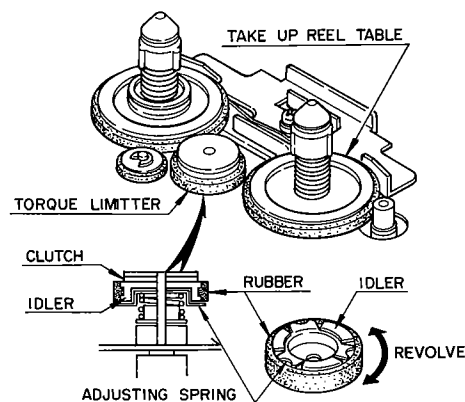
Adjusting the PLAY torque

If the PLAY torque is out of the standard, i.e., 40 to 70g-cm, first wipe off dirt and grease accumulated on the mating surface of the takeup reel with the drive roller and the surfaces of the tension belt. Second, suspend the torsion spring for the tension pulley on an alternative torque adjusting hole. If the torque is not within the standard yet, replace the tension pulley.



Adjusting the FF/REW torque

If the FF/REW torque is out of the standard, i.e., 70 to 120g-cm, then change the spring put in the torque limiter to an alternative position for proper torque.



Measurement of PLAY, FF and REWIND torques

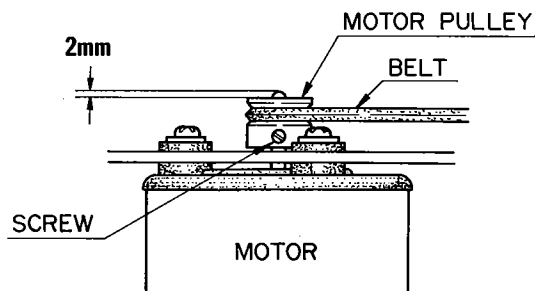
— in Play/FF/Rew Mode —

Measure the torques with a torque cassette to confirm that the torque satisfies the specified value in each mode.

Specifications:	Play	40 ~ 70 g.cm
	FF	70 ~ 120 g.cm
	Rew	70 ~ 120 g.cm

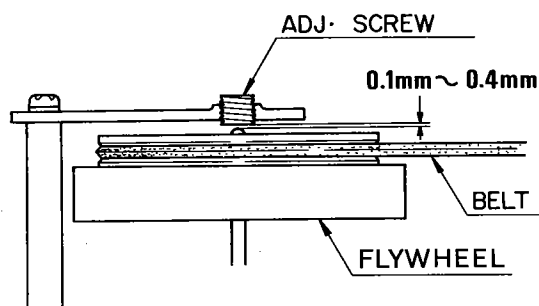
Adjusting the motor pulley mounting position

Loosen the set screw and adjust the position to obtain the distance of 2mm between the edge of Motor Shaft and the upper surface of Motor Pulley.



Adjusting the flywheel thrust

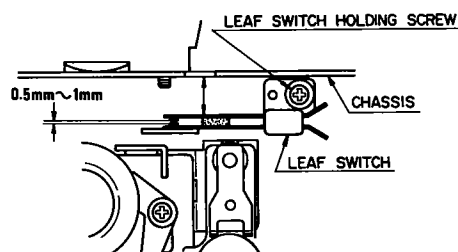
Adjust the thrust to 0.1 ~ 0.4 mm by rotating the adjustment screw. After the adjustment, be sure to lock the adjustment screw with paint.



Adjusting the leaf switch position

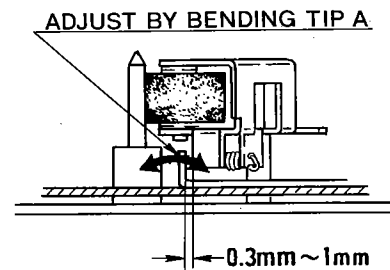
— in Stop Mode —

Leaf Switch should be positioned parallel with the chassis.



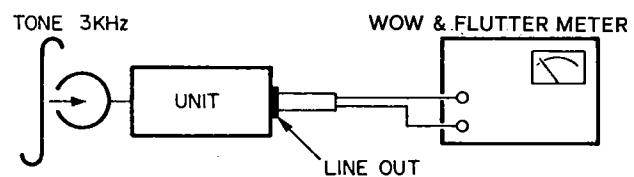
Adjusting the pinch roller position
— in Playback Mode —

In the playback mode of operation, bend the tip A right or left until there becomes 0.3 to 1.0mm gap between the pinch roller arm and pinch roller home stopper hook on the head chassis as shown.



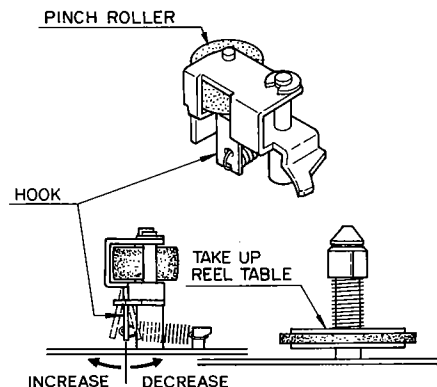
Measurement of wow and flutter
— in Playback Mode —

Playing back a 3 kHz Test Tape, connect a wow and flutter meter to the Line Out jack to confirm that the meter reading satisfies the specified value. Use the beginning and the last portions of the test tape for the measurement and the measurement should be performed at least 30 seconds after placing the unit in Playback mode.



Adjusting the pinch roller pressure

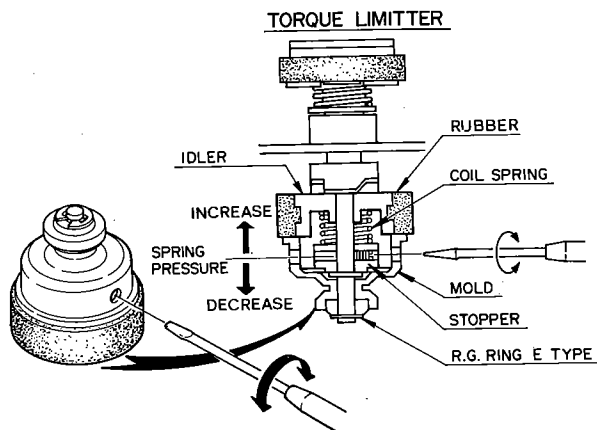
To adjust the pinch roller pressure, bend the spring hook beneath the pinch roller toward the takeup reel (for weak pressure) or in the reverse direction (for strong pressure).



Adjusting the FF/REW autostop mechanism

If the tape is automatically stopped in the course of the fast forward or rewind, loosen the stopper screw within the mold under the torque limiter with a small standard screwdriver inserted into the hole located at the side of the mold. Move the stopper in the direction of compressing the coil spring, or upward in the figure, to increase the coil spring pressure to prevent such an erroneous stopping.

On the contrary, if the tape is not automatically stopped at its end, make the above-mentioned coil spring pressure weak and wipe dirt and grease off the mating surface of the fly-wheel with the rubber. If the tape-end stop is not normal yet, then replace the torque limiter.



5-2. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

Precautions Before Adjustment and Measurement

1. Before playing the test tape back, thoroughly demagnetize the heads, capstan and similar metal parts using an eraser as the test tape-recorded tone is easily erased.
2. Do not place the test tape on any measuring instrument.
3. Do not put the test tape near a place where the eraser is used.
4. Method of Demagnetization:—Turn the eraser power switch on at a remote position far away from the heads. Bring the eraser close to the heads, capstan and other parts to be demagnetized, and move it up and down four or five times to demagnetize. Slowly separate the eraser far away from the parts, and turn the power switch off.
5. Do not use any magnetized adjusting tool. When using it, demagnetize it from time to time in the course of each adjustment..
6. Do not turn semi-fixed resistor, capacitor, and inductor adjusting screws more than needed.
7. If measuring the tape speed wow and flutter, operate the tape deck in the normal opera-

ting condition.

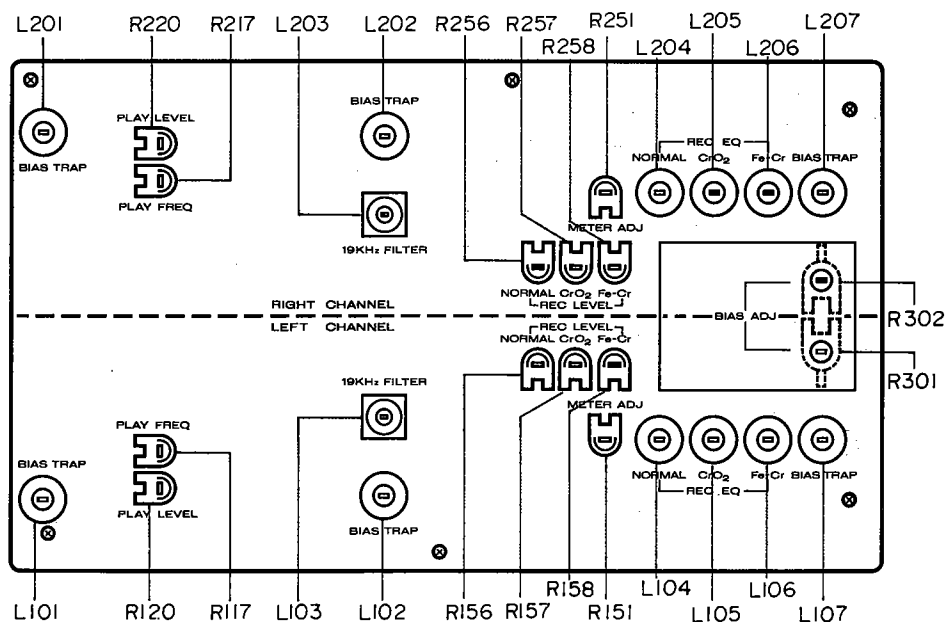
8. Do not apply locking bond excessively.

Definitions

1. The "normal playback state" is an operating state of the tape deck which plays back the MTT-150 test tape and is adjusted so as to produce a 580mV output at the MAIN P.W. Board (P100) J125, J225 with the load assuming the measuring instrument input impedance of greater than 100k Ω and with the TAPE selector switch set at the NORMAL position.

2. The "normal recording state" is an operating state of the tape deck which records a 1kHz signal to a specified recording level for which the recording level control is adjusted with the 1kHz signal applied at a specified input level to the MIC input terminal.

In the normal recording state, therefore, this tape deck is set up with the level control to the state that the level meter pointer may deflect to the 100% mark as 0VU with a 1kHz, 1mV input signal applied.



1. Head Azimuth Adjustment

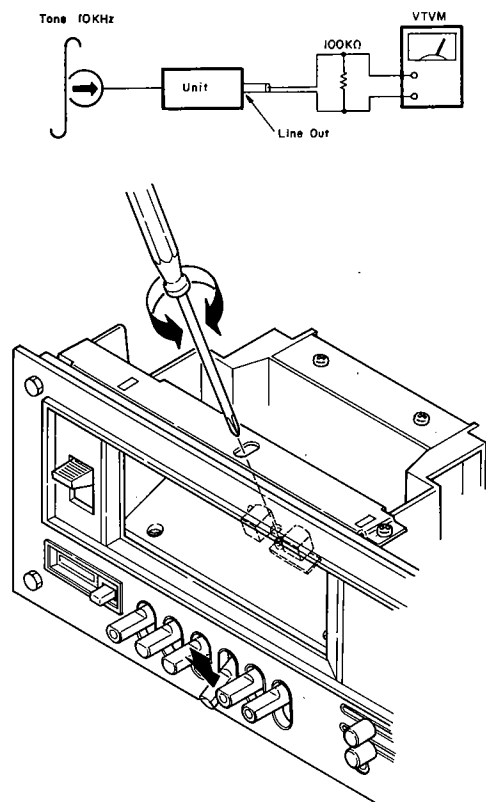
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. TAPE selector switch position:- NORMAL.
3. Load:- Measuring instrument input impedance.
4. Output terminal used:- LINE OUT.
5. Test tape used:- MTT-116U (31.5Hz to 14kHz).

PROCEDURES

1. Play the 10kHz portion of the test tape MTT-116U back. Adjust the head azimuth adjusting screw for maximum VTVM read.
2. If the peak output reads of the right and left channels are different, set the screws to obtain the mechanical center between the peaks.
3. After adjustment, lock the screw with bond.

Mode: playback



CAUTION

After adjustment, repeat the playback and stop setting a few times to make certain of no head azimuth deviation.

2. Tape Speed Adjustment

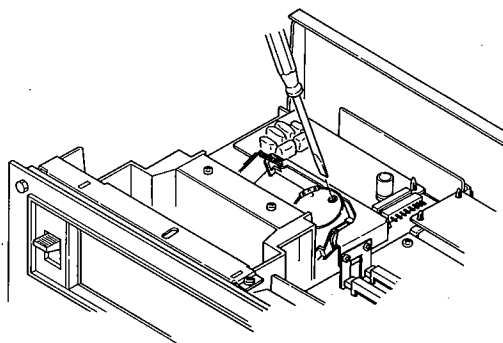
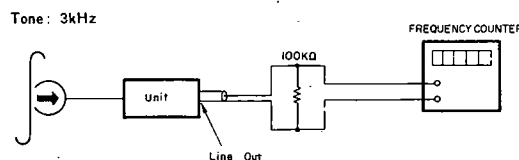
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Output terminal:- LINE OUT.
3. Test tape used:- MTT-111.
4. Unit position:- Horizontal.

PROCEDURES

1. Play the mid portion of the test tape MTT-111 back. Adjust the tape speed adjusting semi-fixed resistor for 2990 to 3010Hz counter indication.

Mode: playback



CAUTIONS

1. For adjustment, the tape deck should be set up in the normal operating condition.
2. Do not adjust the semi-fixed resistor more turns than needed.
3. Do not proceed with adjustment after the tape deck temperature has changed.
4. If a strong shock or similar vibration is applied to the tape deck after adjustment, make certain that the measured tape speed had not changed.
5. If the tape speed deviation occurs, perform the adjustment again.
6. Be careful that the counter may indicate a wrong value because of too low counter input level.
7. Before adjustment, allow for 30 seconds or more after depressing of the PLAY push-button.

3. Playback Equalizer Adjustment

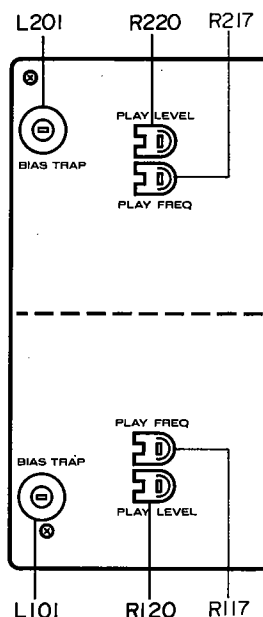
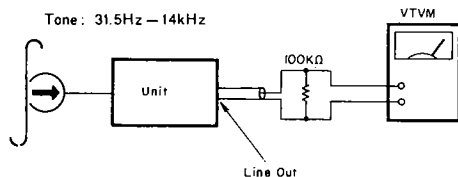
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. TAPE selector switch position:- NORMAL.
3. Load:- Measuring instrument input impedance.
4. output terminal:- LINE OUT.
5. Test tape used:- MTT-116U (31.5Hz to 14kHz).

PROCEDURES

1. Play the test tape MTT-116U. Let the 315Hz signal level be reference as 0dB.
2. Adjust R117 and R217 (3k Ω each) for 10kHz frequency response of 0 to -1dB in reference to the 315Hz signal level (0dB).
3. Proceed both for the right and left channels in the same manner.
4. Note that clockwise turning of R117 and R217 will increase the 10kHz signal output level.

Mode: playback



4. Playback Output Adjustment

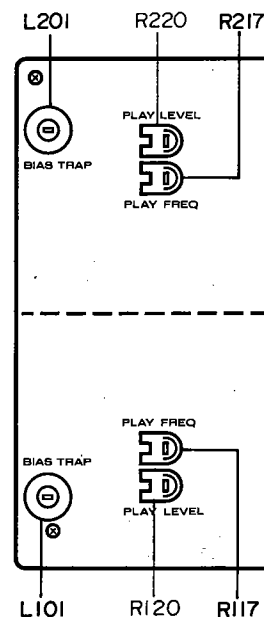
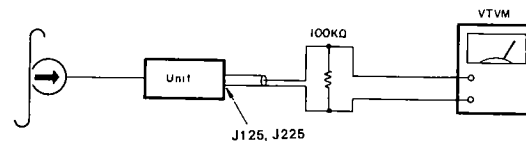
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. TAPE selector switch position:- NORMAL.
3. Load:- Measuring instrument input impedance.
4. Output terminal:- MAIN P.W. Board (P100) J125 and J225.
5. Test tape used:- MTT-150.

PROCEDURES

1. Play the test tape MTT-150 back. Adjust R120 and R220 (50k Ω each) for 580mV playback output level.
2. Proceed both for the right and left channels in the same manner.

Mode: playback



CAUTION

1. This adjustment should be performed after the one for the playback equalizer. If the playback equalizer is adjusted after the playback output adjustment, the playback output should be readjusted.

5. VU Meter Adjustment

SET UP

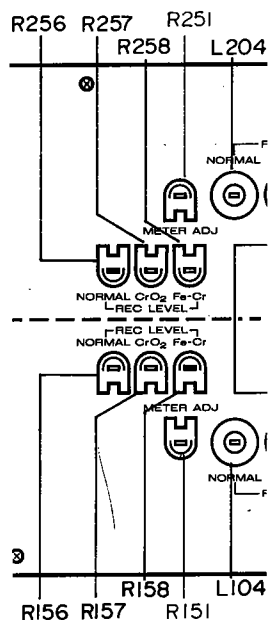
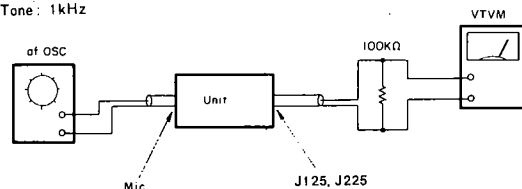
1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. FUNCTION selector switch position:- NORMAL.
3. Load:- Measuring instrument input impedance.
4. Output terminal used:- MAIN P.W. Board (P100) J125 and J225.
5. Input terminal:- MIC.

PROCEDURES

1. Connect a 1kHz, -60dBV input signal to the MIC terminal. Set up the tape deck for the recording mode of operation.
2. Adjust the REC control for 580mV output level at MONI. OUT of the MAIN P.W. Board (P100) J125 and J225.
3. Adjust R151 and R251 (3k Ω each) until the VU meter pointer deflects to the DOLBY mark (DQ) on the VU meter.

Mode: record

Tone: 1kHz



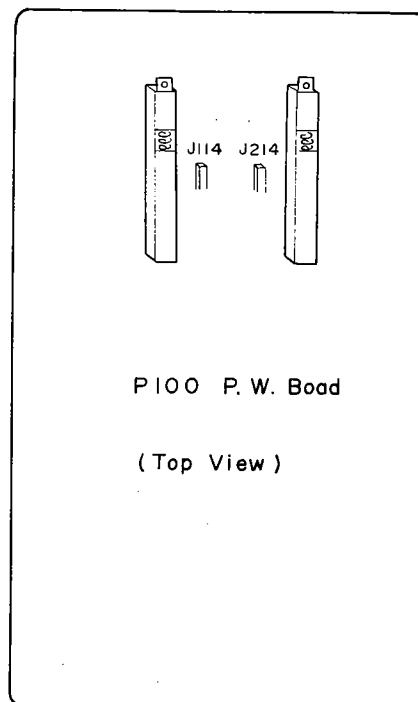
6. Bias Trap Adjustment

SET UP

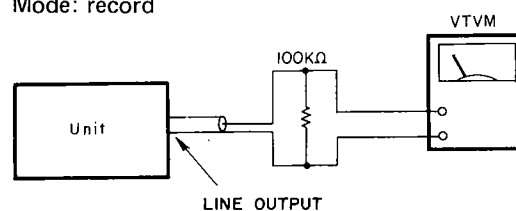
1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Level control position:- Maximum.
3. TAPE selector switch position:- CrO₂.

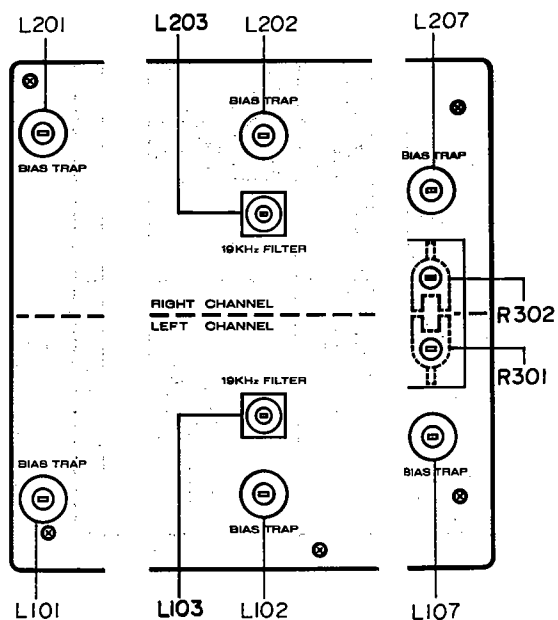
PROCEDURES

1. Set up the tape deck in the recording mode of operation.
2. Connect the VTVM to J114 and J214. Adjust L101 and L201 for minimum VTVM read.
3. In turn, connect the VTVM to R171 and R271. Adjust L107 and L207 for minimum VTVM read.
4. Adjust L102 and L202 for minimum leak bias at the LINE OUTPUT terminal.



Mode: record





CAUTIONS

1. If the leak bias is less than the specified value, the bias trap needs not to be adjusted since the adjusting coil is factory preset.
2. The adjusting rod used should be non-metallic.

7. 19kHz Filter Adjustment

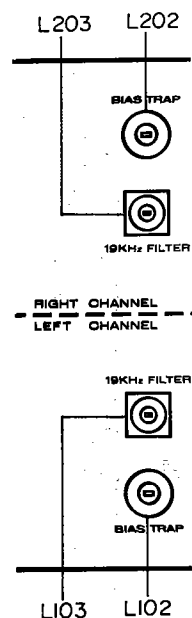
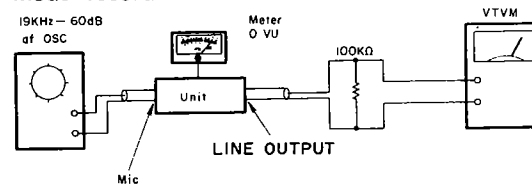
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Input connection:- 19kHz, -60dB signal to MIC terminal.
3. TAPE selector switch:- NORMAL.
4. Output terminal: LINE OUTPUT.
5. Load:- Measuring instrument input impedance.

PROCEDURES

1. Connect the 19kHz, -60dBV input signal to the MIC terminal. Adjust the level control for 0VU.
2. In turn, turn the MPX Filter switch to the ON position. Adjust L103 and L203 for minimum output level at the LINE OUTPUT terminal.
3. Proceed both for the right and left channels in the same manner.

Mode: record



CAUTIONS

1. The 19kHz input signal should be as precise as $19 \pm 0.5\text{kHz}$.
2. If the filter characteristic is better than 15dB, the adjusting coil needs not to be adjusted since it is factory set.

8. Recording Bias Current Adjustment (Temporal)

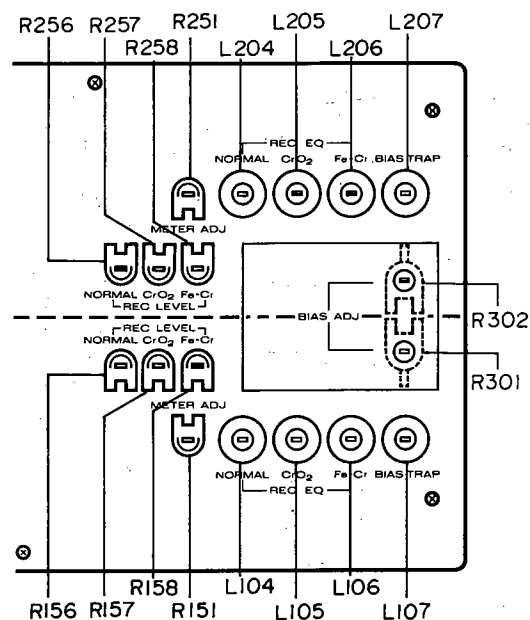
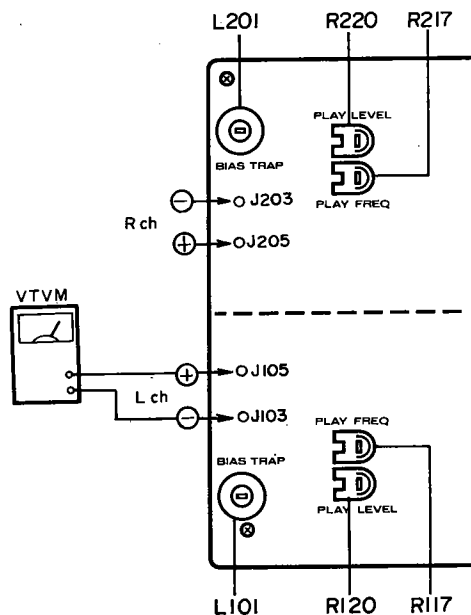
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. TAPE selector switch:- NORMAL.

PROCEDURES

1. Set up the tape deck in the recording mode of operation. Connect the VTVM to J105, J103 (Lch) and J205, J203 (Rch). Adjust the semifixed resistor R301 and R302 for 58mV VTVM read.
2. Proceed both for the right and left channels in the same manner.
3. For the tape deck equipped with the TAPE selector switch, make certain that the VTVM reads approximately 85mV with it set to the CrO₂ position.
4. When the TAPE selector switch is set at the NORMAL position, the leaf switch interlocked with the automatic tape selector lever, or CrO₂ tape detecting lever, will turn off.

Mode: record



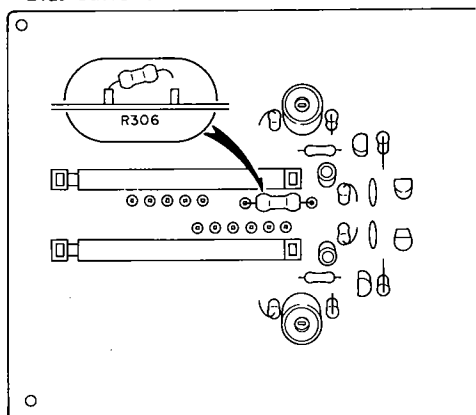
9. Recording Equalizer Adjustment

SET UP

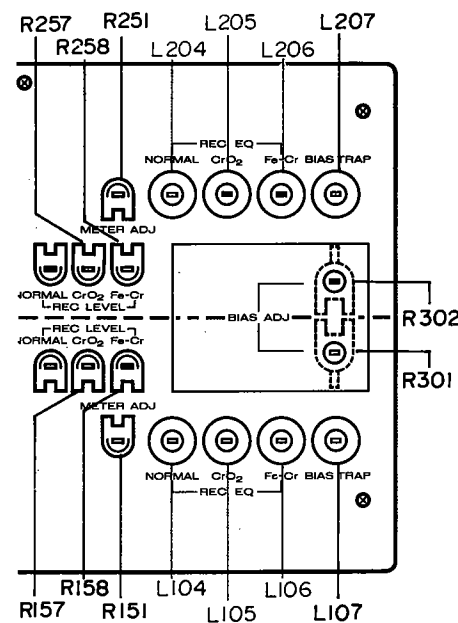
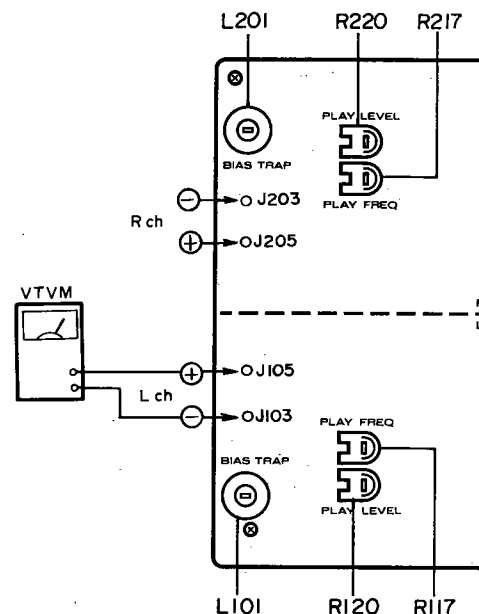
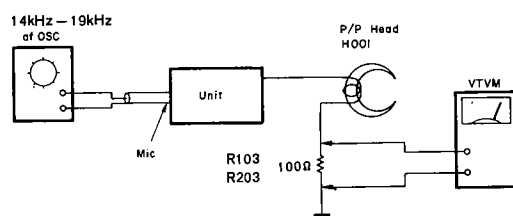
1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Input level:- 20dB lower than -60dB.

PROCEDURES

1. Stop the recording bias current oscillation by disconnecting the bias circuit +B resistor (R306).
2. Set up the tape deck to the normal recording state. Reduce the input level by 20dB.
3. Set the TAPE selector switch to the NORMAL position. Set the audio-frequency oscillator to 14kHz. Connect the VTVM to J105, J103 (L ch) and J205, J203 (R ch). Adjust L104 and L204 for maximum VTVM read.
4. In turn, set the TAPE selector switch to the CrO₂ position. Set the low-frequency oscillator to 17kHz. Connect the VTVM to J105, J103 (L ch) and J205, J203 (R ch). Adjust L105 and L205 for maximum VTVM read.
5. Set the TAPE selector switch to the Fe-Cr position. Set the audio-frequency oscillator to 19kHz. Connect the VTVM to J105, J103 (L ch) and J205, J203 (R ch). Adjust L106 and L206 for maximum VTVM read.
6. Proceed both for the right and left channels in the same manner.
7. After adjustment, release the recording bias current.



Mode: record



CAUTION

The adjusting rod should be non-metallic.

10. Recording Current Adjustment (Temporal)

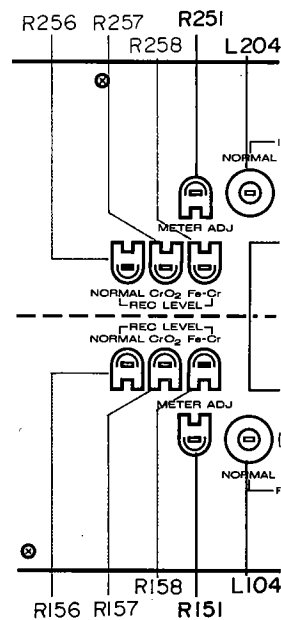
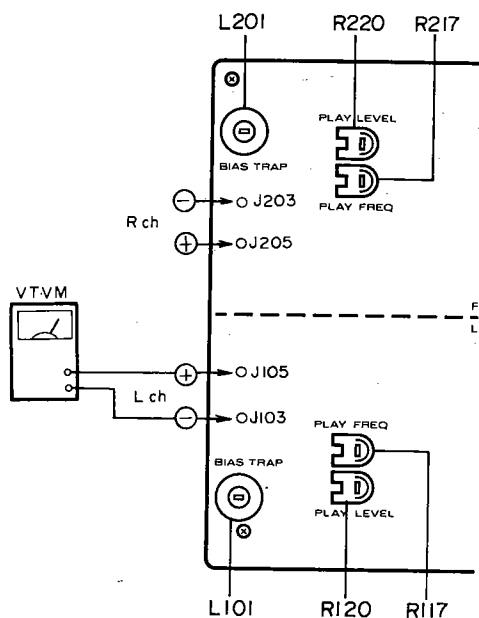
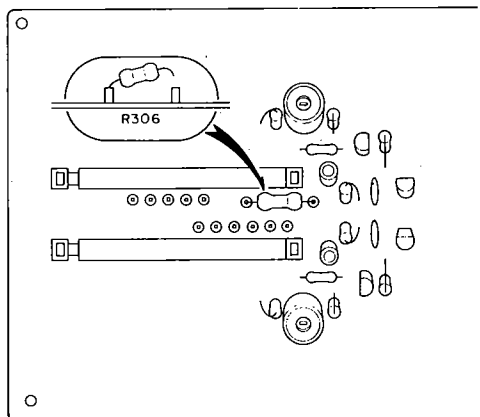
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Input signal:- 1kHz, -60dB signal.
3. TAPE selector switch positions:- NORMAL, CrO₂ and Fe-Cr.
4. Load:- Measuring instrument input impedance.

PROCEDURES

1. Stop the recording bias current oscillation by disconnecting the bias circuit +B resistor (R306).
2. Set up the tape deck to the normal recording state. Connect the VTVM to J105, J103 (L ch) and J205, J203 (R ch). Adjust the semi-fixed resistors R156 and R256 (for NORMAL) R157 and R257 (for CrO₂) and R158 and R258 (for Fe-Cr) until the VTVM reads 4.4mV (for NORMAL), 7mV (for CrO₂) and 4.6mV (for Fe-Cr), respectively.
3. Proceed both for the right and left channels in the same manner.
4. After adjustment, release the recording bias current.

Mode: record



11. Record-Playback Frequency Response Adjustment

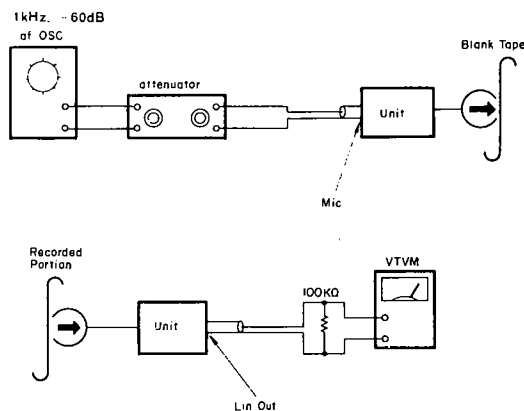
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Input signal:- 1kHz, -60dB with -20dB referenced as 0VU.
3. TAPE selector switch:- Fe-Cr.
4. Output terminal:- LINE OUT.
5. Load:- Measuring instrument input impedance.
6. Test tape used:- SONY Fe-Cr.

PROCEDURES

1. Connect the input signal to the MIC terminal. Set up the tape deck to the normal recording state.
2. In turn, reduce the input level by 20dB with the use of the attenuator. Record the 1 and 10kHz tones.
3. Play the 1kHz, 20dB-down recorded tone back as 0dB. Adjust the recording bias current until the 10kHz response is within $\pm 1.5\text{dB}$ as referenced to the 1kHz, 0dB response.
4. Proceed both for the right and left channels in the same manner.
5. If the recording bias current is reduced in the above adjustment, be sure to measure the distortion.

Mode: record



12. Record-Playback Output Level Adjustment

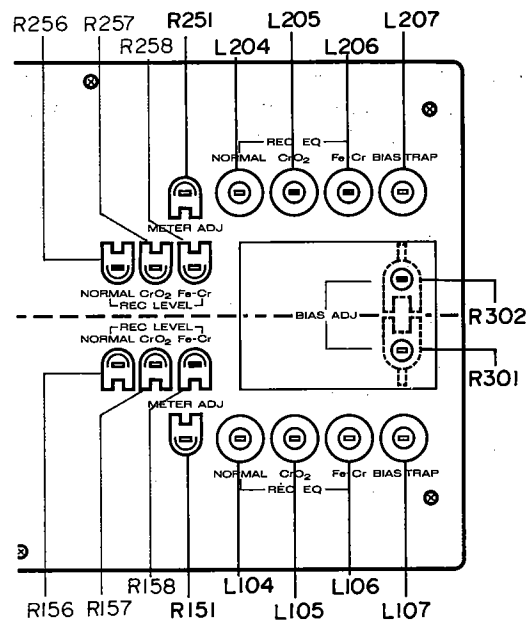
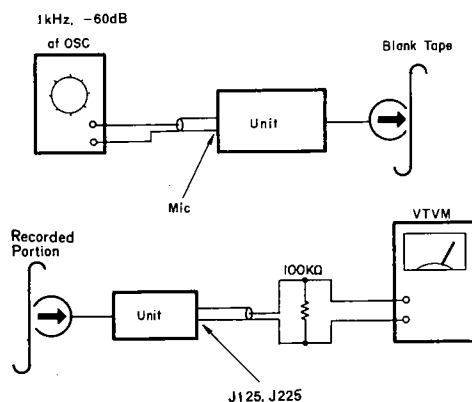
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Input:- 1kHz, -60dB signal.
3. TAPE selector switch position:- NORMAL, CrO₂ and Fe-Cr.
4. Output terminal:- MAIN P.W. Board (P100) J125 and J225.
5. Load:- Measuring instrument input impedance.
6. Test tape used:- TDK DC-60, KRC-60 and SONY Fe-Cr.

PROCEDURES

1. Connect the 1kHz, -60dB input signal to the MIC terminal. Set up the tape deck to the normal recording state.
2. Adjust the REC LEVEL semi-fixed resistor until the recorded signal is reproduced at 460mV $\pm$ 0.5dB.
3. Proceed for the NORMAL, CrO₂ and Fe-Cr positions each in the same manner.
4. The semi-fixed resistors to be adjusted are:
R156 and R256 for the NORMAL position.
R157 and R257 for the CrO₂ position.
R158 and R258 for the Fe-Cr position.

Mode: record



CAUTION

1. If the bias current is changed, be sure to perform the above adjustment.

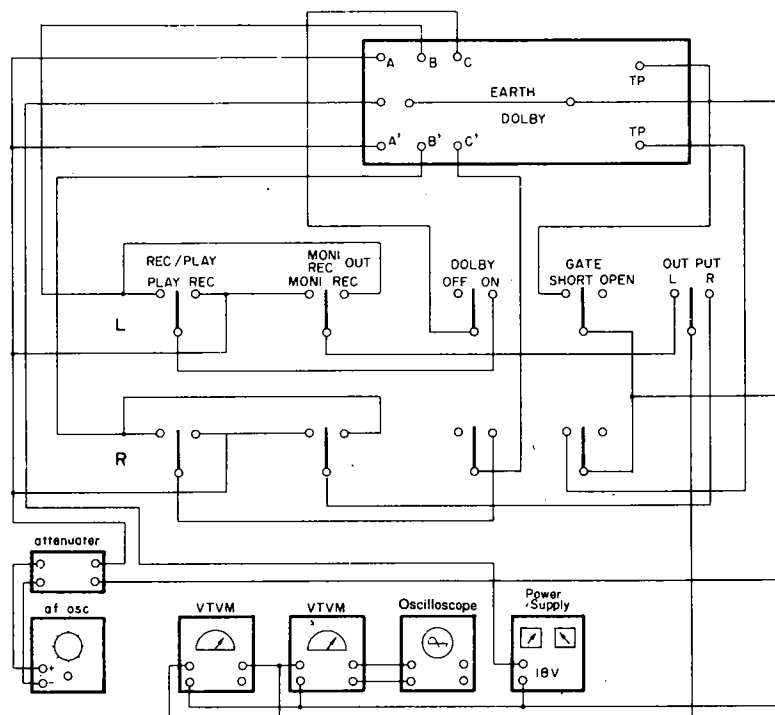
13. Dolby Circuit Adjustment

A) Encoder Circuit

1. Set the selector switch to the ENCODER (recording) position.
2. Adjust the LAW control for maximum positive potential applied to the source of the FET.
3. Turn the NOISE REDUCTION switch to the OFF position. Ground the gate of the FET.
4. Connect and adjust a 5kHz input signal for 17.5mV level at the MON. OUT terminal.
5. Note the output level at the REC. OUT terminal. Let the output level be 0dB as reference level.
6. Turn the NOISE REDUCTION switch to the ON position. Adjust the GAIN control until the output level at the REC. OUT terminal increases by $10 \pm 0.25\text{dB}$ as compared with the one measured in Step (5) above (0dB).
7. Open the gate of the FET. Adjust the LAW control until the output level at the REC. OUT terminal decreases by $2 \pm 0.25\text{dB}$ as compared with the 0dB reference level.

B) Decoder Circuit

1. Set the selector switch to the DECODER (playback) position.
2. Turn the NOISE REDUCTION switch to the OFF position. Ground the gate of the FET.
3. Connect and adjust the 5kHz input signal for 4.4mV level at the MON. OUT terminal.
4. Make certain that the output level at the MON. OUT terminal is reduced by $10\text{dB} \pm 0.5\text{dB}$ when the NOISE REDUCTION switch is turned to the ON position.
5. Open the gate of the FET. Make certain that the signal level at the MON. OUT terminal is $17.5\text{mV} \pm 0.5\text{dB}$.
6. If the signal level is out of the above permissible range, repeat the adjustment beginning with the encoder circuit, not from the decoder circuit at all.



14. Tape Speed Measurement

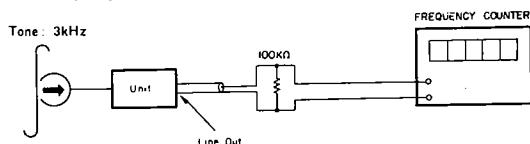
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Output terminal:- LINE OUT.
3. Test tape used:- MTT-111.
4. Set position:- Horizontal

PROCEDURES

1. Play the wound-up end of the test tape MTT-111 back. Read the frequency counter indication.

Mode: playback



STANDARD

Tape speed:- 4.8cm/sec +2, -2%.
Frequency: 2940 to 3060Hz.

CAUTION

The tape deck should be leveled as specified for this measurement.

15. Wow and Flutter Measurement

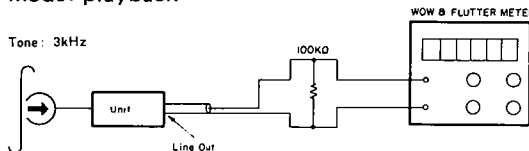
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Output terminal:- LINE OUT.
3. Load:- Measuring instrument input impedance.
4. Test tape used:- MTT-111.
5. Set position:- Horizontal.
6. Wow & flutter meter function switch:- NAB UNWTD.

PROCEDURES

1. Play the test tape MTT-111 back. Read the wow & flutter meter indication.

Mode: playback



STANDARD

Less than NAB 0.25% in rms.

CAUTION

The measurement should be performed at the wound-up end of the test tape.

16. Playback Output Level Measurement (at LINE OUT)

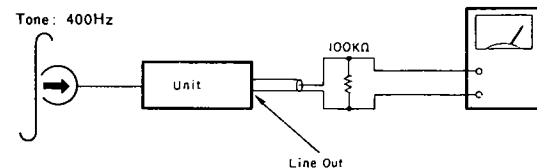
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. TAPE selector switch position: NORMAL.
3. Load:- Measuring instrument input impedance.
4. Output terminal:- LINE OUT.
5. Test tape used:- MTT-150.

PROCEDURES

1. Play the test tape back in the normal playback state. Read the VTVM indication.
2. Proceed both for the right and left channels in the same manner.

Mode: playback



STANDARD

Within 900mV ± 3 dB.

17. Playback Signal-to-Noise Ratio Measurement

SET UP

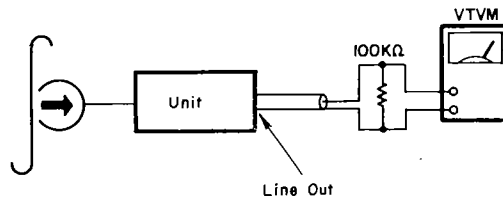
1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Load:- Measuring instrument input impedance.
3. Measuring output terminal:- LINE OUT.
4. Test tape used:- MTT-112 (333Hz tone).
5. TAPE selector switch position:- NORMAL, CrO₂ and Fe-Cr.

PROCEDURES

1. Load the test tape MTT-112. Set up the tape deck to the normal playback state.
2. Read playback output as a 0dB reference. Then playback blank tape and note the output level drop in dB.
3. Proceed both for the right and left channels in the same manner.
4. Repeat the above measurement for each TAPE selector switch position.

Mode: playback

Tone 333Hz



STANDARD

Greater than 45dB.

CAUTIONS

1. Arrange the tape deck power cord for minimum hum component.
2. Effect by induction noises should be minimized for the measurement.
3. When playing the standard reference level tape MTT-112 back, the VU meter indication is close to +2.5 VU and is used as the reference level for the signal-to-noise ratio measurement.

18. Playback Frequency Response Measurement

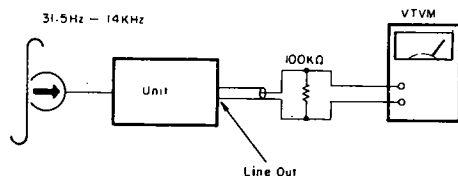
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. TAPE selector switch position:- NORMAL and CrO₂ or Fe-Cr.
3. Load:- Measuring instrument input impedance.
4. Measuring output terminal:- LINE OUT.
5. Test tape used:-
MTT-116U (for NORMAL).
MTT-116K (for CrO₂ or Fe-Cr).

PROCEDURES

1. Play the test tape MTT-116U and -116K back. Let the 315Hz output level be 0dB as reference level.
2. Read the 40Hz and 10kHz output level differences from the 315Hz, 0dB reference level.
3. Proceed both for the right and left channels in the same manner.
4. For the above measurement, use the test tape MTT-116U for the NORMAL position and MTT-116K for the CrO₂ or Fe-Cr.

Mode: playback



STANDARD

In reference to the 315Hz, 0dB signal output level,

- +3dB to -5dB at 40Hz.
- +3dB to -6dB at 10kHz.

CAUTION

Since the test tapes used may involve some head azimuth difference, the head azimuth should be corrected at the highest frequency of each test tape before measurement.

19. Record-Playback Output Level Measurement (at LINE OUT)

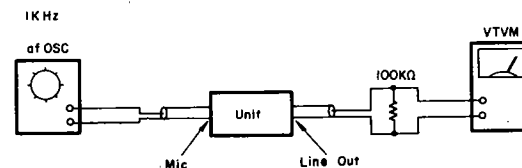
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Input: 1kHz, -60dB signal.
3. Load:- Measuring instrument input impedance.
4. Level control position:- SRL for recording operation.
5. TAPE selector switch position:- NORMAL, CrO₂ and Fe-Cr.
6. Measuring output terminal:- LINE OUT.
7. Cassette tape used:- TDK DC-60, KRC-60 and SONY Fe-Cr.

PROCEDURES

1. Record the 1kHz, -60dB signal in the normal recording state.
2. Play the recorded signal back. Read the VU meter indication.
3. Proceed for the NORMAL, CrO₂ and Fe-Cr positions each in the same manner.
4. Proceed both for the right and left channels in the same manner.

Mode: record



STANDARDS

1. NORMAL position: 730mV ± 3dB.
2. CrO₂ position: 730mV ± 3dB.
3. Fe-Cr position: 730mV ± 3dB.

20. Record-Playback, Harmonic Distortion Measurement

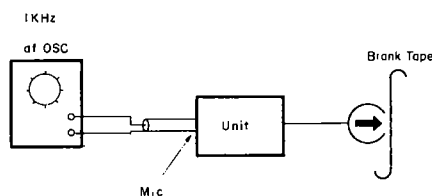
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Input:- 1kHz, -60dB signal.
3. Playback output level:- Same as the recorded signal level.
4. Load:- Measuring instrument input impedance.
5. Measuring output terminal:- LINE OUT.
6. Cassette tape used:- TDK DC-60, KRC-60 and SONY Fe-Cr.

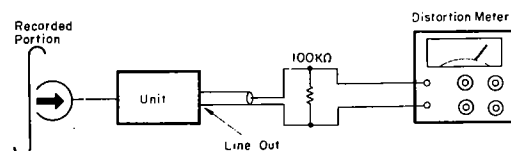
PROCEDURES

1. Record the 1kHz signal in the normal recording state.
2. Play the recorded signal back in the normal playback state. Calibrate the harmonic distortion meter to 100% at the INPUT CONT. Adjust the adjusting knob for minimum meter pointer deflection, and read the harmonic distortion.
3. Proceed both for the right and left channels in the same manner.
4. Proceed for the NORMAL, CrO₂ and Fe-Cr positions each in the same manner.

Mode: record



Mode: playback



STANDARDS

1. Less than 4% for the NORMAL and Fe-Cr positions.
2. Less than 4.5% for the CrO₂ position.

CAUTIONS

1. Be sure to demagnetize the heads as the measured values may deviate from the accurate values.
2. Note that excessive wow and flutter also causes deviation of the measured values.

21. Record-Playback Signal-to-Noise Ratio Measurement

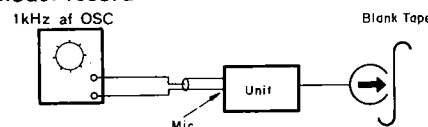
SET UP

1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Input:- 1kHz, -60dB signal.
3. Playback output level:- Same as the recorded signal level.
4. Load:- Measuring instrument input impedance.
5. Measuring output terminal:- LINE OUT.
6. Cassette tape used:- TDK DC-60, KRC-60 and SONY Fe-Cr.

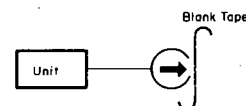
PROCEDURES

1. Record the 1kHz signal in the normal recording state.
2. Disconnect the input signal from the microphone jack. In this state, record no signal.
3. Play the 1kHz signal back in the normal playback state. Let the output level be 0dB as reference level.
4. Read difference between the recorded 0dB reference output and no-signal output levels.
5. Proceed both for the right and left channels in the same manner.
6. Set the DOLBY switch to the ON position, and proceed with similar measurement with the use of the high-pass filter.

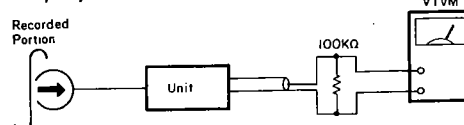
Mode: record



Mode: record



Mode: playback



STANDARDS

1. Greater than 52dB for the ON position of the DOLBY switch.
2. Greater than 43dB for the OFF position of the DOLBY switch.

CAUTION

Arrange the tape deck power cord for minimum hum component.

22. Record-Playback Frequency Response Measurement

SET UP

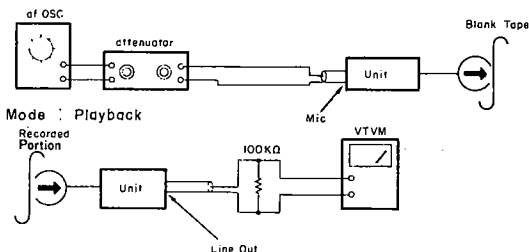
1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
2. Input:- 1kHz, -60dB signal with -20dB as OVU.
3. Playback output level:- Same as the recorded signal level.
4. Load:- Measuring instrument input impedance.
5. Measuring output terminal:- LINE OUT.
6. Cassette tape used:- TDK DC-60, KRC-60 and SONY Fe-Cr.

PROCEDURES

1. Record the 1kHz signal in the normal recording state. In turn, reduce the input level by 20dB with an attenuator. Then, record the 1kHz, 40Hz, 12kHz, and 13kHz signals.
2. Play the recorded 1kHz signal back in the normal playback state.
3. Let the 1kHz, -20dB-down signal level be 0dB as reference level. Read difference of the 40Hz, 10kHz and 12.5kHz signal output levels from the 1kHz signal 0dB reference level.
4. Proceed for the NORMAL, CrO₂ and Fe-Cr positions each in the same manner.
5. Proceed both for the right and left channels in the same manner.

Mode: record

1K, 40, 10K, 12.5KHz



STANDARDS

1. NORMAL position:
+3dB to -6dB at 40Hz
+3dB to -6dB at 10kHz
with DOLBY switch at OFF.

2. CrO₂ position:
+3dB to -6dB at 40Hz
+3dB to -8dB at 12.5kHz
with DOLBY switch at OFF.
3. Fe-Cr position:
+3dB to -6dB at 40Hz
+3dB to -6dB at 12.5 kHz
with DOLBY switch at OFF.
4. NORMAL, CrO₂ and Fe-Cr positions:
+3dB to -8dB at 40Hz
+5dB to -8dB at 10kHz
with DOLBY switch at ON.

23. Erasing Effect Measurement

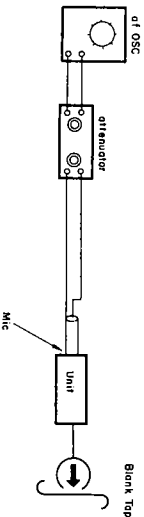
SET UP

- 1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
- 2. Input:- 1kHz, -60dB signal with +10dB as 0VU.
- 3. Playback output level:- Same as the recorded signal level.
- 4. Load:- Measuring instrument input impedance.
- 5. TAPE selector switch position:- NORMAL, CrO₂ and Fe-Cr.
- 6. Cassette tape used:- TDK DC-60, KRC-60 and SONY Fe-Cr.
- 7. Filter used:- 1kHz band-pass filter.

PROCEDURES

- 1. Record the 1kHz input signal in the normal recording state.
- 2. In turn, increase the input level by 10dB with the attenuator, and record it.
- 3. Rewind a half portion of the 10dB-up tape and record in no-signal state, or erase, on the portion with the input signal disconnected from the microphone jack.
- 4. Play back in the normal playback state the input signal recorded in the normal recording state.
- 5. In turn, let the 10dB-up recorded signal level be 0dB as reference level. Read difference of the level at the erased portion from the 0dB reference level.

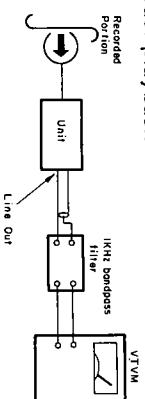
Mode: record



Mode: record



Mode: playback



STANDARD

Greater than 55dB.

24. Leak Bias Measurement

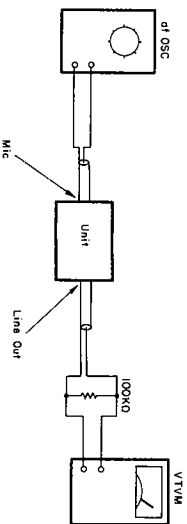
SET UP

- 1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
- 2. Input:- 1kHz, -60dB signal.
- 3. Load:- Measuring instrument input impedance.
- 4. Level control position:- SRL.
- 5. TAPE selector switch position:- NORMAL, CrO₂ and Fe-Cr.

PROCEDURES

- 1. Record the 1kHz input signal in the normal recording state. Let the monitor output level at the LINE OUT terminal be 0dB as reference level. Read difference of the output level having the input signal disconnected from the 0dB reference level.
- 2. Proceed both for the right and left channels in the same manner.

Mode: record



STANDARD

Lower than -45dB.

25. FM Deemphasis Measurement

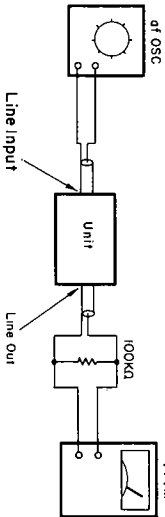
SET UP

- 1. Power voltage:- 50 or 60Hz AC voltage rated for the unit to be used in a market country.
- 2. Input:- 100Hz, -10dB signal.
- 3. Input terminal:- LINE INPUT
- 4. Output terminal:- LINE OUT.
- 5. DOLBY FM switch position: ON
- 6. DOLBY switch position:- ON.
- 7. REC/PLAY switch position:- REC.

PROCEDURES

- 1. Connect the 100Hz, -10dBV input signal to the LINE INPUT terminal. Adjust the FM CAL control for 0VU output level with the DEEMPHASIS switch set at the FLAT position.
- 2. Let the above output level at the LINE OUT terminal be 0dB as reference level. Set the DEEMPHASIS switch to the 25μsec position and read output level differences of 5kHz and 10kHz to 100Hz.
- 3. Proceed both for the right and left channels in the same manner.

Mode: record



STANDARD

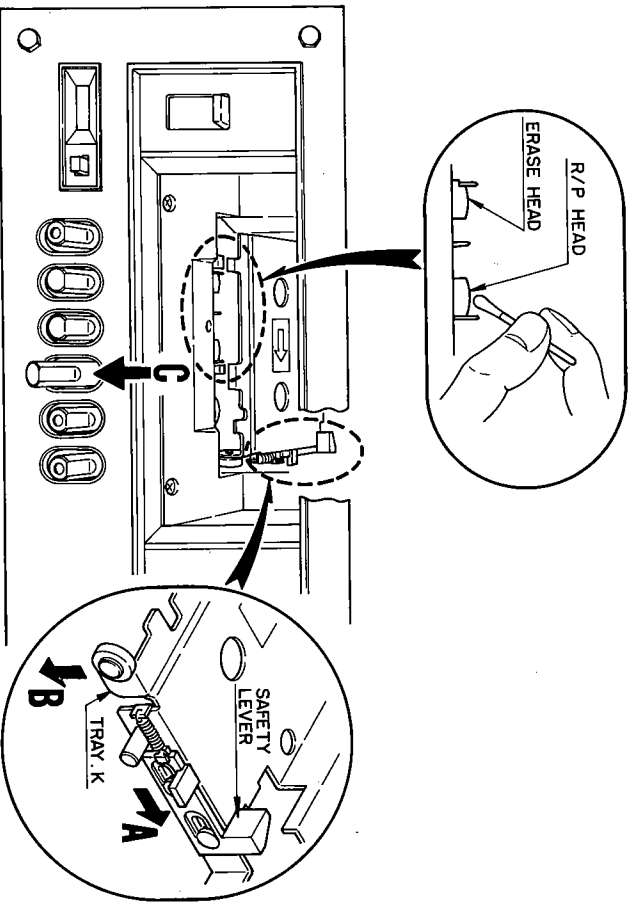
FREQ.	FOR U AND C	FOR N
5kHz	+6 ± 2dB	+3.5 ± 2dB
10kHz	+8.5 ± 2dB	+5 ± 2dB

NOTE

- U: U.S.A.
- C: Canada
- N: Europe

6. HOW TO LOWER THE CASSETTE TRAY DOWN (WITHOUT CASSETTE TAPE)

To operate the 5020 in the playback mode of operation in cleaning or demagnetizing the heads, push the safety lever, which is located at the back right of the cassette compartment (A) all the way toward the rear panel using a pencil, small screwdriver or similar rod. While pressing the safety lever, then, push the cassette tray (B) down and depress the PLAY button (C) down.

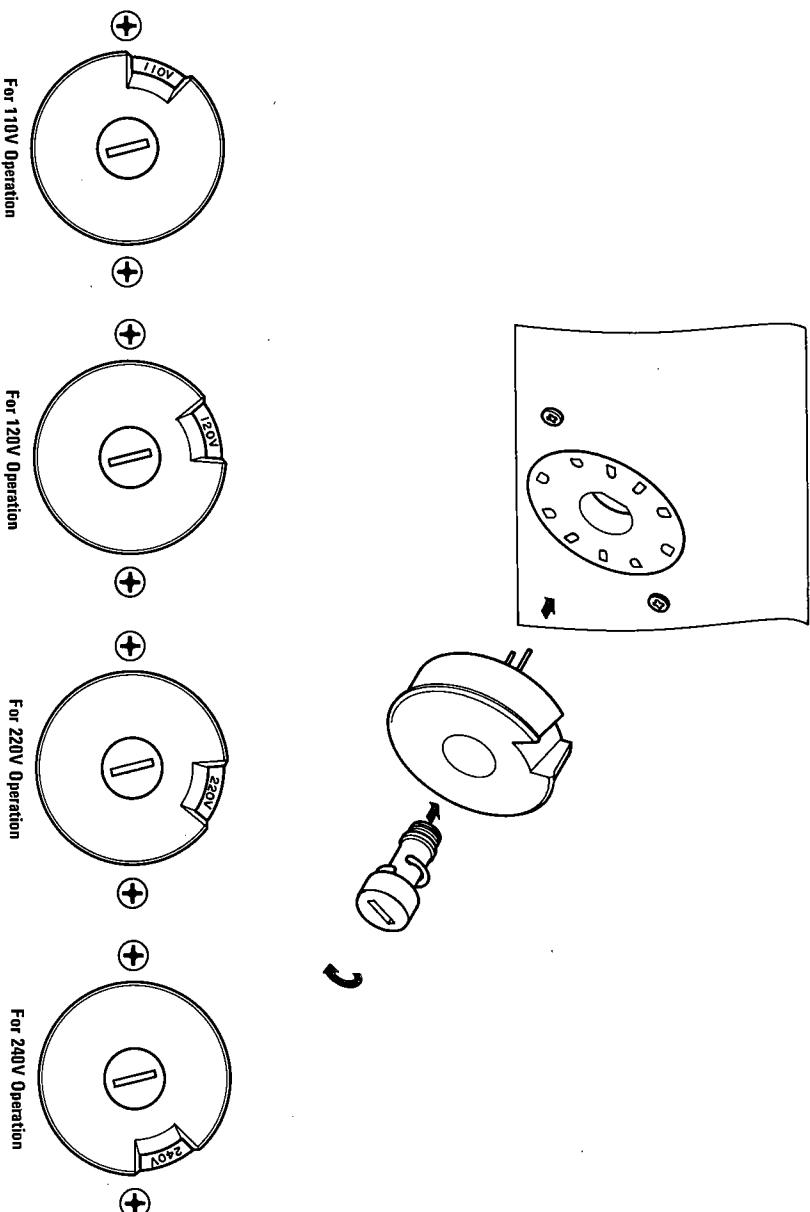


7. VOLTAGE CONVERSION (For European Model Only)

This Model is equipped with a universal power transformer to permit operation at either power source of 110, 120, 220 or 240 V AC, 50/60 Hz.

To convert the unit to a different power source voltage, change the plug as illustrated in the drawing below.

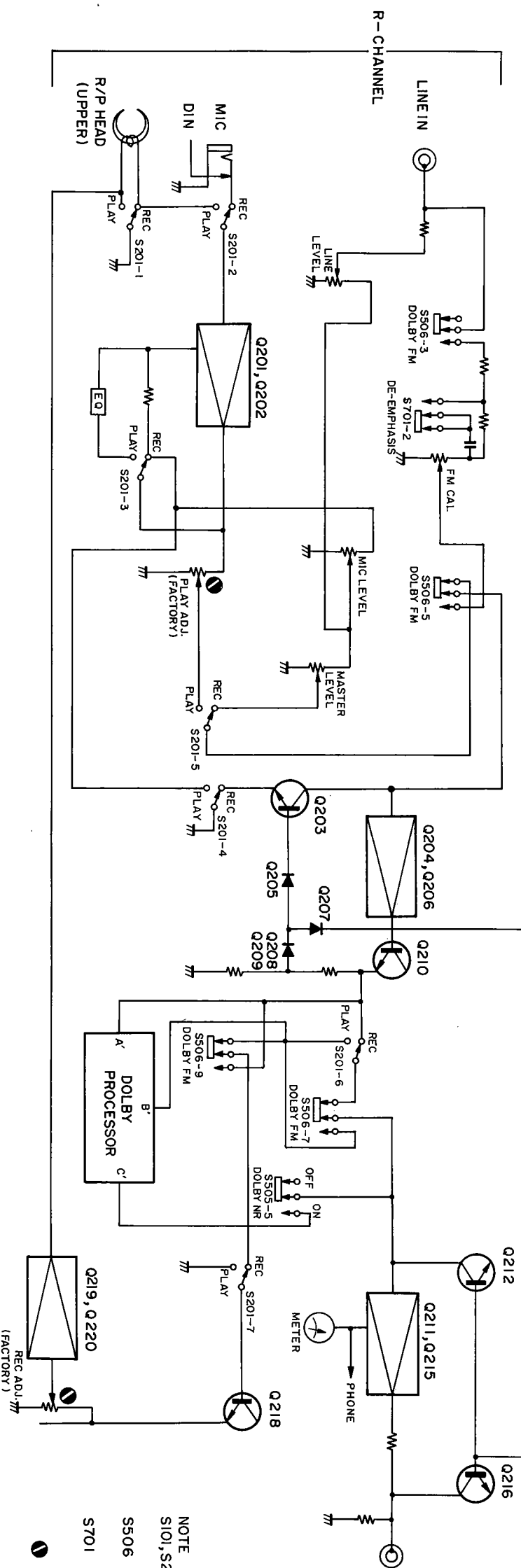
CAUTION: DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.



8. HOW TO USE 5020 DOLBY SYSTEM

Use	Connections	Input	Deck Mode	Level Adj.	5020 Function Switches				Signal State			Result
					DOLBY NR	DOLBY FM	De-emphasis	Mic/Line in	Input	Rec. Out Rec. Amp	Output	
Play back	5020 LINE (Line output) – Amp AUX Tape In	Recorded Tape	Play	Output Level Cont. (Rear)	ON	OFF	–			–		Good
										–		Wrong
										–		Wrong
					OFF	OFF	–			–		Good
										–		Wrong
Record	Amp Tape Out/ Rec Out – 5020 LINE (Line Input)	LINE	Rec	Record Level Cont.	ON	OFF	–	Both position OK				Wrong
												Good
												Wrong
					OFF	OFF	–	Both position OK				Good
												Wrong
DOLBY FM	Tuner – 5020 LINE INPUT & 5020 LINE (Line Output) – Amp. AUX Tape in	LINE	Rec	FM CAL (Rear)	ON	ON	25µ					Good
												Wrong
Other Tape Recorder play CAL for Decode	Other Tape Recorder Output – 5020 LINE IN-PUT (from Recorder)	LINE	STOP	Play CAL (Rear)	ON	ON	Flat		400Hz DOLBY TONE			Good

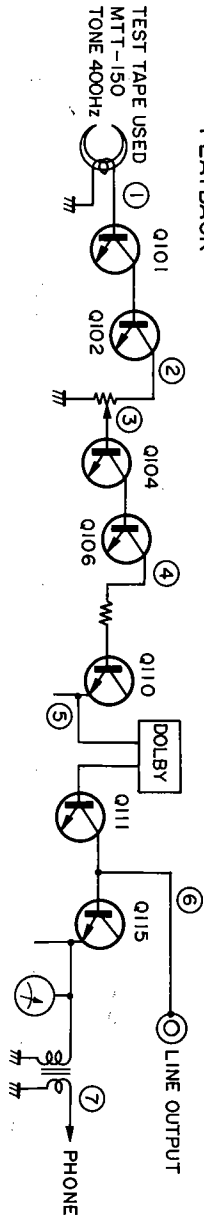
The schematic diagram illustrates the L-CHANNEL of a stereo receiver. It begins with a 'LINE IN' jack connected to a network of switches (S506-4, S506-6, S701-1) and a 'DE-EMPHASIS' filter. The signal then passes through a 'FM CAL' (frequency calibration) section and a 'MIC LEVEL' control. The main signal path is controlled by a 'PLAY' switch (S101-1) and a 'REC' switch (S101-2). The signal is then amplified by a pair of transistors (Q101, Q102). Following amplification, the signal passes through a 'PLAY ADJ (FACTORY)' control and a 'MASTER LEVEL' control. The output stage consists of a push-pull arrangement of transistors (Q103, Q105, Q108, Q109) driving a speaker or earphone through a transformer (Q104, Q106). A 'PHONE' output is also available, controlled by a 'PHONE' switch (S101-6) and a 'DOLBY NR' (noise reduction) switch (S505-3). The final output is connected to a 'LINE OUTPUT' jack. The diagram also shows a 'MUTING SWITCH' and a 'DOLBY PROCESSOR' (A, B, C) section.



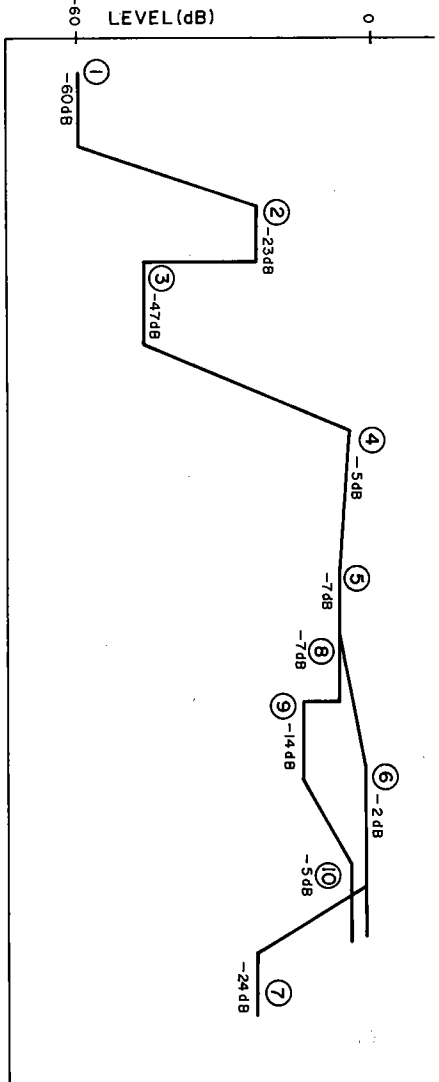
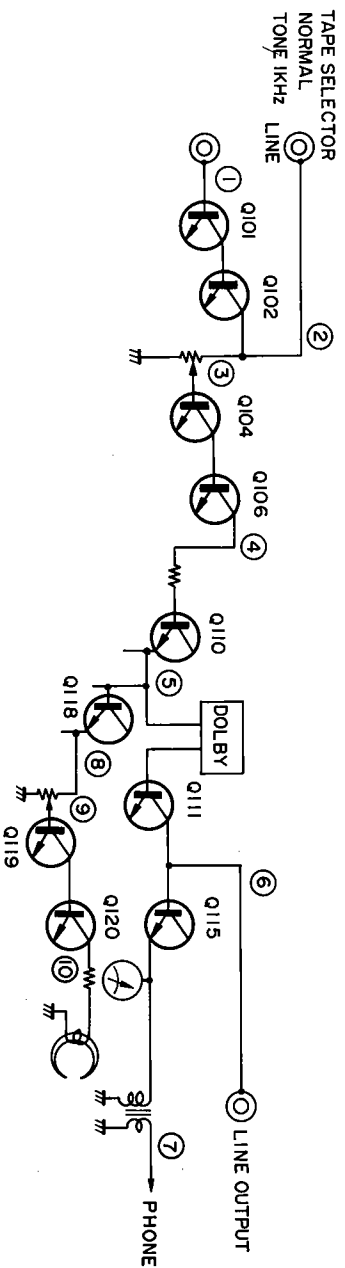
NOTE
S101, S201 : REC/PLAY SWITCH
(IN REC POSITION)
S506 : DOLBY FM SWITCH
(IN OFF POSITION)
S701 : DE-EMPHASIS SWITCH
(IN FLAT POSITION)

10. LEVEL DIAGRAMS

PLAYBACK

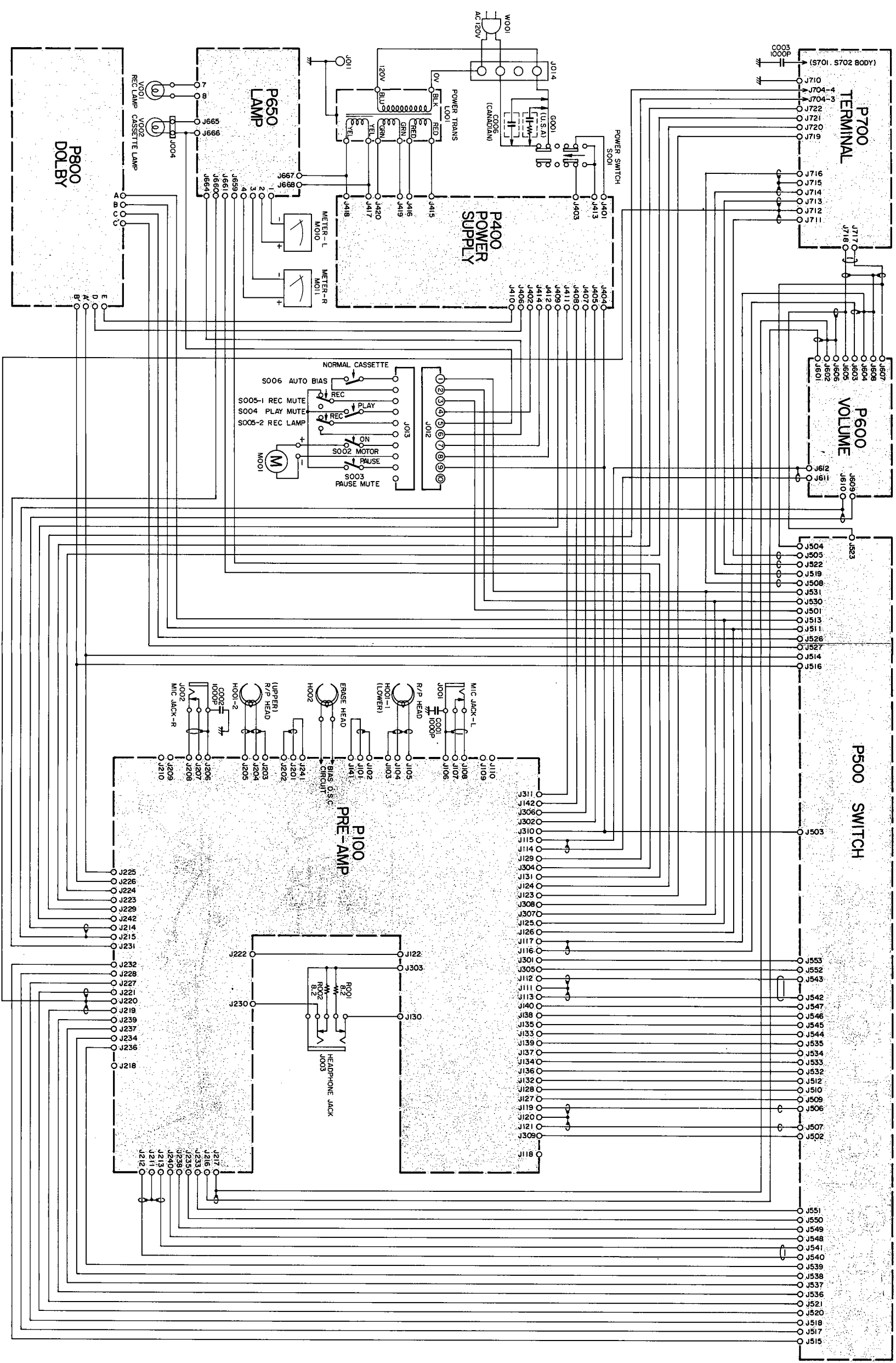


RECORD

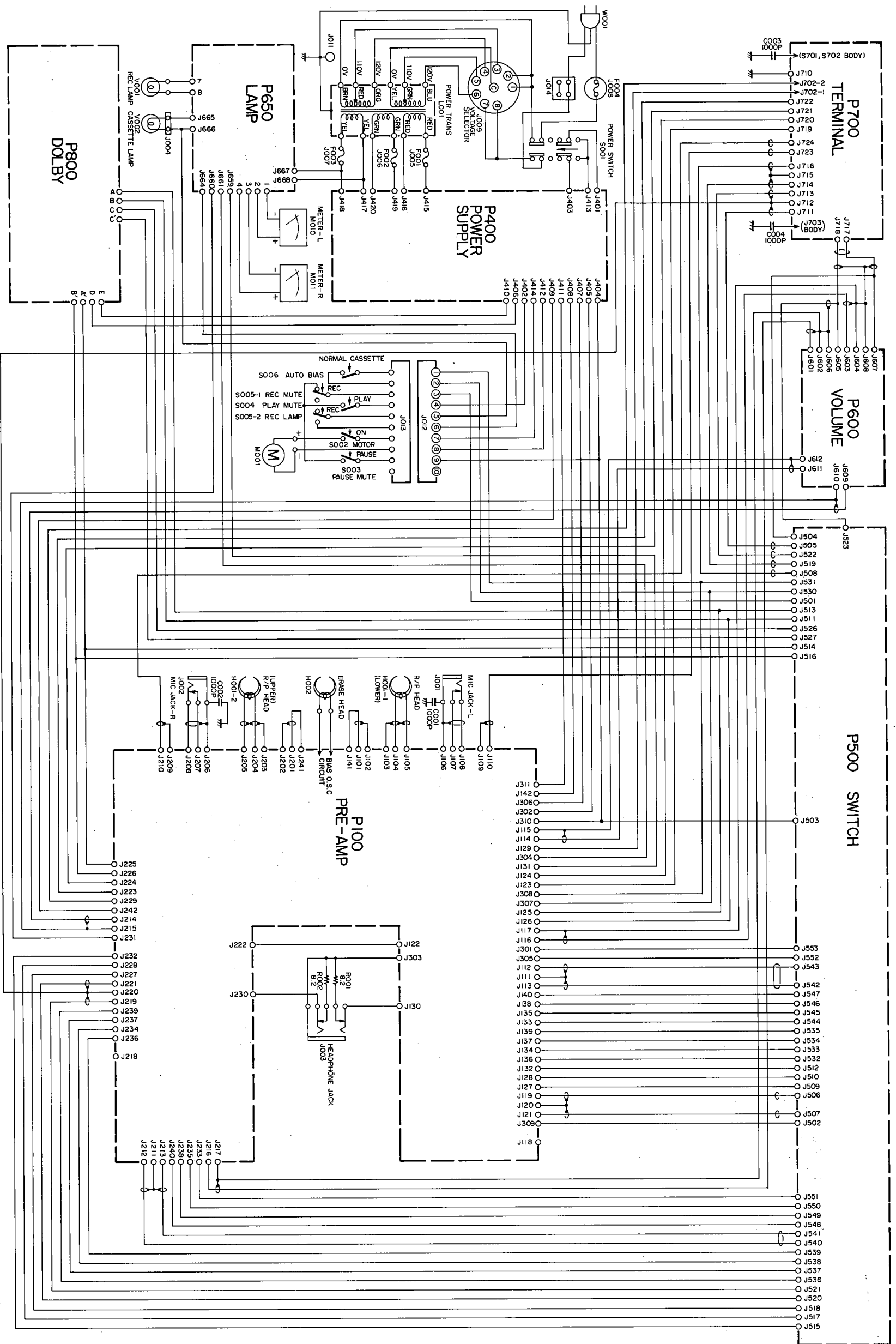


Intelligence

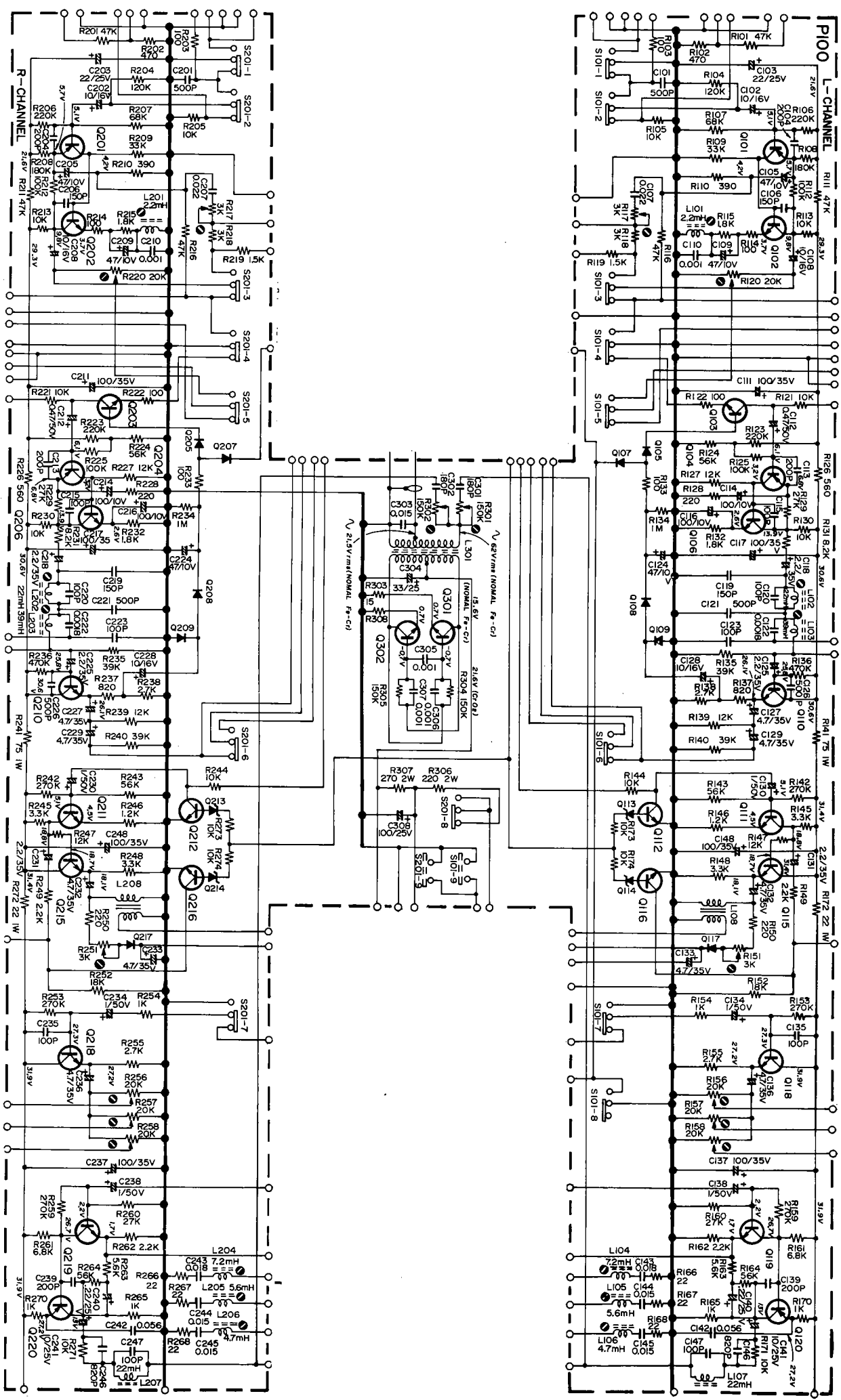
11. INTERCONNECTION DIAGRAMS



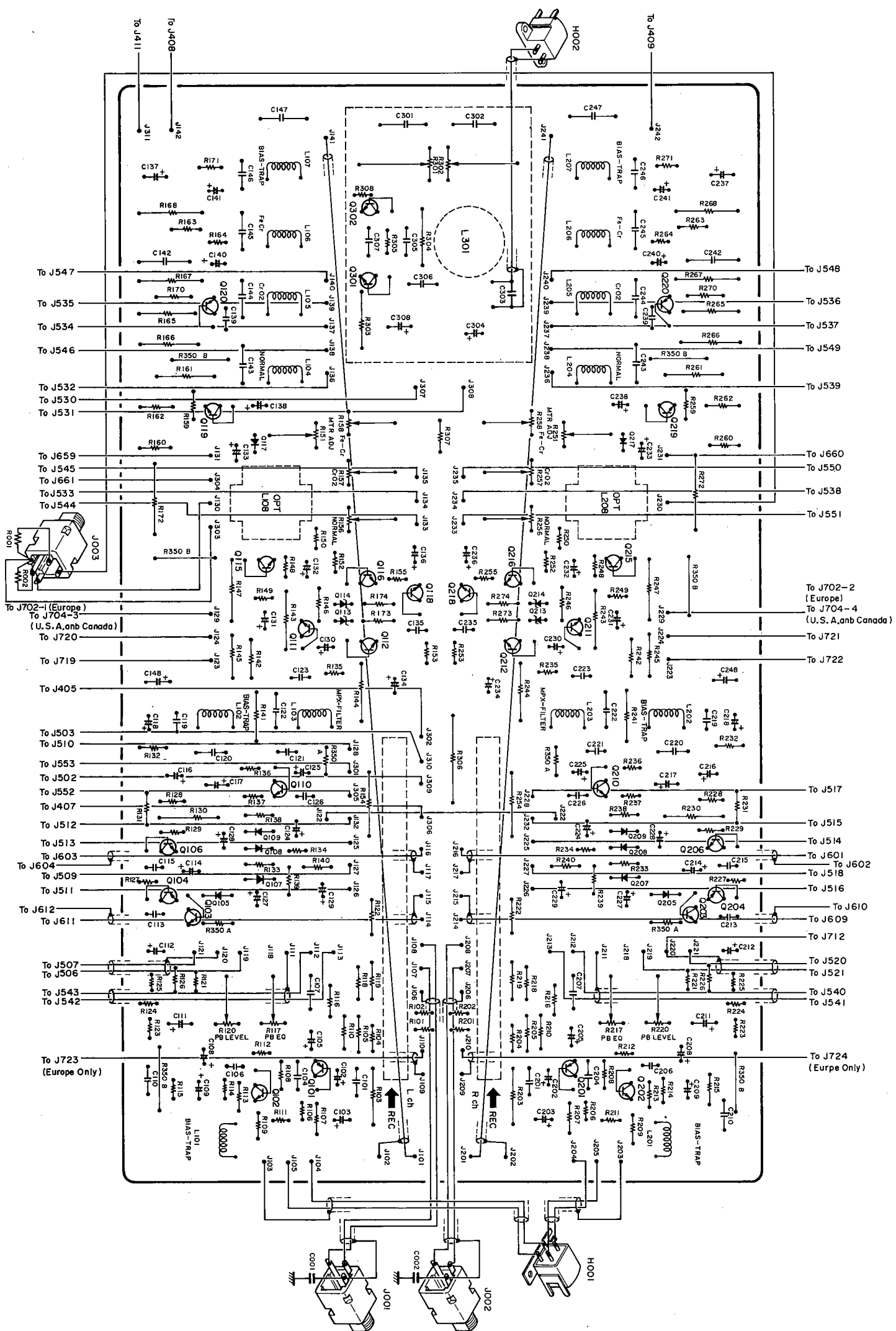
(B) for Europe



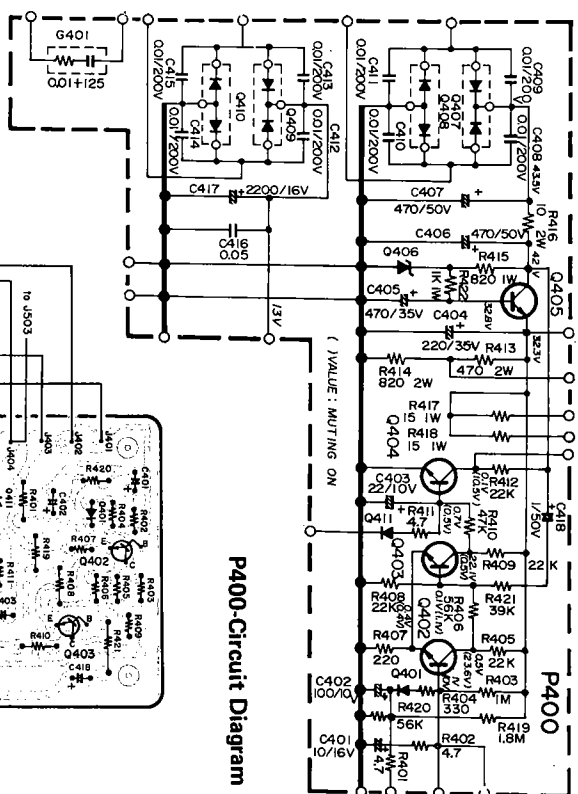
12. MOUNTING/SCHEMATIC DIAGRAMS



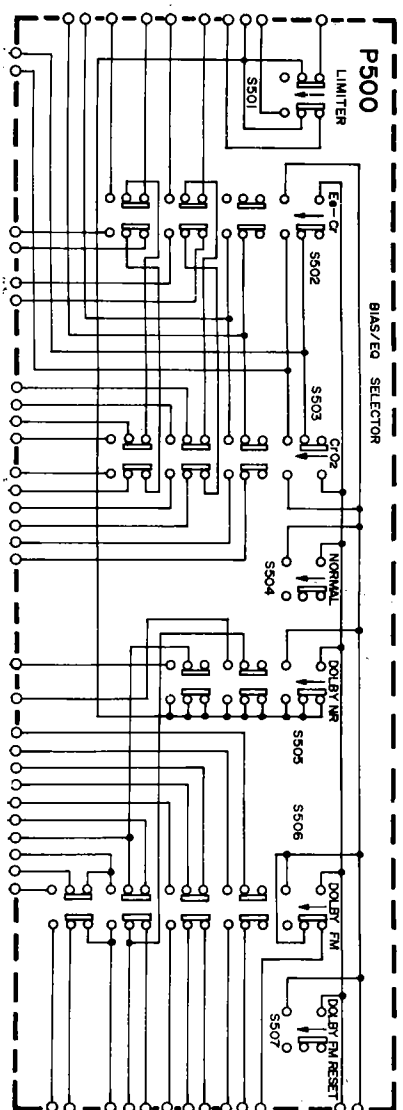
P100-Circuit Diagram



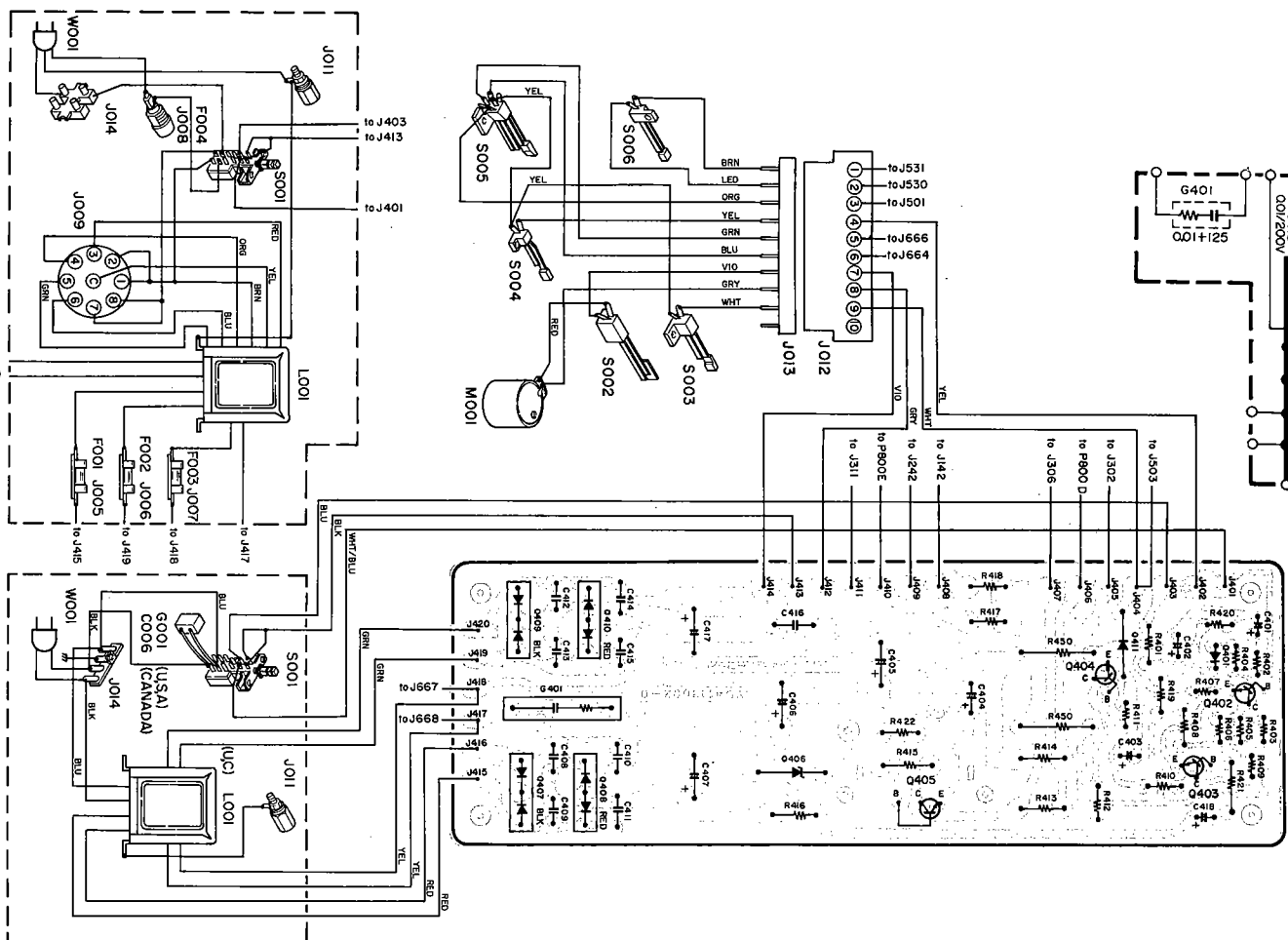
Pre-Amp. Assembly P100 Component Locations



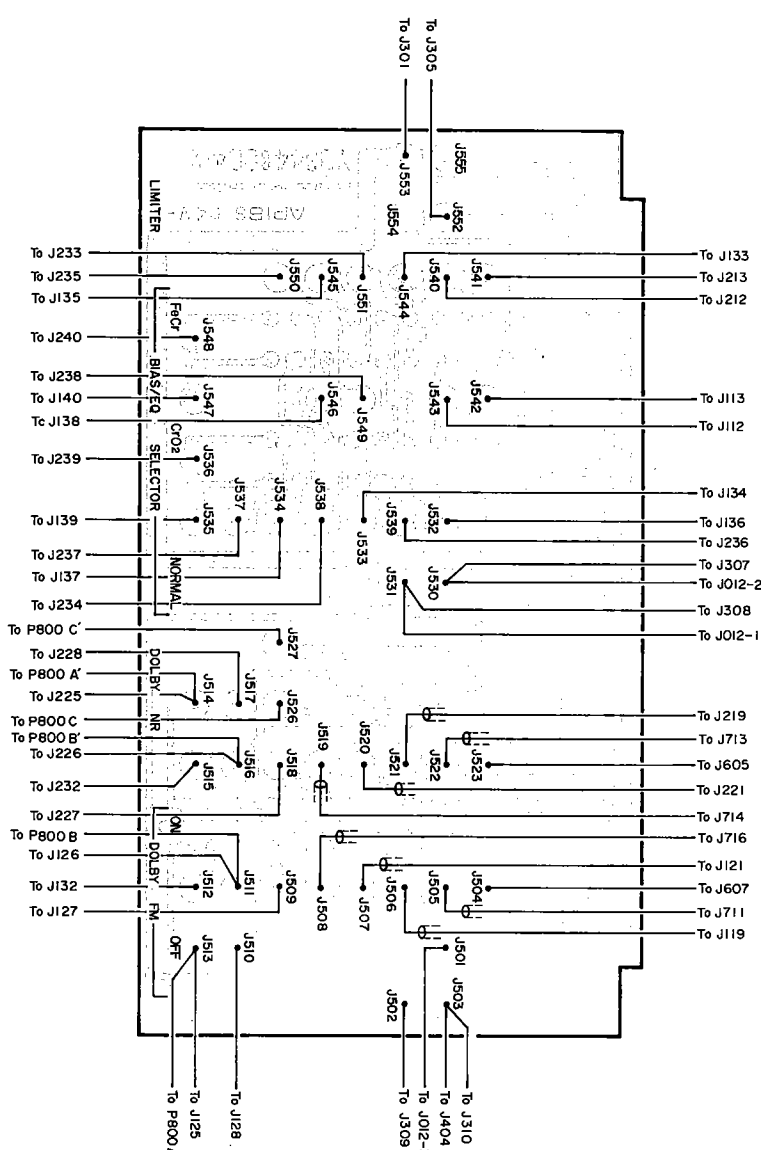
P400-Circuit Diagram



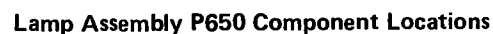
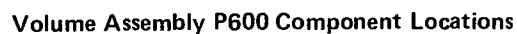
P500-Circuit Diagram

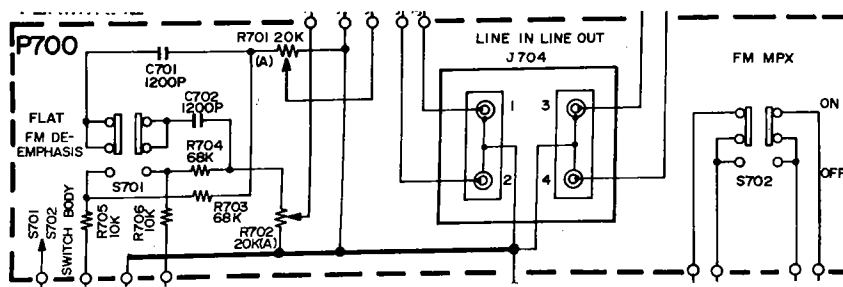


Power Supply Assembly P400 Component Locations

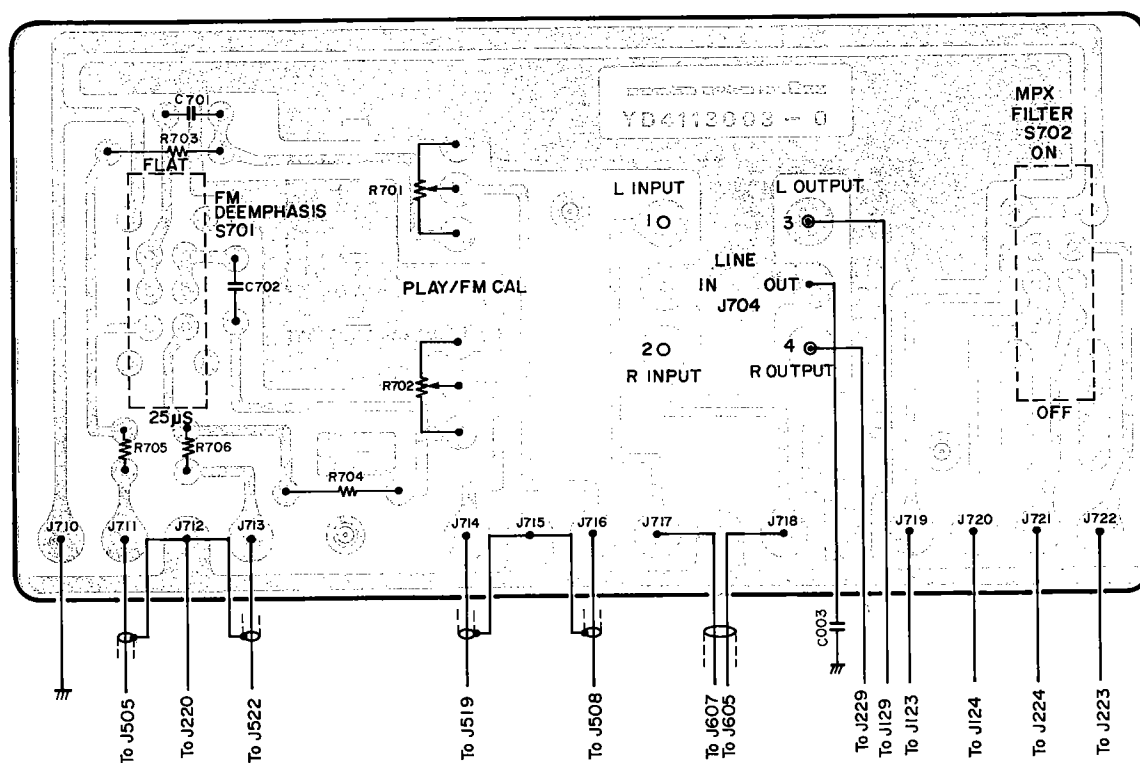


Switch Assembly P500 Component Locations

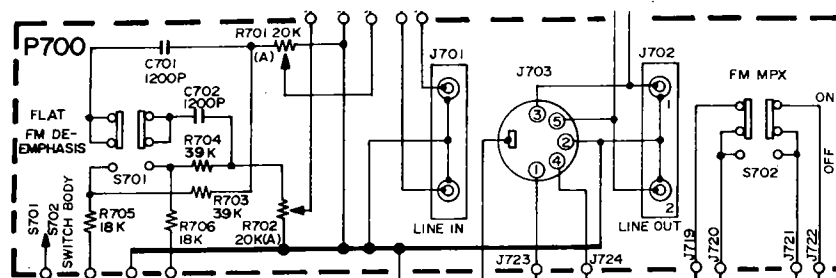




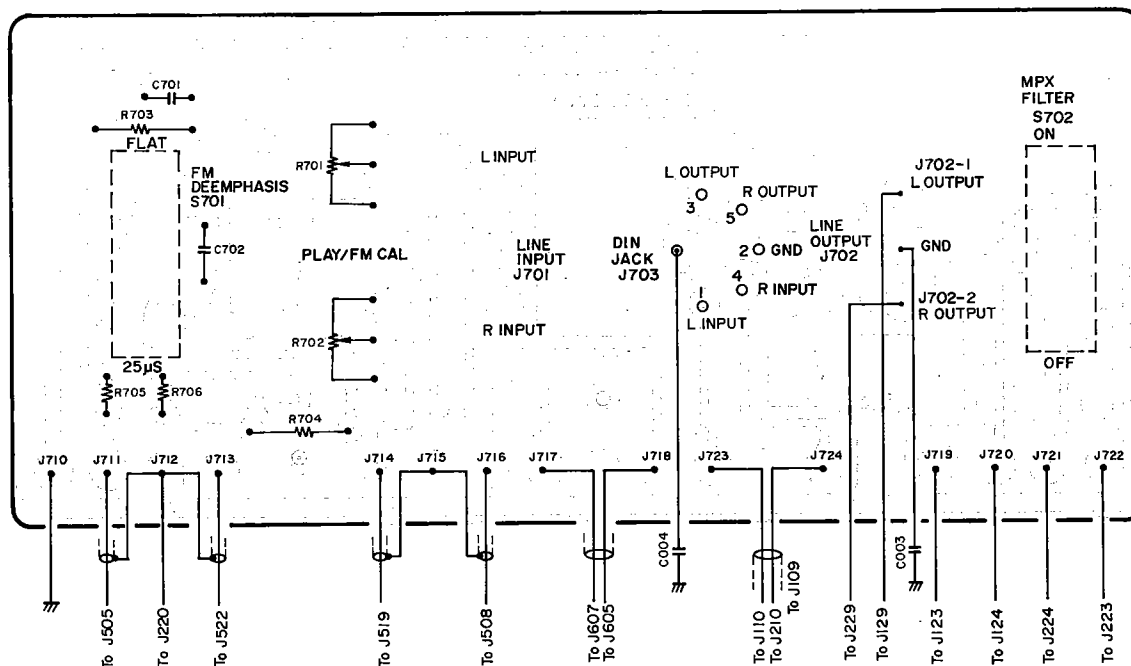
P700-Circuit Diagram



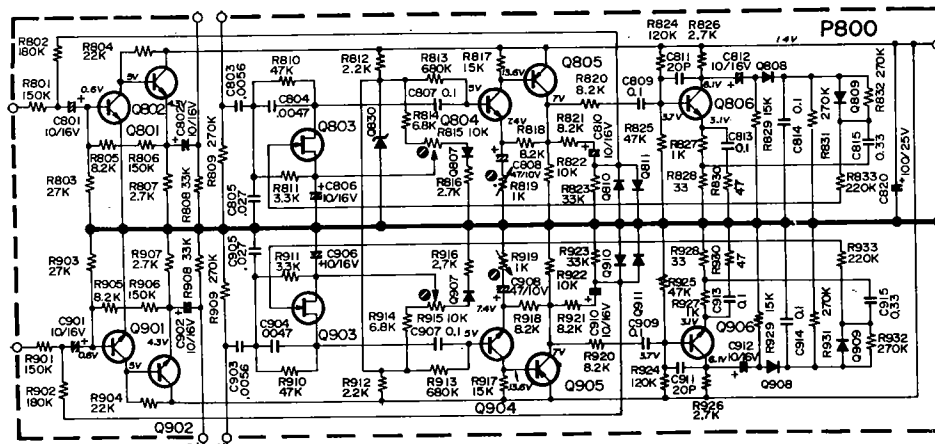
Terminals Assembly P700 Component Locations



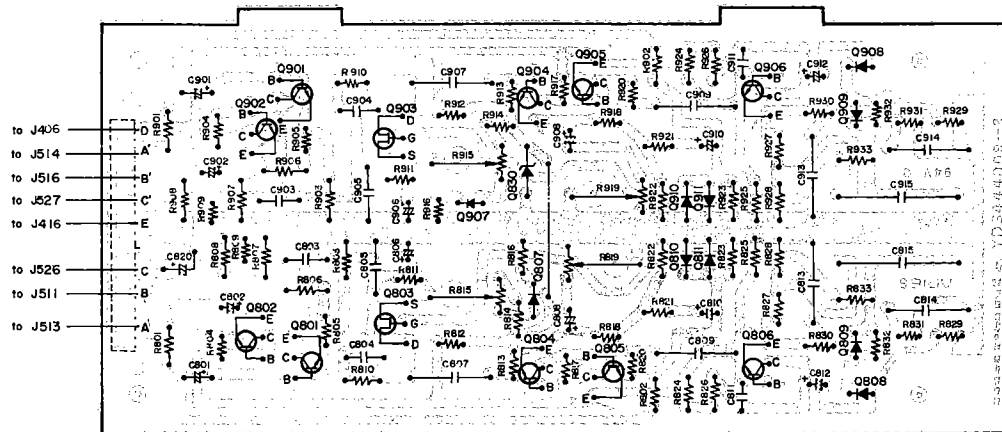
P700-Circuit Diagram (For European Model)



Terminals Assembly P700 Component Locations (For European Model)



P800-Circuit Diagram

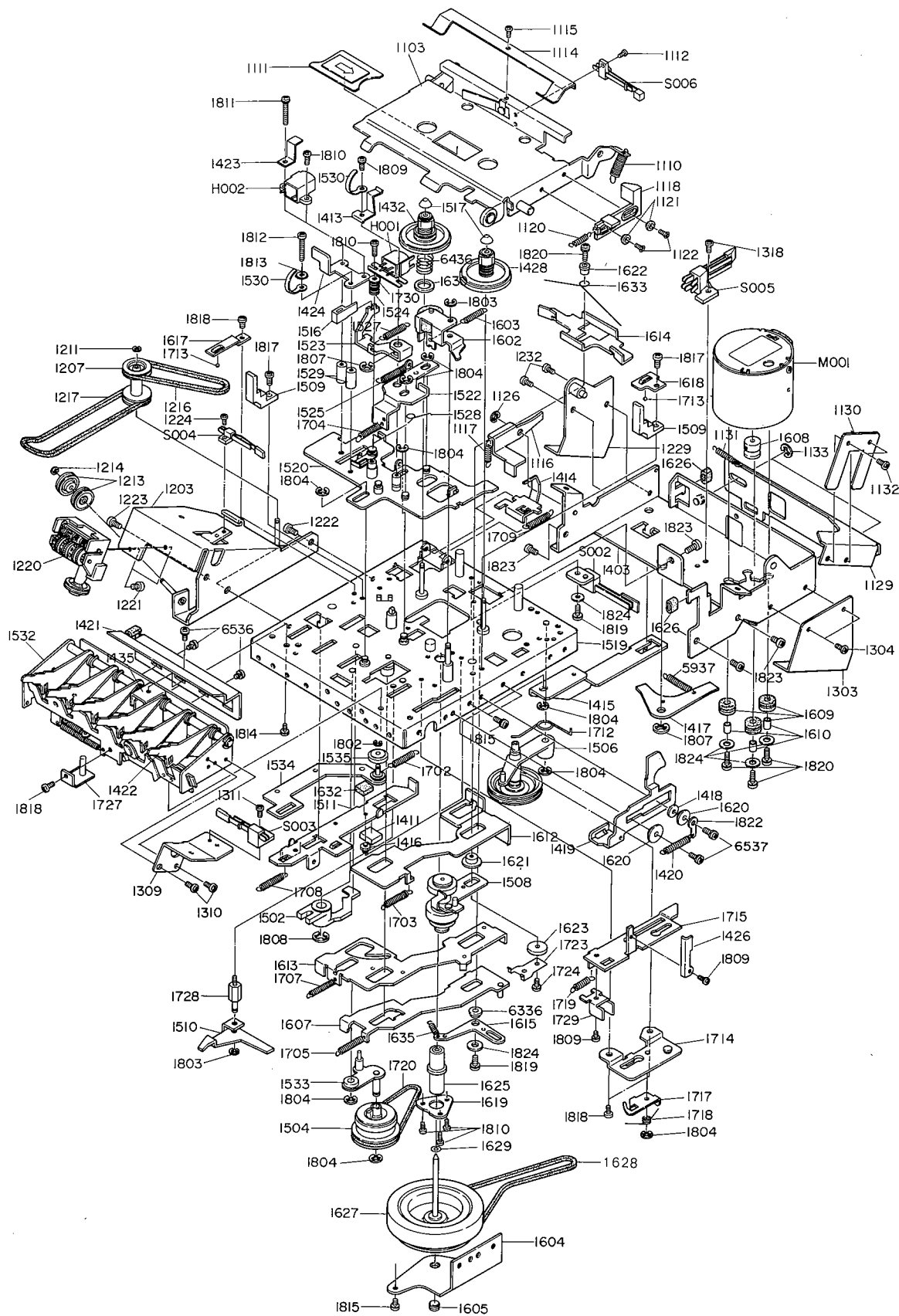


Dolly Assembly P800 Component Locations

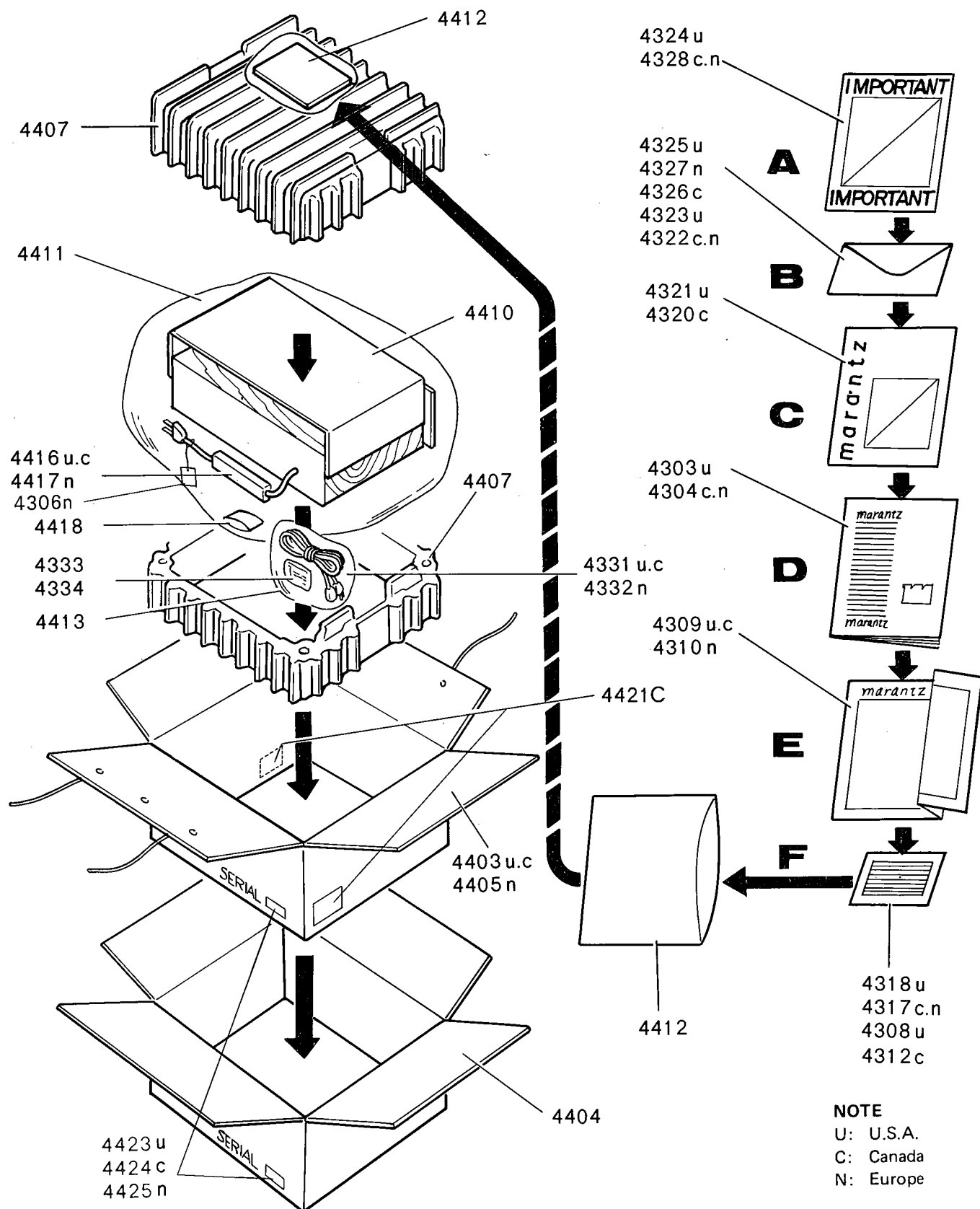
Cabinet



Tape Mechanism



14. PACKING MATERIAL EXPLODED VIEW



U: U.S.A.
C: Canada
N: Europe

15. PARTS LIST

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
A	1	1	1	4113063400	Front Panel Assembly
0104	1	1	1	4113063500	Front Panel
0110	1	1	1	3448401016	Frame
0111	1	1	1	4113158010	Window
0113	1	1	1	4113158020	Window
0116	1	1	1	2886259010	Bushing
0117	4	4	4	3448259070	Bushing
0118	1	1	1	3448259080	Bushing
0119	7	7	7	3448259010	Bushing
0120	1	1	1	4113259012	Bushing
0124	1	1	1	4113053010	Cover
0126	1	1	1	3448158032	Window
0130	3	3	3	1861056030	Buffer
0133	1	1	1	3448303010	Mask
0134	1	1	1	3448303020	Mask
0203	1	1	1	4113053020	Cover
B	1	1	1	4113270400	Button Assembly, Pause
0214	1	1	1	4113270502	Button
0222	1	1	1	3411108013	Seal
C	1	1	1	4113270410	Button Assembly, Stop. Eject
0214	1	1	1	4113270502	Button
0223	1	1	1	3411108023	Seal
D	1	1	1	4113270420	Button Assembly, Rec.
0214	1	1	1	4113270502	Button
0224	1	1	1	3411108033	Seal
E	1	1	1	4113257400	Top Lid Assembly
0228	1	1	1	3448257012	Lid
0229	3	3	3	2577118070	Spacer
0431	1	1	1	4113861010	Label, Adj. Point
F					
0904				4113160400	Rear Panel Assembly
0925				4113160050	Bracket
0926				2821259010	Bushing
				55060305S0	T.R. Rivet
EXTERIORS					
0204	4	4	4	52017039J0	H. Head Bolt
0208	4	4	4	3448154010	Knob, Mic & Line
0209	1	1	1	2850154010	Knob, Master Level
0210	7	7	7	3448154020	Knob, Push Button
0211	1	1	1	3448154040	Knob, Power
0213	1	1	1	3448270012	Button
0218	3	3	3	4113270512	Button Play, FF, Rew
0230	4	4	4	51480406S0	B. H. M. Screw F, B4x6
0231	1	1	1	51122608S0	T. H. M. Screw T, T2.6x8
0232	2	2	2	51122605S0	T. H. M. Screw T, T2.6x5
0303	1	1	1	3448257023	Lid
0305	1	1	1	3448120050	Insulator
0306	10	10	10	51100406S9	B. H. M. Screw, B4x6

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
0310	4	4	4	2932057010	Leg
0311	4	4	4	51440410S9	B. H. M. Screw FS, B4x10
PANEL INDICATORS					
0318	1			4113265010	Name Plate
0319		1		4113265022	Name Plate
0320			1	4113265032	Name Plate
0323	2	2	2	51100306S9	B. H. M. Screw, B3x6
0403	1	1	1	2578861010	Label, UL Caution
0404	1	1	1	2932861010	Label, Caution "Do not remove marking on bottom"
0407	1			2818861010	Label, "Imitation"
0410		1		9510911010	Label, LL No.
0412	1			9510911020	Label, UL Factory
0415	1			9511101050	Label, UL
LABEL INSIDE CABINET					
0428	1	1	1	2908861010	Label, "Marantz" on Power Transf.
FRONT PANEL ASSOCIATED HARDWARE					
0503	1	1	1	4113160500	Bracket K
0509	1	1	1	4113354020	Lever
0510	1	1	1	4113354030	Lever
0511	1	1	1	51100305B9	B. H. M. Screw, B3x5
0512	1	1	1	64000300R0	RG Ring, E Type
0513	1	1	1	4113115080	Spring
0516	1	1	1	3448160192	Bracket
0517	2	2	2	3448107010	Sheet
0518	2	2	2	51100306B9	B. H. M. Screw, B3x6
0521	1	1	1	3448160020	Bracket
0522	1	1	1	3448107010	Sheet
0523	2	2	2	51100306B9	B. H. M. Screw, B3x6
0528	1	1	1	4113265040	Indicator, Meter Window
0530	2	2	2	3448122010	Sticker, Blind
0531	1	1	1	3448118033	Spacer
0532	1	1	1	3444107030	Sheet
0602	1	1	1	3448274014	Reflector
0603	1	1	1	3444271060	Holder, Lamp
0604	2	2	2	51280308P0	B. H. Tapped Screw, B3x8ST
0605	2	2	2	51100306B9	B. H. M. Screw, B3x6
0606	1	1	1	3448160270	Bracket
0607	2	2	2	51100306B9	B. H. M. Screw, B3x6
0609	8	8	8	51100205B0	B. H. M. Screw, B2x5
0610	2	2	2	51100304B9	B. H. M. Screw, B3x4
0611	2	2	2	51100306B9	B. H. M. Screw, B3x6
0612	2	2	2	51100306B9	B. H. M. Screw, B3x6
0615	8	8	8	51100306B9	B. H. M. Screw, B3x6
CHASSIS AND ASSOCIATED PARTS					
0620			1	51100314B9	B. H. M. Screw, B3x14
0621	1	1		3892120020	Insulator
0622	1	1		51100306B9	B. H. M. Screw, B3x6
0625	1	1	1	4113105503	Chassis K
0629			1	3448120060	Insulator
0632	5	5	5	2912101050	Support
0633	4	4	4	2912101050	Support
0634	2	2	2	2886005050	Clamper
0702	1	1	1	3448160220	Bracket
0703	1	1	1	2886120090	Insulator
0704	2	2	2	51100306B9	B. H. M. Screw, B3x6

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
0708	2	2	2	51100408B9	B. H. M. Screw, B4x8
0709	2	2	2	54050400R0	T. L. Washer OR
0710	1	1	1	62041760W0	Lug
0714			1	3448120043	Insulator
0715			3	51062606B0	P. H. M. Screw, P2.6x6
0718	1	1	1	62030039W0	T. L. Lug
0719			1	62030039W0	T. L. Lug
0720	1	1	1	51570306B0	P. H. Tapped Screw, P3x6ST
0721	1	1	1	51570306B0	P. H. Tapped Screw, P3x6ST
0725	1	1	1	3448104013	Retainer
0726			1	3448114110	Stopper
0727			1	51100306B9	B. H. M. Screw, B3x6
0731	1	1	1	4113104010	Retainer
0802	1	1	1	4113104022	Retainer
0803	1	1	1	2889259010	Bushing
0804	1	1	1	62030039W0	T. L. Lug
0805	1	1	1	51100306B9	B. H. M. Screw, B3x6
0806	1	1	1	2886005050	Clamper
0807	3	3	3	2886005020	Clamper
0809			1	3448114100	Stopper
0810			1	51100306B9	B. H. M. Screw, B3x6
0817	9	9	9	51100306B9	B. H. M. Screw, B3x6
0818	3	3	3	1382005030	Clamper
0820	6	6	6	51100305S9	B. H. M. Screw, B3x5
0821	2	2	2	51100305S9	B. H. M. Screw, B3x5
0824	1	1	1	3444267013	Heatsink
0825	1	1	1	51100306A9	B. H. M. Screw, B3x6
0828	1	1	1	3448109040	Shield
0829	2	2	2	3448120070	Insulator
0832	1	1	1	3444109092	Shield
TERMINAL BOARD ASSOCIATED HARDWARE					
0903	1	1		4113160040	Bracket
0906	8	8	8	51100306S9	B. H. M. Screw B3x6
0908	2	2	4	51100306S9	B. H. M. Screw, B3x6
0909			2	51100306S9	B. H. M. Screw, B3x6
0910	2	2	2	51102603S0	B. H. M. Screw, B2.6x3
0911	2	2	2	51102603S0	B. H. M. Screw, B2.6x3
0912			1	62031340W0	Lug
0915	1	1	1	54050400R0	T. L. Washer OR
0916	1	1	1	62041760W0	Lug
0919	1	1		1455259030	Bushing
0923			2	51100306S9	B. H. M. Screw, B3x6
0927			2	53110303A9	Hexagon Nut
0928			2	51100316A9	B. H. M. Screw, B3x16
0929			2	54050300R0	T. L. Washer OR
0931			1	2882861020	Label
TAPE MECHANISM MOUNTING HARDWARE					
1003	1	1	1	4113064012	Case
1005	1	1	1	4113158042	Window
1007	2	2	2	51040310S9	F. H. M. Screw, F3x10
1008	2	2	2	51100306B9	B. H. M. Screw, B3x6
1011	1	1	1	4113257012	Window
1015	1	1	1	4113160090	Bracket
1016	2	2	2	51100305B9	B. H. M. Screw, B3x5
1017	1	1	1	51100305B9	B. H. M. Screw, B3x5
1019	1	1	1	4113160540	Bracket K
1022	3	3	3	51300308P0	P. H. Tapped Screw, P3x8ST
1023	1	1	1	4113056020	Buffer
1024	1	1	1	4113002502	Arm K

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
1029	1	1	1	64000200R0	RG Ring E Type
1030	1	1	1	3448055050	Collar
1031	1	1	1	4113115062	Spring
1033	1	1	1	4113269012	Protector
1034	2	2	2	51100306B9	B. H. M. Screw, B3x6
1103	1	1	1	4113163504	Tray K
1110	1	1	1	4113115022	Spring
1111	1	1	1	3448158040	Window
1112	1	1	1	51060204B0	P. H. M. Screw, P2x4
1114	1	1	1	4113115042	Spring
1115	3	3	3	51100204B0	B. H. M. Screw, B2x4
1116	1	1	1	4113354100	Lever
1117	1	1	1	4113115100	Spring
1118	1	1	1	4113354072	Lever
1120	1	1	1	4113115072	Spring
1121	2	2	2	4113055010	Collar
1122	2	2	2	51040205B0	F. H. M. Screw, F2x5
1126	1	1	1	64000200R0	RG Ring, E Type
1129	1	1	1	4113354082	Lever, Rec. Switch
1130	1	1	1	4113115010	Spring
1131	1	1	1	4113115080	Spring
1132	2	2	2	51100305B9	B. H. M. Screw, B3x5
1133	2	2	2	64000300R0	RG Ring, E Type
1203	1	1	1	4113160510	Bracket K
1207	1	1	1	4113262500	Pulley K
1211	1	1	1	64001500R0	RG Ring, E Type
1213	2	2	2	4113262020	Pulley
1214	1	1	1	64001500R0	RG Ring, E Type
1216	1	1	1	4113264012	Belt
1217	1	1	1	4113264022	Belt
1220	1	1	1	4113052010	Counter
1221	2	2	2	51100305B9	B. H. M. Screw, B3x5
1222	2	2	2	51570306B0	P. H. Tapped Screw, P3x6ST
1223	1	1	1	51102605B0	B. H. M. Screw, B2.6 x5
1224	1	1	1	51060205B0	P. H. M. Screw, P2x5
1229	1	1	1	4113160522	Bracket K
1232	2	2	2	51570306B0	P. H. Tapped Screw, P3x6ST
1303	1	1	1	4113160120	Bracket
1304	2	2	2	51570306B0	P. H. Tapped Screw, P3x6ST
1309	1	1	1	4113160072	Bracket
1310	2	2	2	51102605B0	B. H. M. Screw, B2.6x5
1311	1	1	1	51102606B0	B. H. M. Screw, B2.6x6
1315	6	6	6	51100306B9	B. H. M. Screw, B3x6
1316	1	1	1	1382005030	Clamper
1318	1	1	1	51102606B0	B. H. M. Screw, B2.6x5
TAPE MECHANISM					
1403	1	1	1	4113160534	Bracket K
1411	1	1	1	4133056020	Buffer
1412	1	1	1	4113115080	Spring
1413	1	1	1	3904115042	Spring
1414	1	1	1	4113354090	Lever
1415	1	1	1	4113354042	Lever
1416	1	1	1	4113112060	Shaft
1417	1	1	1	4113002032	Arm
1418	1	1	1	4113358020	Roller
1419	1	1	1	4113354052	Lever
1420	1	1	1	4113115090	Spring
1421	1	1	1	4113104032	Retainer
1422	6	6	6	4113354010	Lever
1423	1	1	1	4113114010	Stopper
1424	1	1	1	4113160132	Bracket
1426	1	1	1	4113002050	Arm

U: U.S.A.
C: Canada
N: Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
1428	1	1	1	4113004500	Table K
1432	1	1	1	4113004510	Table K
1435	1	1	1	3904104020	Retainer
1502	1	1	1	3435002100	Arm
1504	1	1	1	4129001010	Idler
1506	1	1	1	3435001700	Idler K
1508	1	1	1	4129001700	Idler K
1509	2	2	2	4113051020	Guide, Cassette
1510	1	1	1	3904354060	Lever, Eject
1511	1	1	1	3435354250	Lever, Rec.
1516	1	1	1	3435123010	Contacto
1517	2	2	2	3435067100	Cap
1519	1	1	1	4113105700	Chassis S, Main
1520	1	1	1	4113105710	Chassis S, Head
1522	1	1	1	3435354200	Lever
1523	1	1	1	4113002060	Arm
1524	1	1	1	3435115200	Spring
1525	1	1	1	3435115210	Spring
1527	1	1	1	3435115222	Spring
1528	1	1	1	3435115230	Spring
1529	2	2	2	4113101030	Support
1530	2	2	2	3435005060	Clumper
1532	1	1	1	4113354500	Lever K
1533	1	1	1	3435002700	Arm S
1534	1	1	1	3435002710	Arm S
1535	1	1	1	3435001050	Idler
1602	1	1	1	4113255500	Pinch Roller K
1603	1	1	1	3435115240	Spring
1604	1	1	1	3435104100	Retainer
1605	1	1	1	3435106010	Bearing
1607	1	1	1	4129002700	Arm S
1608	1	1	1	3435262010	Pulley
1609	3	3	3	3435056010	Buffer
1610	3	3	3	4113055020	Collar
1612	1	1	1	3435354230	Lever
1613	1	1	1	3435354240	Lever
1614	1	1	1	3435002120	Arm
1615	1	1	1	3435002130	Arm
1617	1	1	1	3435115260	Spring
1618	1	1	1	3435115270	Spring
1620	2	2	2	3904259010	Bushing
1621	1	1	1	4113259030	Bushing
1622	1	1	1	3435055020	Collar
1623	1	1	1	4113055030	Collar
1625	1	1	1	3435106040	Bearing
1626	2	2	2	4113056030	Buffer
1627	1	1	1	4113273500	Flywheel K
1628	1	1	1	3435264010	Belt
1629	1	1	1	59254602G9	Washer
1630	1	1	1	59060902G9	Washer
1632	1	1	1	3435056020	Buffer
1633	1	1	1	3435115290	Spring
1635	1	1	1	3435115320	Spring
1702	1	1	1	3435115330	Spring, Rew Arm
1703	1	1	1	3435115340	Spring, Break Lever
1704	1	1	1	3435115360	Spring, Head Chassis
1705	1	1	1	3435115370	Spring, FF Arm
1707	1	1	1	3435115380	Spring, Rew Lever
1708	1	1	1	3435115390	Spring, Rec Lever
1709	1	1	1	3904115060	Spring
1712	1	1	1	3435115620	Spring
1713	2	2	2	6102001070	Ball
1714	1	1	1	3435160700	Bracket S

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
1715	1	1	1	3435354270	Lever
1717	1	1	1	3435054100	Cam
1718	1	1	1	3435115630	Spring
1719	1	1	1	3435115640	Spring
1720	1	1	1	4129264010	Belt
1723	1	1	1	4129115020	Spring
1724	1	1	1	51062603A0	P. H. M. Screw, P2.6x3
1727	1	1	1	3904002500	Arm S
1728	1	1	1	3904101010	Support
1729	1	1	1	3904125010	Joint
1730	1	1	1	3444118070	Spacer
1802	1	1	1	64001500R0	RG Ring, E Type
1803	2	2	2	64000200R0	RG Ring, E Type
1804	9	9	9	64002500R0	RG Ring, E Type
1807	2	2	2	64000300R0	RG Ring, E Type
1808	1	1	1	64000400R0	RG Ring, E Type
1809	3	3	3	51440204A0	L Washer Screw
1810	5	5	5	51060205A0	P. H. M. Screw, P2x5
1811	1	1	1	51440216A0	L Washer Screw
1812	1	1	1	51060214A0	P. H. M. Screw, P2x14
1813	1	1	1	54020201E0	Flat Washer P
1814	2	2	2	51442604A0	L Washer Screw, 2.6x4
1815	3	3	3	51442605A0	L Washer Screw, 2.6x5
1817	1	1	1	51062605A0	P. H. M. Screw, P2.6x5
1818	4	4	4	51062603A0	P. H. M. Screw, P2.6x3
1819	2	2	2	51442606A0	L Washer Screw, 2.6x6
1820	4	4	4	51442608A0	L Washer Screw, 2.6x8
1822	1	1	1	62261240W0	Lug
1823	4	4	4	51570305A0	P. Tapped Screw, P3x5ST
1824	5	5	5	54022601E0	Flat Washer P
4303	1			4113851010	PRINTED MATTER
4304		1	1	4113851310	Instructions, Set
4306			1	9560000042	Hang Tag
4308	1			9650000060	S Station Card
4309	1	1		4113856010	Schematic Diagram
4310			1	4113856020	Schematic Diagram
4312		1		9650000050	S Station Card
4317		1	1	2818851140	Instructions, Packing
4318	1			2818851040	Instructions, Packing
4320		1		2818854040	Guarantee Card
4321	1			2818854020	Guarantee Card
4322		1	1	9630000180	Guarantee Card, IBM
4323	1			2577854012	Guarantee Card, IBM
4324	1			2577851020	Instructions, "Important"
4325	1			2577813010	Envelope
4326		1		2918813012	Envelope
4327			1	2818813010	Envelope
4328		1	1	2818851120	Instructions, "Important"
4331	2	2		ZD01500160	ACCESSORIES
4332			1	ZD02000070	Connection Cord, RCA Type
4333	1	1	1	3089071020	Connection Cord, DIN Type
4334	1	1	1	2881071010	Cleaner, Longer
					Cleaner, Shorter
4403	1	1		4113801010	PACKING MATERIALS
4404	1	1	1	4113801020	Packing Case, Inner
4405			1	4113801030	Packing Case, Outer
					Packing Case, Inner

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
4407	2	2	2	3448803013	Cushion
4410	1	1	1	2918107150	Sheet
4411	1	1	1	9014538350	Polyethylene Bag, Set
4412	1	1	1	9013025010	Polyethylene Bag, Printed Matter
4413	1	1	1	9011325010	Polyethylene Bag, Accessories
4416	1	1	1	1029804010	Sleeve
4417			1	2864804010	Sleeve
4418	1	1	1	2731821010	Silicagel
4421		2		9510901020	Label
4423	4			9522815010	Serial No. Card
4424		4		9523015120	Serial No. Card
4425			4	9523015130	Serial No. Card
5136	1	1	1	1210005010	Clamper
5937	1	1	1	4113115080	Spring
6336	1	1	1	3435055030	Collar
6436	1	1	1	3435115610	Spring
6536	3	3	3	51442605A0	L. Washer Screw
6537	2	2	2	51062606A0	P.H.M. Screw, P2.6x6
PRE AMP. CIRCUIT BOARD-P100					
P100	1	1	1	YD41130010	P. W. Board (Print Only)
	1	1	1	ZZ41130010	P. W. Board Assembly
P100-SWITCHES					
S101	1	1	1	SS09020070	Slide Switch, Rec/Play
S201	1	1	1	SS09020070	Slide Switch, Rec/Play
P100-COILS & TRANSFORMERS					
L101	1	1	1	LC22250040	Choke Coil, 2.5mH
L201	1	1	1	LC22250040	Choke Coil, 2.5mH
L102	1	1	1	LC22260050	Choke Coil, 22mH
L202	1	1	1	LC22260050	Choke Coil, 22mH
L103	1	1	1	LC23960010	Choke Coil, 39mH
L203	1	1	1	LC23960010	Choke Coil, 39mH
L104	1	1	1	LC27250010	Choke Coil, 7.2mH
L204	1	1	1	LC27250010	Choke Coil, 7.2mH
L105	1	1	1	LC25650040	Choke Coil, 5.6mH
L205	1	1	1	LC25650040	Choke Coil, 5.6mH
L106	1	1	1	LC24750030	Choke Coil, 4.7mH
L206	1	1	1	LC24750030	Choke Coil, 4.7mH
L107	1	1	1	LC22260050	Choke Coil, 22mH
L207	1	1	1	LC22260050	Choke Coil, 22mH
L108	1	1	1	TO11905040	Output Transformer
L208	1	1	1	TO11905040	Output Transformer
L301	1	1	1	TC10180072	Osc Transformer
P100-SEMICONDUCTORS					
Q101	1	1	1	HT107501E0	Transistor, 2SA750(E)
Q201	1	1	1	HT107501E0	Transistor, 2SA750(E)
Q102	1	1	1	HT312221U0	Transistor, 2SC1222(U)
Q202	1	1	1	HT312221U0	Transistor, 2SC1222(U)
Q103	1	1	1	HT402272A0	Transistor, 2SD227(Q) or (V)
Q203	1	1	1	HT402272A0	Transistor, 2SD227(Q) or (V)
Q104	1	1	1	HT107501F0	Transistor, 2SA750(F)
Q204	1	1	1	HT107501F0	Transistor, 2SA750(F)
Q105	1	1	1	HD20011050	Diode, 1S1555
Q205	1	1	1	HD20011050	Diode, 1S1555
Q106	1	1	1	HT312221U0	Transistor, 2SC1222(U)
Q206	1	1	1	HT312221U0	Transistor, 2SC1222(U)
Q207	1	1	1	HD20011050	Diode, 1S1555
Q207	1	1	1	HD20011050	Diode, 1S1555
Q108	1	1	1	HD20011050	Diode, 1S1555
Q208	1	1	1	HD20011050	Diode, 1S1555
Q109	1	1	1	HD10003020	Diode, 20A90

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
Q209	1	1	1	HD10003020	Diode, 20A90
Q110	1	1	1	HT312221U0	Transistor, 2SC1222(U)
Q210	1	1	1	HT312221U0	Transistor, 2SC1222(U)
Q111	1	1	1	HT312221E0	Transistor, 2SC1222(E)
Q211	1	1	1	HT312221E0	Transistor, 2SC1222(E)
Q112	1	1	1	HT309452B0	Transistor, 2SC945(P) or (Q)
Q212	1	1	1	HT309452B0	Transistor, 2SC945(P) or (Q)
Q113	1	1	1	HD30031090	Diode, WZ082
Q213	1	1	1	HD30031090	Diode, WZ082
Q114	1	1	1	HD30033090	Diode, WZ052
Q214	1	1	1	HD30033090	Diode, WZ052
Q115	1	1	1	HT309001E0	Transistor, 2SC900(E)
Q215	1	1	1	HT309001E0	Transistor, 2SC900(E)
Q116	1	1	1	HT309452B0	Transistor, 2SC945(P) or (Q)
Q216	1	1	1	HT309452B0	Transistor, 2SC945(P) or (V)
Q117	1	1	1	HD10003020	Diode, 20A90
Q217	1	1	1	HD10003020	Diode, 20A90
Q118	1	1	1	HT312221E0	Transistor, 2SC1222(E)
Q218	1	1	1	HT312221E0	Transistor, 2SC1222(E)
Q119	1	1	1	HT312221E0	Transistor, 2SC1222(E)
Q219	1	1	1	HT312221E0	Transistor, 2SC1222(E)
Q120	1	1	1	HT107501E0	Transistor, 2SA750(E)
Q220	1	1	1	HT107501E0	Transistor, 2SA750(E)
Q301	1	1	1	HT313181R0	Transistor, 2SC1318(R)
Q302	1	1	1	HT313181R0	Transistor, 2SC1318(R)
P100-RESISTORS					
R101	1	1	1	RN05473140	Fixed, 47K Ω $\pm$ 5%, $\frac{1}{4}$ W
R201	1	1	1	RN05473140	Fixed, 47K Ω $\pm$ 5%, $\frac{1}{4}$ W
R102	1	1	1	RT05471140	Fixed, 470 Ω $\pm$ 5%, $\frac{1}{4}$ W
R202	1	1	1	RT05471140	Fixed, 470 Ω $\pm$ 5%, $\frac{1}{4}$ W
R103	1	1	1	RT05101140	Fixed, 100 Ω $\pm$ 5%, $\frac{1}{4}$ W
R203	1	1	1	RT05101140	Fixed, 100 Ω $\pm$ 5%, $\frac{1}{4}$ W
R104	1	1	1	RN05124140	Fixed, 120K Ω $\pm$ 5%, $\frac{1}{4}$ W
R204	1	1	1	RN05124140	Fixed, 120K Ω $\pm$ 5%, $\frac{1}{4}$ W
R105	1	1	1	RN05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R205	1	1	1	RN05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R106	1	1	1	RN05224140	Fixed, 220K Ω $\pm$ 5%, $\frac{1}{4}$ W
R206	1	1	1	RN05224140	Fixed, 220K Ω $\pm$ 5%, $\frac{1}{4}$ W
R107	1	1	1	RN05683140	Fixed, 68K Ω $\pm$ 5%, $\frac{1}{4}$ W
R207	1	1	1	RN05683140	Fixed, 68K Ω $\pm$ 5%, $\frac{1}{4}$ W
R108	1	1	1	RN05184140	Fixed, 180K Ω $\pm$ 5%, $\frac{1}{4}$ W
R208	1	1	1	RN05184140	Fixed, 180K Ω $\pm$ 5%, $\frac{1}{4}$ W
R109	1	1	1	RN05333140	Fixed, 33K Ω $\pm$ 5%, $\frac{1}{4}$ W
R209	1	1	1	RN05333140	Fixed, 33K Ω $\pm$ 5%, $\frac{1}{4}$ W
R110	1	1	1	RT05391140	Fixed, 390 Ω $\pm$ 5%, $\frac{1}{4}$ W
R210	1	1	1	RT05391140	Fixed, 390 Ω $\pm$ 5%, $\frac{1}{4}$ W
R111	1	1	1	RT05473140	Fixed, 47K Ω $\pm$ 5%, $\frac{1}{4}$ W
R211	1	1	1	RT05473140	Fixed, 47K Ω $\pm$ 5%, $\frac{1}{4}$ W
R112	1	1	1	RN05104140	Fixed, 100K Ω $\pm$ 5%, $\frac{1}{4}$ W
R212	1	1	1	RN05104140	Fixed, 100K Ω $\pm$ 5%, $\frac{1}{4}$ W
R113	1	1	1	RN05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R213	1	1	1	RN05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R114	1	1	1	RT05101140	Fixed, 100 Ω $\pm$ 5%, $\frac{1}{4}$ W
R214	1	1	1	RT05101140	Fixed, 100 Ω $\pm$ 5%, $\frac{1}{4}$ W
R115	1	1	1	RT05182140	Fixed, 1.8K Ω $\pm$ 5%, $\frac{1}{4}$ W
R215	1	1	1	RT05182140	Fixed, 1.8K Ω $\pm$ 5%, $\frac{1}{4}$ W
R116	1	1	1	RN05473140	Fixed, 47K Ω $\pm$ 5%, $\frac{1}{4}$ W
R216	1	1	1	RN05473140	Fixed, 47K Ω $\pm$ 5%, $\frac{1}{4}$ W
R117	1	1	1	RA03020030	Trimming, 3K Ω
R217	1	1	1	RA03020030	Trimming, 3K Ω
R118	1	1	1	RN05302140	Fixed, 3K Ω $\pm$ 5%, $\frac{1}{4}$ W
R218	1	1	1	RN05302140	Fixed, 3K Ω $\pm$ 5%, $\frac{1}{4}$ W
R119	1	1	1	RN05152140	Fixed, 1.5K Ω $\pm$ 5%, $\frac{1}{4}$ W

U: U.S.A.
C: Canada
N: Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
R219	1	1	1	RN05152140	Fixed, 1.5K Ω $\pm$ 5%, $\frac{1}{4}$ W
R120	1	1	1	RA02030060	Trimming, 20K Ω
R220	1	1	1	RA02030060	Trimming, 20K Ω
R121	1	1	1	RN05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R221	1	1	1	RN05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R122	1	1	1	RT05101140	Fixed, 100 Ω $\pm$ 5%, $\frac{1}{4}$ W
R222	1	1	1	RT05101140	Fixed, 100 Ω $\pm$ 5%, $\frac{1}{4}$ W
R123	1	1	1	RN05224140	Fixed, 220K Ω $\pm$ 5%, $\frac{1}{4}$ W
R223	1	1	1	RN05224140	Fixed, 220K Ω $\pm$ 5%, $\frac{1}{4}$ W
R124	1	1	1	RN05563140	Fixed, 56K Ω $\pm$ 5%, $\frac{1}{4}$ W
R224	1	1	1	RN05563140	Fixed, 56K Ω $\pm$ 5%, $\frac{1}{4}$ W
R125	1	1	1	RN05104140	Fixed, 100K Ω $\pm$ 5%, $\frac{1}{4}$ W
R225	1	1	1	RN05104140	Fixed, 100K Ω $\pm$ 5%, $\frac{1}{4}$ W
R126	1	1	1	RT05561140	Fixed, 560 Ω $\pm$ 5%, $\frac{1}{4}$ W
R226	1	1	1	RT05561140	Fixed, 560 Ω $\pm$ 5%, $\frac{1}{4}$ W
R127	1	1	1	RN05123140	Fixed, 12K Ω $\pm$ 5%, $\frac{1}{4}$ W
R227	1	1	1	RN05123140	Fixed, 12K Ω $\pm$ 5%, $\frac{1}{4}$ W
R128	1	1	1	RT05221140	Fixed, 220 Ω $\pm$ 5%, $\frac{1}{4}$ W
R228	1	1	1	RT05221140	Fixed, 220 Ω $\pm$ 5%, $\frac{1}{4}$ W
R129	1	1	1	RN05273140	Fixed, 27K Ω $\pm$ 5%, $\frac{1}{4}$ W
R229	1	1	1	RN05273140	Fixed, 27K Ω $\pm$ 5%, $\frac{1}{4}$ W
R130	1	1	1	RN05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R230	1	1	1	RN05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R131	1	1	1	RN05822140	Fixed, 8.2K Ω $\pm$ 5%, $\frac{1}{4}$ W
R231	1	1	1	RN05822140	Fixed, 8.2K Ω $\pm$ 5%, $\frac{1}{4}$ W
R132	1	1	1	RT05182140	Fixed, 1.8K Ω $\pm$ 5%, $\frac{1}{4}$ W
R232	1	1	1	RT05182140	Fixed, 1.8K Ω $\pm$ 5%, $\frac{1}{4}$ W
R133	1	1	1	RT05101140	Fixed, 100 Ω $\pm$ 5%, $\frac{1}{4}$ W
R233	1	1	1	RT05101140	Fixed, 100 Ω $\pm$ 5%, $\frac{1}{4}$ W
R134	1	1	1	RT05105140	Fixed, 1M Ω $\pm$ 5%, $\frac{1}{4}$ W
R234	1	1	1	RT05105140	Fixed, 1M Ω $\pm$ 5%, $\frac{1}{4}$ W
R135	1	1	1	RT05393140	Fixed, 39K Ω $\pm$ 5%, $\frac{1}{4}$ W
R235	1	1	1	RT05393140	Fixed, 39K Ω $\pm$ 5%, $\frac{1}{4}$ W
R136	1	1	1	RT05474140	Fixed, 470K Ω $\pm$ 5%, $\frac{1}{4}$ W
R236	1	1	1	RT05474140	Fixed, 470K Ω $\pm$ 5%, $\frac{1}{4}$ W
R137	1	1	1	RT05821140	Fixed, 820 Ω $\pm$ 5%, $\frac{1}{4}$ W
R237	1	1	1	RT05821140	Fixed, 820 Ω $\pm$ 5%, $\frac{1}{4}$ W
R138	1	1	1	RT05272140	Fixed, 2.7K Ω $\pm$ 5%, $\frac{1}{4}$ W
R238	1	1	1	RT05272140	Fixed, 2.7K Ω $\pm$ 5%, $\frac{1}{4}$ W
R139	1	1	1	RT05123140	Fixed, 12K Ω $\pm$ 5%, $\frac{1}{4}$ W
R239	1	1	1	RT05123140	Fixed, 12K Ω $\pm$ 5%, $\frac{1}{4}$ W
R140	1	1	1	RT05393140	Fixed, 39K Ω $\pm$ 5%, $\frac{1}{4}$ W
R240	1	1	1	RT05393140	Fixed, 39K Ω $\pm$ 5%, $\frac{1}{4}$ W
R141	1	1	1	GJ05750010	Fixed, 75 Ω $\pm$ 5%, 1 W
R241	1	1	1	GJ05750010	Fixed, 75 Ω $\pm$ 5%, 1 W
R142	1	1	1	RT05274140	Fixed, 270K Ω $\pm$ 5%, $\frac{1}{4}$ W
R242	1	1	1	RT05274140	Fixed, 270K Ω $\pm$ 5%, $\frac{1}{4}$ W
R143	1	1	1	RT05563140	Fixed, 56K Ω $\pm$ 5%, $\frac{1}{4}$ W
R243	1	1	1	RT05563140	Fixed, 56K Ω $\pm$ 5%, $\frac{1}{4}$ W
R144	1	1	1	RT05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R244	1	1	1	RT05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R145	1	1	1	GD05332140	Fixed, 3.3K Ω $\pm$ 5%, $\frac{1}{4}$ W
R245	1	1	1	GD05332140	Fixed, 3.3K Ω $\pm$ 5%, $\frac{1}{4}$ W
R146	1	1	1	RT05122140	Fixed, 1.2K Ω $\pm$ 5%, $\frac{1}{4}$ W
R246	1	1	1	RT05122140	Fixed, 1.2K Ω $\pm$ 5%, $\frac{1}{4}$ W
R147	1	1	1	RT05123140	Fixed, 12K Ω $\pm$ 5%, $\frac{1}{4}$ W
R247	1	1	1	RT05123140	Fixed, 12K Ω $\pm$ 5%, $\frac{1}{4}$ W
R148	1	1	1	RT05332140	Fixed, 3.3K Ω $\pm$ 5%, $\frac{1}{4}$ W
R248	1	1	1	RT05332140	Fixed, 3.3K Ω $\pm$ 5%, $\frac{1}{4}$ W
R149	1	1	1	RT05222140	Fixed, 2.2K Ω $\pm$ 5%, $\frac{1}{4}$ W
R249	1	1	1	RT05222140	Fixed, 2.2K Ω $\pm$ 5%, $\frac{1}{4}$ W
R150	1	1	1	RT05221140	Fixed, 220 Ω $\pm$ 5%, $\frac{1}{4}$ W
R250	1	1	1	RT05221140	Fixed, 220 Ω $\pm$ 5%, $\frac{1}{4}$ W

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
R151	1	1	1	RA03020030	Trimming, 3K Ω
R251	1	1	1	RA03020030	Trimming, 3K Ω
R152	1	1	1	RT05183140	Fixed, 18K Ω $\pm$ 5%, $\frac{1}{4}$ W
R252	1	1	1	RT05183140	Fixed, 18K Ω $\pm$ 5%, $\frac{1}{4}$ W
R153	1	1	1	RT05274140	Fixed, 270K Ω $\pm$ 5%, $\frac{1}{4}$ W
R253	1	1	1	RT05274140	Fixed, 270K Ω $\pm$ 5%, $\frac{1}{4}$ W
R154	1	1	1	RT05102140	Fixed, 1K Ω $\pm$ 5%, $\frac{1}{4}$ W
R254	1	1	1	RT05102140	Fixed, 1K Ω $\pm$ 5%, $\frac{1}{4}$ W
R155	1	1	1	RT05272140	Fixed, 2.7K Ω $\pm$ 5%, $\frac{1}{4}$ W
R255	1	1	1	RT05272140	Fixed, 2.7K Ω $\pm$ 5%, $\frac{1}{4}$ W
R156	1	1	1	RA02030060	Trimming, 20K Ω
R256	1	1	1	RA02030060	Trimming, 20K Ω
R157	1	1	1	RA02030060	Trimming, 20K Ω
R257	1	1	1	RA02030060	Trimming, 20K Ω
R158	1	1	1	RA02030060	Trimming, 20K Ω
R258	1	1	1	RA02030060	Trimming, 20K Ω
R159	1	1	1	RT05304140	Fixed, 300K Ω $\pm$ 5%, $\frac{1}{4}$ W
R259	1	1	1	RT05304140	Fixed, 300k Ω $\pm$ 5%, $\frac{1}{4}$ W
R160	1	1	1	RT05273140	Fixed, 27K Ω $\pm$ 5%, $\frac{1}{4}$ W
R260	1	1	1	RT05273140	Fixed, 27K Ω $\pm$ 5%, $\frac{1}{4}$ W
R161	1	1	1	RT05682140	Fixed, 6.8K Ω $\pm$ 5%, $\frac{1}{4}$ W
R261	1	1	1	RT05682140	Fixed, 6.8K Ω $\pm$ 5%, $\frac{1}{4}$ W
R162	1	1	1	RT05222140	Fixed, 2.2K Ω $\pm$ 5%, $\frac{1}{4}$ W
R262	1	1	1	RT05222140	Fixed, 2.2K Ω $\pm$ 5%, $\frac{1}{4}$ W
R163	1	1	1	RT05562140	Fixed, 5.6K Ω $\pm$ 5%, $\frac{1}{4}$ W
R263	1	1	1	RT05562140	Fixed, 5.6K Ω $\pm$ 5%, $\frac{1}{4}$ W
R164	1	1	1	RT05563140	Fixed, 56K Ω $\pm$ 5%, $\frac{1}{4}$ W
R264	1	1	1	RT05563140	Fixed, 56K Ω $\pm$ 5%, $\frac{1}{4}$ W
R165	1	1	1	RT05102140	Fixed, 1K Ω $\pm$ 5%, $\frac{1}{4}$ W
R265	1	1	1	RT05102140	Fixed, 1K Ω $\pm$ 5%, $\frac{1}{4}$ W
R166	1	1	1	RT05220140	Fixed, 22 Ω $\pm$ 5%, $\frac{1}{4}$ W
R266	1	1	1	RT05220140	Fixed, 22 Ω $\pm$ 5%, $\frac{1}{4}$ W
R167	1	1	1	RT05220140	Fixed, 22 Ω $\pm$ 5%, $\frac{1}{4}$ W
R267	1	1	1	RT05220140	Fixed, 22 Ω $\pm$ 5%, $\frac{1}{4}$ W
R168	1	1	1	RT05220140	Fixed, 22 Ω $\pm$ 5%, $\frac{1}{4}$ W
R268	1	1	1	RT05220140	Fixed, 22 Ω $\pm$ 5%, $\frac{1}{4}$ W
R170	1	1	1	RT05102140	Fixed, 1K Ω $\pm$ 5%, $\frac{1}{4}$ W
R270	1	1	1	RT05102140	Fixed, 1K Ω $\pm$ 5%, $\frac{1}{4}$ W
R171	1	1	1	RT05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R271	1	1	1	RT05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R172	1	1	1	GJ05220010	Fixed, 22 Ω $\pm$ 5%, 1W
R272	1	1	1	GJ05220010	Fixed, 22 Ω $\pm$ 5%, 1W
R173	1	1	1	RT05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R273	1	1	1	RT05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R174	1	1	1	RT05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R274	1	1	1	RT05103140	Fixed, 10K Ω $\pm$ 5%, $\frac{1}{4}$ W
R301	1	1	1	RA01540020	Trimming, 150K Ω
R302	1	1	1	RA01540020	Trimming, 150K Ω
R303	1	1	1	RT05390140	Fixed, 390 Ω $\pm$ 5%, $\frac{1}{4}$ W
R304	1	1	1	RT05154140	Fixed, 150K Ω $\pm$ 5%, $\frac{1}{4}$ W
R305	1	1	1	RT05154140	Fixed, 150K Ω $\pm$ 5%, $\frac{1}{4}$ W
R306	1	1	1	GJ05221020	Fixed, 220 Ω $\pm$ 5%, 2W
R307	1	1	1	GJ05271020	Fixed, 270 Ω $\pm$ 5%, 2W
R308	1	1	1	RT05390140	Fixed, 39 Ω $\pm$ 5%, $\frac{1}{4}$ W
R350	10	10	10	RC00000120	Fixed, 0 Ω $\frac{1}{2}$ W
P100-CAPACITORS					
C101	1	1	1	DF65501010	Film, 500pF
C201	1	1	1	DF65501010	Film, 500pF
C102	1	1	1	EE10601650	Electrolytic, 10 μ F, 16V
C202	1	1	1	EE10601650	Electrolytic, 10 μ F, 16V
C103	1	1	1	EE22602550	Electrolytic, 22 μ F, 25V
C203	1	1	1	EE22602550	Electrolytic, 22 μ F, 25V
C104	1	1	1	DD16201010	Film, 200pF
C204	1	1	1	DD16201010	Film, 200pF

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION		
	U	C	N				
C105	1	1	1	EE47601050	Electrolytic,	47 μ F,	10V
C205	1	1	1	EE47601050	Electrolytic,	47 μ F,	10V
C106	1	1	1	DD16151010	Ceramic,	150pF	
C206	1	1	1	DD16151010	Ceramic,	150pF	
C107	1	1	1	DF15223050	Film,	0.022 μ F	
C207	1	1	1	DF15223050	Film,	0.022 μ F	
C108	1	1	1	EE10601650	Electrolytic,	10 μ F,	16V
C208	1	1	1	EE10601650	Electrolytic,	10 μ F,	16V
C109	1	1	1	EE47601050	Electrolytic,	47 μ F,	10V
C209	1	1	1	EE47601050	Electrolytic,	47 μ F,	10V
C110	1	1	1	DF65821010	Film,	820pF	
C210	1	1	1	DF65821010	Film,	820pF	
C111	1	1	1	EA10703590	Electrolytic,	100 μ F,	35V
C211	1	1	1	EA10703590	Electrolytic,	100 μ F,	35V
C112	1	1	1	EE47405050	Electrolytic,	0.47 μ F,	50V
C212	1	1	1	EE47405050	Electrolytic,	0.47 μ F,	50V
C113	1	1	1	DD16201010	Ceramic,	200pF	
C213	1	1	1	DD16201010	Ceramic,	200pF	
C114	1	1	1	EA10701090	Electrolytic,	100 μ F,	10V
C214	1	1	1	EA10701090	Electrolytic,	100 μ F,	10V
C115	1	1	1	DD16101010	Ceramic,	100pF	
C215	1	1	1	DD16101010	Ceramic,	100pF	
C116	1	1	1	EA10701090	Electrolytic,	100 μ F,	10V
C216	1	1	1	EA10701090	Electrolytic,	100 μ F,	10V
C117	1	1	1	EA10703590	Electrolytic,	100 μ F,	35V
C217	1	1	1	EA10703590	Electrolytic,	100 μ F,	35V
C118	1	1	1	EE22503550	Electrolytic,	2.2 μ F,	35V
C218	1	1	1	EE22503550	Electrolytic,	2.2 μ F,	35V
C119	1	1	1	DF65151510	Film,	150pF	
C219	1	1	1	DF65151510	Film,	150pF	
C120	1	1	1	DF65101010	Film,	100pF	
C220	1	1	1	DF65101010	Film,	100pF	
C121	1	1	1	DF65501010	Film,	500pF	
C221	1	1	1	DF65501010	Film,	500pF	
C122	1	1	1	DF15182050	Film,	0.0018 μ F	
C222	1	1	1	DF15182050	Film,	0.0018 μ F	
C123	1	1	1	DF65101010	Film,	100pF	
C223	1	1	1	DF65101010	Film,	100pF	
C124	1	1	1	EA47601090	Electrolytic,	47 μ F,	10V
C224	1	1	1	EA47601090	Electrolytic,	47 μ F,	10V
C125	1	1	1	EE22503550	Electrolytic,	2.2 μ F,	35V
C225	1	1	1	EE22503550	Electrolytic,	2.2 μ F,	35V
C126	1	1	1	DD16501010	Ceramic,	500pF	
C226	1	1	1	DD16501010	Ceramic,	500pF	
C127	1	1	1	EE47503550	Electrolytic,	4.7 μ F,	35V
C227	1	1	1	EE47503550	Electrolytic,	4.7 μ F,	35V
C128	1	1	1	EA10601690	Electrolytic,	10 μ F,	16V
C228	1	1	1	EA10601690	Electrolytic,	10 μ F,	16V
C129	1	1	1	EE47503550	Electrolytic,	4.7 μ F,	35V
C229	1	1	1	EE47503550	Electrolytic,	4.7 μ F,	35V
C130	1	1	1	EE10505050	Electrolytic,	1 μ F,	50V
C230	1	1	1	EE10505050	Electrolytic,	1 μ F,	50V
C131	1	1	1	EE22503550	Electrolytic,	2.2 μ F,	35V
C231	1	1	1	EE22503550	Electrolytic,	2.2 μ F,	35V
C132	1	1	1	EA47503590	Electrolytic,	4.7 μ F,	35V
C232	1	1	1	EA47503590	Electrolytic,	4.7 μ F,	35V
C133	1	1	1	EA47503590	Electrolytic,	4.7 μ F,	35V
C233	1	1	1	EA47503590	Electrolytic,	4.7 μ F,	35V
C134	1	1	1	EE10505050	Electrolytic,	1 μ F,	50V
C234	1	1	1	EE10505050	Electrolytic,	1 μ F,	50V
C135	1	1	1	DD16101010	Ceramic,	100pF	
C235	1	1	1	DD16101010	Ceramic,	100pF	
C136	1	1	1	EE47503550	Electrolytic,	4.7 μ F,	35V

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION		
	U	C	N				
C236	1	1	1	EE47503550	Electrolytic,	4.7 μ F,	35V
C137	1	1	1	EA10703590	Electrolytic,	100 μ F,	35V
C237	1	1	1	EA10703590	Electrolytic,	100 μ F,	35V
C138	1	1	1	EE10505050	Electrolytic,	1 μ F,	50V
C238	1	1	1	EE10505050	Electrolytic,	1 μ F,	50V
C139	1	1	1	DD16201010	Ceramic,	200pF	
C239	1	1	1	DD16201010	Ceramic,	200pF	
C140	1	1	1	EM22402510	Electrolytic,	0.22 μ F,	25V
C240	1	1	1	EM22402510	Electrolytic,	0.22 μ F,	25V
C141	1	1	1	EE10602550	Electrolytic,	10 μ F,	25V
C241	1	1	1	EE10602550	Electrolytic,	10 μ F,	25V
C142	1	1	1	DF15563050	Film,	0.056 μ F	
C242	1	1	1	DF15563050	Film,	0.056 μ F	
C143	1	1	1	DF15183050	Film,	0.018 μ F	
C243	1	1	1	DF15183050	Film,	0.018 μ F	
C144	1	1	1	DF15153050	Film,	0.015 μ F	
C244	1	1	1	DF15153050	Film,	0.015 μ F	
C145	1	1	1	DF15153050	Film,	0.015 μ F	
C245	1	1	1	DF15153050	Film,	0.015 μ F	
C146	1	1	1	DF65821010	Film,	820pF	
C246	1	1	1	DF65821010	Film,	820pF	
C147	1	1	1	DF65101010	Film,	100pF	
C247	1	1	1	DF65101010	Film,	100pF	
C148	1	1	1	EA10703590	Electrolytic,	100 μ F,	35V
C248	1	1	1	EA10703590	Electrolytic,	100 μ F,	35V
C301	1	1	1	DF66181500	Film,	180pF,	125V
C302	1	1	1	DF66181500	Film,	180pF,	125V
C303	1	1	1	DF15153510	Film,	0.015 μ F,	200V
C304	1	1	1	EE33602550	Electrolytic,	33 μ F,	25V
C305	1	1	1	DF16102050	Film,	0.001 μ F,	
C306	1	1	1	DF16102510	Film,	0.001 μ F,	200V
C307	1	1	1	DF16102510	Film,	0.001 μ F,	200V
C308	1	1	1	EA10702590	Electrolytic,	100 μ F,	25V
P106	3	3	3	3444118050	Spacer		
P107	12	12	12	2933118020	Spacer		
J101	94	94	94	YP10001130	Plugs		
P100-MISCELLANEOUS							
POWER SUPPLY CIRCUIT BOARD-P400							
P400	1	1	1	YD41130020	P. W. Board (Print Only)		
	1	1	1	ZZ44130020	P. W. Board Assembly		
P400-SEMICONDUCTORS							
Q401	1	1	1	HD20011050	Diode,	1S1555	
Q402	1	1	1	HT309451Q0	Transistor,	2SC945(Q)	
Q403	1	1	1	HT309451Q0	Transistor,	2SC945(Q)	
Q404	1	1	1	HT309451Q0	Transistor,	2SC945(Q)	
Q405	1	1	1	HT403891A0	Transistor,	2SD389(Q)	
Q406	1	1	1	HD30046090	Diode,	BZ-310	
Q407	1	1	1	HD20016100	Diode,	10DC1 +	
Q408	1	1	1	HD20017100	Diode,	10DC1 -	
Q409	1	1	1	HD20016100	Diode,	10DC1 +	
Q410	1	1	1	HD20017100	Diode,	10DC1 -	
Q411	1	1	1	HD10001010	Diode,	1N34A	
P400-RESISTORS							
R401	1	1	1	RT05047140	Fixed,	4.7 Ω $\pm$ 5%,	$\frac{1}{4}$ W
R402	1	1	1	RT05047140	Fixed,	4.7 Ω $\pm$ 5%,	$\frac{1}{4}$ W
R403	1	1	1	RT05105140	Fixed,	1M Ω $\pm$ 5%,	$\frac{1}{4}$ W
R404	1	1	1	RT05331140	Fixed,	330 Ω $\pm$ 5%,	$\frac{1}{4}$ W
R405	1	1	1	RT05223140	Fixed,	22K Ω $\pm$ 5%,	$\frac{1}{4}$ W
R406	1	1	1	RT05563140	Fixed,	56K Ω $\pm$ 5%,	$\frac{1}{4}$ W
R407	1	1	1	RT05221140	Fixed,	220 Ω $\pm$ 5%,	$\frac{1}{4}$ W
R408	1	1	1	RT05223140	Fixed,	22K Ω $\pm$ 5%,	$\frac{1}{4}$ W
R409	1	1	1	RT05223140	Fixed,	22K Ω $\pm$ 5%,	$\frac{1}{4}$ W

U: U.S.A.
C: Canada
N: Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
R410	1	1	1	RT05473140	Fixed, 47K Ω $\pm$ 5%, 1/4W
R411	1	1	1	RT05047140	Fixed, 4.7 Ω $\pm$ 5%, 1/4W
R412	1	1	1	RT05223140	Fixed, 22K Ω $\pm$ 5%, 1/4W
R413	1	1	1	GJ05471020	Fixed, 470 Ω $\pm$ 5%, 2 W
R414	1	1	1	GJ05821020	Fixed, 820 Ω $\pm$ 5%, 2 W
R415	1	1	1	GJ05821010	Fixed, 820 Ω $\pm$ 5%, 1 W
R416	1	1	1	GJ05100020	Fixed, 10 Ω $\pm$ 5%, 2 W
R417	1	1	1	GJ05150010	Fixed, 15 Ω $\pm$ 5%, 1 W
R418	1	1	1	GJ05150010	Fixed, 15 Ω $\pm$ 5%, 1 W
R419	1	1	1	RT05185140	Fixed, 1.8M Ω $\pm$ 5%, 1/4W
R420	1	1	1	RT05563140	Fixed, 56K Ω $\pm$ 5%, 1/4W
R421	1	1	1	RT05393140	Fixed, 39K Ω $\pm$ 5%, 1/4W
R422	1	1	1	GJ05102010	Fixed, 1K Ω $\pm$ 5%, 1W
R450	2	2	2	RC00000120	Fixed, 0 Ω , 1/4W
P400-CAPACITORS					
C401	1	1	1	EE10601650	Electrolytic, 10 μ F, 16V
C402	1	1	1	EZ10701010	Electrolytic, 100 μ F, 10V
C403	1	1	1	EE22600650	Electrolytic, 22 μ F, 6.3V
C404	1	1	1	EA22703590	Electrolytic, 220 μ F, 35V
C405	1	1	1	EA47703590	Electrolytic, 470 μ F, 35V
C406	1	1	1	EA47705090	Electrolytic, 470 μ F, 50V
C407	1	1	1	EA47705090	Electrolytic, 470 μ F, 50V
C408	1	1	1	DF16103500	Film, 0.01 μ F, 200V
C409	1	1	1	DF16103500	Film, 0.01 μ F, 200V
C410	1	1	1	DF16103500	Film, 0.01 μ F, 200V
C411	1	1	1	DF16103500	Film, 0.01 μ F, 200V
C412	1	1	1	DF16103500	Film, 0.01 μ F, 200V
C413	1	1	1	DF16103500	Film, 0.01 μ F, 200V
C414	1	1	1	DF16103500	Film, 0.01 μ F, 200V
C415	1	1	1	DF16103500	Film, 0.01 μ F, 200V
C416	1	1	1	DK18503010	Ceramic, 0.05 μ F
C417	1	1	1	EA22801690	Electrolytic, 2200 μ F, 16V
C418	1	1	1	EA10505090	Electrolytic, 1 μ F, 50V
P400-MISCELLANEOUS					
G401	1	1	1	BF10400030	Printed Comp., 0.1 μ F + 120 Ω
J401	20	20	20	YP10001130	Plugs
P406	7	7	7	3444118050	Spacer
P407	14	14	14	2933118020	Spacer
SWITCH CIRCUIT BOARD-P500					
P500	1	1	1	YD34480042	P. W. Board (Print Only)
	1	1	1	ZZ34480040	P. W. Board Assembly
P500-MISCELLANEOUS					
S501	1	1	1	SP10070010	Push Switch with S502+S507
J501	51	51	51	YP10001130	Plugs
VOLUME CIRCUIT BOARD-P600					
P600	1	1	1	YD34480050	P. W. Board (Print Only)
	1	1	1	ZZ34480050	P. W. Board Assembly
P600-RESISTERS					
R601	1	1	1	RS05030240	Variable, 50K Ω (A), Master
R602	1	1	1	RX05030110	Variable, 50K Ω (A), Line(L)
R603	1	1	1	RX05030110	Variable, 50K Ω (A), Line(R)
R604	1	1	1	RT05223140	Fixed, 22K Ω $\pm$ 5%, 1/4W
R605	1	1	1	RT05223140	Fixed, 22K Ω $\pm$ 5%, 1/4W
R606	1	1	1	RX05030110	Variable, 50K Ω (A), Mic (L)
R607	1	1	1	RX05030110	Variable, 50K Ω (A), Mic (R)
R608	1	1	1	RT05104140	Fixed, 100K Ω $\pm$ 5%, 1/4W
R609	1	1	1	RT05104140	Fixed, 100K Ω $\pm$ 5%, 1/4W

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
J601	12	12	12	YP10001130	P600-PLUGS Plugs
LAMP CIRCUIT BOARD-P650					
P650	1	1	1	YD34480080	P. W. Board (Print Only)
	1	1	1	ZZ34480080	P. W. Board Assembly
P650-MISCELLANEOUS					
J651	8	8	8	YJ08000170	Jacks
J658	8	8	8	YP10001130	Plugs
V651	4	4	4	IN10080070	Lamps
V654					
TERMINAL CIRCUIT BOARD-P700					
P700	1	1		YD41130030	P. W. Board (Print Only)
	1	1		ZZ41130030	P. W. Board Assembly
P700			1	YD41130040	P. W. Board (Print Only)
			1	ZZ41130040	P. W. Board Assembly
P700-SWITCHES					
S701	1	1	1	SS02020420	Slide Switch
S702	1	1	1	SS02020420	Slide Switch
P700-RESISTORS					
R701	1	1	1	RK02030360	Variable, 20K Ω (A), FM Cal(L)
R702	1	1	1	RK02030360	Variable, 20K Ω (A), FM Cal(R)
R703	1	1		RT05683140	Fixed, 68K Ω $\pm$ 5%, 1/4W
R704	1	1		RT05683140	Fixed, 68K Ω $\pm$ 5%, 1/4W
R705	1	1		RT05103140	Fixed, 10K Ω $\pm$ 5%, 1/4W
R706	1	1		RT05103140	Fixed, 10K Ω $\pm$ 5%, 1/4W
R703			1	RT05393140	Fixed, 39K Ω $\pm$ 5%, 1/4W
R704			1	RT05393140	Fixed, 39K Ω $\pm$ 5%, 1/4W
R705			1	RT05183140	Fixed, 18K Ω $\pm$ 5%, 1/4W
R706			1	RT05183140	Fixed, 18K Ω $\pm$ 5%, 1/4W
P700-CAPACITORS					
C701	1	1	1	DF15122050	Film, 0.0012 μ F
C702	1	1	1	DF15122050	Film, 0.0012 μ F
P700-MISCELLANEOUS					
J701			1	YT02020100	Terminal, 2P, RCA Type, Input
J702			1	YT02020100	Terminal, 2P, RCA Type, Output
J703			1	YJ11000170	Jack, DIN
J704	1	1		YT02040070	Terminal, 4P RCA Type, Input, Output
J711	13	13	15	YP10001130	Plugs
DOLBY CIRCUIT BOARD-P800					
P800	1	1	1	YD34440092	P. W. Board (Print Only)
	1	1	1	ZZ34440092	P. W. Board Assembly
P800-SEMICONDUCTORS					
Q801	1	1	1	HT306441B0	Transistor, 2SC644(S)
Q901	1	1	1	HT306441B0	Transistor, 2SC644(S)
Q802	1	1	1	HT306441B0	Transistor, 2SC644(S)
Q902	1	1	1	HT306441B0	Transistor, 2SC644(S)
Q803	1	1	1	HF200301E0	Transistor, 2SK30A(D)
Q903	1	1	1	HF200301E0	Transistor, 2SK30A(D)
Q804	1	1	1	HT306441B0	Transistor, 2SC644(S)
Q904	1	1	1	HT306441B0	Transistor, 2SC644(S)
Q805	1	1	1	HT107211T0	Transistor, 2SA721(T)
Q905	1	1	1	HT107211T0	Transistor, 2SA721(T)

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
Q806	1	1	1	HT306441B0	Transistor, 2SC644(S)
Q906	1	1	1	HT306441B0	Transistor, 2SC644(S)
Q807	1	1	1	HD10003020	Diode, 20A90
Q907	1	1	1	HD10003020	Diode, 20A90
Q808	1	1	1	HD10003020	Diode, 20A90
Q908	1	1	1	HD10003020	Diode, 20A90
Q809	1	1	1	HD20011050	Diode, 1S1555
Q909	1	1	1	HD20011050	Diode, 1S1555
Q810	1	1	1	HD20011050	Diode, 1S1555
Q910	1	1	1	HD20011050	Diode, 1S1555
Q811	1	1	1	HD20011050	Diode, 1S1555
Q911	1	1	1	HD20011050	Diode, 1S1555
Q830	1	1	1	HD30031090	Diode, WZ081
P800-RESISTORS					
R801	1	1	1	RT05154140	Fixed, 150K Ω $\pm 5\%$, $\frac{1}{4}W$
R901	1	1	1	RT05154140	Fixed, 150K Ω $\pm 5\%$, $\frac{1}{4}W$
R802	1	1	1	RT05184140	Fixed, 180K Ω $\pm 5\%$, $\frac{1}{4}W$
R902	1	1	1	RT05184140	Fixed, 180K Ω $\pm 5\%$, $\frac{1}{4}W$
R803	1	1	1	RT05273140	Fixed, 27K Ω $\pm 5\%$, $\frac{1}{4}W$
R903	1	1	1	RT05273140	Fixed, 27K Ω $\pm 5\%$, $\frac{1}{4}W$
R804	1	1	1	RT05223140	Fixed, 22K Ω $\pm 5\%$, $\frac{1}{4}W$
R904	1	1	1	RT05223140	Fixed, 22K Ω $\pm 5\%$, $\frac{1}{4}W$
R805	1	1	1	RT05822140	Fixed, 8.2K Ω $\pm 5\%$, $\frac{1}{4}W$
R905	1	1	1	RT05822140	Fixed, 8.2K Ω $\pm 5\%$, $\frac{1}{4}W$
R806	1	1	1	RT05154140	Fixed, 150K Ω $\pm 5\%$, $\frac{1}{4}W$
R906	1	1	1	RT05154140	Fixed, 150K Ω $\pm 5\%$, $\frac{1}{4}W$
R807	1	1	1	RT05272140	Fixed, 2.7K Ω $\pm 5\%$, $\frac{1}{4}W$
R907	1	1	1	RT05272140	Fixed, 2.7K Ω $\pm 5\%$, $\frac{1}{4}W$
R808	1	1	1	RT05333140	Fixed, 33K Ω $\pm 5\%$, $\frac{1}{4}W$
R908	1	1	1	RT05333140	Fixed, 33K Ω $\pm 5\%$, $\frac{1}{4}W$
R809	1	1	1	RT05274140	Fixed, 270K Ω $\pm 5\%$, $\frac{1}{4}W$
R909	1	1	1	RT05274140	Fixed, 270K Ω $\pm 5\%$, $\frac{1}{4}W$
R810	1	1	1	RT05473140	Fixed, 47K Ω $\pm 5\%$, $\frac{1}{4}W$
R910	1	1	1	RT05473140	Fixed, 47K Ω $\pm 5\%$, $\frac{1}{4}W$
R811	1	1	1	RT05332140	Fixed, 3.3K Ω $\pm 5\%$, $\frac{1}{4}W$
R911	1	1	1	RT05332140	Fixed, 3.3K Ω $\pm 5\%$, $\frac{1}{4}W$
R812	1	1	1	RT05222140	Fixed, 2.2K Ω $\pm 5\%$, $\frac{1}{4}W$
R912	1	1	1	RT05222140	Fixed, 2.2K Ω $\pm 5\%$, $\frac{1}{4}W$
R813	1	1	1	RT05684140	Fixed, 680K Ω $\pm 5\%$, $\frac{1}{4}W$
R913	1	1	1	RT05684140	Fixed, 680K Ω $\pm 5\%$, $\frac{1}{4}W$
R814	1	1	1	RT05183140	Fixed, 18K Ω $\pm 5\%$, $\frac{1}{4}W$
R914	1	1	1	RT05183140	Fixed, 18K Ω $\pm 5\%$, $\frac{1}{4}W$
R815	1	1	1	RA01030140	Trimming, 10K Ω
R915	1	1	1	RA01030140	Trimming, 10K Ω
R816	1	1	1	RT05272140	Fixed, 2.7K Ω $\pm 5\%$, $\frac{1}{4}W$
R916	1	1	1	RT05272140	Fixed, 2.7K Ω $\pm 5\%$, $\frac{1}{4}W$
R817	1	1	1	RT05153140	Fixed, 15K Ω $\pm 5\%$, $\frac{1}{4}W$
R917	1	1	1	RT05153140	Fixed, 15K Ω $\pm 5\%$, $\frac{1}{4}W$
R818	1	1	1	RT05822140	Fixed, 8.2K Ω $\pm 5\%$, $\frac{1}{4}W$
R918	1	1	1	RT05822140	Fixed, 8.2K Ω $\pm 5\%$, $\frac{1}{4}W$
R819	1	1	1	RA01020110	Trimming, 1K Ω
R919	1	1	1	RA01020110	Trimming, 1K Ω
R820	1	1	1	RT05822140	Fixed, 8.2K Ω $\pm 5\%$, $\frac{1}{4}W$
R920	1	1	1	RT05822140	Fixed, 8.2K Ω $\pm 5\%$, $\frac{1}{4}W$
R821	1	1	1	RT05822140	Fixed, 8.2K Ω $\pm 5\%$, $\frac{1}{4}W$
R921	1	1	1	RT05822140	Fixed, 8.2K Ω $\pm 5\%$, $\frac{1}{4}W$
R822	1	1	1	RT05103140	Fixed, 10K Ω $\pm 5\%$, $\frac{1}{4}W$
R922	1	1	1	RT05103140	Fixed, 10K Ω $\pm 5\%$, $\frac{1}{4}W$
R823	1	1	1	RT05333140	Fixed, 33K Ω $\pm 5\%$, $\frac{1}{4}W$
R923	1	1	1	RT05333140	Fixed, 33K Ω $\pm 5\%$, $\frac{1}{4}W$
R824	1	1	1	RT05124140	Fixed, 120K Ω $\pm 5\%$, $\frac{1}{4}W$
R924	1	1	1	RT05124140	Fixed, 120K Ω $\pm 5\%$, $\frac{1}{4}W$
R825	1	1	1	RT05473140	Fixed, 47K Ω $\pm 5\%$, $\frac{1}{4}W$

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
R925	1	1	1	RT05473140	Fixed, 47K Ω $\pm 5\%$, $\frac{1}{4}W$
R826	1	1	1	RT05272140	Fixed, 2.7K Ω $\pm 5\%$, $\frac{1}{4}W$
R926	1	1	1	RT05272140	Fixed, 2.7K Ω $\pm 5\%$, $\frac{1}{4}W$
R827	1	1	1	RT05102140	Fixed, 1K Ω $\pm 5\%$, $\frac{1}{4}W$
R927	1	1	1	RT05102140	Fixed, 1K Ω $\pm 5\%$, $\frac{1}{4}W$
R828	1	1	1	RT05330140	Fixed, 33 Ω $\pm 5\%$, $\frac{1}{4}W$
R928	1	1	1	RT05330140	Fixed, 33 Ω $\pm 5\%$, $\frac{1}{4}W$
R829	1	1	1	RT05153140	Fixed, 15K Ω $\pm 5\%$, $\frac{1}{4}W$
R929	1	1	1	RT05153140	Fixed, 15K Ω $\pm 5\%$, $\frac{1}{4}W$
R830	1	1	1	RT05470140	Fixed, 47 Ω $\pm 5\%$, $\frac{1}{4}W$
R930	1	1	1	RT05470140	Fixed, 47 Ω $\pm 5\%$, $\frac{1}{4}W$
R831	1	1	1	RT05274140	Fixed, 270K Ω $\pm 5\%$, $\frac{1}{4}W$
R931	1	1	1	RT05274140	Fixed, 270K Ω $\pm 5\%$, $\frac{1}{4}W$
R832	1	1	1	RT05274140	Fixed, 270K Ω $\pm 5\%$, $\frac{1}{4}W$
R932	1	1	1	RT05274140	Fixed, 270K Ω $\pm 5\%$, $\frac{1}{4}W$
R833	1	1	1	RT05224140	Fixed, 220K Ω $\pm 5\%$, $\frac{1}{4}W$
R933	1	1	1	RT05224140	Fixed, 220K Ω $\pm 5\%$, $\frac{1}{4}W$
R800	1	1	1	RC00000120	Fixed, 0 Ω $\frac{1}{4}W$
P800-CAPACITORS					
C801	1	1	1	EA10601690	Electrolytic, 10 μF , 16V
C901	1	1	1	EA10601690	Electrolytic, 10 μF , 16V
C802	1	1	1	EA10601690	Electrolytic, 10 μF , 16V
C902	1	1	1	EA10601690	Electrolytic, 10 μF , 16V
C803	1	1	1	DF15562050	Film, 0.0056 μF
C903	1	1	1	DF15562050	Film, 0.0056 μF
C804	1	1	1	DF15472050	Film, 0.0047 μF
C904	1	1	1	DF15472050	Film, 0.0047 μF
C805	1	1	1	DF15273050	Film, 0.027 μF
C905	1	1	1	DF15273050	Film, 0.027 μF
C806	1	1	1	EA10601690	Electrolytic, 10 μF , 16V
C906	1	1	1	EA10601690	Electrolytic, 10 μF , 16V
C807	1	1	1	DF17104050	Film, 0.1 μF
C907	1	1	1	DF17104050	Film, 0.1 μF
C808	1	1	1	EA47601090	Electrolytic, 47 μF , 10V
C908	1	1	1	EA47601090	Electrolytic, 47 μF , 10V
C809	1	1	1	DF17104050	Film, 0.1 μF
C909	1	1	1	DF17104050	Film, 0.1 μF
C810	1	1	1	EA10601690	Electrolytic, 10 μF , 16V
C910	1	1	1	EA10601690	Electrolytic, 10 μF , 16V
C811	1	1	1	DD15200010	Ceramic, 20pF
C911	1	1	1	DD15200010	Ceramic, 20pF
C812	1	1	1	EA10601690	Electrolytic, 10 μF , 16V
C912	1	1	1	EA10601690	Electrolytic, 10 μF , 16V
C813	1	1	1	DF17104050	Film, 0.1 μF
C913	1	1	1	DF17104050	Film, 0.1 μF
C814	1	1	1	DF17104050	Film, 0.1 μF
C914	1	1	1	DF17104050	Film, 0.1 μF
C815	1	1	1	DF17334050	Film, 0.33 μF
C915	1	1	1	DF17334050	Film, 0.33 μF
C820	1	1	1	EA10702590	Electrolytic, 100 μF , 25V
P800-MISCELLANEOUS					
J801	1	1	1	YP06000270	Plug
J802	1	1	1	YJ06000270	Jack
GENERAL MISCELLANEOUS					
R001	1	1	1	RT05082140	Fixed Resistor, 8.2 Ω $\pm 5\%$, $\frac{1}{4}W$
R002	1	1	1	RT05082140	Fixed Resistor, 8.2 Ω $\pm 5\%$, $\frac{1}{4}W$
C001	1	1	1	DK17102010	Ceramic Capacitor, 1000pF
C002	1	1	1	DK17102010	Ceramic Capacitor, 1000pF
C003	1	1	1	DK17102010	Ceramic Capacitor, 1000pF
C004	1	1	1	DK17102010	Ceramic Capacitor, 1000pF
C006	1	1	1	DF17473590	Film Capacitor, 0.047 μF

U: U.S.A.
C: Canada
N: Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	N		
J001	1	1	1	YJ01000820	Jack
J002	1	1	1	YJ01000820	Jack
J003	1	1	1	YJ01000810	Jack
J004	1	1	1	YJ08000130	Jack
J005				YJ08000090	Jack
J006			1	YJ08000090	Jack
J007			1	YJ08000090	Jack
J008			1	YJ08000220	Jack
J009			1	BY03110010	Jack
J011	1	1	1	YT01010050	Terminal
J012	1	1	1	BY03100010	Jack
J013	1	1	1	YJ07000140	Jack
J014	1	1		YL01040160	Terminal
J014			1	YL09020040	Terminal
S001	1	1	1	SP04010150	Pushswitch
S003	1	1	1	SM01010360	Mini-Switch
S004	1	1	1	SM01010520	Mini-Switch
S005	1	1	1	SM02020070	Mini-Switch
S006	1	1	1	SM01010462	Mini-Switch
H001	1	1	1	LH42851020	Rec/Play Head
H002	1	1	1	LH31000400	Erase Head
M001	1	1	1	MM11200042	DC Motor
S002	1	1	1	SM01010530	Mini-Switch
M010	1	1	1	IM11080014	Meter, Left
M011	1	1	1	IM11080014	Meter, Right
L001		1		TS16016020	Power Transformer
L001			1	TS16017020	Power Transformer
L001	1			TS16016040	Power Transformer
V001	1	1	1	IN10080300	Lamp
V002	1	1	1	IN10080070	Lamp
F001			1	FS10100800	Fuse, 1A
F002			1	FS10100800	Fuse, 1A
F003			1	FS10315800	Fuse, 3.15A
F004			1	FS10031800	Fuse, 3.15mA
W001			1	YC01900030	Power Cord
W001	1	1		YC02400220	Power Cord
G001	1			BF10400040	Printed Comp., 0.1 μ F + 120 Ω

16 TECHNICAL SPECIFICATIONS

Signal-to-Noise Ratio

DOLBY NR OFF

with Fe-Cr or CrO₂ tape 50 dB

with standard tape 48 dB

DOLBY NR ON improves S/N by 8 dB

Total Harmonic Distortion 2%

Frequency Response

with Fe-Cr tape 40 Hz to 17 kHz

with CrO₂ tape 40 Hz to 15 kHz

with standard tape 40 Hz to 13 kHz

Wow and Flutter 0.15% W.R.M.S.

Input Impedance

Mic 8.2 k Ω

Line 120 k Ω

Line Output Level 900 mV

Line Output Impedance 3.9 k Ω

Headphone Output Impedance 8 Ω

GENERAL

Power Requirements 120V AC, 60 Hz (for U.S.A. and Canada)

..... 110/120/220/240 AC, 50 Hz (for Europe)

Power Consumption 25 W

Dimensions:

Width 17-3/8 inches

Height 5-3/8 inches

Depth 11-1/2 inches

Weight:

Model 5020 Only 17 lbs 10 oz

Packed for Shipment 23 lbs 11 oz