RCA

FILE
1983
SJT 400

# SelectaVision® VideoDisc System CED Basic Service Data

# Model SJT 400


**RCA Corporation**
**Consumer Electronics**
**Technical Publications**
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**Canada Stock Numbers:**
Add prefix **62** to **all** stock numbers.

*SJT 400*

**TO AVOID ERROR** file all supplements and addendums as soon as received. Consult these before ordering parts.

## Service Data Contents



**CAUTION:** DO NOT USE MONAURAL ALIGNMENT (TEST) DISC STK. NO. 149235 WITH MODELS COVERED BY THIS SERVICE DATA.

## SAFETY NOTICE

Components having special safety characteristics are identified by shading on schematics and by * stars on the parts list in this Service Data and its supplements and bulletins. Before servicing this instrument, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in this Service Data.

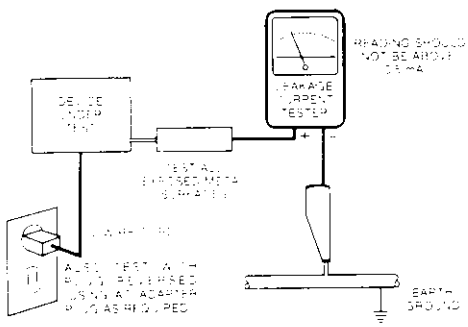

First Edition — First Printing

1 **Before returning the VideoDisc Player to the customer**, always make a safety check of the entire instrument, including, but not limited to, the following items.

a. Be sure that no built-in protective devices are defective and/or have been defeated during servicing. (1) Protective shields are provided on this VideoDisc Player to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reassembling the VideoDisc Player, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**

b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) excessively wide cabinet ventilation slots, and (2) improperly fitted and/or incorrectly secured cabinet covers.

c. **Leakage Cold Check** — With the VideoDisc Player AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the VideoDisc Player AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each push button/customer control, exposed metal screws, metalized overlays and to each cable connector. If the measured resistance is less than 1.0 megohm or greater than 5.2 megohm (except for the center conductor of the F connector that feeds the TV receiver which will measure *open* when the function switch is in the play position) an abnormality exists that must be corrected before the VideoDisc Player is returned to the customer. Repeat this test with the VideoDisc Player AC switch in the *off* position. All the preceding tests should be made with a *Disc* in the player and repeated *without a Disc* in the player.



*AC Leakage Test*

d. **Leakage Current Hot Checks**

On completely assembled instrument, with a *Disc* in the Player and all tests repeated without a *Disc* in the Player, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) *C101.1 Leakage Current for Appliances* and Underwriters Laboratories (UL) *1410, (50.7)*. Measure for current, with the player in the *play* position and repeat with the player in the *Load—Unload* and *off* positions from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal or conductive parts of the instrument (antenna connections, handle bracket, metal cabinet, screwheads, metallic overlays, push-buttons, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the Player deck. Any current measured must not exceed 0.5 milliamp. Reverse the instrument power cord plug in the outlet and repeat test.

**ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING TO AN ANTENNA OR ACCESSORIES.**

e. **Interconnected Equipment AC Leakage Test**

Avoid shock hazards. The television instrument, accessory, or cable(s) to which this VideoDisc Player is connected should have the applicable sections of the leakage resistance cold check and the leakage current hot check performed. Do not connect this VideoDisc Player to a TV antenna, cable or accessory that exhibits excessive leakage currents.

2. Read and comply with all caution and safety-related notes on or inside the VideoDisc Player cabinet, and on the Player deck.

3. **Design Alteration Warning** — Do *not* alter or add to the mechanical or electrical design of this VideoDisc Player. Design alterations and additions, including, but not limited to, circuit modifications and the addition of items such as auxiliary audio and/or video output connections, cables and accessories etc. might alter the safety characteristics of this VideoDisc Player and create a hazard to the user. Any design alterations or additions may void the manufacturer's warranty and may make you, the servicer responsible for personal injury or property damage resulting therefrom.

4. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: a. near sharp edges, b. near thermally hot parts — be sure that leads and components do not touch thermally hot parts in the AC and DC supplies. Always inspect in all areas for pinched, out-of-place, or frayed wiring. Do not change spacing between components, and between components and the printed-circuit board. Check AC power cord for damage.

5. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6. **PRODUCT SAFETY NOTICE** — Many electrical and mechanical parts have special safety-related characteristics some of which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified in RCA service data by *shading* on schematics and by a (★) in the parts list. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part in RCA service data parts list might create shock, fire, and/or other hazards. Product Safety is under review continuously and new instructions are issued whenever appropriate. For the latest information, always consult the appropriate current RCA service literature. A subscription to, or additional copies of, RCA service literature may be obtained at a nominal charge from your RCA Consumer Electronics Distributor or from RCA Technical Publications, P.O. Box 1976, Indianapolis, IN 46206, or Canadian residents may order from RCA Inc., Technical Publications, 5575 Royalmount Ave., Town of Mount-Royal, Quebec H4P 1J8 Canada.

**CAUTION:** Before servicing instruments covered by this service data and its supplements and addendums, read and follow the *SAFETY PRECAUTIONS* on page 2 of this publication. *NOTE:* If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 2 of this publication, always follow the safety precautions. *Remember Safety First.*

### General Servicing Precautions

1. Always unplug the instrument AC power cord from the AC power source before:
   a. Removing or reinstalling any component, circuit board, module, or any other instrument assembly.
   b. Disconnecting or reconnecting any instrument electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

   Caution: A wrong part substitute or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Do *not* spray chemical on or near this instrument or any of its assemblies.
3. Unless specified otherwise in this service data, clean electrical contacts by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator: 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90% - 99% strength).

   **Caution:** *This is a flammable mixture.*

   Unless specified otherwise in this service data, lubrication of contacts is not required.
4. Do *not* defeat any plug/socket B+ voltage interlocks with which instruments covered by this service data might be equipped.
5. Do *not* apply AC power to this instrument and/or any of its electrical assemblies unless *all* solid-state device heat sinks are correctly installed.
6. Always connect the test instrument ground lead to the appropriate instrument chassis ground *before* connecting the test instrument positive lead. Always remove the test instrument ground lead *last*.

### Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices*. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a *grounded-tip* soldering iron to solder or unsolder ES devices.
4. Use only an *anti-static* type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do *not* use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do *not* remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the instrument ground or circuit assembly into which the device will be installed. **CAUTION:** Be sure no power is applied to the instrument or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

### General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range 500°F to 600°F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch, or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique:
   a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).
   b. Heat the component lead until the solder melts.
   c. Quickly draw away the melted solder with an anti-static, suction-type solder removal device or with solder braid.

   **CAUTION:** Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique:
   a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).
   b. First, hold the soldering iron tip and solder strand against the component lead until the solder melts.
   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.

   **CAUTION:** Work quickly to avoid overheating the circuit board printed foil.
   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

### IC Removal/Replacement

Use the following technique for IC removal and replacement.

*Removal*

1. Desolder and draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

*Replacement*

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas.)

**"Small-Signal" Discrete Transistor Removal/Replacement**

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact, then solder each connection.

**Power Output Transistor Devices Removal/Replacement**

1. Heat and remove all solder from around the transistor leads.
2. Remove the heatsink mounting screw (if so equipped).
3. Carefully remove the transistor from the circuit board.
4. Insert new transistor in circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heatsink.

**Diode Removal/Replacement**

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicularly to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and, if necessary, apply additional solder.

**Fuse and Conventional Resistor Removal/Replacement**

1. Clip each fuse or resistor lead at top of circuit board hollow stake.
2. Securely crimp leads of replacement component around notch at stake top.
3. Solder the connections.

> **CAUTION:** Maintain original spacing between the replaced component and adjacent components and the circuit board, to prevent excessive component temperatures.

**Circuit Board Foil Repair**

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board, causing the foil to separate from, or "lift-off", the board. The following guidelines and procedures should be followed whenever this condition is encountered.

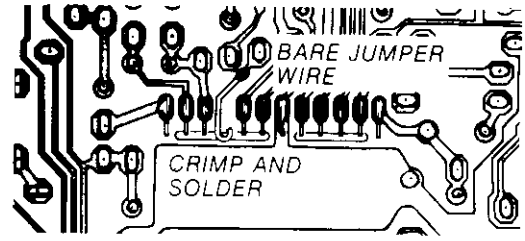
*In Critical Copper Pattern Areas*

High component/copper pattern density and/or special voltage/current characteristics make the spacing and integrity of copper pattern in some circuit board areas more critical than in others. The circuit foil in these areas is designated as *Critical Copper Pattern* and is identified and illustrated in this service data in the section titled *Safety Related Copper Pattern* (see table of contents for page number). Because Critical Copper Pattern requires special soldering techniques to ensure the maintenance of reliability and safety standards, contact your local RCA Consumer Electronics Distributor Service Manager before attempting repair of Critical Copper Pattern.

*At IC Connections*

To repair defective copper pattern at IC connections, use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections.)

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary.)
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.



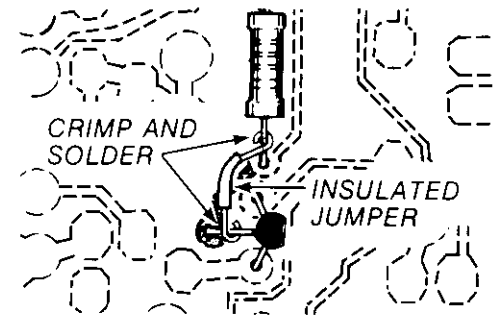

*Install Jumper Wire and Solder*

3. Bend a small "U" in one end of a small-gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the cut-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area, and clip off any excess jumper wire.

*At Other Connections*

Use the following techniques to repair defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.




*Insulated Jumper Wire*

**CAUTION:** Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.
F013.4.2

**Power Input:** — 120 VOLTS, 50/60 Hz.
**Power Consumption:** — 31 WATTS
**Antenna Impedence:** — 75 ohm in/out
**RF Output Level:** — 3 mV Maximum
1 mV Minimum
Switchable to
Channel 3 or 4
**Circuit Boards:** — PW 200 — RESONATOR
PW 400 — Arm Preamp
PW 600 — AC input
PW 900 — Remote IR Preamp
PW 1700 — Display
PW 5600 — Function Switch
Assembly
PW 6100 — RKM/Features/OSD
PW Hook up-Arm Interconnect
PW Master — Master Circuit Board
**Weight:** — Approx. 21 lbs.
**Dimensions:** — WIDTH — 17" (431.8 mm)
DEPTH — 16-1/2" (418.9 mm)
HEIGHT: — 5" (126.7 mm)
**Turntable Speed:** — 449.55 RPM Direct Drive
Quartz-Locked
**Play Time:** — 2 hours (1 hour per disc side)
**Video Signal System:** — EIA Standard NTSC Color
Signal
**Video Output:** — 1V p-p into 75-ohm termination 2V p-p
unterminated
**Audio Output:** — 2 channel 200 mV ± 20 mV RMS, into
10K ohm or greater impedence
**Disc Play System:** — CED Capacitance
Electronic Disc

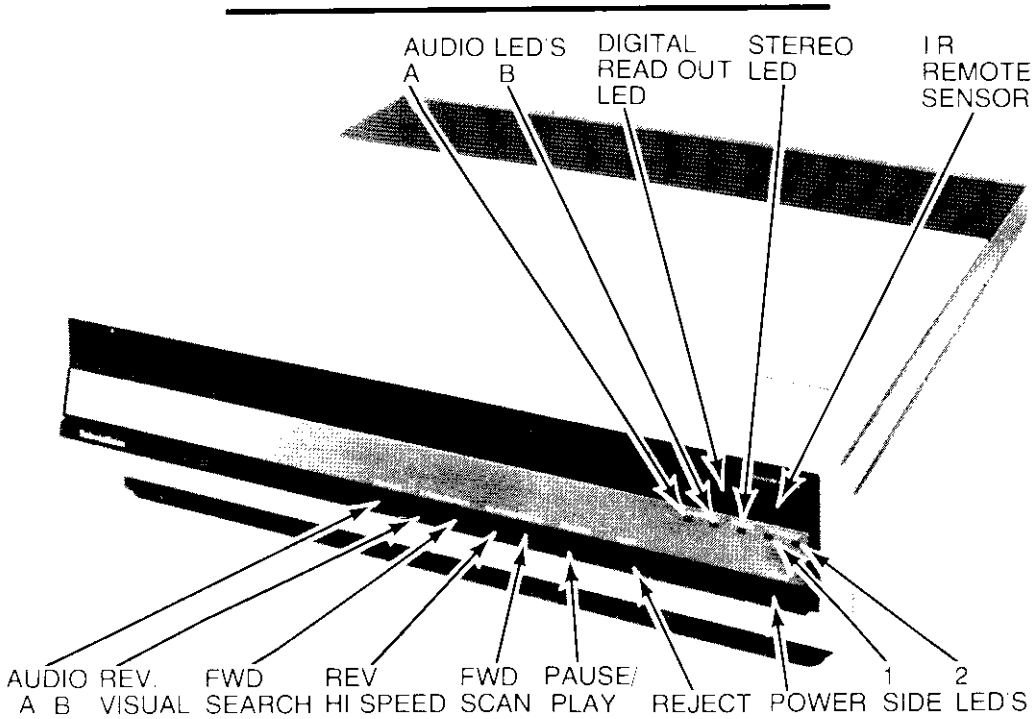



*Fig. 1—Operating Controls*

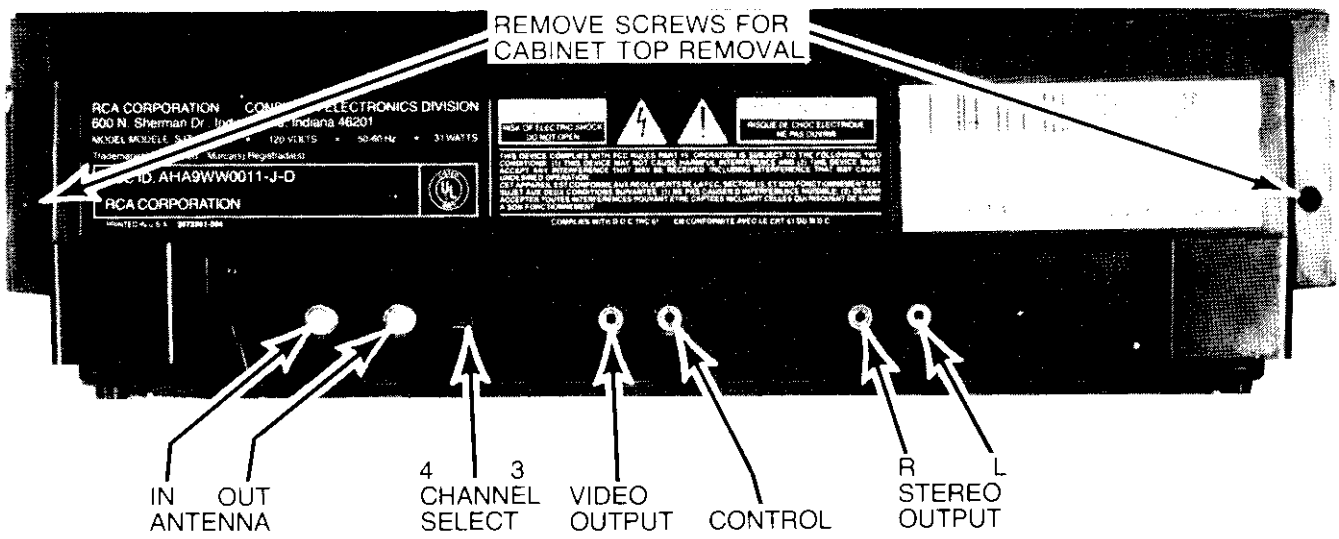



*Fig. 2—Rear Panel Connections*

**NOTE:** In addition to the LED Digital Readout indicator on the player, described in the following text, the SJT 400 RANDOM ACCESS VideoDisc player also has ON SCREEN DISPLAY capability which prompts the user in the operation of the instrument. See customer instruction book for more detail.

**Power On/Off — Load — Play — Unload**

Power is applied to the player by depressing the player on/off button. The player automatically places itself in the "Load" position (caddy entry door open). The digital readout indicator lights and displays a flashing "L".

To load player, insert loaded caddy into player gently until the player loading mechanism takes hold and pulls caddy into player (DO NOT force caddy into Player). When the caddy spine is latched the loading mechanism will reverse and return the empty sleeve (caddy) out beyond the caddy entry door opening. Remove the empty sleeve (caddy) from the player and the player will automatically place itself in the "Play" mode. During the automatic cycle the digital readout will display —•—. In approximately 10 seconds a picture will appear on the TV screen and the digital readout will begin to display elapsed playing time in minutes.

When "Play" is completed (approximately 60 minutes) the digital readout will display a flashing "E" momentarily then the "E" lights continuously. In approximately 8 to 10 seconds the player automatically places itself in the "Unload" mode. The digital readout will display a flashing "UL" and the caddy entry door will open. Insert empty sleeve (caddy), in same manner prescribed for load procedure, to retrieve the disc and spine from the player. Remove loaded caddy from player and the digital readout will then begin displaying a flashing "L".

**Audio A/B Button**

This function is active only when playing a special DUAL sound track or BILINGUAL disc. Press to select either the primary sound track "A" or the secondary sound track "B". Depending upon which sound track is active, the corresponding LED display lamp will light. (A/B).

**Note:** The player automatically selects the proper audio playback mode whether you are playing a special dual sound track, Bilingual, Stereo or monaural VideoDisc

**Visual Search**

Pressing either *Visual Search* Button, Fwd ▶ or Rev. ◀, (with disc in player) permits faster than normal (16 times normal speed) movement of the pick-up arm assembly. The stylus remains in contact with the disc permitting *Visual Search* (scan) viewing of the program material (audio is muted during this mode of operation).

**Hi-Speed Scan**

Pressing either *Hi-Speed Scan* Button, Fwd ▶▶ or Rev. ◀◀ (with disc in player) permits rapid (120 times normal speed) movement of the pick-up arm Assembly. The stylus remains in contact with the disc permitting hi-speed scan (search) viewing of the program material (Audio is muted during this mode of operation.

**Pause/Play**

Pressing the *"Pause"* Button (with disc in player) places the stylus lifter circuit into operation raising the stylus off the disc. Video is blanked, audio is muted, and there is no movement of the pick-up arm assembly in this mode of operation. The digital readout will display a flashing "P". Pressing the *"Pause"* button a second time returns the player to normal operation. The in arm stylus cleaner (sweeper) is activated in the "Pause" mode.

**Stereo Sound**

By connecting an external stereo amplifier (optional equipment) to the stereo output jacks on the back of the player you can enjoy stereo sound when playing a stereo disc.

**Video Out Jack**

The video output jack (located on the back of the player) makes it possible to connect video from the player directly to a TV set or monitor equipped with a video input jack.

## CIRCUIT PROTECTION

| Fuse (or Device) | Circuit Protected | Physical Location |
|---|---|---|
| F601 | AC input | PW 600 |

**Note:** Technicians servicing this product will find helpful the following related **RCA** Technical Training Publications.
**VideoDisc Manual SJT200/300-1**
**VideoDisc Manual SJT400 TR**

These publications may be ordered, for a nominal charge, from: RCA Technical Publications 1-450, P.O. Box 1976, Indianapolis, IN 46206.

The New RCA SelectaVision Random Access VideoDisc Player is simple to operate, and easy to install. External connections to and from the player are minimal, involving only intercept and reconnection of the television VHF antenna input lead (cable). Necessary connecting lead (cable) and matching transformers are included to handle all but unusual installations.

1. A 5 foot, 75 ohm coaxial cable connects from the antenna out connector on the player, to the VHF antenna input on the television receiver. Use cable direct if the television has 75 ohm VHF antenna input connector; use via a 75 to 300 ohm matching transformer/adaptor if the television VHF antenna input is 300 ohm.

2. A 300 to 75 ohm matching transformer/adaptor mates a 300 ohm twin lead antenna system (outside or rabbit ears) to the player 75 ohm antenna input system. (Captive, screw type lugs are integral to the 300 to 75 ohm antenna matching transformer/adaptor; strip and insert the 300 ohm twin lead wires then tighten the screws.) Keep in mind — for different or "odd" antenna systems — the antenna input and output of the Video Disc Player is 75 ohm unbalanced.

Antenna connection instructions should be carefully followed. The player produces an R-F signal which is transmitted on VHF Channel 3 or 4 (switch selectable) frequency. If the player antenna output is connected to an antenna, directly or in parallel from the television antenna input connections, the player may broadcast a signal. Broadcasting an unauthorized signal could violate certain regulations of the Federal Communications Commission regarding the operation of R-F devices. Recheck the installation to avoid any broadcasting possibilities; make sure the 75 ohm shielded cable is used to connect the R-F output of the player to the television receiver, and that no other connections are paralleled from these terminals.

The physical location of the antenna "in" and "out" connectors are depicted in the rear apron photo of the Video Disc Player (Fig. 2). "F" type connectors accept the VHF antenna input and output cables.

Interface of the antenna system, Video Disc Player, and monitor television receiver is controlled by an electronic antenna switch in the player. When the Player ON/OFF Switch is in the "OFF" position, the antenna is connected directly (via the player electronic antenna switch) to the television receiver and the television will operate normally. When the player ON/OFF switch is in the "ON" position, the antenna is disconnected and the player R-F output is connected directly to the television VHF antenna input connector. Under this condition the television receiver will receive a signal only on Channels 3 or 4 (switch selectable on the rear of Video Disc Player Fig. 2). Specifically the Video Disc Player antenna switch system serves to either connect the antenna system direct to the television VHF antenna input or disconnect the antenna system and connect the Video Disc Player R-F output direct to the television VHF antenna connector.

Stereo output jacks are available for connecting (cable included) stereo sound output to an external Stereo Amplifier (optional equipment). Also available is a Video Output Jack for connecting (cable not included) a video signal directly to a television receiver or video monitor equipped with video input capabilities.

The new design of the RCA VideoDisc player uses the single—main circuit board concept. The main circuit board contains nearly all of the electronic circuits. Circuits not contained on the main circuit board are AC input, resonator, pick-up arm preamp, and in the case of the remote controlled Random Access VideoDisc player, the remote preamp and remote control/Features/on screen display circuits.

Servicability of the new VideoDisc player is enhanced by the logical physical arrangement of circuits on the main circuit board. The board is segmented by **circuit area**. AND FURTHER ENHANCED BY PROMINENT ROAD MAPPING ON THE CIRCUIT BOARD. In addition, a component numbering system is used which relates to general circuit areas and will aid in readily locating individual components.

The SJT 400 VideoDisc player has the capability of random access to any area of the disc. Included with the unit is an infrared hand unit which allows the user to control all functions of the player except Power On/Off and caddy insertion/removal. Front panel buttons are provided to control simple functions of the player along with a two digit LED digital display device.

To assist the user during the *Remote Random Access* and *Program* operation, the player displays an on-screen message which indicates the operating state of the VideoDisc player, prompts the user with the appropriate action to be taken, and assists in programming the Random access features.

There are two IR remote units capable of controlling the random access VideoDisc player. The CRK-36 (furnished with the player) is dedicated solely to the control of the SJT 400 player. The CRK-32 (referred to as the Digital Command Center) can control not only the SJT 400 VideoDisc player but certain other RCA home entertainment products having IR controlled capabilities.

For complete CRK 36 IR Remote Random Access and Program operation instructions refer to SJT 400 Owner's Manual Part No. 2817354.

For complete CRK 32 IR Remote "Digital Command Center" operation instructions refer to RCA Technical publications File 1983 DCC-1.

Circuits not located on the Main Circuit Board and their numerical designation.

**Component Numbering Versus Circuits.**

0 - 99 — Mechanism/Player mounted components
100 series — PW Hookup on Arm assembly
200 series — Resonator on Arm assembly
400 series — Arm Preamp on Arm assembly
600 series — AC input
900 series — IR preamp
1700 series — Display board assembly
5600 series — Function Switch assembly
6100 series — RKM/Features/OSD

Circuits located on the Main Circuit Board and their numerical designation.

**Component Numbering Versus Circuits**

2000 series — Power Supply
2500 series — Pulse Interference Corrector (PIC)
2700 series — Video Output
3100 series — Non-Linear Aperture Correction (NLAC), Sound Beat Correction
3200 series — Video Demodulation
3300 series — Comb Filter/Defect Corrector
3400 series — Video Converter and Time Base Correction
3500 series — RF Modulator
4100 series — Audio Modulator
4200 series — Audio Track/Hold Mute (CMOS switch)
4300 series — Audio Matrix and Buffer
4400 series — Audio Decoder Rectifier
4500 series — Audio Decoder Control
4600 series — Audio Output
5100 series — Player Control
5300 series — Kicker Pulse
5900 series — Mechanism Control

## INSTRUMENT SHIPPING

The customer instruction book advises the customer to retain the shipping tabs, original carton and packing material for use should they need to repack the player for moving or shipping.

To reinstall the shipping tabs for moving or shipping:

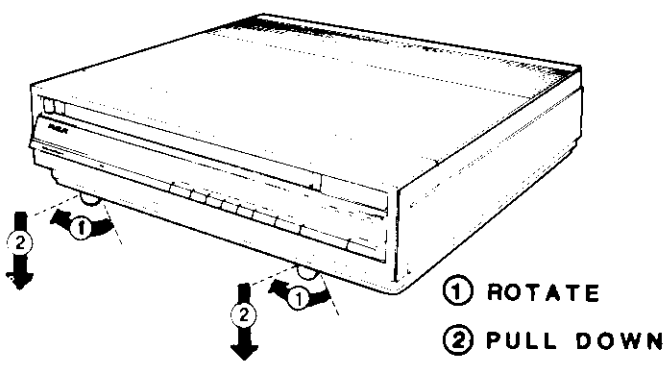
1. Be certain player is in "OFF" mode (caddy entry door closed).
2. Disconnect player from AC power and remove antenna Connections.
3. Replace shipping tabs (see illustrations).
4. Repack player in original carton for shipping using original packing material.
5. Be certain to include player accessories (antenna hook-up cable and adaptors, stereo hook-up cables and Remote transmitter) if instrument is being returned for service.

**NOTE:** Two different size shipping tabs are used. The large diameter pin shipping tab goes on the right side and the small diameter pin shipping tab goes on the left side.

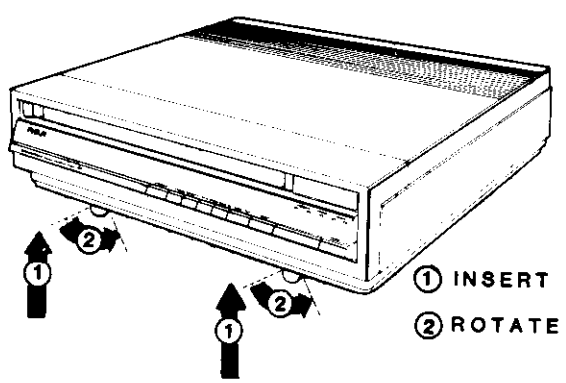
**Preparing The Player For Out-of-Carton Transport**

When transporting the player out of original packing material, the following guidelines are recommended.

1. Be certain player is in "OFF" mode (caddy entry door closed).
2. Disconnect player from AC power source and remove antenna connections.
3. Replace shipping tabs (see illustrations).
4. Player can now be transported safely.




*Shipping Tabs—Removal*




*Shipping Tabs—Installation*

**AM** — Audio Modulation
**AMA** — Audio Mute Primary Channel A
**AMB** — Audio Mute Secondary Channel B
**ANX** — Antenna Transfer
**AO** — Arm Output
**AS** — Arm Stretcher
**CAB** — Channel A/B
**CO** — Clock Output (or Chroma Output)
**CR** — Caddy Reverse
**CS** — Caddy Sense
**CV** — Control Voltage
**CY** — Cored Luminance
**DD** — Decoder Defeat
**DG** — Defect Gate
**DS** — Display
**FM** — Function Motor (or Frequency Modulation)
**GND** — Ground
**HE** — Hall Effect
**HNC** — Home Normally Closed
**HNO** — Home Normally Open
**Hz** — Hertz
**IC** — Integrated Circuit
**KPO** — Kicker Pulse Output
**LA** — Landing
**LED** — Light Emitting Diode
**LO** — Load
**LSE** — Least Significant Digit Voltage
**MA** — Modulator Audio
**MSE** — Most Significant Digit Voltage
**NS** — Negative Supply
**OSD** — On Screen Display
**P** — Play
**PAU** — Pause
**PLL** — Phase Lock Loop
**RAF** — Random Access Forward
**RAR** — Random Access Reverse
**RES** — Reset
**RKM** — Remote Keyboard Microcomputer
**RS** — Radius Sense
**RSF** — Rapid Search Forward
**RSR** — Rapid Search Reverse
**SB** — Sound Beat
**SC** — Stylus Clean
**SI** — Side Indicator
**SL** — Stylus Lifter
**SQ** — Squelch
**SR** — Sound Reference
**SS** — Spine Sense
**SWP** — Sweeper (in Arm Stylus Cleaner)
**TT** — Turntable
**UNL** — Unload
**V** — Voltage
**VB** — Video Blanking
**VDO** — Vertical Detail Output
**VR** — Voltage Regulator
**VSF** — Visual Search Forward
**VSR** — Visual Search Reverse
**Y** — Luminance or B/W Video
**Z** — Impedence

## SAFETY RELATED COPPER PATTERN

Modern circuit design/manufacturing techniques dictate a rather high component density on the printed circuit board utilized in this instrument. It naturally follows that the area available for "printing" copper patterns is also restricted. To maintain high reliability and safety standards, the printed circuit boards are manufactured under carefully controlled conditions and to extremely close tolerances. Some areas of the board are more critical than others due to spacing, pattern size, voltage/current requirements, etc. RCA has concluded, as a result of extensive studies that less-than-optimum repair of copper patterns in these specific areas can degrade the reliability/safety of the instrument. The critical copper patterns are shown as "dark black" in the illustration (Fig. 3). In the event printed circuit damage is evident in these designated areas (copper pattern broken, lifted, etc.) special soldering techniques are necessary to maintain reliability and safety standards. Contact your local RCA Consumer Electronics Distributor Service Manager before attempting copper pattern repair in the designated areas on the board layout.

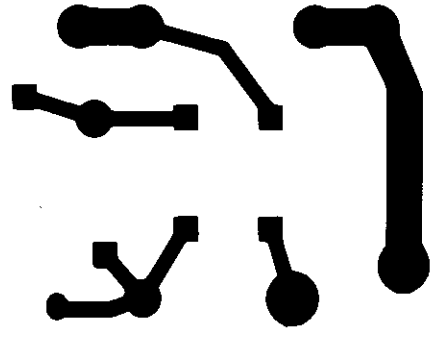


*Fig. 3—PW 600 Critical Copper Pattern*

**Analog** — Of or pertaining to the general class of devices or circuits in which the output varies as a continuous function of the input.

**Angstrom** — One tenth of a millimicron. Angstrom unit is a term utilized to express the length of very short waves.

**Beats** — A term used to describe the unwanted signals produced when two original signals are mixed together.

**Buried Subcarrier** — See Subcarrier, except frequency is down converted. Example: In CED system color burst is 1.53 MHz.

**Burst** — A short time occurrence (8 to 10 Hz) of the color subcarrier signal appearing right after Horizontal sync, but centered on the blanking portion of the video waveform.

**Caddy** — Name given to device in which the Video Disc is enclosed (see sleeve).

**Chroma** — The color portion of a video signal.

**D Flip-Flop** — A dual solid state processing circuit, the output of which is determined by the input.

**DAXI** — Digital Auxiliary Information recorded on the disc and utilized by the player control microcomputer to control operation of the disc player.

**Delta Frequency ($\Delta f$)** — A term to indicate that a signal or frequency has some variation or change.

**Dropout** — A momentary absence of carrier signal off the disc, whether due to uneven stamping or a particle of dust on the disc or stylus.

**Deviation** — A term used to describe how far the FM carrier frequency swings when it is modulated.

**Digital** — Of or pertaining to the class of devices or circuits in which the output varies in discrete steps (i.e., pulses or "ON-OFF" operation).

**Emphasis** — The process of boosting the level of the high frequency portions of the video signal.

**FM Signal** — Abbreviation for Frequency Modulated Signal.

**Field** — One half of a television picture. A field consists of 262.5 horizontal scanning lines across a picture tube. Two fields (line 1 thru 262.5 and line 262.5 thru 525 interlaced) are necessary to complete a fully scanned television picture (frame). The two sweeps of the TV picture tube, or two fields make up one complete TV picture or "frame". Frame repetition is 30 Hz, therefore field repetition is 60 Hz.

**Frame** — One complete television picture (see "Field").

**Gate** — A circuit which will deliver an output only when a specific combination of its inputs are present for use in analog or digital applications.

**Integrated Circuit (IC)** — An electronic device in which both active and passive elements are contained in a single package.

**Interlacing** — The property of the scan lines of two television fields to lie in-between each other.

**Interleaving** — A term used to indicate that the harmonics of the chrominance signal lie in-between the harmonics of the luminance portion of the video signal as it is viewed on a spectrum analyzer. This means that the color information of a video signal does not interfere with, although it is broadcast at the same time as, the luminance information.

**Jitter** — The name of an effect on the playback picture (sometimes referred to as "Wiggles" or "Flutter"). The picture appears to have a rapid shaking motion.

**Luminance** — This is the portion of the video signal which contains B/W information and sync (see "Y" signal).

**Micro Computer** — ($\mu$C) A compact and inexpensive computer relatively limited in capability and capacity, consisting of a microprocessor and other components of a computer, commonly used to store and process digital information.

**Micron** — One millionth part of a meter.

**Microprocessor** — ($\mu$P)— A miniaturized integrated circuit device which performs all of the functions of a central processing unit.

**NLAC** — Non Linear Aperture Correction — System which compensates for non-linear response of the stylus to the disc information.

**NTSC** — (National Television Systems Committee)— These four letters identify the United States Color Television Standard.

**PIC** — Pulse Interference Corrector—Circuit which detects and compensates for interference generated in the 900 MHz frequency range.

**Resonator** — A circuit that responds in accordance to oscillations produced in another circuit.

**Sample and Hold** (S/H) — A process by which the value of a particular signal is measured at a specific moment in time — then this signal is stored for later use.

**Servo** — Short for Servomechanism. An electromechanical device whose mechanical operation (for instance, motor speed) is constantly being measured and regulated so that it closely matches or follows an external reference.

**Sleeve** — Another name applied to the caddy in which the VideoDisc is enclosed. (See Caddy).

**Spine** — Device utilized in conjunction with the VideoDisc and caddy to support the disc when it is transferred from the caddy to the player.

**Stylus** — Diamond tipped device utilized to transfer video and audio information from disc to pickup arm assembly electronics.

**Subcarrier** — A carrier signal inserted within the passband of a broadcast signal to provide a channel for the transmission of additional information.
Example: In color TV, the 3.58 MHz color burst.

**VCO** — (Voltage Controlled Oscillator) An oscillator whose frequency of oscillation is governed by an external voltage and/or timing capacitor in IC applications.

**VCXO** — (Voltage Controlled Crystal Oscillator) Similar to VCO except that a quartz crystal is used as a reference.

**XTAL** — Abbreviation for Crystal.

| Segment | Time Display (Minutes) | Video Display | On Screen Display | Audio** | Daxi Band | Audio Code | Service Application |
|---|---|---|---|---|---|---|---|
| A | 72 | Grey Field | | S1: Unmodulated<br>S2: Unmodulated | 0 | None | Stylus Landing Check |
| B | 0<br>1 | Grey Field<br>w: Time Count | 0:00<br>1:12<br>2:12-3:12 | S1: Unmodulated<br>S2: Unmodulated | 1 | | Stylus Landing Adjustment |
| C | 2 | Uniform Motion on Grey Field | | 1020Hz 100% | 2 | None | Audio Level Adjust Mono Player<br>Visual Search FWD REV Check |
| D | 6 | Color Bars | | S1: Unmodulated | 3 | None | Chroma and Video Adjustments<br>General Picture Quality Check<br>Stereo Indicator Check |
| E | 10 | 100 IRE.<br>White Field | 100 IRE | S1: 480Hz 50%<br>S2: 1020Hz 50% | 4 | Independent<br>Not<br>Encoded | Video Level Adjust<br>Independent Audio Channel<br>Test |
| F | 13 | Grey Field | Left Audio | S1 1020Hz 50%<br>S2 1020Hz 50%<br>In Phase | 5 | Stereo<br>Encoded | Check and Adjust Stereo Separation Left Channel |
| G | 15 | Grey Field | Right Audio | S1: 1020Hz 50%<br>S2 1020Hz 50%<br>Out of Phase | 6 | Stereo<br>Encoded | Check and Adjust Stereo Separation Right Channel |
| H | 19 | 120 IRE.<br>30% Window | | S1: Unmodulated | 7 | None | Modulation Depth Adjust |
| I | 23 | 5 Step<br>Linearity w<br>Defect | | S1: Unmodulated | 8 | Mono<br>Encoded | Defect Substitution Level Adjust |
| J | 27*** | Unmodulated<br>(5MHz Carrier) | | S1: Unmodulated | None | | 5.11MHz VCO Frequency Adjust |
| K | 31 | Demonstration | | S1<br>Demonstration<br>S2 1020Hz 100% | 10 | Independent<br>Not<br>Encoded | General Picture and Sound<br>Check |
| L | 35 | Grey Field | No Audio Carriers | | 11 | None | Sound Beat Check |
| M | 39 | Grey Field | Audio 1 | S1 1020Hz 100%<br>S2: Unmodulated | 12 | Independent-1<br>Not Encoded | Sound Beat Check |
| N | 43 | Grey Field | Audio 2 | S1 Unmodulated<br>S2: 1020Hz 100% | 13 | Not Encoded<br>Independent-2 | Sound Beat Check |
| O | 47 | Grey Field | Audio Decoder Reference | S1 1020Hz 50%<br>S2 Unmodulated | 14 | Stereo<br>Encoded | Decoder Testing and Audio Output Measurement |
| P | 49 | Grey Field | Audio, -30db | S1: 1020 Hz<br>1.58%<br>S2: Unmodulated | 15 | Stereo<br>Encoded | Decoder Testing and Adjust |
| Q | 51 | Grey Field | Audio, -20db | S1 1020Hz 5%<br>S2: Unmodulated | 16 | Stereo<br>Encoded | Decoder Testing |
| R | 53 | Grey Field | Audio, -10db | S1: 1020Hz<br>15.8%<br>S2: Unmodulated | 17 | Stereo<br>Encoded | Decoder Testing |
| S | 56 | Uniform Motion on Grey Field | | S1 Unmodulated<br>S2: Unmodulated | 18 | Stereo<br>Encoded | Visual Search Check<br>Background Noise Level Check |
| T | 60 | Vertical Lines<br>w: Time Count | 0:00 | S1 Unmodulated<br>S2 Unmodulated | 19 | Independent | Armstretcher Check and or Adjustment |
| U | 62<br>E | Grey Field<br>w: Time Count | 2:00 E | S1 Unmodulated<br>S2 Unmodulated | 63 | None<br>None | Daxi Signal Check<br>For End of Recording |
| V | 63 | Grey Field<br>w: Time Count | 3:00-5:00 | S1 Unmodulated<br>S2: Unmodulated | 20 | Independent<br>Not Encoded | Arm Travel Limit Check |

Note: Time count in Bands T, U and V is continuous (i.e.), clock does not reset at the beginning of bands U and V. To access Band V, Rapid Access FWD must be used. Segment V ending time will depend on arm stop.

* See Service Data for use of pre-program segments of Bands A and B.

** Unless otherwise noted, Modulation/Deviation shown is for S1 only, and S2 is not present. (S1 = 716kHz carrier; S2 = 905kHz carrier).

*** Time Display will not increment when Daxi Band is not present (Segment J) and "In Arm Sweeper" will operate continuously.

**Load Sequence**

Pressing the on/off button (turning player on) applies power to the Function Motor. The function motor (running in the forward mode), drives the pulley and 1st reduction gear and the pinion and 2nd reduction gear which in turn drives the upper and lower power assist gears and caddy rollers. The upper power assist gear drives the power assist hub and rod assembly transfering power to the pawl drive gear that in turn drives the function gear. The function gear, as it rotates to the load position opens the caddy (sleeve) entry port door through mechanical linkage, operates the disc transfer rod and activates the mechanism load switch (S9). The digital display will display a flashing "L" indicating the player is in the "Load" mode (See Fig. 4).

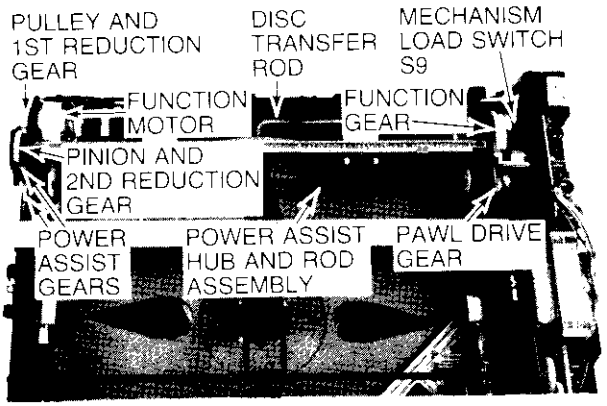



*Fig. 4—Mechanism Identification*

Insertion of the loaded Caddy (sleeve) into the player first encounters the Pawl Actuating Crank lever which, through mechanical linkage, places the function gear actuating pawl in a non-actuating position. Encountered next the spine holddown pads, caddy lockout assemblies, and front receiver pads are raised and lowered respectively to allow caddy (sleeve) entry. The spindle receiver is then raised, the side receiver pads lowered and the caddy (sleeve) sense switch S4 activated (closed) by the caddy (sleeve).

When the caddy sense switch, S4, is activated (closed), power is applied to the function motor. The caddy (sleeve) rollers begin to rotate, they grasp the caddy (sleeve) pulling it into the player. The caddy (sleeve) then activates (closes) the caddy reverse switch, S8. As caddy (sleeve) insertion nears completion the rear receiver pads are lowered, the caddy (sleeve) lock defeat tabs enter the end of the caddy (sleeve) on either side unlocking the spine tabs which hold the spine and Video Disc captive in the caddy (sleeve). At the same time the spine latch tabs, are pushed up and over the end of the spine and drop into their latching position holding the spine and Video Disc captive in the player. The spine sense switch, S5, is also activated (closed) at this time and the side indicator switch, S6, is either activated (closed) or left "off" (open) depending upon which side of the disc is being played. The function motor stops for approximately one (1) second before it begins running in the reverse mode (See Figs. 5 & 6).

With the function motor running in the forward mode the caddy (sleeve) rollers will be driven in the reverse mode. This causes the caddy (sleeve), now empty, to be ejected automatically to a point just beyond the caddy (sleeve) entry door where it must then be manually removed.

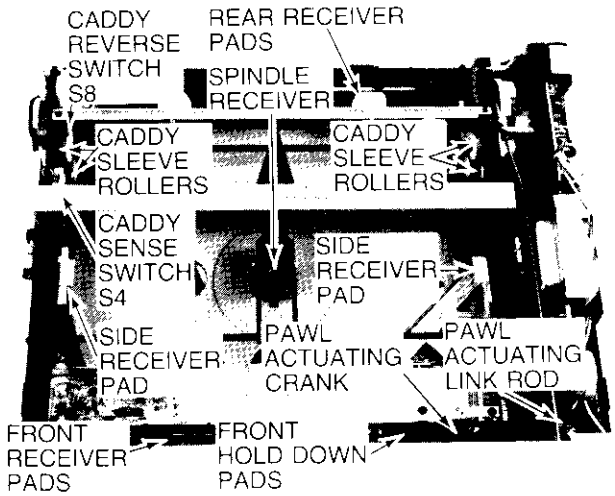



*Fig. 5—Mechanism Identification*

As the caddy (sleeve), now empty, begins its ejection travel from the player—the caddy (sleeve) lock defeat tabs (spring loaded) pop up above the spine to the position necessary for performing their function during the "unload" process. The rear receiver pads rotate up to their normal position to support the disc and spine. The caddy (sleeve) reverse switch, S8, is deactivated (opens), however the function motor continues to run. When the caddy (sleeve) is released by the caddy rollers it must then be manually removed from the player. As the caddy (sleeve) is being manually removed from the player—the caddy sense switch, S4, is deactivated (opens), the side receiver pads (spring loaded) raise up to support the spine, the front receiver pads (spring loaded) raise and the spine holddown pads (also spring loaded) lower to support the disc and spine. The last item to be released is the Pawl Actuating Crank, which is used to prevent the function gear actuating pawl from being tripped during the time a caddy (sleeve) is in the player (See Figs. 5 & 6).

**Note:** The function motor, now controlled by the mechanism $\mu$C, is still running in the forward mode.

Immediately upon release of the pawl activating crank the function gear actuating pawl is released, through mechanical linkage, and allowed to revert to its normal position. On the very next rotation of the pawl drive gear it strikes the function gear pawl placing the function gear

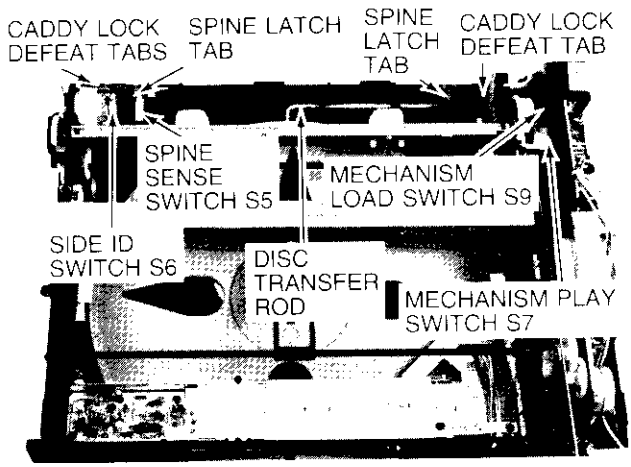



*Fig. 6—Mechanism Identification*

*Continued next page*

teeth in contact with the pawl drive gear teeth, thus driving the function gear through its rotation. As the function gear is driven through its rotation several mechanical functions occur (via cams which are an integral part of the function gear) that operate mechanical linkage. The rear receiver pads are moved back slightly and the front receiver pads are moved forward slightly to allow the disc to be lowered onto the turntable. The caddy (sleeve) entry door is closed, the disc is lowered onto the turntable by the Disc Transfer Rod and the mechanism play switch, S7, is activated (closed). With the activation (closing) of the mechanism play switch the turntable powers up and the arm assembly is moved into position over the disc, the stylus drops making contact with the disc producing picture and sound on the monitor television.

**Note:** A time lapse of approximately 10 seconds is required from turntable power up until picture and sound appear on the monitor TV.

**Stylus Clean**

The stylus is cleaned during the time the arm assembly is moved forward from its "home" position to its "play" position over the disc. The stylus cleaner pad is spring loaded and moves forward on an angle controlled by the arm assembly. About half-way through the forward movement of the stylus cleaner pad assembly the arm assembly hesitates (stops momentarily), the stylus is dropped and then the arm assembly and stylus cleaner pad continue their forward movement dragging the stylus across the cleaner pad in a parallel path cleaning the stylus. Almost immediately the stylus lifter circuit is activated lifting the stylus off the cleaner pad. When the stylus cleaner pad reaches the end of its travel the arm assembly continues its forward movement and positions itself over the disc at a predetermined starting point controlled electronically by activation of Landing Switch S10, contacts 1 & 2. The stylus is then dropped onto the disc to begin its function during the "Play" process (See Fig. 7).

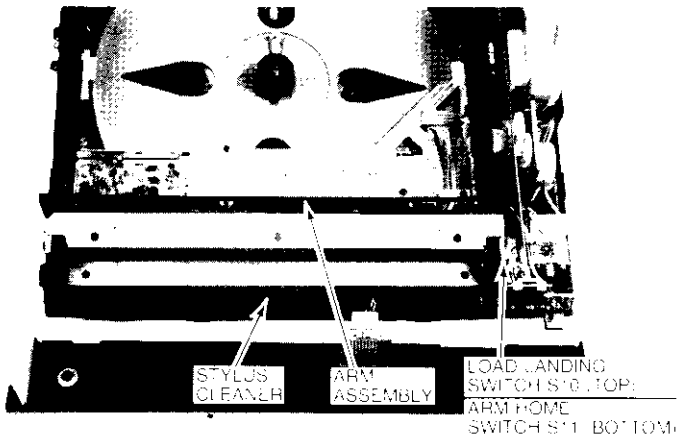



*Fig. 7—Stylus Clean*

**Unload**

At "end-of-play" the digital display will display a flashing "E" for a period of approximately four (4) seconds, then display a non-flashing "E" during the time the arm assembly is being returned to its "Home" position. When the arm assembly reaches its home (outermost) position, Landing Switch, S10, is deactivated (open) and Arm Home switch, S11, is activated (terms. 1 & 3 closed). The stylus cleaner pad is also forced to its outermost position by the arm assembly and the turntable electronically seeks its locked position.

When the arm assembly reaches its Home position Arm Home switch, S11 opens permitting the function motor to be activated in the reverse mode. With the function motor running in the reverse mode the function gear is rotated through its cycle opening the caddy (sleeve) entry door, through mechanical linkage, and the VideoDisc is raised to the "unload" position by the Disc Transfer Rod.

NOTE: There is a 5 minute time-out period in the "unload" mode. If the disc and spine is not removed during this period the disc is returned to the turntable and the player places itself in the "Pause" mode.

Insert empty caddy (sleeve) through the caddy (sleeve) entry port door in the same manner used when the player was loaded. The same series of events will occur as occurred during the "Load" sequence with the following exceptions. The caddy (sleeve) makes contact with the caddy lock defeat tabs (these are the tabs used to release the spine and VideoDisc from the caddy during the "load" process and sprang up when the caddy was removed) forcing them up over the caddy (sleeve) which in turn forces the spine latch tabs to release the spine. The spine and VideoDisc are forced into the empty caddy (sleeve) by the spine push back springs locking it securely. The caddy (sleeve), with the spine and disc locked securely inside, can now be safely ejected by the caddy rollers. When the caddy (sleeve) is removed past the caddy sense switch S4, the switch is deactivated removing power from the function motor. The player automatically reverts to the "Load" mode. At this time the loaded caddy may be turned over and re-loaded in the player to play the other side of the Video Disc. **DO NOT** leave the player in the "Load" mode for any extended period of time. Dust or other contaminates could enter the mechanism through the open caddy entry port door and cause damage to the unit (See Fig. 8).

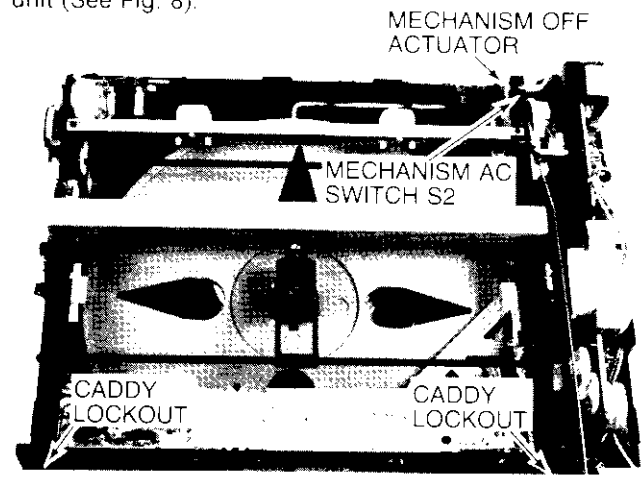



*Fig. 8—Unload and Off*

**Off Position (Disc and spine removed)**

Pushing the "OFF" button (to turn player off) makes the player think it has been loaded with a disc. The function motor runs in the forward mode operating the function gear which begins rotating as if to drop a disc on the turntable. However with no spine in the player the mechanism "OFF" actuator comes into play. At about half-rotation of the function gear, a cam (an integral part of the function gear) forces the mechanism "OFF" actuator up against mechanism AC switch, S2, turning it off (open) removing AC power from the player. The same cam also operates

mechanical linkage which closes the caddy entry port door and holds the Lockouts and Pawl Actuating Crank rigid preventing insertion of a loaded caddy into the player in the "OFF" position (See Fig. 8).

Fig. 46 is a Functional Block Diagram of RCA VideoDisc Player model SJT400. The Front panel control buttons and digital display allow the user direct control of the primary functions of the player. In its primary functions, model SJT400 operates the same as the SJT 200/300 VideoDisc Players.

Most of the electronic circuits in model SJT400 can be seperated into two (2) basic categories; PLAYER CONTROL and SIGNAL PROCESSING. One large Master Circuit Board contains the majority of electronic circuits for player control and signal processing while the PW 6100 circuit board assembly contains the RKM/Features/OSD electronic circuits (Fig. 31—is a Functional Block Diagram of the PW 6100 Features Circuit Board).

Three (3) microcomputer ($\mu$C) integrated circuit devices are the heart of the player control function. The remote control $\mu$C (RKM) which is located on the Features circuit board, accepts and decodes all input commands from the IR Remote transmitter (CRK36 or CRK32) and the user primary control buttons (located on the player itself).

After the input commands have been decoded and the corresponding output data extracted from the Features control software, the output commands are then transferred via unibus lines to the Features $\mu$C. The Features $\mu$C further processes the information and produces output data for On Screen Display, Side 1-Side 2 identification, antenna transfer and player control. The Feature $\mu$C and the player $\mu$C (located on the Main Circuit Board) then work together to control operation of the player. The Player Control $\mu$C also decodes the **Digital Auxiliary Information** (*DAXI* on the VideoDisc) which is used by the Features $\mu$C and Player Control $\mu$C to control various functions of the player electronics and mechanism.

The signal processing circuits are equipped with several integrated circuits and discrete devices, the majority of which are mounted on the master circuit board assembly with the remainder being on the pick-up arm assembly. The signal processing circuits detect the video and audio information on the VideoDisc, demodulates it and processes it through a comb-filter circuit, and then modulates it onto either a channel 3 or channel 4 television RF carrier. This modulated television RF carrier signal is then connected through coaxial cable to any NTSC television receiver.

### Functional Operation

Operation of the VideoDisc player is totally controlled by the combined efforts of the RKM, Features and Player Control microcomputer devices. When the user selects a mode of operation—be it by way of the IR remote system or the "On Player" primary function buttons—input commands related to that mode are fed to the RKM $\mu$C. The RKM $\mu$C decodes these input commands and develops Digital Data which is transferred to the Features $\mu$C. The Features $\mu$C decodes the digital data it receives from the RKM $\mu$C and develops additional digital data. This data is then used to develop the on screen Display, Side 1/Side 2 indication, antenna transfer and to establish communications between the Features $\mu$C and Player Control $\mu$C (located on the master circuit board). The Player Control microcomputer decodes these input commands and, in turn, uses the decoded information to "direct" other player control electronics to establish the electrical conditions required to perform the selected mode of operation. The state of all signal processing circuits is controlled by the Not Squelch **(SQ)** output of the player control microcomputer. When the Not Squelch line goes to a logic "Lo" state, all of the signal-processing electronic circuits are disabled (squelched).

The player control microcomputer has direct control over the pickup arm assembly and the mechanism control microprocessor. This involves:—operation of the Function motor (to "Load" and "Unload" the player); — the turntable motor; — the arm drive (stepper) motor operation, moving the arm forward (Toward center of disc) during normal play — the stylus lifter operation, raising and lowering the stylus as the various functions are initiated; — and the stylus kicker circuits, enabling the system to provide the VISUAL SEARCH feature. The player control microcomputer also controls the direction of the arm drive (stepper) motor. In the HI SPEED SCAN REVERSE, and VISUAL SEARCH REVERSE operating modes, the microcomputer instructs the arm drive (stepper) motor to operate in the reverse mode. The player control microcomputer also generates the elapsed play time display. The time display information is developed from the Digital Auxiliary Information (DAXI) signal. This signal is pre-recorded on the VideoDisc on line 17 of each vertical field. The DAXI signal includes a field identification number that is decoded by the player control microcomputer. This decoded information is used by the microcomputer to develop the elapsed time display.

The signal processing electronics on the pickup arm assembly detect information recorded on the VideoDisc. The arm also contains components for providing the features of VISUAL SEARCH FORWARD and REVERSE as well as locked groove protection. They are: the "stylus kicker" coils which will cause the stylus to skip two grooves of the Video Disc; the "armstretcher" transducer which corrects for the timebase variations in the recovered chrominance and luminance signals. The arm assembly of VideoDisc player Model SJT 400 also contains an **in arm** stylus sweeper which is activated when the player goes into carrier distress (loses DAXI) and does so for a period of 3 seconds more. It is also activated each time the player is placed in the "Pause" mode.

The primary function of the pickup arm signal processing electronics is to detect the information recorded on the Video Disc. This is accomplished by modulating a 910 MHz VHF resonator circuit with the capacitance changes on the VideoDisc surface. The variations in capacitance on the VideoDisc surface causes the 910 MHz resonator center frequency to be modulated. This, in turn, amplitude modulates a fixed 915 MHz oscillator signal. The signal is then peak detected, with the resultant signal representing the capacitance variations on the VideoDisc. The signal is then preamplified and AFT controlled before being applied to the remaining signal processing electronics. The Arm Output (AO) signal contains the video and audio FM-modulated carrier information and all of the information (DAXI) necessary for player control.

The AO signal is applied to the Main Circuit Board assembly where it is distributed to the player control electronics, the video signal processing electronics, and the audio processing electronics.

In the signal processing electronics of the stereo VideoDisc player the AO signal is applied to three (3) FM demodulator ICs. One (1) for video processing and two (2) for audio processing.

In the case of a Monaural VideoDisc a single audio track is imprinted on the disc at 716 kHz. In the case of a stereo or bilinqual VideoDisc two (2) audio tracks are imprinted on the disc. One at 716 kHz, the other at 905 kHz.



*Continued next page*

Before the AO signal is applied to the Video Demodulator IC, it is passed through a Non Liner Aperture Correction (NLAC) circuit. The NLAC circuit removes the 716 kHz audio modulation from the video information. It does this by phase inverting the audio modulation, and then adding it back to the original signal. This cancels out the 716 kHz audio modulation in the carrier information. The video FM carrier, with the 716 kHz audio modulation removed is then applied to the Video demodulator IC and a Pulse Interference Corrector (PIC) circuit.

The purpose of the Pulse Interference corrector (PIC) circuit is to prevent radar and other strong RF pulses in the 900 MHz range from interfering with the operation of the VideoDisc Player. The PIC circuit detects the presence of such pulses and instructs the defect corrector in the Comb Filter and Defect Corrector integrated circuit to substitute the previous line of video information.

The Video Demodulator IC, which demodulates the video carrier, also contains a defect detector circuit used to activate the defect corrector in the comb filter IC. Thus allowing a portion of the previous horizontal line to be inserted when a defect caused by loss of carrier occurs. The output of the video demodulator, being composite video with "buried" subcarrier chroma, is then applied to a comb-filter circuit. The comb-filter dynamically separates chrominance and luminance information from the composite video information. The output of the comb filter is "combed" chrominance and "combed" luminance. The combed chrominance output signal contains low frequency luminance information and the DAXI signal which is transmitted with each vertical field. After bandpassing the 1 to 2 MHz chroma signal, the two remaining signals (low frequency luminance and DAXI) are separated by low pass filters. The low frequency luminance information is recombined with the "combed" luminance information to provide the luminance output. Vertical Detail Output (VDO) containing the DAXI signal is supplied via the DAXI buffer IC to the player control microcomputer.

The luminance and chrominance information is coupled from the comb-filter circuit to the video converter circuit. The video converter up-converts the 1.53 MHz chrominance information to 3.58 MHz. The 3.58 MHz chroma and the luminance information are then combined. The resultant composite video signal is then supplied to the RF modulator where the demodulated audio signal is added and a RF signal on channel 3 or channel 4 is developed for output to a standard NTSC television receiver.

Also developed in the video converter stage is the drive signal for the "Armstretcher" time base corrector circuit. The correction signal is developed by comparing the up converted 3.58 MHz. chroma information with a crystal controlled 3.58 MHz reference oscillator. Any phase or frequency difference between the two signals develops an error signal which is applied to the arm-stretcher circuit. The armstretcher circuit operates a solenoid (located on the pick up arm assembly) moving the stylus (laterally with respect to the disc) to maintain a constant disc to stylus velocity. The armstretcher circuit output is also coupled to the converter oscillator (5.11 MHz VCXO) in order to maintain phase lock between the up converted 3.58 MHz color signal and the crystal controlled 3.58 MHz reference oscillator.

A Video Noise Coring circuit is used in conjunction with the video converter circuit to eliminate high frequency signals below 5 IRE peak-to-peak from the composite video output signal. The "combed" luminance signal is capacitively coupled to a noise coring amplifier stage where it is inverted. The inverted signal is then direct coupled to a non-inverting noise coring buffer stage. The non-inverted signal is coupled back to the input circuit of the noise coring amplifier stage through a coring circuit consisting of a coupling capacitor and two (2) coring diodes. This represents a negative feedback of all signals above 5 IRE peak-to-peak which is 180 degrees out-of-phase with the incoming signal. Therefore all signals above 5 IRE will be cancelled at the input of the noise coring amplifier stage. Hence, the signal at the output of the noise coring buffer stage will contain only signals below 5 IRE peak-to-peak. This signal is then added, 180 degrees out-of-phase, to the composite video signal from the video converter IC. The result being elimination of high frequency signals below 5 IRE peak-to-peak from the composite video output signal, thus reducing high frequency noise in the video information.

**Audio Signal Processing**

As previously stated, in the case of a monaural VideoDisc a single audio track is imprinted on the disc at 716 kHz. The AO signal is applied to a Band pass filter which passes only the 716 kHz audio FM information. This information then is applied to the 716kHz Audio FM Demodulator IC. After demodulation the signal is coupled to a Sample and Hold CMOS switching IC. The audio signal then is capacitively coupled to the RF Modulator circuit.

In the case of a Stereo or Bilinqual VideoDisc two (2) separate audio tracks are imprinted on the disc—one at 716 kHz the other at 905 kHz. The AO signal is applied to two (2) Band Pass Filters one of which passes only the 716 kHz audio signal and the other passes only the 905 kHz audio signal. The audio signals are then applied to two (2) audio demodulator IC's. The 716 kHz signal is processed by the (L+R) audio demodulator IC and the 905 kHz is processed by the (L−R) audio demodulator IC.

The signals are then routed through a TRACK/HOLD and MUTE CMOS Switching IC. The (L+R) signal is applied to a non-inverting OP Amp and then to the base of the Right and Left channel audio buffer stages. The (L-R) is applied to a non-inverting OP Amp and then to the base of the Left channel audio buffer stage. It is also applied to an inverting OP Amp, which provides the necessary inversion of the (L−R) signal, the output of which is applied to the base of the right channel audio buffer stage.

Separation takes place in the base circuit of the left and right channel audio buffer stages. With both (L−R) and (L+R) signals present at the base of the left channel audio buffer the right channel information is cancelled leaving only the left channel information at its output. Likewise with both [−(L−R)] and (L+R) signals present at the base of the right channel audio buffer the left channel information is cancelled leaving only the right channel information at its output.

The output of the left and right audio buffers (now separated audio) is applied to three (3) circuits. First is the transconductance audio output amplifier IC; second the right and left audio signals are applied to the noise reduction decoder circuit which generates a gain control signal and couples it back to the transconductance audio output amplifier; third, the right and left audio signals are summed together and coupled via the CMOS switching IC to the RF modulator circuit. After final amplification by the audio output IC the audio signals are then de-emphasized and applied to their respective audio output jacks.

The ON or OFF state of the Track/Hold and Mute electronic CMOS switching IC is electronically determined by the DAXI code imprinted on the VideoDisc being played.

*Continued next page*

In the case of a monaural disc, the portions of the CMOS switch IC Controlled by pins 5, 6 & 13 (pins 5, 6 & 13 go to high state) will be activated allowing the 716 kHz (or right channel audio) to be passed for processing. In the case of a stereo disc, the portions of the CMOS switch IC controlled by pins 5, 6 & 12 (pins 5, 6 & 12 go to high state) will be activated allowing both the 716 kHz (right channel audio) and 905 kHz (left channel audio) to be passed for processing. In the case of a bilinqual Video Disc, the state of the CMOS switches depends on which audio channel you choose to operate. If you choose to operate primary channel "A", CMOS switching IC pins 5, 6 and 13 will be "high" allowing only channel "A" (716kHz) information to be passed for processing. If you choose secondary channel "B", CMOS switching IC pins 12 and 13 will be "high" allowing only channel "B" (905 kHz) information to be passed for processing.

Muting is accomplished by placing pins 5 and 12, of the CMOS switching IC, in a "low" state thereby opening their respective switch sections.

### Decoder Operation

The original Stereo audio signal stamped onto the VideoDisc is compacted from a dynamic range of (+12db to −40db) to (+6db to −20db) for recording on the disc itself. To reproduce the original stereo audio signal a decoder system has been incorporated in the "Stereo" VideoDisc Player audio signal processing circuitry. The audio signal from each channel is coupled via a 100 Hz high pass filter into a pair of Op Amps. One is an inverting amp the other noninverting. All four of these Op Amps, tied together at their outputs, perform like a full wave rectifier. Another Op Amp, whose output is controlled by a fixed bias, sets the output of the rectifier stages. This permits a maximum signal expansion of (−20db) changed to (−40db) point level. The output of the rectifier Op Amps is then coupled to a decoder Op Amp (works like a filter) whose output is applied to another decoder Op Amp (a DC amp) creating a variable DC voltage at its output. This variable DC voltage is then processed by a time constant network which performs the actual decoding function. The output of the time constant network is then applied to an additional Op Amp. The output of this Op Amp (also a variable DC voltage) is used to control the current flow through a Current source transistor. The output of the current source transistor then is used to control the gain of the transconductance amplifier stages for both the Left and Right Channel audio output.

**Note:** The decoder circuit is operational only when playing a Stereo encoded (compacted) VideoDisc. When a monaural or bilinqual VideoDisc is being played a fixed bias is applied to the Op Amp immediately preceding the decoder time constant network. This in turn places a constant bias on the Transconductance amplifier stages in the Audio Output Integrated Circuit.

### On Screen Display

The SJT400 provides on screen display information prompting the user during operation of the instrument. Player video information, after processing by the video converter IC on the master circuit board, is applied to a video mixer stage on the PW 6100 circuit board. Horizontal sync pulses (also processed by the video converter IC), Vertical sync pulses (processed by the DAXI buffer IC) and Video blanking pulses (processed by the Player Control $\mu$C) are also applied to the On Screen Display microprocessor. A composite Video signal is output by the video mixer stage which is then applied, via video amp and buffer stages, to the RF modulator.

### Video Output

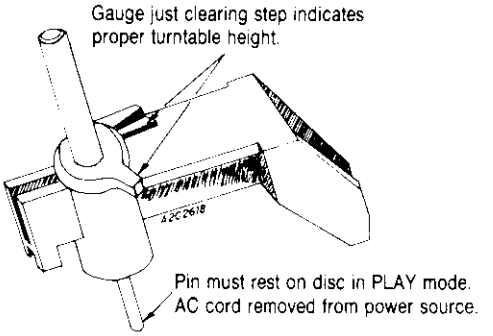
Video Output is provided on the SJT400 Random Access VideoDisc player. The composite video signal is tapped off, just prior to being applied to the RF Modulator stage, and applied to a Video buffer stage. The output of the Video Buffer stage is connected to a video output jack on the rear of the player. This provides a 1V p-p video output signal when terminated with a 75 ohm load.

## TURNTABLE HEIGHT ADJUST

To check turntable height—With disc in player in "Play" mode remove AC cord from power source. Remove stylus cartridge and store in safe place. Insert turntable height gauge (see replacement parts list for Stock No.). Hold height gauge in Arm Assembly firmly. Be sure height gauge plunger is free to indicate properly (see illustration).

1. If gauge plunger remains on lowest step—raise turntable height by adjusting height adjust screw (Item 99, Fig. 47) clockwise.
2. If gauge plunger moves to highest step—lower turntable height by adjusting height adjust screw counterclockwise.
3. Proper turntable height—when gauge plunger passes over lowest step on gauge and does **not** pass over highest step.

**CAUTION:** Use old disc or reserve one side of test disc for this adjustment. DO NOT use a good disc for this procedure.




*Turntable Height Gauge*

**Note:** Turntable height adjust screw is an Allen head screw accessible from the bottom with a ($^{1}/_{16}$") Allen wrench. Some instruments may use a locking screw (same size). First try turning screw clockwise, if screw will not turn with slight pressure the instrument uses a locking screw which must be removed to accomplish turntable height adjust. Replace locking screw when adjustment is complete.

### Cabinet Top Removal

1. Place instrument in "off" mode—remove power plug from 120V AC power source.
2. Remove two (2) pozi-drive (+ head) screws Fig. 2.
3. Grasp cabinet top at bottom edge on either side (towards the rear). Pull up and to the rear freeing cabinet top front lip from under the front panel and remove cabinet top.
4. To reassemble—reverse procedure.

### Front Panel Removal

1. With cabinet top removed and player in "LOAD" mode—remove AC cord from power source. Use needle nose pliers and carefully remove door push rod spring from front receiver pad (left and right sides) Fig. 9.
2. Grasp front panel along top rear edge—lift rear edge slightly and pull front panel away from player.
3. Remove flex cable plastic cover, disconnect flex cable connector and remove front panel.
4. To reassemble—reverse procedure.

**Note:** When removing front panel it is necessary that the arm assembly be placed in its forward most position. See stylus cartridge removal for procedure. Be certain, during reassembly that the Flex cable and plastic cover are properly seated.

### Bottom Cover Removal

1. If cabinet top has been removed remove receiver spindle assembly (Fig. 14), also remove stylus cartridge and store in safe place. Place instrument, bottom up, on workbench with soft surface.
2. Remove adjusting nut (1/2 inch Hex Head) and reinforcing plate (1 1/4" washer) from center of bottom cover.
3. Remove five (5) pozi-drive (+ head) screws Fig. 10.
4. To replace—reverse procedure.

**Note:** When replacing Bottom Cover—*just start* adjusting nut and screws. Properly seat Bottom Cover then: (a.) tighten screws (b.) tighten adjusting nut.

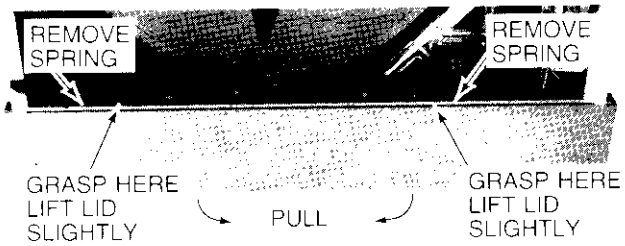



*Fig. 9—Door Push Rod Spring*

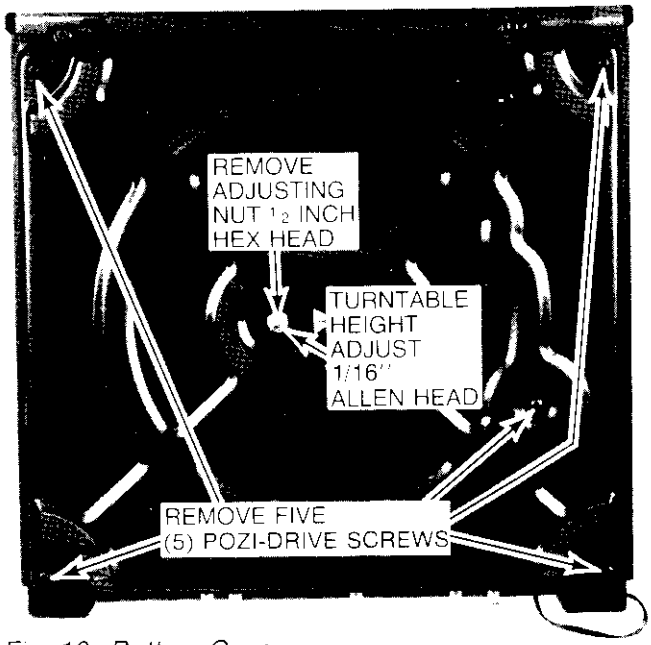



*Fig. 10—Bottom Cover*

### Master Circuit Board and PW 6100 Removal/Service Position

1. Remove cabinet top and receiver spindle assembly, and stylus cartridge place instrument bottom up on workbench with soft surface. Remove bottom cover.
2. Remove thirteen (13) pozi-drive (+ head) screws Fig. 11.
3. Remove main circuit board and PW 6100 by lifting front edge up to approximately a 10° to 15° angle, so as to clear all obstacles, then move board forward towards front of instrument until antenna connectors clear rear edge of base plate.
4. After circuit boards are clear of baseplate rotate boards horizontally 90° and lay beside instrument.
5. Turn bottom plate over and fasten in position on baseplate with center adjusting nut and reinforcing plate (1 1/4" washer).

**Note:** Bottom plate must be installed in prescribed manner to operate instrument in service position.

6. Place instrument and circuit board in upright position (Fig. 12), reinstall receiver spindle assembly and if front panel was removed reconnect front panel flex cable to flex cable connector. Instrument is now in operational service position.
7. To reassemble—reverse procedure.

**Caution:** Replace circuit board mounting screws only in holes from which they were removed (Fig. 11).

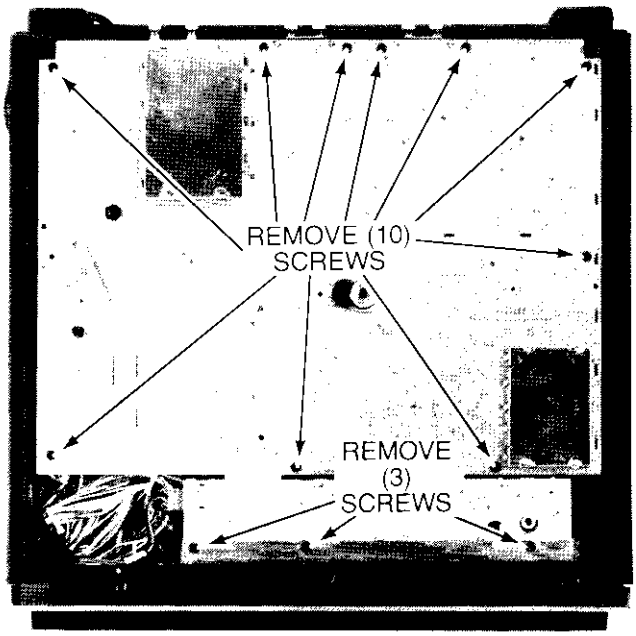



*Fig. 11—Master Circuit Board*

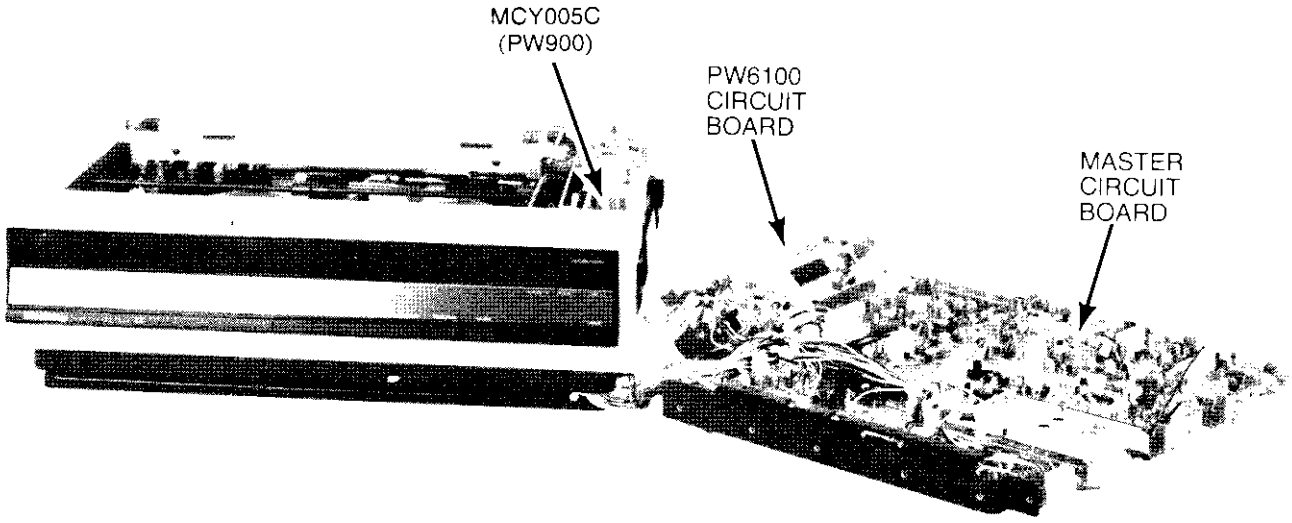



*Fig. 12—Service Position*

**Arm Drive Assembly Disassembly**

1. With cabinet top and front panel removed—remove one (1) pozi-drive (+ head) screw Fig. 13.
2. Unsolder and remove Brn. and Wht/Brn wires from radius sense control.
3. Remove stepper motor from arm drive assembly by removing two (2) small pozi-drive (+ head) screws and lay stepper motor to the side out of the way.
4. Move arm drive assembly toward center of player and lift up to remove from player.
5. To replace any gear—first remove wire nut from 3rd reduction gear mounting stud and remove 3rd reduction gear. The 2nd and 1st reduction gears are now accessable.
6. To reassemble—reverse procedure. Be certain ESD ground spring is dressed to the outside of stepper motor mounting screw.

**Note:** After replacing arm drive assembly—apply power to player. "Load" player with a Video Disc and *rapid access* arm assembly to its *innermost* position. Reject player and unload Video Disc. If a clicking noise is heard during this procedure—disregard—the radius sense control gear is resetting itself. Be certain during this procedure that the arm assembly does indeed reach its innermost and arm home positions.

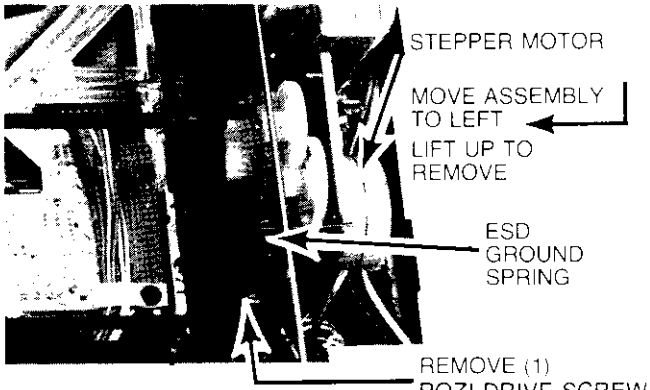



*Fig. 13—Arm Drive Assembly*

**Stylus Cartridge Removal**

1. With cabinet top removed—remove AC plug from power source.
2. Using thumb—rotate 2nd reduction gear (Fig. 14) in counter clockwise direction moving the arm assembly to a point where the stylus cartridge access cover (lid) is accessible.
3. Using a small blade screwdriver—unlatch stylus cartridge access cover (lid) latch spring and open access cover (lid).
4. Using thumb and forefinger—grasp stylus cartridge and push it slightly to the right against the arm-stretcher coil assembly. With a rocking motion lift left end of cartridge slightly, then lift cartridge straight up and out of arm assembly.
5. To replace—reverse procedure.

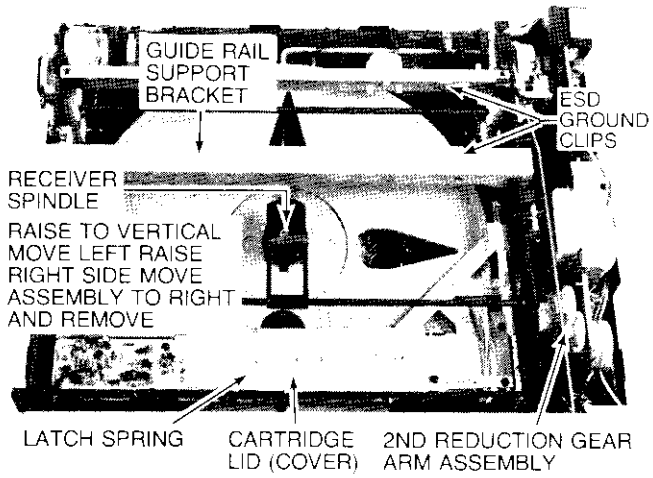



*Fig. 14—Stylus Cartridge and Receiver Spindle*

**Receiver Spindle Assembly Removal**

1. With cabinet top removed—rotate receiver spindle assembly to a vertical position (Fig. 14).

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2. Move receiver spindle assembly to the left until the right side just clears the right rail assembly.
3. Lift up on right side of receiver spindle assembly until it clears the right rail assembly.
4. Move receiver spindle assembly to the right until it clears the left rail assembly and remove the receiver spindle assembly from the player.
5. To replace—reverse procedure.

**Stepper Motor Removal**

1. With instrument in service position—remove stepper motor plug, P2, from main circuit board.
2. Cut four (4) wire ties and pull stepper motor cable and plug assembly up through baseplate.
3. Remove two (2) small pozi-drive (+ head) screws used to mount stepper motor and remove stepper motor (Fig. 13).
4. To replace—reverse procedure. Replace wire ties and observe original lead dress.

**Function Motor Removal**

1. With cabinet top removed—disconnect Blu and Wht/Blu wires from function motor (observe polarity).
2. Remove two (2) posi-drive (+ head) screws and remove gear cover Fig. 16.
3. Remove square drive belt Fig. 16.
4. Remove two (2) small posi-drive (+ head) screws and remove function motor.
5. To replace—reverse procedure.

**Note:** When replacing Function Motor observe polarity of wiring. Solid blue wire connects to stake beside small plastic stud.

**Guide Rail Assembly Removal**

1. Place player in "Load" mode and remove AC plug from AC power source. With cabinet top and front panel removed—remove guide rail assembly front support bracket ESD ground spring Fig. 15, and ground clips from guide rail bracket and pivot support brackets (Fig. 14).
2. Remove one (1) small posi-drive (+ head) screw from S2 AC switch shield and remove shield (items 45 & 44, Fig. 47).
3. Remove AC switch, S2, from right rail assembly.
4. Remove AC fuse shield from PW 600 circuit board and mounting bracket assembly.

**Note:** Removal of PW600 circuit board is not necessary for guide rail assembly removal. However it is recommended for ease and convenience.

5. Unsolder and remove AC input cord from PW600 and remove PW 600 circuit board from bracket assembly. One plastic clip located at the front top edge of mounting bracket holds the circuit board captive. Carefully lift up on this plastic clip and separate circuit board and mounting bracket, then lift straight up on circuit board until it is free of the baseplate. Lay circuit board to right side.
6. Remove PW 600 plastic mounting plate. Use 1/4" blade screwdriver through access holes along bottom edge of plate to spring plastic clips holding plate captive to baseplate and lift mounting plate straight up and free of baseplate. Remove switches S7 and S9 from plate assembly.

**CAUTION:** Switches S7 and S9 are mounted on the plate assembly by molded plastic clips and studs, use special care when removing and replacing switches to avoid breaking them.

7. Grasp mechanism AC switch (S2) off actuator (item 47, Fig. 47) between thumb and forefinger and pull actuator back and free of right rail assembly and function gear (some pressure will be required to perform this step).
8. Using thumb rotate mechanism 2nd reduction and pinion gear in a clockwise direction until the function gear on right rail assembly is engaged. Continue rotating gears until the disc transfer rod coupler (item 38, Fig. 47), mounted on function gear, reaches its top most position. This is the mechanism (player) "off" position.
9. Remove disc transfer rod from coupler and remove coupler from function gear.
10. Remove switches S4 and S8 from left rail assembly and place them out of the way.

**CAUTION:** Switches S4 and S8 are mounted on the left rail assembly by molded plastic clips and studs, use special care when removing and replacing switches to avoid breaking them.

11. Unsolder function motor leads—observe polarity for replacing.
12. Remove three (3) pozi-drive (+ head) screws (Fig. 15).
13. Lift guide rail assembly to about a 45° angle. Move guide rail assembly toward rear of player unseating one side at a time, and lift straight up to remove from mounting brackets molded into player baseplate. (see Note) Guide rail assembly is now free to be removed from player.

**Note:** For ease in removal use slight pressure to unseat each side individually, Guide Rail assembly snaps into base plate mountings.

14. To reassemble—reverse procedure.

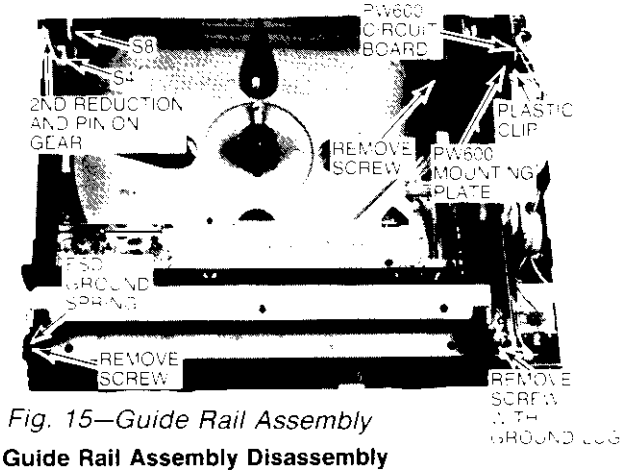


*Fig. 15—Guide Rail Assembly*

**Guide Rail Assembly Disassembly**

1. With guide rail assembly removed from player—remove retaining rings from function gear and receiver actuator (Fig. 17).
2. Release front receiver activating rod (Fig. 17) held captive by plastic tab on right rail assembly.
3. Pull both the function gear and receiver actuator away from rail assembly slightly. Push function gear

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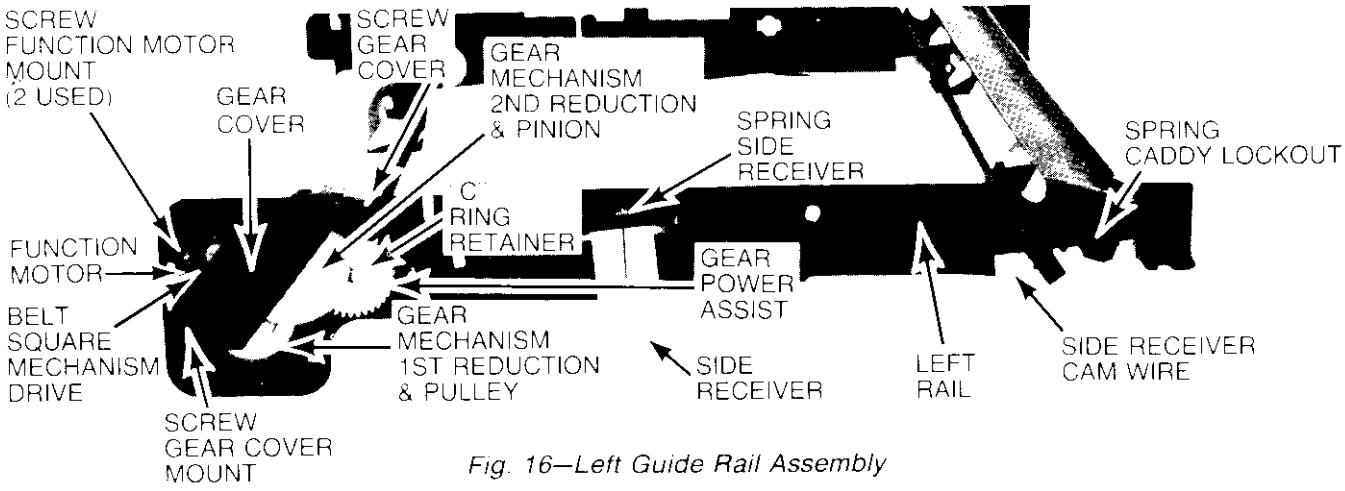



*Fig. 16—Left Guide Rail Assembly*

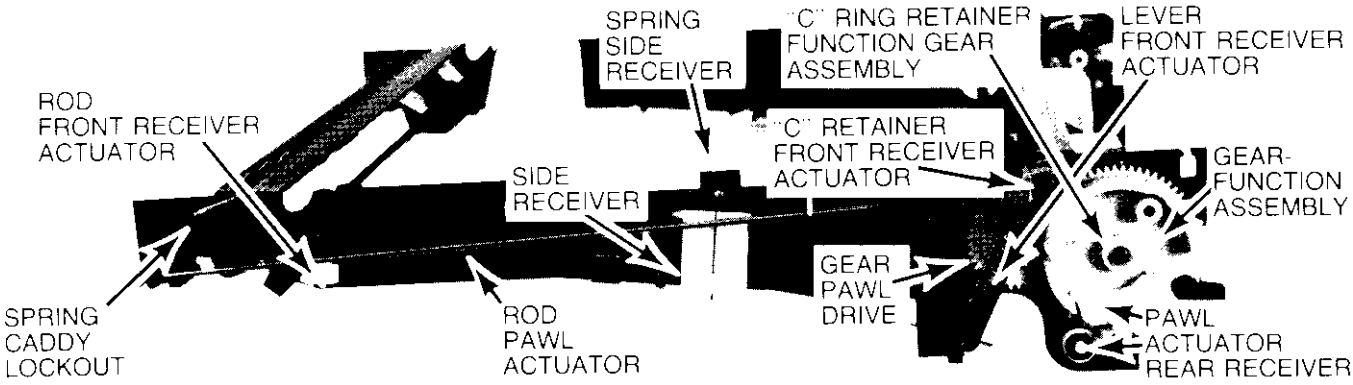



*Fig. 17—Right Guide Rail Assembly*

pawl out of the way and position function gear to clear receiver actuator. Remove function gear and then the receiver actuator.

4. Remove side receivers (one each side)—release spring and rotate receiver to 45° angle. Slide receiver toward front of rail assembly and remove from rear mounting bracket by angling rear of receiver away from rail, slide receiver toward rear of rail assembly to complete removal.
5. Remove receiver actuator rod (Fig. 17) from right rail assembly and side receiver wire cam (Fig. 16) from left rail.
6. Remove retaining ring holding pawl drive gear (Fig. 17) captive—remove pawl drive gear.
7. Remove retaining ring holding the power assist gear (Fig. 17) captive. Remove power assist gear.
8. Remove caddy lockout springs (Figs. 16 & 17) right and left sides. Remove caddy lockouts (Figs. 16 & 17).
9. To separate the Left and Right rail assemblies the cabinet support bracket (Fig. 18) and the pivot support bracket (Fig. 18) must be removed.
10. Use small blade screwdriver (approximately $^{1}/_{8}$")—slip between plastic overlap of rail assembly and top of cabinet support bracket and pry up to remove bracket. Repeat same procedure at rear of pivot support bracket.

**CAUTION:** Some pressure must be exerted during this procedure, however care must be taken to avoid breaking plastic rail.

**Note:** Brackets simply snap into place during replacement.

11. Remove spacer (Item 52, Fig. 47) from right rail assembly (holds spine hold down assembly in place on right rail assembly). Remove spine hold down assembly (Item 53, Fig. 47).
12. Remove power assist hub assembly (Item 32, Fig. 47) and front receiver pad assembly (Item 51, Fig. 47).
13. To reassemble—reverse procedure.

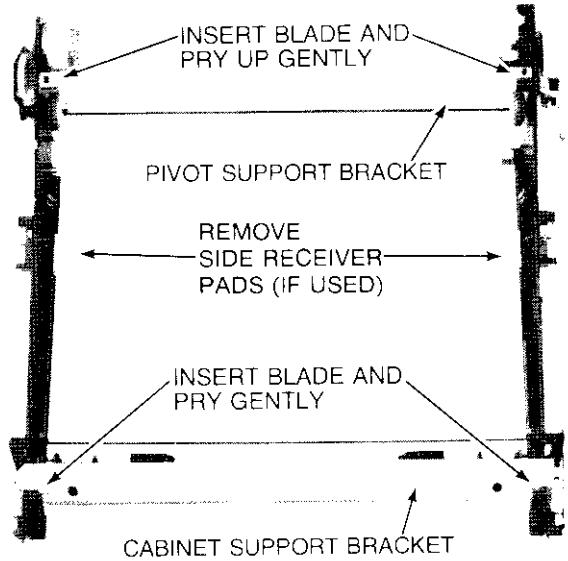



*Fig. 18—Guide Rail Assembly*

**Rear Receiver Pad Assembly Removal**

1. With guide rail assembly and turntable removed—release tension on rear receiver pad assembly torsion spring (Fig. 19) and remove wires to switch S8 from wire guide stud. Move switch and wire out of the way.
2. Lift rear receiver pad assembly (Fig. 19) straight up and remove from baseplate.
3. To replace—reverse procedure.

**Note:** Before replacing rear receiver pad assembly in position apply one (1) full turn of tension to torsion spring.

**Caddy Defeat and Spine Latch Assembly Removal**

1. With guide rail assembly removed—release caddy defeat springs (Fig. 19) from baseplate studs.
2. Remove spacer clip (Fig. 19) from caddy defeat and spine latch assembly.
3. Slide caddy defeat and spine latch assembly (Fig. 19) to right—raise left side of assembly to clear mounting stud and slide assembly to left to remove.
4. To replace—reverse procedure.

**Disc Transfer Rod Removal**

1. With Guide Rail, Rear Receiver Pad and Caddy Defeat/Spine Latch assemblies removed—release Transfer Rod spring (Fig. 19) from baseplate stud.
2. Rotate Transfer Rod (Fig. 19) upward to clear center portion of baseplate.
3. Move Transfer Rod to the left to clear far right mounting stud. Rotate rod toward rear of player to clear next mounting stud and continue moving rod to the left.
4. After the first large mounting stud has been cleared by transfer rod, guide left portion of rod up and toward rear of player. Drop right portion of rod into trough molded into baseplate.
5. Using an upward arcing motion continue moving rod until it can easily be lifted up and out of the center baseplate mounting studs.

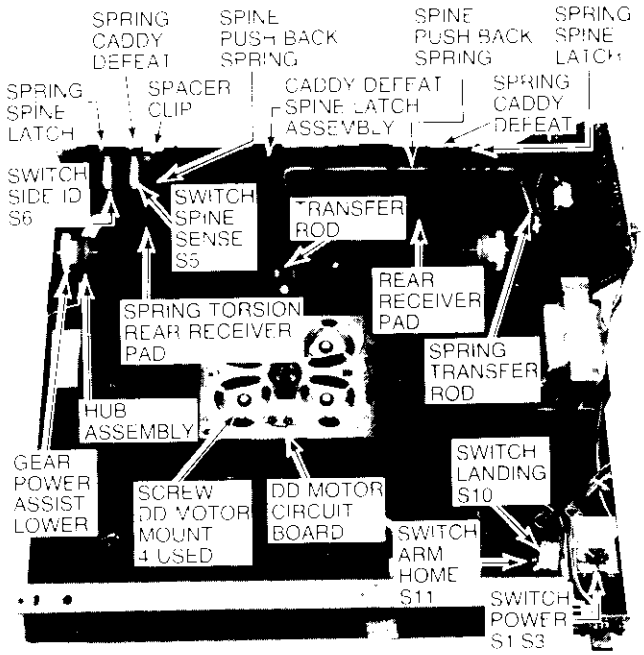



*Fig. 19—Miscellaneous Disassembly*

6. To replace—reverse procedure.

**Note:** No force is required to remove or replace the disc Transfer Rod.

**Turntable Removal**

1. With cabinet top, receiver spindle assembly and guide rail bracket removed—use thumb to rotate mechanism drive 2nd reduction gear (Fig. 16) in clockwise direction to place mechanism in "PLAY" mode while holding AC switch (S2) actuator (Item 47, Fig. 47) back out of the way. Immediately stop rotating mechanism 2nd reduction gear when Disc Transfer Rod Coupler (Item 38, Fig. 47) activates "PLAY" Switch S7 (forwardmost switch mounted on plastic AC IN board mounting bracket beside mechanism function gear.
2. Rotate turntable to center solid portion of turntable over transfer rod (two holes in turn-table at 45° angle with respect to rear edge of player).
3. Lift up on turntable and angle front edge of turntable to clear front receiver pad and remove turntable from player on an angle.
4. To replace—reverse procedure.

**Note:** When replacing turntable—be certain to check magnet and turntable well for debris.

**CAUTION:** There is a thrust plate (Item 102, Fig. 47) used in the turntable bearing. Be sure that it is in place before replacing turntable. Do not turn player upside down during servicing without turntable in place, it could result in possible loss of the thrust plate.

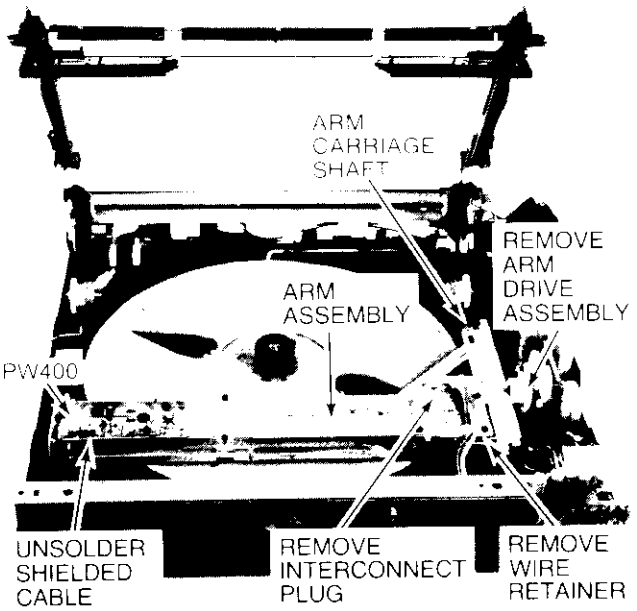



*Fig. 20—Turntable and Arm Assembly*

**Arm Assembly Removal**

1. With cabinet top, cabinet front and receiver spindle removed—remove cabinet support bracket ESD ground spring from left front corner.
2. Remove ground clips from guide rail bracket and pivot support bracket. Remove stylus cartridge from arm assembly and store in safe place.
3. Remove Arm Drive Assembly from baseplate and move to the side out of the way.
4. Remove three (3) pozi-drive (+ head) screws holding

*Continued on next page*

guide rail assembly and lift assembly to 45° angle. (Fig. 20).

5. Unsolder shielded AO cable from PW 400, arm preamp circuit board. Remove cable strap and P 101 from arm interconnect circuit board.
6. Lift Arm Carriage Shaft (Fig. 20) from its rear baseplate mounting and pull it loose from its front baseplate mounting.
7. Remove Arm assembly from player.
8. To replace—reverse procedure.

**PW 200 Resonator Removal**

1. Remove stylus cartridge and store in safe place.
2. Remove two (2) pozi-drive (+ head) screws holding resonator captive and remove stylus cover latch spring (Fig. 21).
3. Unsolder three (3) wires connected to feed-thru studs on resonator.
4. Lift resonator up to remove from Arm Assembly.
5. To replace—reverse procedure.

**Lifter Actuator Assembly Removal**

1. Remove cartridge cover and stylus cartridge. Place stylus cartridge in safe place.
2. Remove two (2) lifter pivot retaining clips—one (1) each side of arm assembly (Fig. 21).
3. Remove Lifter Actuator assembly.
4. To replace—reverse procedure.

**Note:** See *Stylus Lifter Alignment* page 69.

**Armstretcher Coil Removal**

1. Remove arm assembly from player and place on solid flat surface.
2. With Lifter Actuator removed — unsolder leads from Armstretcher Coil (observe polarity).
3. Break push on retainers and remove Armstretcher coil.
4. To replace, reverse procedure (new push on retainers required).

**Note:** See Arm Assembly schematic for Armstretcher Coil basing.

**Kicker Coil Replacement**

1. Remove arm assembly from player and place on solid flat surface.
2. With Lifter Actuator removed — unsolder leads from Kicker Coil (observe polarity).
3. Break push on retainers and remove kicker coil assembly.
4. To replace, reverse procedure (new push on retainers required).

**Note:** See Arm assembly schematic for Kicker Coil basing.

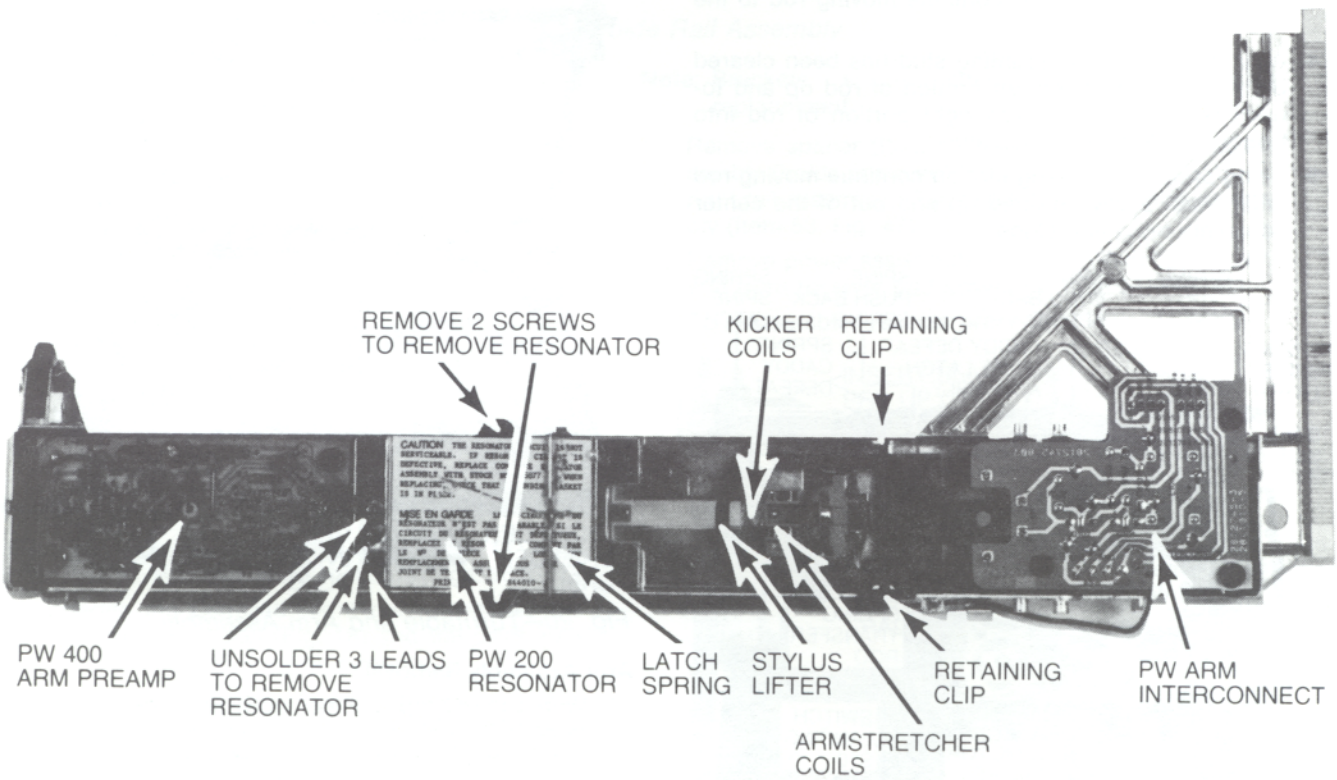



*Fig. 21—Arm Assembly*

| Test Equipment Required: | Specifications |
|---|---|
| **Digital Voltmeter** | Range: .1V DC to 30V DC<br>Accuracy: ±1% |
| **Oscilloscope** | Triggered<br>Response: DC −20 MHz.<br>Sensitivity: 5mV/cm<br>Maximum Sweep Rate .1μS/cm |
| **Frequency Counter** | Range: 50 Hz to 100 MHz.<br>Sensitivity: 25mV to 5V |
| **VideoDisc** | Stereo Alignment Disc: See Replacement Parts List for Stock No. |
| **Color TV Receiver** | Standard NTSC |
| **Marker Generator** | Range: Crystal Calibrated from 19 to 262 MHz. |
| **Alignment Tools** | 2.5mm non-metallic female<br>Hex Head adjustment tool<br>(see replacement parts list for Stock No.)<br>.056" square end tool GC9440 or equivalent<br>.100" hex end tool GC8606 or equivalent<br>insulated blade tool GC8722 or equivalent |

## ELECTRICAL ADJUSTMENTS

**Note:** Use only the Stereo Alignment (TEST) Disc (see replacement parts list for stock no.) to perform the following adjustments.

### 5V Reference Adjust (R2020)

1. Apply power to player and place in "Load" mode.
2. Connect DC Voltmeter to TP 2003 (Fig. 26).
3. Adjust R2020 for 5.0V DC ± .05V DC (Fig. 28).

### 3.58 MHz Reference Oscillator Adjust (C5902)

1. Connect frequency counter via X10 probe (see note) to TP 3406 (Fig. 26).
2. With player in "Load" mode adjust C5902 for 3.579545 ± 10 Hz (Fig. 27).

**Note:** Typical capacity of X10 probe and counter is approximately 20-25pf. A X1 probe (typical capacity of approximately 100pf) may be used with a 33pf capacitor placed in series with probe.

### NLAC (DC Balance) Adjust (R3131)

1. Place player in "Pause" mode.
2. Connect DC Voltmeter to TP 3101 (Fig. 26).
3. Adjust R3131 to produce a 10.5 ± 0.5 V.D.C. reading (Fig. 28).

### Video Demodulator VCO Adjust (C3215)

1. Apply power to player.
2. Disconnect interconnect plug P4 (A0).
3. Short the two pins of J4 together.
4. Connect frequency counter via X10 probe (see note) to TP 3102 (Fig. 26).
5. Adjust C3215 for 5.25 MHz ± 50 KHz (Fig. 28).
6. Remove short from the two pins of J4 and reconnect P4.

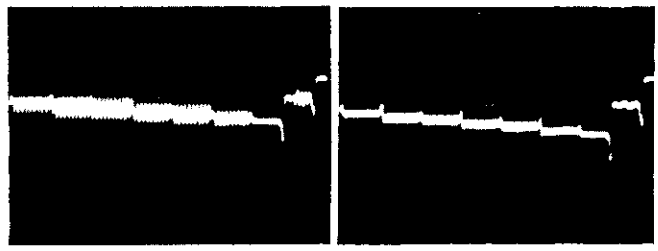
**Note:** Typical capacity of X10 probe and counter is approximately 20-25pf. A X1 probe (typical capacity of 100 pf) may be used with a 33pf capacitor placed in series with probe. This will place a load on the VCO of approximately 25pf.

### Video Level Adjust (R3202)

1. Place player in "Play" mode.
2. Use stereo alignment disc 100 IRE white field signal (Segment E).
3. Connect oscilloscope to TP 3410 (Fig. 26).
4. Adjust R3202 (video level adjust) to produce 2.8Vp-p response at TP 3410 (Fig. 28).

### Luminance Channel Null Adjust (R3328)

1. Place player in "Play" mode.
2. Use stereo alignment disc color bar signal (Segment D).
3. Connect oscilloscope to TP 3302 (Fig. 26).
4. Adjust R3328 for minimum (null) chroma information. See Figs. 22 & 28.



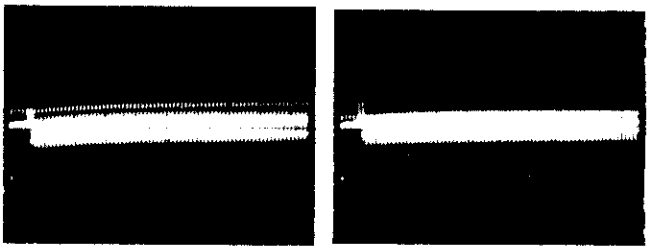
INCORRECT CORRECT

*Fig. 22—Luminance Null*

**Chroma Channel Null Adjust (R3329)**

1. Place player in "Play" mode.
2. Use stereo alignment disc color bar signal (Segment D).
3. Connect oscilloscope to TP 3303 (Fig. 26).
4. Adjust R3329 for minimum p-p signal see Figs. 23 & 28.

**Note:** Repeat Video Level Adjustment after completion of Luminance Channel Null and Chroma Channel Null adjustments.

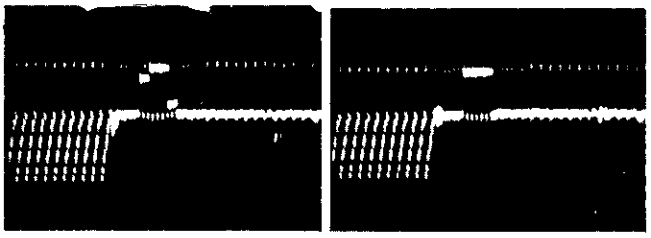


INCORRECT CORRECT

*Fig. 23—Chroma Null*

**Vertical Detail Level Adjust (R3317)**

1. Place player in "Play" mode.
2. Use stereo alignment disc color bar signal (Segment D).
3. Connect oscilloscope to TP 3404 (Fig. 26).
4. Adjust R3317 so that the pulse level matches before and after transition from vertical equalizing pulses to vertical sync pulses see Figs. 24 & 28.



INCORRECT CORRECT

*Fig. 24—Vertical Detail Level*

**Chroma Level Adjust (R3312)**

1. Place player in "Play" mode.
2. Use stereo alignment disc color bar signal (Segment D).
3. Connect oscilloscope to TP 3410 (Fig. 26).
4. Adjust R3312 so that the p-p level of color reference burst is 1V p-p see Figs. 25 & 28.

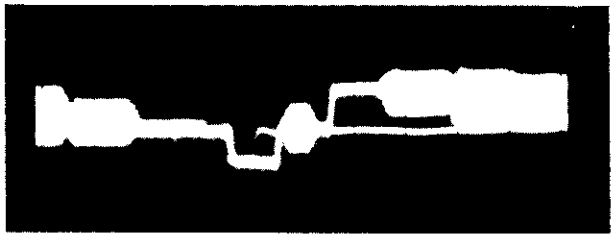


*Fig. 25—Chroma Level*

**Defect Substitution Level (Delayed Video) Adjust (R3304)**

1. Place player in "Play" mode.
2. Use stereo alignment disc 5 step linearity with defect (Segment I).
3. Connect disc player to TV set. Locate defect (Line No. 130) by rotating R3304 to one end of rotation (Fig. 28).
4. Adjust R3304 for proper substitution to make defect disappear (adjust for best picture).

**VCXO Adjust**

1. Place player in "Pause" mode.
2. Apply +5V to U3402 Pin 1.
3. Connect DVM from TP 3402 to ground (Fig. 26).
4. Connect 4.7 MΩ resistor from TP 3412 (U3401 Pin 6) to +15V DC source and record voltage V1 measured on DVM at TP 3402 (Fig. 26).
5. Remove 4.7 MΩ resistor end from +15V source and connect it to ground.
6. Record voltage measured on DVM as V2. Remove grounded end of 4.7 MΩ resistor, leave one end connected to TP 3412 (Fig. 26).
7. Using the formula $\Delta F = 3/2\ (V1 - V2 - .177)$ kHz, calculate ΔF. (The result should be between 1.90 and 2.52 kHz.)

**Example:** $\Delta F = 3/2\ (8.66V - 7.09V - .177)$ kHz
$\Delta F = 3/2\ (1.393)$ kHz
$\Delta F = 1.5 \times 1.393$ kHz
$\Delta F = 2.09$ kHz

**Note:** The voltages shown in solving the formula to determine ΔF are example voltages — actual measured voltages (V1 & V2) will have to be substituted.

8. Calculate high frequency limit fH = 1535.625 + ΔF kHz

**Example:** fH = 1535.625 kHz + 2.09 kHz

9. Calculate low frequency limit. fL = 1535.625 − ΔF kHz

**Example:** fL = 1535.625 kHz − 2.09 kHz

10. Connect frequency counter via X10 probe to TP 3407.

**Note:** Typical capacity of X10 probe is approximately 20-25 pf. A X1 probe (typical capacity of approximately 100 pf) may be used with a 33 pf capacitor if placed in series with probe.

11. Remove +5V from U3402 Pin 1.
12. Adjust L3403 for 1.534091 ± 100 Hz (Fig. 28).

**CAUTION:** 4.7 MΩ resistor must be open at one end to make this adjustment.

13. Connect 4.7 MΩ resistor from TP 3412 to +15V source. With player in "Play" mode, release pause mode. Frequency indicated on frequency meter should be ±100 Hz of previously calculated fH (EXAMPLE: 1537.715 kHz ± 100 Hz). If not, adjust R3412 to achieve the previously calculated fH.
14. Remove 4.7 MΩ resistor from +15V source and place player in "Pause" mode. Check that frequency on fre-

*Continued next page*

quency meter is 1.534091 ± 100 Hz. If not, adjust L3403.

15. Connect 4.7 MΩ resistor from TP 3412 to ground. With player in "Play" mode, release "Pause" mode. Frequency indicated on frequency counter should be ± 100 Hz of previously calculated fL (Example: 1533.445 kHz ± 100 Hz). If not, adjust L3402 to remove approximately 1/2 of the frequency error and adjust R3412 to remove the remainder.
16. Repeat Steps 13-16 until limits of each are met.
17. Remove 4.7 MΩ resistor from TP 3412.

**Phase Detector Gain Adjust (R3419)**

1. Use stereo alignment disc—any signal, place player in "Play" mode.
2. Connect oscilloscope to TP 3408 (Fig. 26).
3. Short TP 3401 to TP 3403 with a clip lead.
   Short TP 3402 to TP 3403 with a clip lead.
4. Adjust R3419 for 3V p-p waveform at TP 3408 (Fig. 28).
5. Remove shorting clip leads from TP 3401 and TP 3402 to TP 3403.

**Audio Demodulator VCO Adjust (716 kHz) (R4111)**

1. Place player in "Load" mode.
2. Disconnect interconnect plug P4 (AO).
3. Short the two pins of J4 together.
4. Connect frequency counter via X10 probe (see note) to TP 4008 (Fig. 26).
5. Adjust R4111 for 716 kHz ± 2 kHz (Fig. 28).
6. Remove frequency counter and remove short from the two pins of J4. Reconnect P4.

**Note:** Typical capacity of X10 probe and counter is approximately 20-25 pf. A X1 probe (typical capacity of approximately 100 pf) may be used with a 33 pf capacitor placed in series with probe. This will place a load on the VCO of approximately 25 pf.

**Audio Demodulator VCO Adjust (905 kHz) (R4112)**

1. Place player in "Load" mode.
2. Disconnect interconnect plug P4 (AO).
3. Short the two pins of J4 together.
4. Connect frequency counter via X10 probe (see note) to TP 4009 (Fig. 26).
5. Adjust R4112 for 905 kHz ± 2 kHz (Fig. 28).
6. Remove frequency counter and remove short from the two pins of J4. Reconnect P4.

**Note:** Typical capacity of X10 probe and counter is approximately 20-25 pf. A X1 probe (typical capacity of approximately 100 pf) may be used with a 33 pf capacitor placed in series with probe. This will place a load on the VCO of approximately 25 pf.

**(L+R) Level Adjust (R4127)**

1. Place player in "Play" mode.
2. Connect oscilloscope to J4602 (R OUT) Fig. 26.
3. Ground TP 5102.
4. Use stereo alignment disc Segment G (S1: 1020 Hz 50% S2: 1020 Hz 50% out of phase)
5. Adjust R4127 (Fig. 28) to produce 560 ± 20 mV p-p; audio signal at J4602 (R OUT).
6. Remove ground from TP 5102.

**(L-R) Level Adjust (R4128)**

1. Place player in "Play" mode.
2. Connect oscilloscope to J4602 (R OUT) (Fig. 26).
3. Use stereo alignment disc Segment G. (S1: 1020 Hz 50% S2: 1020 Hz 50% out of phase).
4. Adjust R4128 (Fig. 28) to produce a minimum (null) V p-p at J4602 (R OUT).

**TV Audio Level Adjust (R4303)**

1. Place player in "Play" mode.
2. Use stereo alignment disc Segment C (S1: 1020 Hz 100%).
3. Connect oscilloscope to TP 3504 (Fig. 26).
4. Adjust R4303 (Fig. 28) to produce 1.2V p-p audio signal at TP 3504.

**R. F. Output Channel Oscillator Adjust (L3501, L3502)**

1. With player in "Load" mode, place Channel Switch, S3501, in Channel 3 position. Connect player to TV or 75 ohm load.
2. Connect marker generator (RF input) to TP 3501 and adjust for 61.25 MHz output, Fig. 26.
3. Adjust L3501 for zero beat (Fig. 28).
4. Place Channel Switch, S3501, in Channel 4 position.
5. Connect marker generator (RF input) to TP 3503 and adjust for 67.25 MHz output.
6. Adjust L3502 for zero beat (Fig. 28).

**Note:** Do not adjust RF Bandpass Coils L3506 and L3507.

**4.5 MHz Oscillator Adjust (L3509)**

1. Connect player to TV, player in "Load" mode.
2. Monitor a suitable point in TV IF to pick up 4.5 MHz sound carrier with a frequency counter.
3. Adjust L3509 (Fig. 28) for 4.5 MHz ± 1 kHz.

**Video Modulation Depth Adjust (R3402)**

1. Connect player to TV, player in "Play" mode.
2. Use stereo alignment disc 120 IRE white field signal (Segment H).
3. Adjust R3402 (Fig. 28) clockwise till a buzz is heard in TV audio, then turn counterclockwise to just eliminate the buzz.

**Audio Modulation Depth Adjust (R4303)**

1. Place player in "Play" mode.
2. Use stereo alignment disc, uniform motion on grey field, S1: 1020 Hz 100% (Segment C).
3. Connect oscilloscope to TP 3504 Fig. 26.
4. Adjust R4303 (Fig. 28) for 1.2 V p-p at TP 3504.

**NOTE:** The feature board adjustments are factory preset and should require no further adjustments. However, if adjust-

**U5901 Mechanism Control μC** (continued)

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 19 | +4.84V | +4.84V | +4.84V | +4.84V |
| 20 | +4.84V | +4.84V | +4.84V | +4.84V |
| 21 | +0.10V | +2.50V | +2.50V | +0.10V |
| 22 | +0.10V | +2.50V | +2.50V | +0.10V |
| 23 | 0V | +4.85V | +4.85V | +4.85V |
| 24 | +4.78V | +4.87V | +4.78V | +4.78V |
| 25 | +4.78V | 0V | 0V | 0V |
| 26 | +4.89V | +4.89V | +4.89V | +4.89V |
| 27 | See Note 5 | See Note 5 | See Note 5 | See Note 5 |
| 28 | +4.89V | +4.89V | +4.89V | +4.89V |

**U5902 T.T. Motor Control I.C.**

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +0.26V | +0.34V | +0.34V | +0.26V |
| 2 | +0.58V | +0.58V | +0.58V | +0.58V |
| 3 | +0.58V | +0.58V | +0.58V | +0.58V |
| 4 | +4.89V | +4.89V | +4.89V | +4.89V |
| 5 | +0.58V | +0.58V | +0.58V | +0.58V |
| 6 | +0.58V | +0.58V | +0.58V | +0.58V |
| 7 | +0.24V | +0.32V | +0.32V | +0.24V |
| 8 | +0.24V | +0.32V | +0.32V | +0.24V |
| 9 | +0.58V | +0.58V | +0.58V | +0.58V |
| 10 | +0.58V | +0.58V | +0.58V | +0.58V |
| 11 | Gnd | Gnd | Gnd | Gnd |
| 12 | +0.58V | +0.58V | +0.58V | +0.58V |
| 13 | +0.58V | +0.58V | +0.58V | +0.58V |
| 14 | +0.26V | +0.34V | +0.34V | +0.26V |

**U2001 Power Supply IC**

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +5.15V | — | — | — |
| 2 | +0.89V | — | — | — |
| 3 | +0.89V | — | — | — |
| 4 | +22.4V | — | — | — |
| 5 | +4.90V | — | — | — |
| 6 | +4.90V | — | — | — |
| 7 | +12.8V | — | — | — |
| 8 | +3.18V | — | — | — |
| 9 | +4.90V | — | — | — |
| 10 | +4.90V | — | — | — |
| 11 | Gnd | — | — | — |
| 12 | +4.90V | — | — | — |
| 13 | +4.90V | — | — | — |
| 14 | +11.5V | — | — | — |

**U2501 Pulse Interference Corrector (PIC) IC**

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +5.40V | +6.87V | +6.87V | +5.40V |
| 2 | +3.64V | +3.64V | +3.64V | +3.64V |
| 3 | N.C. | N.C. | N.C. | N.C. |

**U2501 Pulse Interference Corrector (PIC) IC** (continued)

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 4 | +1.47V | +1.47V | +1.47V | +1.47V |
| 5 | +1.47V | +1.47V | +1.47V | +1.47V |
| 6 | +1.47V | +1.47V | +1.47V | +1.47V |
| 7 | Gnd | Gnd | Gnd | Gnd |
| 8 | Gnd | Gnd | Gnd | Gnd |
| 9 | N.C. | N.C. | N.C. | N.C. |
| 10 | N.C. | N.C. | N.C. | N.C. |
| 11 | N.C. | N.C. | N.C. | N.C. |
| 12 | +3.64V | +3.64V | +3.64V | +3.64V |
| 13 | +11.6V | +11.6V | +11.6V | +11.6V |
| 14 | +6.15V | +7.57V | +7.57V | +6.15V |

**U3101 Sync Detector IC (NLAC)**

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +4.69V | +4.77V | +4.69V | +4.69V |
| 2 | +3.53V | +3.47V | +3.47V | +3.47V |
| 3 | Gnd | Gnd | Gnd | Gnd |
| 4 | +1.42V | +1.42V | +1.42V | +1.42V |
| 5 | +1.42V | +1.42V | +1.42V | +1.42V |
| 6 | +1.42V | +1.42V | +1.42V | +1.42V |
| 7 | Gnd | Gnd | Gnd | Gnd |
| 8 | Gnd | Gnd | Gnd | Gnd |
| 9 | N.C. | N.C. | N.C. | N.C. |
| 10 | N.C. | N.C. | N.C. | N.C. |
| 11 | N.C. | N.C. | N.C. | N.C. |
| 12 | +3.53V | +3.47V | +3.47V | +3.47V |
| 13 | +10.3V | +10.3V | +10.3V | +10.3V |
| 14 | +5.36V | +5.36V | +5.36V | +5.36V |

**U3201 Video FM Demod IC**

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +3.10V | +3.10V | +3.10V | +3.10V |
| 2 | +3.10V | +3.10V | +3.10V | +3.10V |
| 3 | +3.10V | +3.10V | +3.10V | +3.10V |
| 4 | Gnd | Gnd | Gnd | Gnd |
| 5 | +6.90V | +6.98V | +6.98V | +6.90V |
| 6 | +6.90V | +6.84V | +6.84V | +6.90V |
| 7 | +6.24V | +6.32V | +6.32V | +6.24V |
| 8 | +0.45V | +4.19V | +1.16V | +0.45V |
| 9 | +5.60V | +5.87V | +5.60V | +5.60V |
| 10 | +2.10V | 0V | 0V | +2.10V |
| 11 | +5.90V | +6.20V | +5.90V | +5.90V |
| 12 | 0V | +4.17V | +1.15V | 0V |
| 13 | +5.75V | +5.82V | +5.82V | +5.75V |
| 14 | +11.5V | +11.5V | +11.5V | +11.5V |
| 15 | +5.24V | +5.30V | +5.30V | +5.24V |
| 16 | +5.24V | +5.30V | +5.30V | +5.24V |

Note 5. Voltage dependent on side of disc being played. Side 1 play—voltage high; side 2 play—voltage low

### U3301 ComB Filter/Defect Corrector IC

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +5.05V | +5.05V | +5.05V | +5.05V |
| 2 | +5.74V | +5.83V | +5.83J | +5.74V |
| 3 | −4.52V | −4.52J | −4.52V | −4.52V |
| 4 | +3.89V | +3.89V | +3.89V | +3.89V |
| 5 | −4.52V | −4.52V | −4.52V | −4.52V |
| 6 | −4.52V | −4.52V | −4.52V | −4.52V |
| 7 | −4.52V | −4.52V | −4.52V | −4.52V |
| 8 | Gnd | Gnd | Gnd | Gnd |
| 9 | +8.86V | +8.86V | +8.86V | +8.86V |
| 10 | +3.86V | +3.86V | +3.86V | +3.86V |
| 11 | +3.73V | +3.73V | +3.73V | +3.73V |
| 12 | +2.57V | +2.57V | +2.57V | +2.57V |
| 13 | +2.42V | +2.42V | +2.42V | +2.42V |
| 14 | +5.32V | +5.32V | +5.32V | +5.32V |
| 15 | +5.18V | +5.18V | +5.18V | +5.18V |
| 16 | +14.6V | +14.6V | +14.6V | +14.6V |
| 17 | N.C. | N.C. | N.C. | N.C. |
| 18 | +5.10V | +5.10V | +5.10V | +5.10V |
| 19 | +4.76V | +4.76V | +4.76V | +4.76V |
| 20 | +8.50V | +8.50V | +8.50V | +8.50V |
| 21 | +7.24V | +7.24V | +7.24V | +7.24V |
| 22 | +5.25V | +5.25V | +5.25V | +5.25V |

### U3401 Armstretcher IC

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +7.97V | +7.97V | +7.24V | +7.97V |
| 2 | +7.23V | +7.23V | +7.23V | +7.23V |
| 3 | +5.74V | +5.74V | +5.74V | +5.74V |
| 4 | +14.6V | +14.6V | +14.6V | +14.6V |
| 5 | +7.17V | +7.17V | +7.17V | +7.17V |
| 6 | +7.15V | +7.15V | +7.15V | +7.15V |
| 7 | +7.65V | +7.65V | +7.65V | +7.65V |
| 8 | +6.69V | +6.69V | +6.69V | +6.69V |
| 9 | +7.19V | +7.19V | +7.16V | +7.19V |
| 10 | +7.16V | +7.16V | +7.16V | +7.16V |
| 11 | Gnd | Gnd | Gnd | Gnd |
| 12 | +4.89V | +4.89V | +4.89V | +4.89V |
| 13 | +4.89V | +4.89V | +4.89V | +4.89V |
| 14 | +5.63V | +5.66V | +5.66V | +5.63V |

### U3402 Video Converter IC

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | 0V | +4.17V | +1.15V | 0V |
| 2 | +5.19V | +4.26V | +5.19V | +5.19V |
| 3 | +7.17V | +7.17V | +7.17V | +7.17V |
| 4 | +3.61V | +3.16V | +3.16V | +3.16V |
| 5 | +7.16V | +7.16V | +7.16V | +7.16V |
| 6 | +4.44V | +4.44V | +4.44V | +4.44V |
| 7 | +2.22V | +2.22V | +2.22V | +2.22V |
| 8 | Gnd | Gnd | Gnd | Gnd |
| 9 | +3.61V | +3.61V | +3.61V | +3.61V |
| 10 | +8.05V | +8.05V | +8.05V | +8.05V |
| 11 | +10.5V | +10.5V | +10.5V | +10.5V |
| 12 | +7.16V | +7.16V | +7.16V | +7.16V |
| 13 | +7.16V | +7.16V | +7.16V | +7.16V |
| 14 | +9.42V | +9.42V | +9.42V | +9.42V |
| 15 | +9.42V | +9.42V | +9.42V | +9.42V |

### U3402 Video Converter IC (continued)

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 16 | +3.24V | +3.24V | +3.24V | +3.24V |
| 17 | +3.24V | +3.24V | +3.24V | +3.24V |
| 18 | +7.83V | +7.72V | +7.03V | +7.83V |
| 19 | +11.7V | +11.7V | +11.7V | +11.7V |
| 20 | +1.86V | +1.86V | +1.86V | +1.86V |
| 21 | +6.76V | +5.26V | +6.76V | +6.76V |
| 22 | +0.66V | +6.80V | +0.66V | +0.66V |
| 23 | +1.07V | +0.26V | +1.07V | +1.07V |
| 24 | +7.18V | +7.18V | +7.18V | +7.18V |

### U3501 RF Modulator IC

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +7.18V | +7.18V | +7.18V | +7.18V |
| 2 | +7.18V | +7.18V | +7.18V | +7.18V |
| 3 | +7.18V | +7.18V | +7.18V | +7.18V |
| 4 | +7.18V | +7.18V | +7.18V | +7.18V |
| 5 | Gnd | Gnd | Gnd | Gnd |
| 6 | See Note 6 | See Note 6 | See Note 6 | See Note 6 |
| 7 | See Note 6 | See Note 6 | See Note 6 | See Note 6 |
| 8 | See Note 7 | See Note 7 | See Note 7 | See Note 7 |
| 9 | See Note 7 | See Note 7 | See Note 7 | See Note 7 |
| 10 | +14.5V | +14.5V | +14.5V | +14.5V |
| 11 | +14.7V | +14.7V | +14.7V | +14.7V |
| 12 | +9.99V | +9.99V | +9.99V | +9.99V |
| 13 | +7.21V | +7.21V | +7.21V | +7.21V |
| 14 | +14.7V | +14.7V | +14.7V | +14.7V |
| 15 | +14.7V | +14.7V | +14.7V | +14.7V |
| 16 | +14.7V | +14.7V | +14.7V | +14.7V |
| 17 | +14.2V | +14.2V | +14.2V | +14.2V |
| 18 | +7.18V | +7.18V | +7.18V | +7.18V |

### U4101 (L+R) Audio FM Demod IC (716kHz)

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +3.15V | +3.15V | +3.15V | +3.15V |
| 2 | +3.15V | +3.15V | +3.15V | +3.15V |
| 3 | +3.15V | +3.15V | +3.15V | +3.15V |
| 4 | Gnd | Gnd | Gnd | Gnd |
| 5 | +6.94V | +6.94V | +6.94V | +6.94V |
| 6 | +7.06V | +7.06V | +7.06V | +7.06V |
| 7 | +6.30V | +6.30V | +6.30V | +6.30V |
| 8 | +4.21V | +4.21V | +4.21V | +4.21V |
| 9 | +5.88V | +5.88V | +5.88V | +5.88V |
| 10 | Gnd | Gnd | Gnd | Gnd |
| 11 | +5.91V | +5.91V | +5.91V | +5.91V |
| 12 | +0.85V | +0.85V | +0.85V | +0175V |
| 13 | +2.06V | +5.84V | +5.84V | +2.06V |
| 14 | +11.6V | +11.6V | +11.6V | +11.6V |
| 15 | +5.30V | +5.30V | +5.30V | +5.30V |
| 16 | +5.30V | +5.30V | +5.30V | +5.30V |

Note 6. +13.1V channel 3 operation; +1.47V channel 4 operation.

Note 7. +1.47V channel 3 operation; +13.1V channel 4 operation.

### U4102 (L – R) Audio FM Demod IC (905kHz)

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +3.13V | +3.13V | +3.13V | +3.13V |
| 2 | +3.13V | +3.13V | +3.13V | +3.13V |
| 3 | +3.13V | +3.13V | +3.13V | +3.13V |
| 4 | Gnd | Gnd | Gnd | Gnd |
| 5 | +6.94V | +6.94V | +6.94V | +6.94V |
| 6 | +6.98V | +6.98V | +6.98V | +6.98V |
| 7 | +6.28V | +6.28V | +6.28 | +6.28V |
| 8 | +4.20V | +4.20V | +4.20V | +4.20V |
| 9 | +5.86V | +5.86V | +5.86V | +5.86V |
| 10 | Gnd | Gnd | Gnd | Gnd |
| 11 | +5.88V | +5.88V | +5.88V | +5.88V |
| 12 | +0.85V | +0.85V | +0.85V | +0.75V |
| 13 | +2.46V | +5.81V | +5.81V | +2.46V |
| 14 | +11.6V | +11.6V | +11.6V | +11.6V |
| 15 | +5.27V | +5.27V | +5.27V | +5.27V |
| 16 | +5.27V | +5.27V | +5.27V | +5.27V |

### U4200 Track/Hold and Mute (C Mos Switch) IC

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +2.36V | +2.36V | +2.36V | +2.36V |
| 2 | +0.95V | +3.88V | +1.43V | +0.95V |
| 3 | +6.94V | +6.94V | +6.94V | +6.94V |
| 4 | +6.95V | +6.95V | +6.95V | +6.95V |
| 5 | +0.59V | +5.61V (1) | +0.59V | +0.59V |
| 6 | +0.45V | +5.29V (2) | +0.45V | +0.45V |
| 7 | Gnd | Gnd | Gnd | Gnd |
| 8 | +7.89V | +7.89V | +7.89V | +7.89V |
| 9 | +7.89V | +7.89V | +7.89V | +7.89V |
| 10 | +6.92V | +6.92V | +6.92V | +6.92V |
| 11 | +6.92V | +6.92V | +6.92V | +6.92V |
| 12 | +0.45V | +5.25V (3) | +0.45V | +0.45V |
| 13 | 0V | 0V (4) | 0V | 0V |
| 14 | +9.17V | +8.56V | +9.17V | +9.17V |

### U4300 Audio Matrix Buffer IC

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +7.91V | +7.91V | +7.91V | +7.91V |
| 2 | +7.91V | +7.91V | +7.91V | +7.91V |
| 3 | +6.93V | +6.93V | +6.93V | +6.93V |
| 4 | +14.7V | +14.7V | +14.7V | +14.7V |
| 5 | +7.89V | +7.89V | +7.89V | +7.89V |
| 6 | +7.89V | +7.89V | +7.89V | +7.89V |
| 7 | +7.87V | +7.87V | +7.87V | +7.87V |
| 8 | +9.55V | +9.55V | +9.55V | +9.55V |
| 9 | +7.89V | +7.89V | +7.89V | +7.89V |
| 10 | +7.89V | +7.89V | +7.89V | +7.89V |
| 11 | Gnd | Gnd | Gnd | Gnd |
| 12 | +6.94V | +6.94V | +6.94V | +6.94V |
| 13 | +7.92V | +7.92V | +7.92V | +7.92V |
| 14 | +7.92V | +7.92V | +7.92V | +7.92V |

### U4400 Decoder Rectifier IC

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +0.98V | +2.32V | +0.98V | +0.98V |
| 2 | +1.30V | +1.37V | +1.30V | +1.30V |
| 3 | +1.31V | +1.36V | +1.30V | +1.30V |
| 4 | +14.7V | +14.7V | +14.7V | +14.7V |
| 5 | +1.31V | +1.37V | +1.31V | +1.31V |
| 6 | +1.31V | +1.36V | +1.31V | +1.31V |
| 7 | +0.98V | +2.28V | +0.98V | +0.98V |
| 8 | +1.00V | +0.95V | +1.00V | +1.00V |
| 9 | +1.31V | +1.37V | +1.31V | +1.31V |
| 10 | +1.31V | +1.36V | +1.31V | +1.31V |
| 11 | Gnd | Gnd | Gnd | Gnd |
| 12 | +1.31V | +1.36V | +1.31V | +1.31V |
| 13 | +1.31V | +1.36V | +1.31V | +1.31V |
| 14 | +1.00V | +0.97V | +1.00V | +1.00V |

### U4500 Decoder Control IC

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +1.93V | See Note 8 | +1.74V | +1.93V |
| 2 | +1.43V | See Note 8 | +1.43V | +1.43V |
| 3 | +1.43V | See Note 8 | +1.43V | +1.43V |
| 4 | +14.7V | +14.7V | +14.7V | +14.7V |
| 5 | +1.43V | See Note 8 | +1.43V | +1.43V |
| 6 | +1.43V | See Note 8 | +1.43V | +1.43V |
| 7 | +1.99V | See Note 8 | +1.99V | +1.99V |
| 8 | 0V | See Note 8 | +2.36V | 0V |
| 9 | +1.30V | See Note 8 | +1.91V | +1.30V |
| 10 | +0.62V | See Note 8 | +1.89V | +0.62V |
| 11 | Gnd | Gnd | Gnd | Gnd |
| 12 | +0.95V | +2.32V | +1.43V | +0.95V |
| 13 | +1.16V | +2.30V | +1.43V | +1.16V |
| 14 | +0.62V | +6.19V | +1.90V | +0.62V |

### U4600 Audio Output IC

| Pin No. | Load | Play | Pause | Unload |
|---|---|---|---|---|
| 1 | +0.09V | +1.22V | +1.10V | +0.09V |
| 2 | +8.68V | +8.68V | +8.68V | +8.68V |
| 3 | +8.07V | +8.07V | +8.07V | +8.07V |
| 4 | +8.07V | +8.07V | +8.07V | +8.07V |
| 5 | +7.85V | +7.69V | +7.85V | +7.85V |
| 6 | Gnd | Gnd | Gnd | Gnd |
| 7 | +7.83V | +7.67V | +7.83V | +7.83V |
| 8 | +6.64V | +6.49V | +6.64V | +6.64V |
| 9 | +6.64V | +6.67V | +6.64V | +6.64V |
| 10 | +7.83V | +7.83V | +7.83V | +7.83V |
| 11 | +14.6V | +14.6V | +14.6V | +14.6V |
| 12 | +7.85V | +7.88V | +7.85V | +7.85V |
| 13 | +8.07V | +8.07V | +8.07V | +8.07V |
| 14 | +8.07V | +8.07V | +8.07V | +8.07V |
| 15 | +8.68V | +8.68V | +8.68V | +8.68V |
| 16 | +0.09V | +1.22V | +1.10V | +0.09V |

Note 8. Voltage varies when playing stereo VideoDisc due to processing action of time constant network.

| | | |
|---|---|---|
| Q401 | E | +3.07V |
| | B | +3.80V |
| | C | +7.84V |

| | | |
|---|---|---|
| Q402 | E | +7.08V |
| | B | +7.84V |
| | C | +14.4V |

| | | |
|---|---|---|
| Q403 | E | +1.08V |
| | B | +2.38V |
| | C | +7.42V |

| | | |
|---|---|---|
| Q404 | E | +1.81V |
| | B | +2.41V |
| | C | +14.7V |

| | | |
|---|---|---|
| Q405 | A | +7.43V |
| | G | +12.1V |
| | K | Gnd |

| | | |
|---|---|---|
| Q2001 | E | +22.6V |
| | B | +21.9V |
| | C | +14.7V |

| | | |
|---|---|---|
| Q2002 | E | +23.0V |
| | B | +22.7V |
| | C | +21.9V |

| | | |
|---|---|---|
| Q2003 | E | +2.72V |
| | B | +3.34V |
| | C | +21.9V |

| | | |
|---|---|---|
| Q2004 | E | +12.1V |
| | B | +12.7V |
| | C | +14.1V |

| | | |
|---|---|---|
| Q2005 | E | +5.04V |
| | B | +5.65V |
| | C | +11.2V |

| | | |
|---|---|---|
| Q2006 | E | +4.90V |
| | B | +5.04V |
| | C | +5.65V |

| | | |
|---|---|---|
| Q2007 | E | +11.9V |
| | B | +12.1V |
| | C | +12.7V |

| | | |
|---|---|---|
| Q2501 | E | +6.63V |
| | B | +7.28V |
| | C | +12.9V |

| | | |
|---|---|---|
| Q2502 | E | +0.34V |
| | B | +0.90V |
| | C | +14.6V |

| | | |
|---|---|---|
| Q2503 | E | Gnd |
| | B | +0V |
| | C | +5.84V |

| | | |
|---|---|---|
| Q2504 | G | +3.42V |
| | S | +6.42V |
| | D | +6.64V |

| | | |
|---|---|---|
| Q2505 | E | +11.6V |
| | B | +11.1V |
| | C | +8.73V |

| | | |
|---|---|---|
| Q2506 | E | +5.94V |
| | B | +5.52V |
| | C | +0.18V |

| | | |
|---|---|---|
| Q2507 | E | Gnd |
| | B | +0.18V |
| | C | +0V |

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| | | |
|---|---|---|
| Q2701 | E | +6.46V |
| | B | +7.13V |
| | C | +14.7V |

| | | |
|---|---|---|
| Q3101 | E | +8.83V |
| | B | +9.47V |
| | C | +14.5V |

| | | |
|---|---|---|
| Q3102 | E | +9.49V |
| | B | +8.83V |
| | C | +4.81V |

| | | |
|---|---|---|
| Q3103 | E | +4.16V |
| | B | +4.82V |
| | C | +10.3V |

| | | |
|---|---|---|
| Q3104 | E | +9.60V |
| | B | +10.3V |
| | C | +14.5V |

| | | |
|---|---|---|
| Q3105 | E | +0.9V |
| | B | +1.52V |
| | C | +7.72V |

| | | |
|---|---|---|
| Q3107 | E | +4.72V |
| | B | +5.28V |
| | C | +7.80V |

| | | |
|---|---|---|
| Q3201 | E | +5.62V |
| | B | +6.29V |
| | C | +8.52V |

| | | |
|---|---|---|
| Q3202 | E | +5.51V |
| | B | +6.17V |
| | C | +11.5V |

| | | |
|---|---|---|
| Q3301 | E | +4.40V |
| | B | +5.03V |
| | C | +14.6V |

| | | |
|---|---|---|
| Q3303 | E | +4.50V |
| | B | +5.16V |
| | C | +14.6V |

| | | |
|---|---|---|
| Q3304 | E | +3.88V |
| | B | +4.49V |
| | C | +14.6V |

| | | |
|---|---|---|
| Q3305 | E | +5.65V |
| | B | +5.06V |
| | C | Gnd |

| | | |
|---|---|---|
| Q3306 | E | +4.46V |
| | B | +5.11V |
| | C | +11.9V |

| | | |
|---|---|---|
| Q3401 | E | +8.31V |
| | B | +8.98V |
| | C | +14.6V |

| | | |
|---|---|---|
| Q3402 | E | +3.62V |
| | B | +4.26V |
| | C | +8.97V |

| | | |
|---|---|---|
| Q3403 | E | +5.61V |
| | B | +6.26V |
| | C | +9.08V |

| | | |
|---|---|---|
| Q3404 | E | +8.39V |
| | B | +9.04V |
| | C | +13.9V |

| | | |
|---|---|---|
| Q3405 | E | +7.20V |
| | B | Varies |
| | C | +14.7V |

| | | |
|---|---|---|
| Q3406 | E | +7.20V |
| | B | Varies |
| | C | Gnd |

| | | |
|---|---|---|
| Q3407 | E | +7.15V |
| | B | Varies |
| | C | +14.7V |

| | | |
|---|---|---|
| Q3408 | E | +7.14V |
| | B | Varies |
| | C | Gnd |

| | | |
|---|---|---|
| Q3409 | E | Gnd |
| | B | +0.11V |
| | C | +4.09V |

| | | |
|---|---|---|
| Q3412 | E | +3.90V |
| | B | +4.60V |
| | C | +5.85V |

| | | |
|---|---|---|
| Q3413 | E | +5.20V |
| | B | +5.85V |
| | C | +11.5V |

| | | |
|---|---|---|
| Q3501 | E | +14.7V |
| | B | +13.9V |
| | C | +14.6V |

| | | |
|---|---|---|
| Q4102 | E | Gnd |
| | B | +0.65V |
| | C | +0.02V |

| | | |
|---|---|---|
| Q4301 | E | +7.15V |
| | B | +7.79V |
| | C | +14.6V |

| | | |
|---|---|---|
| Q4302 | E | +7.15V |
| | B | +7.79V |
| | C | +14.6V |

| | | |
|---|---|---|
| Q4501 | E | +1.93V |
| | B | +1.33V |
| | C | +1.26V |

| | | |
|---|---|---|
| Q5101 | E | +3.01V |
| | B | +4.70V |
| | C | +2.07V |

| | | |
|---|---|---|
| Q5102 | E | +3.01V |
| | B | +2.55V |
| | C | +2.70V |

| | | |
|---|---|---|
| Q5103 | E | Gnd |
| | B | +0.68V |
| | C | +0.02V |

| | | |
|---|---|---|
| Q5104 | E | Gnd |
| | B | Steps Hi-Lo |
| | C | Steps Hi-Lo |

| | | |
|---|---|---|
| Q5105 | E | Steps Hi-Lo |
| | B | Steps Hi-Lo |
| | C | Steps Hi-Lo |

| | | |
|---|---|---|
| Q5106 | E | +22.9V |
| | B | +22.8V |
| | C | Steps Hi-Lo |

| | | |
|---|---|---|
| Q5107 | E | Gnd |
| | B | Steps Hi-Lo |
| | C | Steps Hi-Lo |

| | | |
|---|---|---|
| Q5108 | E | +3.27V |
| | B | +3.91V |
| | C | +3.84V |

| | | |
|---|---|---|
| Q5109 | E | +13.1V |
| | B | +12.3V |
| | C | +13.0V |

| | | |
|---|---|---|
| Q5110 | E | +3.89V |
| | B | +4.50V |
| | C | +8.71V |

| | | |
|---|---|---|
| Q5111 | E | Steps Hi-Lo |
| | B | Steps Hi-Lo |
| | C | +22.0v |

| | | |
|---|---|---|
| Q5112 | E | +22.0V |
| | B | Steps Hi-Lo |
| | C | Steps Hi-Lo |

| | | |
|---|---|---|
| Q5113 | E | +4.90V |
| | B | +4.55V |
| | C | +3.01V |

| | | |
|---|---|---|
| Q5114 | E | +4.90V |
| | B | +4.58V |
| | C | +3.90V |

| | | |
|---|---|---|
| Q5115 | E | Gnd |
| | B | +0.74V |
| | C | +0.02V |

| | | |
|---|---|---|
| Q5116 | E | Gnd |
| | B | +0.02V |
| | C | +4.87V |

| | | |
|---|---|---|
| Q5301 | E | Gnd |
| | B | +0.70V |
| | C | +0.02V |

| | | |
|---|---|---|
| Q5302 | E | Gnd |
| | B | +0.66V |
| | C | +0.06V |

| | | |
|---|---|---|
| Q5303 | E | +4.74V |
| | B | +5.12V |
| | C | +22.5V |

| | | |
|---|---|---|
| Q5304 | E | +4.75V |
| | B | +5.12V |
| | C | Gnd |

| | | |
|---|---|---|
| Q5305 | E | +4.28V |
| | B | +4.75V |
| | C | +22.5V |

| | | |
|---|---|---|
| Q5306 | E | +4.28V |
| | B | +4.75V |
| | C | Gnd |

| | | NORM | REV/ RUN |
|---|---|---|---|
| Q5901 | E | Gnd | Gnd |
| | B | +0.70V | +0.75V |
| | C | +0.02V | 0V |

| | | NORM | REV/ RUN |
|---|---|---|---|
| Q5902 | E | +0.02V | +0.88V |
| | B | +0.02V | +0.09V |
| | C | +22.6V | +19.2V |

| | | NORM | FWD/ RUN |
|---|---|---|---|
| Q5903 | E | Gnd | Gnd |
| | B | +0.69V | +0.74V |
| | C | +0.02V | +0.11V |

| | | NORM | FWD/ RUN |
|---|---|---|---|
| Q5904 | E | +0.02V | +0.91V |
| | B | +0.02V | +0.11V |
| | C | +23.3V | +19.2V |

| | | NORM | FWD/ RUN |
|---|---|---|---|
| Q5905 | E | +0.02V | +0.91V |
| | B | +0.02V | +0.91V |
| | C | +23.3V | +19.2V |

| | | NORM | REV/ RUN |
|---|---|---|---|
| Q5906 | E | +0.02V | +0.87V |
| | B | +0.02V | +0.87V |
| | C | +22.8V | +18.8V |

| | | NORM | MOMENT SWITCH |
|---|---|---|---|
| Q5907 | E | +4.85V | +0.99V |
| | B | +4.85V | +0.99V |
| | C | Gnd | Gnd |

| | | STOP | RUN |
|---|---|---|---|
| Q5921 | E | +23.4V | +22.6V |
| | B | +23.4V | +22.6V |
| | C | 0V | +1.58V |

| | | STOP | RUN |
|---|---|---|---|
| Q5922 | E | +0.05V | +0.10V |
| | B | +0.25V | +0.33V |
| | C | +23.4V | +21.3V |

| | | STOP | RUN |
|---|---|---|---|
| Q5923 | E | 0V | +0.02V |
| | B | +0.05V | +0.10V |
| | C | +0.24V | +6.50V |

| | | STOP | RUN |
|---|---|---|---|
| Q5931 | E | +23.5V | +22.6V |
| | B | +23.5V | +22.6V |
| | C | 0V | +1.58V |

| | | STOP | RUN |
|---|---|---|---|
| Q5932 | E | +0.05V | +0.10V |
| | B | +0.25V | +0.33V |
| | C | +23.4V | +21.3V |

| | | STOP | RUN |
|---|---|---|---|
| Q5933 | E | 0V | +0.02V |
| | B | +0.05V | +0.10V |
| | C | +0.24V | +6.35V |

| | | STOP | RUN |
|---|---|---|---|
| Q5941 | E | +23.4V | +22.6V |
| | B | +23.4V | +22.6V |
| | C | 0V | +1.58V |

| | | STOP | RUN |
|---|---|---|---|
| Q5942 | E | +0.05V | +0.10V |
| | B | +0.25V | +0.33V |
| | C | +23.4V | +22.3V |

| | | STOP | RUN |
|---|---|---|---|
| Q5943 | E | 0V | +0.02V |
| | B | +0.05V | +0.10V |
| | C | +0.24V | +6.30V |

| | | STOP | RUN |
|---|---|---|---|
| Q5951 | E | +23.4V | +22.6V |
| | B | +23.4V | +22.6V |
| | C | 0V | +1.58V |

| | | STOP | RUN |
|---|---|---|---|
| Q5952 | E | +0.05V | +0.10V |
| | B | +0.25V | +0.33V |
| | C | +23.4V | +22.3V |

| | | STOP | RUN |
|---|---|---|---|
| Q5953 | E | 0V | +0.02V |
| | B | +0.05V | +0.10V |
| | C | +0.24V | +6.30V |

NOTE: Voltages measured with DVM—Player in "PLAY" mode unless otherwise indicated.

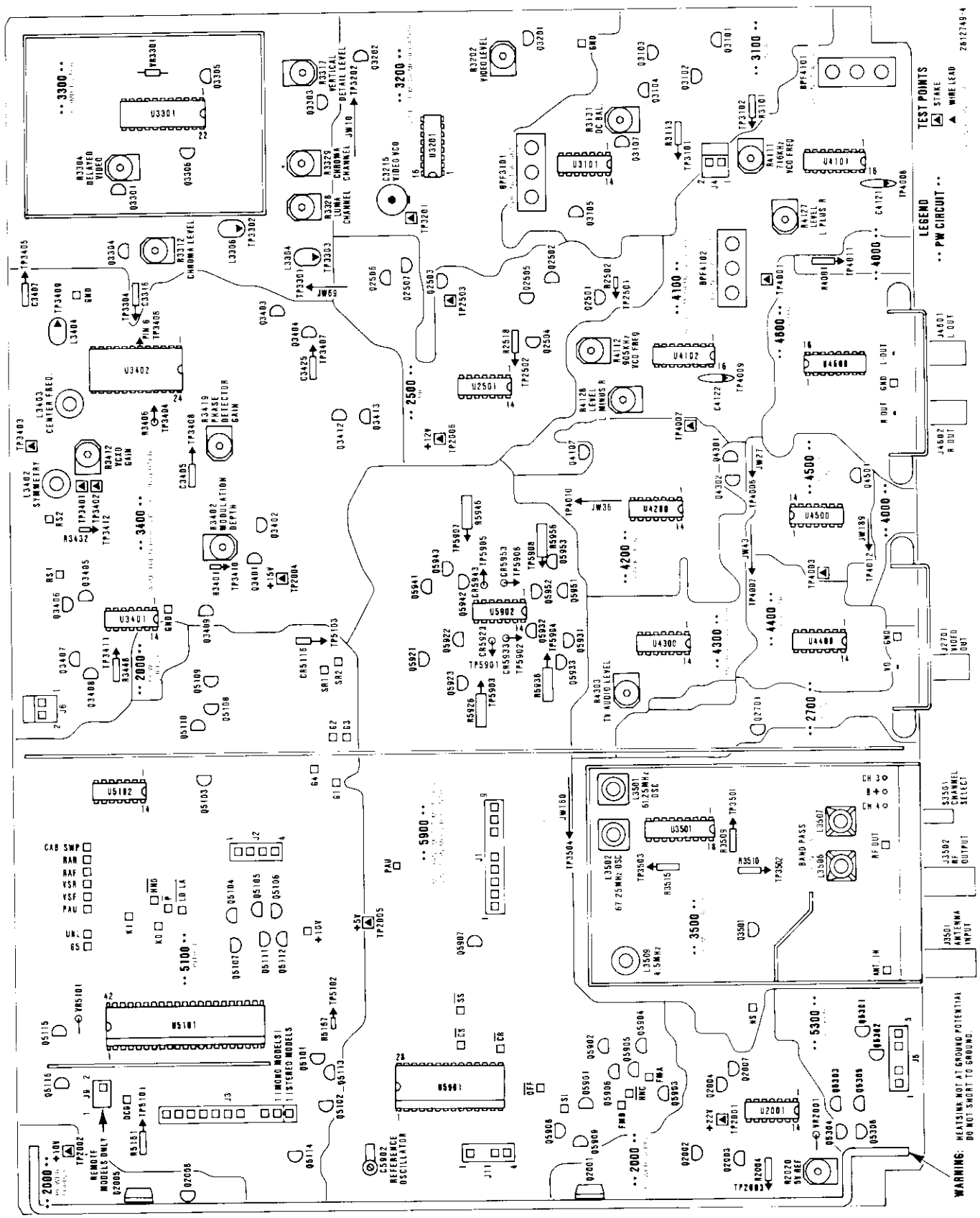



*Fig. 26—Test Point and Active Device Location*

## TEST POINTS

| | |
|---|---|
| TP2001 | +22VDC |
| TP2002 | +10VDC |
| TP2003 | +5.0V Ref |
| TP2004 | +15VDC (In 3400 Area) |
| TP2005 | +5VDC |
| TP2006 | +12VDC (In 2500 Area) |
| TP2501 | FM In |
| TP2502 | Detector Out |
| TP2503 | Defect Input |
| TP3101 | Anlac Setup |
| TP3102 | Arm Input |
| TP3201 | 5.3MHz VCO |
| TP3202 | Video Input to U3301 |
| TP3301 | Vertical Detail Out |
| TP3302 | Luminance Out |
| TP3303 | Vertical Detail |
| TP3304 | 1.53MHz Chroma |
| TP3401 | VCXO Setup |
| TP3402 | VCXO Input |
| TP3403 | +7VDC Ref |
| TP3404 | Luminance Input |
| TP3405 | 1.53MHz Clock |
| TP3406 | 3.58MHz Oscillator |
| TP3407 | 1.53MHz Clock Buffered |
| TP3408 | Phase Detector Output |
| TP3409 | 5.11MHz Oscillator |
| TP3410 | Video Input to Modulator |
| TP3411 | Armstretcher Setup |
| TP3501 | Channel 3 Output |
| TP3502 | Channel 4 Output |
| TP3503 | 4.5MHz Input |
| TP3504 | Audio Input |
| TP4001 | Left Plus Right Output |
| TP4002 | Left Minus Right Output |
| TP4003 | Rectified Output |
| TP4006 | Left Matrix Output |
| TP4007 | Right Matrix Output |
| TP4008 | 716KHz VCO |
| TP4009 | 905KHz VCO |
| TP4010 | Decoder Disable |
| TP4011 | +7.5VDC Ref |
| TP4012 | +1.4VDC Ref |
| TP5101 | Audio Channel A Mute |
| TP5102 | Audio Channel B Mute |
| TP5103 | Squelch |
| TP5901 | Turntable Motor Drive Voltage B |
| TP5902 | Turntable Motor Drive Voltage A |
| TP5903 | Turntable Motor Drive Current B |
| TP5904 | Turntable Motor Drive Current A |
| TP5905 | Turntable Motor Drive Voltage D |
| TP5906 | Turntable Motor Drive Voltage C |
| TP5907 | Turntable Motor Drive Current D |
| TP5908 | Turntable Motor Drive Current C |

## ACTIVE DEVICES

| | |
|---|---|
| Q2001 | Regulator |
| Q2002 | Current Limiter |
| Q2003 | Driver |
| Q2004 | Regulator |
| Q2005 | Regulator |
| Q2006 | Current Limiter |
| Q2007 | Current Limiter |
| Q2501 | RF Amplifier |
| Q2502 | Output Detector/Switch |
| Q2503 | Output Detector/Switch |
| Q2504 | Gain Control |
| Q2505 | AGC Amplifier |
| Q2506 | Sync Stripper |
| Q2507 | Clamp |
| Q2701 | Video Driver |
| Q3101 | N-Lac Buffer |
| Q3102 | N-Lac Amplifier |
| Q3103 | N-Lac Amplifier |
| Q3104 | N-Lac Output Driver |
| Q3105 | 716KHz Amplifier |
| Q3107 | Control Amplifier |
| Q3201 | Phase Corrector |
| Q3202 | Video Buffer |
| Q3301 | Delayed Video Drive |
| Q3303 | Vertical Detail Buffer |
| Q3304 | Chroma Driver |
| Q3305 | Chroma Buffer |
| Q3306 | Luma Buffer |
| Q3401 | Video Buffer |
| Q3402 | Video Amplifier |
| Q3403 | Clock Phase Shifter |
| Q3404 | Clock Buffer |
| Q3405 | Transducer Driver |
| Q3406 | Transducer Driver |
| Q3407 | Transducer Driver |
| Q3408 | Transducer Driver |
| Q3409 | Video Blanker |
| Q3412 | Noise Coring Amplifier |
| Q3413 | Noise Coring Buffer |
| Q3501 | Bias Switch |
| Q4102 | Decoder Defeat |
| Q4301 | Left Channel Buffer |
| Q4302 | Right Channel Buffer |
| Q4501 | Current Source |
| Q5101 | Least Significant Digit Driver |
| Q5102 | Most Significant Digit Driver |
| Q5103 | Daxi Status Inverter |
| Q5104 | Stepper Output B |
| Q5105 | Stepper Drive A |
| Q5106 | Stepper Output A |
| Q5107 | Stepper Output D |
| Q5108 | Lifter Drive |
| Q5109 | Lifter Output |
| Q5110 | Vertical Detail Driver |
| Q5111 | Stepper Drive C |
| Q5112 | Stepper Output C |
| Q5113 | LED Display Select |
| Q5114 | Discrete LED Select |
| Q5115 | Low Voltage Detector |
| Q5116 | Reset Switch |
| Q5301 | Reverse Ramp Switch |

## ACTIVE DEVICES (Continued)

| | |
|---|---|
| Q5302 | Forward Ramp Switch |
| Q5303 | Kick Pulse Driver |
| Q5304 | Kick Pulse Driver |
| Q5305 | Kick Pulse Output |
| Q5306 | Kick Pulse Output |
| Q5901 | Reverse Function Switch |
| Q5902 | Function Drive Reverse |
| Q5903 | Forward Function Switch |
| Q5904 | Function Drive Forward |
| Q5905 | Function Motor Output Forward |
| Q5906 | Function Motor Output Reverse |
| Q5907 | Pause Line Buffer |
| Q5908 | Rev. Driver Switch |
| Q5909 | Fwd. Driver Switch |
| Q5921 | Current Source Switch |
| Q5922 | Drive Amplifier |
| Q5923 | Turntable Motor Driver B |
| Q5931 | Current Source Switch |
| Q5932 | Drive Amplifier |
| Q5933 | Turntable Motor Driver A |
| Q5941 | Current Source Switch |
| Q5942 | Drive Amplifier |
| Q5943 | Turntable Motor Driver D |
| Q5951 | Current Source Switch |
| Q5952 | Drive Amplifier |
| Q5953 | Turntable Motor Driver C |
| U2001 | Quad Operational Amplifier |
| U2501 | Sync Detector |
| U3101 | Sync Detector |
| U3201 | Video FM Demodulator |
| U3301 | Comb Filter/Defect Corrector |
| U3401 | Armstretcher Drive |
| U3402 | Video Converter |
| U3501 | RF Modulator |
| U4101 | Audio Demodulator |
| U4102 | Audio Demodulator |
| U4200 | Track/Hold Mute |
| U4300 | Audio Matrix & Buffer |
| U4400 | Decoder Rectifier |
| U4500 | Decoder Control |
| U4600 | Decoder Amplifier |
| U5101 | Player Control Microcomputer |
| U5102 | Daxi Buffer |
| U5901 | Mechanism Microcomputer |
| U5902 | Turntable Drive |
| VR2001 | 5.8V Zener |
| VR3301 | 9.1V Zener |
| VR5101 | 2.85V Zener |

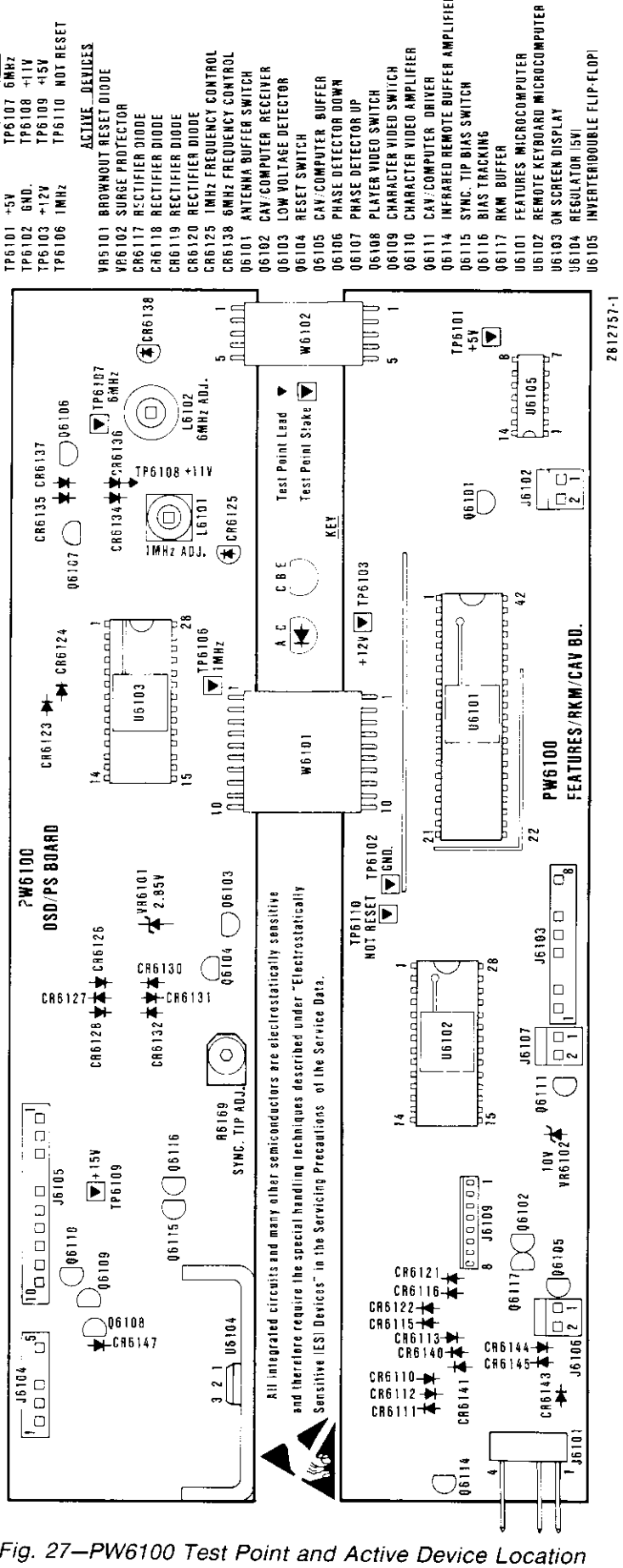
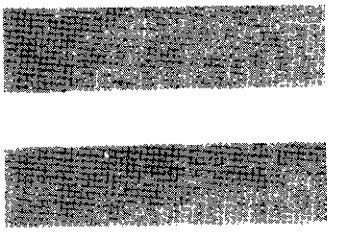
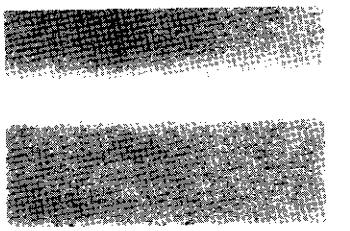



*Fig. 27—PW6100 Test Point and Active Device Location*

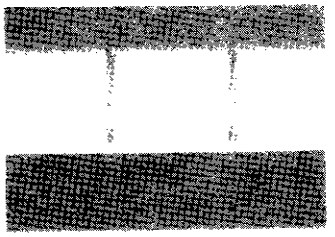
(1) 5mS/Div. .4V p-p



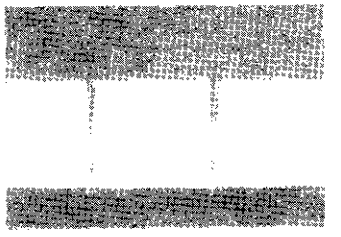
(2) 5mS/Div. .8V p-p



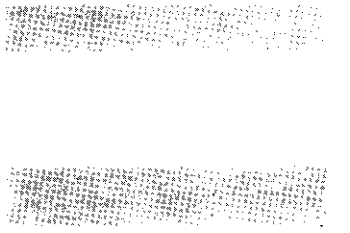
(3) 5mS/Div. 5V p-p



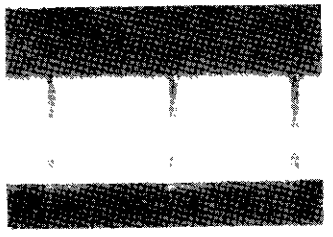
(4) 5mS/Div. .3V p-p



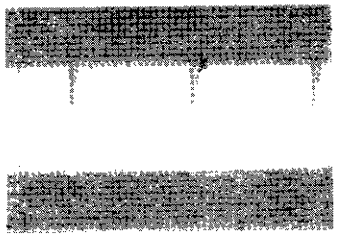
(5) 5mS/Div. .3V p-p



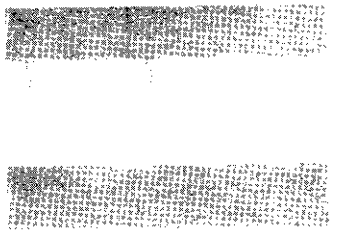
(6) 5mS/Div. .3V p-p



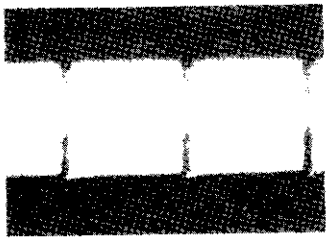
(7) 5mS/Div. .3V p-p



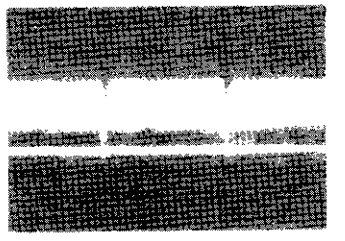
(8) 5mS/Div .3V p-p



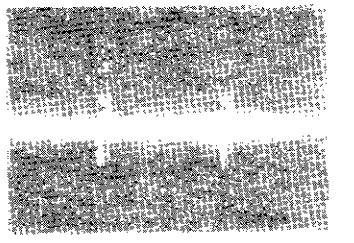
(9) 5mS/Div .3V p-p



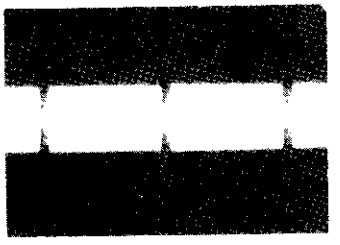
(10) 5mS/Div. .6V p-p



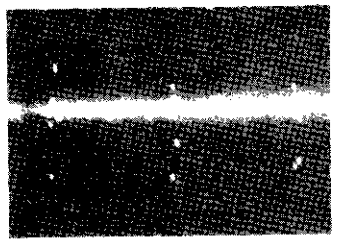
(11) 5mS/Div. .4V p-p



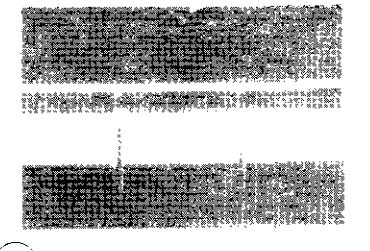
(12) 5mS/Div. 25V p-p



(13) 5mS/Div. .4V p-p

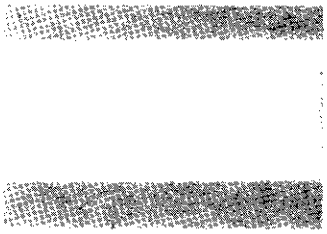


(14) 5mS/Div. 1.5V p-p

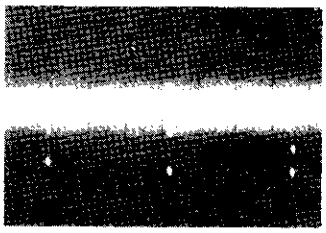


(15) 5mS/Div. 3V p-p

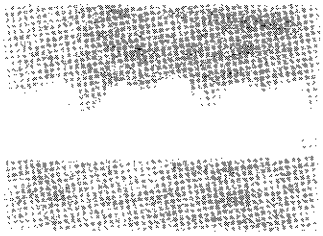
(16) 5mS Div. 35V p-p



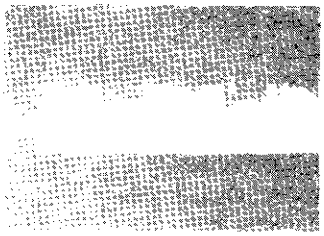
(17) 5mS Div. .8V p-p



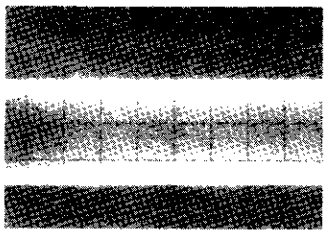
(18) 5mS Div. 2V p-p



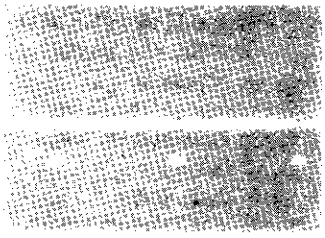
(19) 5mS Div. 2V p-p



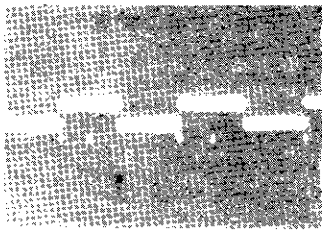
(20) 5mS Div. 2V p-p



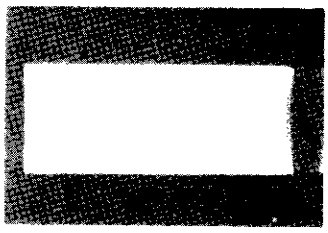
(21) 5mS Div. 5.5V p-p



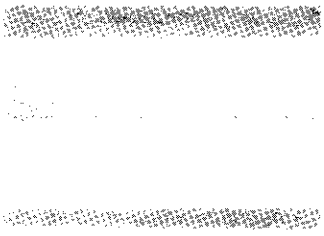
(22) 5mS Div. 5V p-p



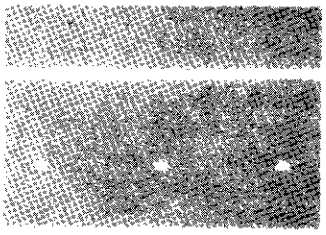
(23) 2mS Div. 75mV p-p



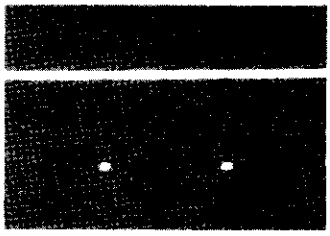
(24) 5mS Div. 3V p-p



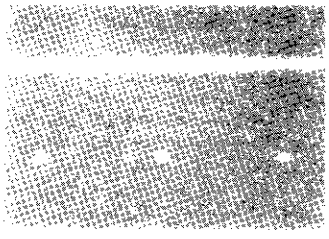
(25) 5mS Div. 4.2V p-p



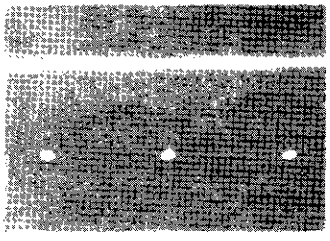
(26) 10mS Div. 5V p-p



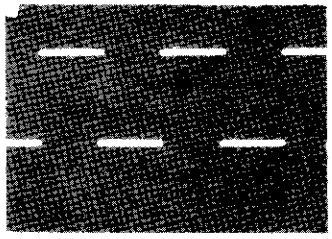
(27) 10mS Div. 5V p-p



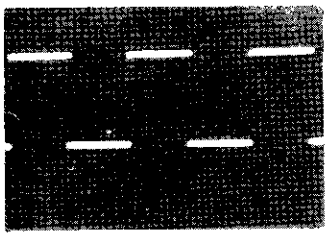
(28) 10mS Div. 5V p-p



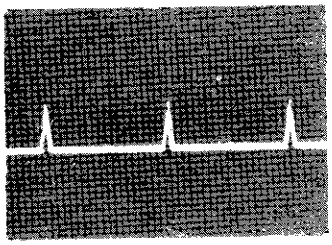
(29) 10mS Div. 5V p-p



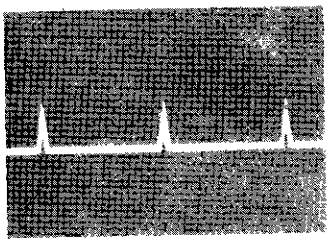
(30) 10mS Div. 4V p-p



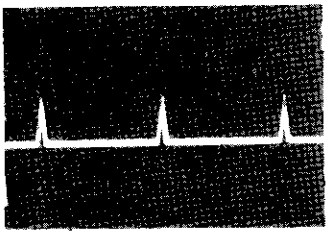
(31) 10mS/Div. 4V p-p



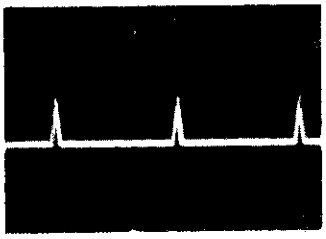
(32) 10mS/Div. .2V p-p



(33) 10mS/Div. .22V p-p



(34) 10mS/Div. .2V p-p



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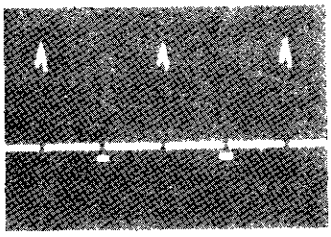
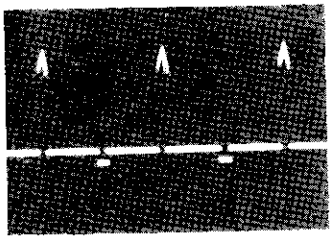
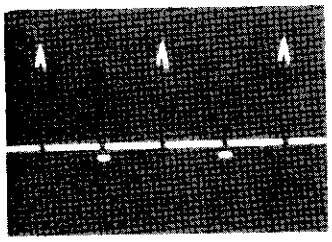


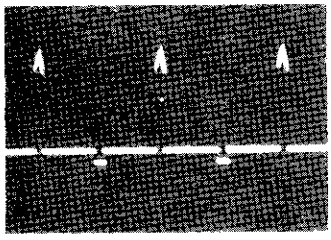
(36) 10mS/Div. 1.5V p-p



(37) 10mS/Div. 1.5V p-p



(38) 10mS/Div. 1.5V p-p



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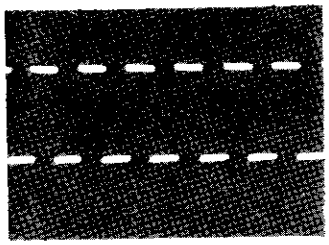
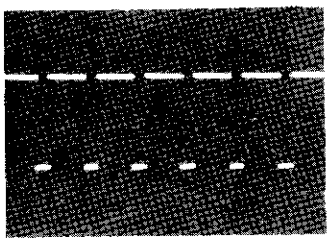


(40) 5mS/Div. 5V p-p



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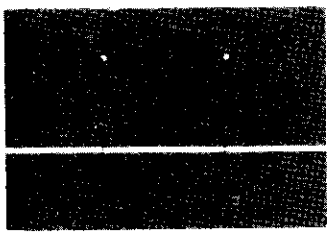

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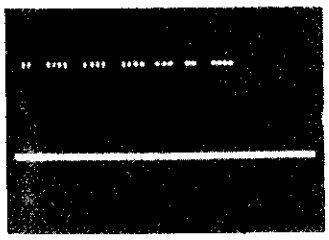
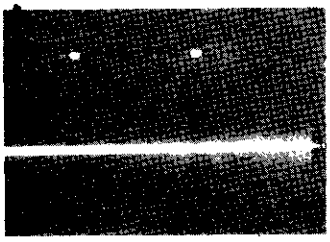
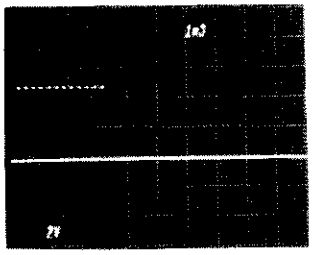


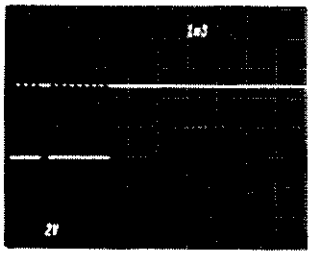
(43) 1mS/Div. 5V p-p



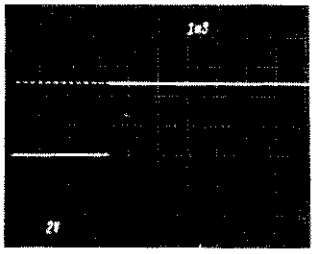
(44) 5mS/Div. 5V p-p



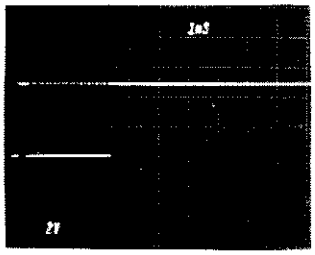
(45) U6101 Pin 5



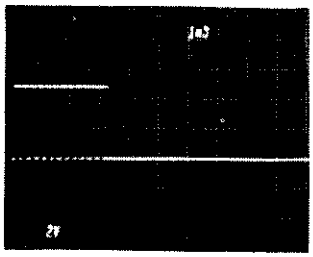
(46) U6101 Pin 6



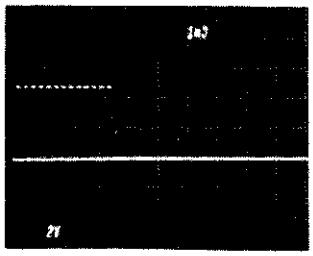
(47) U6101 Pin 7



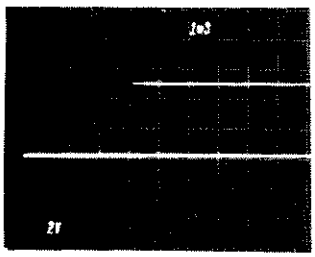
(48) U6101 Pin 8



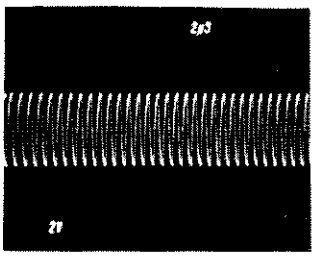
(49) U6101 Pin 9



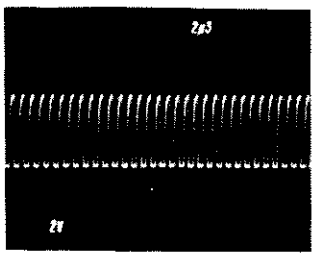
(50) U6101 Pin 10



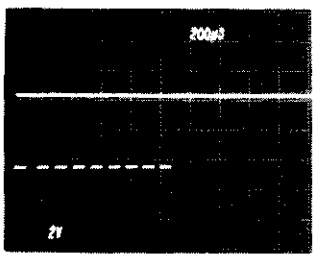
(51) U6101 Pin 11



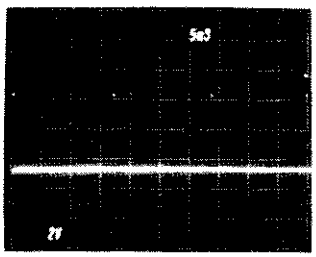
(52) U6101 Pin 16



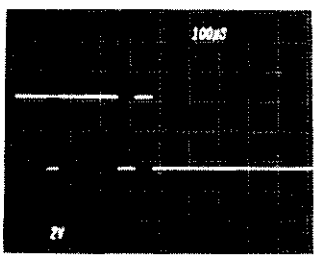
(53) U6101 Pin 17



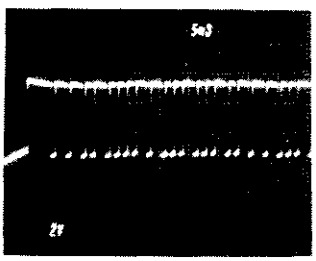
(54) U6101 Pin 22



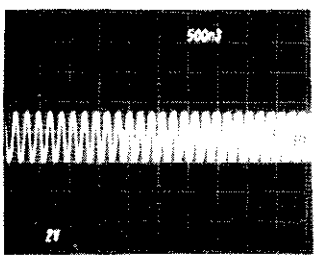
(55) U6101 Pin 23



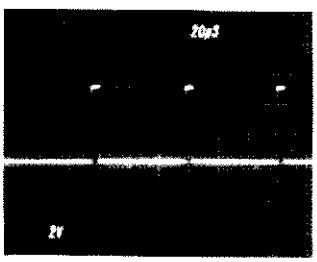
(56) U6101 Pin 24



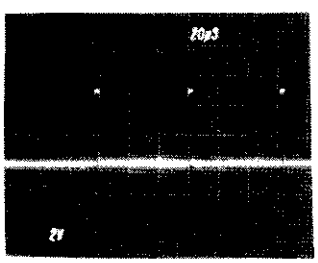
(57) U6102 Pin 12
CRK36 Pause Button Depressed



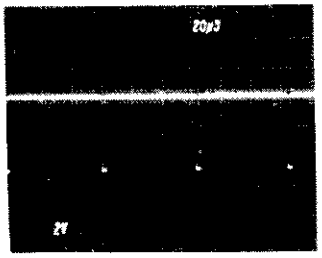
(58) U6103 Pin 1



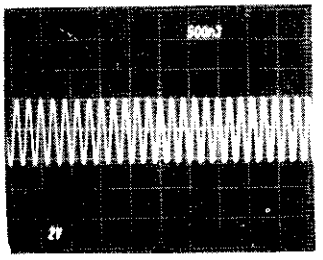
(59) U6103 Pin 2



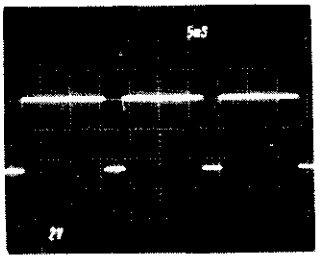
(60) U6103 Pin 3



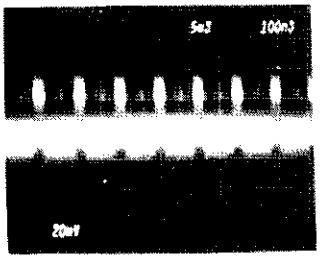
(61) U6103 Pin 4



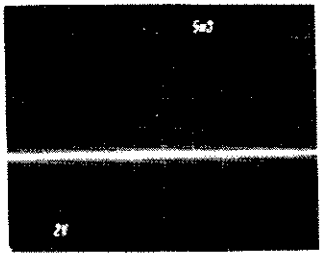
(62) U6103 Pin 5



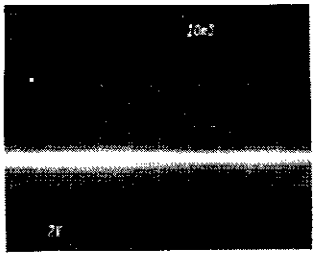
(63) U6103 Pin 9



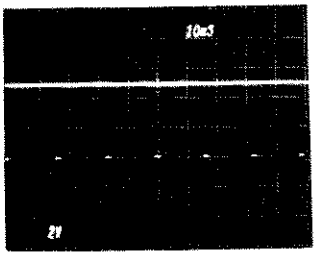
(64) U6103 Pin 10



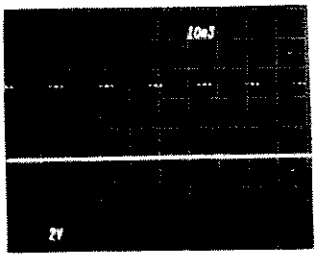
(65) U6103 Pin 11



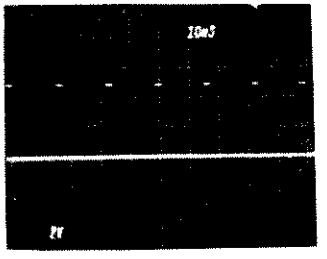
(66) U6103 Pin 12



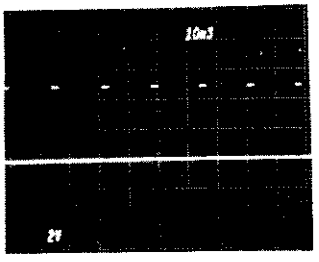
(67) U6103 Pin 13



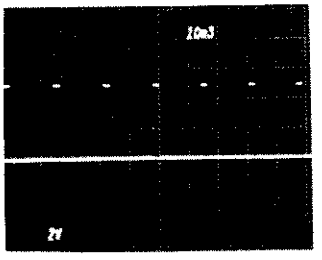
(68) U6103 Pin 14



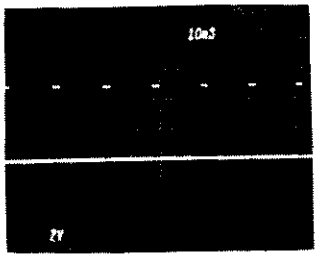
(69) U6103 Pin 15



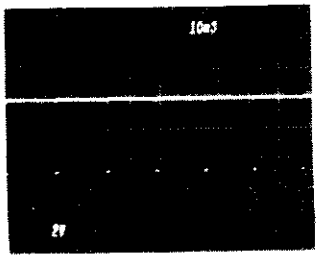
(70) U6103 Pin 16



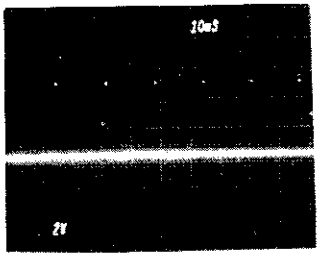
(71) U6103 Pin 17



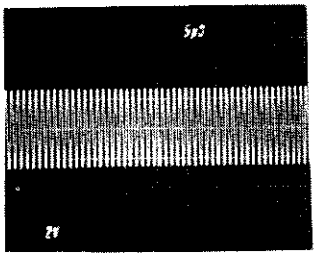
(72) U6103 Pin 18



(73) U6103 Pin 19



(74) U6103 Pin 23



(75) U6103 Pins 26 & 27

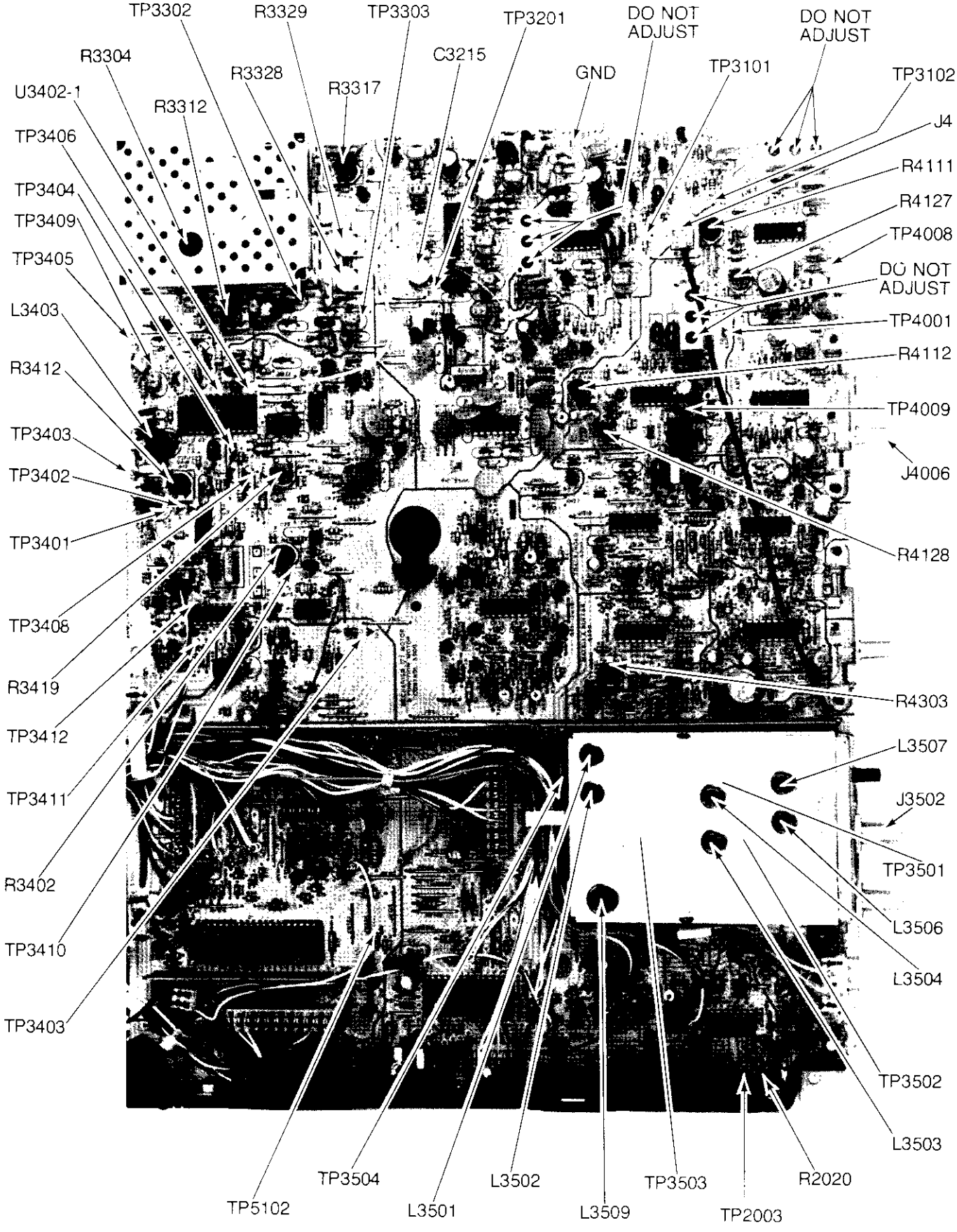



*Fig. 28—Adjustment Points*

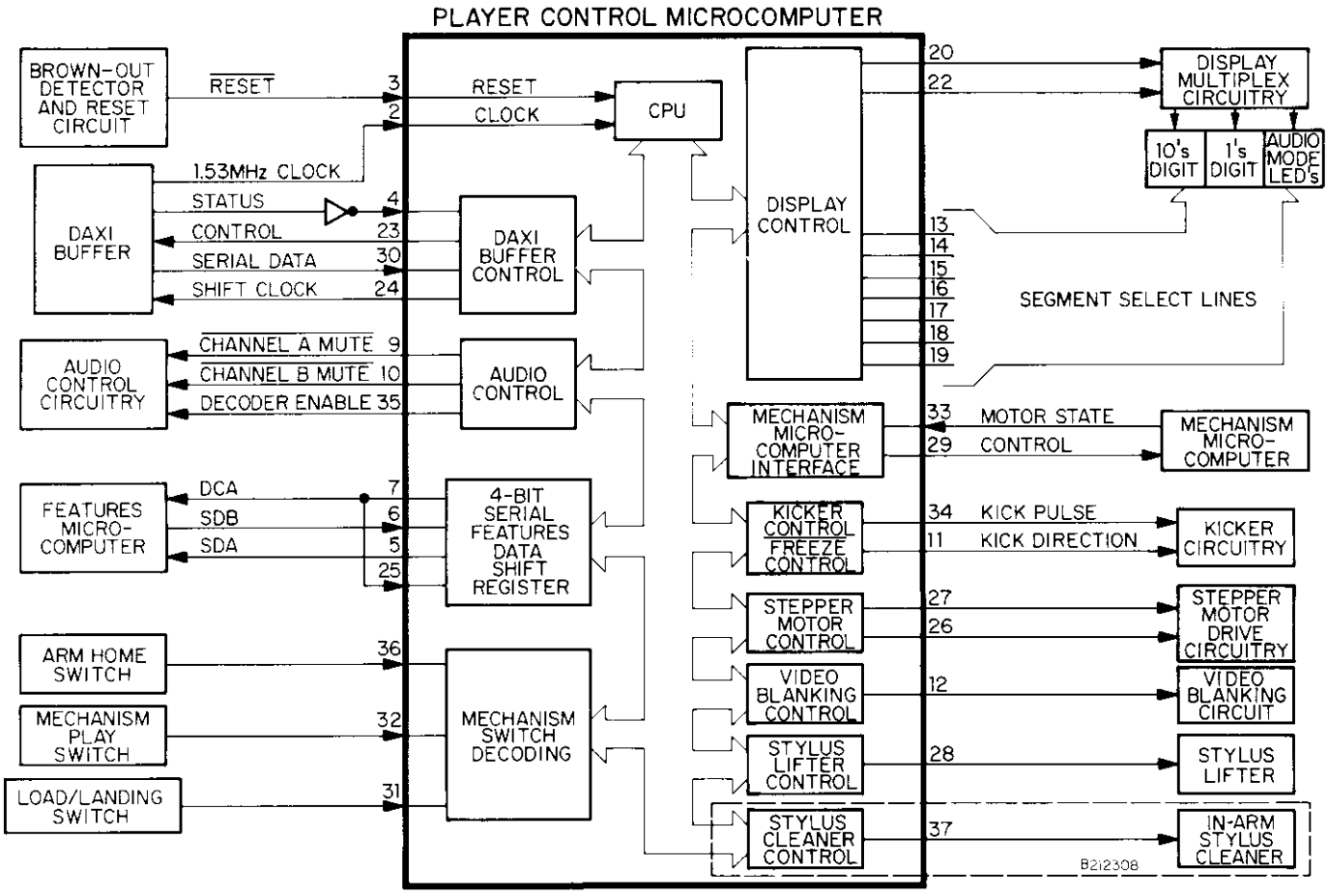



*Fig. 29—U5105 Player Control μC*

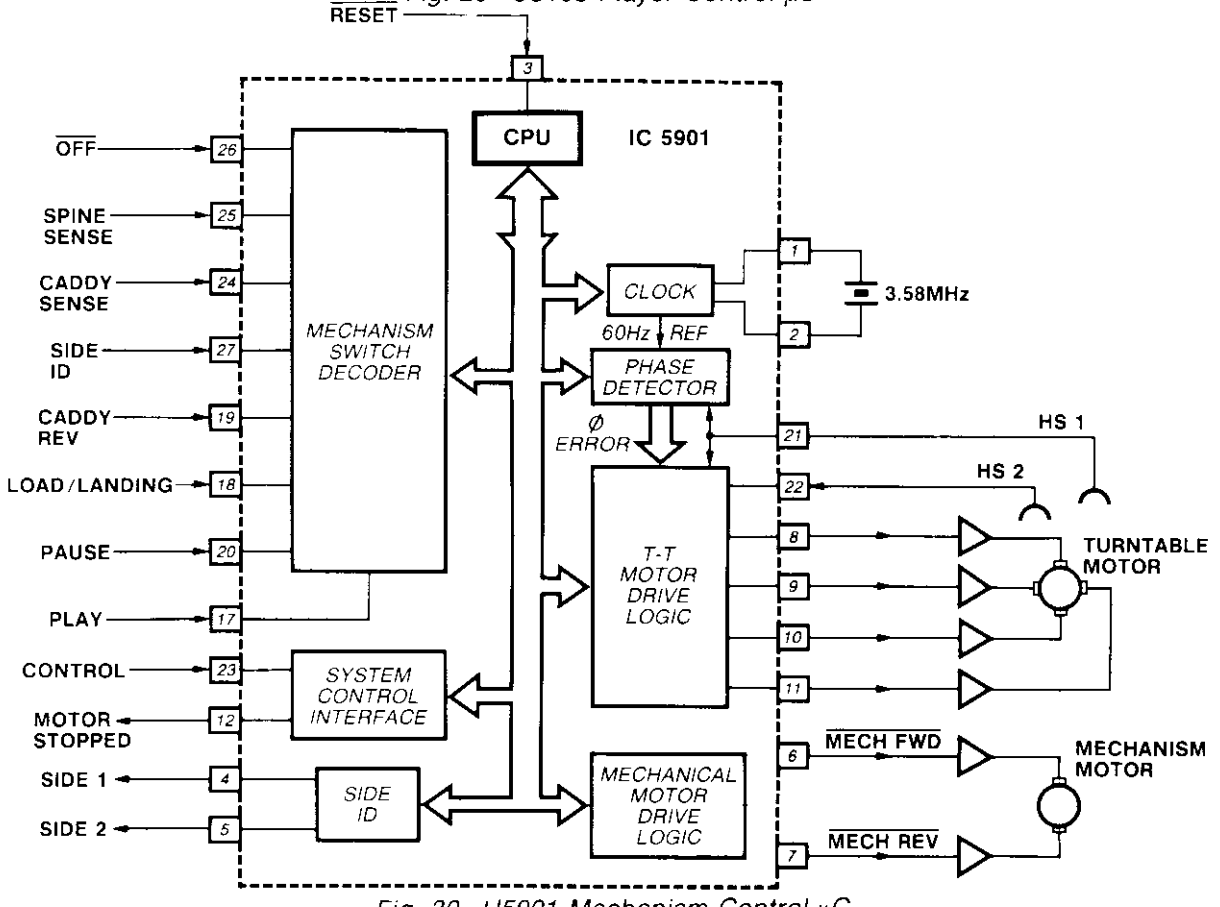



*Fig. 30—U5901 Mechanism Control μC*

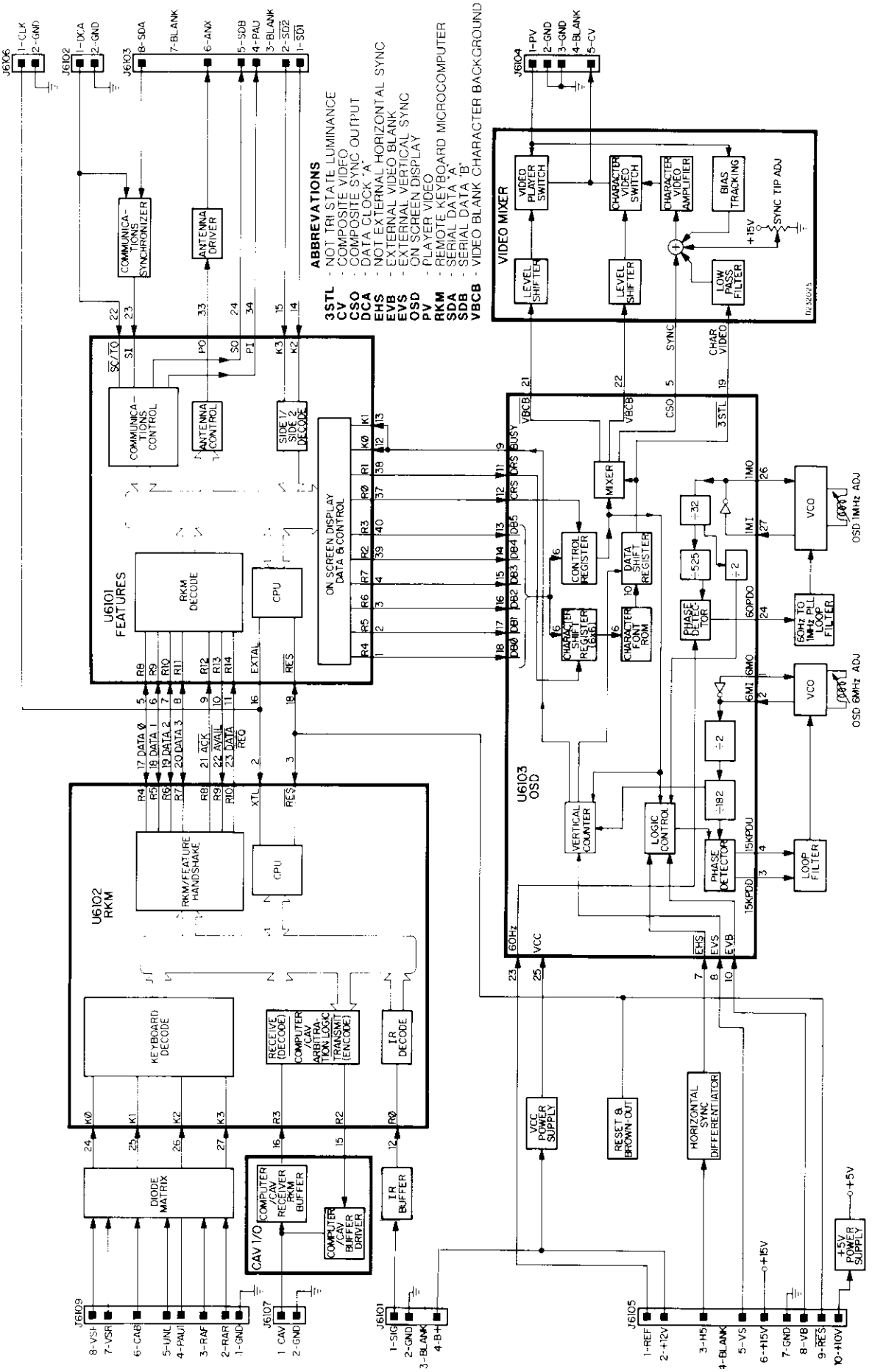



*Fig. 31—PW6100 Functional Block Diagram*

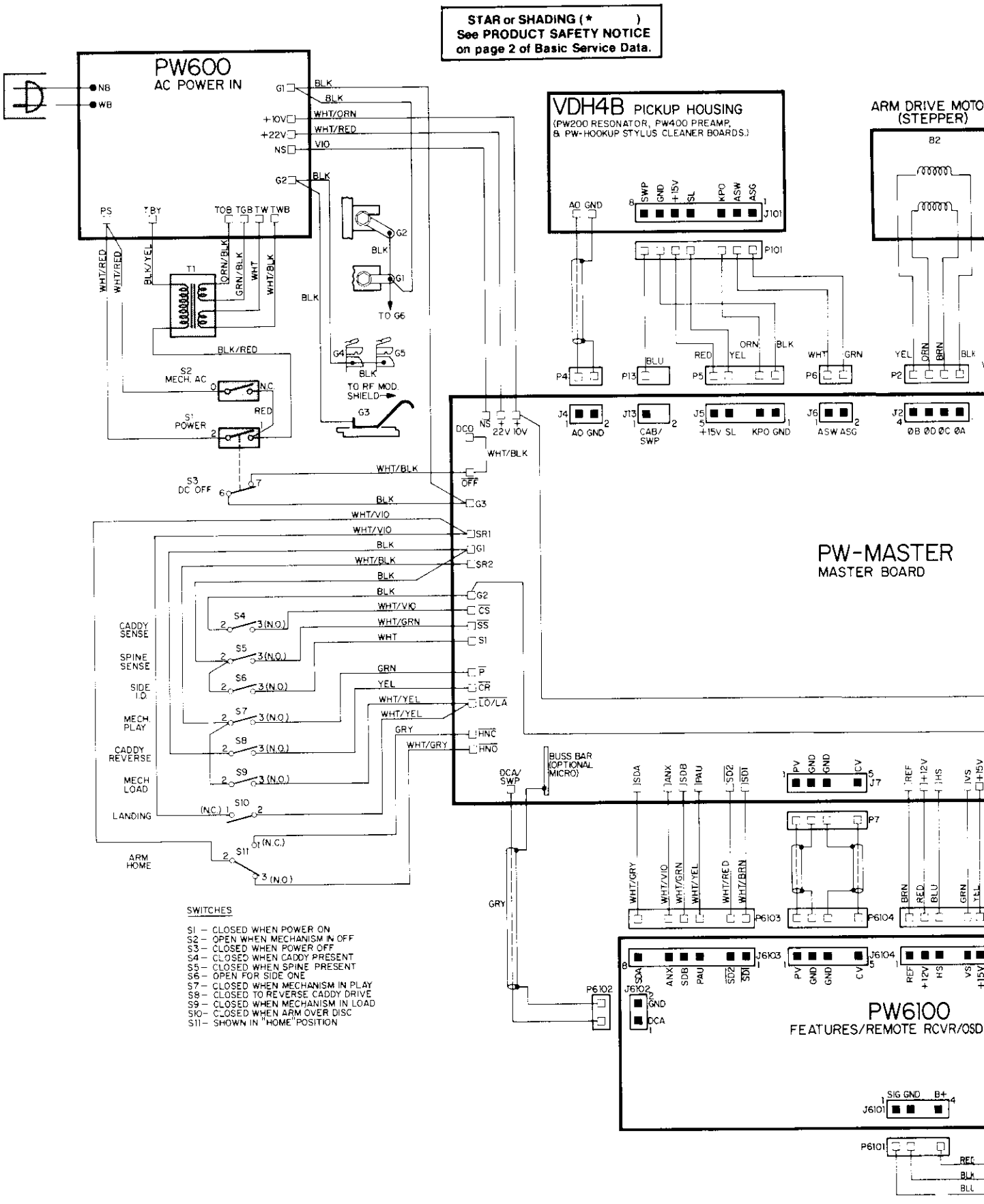
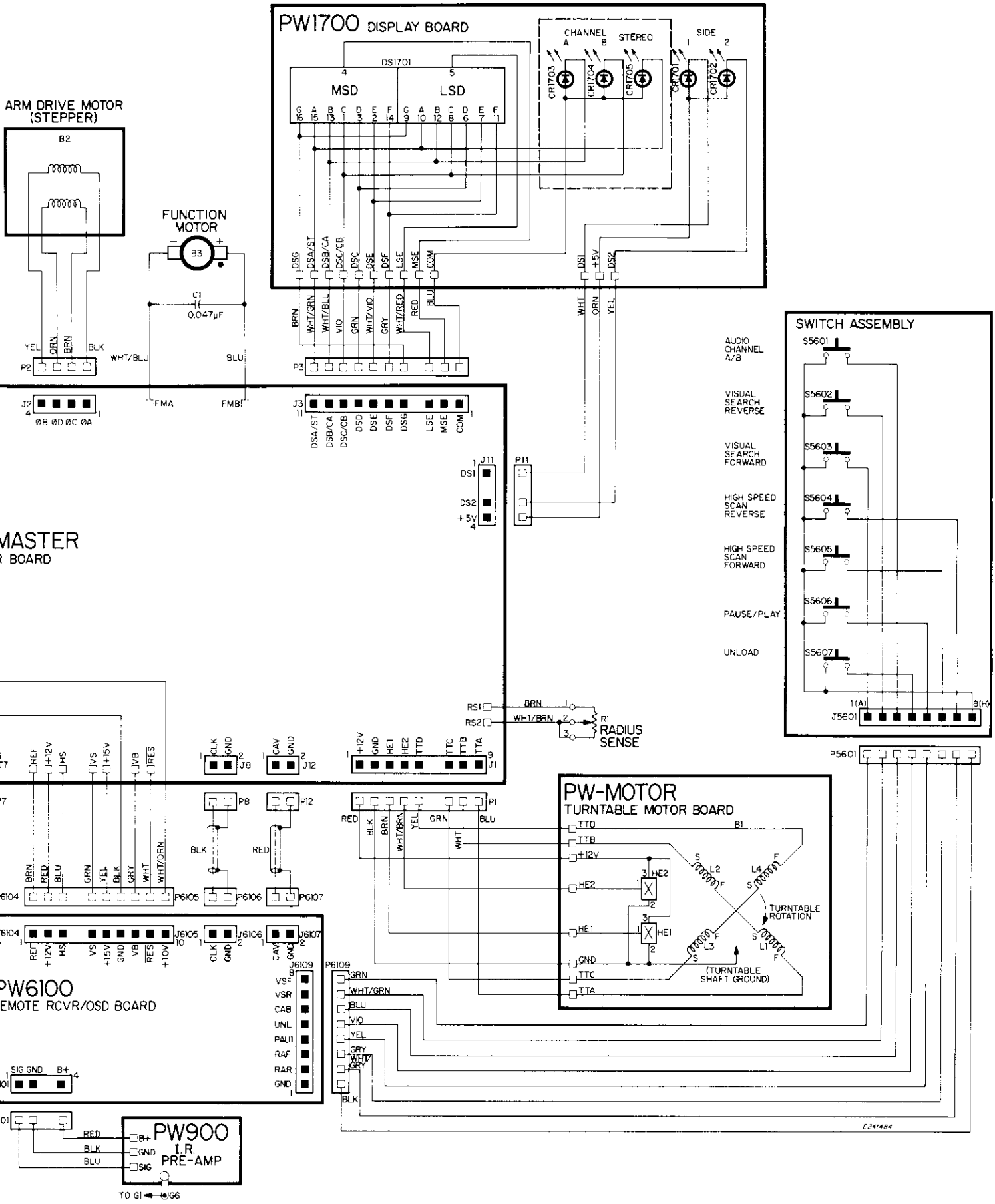



*Fig. 32—Interconnec*




*—Interconnect Wiring Diagram*

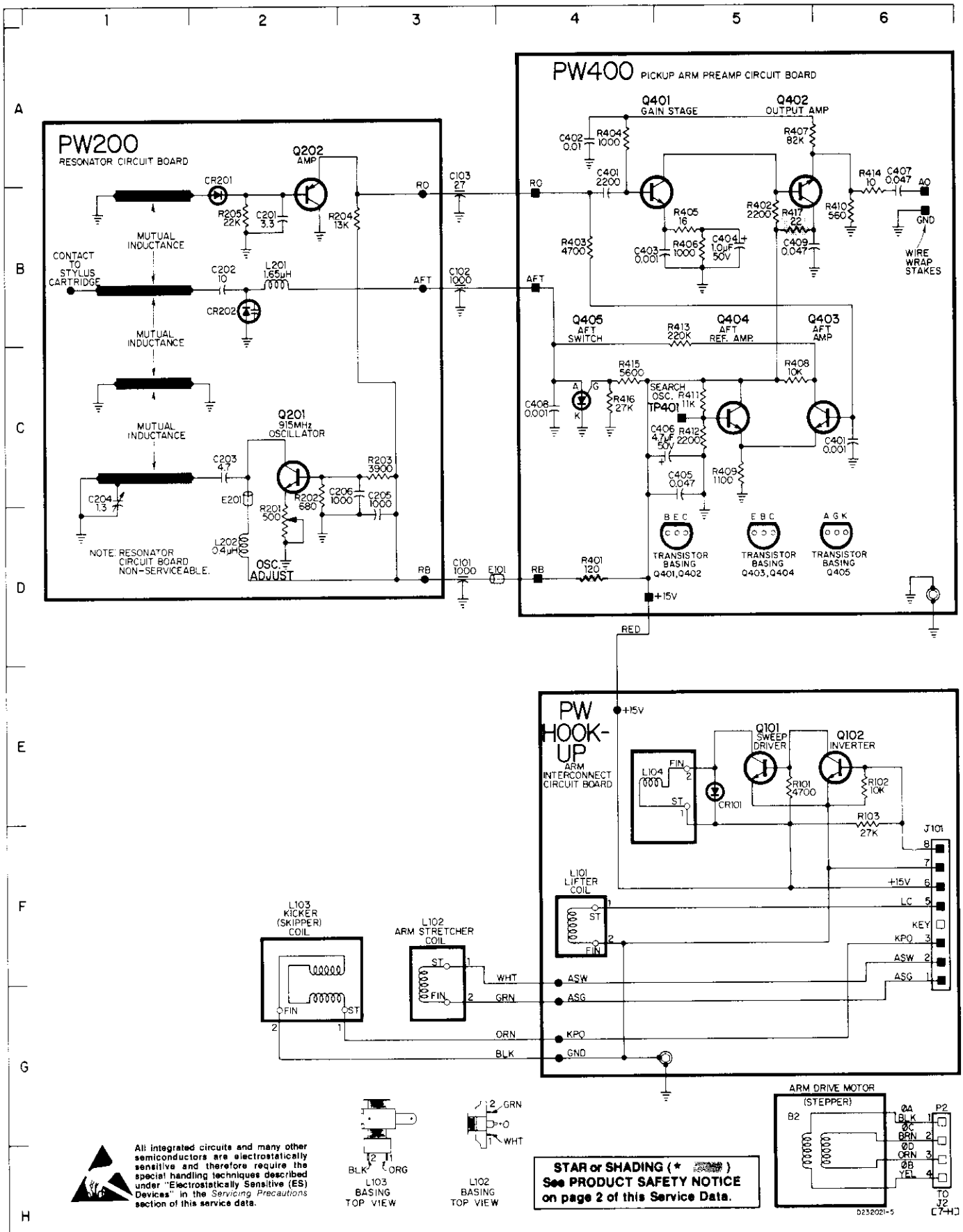
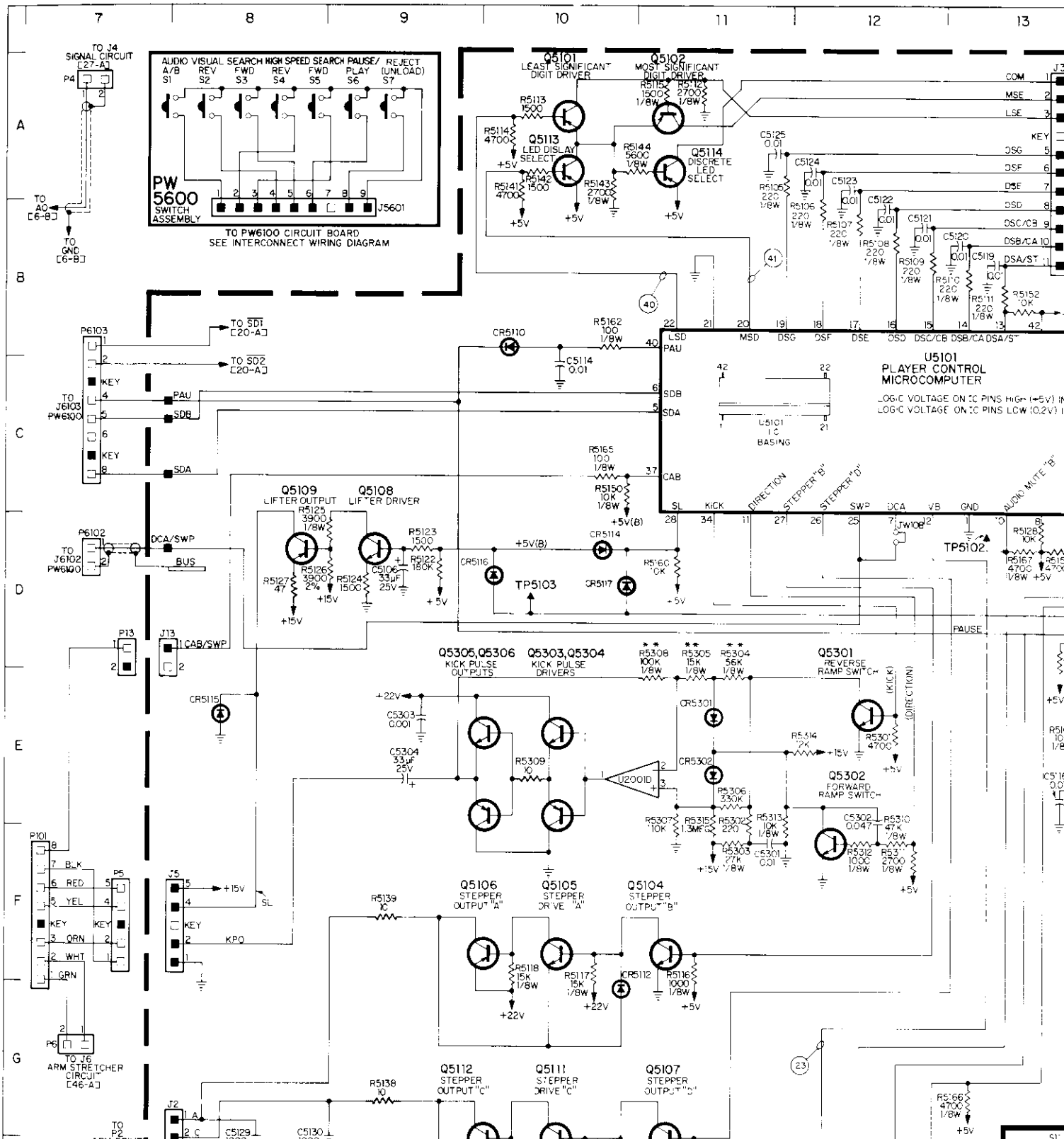



*Fig. 33—Pickup Arm Electronics*


AUDIO VISUAL SEARCH HIGH SPEED SEARCH PAUSE/ REJECT
A/B REV FWD REV FWD PLAY (UNLOAD)
S1 S2 S3 S4 S5 S6 S7
PW 5600 SWITCH ASSEMBLY
J5601
TO PW6100 CIRCUIT BOARD SEE INTERCONNECT WIRING DIAGRAM
Q5101 LEAST SIGNIFICANT DIGIT DRIVER
Q5102 MOST SIGNIFICANT DIGIT DRIVER
Q5113 LED DISLAY SELECT
Q5114 DISCRETE LED SELECT
U5101 PLAYER CONTROL MICROCOMPUTER
LOGIC VOLTAGE ON IC PINS HIGH (+5V)
LOGIC VOLTAGE ON IC PINS LOW (0.2V)
LSD MSD DSG DSF DSE DSD DSC/CB DSB/CA DSA/ST
PAU SDB SDA CAB SL KICK DIRECTION STEPPER "B" STEPPER "D" SWP DCA VB GND AUDIO MUTE "B"
Q5109 LIFTER OUTPUT
Q5108 LIFTER DRIVER
Q5305,Q5306 KICK PULSE OUTPUTS
Q5303,Q5304 KICK PULSE DRIVERS
Q5301 REVERSE RAMP SWITCH
Q5302 FORWARD RAMP SWITCH
Q5106 STEPPER OUTPUT "A"
Q5105 STEPPER DRIVE "A"
Q5104 STEPPER OUTPUT "B"
Q5112 STEPPER OUTPUT "C"
Q5111 STEPPER DRIVE "C"
Q5107 STEPPER OUTPUT "D"
TO J4 SIGNAL CIRCUIT [27-A]
TO AO [6-B]
TO GND [6-B]
TO SD1 [20-A]
TO SD2 [20-A]
TO J6103 PW6100
TO J6102 PW6100
TO J6 ARM STRETCHER CIRCUIT [46-A]
TO P2 ARM DRIVE MOTOR (B2 STEPPER) [6-H]
TO J6105-8 [38-h]
TO CR4205 [47-C]
TO U4200-6 [47-C]
TO R4147 [50-G]
AUDIO CIRCUIT
TO NC HNC [22-A]
TP5102
TP5103
PAUSE
+5V(B)
+22V
+15V
+10V

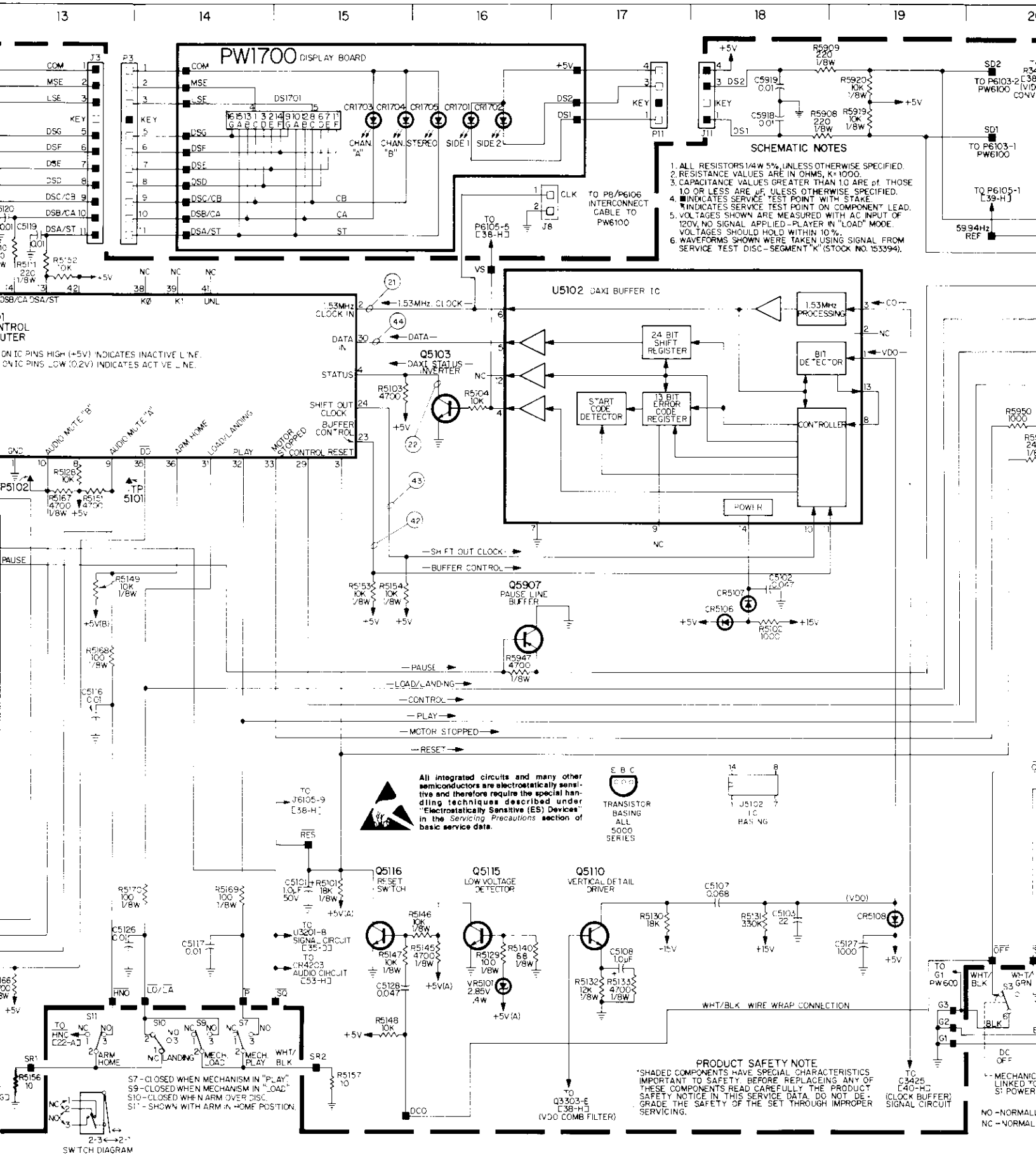
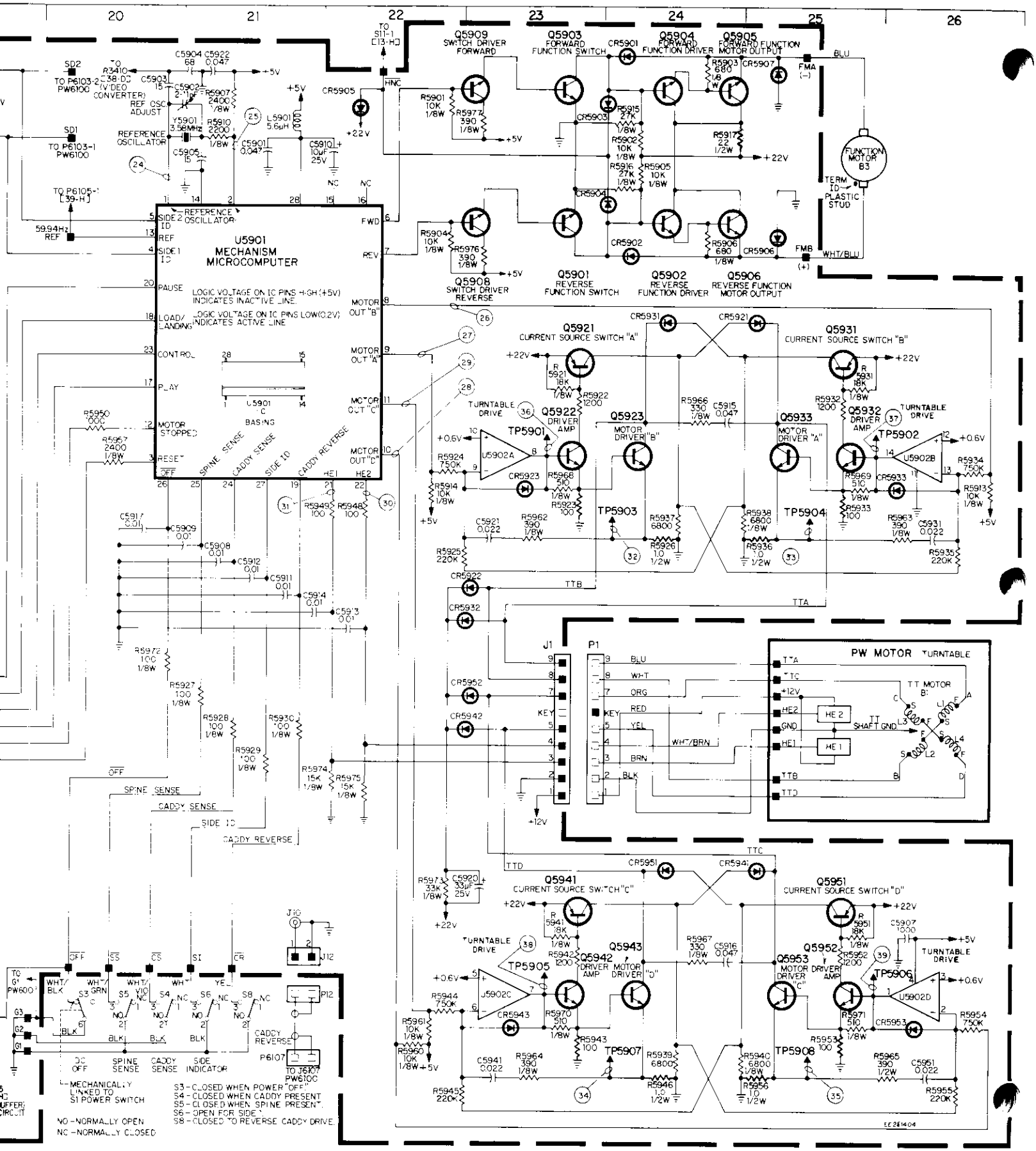
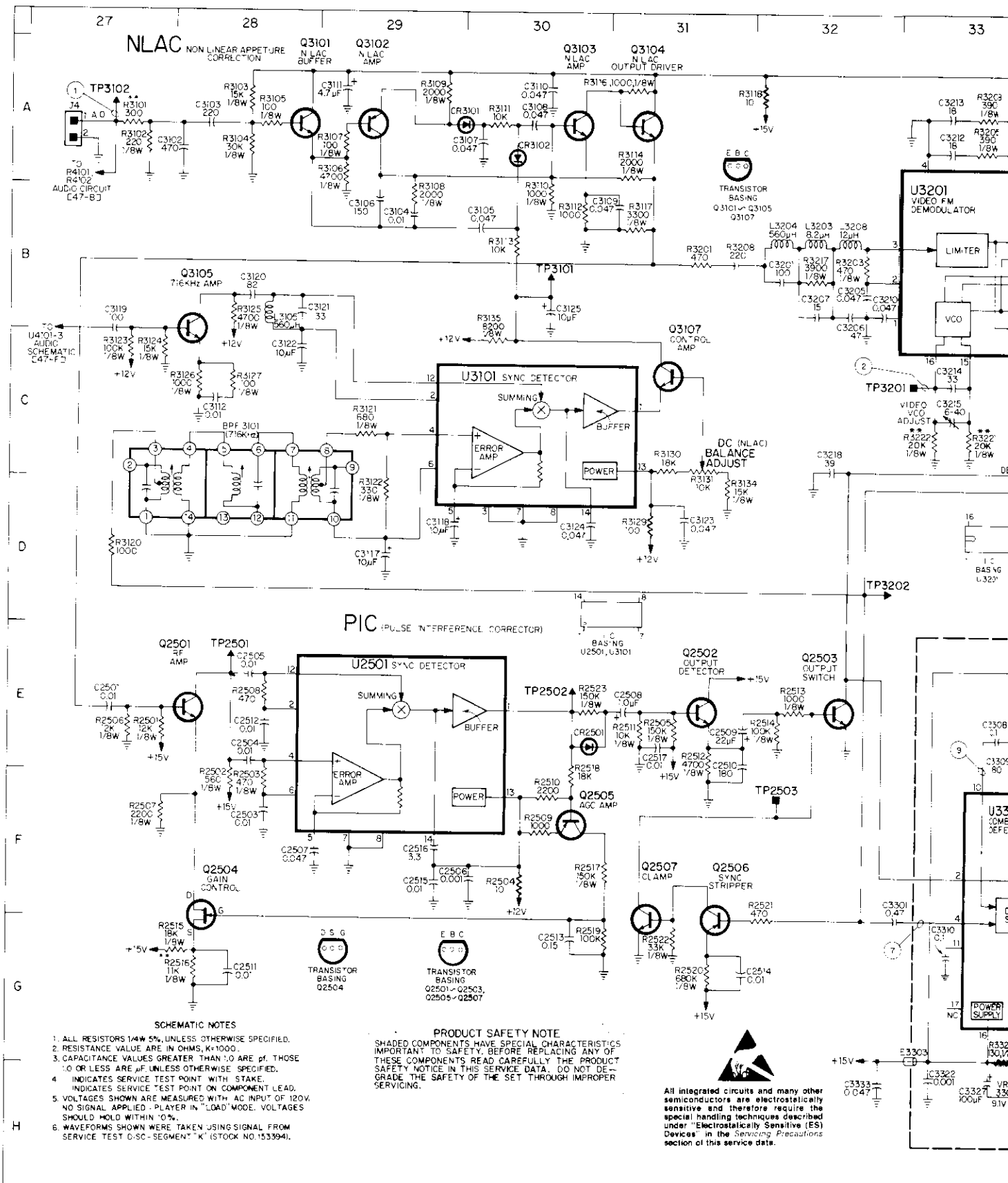



Fig. 34—Player/Mechanism Control Electronics


U5901
MECHANISM
MICROCOMPUTER
LOGIC VOLTAGE ON IC PINS HIGH (+5V) INDICATES INACTIVE LINE.
LOGIC VOLTAGE ON IC PINS LOW (0.2V) INDICATES ACTIVE LINE
REFERENCE OSCILLATOR
SIDE 2 ID
REF
SIDE 1 ID
PAUSE
LOAD/ LANDING
CONTROL
PLAY
MOTOR STOPPED
RESET
FWD
REV
MOTOR OUT "B"
MOTOR OUT "A"
MOTOR OUT "C"
MOTOR OUT "D"
BASING
SPINE SENSE
CADDY SENSE
SIDE ID
CADDY REVERSE
HE1
HE2
59.94Hz REF
Q5909 SWITCH DRIVER FORWARD
Q5903 FORWARD FUNCTION SWITCH
Q5904 FORWARD FUNCTION DRIVER
Q5905 FORWARD FUNCTION MOTOR OUTPUT
Q5908 SWITCH DRIVER REVERSE
Q5901 REVERSE FUNCTION SWITCH
Q5902 REVERSE FUNCTION DRIVER
Q5906 REVERSE FUNCTION MOTOR OUTPUT
FUNCTION MOTOR B3
TERM ID - PLASTIC STUD
FMA (-)
FMB (+)
BLU
WHT/BLU
Q5921 CURRENT SOURCE SWITCH "A"
Q5931 CURRENT SOURCE SWITCH "B"
Q5922 DRIVER AMP
Q5923 MOTOR DRIVER "B"
Q5933 MOTOR DRIVER "A"
Q5932 DRIVER AMP
TURNTABLE DRIVE
TP5901
TP5902
TP5903
TP5904
U5902A
U5902B
TTA
TTB
TTC
TTD
Q5941 CURRENT SOURCE SWITCH "C"
Q5951 CURRENT SOURCE SWITCH "D"
Q5942 DRIVER AMP
Q5943 MOTOR DRIVER "D"
Q5953 MOTOR DRIVER "C"
Q5952 DRIVER AMP
TP5905
TP5906
TP5907
TP5908
U5902C
U5902D
J1
P1
J10
J12
P12
P6107
TO J6107 PW6100
PW MOTOR TURNTABLE
TT MOTOR B1
TT SHAFT GND
BLU
WHT
ORG
RED
YEL
WHT/BRN
BRN
BLK
OFF
SPINE SENSE
CADDY SENSE
SIDE ID
CADDY REVERSE
S3 - CLOSED WHEN POWER "OFF"
S4 - CLOSED WHEN CADDY PRESENT
S5 - CLOSED WHEN SPINE PRESENT
S6 - OPEN FOR SIDE 1
S8 - CLOSED TO REVERSE CADDY DRIVE
MECHANICALLY LINKED TO S1 POWER SWITCH
NO - NORMALLY OPEN
NC - NORMALLY CLOSED
EE 2514-04




SCHEMATIC NOTES

1. ALL RESISTORS 1/4W 5%, UNLESS OTHERWISE SPECIFIED.
2. RESISTANCE VALUE ARE IN OHMS, K=1000.
3. CAPACITANCE VALUES GREATER THAN 1.0 ARE pf. THOSE 1.0 OR LESS ARE μF UNLESS OTHERWISE SPECIFIED.
4. ▲ INDICATES SERVICE TEST POINT WITH STAKE. ● INDICATES SERVICE TEST POINT ON COMPONENT LEAD.
5. VOLTAGES SHOWN ARE MEASURED WITH AC INPUT OF 120V, NO SIGNAL APPLIED. PLAYER IN "LOAD" MODE. VOLTAGES SHOULD HOLD WITHIN 10%.
6. WAVEFORMS SHOWN WERE TAKEN USING SIGNAL FROM SERVICE TEST DISC - SEGMENT "K" (STOCK NO. 153394).

PRODUCT SAFETY NOTE

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

**All integrated circuits and many other semiconductors are electrostatically sensitive and therefore require the special handling techniques described under "Electrostatically Sensitive (ES) Devices" in the *Servicing Precautions* section of this service data.**

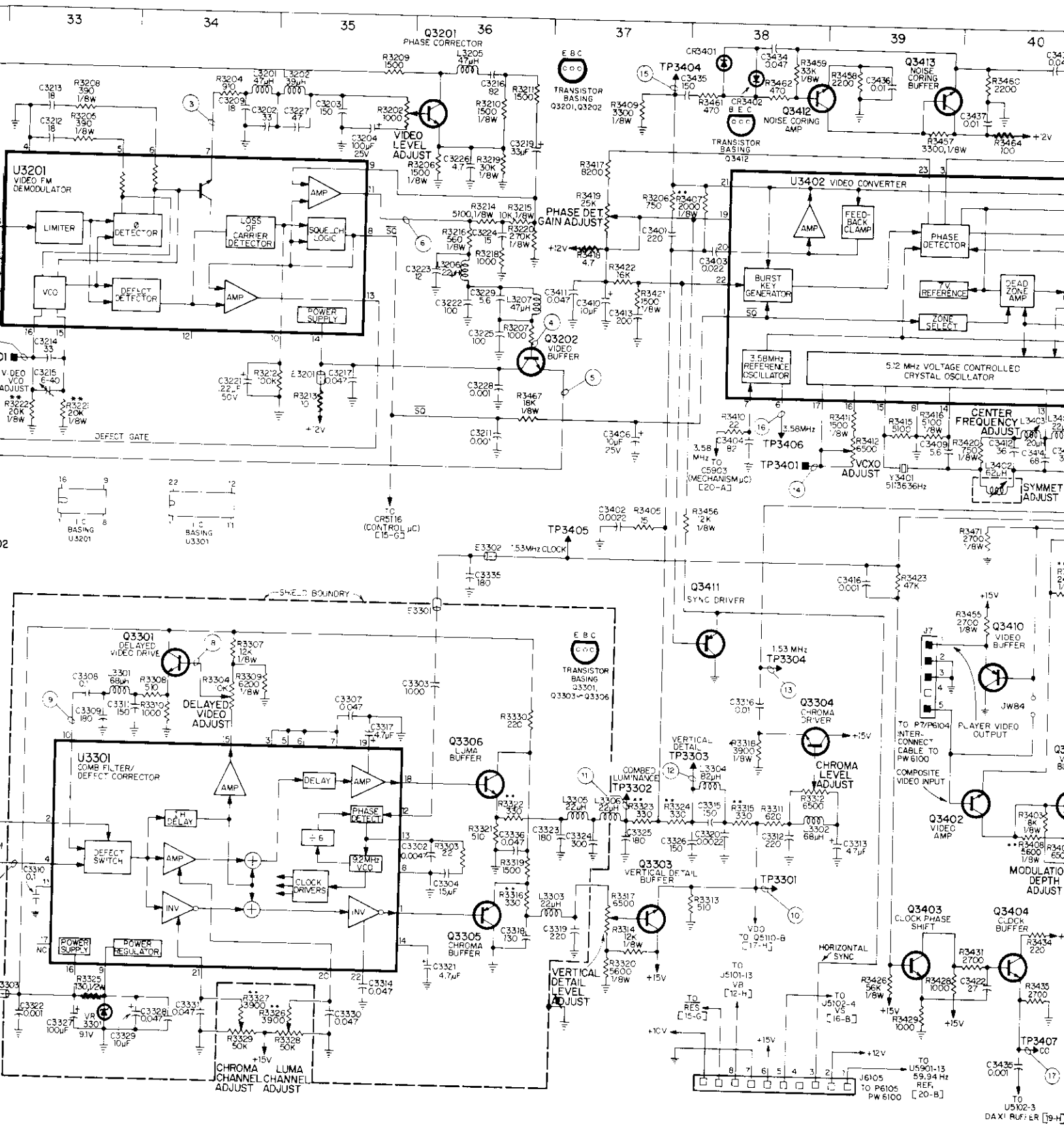
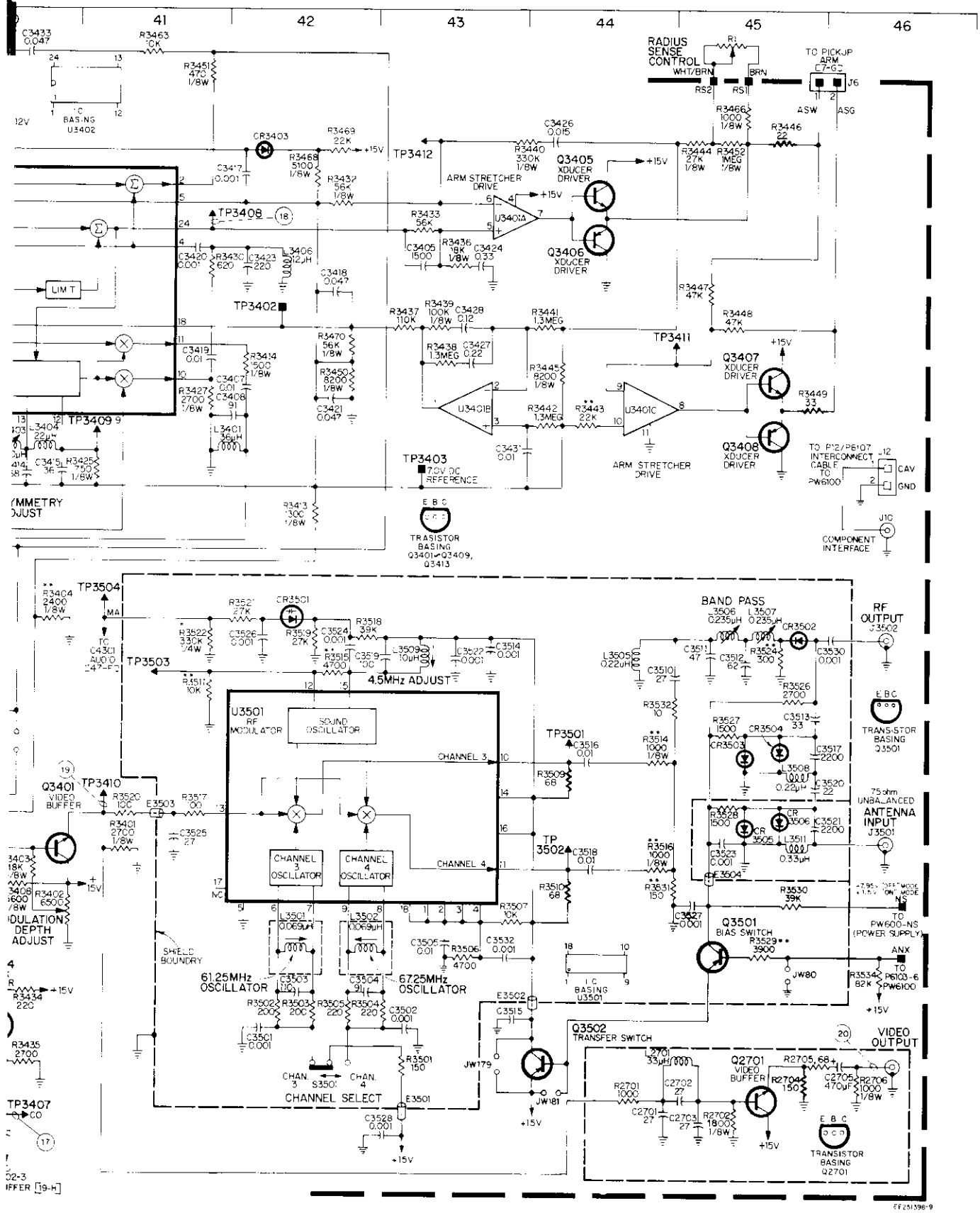



*Fig. 35—Signal Processing Electronics*


41
42
43
44
45
46
RADIUS SENSE CONTROL
TO PICKUP ARM C7-G2
Q3405 XDUCER DRIVER
Q3406 XDUCER DRIVER
Q3407 XDUCER DRIVER
Q3408 XDUCER DRIVER
ARM STRETCHER DRIVE
TP3402
TP3403 7.0V DC REFERENCE
TP3408
TP3409
TP3411
TP3412
LIMIT
TRANSISTOR BASING Q3401-Q3409, Q3413
TO P12/P6107 INTERCONNECT CABLE TO PW6100
COMPONENT INTERFACE
TP3504
TP3503
4.5MHz ADJUST
U3501 RF MODULATOR
SOUND OSCILLATOR
CHANNEL 3
CHANNEL 4
CHANNEL 3 OSCILLATOR
CHANNEL 4 OSCILLATOR
61.25MHz OSCILLATOR
67.25MHz OSCILLATOR
CHANNEL SELECT
SHIELD BOUNDRY
Q3401 VIDEO BUFFER
MODULATION DEPTH ADJUST
TP3410
TP3501
TP3502
BAND PASS
RF OUTPUT J3502
TRANSISTOR BASING Q3501
75 ohm UNBALANCED ANTENNA INPUT J3501
Q3501 BIAS SWITCH
TO PW600-NS (POWER SUPPLY)
Q3502 TRANSFER SWITCH
Q2701 VIDEO BUFFER
VIDEO OUTPUT
TRANSISTOR BASING Q2701
TP3407
IC BASING U3402
IC BASING U3501
EF251396-9

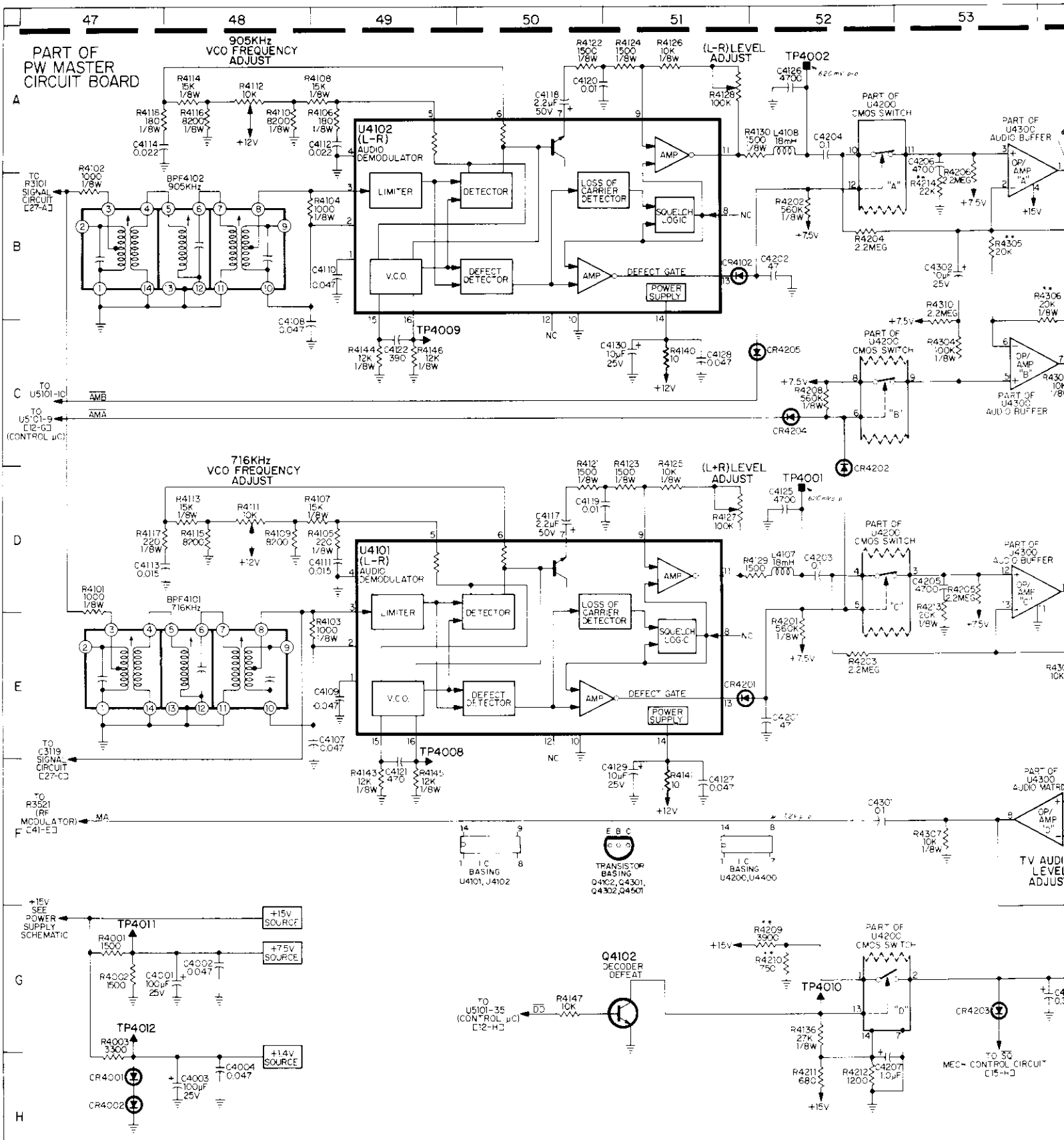
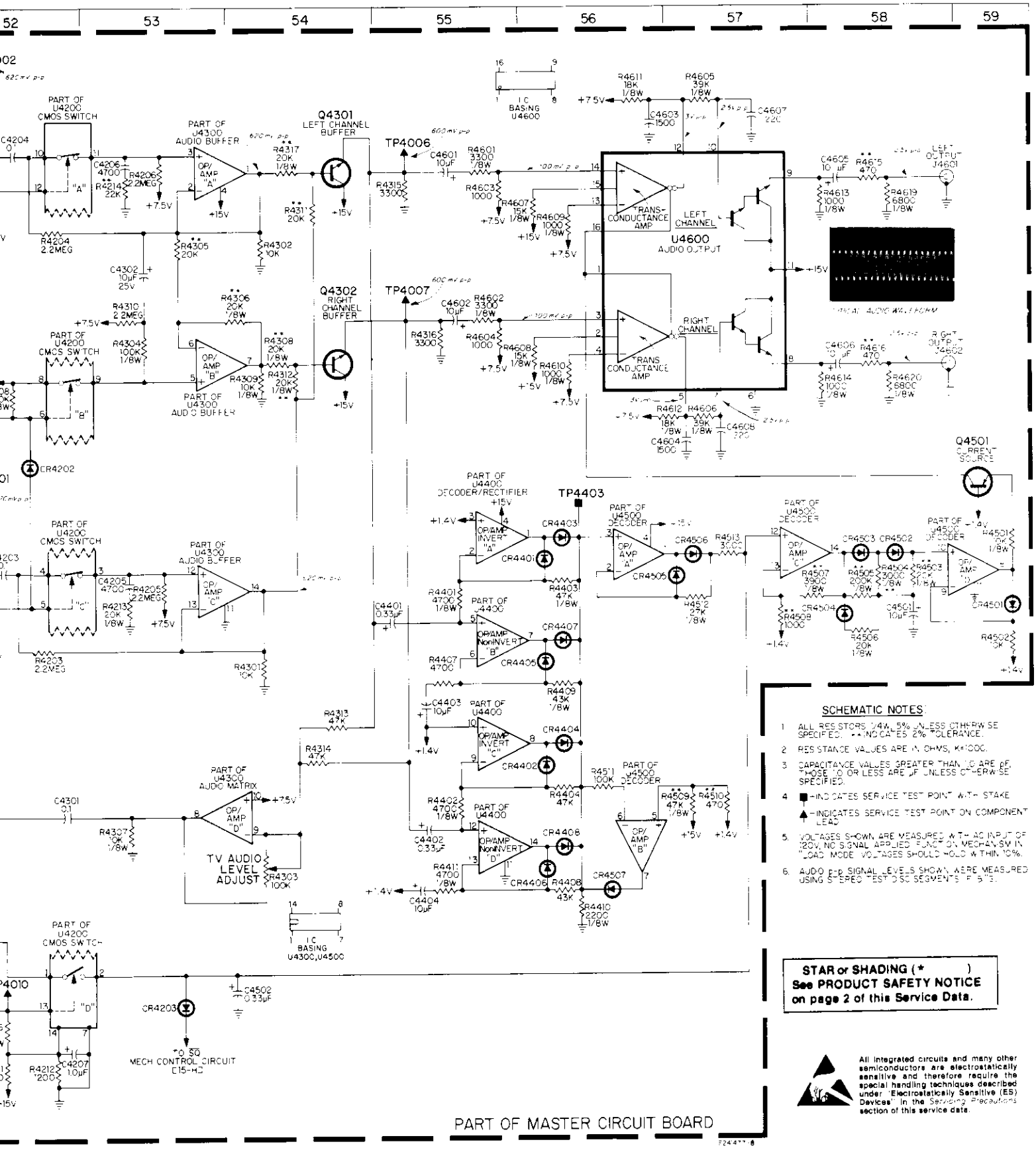



*Fig. 36—Stereo Audio Electronics*




SCHEMATIC NOTES

1. ALL RESISTORS 1/4W, 5% UNLESS OTHERWISE SPECIFIED. ▪ INDICATES 2% TOLERANCE.
2. RESISTANCE VALUES ARE IN OHMS, K=1000.
3. CAPACITANCE VALUES GREATER THAN 1.0 ARE IN pF. THOSE 1.0 OR LESS ARE IN µF UNLESS OTHERWISE SPECIFIED.
4. ■ INDICATES SERVICE TEST POINT WITH STAKE
   ▲ INDICATES SERVICE TEST POINT ON COMPONENT LEAD
5. VOLTAGES SHOWN ARE MEASURED WITH NO INPUT OF 120V, NO SIGNAL APPLIED, FUNCTION MECHANISM IN "LOAD" MODE. VOLTAGES SHOULD HOLD WITHIN 10%.
6. AUDIO PEAK SIGNAL LEVELS SHOWN ARE MEASURED USING STEREO TEST DISC SEGMENTS E & B.

**STAR or SHADING (* ) See PRODUCT SAFETY NOTICE on page 2 of this Service Data.**

All integrated circuits and many other semiconductors are electrostatically sensitive and therefore require the special handling techniques described under "Electrostatically Sensitive (ES) Devices" in the Servicing Precautions section of this service data.

PART OF MASTER CIRCUIT BOARD

F24477-B

*Fig. 36—Stereo Audio Electronics*

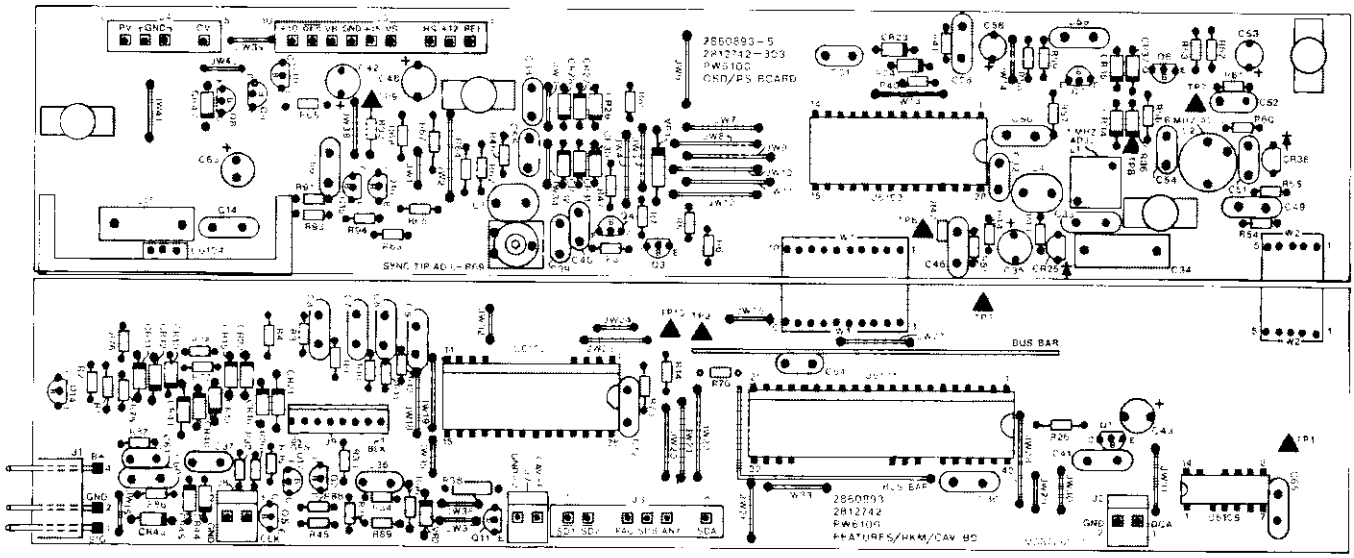


*Fig. 37—PW6100 Circuit Board Assembly*

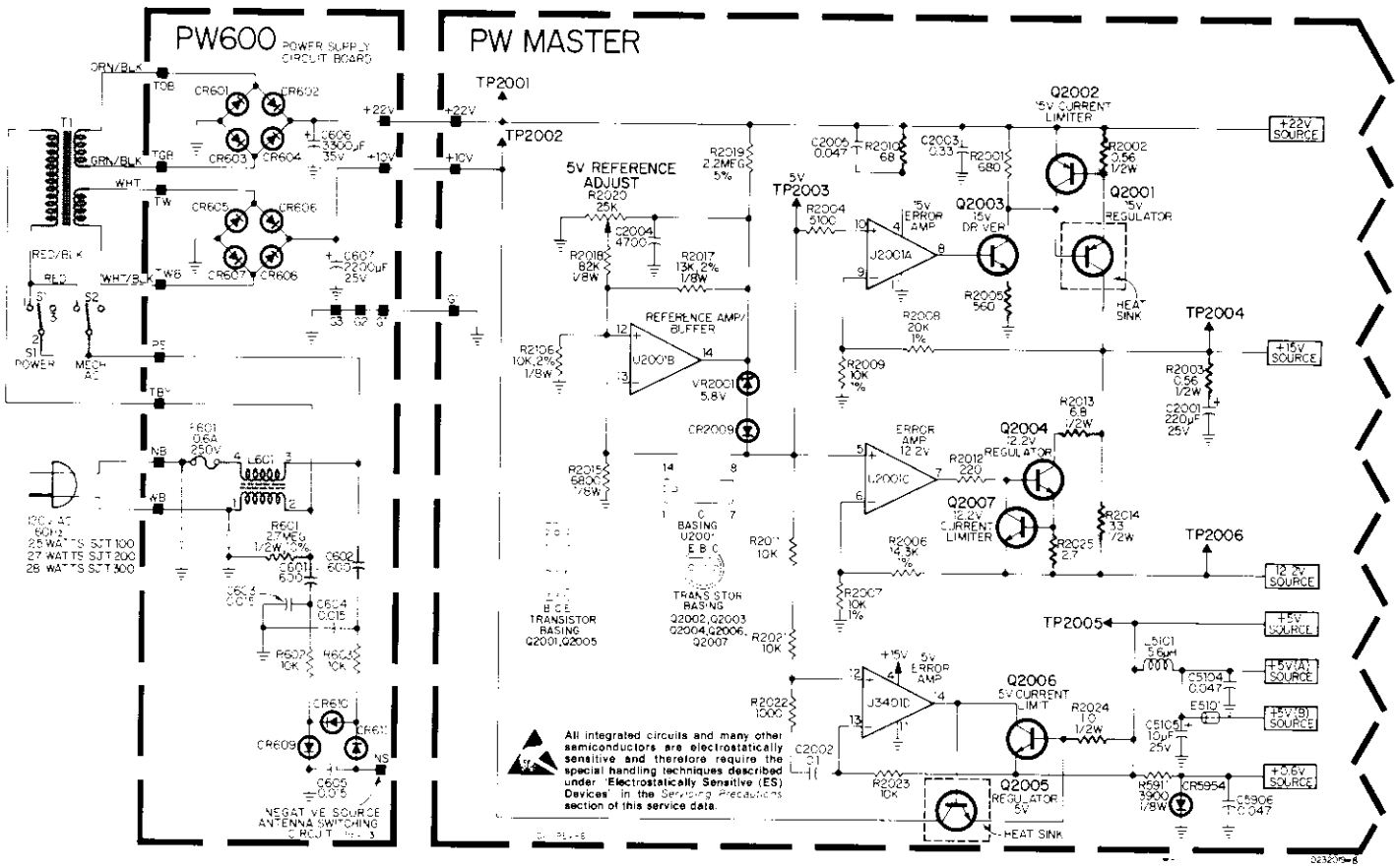



*Fig. 38—Power Supply Electronics*

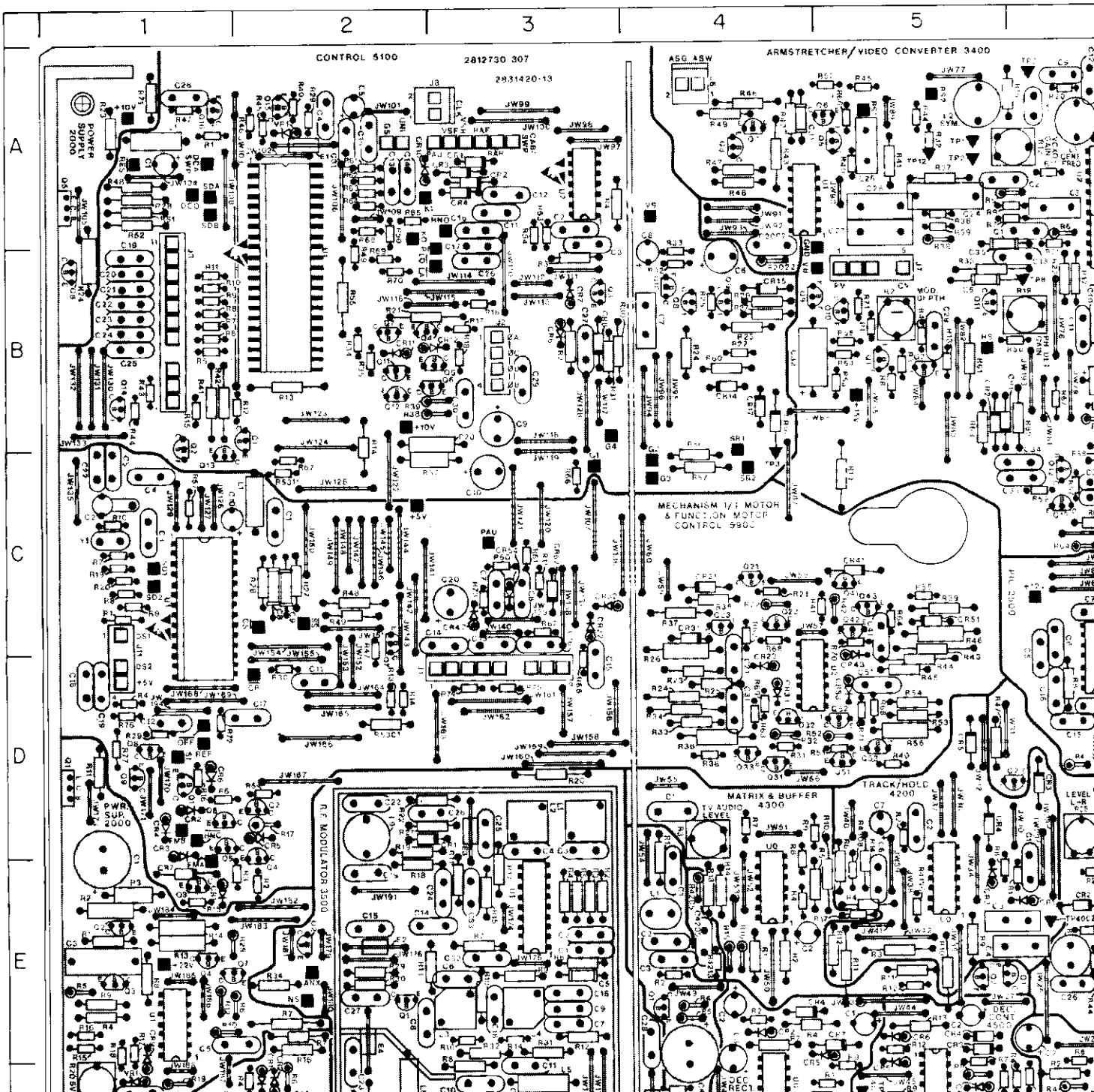
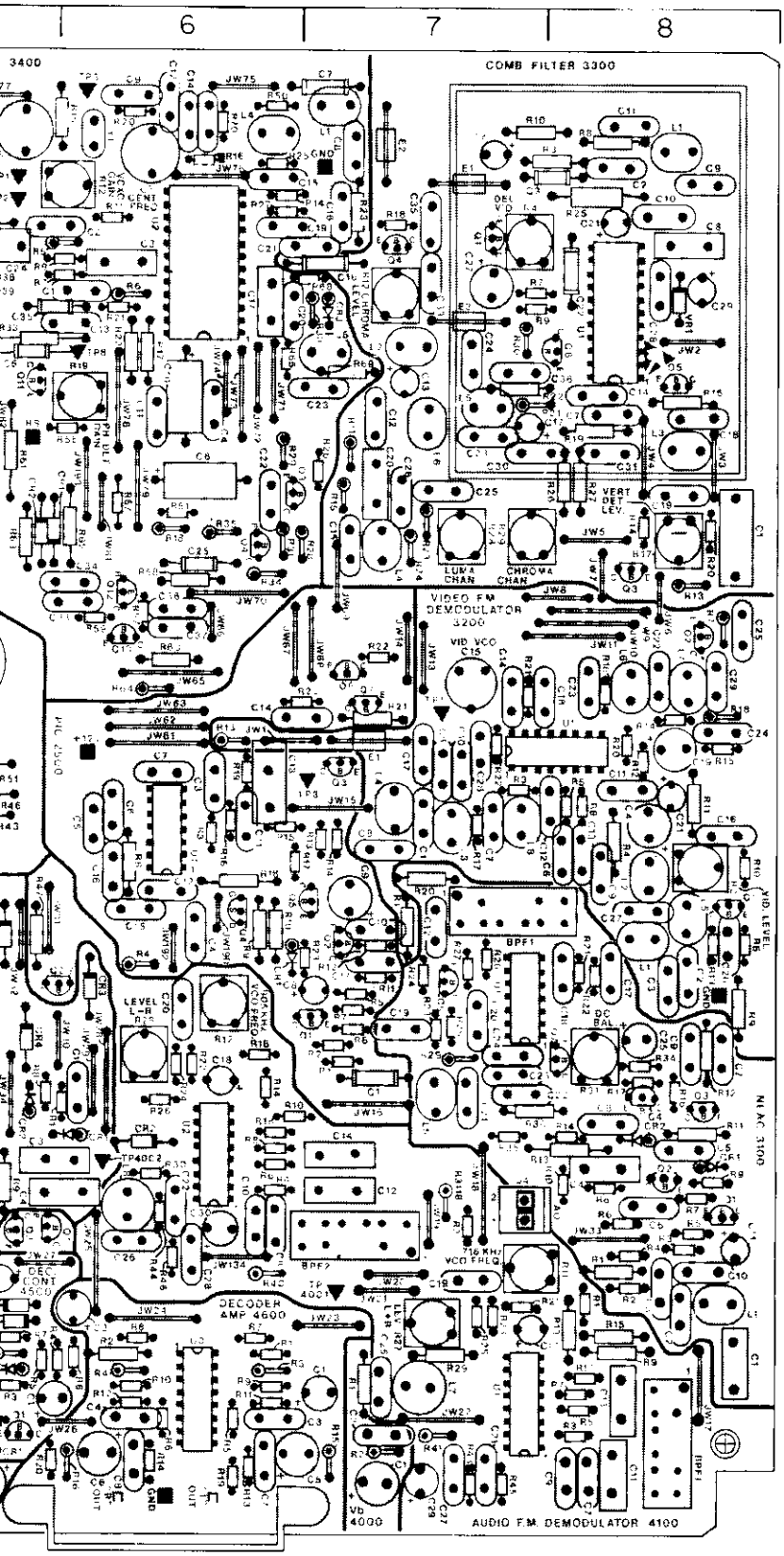



*Fig. 39—PW Master Circuit Board Assembly*




nbly

## Component Location Guide

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8PF3101 | 7D | C3309 | 8A | C3522 | 2D | C5301 | 2F | CR5906 | 1D |
| 8PF4101 | 8F | C3310 | 8A | C3523 | 2F | C5302 | 2F | CR5907 | 1E |
| 8PF4102 | 7E | C3311 | 8A | C3524 | 3E | C5303 | 1F | CR5921 | 4C |
| C2001 | 1D | C3312 | 7B | C3525 | 3D | C5304 | 1F | CR5922 | 3C |
| C2002 | 4A | C3313 | 7B | C3526 | 3E | C5306 | 1F | CR5923 | 4D |
| C2003 | 1E | C3314 | 8B | C3527 | 2E | C5901 | 2C | CR5931 | 4C |
| C2004 | 1F | C3315 | 7B | C3528 | 4E | C5902 | 1C | CR5932 | 3C |
| C2005 | 1C | C3316 | 7A | C3530 | 3F | C5903 | 1C | CR5933 | 4D |
| C2501 | 7D | C3317 | 7B | C3532 | 3E | C5904 | 1C | CR5941 | 5C |
| C2503 | 6C | C3318 | 8B | C3533 | 3E | C5905 | 1C | CR5942 | 3C |
| C2504 | 6D | C3319 | 8B | C4001 | 7F | C5906 | 3C | CR5943 | 5D |
| C2505 | 6D | C3320 | 7B | C4002 | 7F | C5907 | 3C | CR5951 | 5C |
| C2506 | 6C | C3321 | 8A | C4003 | 5F | C5908 | 2D | CR5952 | 3C |
| C2507 | 6C | C3322 | 8A | C4004 | 5F | C5909 | 2D | CR5953 | 5D |
| C2508 | 7D | C3323 | 7B | C4107 | 8F | C5910 | 1C | CR5954 | 3C |
| C2509 | 7D | C3324 | 7B | C4108 | 6E | C5911 | 2D | E3201 | 7C |
| C2510 | 7D | C3325 | 7B | C4109 | 8F | C5912 | 1D | E3301 | 7A |
| C2511 | 6D | C3326 | 7B | C4110 | 6E | C5913 | 3C | E3302 | 7A |
| C2512 | 6D | C3327 | 7A | C4111 | 8F | C5914 | 3C | E3303 | 7B |
| C2513 | 6C | C3328 | 8A | C4112 | 7E | C5915 | 3D | E3501 | 4F |
| C2514 | 6C | C3329 | 8A | C4113 | 8F | C5916 | 3C | E3502 | 2E |
| C2515 | 6D | C3330 | 7B | C4114 | 7E | C5917 | 2D | E3503 | 3D |
| C2516 | 6D | C3331 | 8B | C4117 | 7F | C5918 | 1D | E3504 | 2E |
| C2517 | 7D | C3333 | 7A | C4118 | 6E | C5919 | 1D | J1 | 3D |
| C2701 | 4E | C3335 | 7A | C4119 | 7E | C5920 | 3C | J2 | 3B |
| C2702 | 4E | C3336 | 7B | C4120 | 6D | C5921 | 4D | J3 | 1B |
| C2703 | 4E | C3401 | 6A | C4121 | 7F | C5922 | 1C | J4 | 7E |
| C2705 | 4F | C3402 | 6A | C4122 | 6E | C5931 | 4D | J5 | 1F |
| C3101 | 8F | C3403 | 6A | C4125 | 7F | C5941 | 4D | J6 | 4A |
| C3102 | 8E | C3404 | 6B | C4126 | 6E | C5951 | 4D | J7 | 5B |
| C3103 | 8E | C3405 | 5B | C4127 | 7F | CR2009 | 1E | J8 | 3A |
| C3104 | 8E | C3406 | 6B | C4128 | 6E | CR2501 | 6D | J9 | 1A |
| C3105 | 8E | C3407 | 7A | C4129 | 7F | CR3101 | 8E | J11 | 1C |
| C3106 | 8E | C3408 | 7A | C4130 | 6E | CR3102 | 8E | J12 | 5F |
| C3107 | 8D | C3409 | 6A | C4201 | 6E | CR3401 | 5B | E5101 | 2A |
| C3108 | 8E | C3410 | 6B | C4202 | 5D | CR3402 | 5B | L2701 | 4E |
| C3109 | 8D | C3411 | 6B | C4203 | 5E | CR3403 | 7B | L3101 | 8F |
| C3110 | 8E | C3412 | 6A | C4204 | 5E | CR3501 | 2D | L3105 | 7E |
| C3111 | 8E | C3413 | 6B | C4205 | 4E | CR3502 | 3F | L3201 | 8D |
| C3112 | 7D | C3414 | 6A | C4206 | 5E | CR3503 | 3F | L3202 | 8D |
| C3117 | 8D | C3415 | 6A | C4207 | 5D | CR3504 | 3F | L3203 | 7D |
| C3118 | 8D | C3416 | 7A | C4301 | 4D | CR3505 | 2F | L3204 | 7C |
| C3119 | 7D | C3417 | 6B | C4302 | 4E | CR3506 | 2F | L3205 | 8D |
| C3120 | 7D | C3418 | 6A | C4401 | 5E | CR4001 | 5F | L3206 | 8C |
| C3121 | 7E | C3419 | 6A | C4402 | 4E | CR4002 | 5F | L3207 | 8C |
| C3122 | 7E | C3420 | 6B | C4403 | 4E | CR4102 | 6E | L3208 | 7D |
| C3123 | 7D | C3421 | 6A | C4404 | 4F | CR4201 | 6E | L3301 | 8A |
| C3124 | 7D | C3422 | 6B | C4501 | 5F | CR4202 | 5E | L3302 | 7B |
| C3125 | 8D | C3423 | 7B | C4502 | 5E | CR4203 | 6D | L3303 | 8B |
| C3201 | 7C | C3424 | 5A | C4601 | 7F | CR4204 | 5D | L3304 | 7B |
| C3202 | 8D | C3425 | 6B | C4602 | 6E | CR4205 | 5D | L3305 | 7B |
| C3203 | 8D | C3426 | 5A | C4603 | 6F | CR4401 | 5F | L3306 | 7B |
| C3204 | 8C | C3427 | 5A | C4604 | 6F | CR4402 | 4E | L3401 | 7A |
| C3205 | 7C | C3428 | 5A | C4605 | 6F | CR4403 | 5F | L3402 | 5A |
| C3206 | 8D | C3429 | 5B | C4606 | 6F | CR4404 | 4E | L3403 | 6A |
| C3207 | 7D | C3431 | 4A | C4607 | 6F | CR4405 | 5E | L3404 | 6A |
| C3208 | 7D | C3432 | 4B | C4608 | 6F | CR4406 | 4F | L3405 | 7B |
| C3209 | 8D | C3433 | 6C | C5101 | 1A | CR4407 | 5E | L3501 | 3D |
| C3210 | 7C | C3434 | 6C | C5102 | 3A | CR4408 | 4F | L3502 | 3D |
| C3211 | 8C | C3435 | 5B | C5103 | 3B | CR4501 | 5F | L3503 | 3E |
| C3212 | 8C | C3436 | 6C | C5104 | 2A | CR4502 | 5F | L3504 | 3E |
| C3213 | 8D | C3437 | 6C | C5105 | 2A | CR4503 | 5E | L3505 | 3F |
| C3214 | 7C | C3501 | 3E | C5106 | 4B | CR4504 | 5E | L3506 | 3F |
| C3215 | 7C | C3502 | 3E | C5107 | 4B | CR4505 | 5F | L3507 | 3F |
| C3216 | 8D | C3503 | 3D | C5108 | 4B | CR4506 | 5E | L3508 | 2F |
| C3217 | 7C | C3504 | 3D | C5109 | 3B | CR4507 | 5F | L3509 | 2D |
| C3218 | 8C | C3505 | 3E | C5110 | 3C | CR5106 | 3B | L3511 | 2F |
| C3219 | 8C | C3506 | 3E | C5111 | 3A | CR5107 | 3B | L4107 | 7F |
| C3221 | 8C | C3507 | 3E | C5114 | 2A | CR5108 | 3B | L4108 | 6E |
| C3222 | 8C | C3508 | 2E | C5116 | 3A | CR5110 | 2A | L5101 | 1A |
| C3223 | 8C | C3509 | 3E | C5117 | 3A | CR5111 | 2B | L5901 | 2C |
| C3224 | 8C | C3510 | 3F | C5119 | 1B | CR5112 | 3B | Q2001 | 1D |
| C3225 | 8C | C3511 | 3F | C5120 | 1B | CR5114 | 4B | Q2002 | 1E |
| C3226 | 8D | C3512 | 3F | C5121 | 1B | CR5115 | 4B | Q2003 | 1E |
| C3227 | 8D | C3513 | 2F | C5122 | 1B | CR5116 | 4B | Q2004 | 1E |
| C3228 | 7C | C3514 | 2E | C5123 | 1B | CR5117 | 4B | Q2005 | 1A |
| C3229 | 8C | C3515 | 2E | C5124 | 1B | CR5301 | 2F | Q2006 | 1B |
| C3301 | 8B | C3516 | 3E | C5125 | 1B | CR5302 | 2F | Q2007 | 1E |
| C3302 | 8A | C3517 | 2F | C5126 | 3B | CR5901 | 1E | Q2501 | 7D |
| C3303 | 7A | C3518 | 3E | C5127 | 3B | CR5902 | 1D | Q2502 | 7D |
| C3304 | 7A | C3519 | 2E | C5128 | 1A | CR5903 | 1D | Q2503 | 7C |
| C3307 | 8B | C3520 | 2F | C5129 | 3B | CR5904 | 1D | Q2504 | 6D |
| C3308 | 8A | C3521 | 2F | C5130 | 3B | CR5905 | 2D | Q2505 | 7D |

**STAKES**



**TEST POINTS**

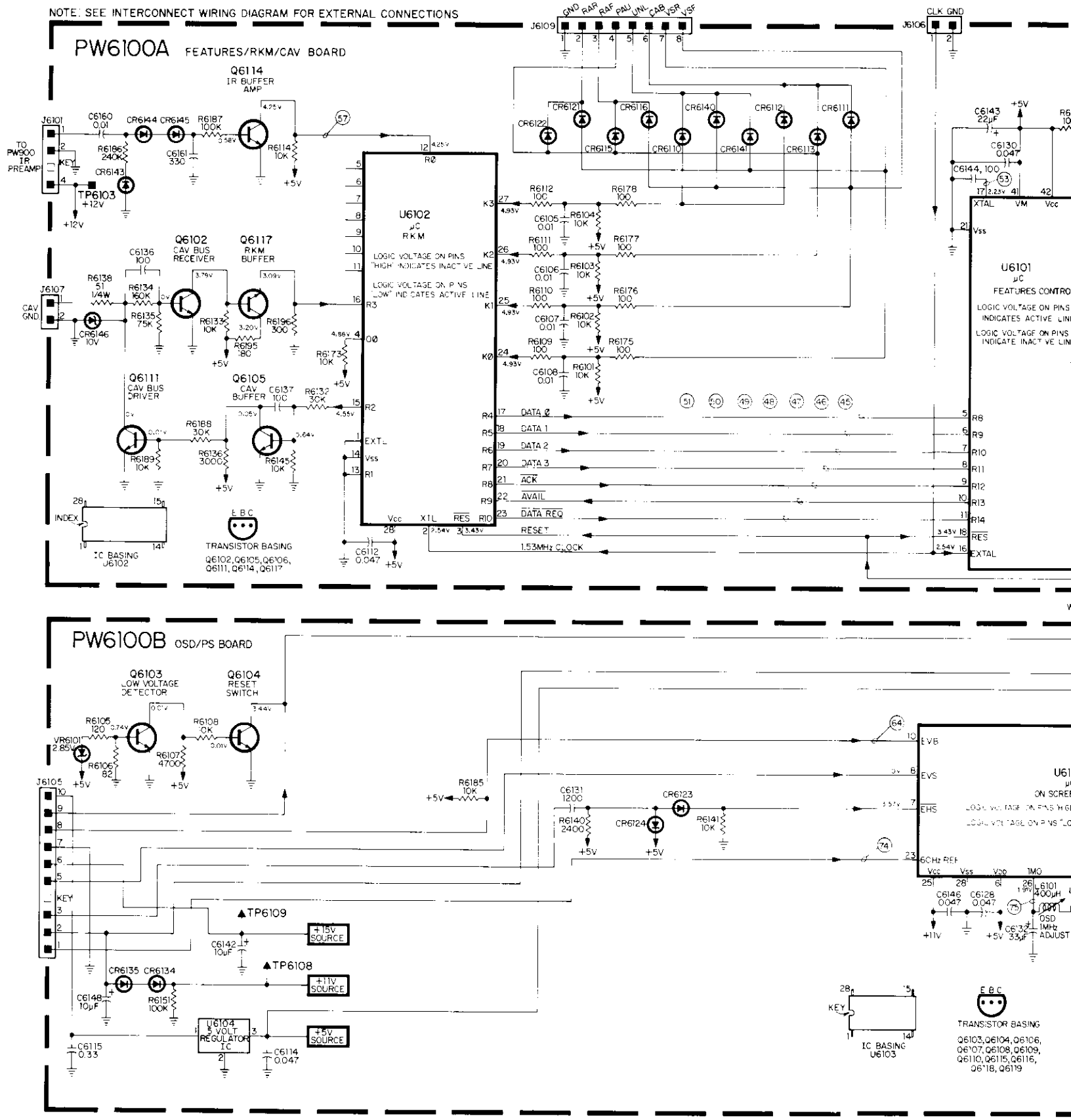
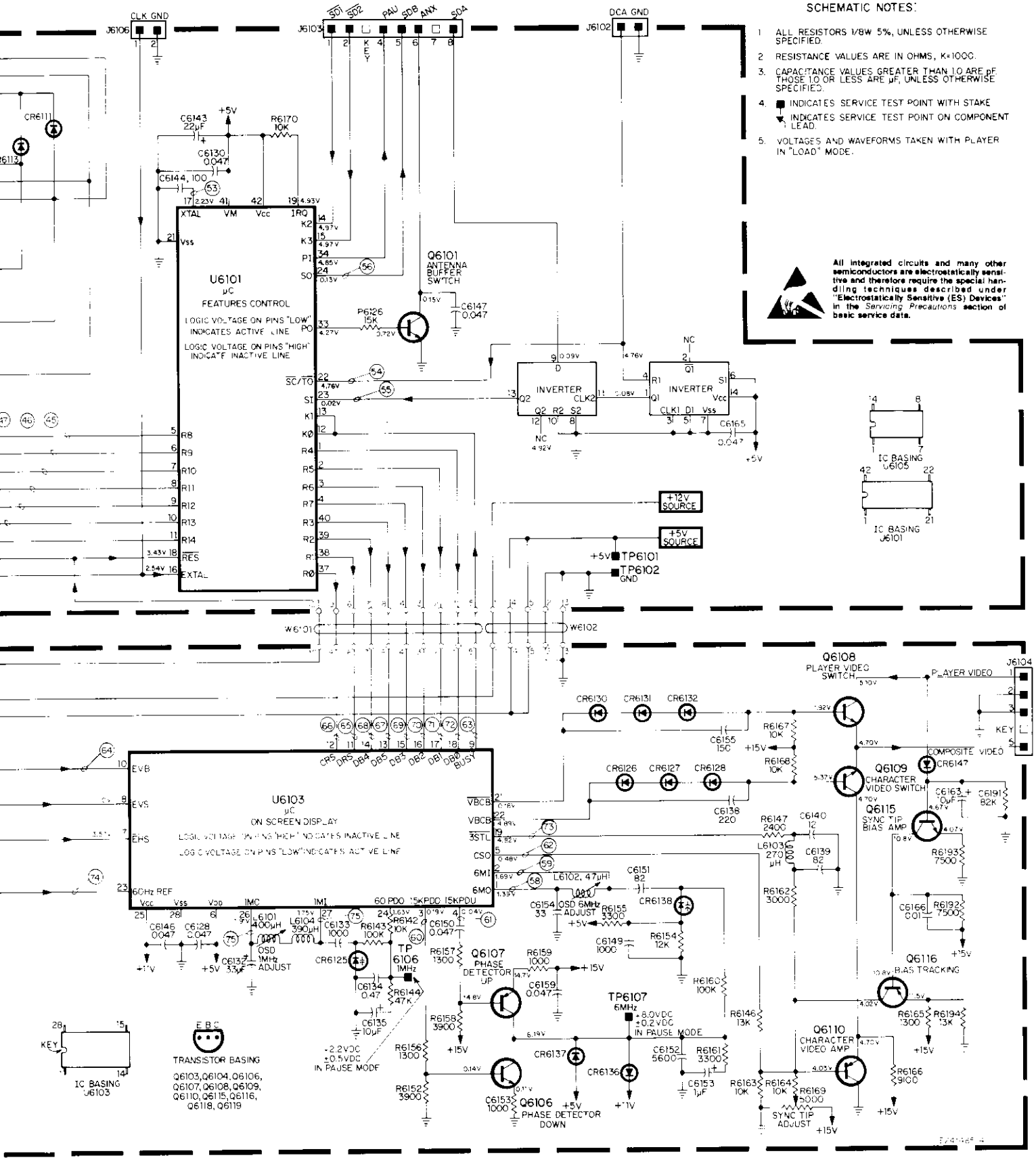
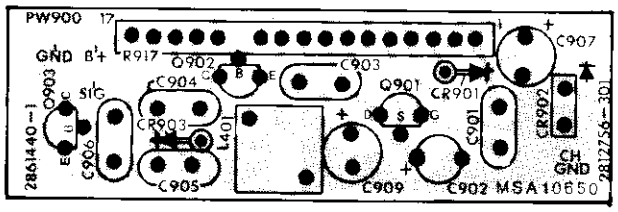



*Fig. 40—PW6100 RKM/Features/OSD Schem*


SCHEMATIC NOTES:
1. ALL RESISTORS 1/8W 5%, UNLESS OTHERWISE SPECIFIED.
2. RESISTANCE VALUES ARE IN OHMS, K=1000.
3. CAPACITANCE VALUES GREATER THAN 1.0 ARE pF. THOSE 1.0 OR LESS ARE µF, UNLESS OTHERWISE SPECIFIED.
4. ■ INDICATES SERVICE TEST POINT WITH STAKE
▼ INDICATES SERVICE TEST POINT ON COMPONENT LEAD.
5. VOLTAGES AND WAVEFORMS TAKEN WITH PLAYER IN "LOAD" MODE.
All integrated circuits and many other semiconductors are electrostatically sensitive and therefore require the special handling techniques described under "Electrostatically Sensitive (ES) Devices" in the Servicing Precautions section of basic service data.
U6101 µC FEATURES CONTROL
LOGIC VOLTAGE ON PINS "LOW" INDICATES ACTIVE LINE
LOGIC VOLTAGE ON PINS "HIGH" INDICATE INACTIVE LINE
U6103 µC ON SCREEN DISPLAY
LOGIC VOLTAGE ON PINS "HIGH" INDICATES INACTIVE LINE
LOGIC VOLTAGE ON PINS "LOW" INDICATES ACTIVE LINE
Q6101 ANTENNA BUFFER SWITCH
Q6106 PHASE DETECTOR DOWN
Q6107 PHASE DETECTOR UP
Q6108 PLAYER VIDEO SWITCH
Q6109 CHARACTER VIDEO SWITCH
Q6110 CHARACTER VIDEO AMP
Q6115 SYNC TIP BIAS AMP
Q6116 BIAS TRACKING
TRANSISTOR BASING
Q6103,Q6104,Q6106, Q6107,Q6108,Q6109, Q6110,Q6115,Q6116, Q6118,Q6119
IC BASING U6103
IC BASING U6105
IC BASING U6101
+12V SOURCE
+5V SOURCE
TP6101
TP6102 GND
TP6107 6MHz
W6101
W6102
J6103
J6104
J6106
J6102
CLK GND
DCA GND
PLAYER VIDEO
COMPOSITE VIDEO
OSD 6MHz ADJUST
SYNC TIP ADJUST
INVERTER
OSD 1MHz ADJUST




NOTE: Add 900 Series Prefix to Item Numbers

*Fig. 41—PW 900 Circuit Board Assembly (SJT 300)*

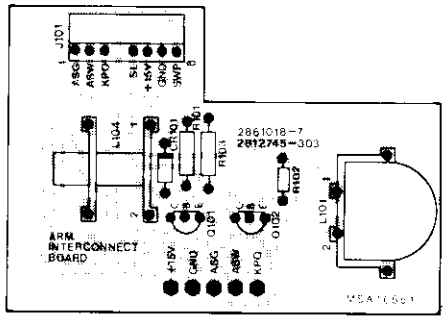
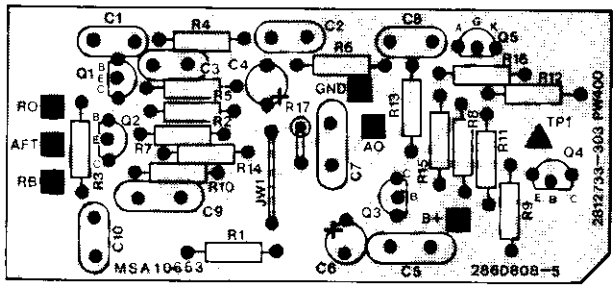
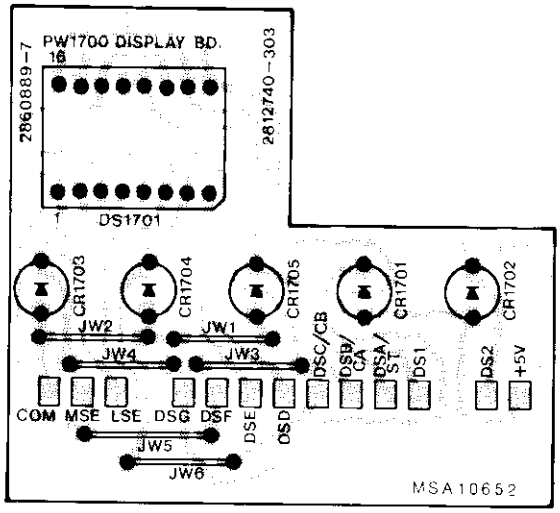



*Fig. 42—PW Arm Interconnect Circuit Board Assembly*



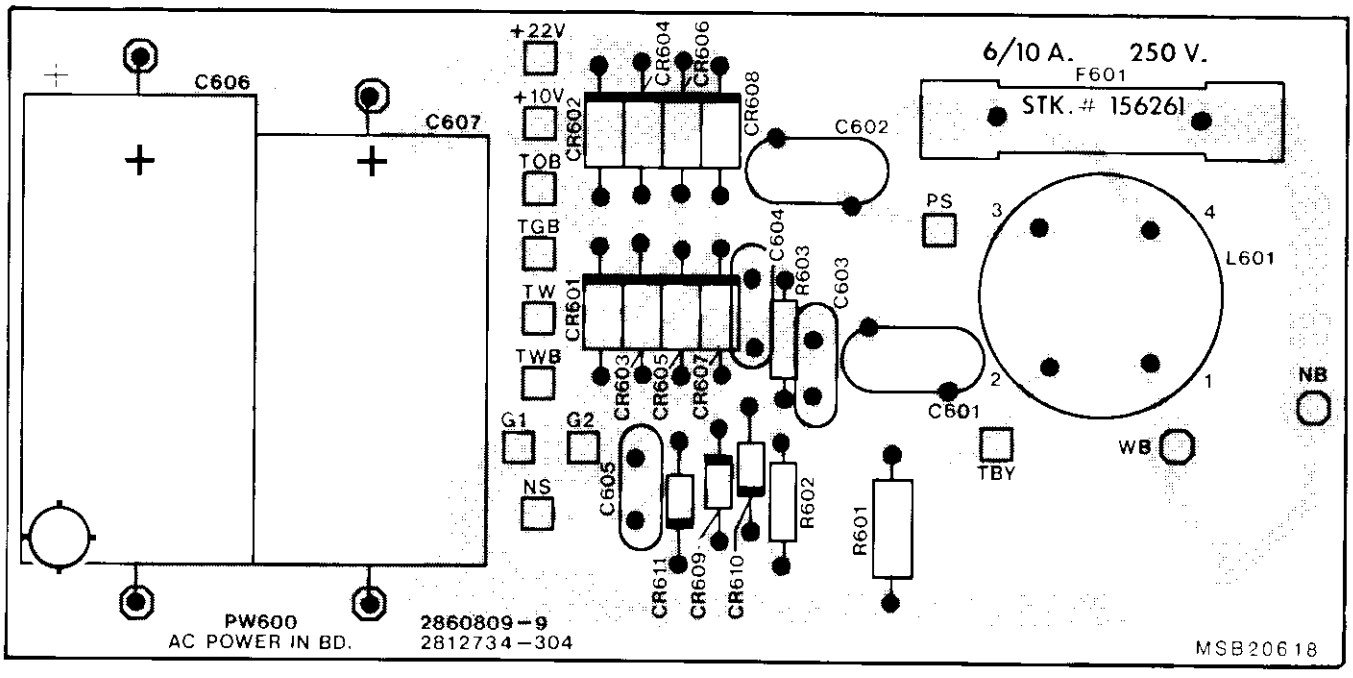

NOTE: Add 400 Series Prefix to Item Numbers

*Fig. 43—PW 400 Circuit Board Assembly*



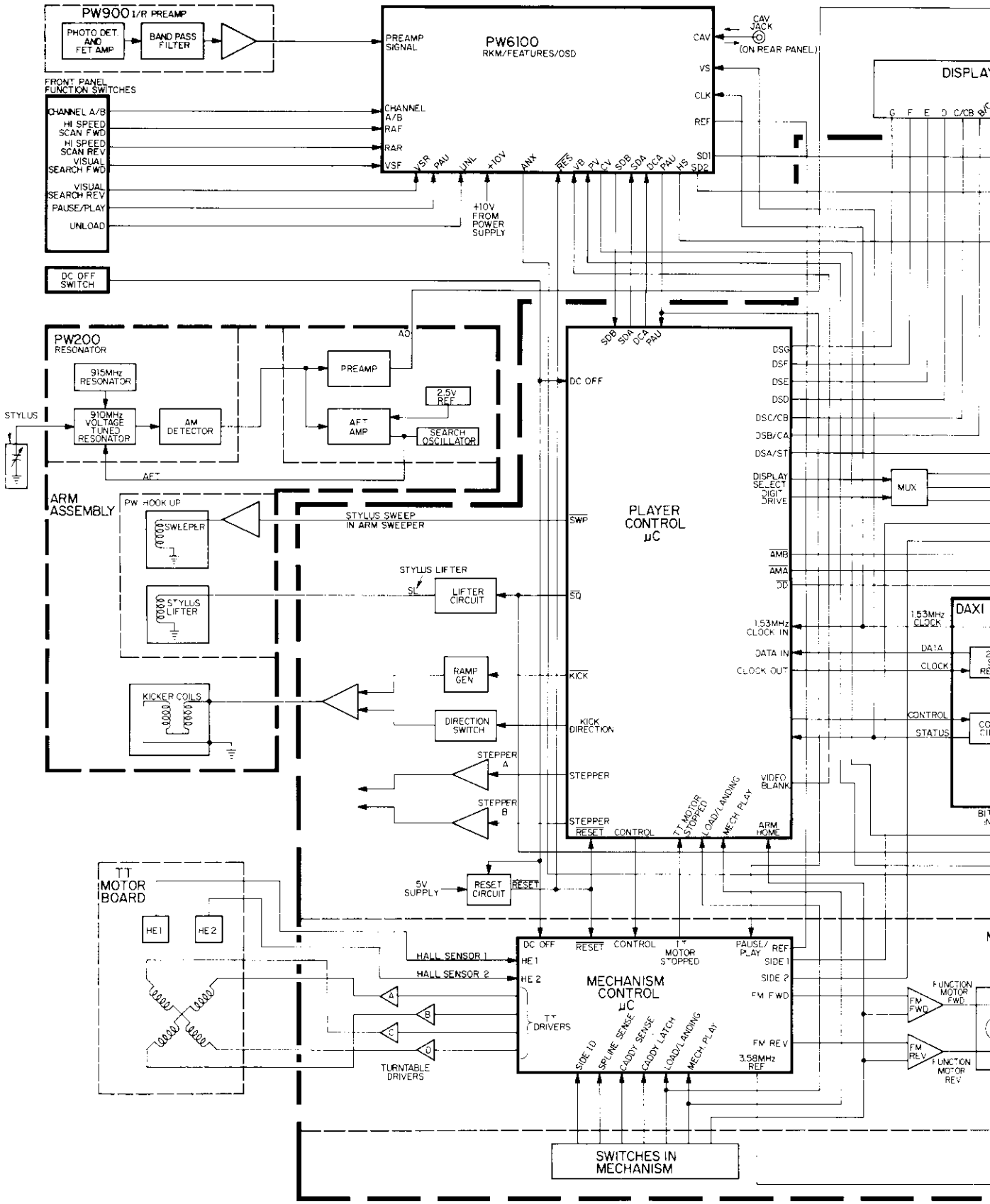

NOTE: Add 1700 Series Prefix to Item Numbers

*Fig. 44—PW 1700 Circuit Board Assembly*




NOTE: Add 600 Series Prefix to Item Numbers

*Fig. 45—PW 600 Circuit Board Assembly*


PW900 I/R PREAMP
PHOTO DET. AND FET AMP
BAND PASS FILTER
PREAMP SIGNAL
PW6100
RKM/FEATURES/OSD
CAV JACK
(ON REAR PANEL)
FRONT PANEL FUNCTION SWITCHES
CHANNEL A/B
HI SPEED SCAN FWD
HI SPEED SCAN REV
VISUAL SEARCH FWD
VISUAL SEARCH REV
PAUSE/PLAY
UNLOAD
+10V FROM POWER SUPPLY
DC OFF SWITCH
PW200 RESONATOR
915MHz RESONATOR
910MHz VOLTAGE TUNED RESONATOR
AM DETECTOR
PREAMP
AFT AMP
2.5V REF.
SEARCH OSCILLATOR
STYLUS
AFT
ARM ASSEMBLY
PW HOOK UP
SWEEPER
STYLUS LIFTER
STYLUS SWEEP IN ARM SWEEPER
STYLUS LIFTER
LIFTER CIRCUIT
KICKER COILS
RAMP GEN
DIRECTION SWITCH
STEPPER A
STEPPER B
PLAYER CONTROL µC
DC OFF
KICK
KICK DIRECTION
STEPPER
STEPPER RESET CONTROL
1.53MHz CLOCK IN
DATA IN
CLOCK OUT
DISPLAY SELECT DIGIT DRIVE
MUX
VIDEO BLANK
ARM HOME
TT MOTOR STOPPED
LOAD/LANDING
MECH PLAY
5V SUPPLY
RESET CIRCUIT
TT MOTOR BOARD
HE1
HE2
HALL SENSOR 1
HALL SENSOR 2
TURNTABLE DRIVERS
MECHANISM CONTROL µC
TT DRIVERS
PAUSE/ PLAY
SIDE 1
SIDE 2
FM FWD
FM REV
3.58MHz REF
SIDE ID
SPLINE SENSE
CADDY SENSE
CADDY LATCH
FUNCTION MOTOR FWD
FUNCTION MOTOR REV
SWITCHES IN MECHANISM
DISPLAY
DAXI
1.53MHz CLOCK
DATA
CLOCK
CONTROL
STATUS

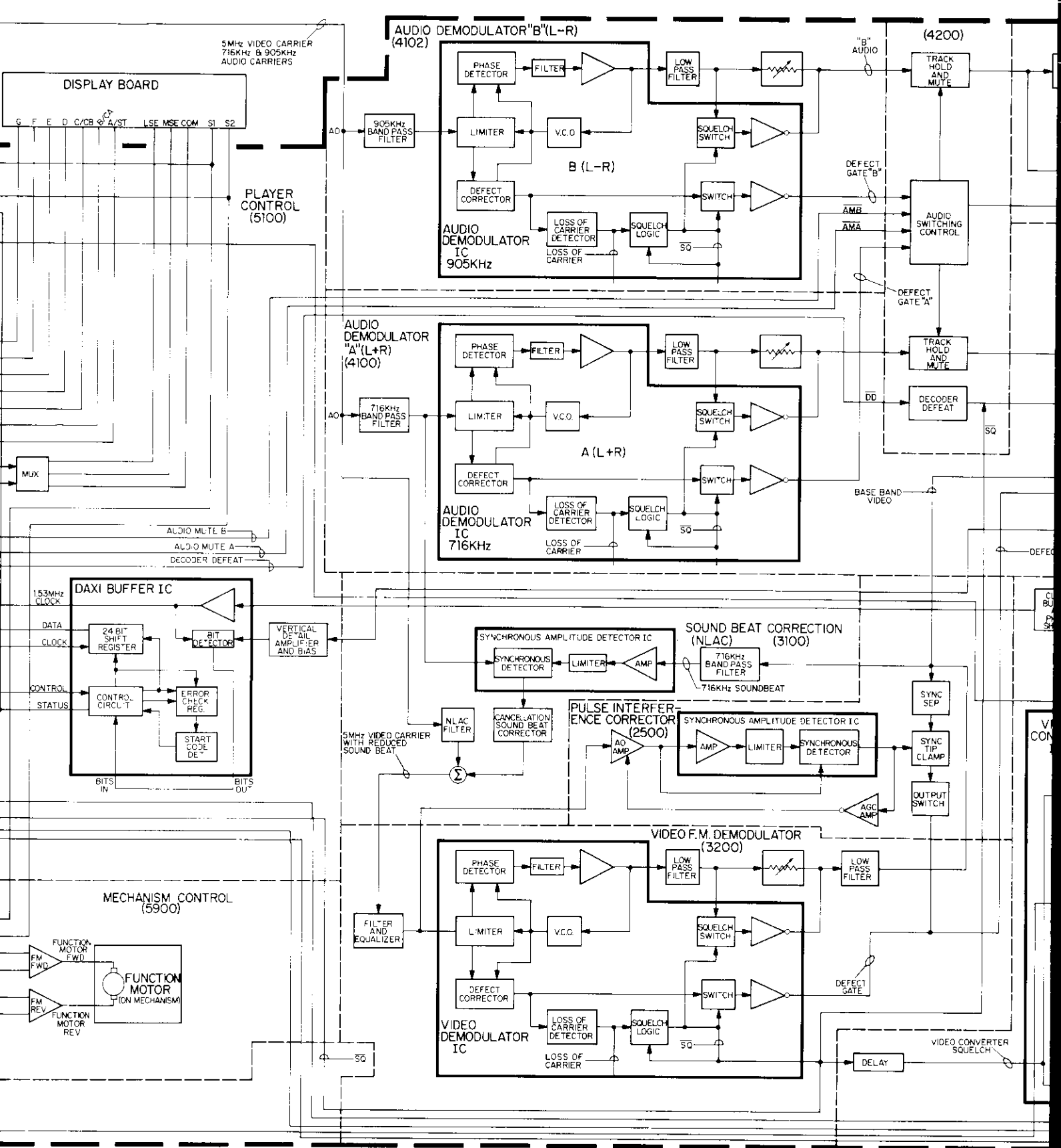
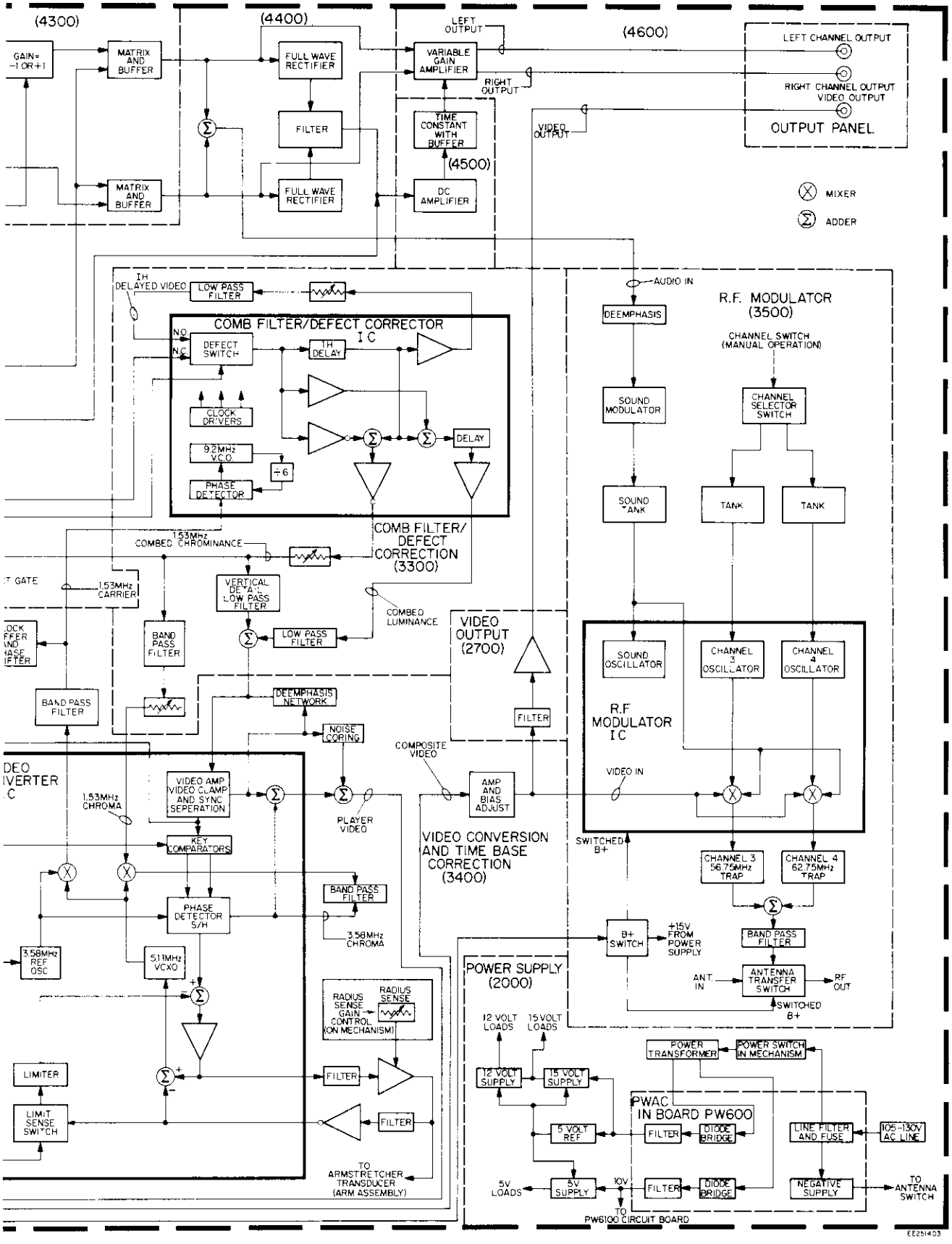
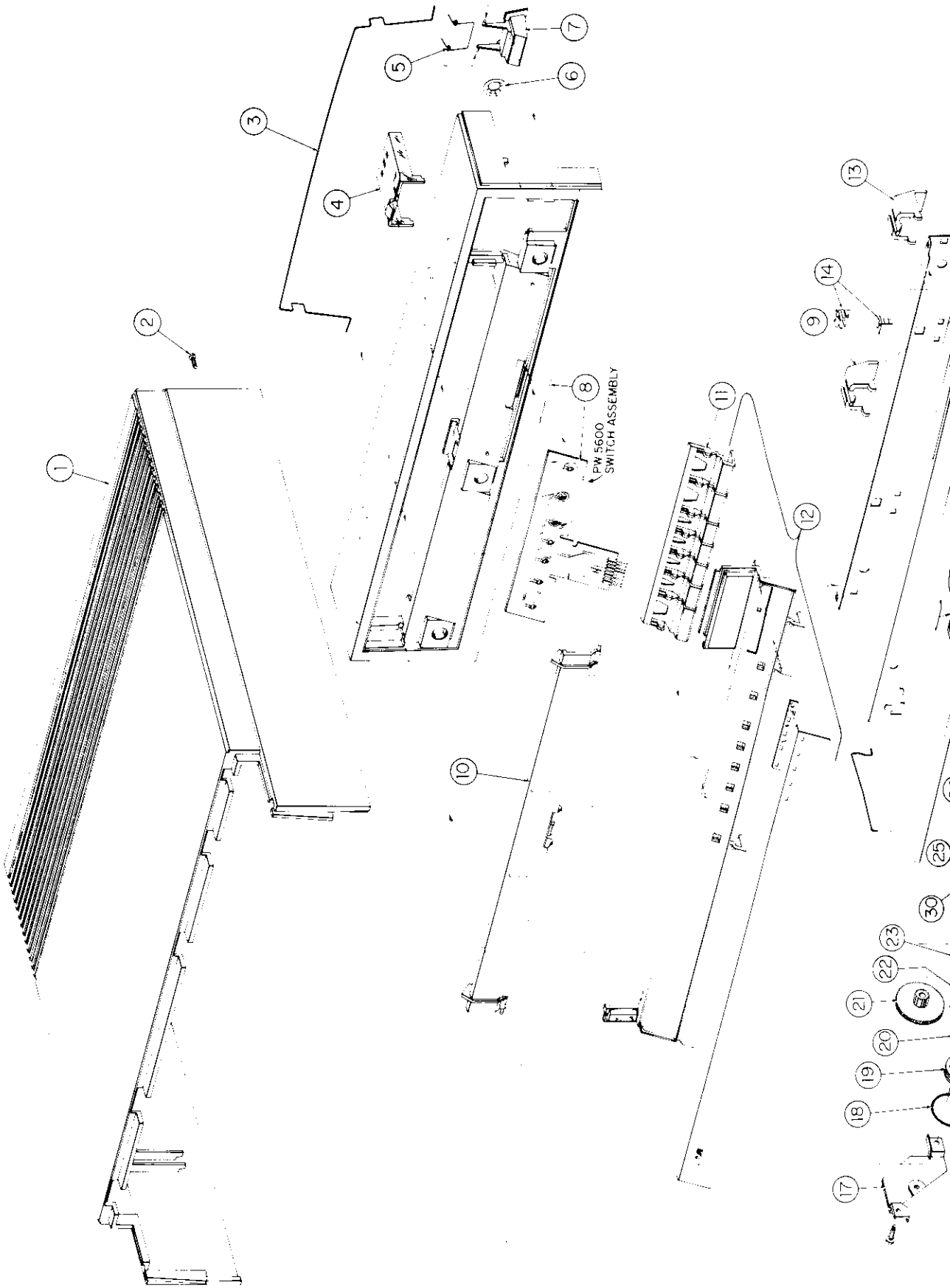
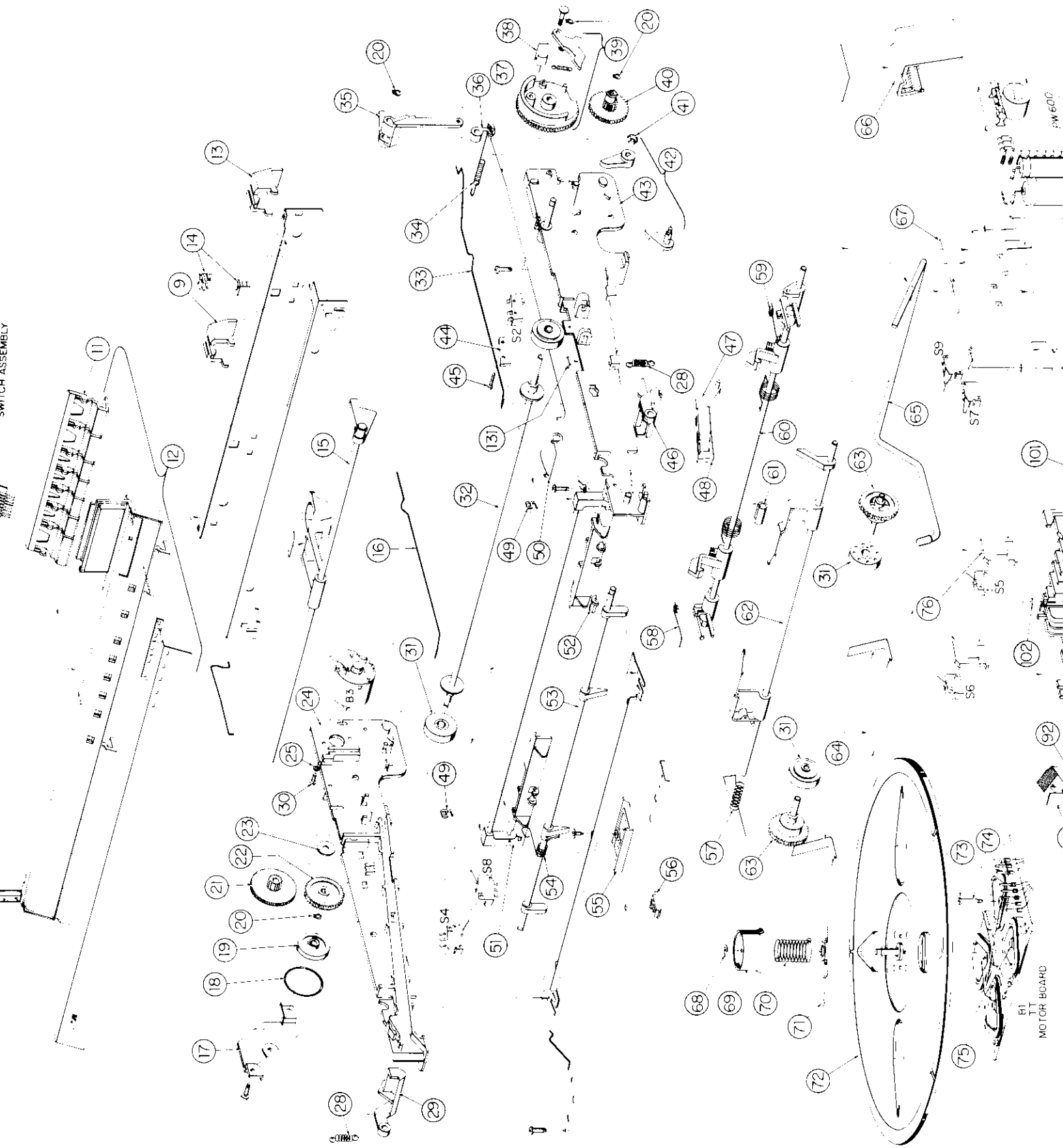


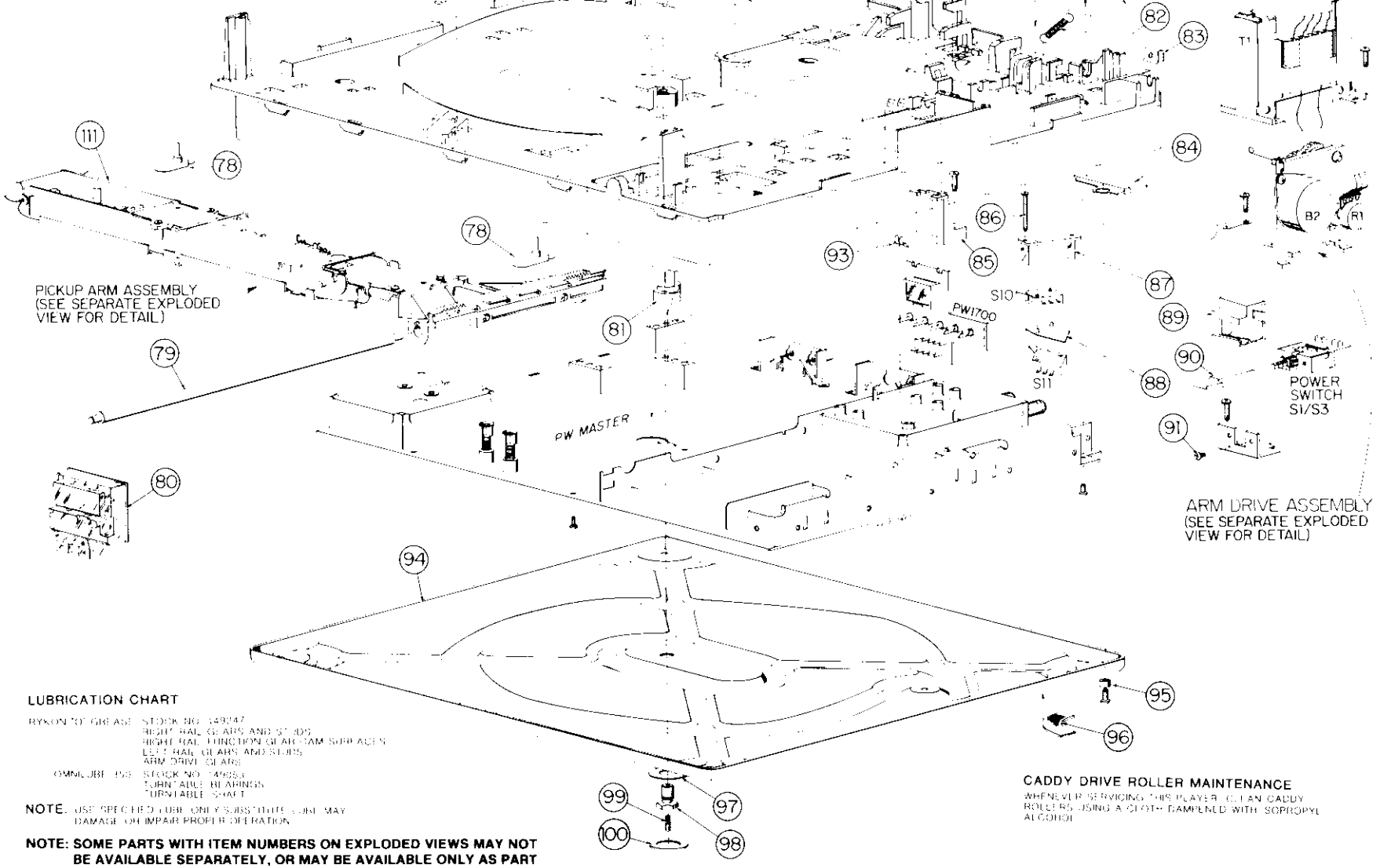

*Fig. 46—Functional Block Diagram*


(4300)
(4400)
(4500)
(4600)
GAIN= -1 OR +1
MATRIX AND BUFFER
MATRIX AND BUFFER
FULL WAVE RECTIFIER
FILTER
FULL WAVE RECTIFIER
LEFT OUTPUT
VARIABLE GAIN AMPLIFIER
RIGHT OUTPUT
TIME CONSTANT WITH BUFFER
DC AMPLIFIER
VIDEO OUTPUT
LEFT CHANNEL OUTPUT
RIGHT CHANNEL OUTPUT
VIDEO OUTPUT
OUTPUT PANEL
MIXER
ADDER
1H DELAYED VIDEO
LOW PASS FILTER
COMB FILTER/DEFECT CORRECTOR I C
NO
NC
DEFECT SWITCH
1H DELAY
CLOCK DRIVERS
9.2MHz VCO
÷6
PHASE DETECTOR
DELAY
COMB FILTER/ DEFECT CORRECTION (3300)
1.53MHz COMBED CHROMINANCE
COMBED LUMINANCE
VERTICAL DETAIL LOW PASS FILTER
LOW PASS FILTER
1.53MHz CARRIER
BAND PASS FILTER
BAND PASS FILTER
DEEMPHASIS NETWORK
NOISE CORING
VIDEO OUTPUT (2700)
FILTER
COMPOSITE VIDEO
AMP AND BIAS ADJUST
VIDEO AMP VIDEO CLAMP AND SYNC SEPERATION
1.53MHz CHROMA
KEY COMPARATORS
PHASE DETECTOR S/H
BAND PASS FILTER
3.58MHz CHROMA
3.58MHz REF OSC
5.11MHz VCXO
PLAYER VIDEO
VIDEO CONVERSION AND TIME BASE CORRECTION (3400)
RADIUS SENSE
RADIUS SENSE GAIN CONTROL (ON MECHANISM)
LIMITER
LIMIT SENSE SWITCH
FILTER
FILTER
TO ARMSTRETCHER TRANSDUCER (ARM ASSEMBLY)
AUDIO IN
DEEMPHASIS
R.F. MODULATOR (3500)
CHANNEL SWITCH (MANUAL OPERATION)
SOUND MODULATOR
CHANNEL SELECTOR SWITCH
SOUND TANK
TANK
TANK
SOUND OSCILLATOR
CHANNEL 3 OSCILLATOR
CHANNEL 4 OSCILLATOR
R.F MODULATOR I C
VIDEO IN
SWITCHED B+
CHANNEL 3 56.75MHz TRAP
CHANNEL 4 62.75MHz TRAP
B+ SWITCH
+15V FROM POWER SUPPLY
BAND PASS FILTER
ANT. IN
ANTENNA TRANSFER SWITCH
RF OUT
SWITCHED B+
POWER SUPPLY (2000)
12 VOLT LOADS
15 VOLT LOADS
POWER TRANSFORMER
POWER SWITCH IN MECHANISM
12 VOLT SUPPLY
15 VOLT SUPPLY
PWAC IN BOARD PW600
5 VOLT REF
FILTER
DIODE BRIDGE
LINE FILTER AND FUSE
105-130V AC LINE
5V LOADS
5V SUPPLY
10V
FILTER
DIODE BRIDGE
NEGATIVE SUPPLY
TO ANTENNA SWITCH
TO PW6100 CIRCUIT BOARD
EE251403

EXPLODED VIEW




SWITCH ASSEMBLY
MOTOR BOARD




**NOTE: SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPARATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.**

*Fig. 47—Cabinet and Player Mechanism*

## EXPLODED VIEW

NOTE: SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPERATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.

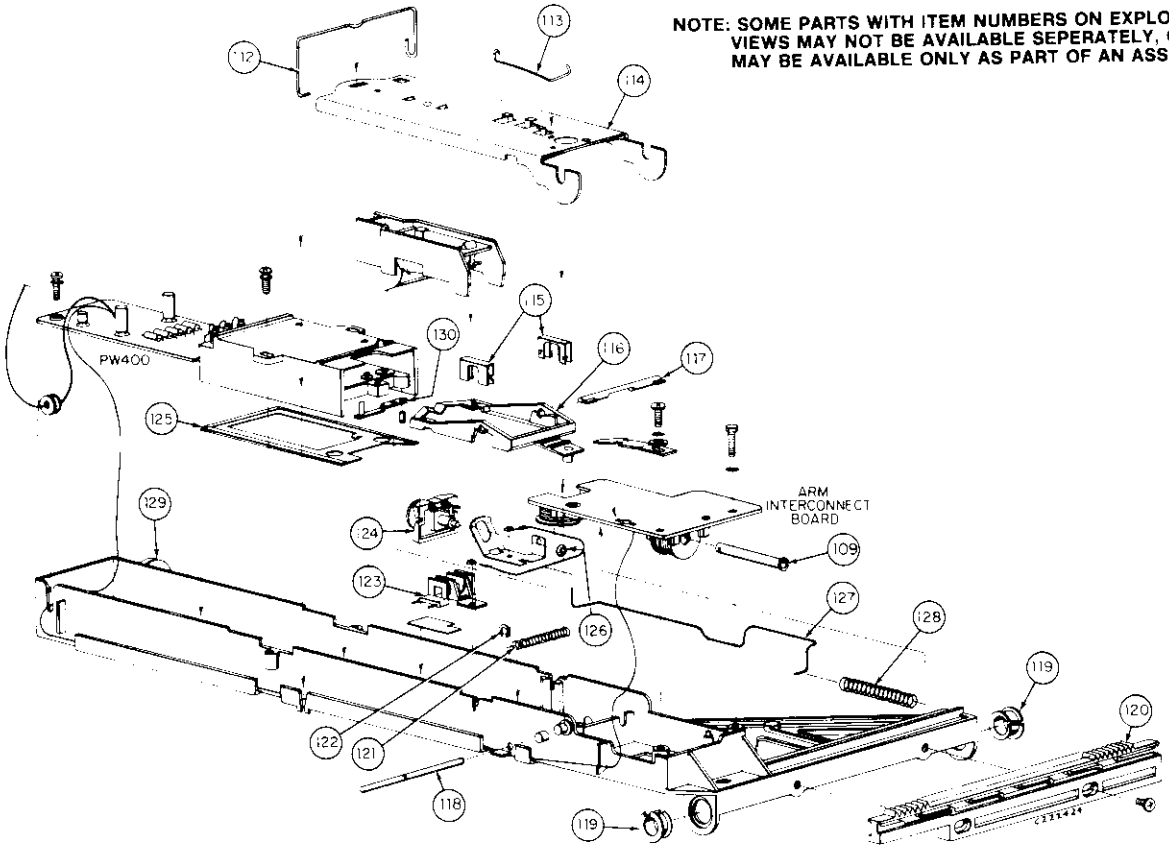



*Fig. 48—Arm Assembly*

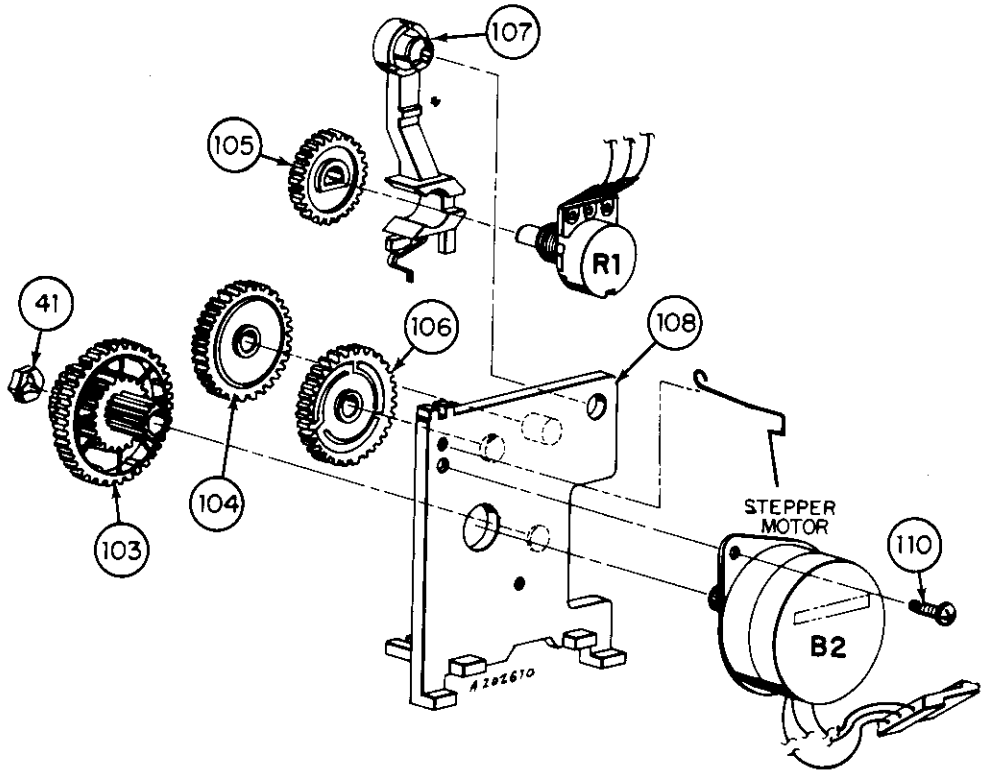



*Fig. 49—Arm Drive Assembly*

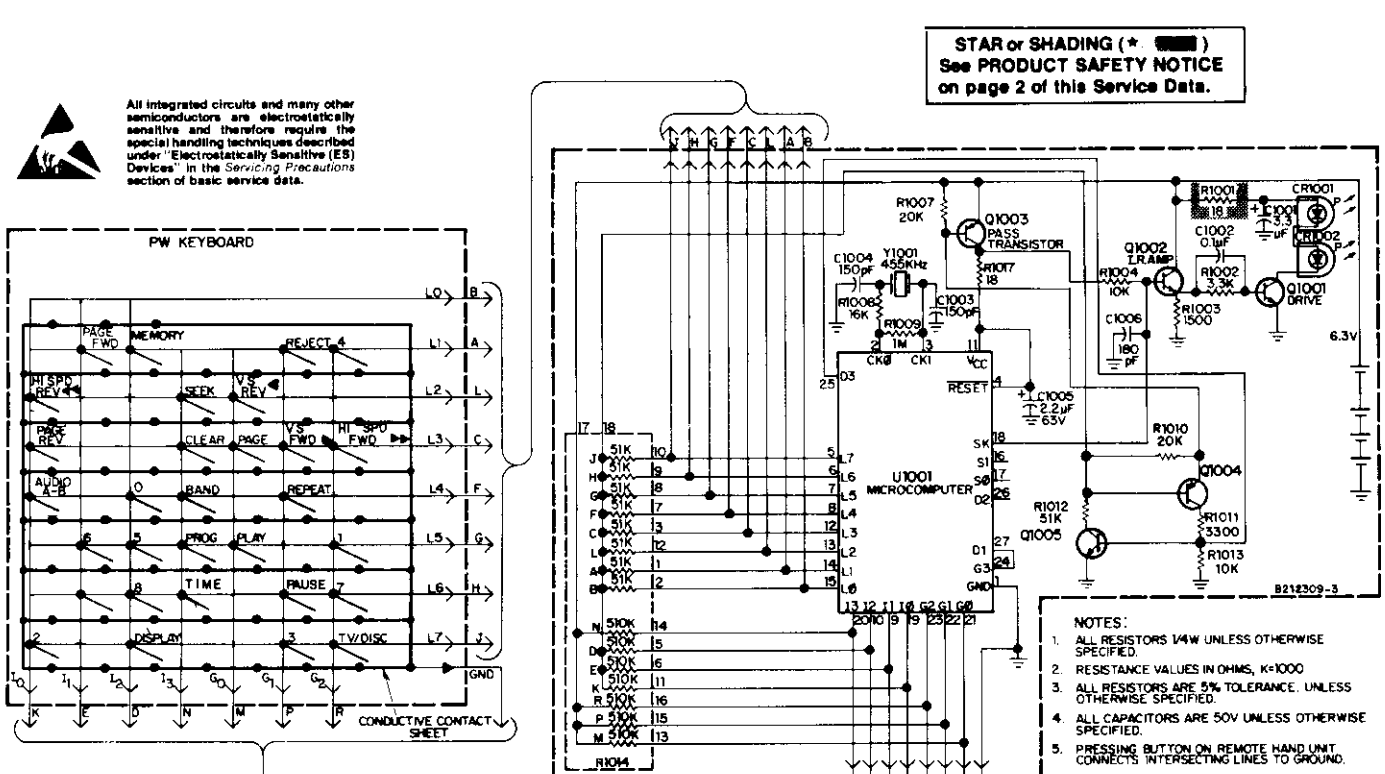
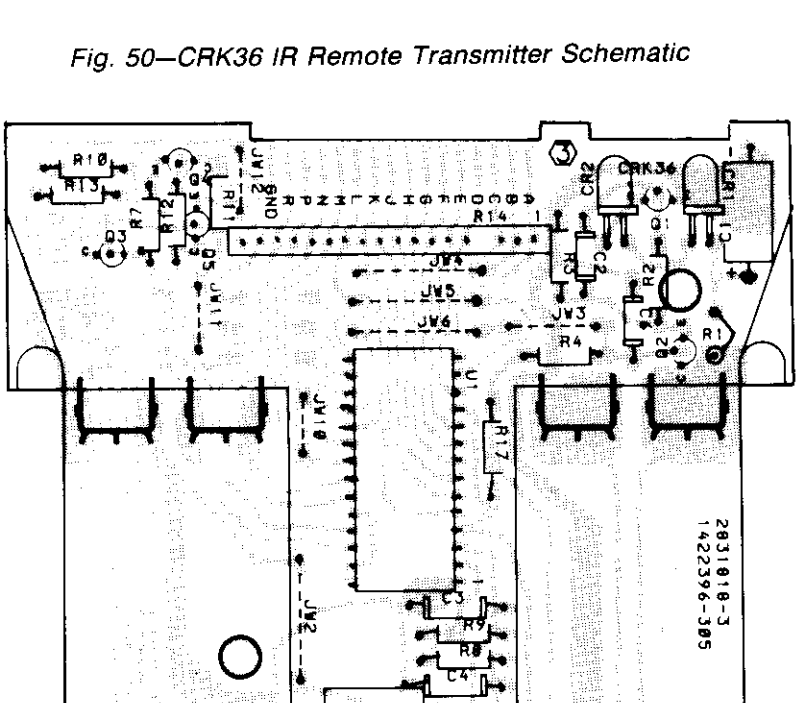



*Fig. 50—CRK36 IR Remote Transmitter Schematic*




NOTE: Add 1000 Series Prefix to Item Numbers

*Fig. 51—PW 1000 Circuit Board*

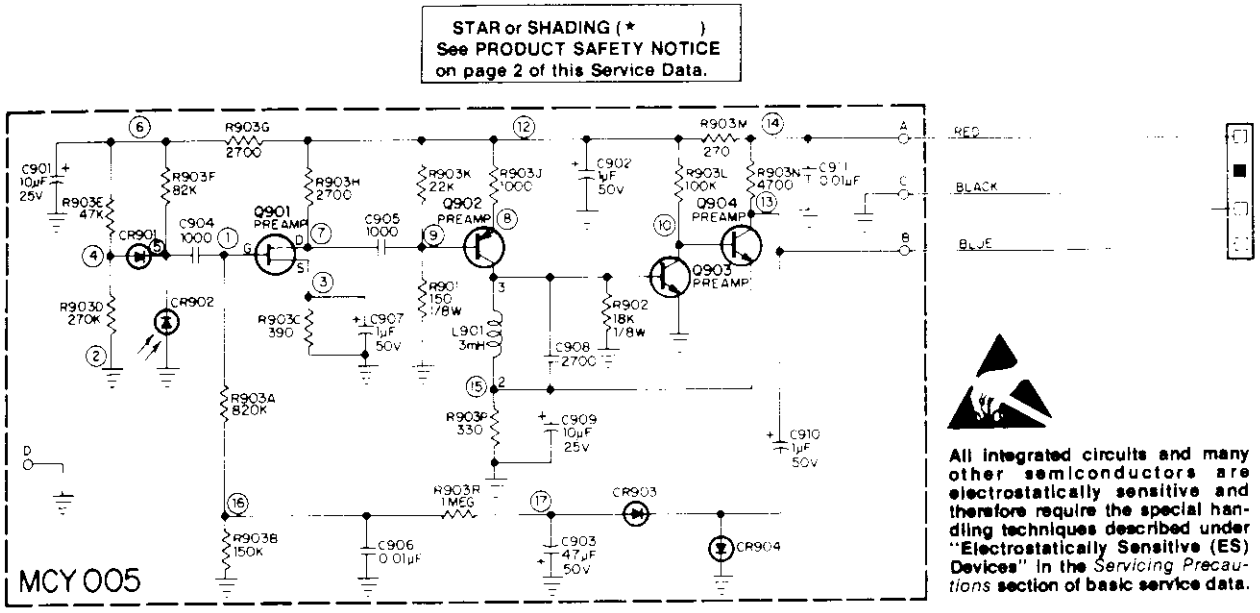
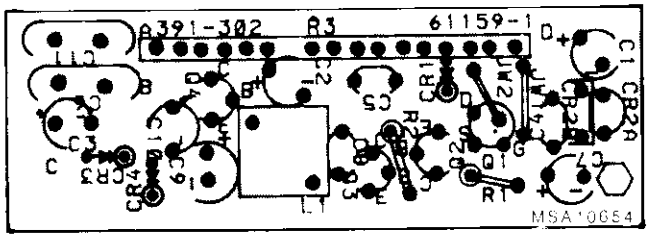



*Fig. 52—MCY005C Preamp Schematic*




NOTE: Add 900 Series Prefix to Item Numbers

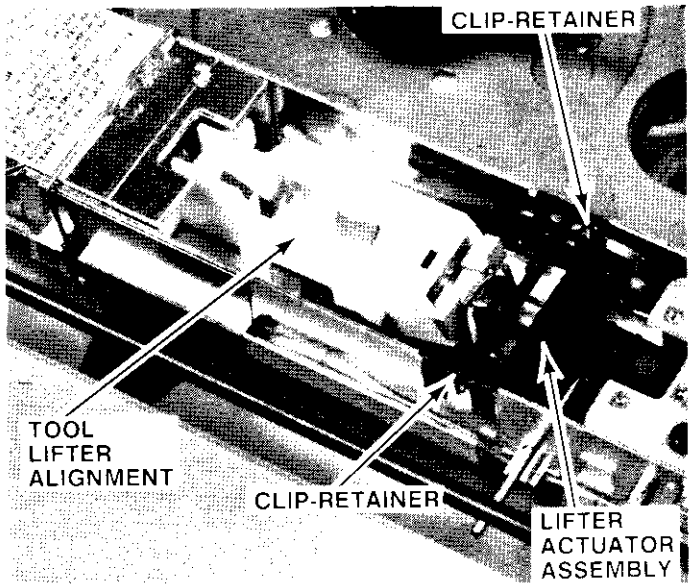
*Fig. 53—PW900 Circuit Board Assembly*

## STYLUS LIFTER ALIGNMENT

If stylus lifter has been removed the use of a Lifter Alignment Gauge (see replacement parts list for Stock No.) is required when replacing it in the arm assembly.

The replacement and alignment procedure is as follows:

1. Reinstall Lifter Actuator Assembly - do not replace Lifter Pivot Clips at this time. see illustration.
2. Install Lifter Alignment Gauge (in same manner as installing Stylus Cartridge). see illustration.
3. Replace Lifter Pivot Clips (one on each side of arm assembly) and check to assure stylus lifter operates freely. see illustration.
4. Remove Lifter Alignment Gauge and install Stylus Cartridge.




*Stylus Lifter Alignment*

# REPLACEMENT PARTS

BEFORE REPLACING PARTS, READ THE FOLLOWING:

**RCA-Approved Substitute Stock Numbers**—Before ordering stock numbers of this parts list, look for an RCA-approved substitute stock number in the current *RCA Distributor & Special Products Price Schedule*. This will minimize your service time and avoid ordering parts you already have in stock.

**See your RCA Distributor for Replacement Parts and Accessories.**

**Warranty Status of Assemblies and Parts**—The warranty status of some assemblies and parts are indicated by one of the following Warranty Status Codes:

- Complete assembly not eligible for warranty exchange or replacement
- Eligible for warranty exchange for new or rebuilt unit
- Complete assembly eligible for warranty replacement with new or rebuilt unit

All parts listed without a Warranty Status Code symbol are eligible for warranty replacement as discrete components.

Warranty replacement of cabinet parts requires prior approval of RCA.

Warranty Status and Specifications of assemblies and parts are subject to change without notice.

**PRODUCT SAFETY NOTE**—Components marked with a (★) have special characteristics important to safety. Before replacing any of these components, read carefully the **PRODUCT SAFETY NOTICE** in the Basic Service Data. Do not degrade the safety of the set through improper servicing. Although assemblies as a whole may not be marked with a (★), replacement of RCA assemblies with other assemblies not RCA approved may result in a safety hazard.

**Canada Stock Numbers:**
Add prefix **62** to **all** stock numbers.

**.....AVOID REPLACEMENT PART ERRORS.....**

**File supplements and addendums immediately upon receipt, and consult the parts lists in them before ordering parts.**

NOTE: For complete coverage of all parts and assemblies used in new equipment produced with the chassis series to which this service data applies, consult the following publications:

- **Basic Service Data**—Chassis and tuning systems and most related parts and assemblies that do not differ from one model or model group to another.
- **Service Data Supplements**—Cabinet, auxiliary, and other parts and assemblies that differ from one model group to another.
- **Service Data Addendum**—Any parts additions, deletions or other changes made after initial production.

**Do not replace or order parts without first consulting any Addendum(s) that may have been issued since publication of this service data.**

## SJT400

### ELECTRICAL ASSEMBLIES & COMPONENTS

| SYMBOL NO. | STOCK NO. | DRAWING NO. | DESCRIPTION |
|---|---|---|---|
| | 157928 | 2812587-501 | • CIRCUIT, AC INPUT PW600 |
| | 157926 | 2816408-502 | • CIRCUIT, ARM INTERCONNECT |
| | 158005 | 2816404-501 | • CIRCUIT, DISPLAY |
| | 159570 | 2816406-501 | • CIRCUIT, FEATURES PW6100 |
| | 157924 | 2812585-501 | • CIRCUIT, PICKUP PREAMP PW400 |
| | 155878 | 2812595-502 | ‡ CIRCUIT, RESONATOR |

### ELECTRICAL COMPONENTS

| | | | |
|---|---|---|---|
| B1 | 156528 | 2816407-504 | ‡ MOTOR TURNTABLE DRIVE INCL CBA |
| B2 | 154243 | 2872666-021 | MOTOR ARM DRIVE |
| B3 | 155879 | 2816456-504 | MOTOR FUNCTION DRIVE |
| BPF3101 | 157184 | 2861041-001 | FILTER BAND-PASS |
| BPF4101 | 157184 | 2861041-001 | FILTER BAND-PASS |
| BPF4102 | 157183 | 2861041-002 | FILTER BAND-PASS |
| C1 | 145896 | 1491415-50R | CAPCD 4700PF M 50V |
| C401 | 143881 | 2841254-41M | CAPCD 2200PF M Z5P 50V |
| C402 | 147971 | 2841255-31N | CAPCD .01UF M Z5T 50V |
| C403 | 148057 | 2841253-92M | CAPCD 1000PF K Z5P 50V |
| C404 | 141868 | 2841273-163 | CAP LYTC 1UF M 85C 50V |
| C405 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C406 | 146365 | 2841273-552 | CAP LYTC 4.7UF N 35V |
| C407 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C408 | 148057 | 2841253-92M | CAPCD 1000PF K Z5P 50V |
| C409 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C410 | 148057 | 2841253-92M | CAPCD 1000PF K Z5P 50V |
| C601 | 157937 | 2870697-110 | ★ CAPCD 600PF M Z5T 1400V |
| C602 | 157931 | 2870697-110 | ★ CAPCD 600PF M Z5T 1400V |
| C603 | 157930 | 2841255-61N | CAPCD .015UF M Z5T 50V |
| C604 | 157930 | 2841255-61N | CAPCD .015UF M Z5T 50V |
| C605 | 157930 | 2841255-61N | CAPCD .015UF M Z5T 50V |
| C606 | 153654 | 1490303-451 | CAP LYTC 3300UF R 35V |
| C607 | 149152 | 1490303-341 | CAP LYTC 2200UF R 25V |
| C2001 | 146216 | 2840363-342 | CAP LYTC 220UF 25V |
| C2002 | 112969 | 1490939-703 | CAPCD .1UF Z Y5T 50V |
| C2003 | 153176 | 2871335-016 | CAP POLY .33UF M 100V |
| C2005 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C2501 | 147036 | 2840395-30N | CAPCT .010UF M Z5R 50V |
| C2503 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C2504 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C2505 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C2506 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C2507 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C2508 | 141868 | 2841273-163 | CAP LYTC 1UF M 85C 50V |
| C2509 | 149205 | 2841274-353 | CAP LYTC 22UF M 35V |
| C2510 | 146418 | 2841252-93A | CAPCD 180PF J NPO 50V |
| C2511 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C2512 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C2513 | 149189 | 993286-153 | CAP POLY .15UF J 100V |
| C2514 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C2515 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C2516 | 148407 | 2841250-67A | CAPCD 33PF D NPO 50V |
| C2517 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C2701 | 143866 | 2841251-83A | CAPCD 27PF J NPO 50V |
| C2702 | 143866 | 2841251-83A | CAPCD 27PF J NPO 50V |
| C2703 | 143866 | 2841251-83A | CAPCD 27PF J NPO 50V |
| C2705 | 143752 | 2840363-531 | CAP LYTC 470UF R 16V |
| C3102 | 153576 | 2841253-53H | CAPCD 470PF J N750 50V |
| C3103 | 135452 | 2841253-13H | CAPCD 220PF J N750 50V |
| C3104 | 149164 | 2872860-113 | CAP POLY .01UF K 50V |
| C3105 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3106 | 143874 | 2841252-83H | CAPCD 150PF J N750 50V |
| C3107 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3108 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3109 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3110 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3111 | 146210 | 2841273-553 | CAP LYTC 4.7UF M 85C 50V |
| C3112 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C3117 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C3118 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C3119 | 143871 | 2841252-63H | CAPCD 100PF J N750 50V |
| C3120 | 145434 | 2841252-53H | CAPCD 82PF J N750 50V |
| C3121 | 146833 | 2841251-93H | CAPCD 33PF J N750 50V |
| C3122 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C3123 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3124 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3125 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C3201 | 143871 | 2841252-63H | CAPCD 100PF J N750 50V |
| C3202 | 146833 | 2841251-93H | CAPCD 33PF J N750 50V |
| C3203 | 143874 | 2841252-83H | CAPCD 150PF J N750 50V |
| C3204 | 149203 | 2841275-143 | CAP LYTC 100UF M 85C 25V |
| C3205 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3206 | 143867 | 2841252-23A | CAPCD 47PF J NPO 50V |
| C3207 | 146768 | 2841251-53A | CAPCD 15PF J NPO 50V |
| C3208 | 135452 | 2841253-13H | CAPCD 220PF J N750 50V |
| C3209 | 146249 | 2841251-63A | CAPCD 18PF J NPO 50V |
| C3210 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3211 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3212 | 146249 | 2841251-63A | CAPCD 18PF J NPO 50V |
| C3213 | 146249 | 2841251-63A | CAPCD 18PF J NPO 50V |
| C3214 | 146833 | 2841251-93H | CAPCD 33PF J N750 50V |
| C3215 | 149196 | 2871417-001 | CAP TRIM 40PF 250V |
| C3216 | 145434 | 2841252-53H | CAPCD 82PF J N750 50V |
| C3217 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3218 | 149151 | 2841252-13A | CAPCD 39PF J NPO 50V |
| C3219 | 149204 | 2841274-442 | CAP LYTC 33UF N 85C 25V |
| C3221 | 157206 | 2841287-563 | CAP LYTC .22UF M 50V |
| C3222 | 143871 | 2841252-63H | CAPCD 100PF J N750 50V |
| C3223 | 103245 | 2841251-43A | CAPCD 12PF J NPO 50V |
| C3224 | 146768 | 2841251-53A | CAPCD 15PF J NPO 50V |
| C3225 | 143871 | 2841252-63H | CAPCD 100PF J N750 50V |
| C3226 | 157205 | 2841250-82A | CAPCD 4.7PF K NPO 50V |
| C3227 | 143867 | 2841252-23A | CAPCD 47PF J NPO 50V |
| C3228 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3229 | 157204 | 2841250-92A | CAPCD 5.6PF K NPO 50V |
| C3301 | 154336 | 2871335-083 | CAP POLY .47UF K 100V |
| C3302 | 143967 | 2841254-81M | CAPCD 4700PF M Z5P 50V |

*Continued on next page*

**Replacement Parts Continued** (See Product Safety Note on first page of this parts list)

| SYMBOL NO. | STOCK NO. | DRAWING NO. | DESCRIPTION |
|---|---|---|---|
| C3303 | 148057 | 2840393-92M | CAPCT 1000PF K Z5P 50V |
| C3304 | 149161 | 2841274-243 | CAP LYTC 15UF M 85C 25V |
| C3307 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3308 | 153925 | 2872860-125 | CAP POLY 0.1UF K 50V |
| C3309 | 146418 | 2841252-93A | CAPCD 180PF J NPO 50V |
| C3310 | 112969 | 1490939-703 | CAPCD .1UF Z Y5T 50V |
| C3311 | 143874 | 2841252-83H | CAPCD 150PF J N750 50V |
| C3312 | 135452 | 2841253-13H | CAPCD 220PF J N750 50V |
| C3313 | 146210 | 2841273-553 | CAP LYTC 4.7UF M 85C 50V |
| C3314 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3315 | 143874 | 2841252-83H | CAPCD 150PF J N750 50V |
| C3316 | 147036 | 2840395-30N | CAPCT .010UF M Z5R 50V |
| C3317 | 146210 | 2841273-553 | CAP LYTC 4.7UF M 85C 50V |
| C3318 | 147635 | 2841262-005 | CAPCD 130PF J NPO 50V |
| C3319 | 135452 | 2841253-13H | CAPCD 220PF J N750 50V |
| C3320 | 157211 | 2872860-205 | CAP POLY .0022UF J 50V |
| C3321 | 146210 | 2841273-553 | CAP LYTC 4.7UF M 85C 50V |
| C3322 | 148057 | 2840393-92M | CAPCT 1000PF K Z5P 50V |
| C3323 | 146418 | 2841252-93A | CAPCD 180PF J NPO 50V |
| C3324 | 149147 | 2841262-006 | CAPCD 300PF J N750 50V |
| C3325 | 146418 | 2841252-93A | CAPCD 180PF J NPO 50V |
| C3326 | 143874 | 2841252-83H | CAPCD 150PF J N750 50V |
| C3327 | 149203 | 2841275-143 | CAP LYTC 100UF M 85C 25V |
| C3328 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3329 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C3330 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3331 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3333 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3335 | 146418 | 2841252-93A | CAPCD 180PF J NPO 50V |
| C3336 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3401 | 135452 | 2841253-13H | CAPCD 220PF J N750 50V |
| C3402 | 145741 | 2841254-41N | CAPCD 2200PF M Z5T 50V |
| C3403 | 149163 | 2872860-017 | CAP POLY .022UF M 50V |
| C3404 | 145434 | 2841252-53H | CAPCD 82PF J N750 50V |
| C3405 | 157215 | 2840394-22N | CAPCT 1500PF K Z5R 50V |
| C3406 | 142329 | 1490301-141 | CAP LYTC 10UF R 25V |
| C3407 | 147036 | 2840395-30N | CAPCT .010UF M Z5R 50V |
| C3408 | 146254 | 2841262-004 | CAPCD 91PF J NPO 50V |
| C3409 | 157204 | 2841250-92A | CAPCD 5.6PF NPO K 50V |
| C3410 | 142329 | 1490301-141 | CAP LYTC 10UF R 25V |
| C3411 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3412 | 157203 | 2841262-016 | CAPCD 36PF J NPO 50V |
| C3413 | 149146 | 2841262-008 | CAPCD 200PF J NPO 50V |
| C3414 | 145676 | 2841252-43A | CAPCD 68PF J NPO 50V |
| C3415 | 157203 | 2841262-016 | CAPCD 36PF J NPO 50V |
| C3416 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3417 | 157210 | 2872860-101 | CAP POLY .001UF K 50V |
| C3418 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3419 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C3420 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3421 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3422 | 143866 | 2841251-83A | CAPCD 27PF J NPO 50V |
| C3423 | 135452 | 2841253-13H | CAPCD 220PF J N750 50V |
| C3424 | 157216 | 2871335-161 | CAP POLY .33UF J 100V |
| C3425 | 148057 | 2840393-92M | CAPCT 1000PF K Z5P 50V |
| C3426 | 149188 | 2871335-129 | CAP POLY .015UF J 100V |
| C3427 | 157209 | 2871335-157 | CAP POLY .22UF J 100V |
| C3428 | 157208 | 2871335-151 | CAP POLY .12UF J 100V |
| C3431 | 147036 | 2840395-30N | CAPCT .010UF M Z5R 50V |
| C3432 | 142329 | 1490301-141 | CAP LYTC 10UF R 25V |
| C3433 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3434 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C3435 | 148523 | 2840392-83J | CAPCT 150PF J NPO 50V |
| C3436 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C3437 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C3501 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3502 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3503 | 143885 | 2841262-010 | CAPCD 110PF J NPO 50V |
| C3504 | 146254 | 2841262-004 | CAPCD 91PF J NPO 50V |
| C3505 | 147036 | 2840395-30N | CAPCT .010UF M Z5R 50V |
| C3510 | 143866 | 2841251-83A | CAPCD 27PF J NPO 50V |
| C3511 | 143867 | 2841252-23A | CAPCD 47PF J NPO 50V |
| C3512 | 157200 | 2841262-019 | CAPCD 62PF J NPO 50V |
| C3513 | 146833 | 2841251-93H | CAPCD 33PF J N750 50V |
| C3514 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3515 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3516 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C3517 | 145741 | 2841254-41N | CAPCD 2200PF M Z5T 50V |
| C3518 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C3519 | 143871 | 2841252-63D | CAPCD 100PF J N150 50V |
| C3520 | 157199 | 2841251-73A | CAPCD 22PF J NPO 50V |
| C3521 | 145741 | 2841254-41N | CAPCD 2200PF M Z5T 50V |
| C3522 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C3523 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3524 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3525 | 143866 | 2841251-83A | CAPCD 27PF J NPO 50V |
| C3526 | 153575 | 2841253-93J | CAPCD 1000PF J SL 50V |
| C3527 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3528 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3530 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C3532 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C4001 | 149203 | 2841275-143 | CAP LYTC 100UF M 85C 25V |
| C4002 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C4003 | 149203 | 2841275-143 | CAP LYTC 100UF M 85C 25V |
| C4004 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C4107 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C4108 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C4109 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C4110 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C4111 | 149188 | 2871335-129 | CAP POLY .015UF J 100V |
| C4112 | 149163 | 2872860-217 | CAP POLY .022UF J 50V |
| C4113 | 149188 | 2872860-215 | CAP POLY .015UF J 50V |
| C4114 | 149163 | 2872860-217 | CAP POLY .022UF J 50V |
| C4117 | 146536 | 2841273-362 | CAP LYTC 2.2UF N 85C 50V |
| C4118 | 146536 | 2841273-362 | CAP LYTC 2.2UF N 85C 50V |
| C4119 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C4120 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C4121 | 153576 | 2841253-53H | CAPCD 470PF J N750 50V |
| C4122 | 157197 | 2841253-41H | CAPCD 390PF M N750 50V |
| C4125 | 143967 | 2841254-81M | CAPCD 4700PF M Z5P 50V |
| C4126 | 143967 | 2841254-81M | CAPCD 4700PF M Z5P 50V |
| C4127 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C4128 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C4129 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C4130 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C4201 | 143867 | 2841252-23A | CAPCD 47PF J NPO 50V |
| C4202 | 143867 | 2841252-23A | CAPCD 47PF J NPO 50V |
| C4203 | 153925 | 2872860-125 | CAP POLY 0.1UF K 50V |
| C4204 | 139444 | 2871335-075 | CAP POLY .1UF K 100V |
| C4205 | 143967 | 2841254-81M | CAPCD 4700PF M Z5P 50V |
| C4206 | 143967 | 2841254-81M | CAPCD 4700PF M Z5P 50V |
| C4207 | 141868 | 2841273-163 | CAP LYTC 1UF M 85C 50V |
| C4301 | 112969 | 1490939-703 | CAPCD .1UF Z Y5T 50V |
| C4302 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C4401 | 154354 | 2841288-164 | CAP LYTC .33UF K 50V |
| C4402 | 154354 | 2841288-164 | CAP LYTC .33UF K 50V |
| C4403 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C4404 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C4501 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C4502 | 154354 | 2841288-164 | CAP LYTC .33UF K 50V |
| C4601 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C4602 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C4603 | 143882 | 2841254-21M | CAPCD 1500PF M Z5P 50V |
| C4604 | 143882 | 2841254-21M | CAPCD 1500PF M Z5P 50V |
| C4605 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C4606 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C4607 | 145741 | 2841254-41N | CAPCD 2200PF M Z5T 50V |
| C4608 | 145741 | 2841254-41N | CAPCD 2200PF M Z5T 50V |
| C5101 | 141868 | 2841273-163 | CAP LYTC 1UF M 85C 50V |
| C5102 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C5103 | 157199 | 2841251-73A | CAPCD 22PF J NPO 50V |
| C5104 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C5105 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C5106 | 149204 | 2841274-442 | CAP LYTC 33UF N 85C 25V |
| C5107 | 157207 | 2872860-023 | CAP POLY .067UF M 50V |
| C5108 | 141868 | 2841273-163 | CAP LYTC 1UF M 85C 50V |
| C5109 | 149203 | 2841275-143 | CAP LYTC 100UF M 85C 25V |
| C5110 | 149203 | 2841275-143 | CAP LYTC 100UF M 85C 25V |
| C5111 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5112 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5113 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5114 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5115 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5116 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5117 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5119 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5120 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5121 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5122 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5123 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5124 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5125 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5126 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5127 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C5128 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C5129 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C5130 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C5301 | 159640 | 2872860-225 | CAP POLY 0.1UF J 50V |
| C5302 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C5303 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C5304 | 149204 | 2841274-442 | CAP LYTC 33UF N 25V |
| C5901 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C5902 | 132174 | 1474578-007 | CAP TRIM 11PF NPO 500V |
| C5903 | 146768 | 2841251-53A | CAPCD 15PF J NPO 50V |
| C5904 | 145676 | 2841252-43A | CAPCD 68PF J NPO 50V |
| C5905 | 146768 | 2841251-53A | CAPCD 15PF J NPO 50V |
| C5906 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C5907 | 143879 | 2841253-91M | CAPCD 1000PF M Z5P 50V |
| C5908 | 147036 | 2840395-30N | CAPCT .010UF M Z5R 50V |
| C5909 | 147036 | 2840395-30N | CAPCT .010UF M Z5R 50V |
| C5910 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C5911 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |

*Continued on next page*

**Replacement Parts Continued** (See Product Safety Note on first page of this parts list)

| SYMBOL NO. | STOCK NO. | DRAWING NO. | DESCRIPTION |
|---|---|---|---|
| C5912 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5913 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5914 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5915 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C5916 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C5917 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5918 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5919 | 147971 | 2841255-31M | CAPCD .01UF M Z5P 50V |
| C5920 | 149204 | 2841274-442 | CAP LYTC 33UF N 85C 25V |
| C5921 | 157196 | 2841255-41L | CAPCD .022UF M Y5R 50V |
| C5922 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C5931 | 157196 | 2841255-41L | CAPCD .022UF M Y5R 50V |
| C5941 | 157196 | 2841255-41L | CAPCD .022UF M Y5R 50V |
| C5951 | 157196 | 2841255-41L | CAPCD .022UF M Y5R 50V |
| C6105 | 143882 | 2841255-30M | CAPCD .01UF Z Z5P 50V |
| C6106 | 143882 | 2841255-30M | CAPCD .01UF Z Z5P 50V |
| C6107 | 143882 | 2841255-30M | CAPCD .01UF Z Z5P 50V |
| C6108 | 143882 | 2841255-30M | CAPCD .01UF Z Z5P 50V |
| C6112 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C6114 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C6115 | 157216 | 2871335-161 | CAP POLY .33UF J 100V |
| C6118 | 143882 | 2841255-30M | CAPCD .01UF Z Z5P 50V |
| C6128 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C6130 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C6131 | 145742 | 2841254-12M | CAPCD 1200PF K Z5P 50V |
| C6132 | 146833 | 2841251-93A | CAPCD 33PF J NPO 50V |
| C6133 | 153575 | 2841253-93J | CAPCD 1000PF J SL 50V |
| C6134 | 154336 | 2871335-165 | CAP POLY .47UF J 100V |
| C6135 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C6136 | 143871 | 2841252-63A | CAPCD 100PF J NPO 50V |
| C6137 | 143871 | 2841252-63A | CAPCD 100PF J NPO 50V |
| C6138 | 147957 | 2841253-12M | CAPCD 220PF K Z5P 50V |
| C6139 | 143869 | 2841252-52J | CAPCD 82PF K SL 50V |
| C6140 | 153276 | 2841251-43J | CAPCD 12PF J SL 50V |
| C6141 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C6142 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C6143 | 159574 | 2841274-332 | CAP LYTC 22UF M 16V |
| C6146 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C6148 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C6149 | 153575 | 2841253-93J | CAPCD 1000PF J SL 50V |
| C6150 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C6151 | 143869 | 2841252-53J | CAPCD 82PF J SL 50V |
| C6152 | 153994 | 2841254-92M | CAPCD 5600PF K Z5P 50V |
| C6153 | 141868 | 2841273-163 | CAP LYTC 1UF M 85C 50V |
| C6154 | 146833 | 2841251-93H | CAPCD 33PF J N750 50V |
| C6155 | 143874 | 2841252-82M | CAPCD 150PF K Z5P 50V |
| C6158 | 141868 | 2841273-163 | CAP LYTC 1UF M 85C 50V |
| C6159 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C6160 | 143882 | 2841255-32M | CAPCD .01UF K Z5P 50V |
| C6161 | 146764 | 2841253-31M | CAPCD 330PF M Z5P 50V |
| C6163 | 146256 | 2841274-143 | CAP LYTC 10UF M 25V |
| C6164 | 143871 | 2841252-63A | CAPCD 100PF J NPO 50V |
| C6165 | 134939 | 2841255-50R | CAPCD .047UF Z Z5V 50V |
| C6166 | 143882 | 2841255-32M | CAPCD .01UF K Z5P 50V |
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| CR1702 | 157637 | 1466679-013 | DIODE LED SIDE 2 |
| CR1703 | 157637 | 1466679-013 | DIODE LED AUD A |
| CR1704 | 157637 | 1466679-013 | DIODE LED AUD B |
| CR1705 | 157637 | 1466679-013 | DIODE LED STEREO |
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| CR3503 | 129095 | 1477022-002 | DIODE |
| CR3504 | 129095 | 1477022-002 | DIODE |
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| CR6144 | 119597 | 1471872-010 | DIODE |
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| CR6147 | 119597 | 1471872-010 | DIODE |
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| E3301 | 153328 | 2843165-004 | BEAD |
| E3302 | 153328 | 2843165-004 | BEAD |
| E3303 | 153328 | 2843165-004 | BEAD |
| E3501 | 153328 | 2843165-004 | BEAD |
| E3502 | 153328 | 2843165-004 | BEAD |
| E3503 | 153328 | 2843165-004 | BEAD |
| E3504 | 153328 | 2843165-004 | BEAD |

*Continued on next page*

**Replacement Parts Continued** (See Product Safety Note on first page of this parts list)

| SYMBOL NO. | STOCK NO. | DRAWING NO. | DESCRIPTION |
|---|---|---|---|
| F601 | 156261 | 2840454-506 | ★ FUSE 0.6A |
| HE1 | 157638 | 2816248-001 | TRANSISTOR HALL EFFECT |
| HE2 | 157638 | 2816248-001 | TRANSISTOR HALL EFFECT |
| J4 | 149208 | 1466404-001 | CONNECTOR |
| J6 | 149208 | 1466404-001 | CONNECTOR |
| J11 | 158021 | 2861623-004 | CONNECTOR |
| J101 | 158697 | 2873321-001 | CONNECTOR 8 PIN |
| J2701 | 157182 | 2816401-504 | JACK VIDEO W/BRACKET |
| J4601 | 157181 | 2816401-503 | JACK AUDIO W/BRACKET |
| J4602 | 157189 | 2816401-503 | JACK AUDIO W/BRACKET |
| J6101 | 159575 | 2873400-104 | CONNECTOR 4 PIN |
| J6102 | 149208 | 1466404-001 | CONNECTOR |
| J6106 | 149208 | 1466404-001 | CONNECTOR |
| J6107 | 149208 | 1466404-001 | CONNECTOR |
| J6109 | 159576 | 2873386-008 | CONNECTOR 8 PIN |
| L101 | 158695 | 2861409-001 | COIL |
| L102 | 157938 | 2812595-506 | COIL ARM STRETCHER |
| L103 | 157936 | 2831713-001 | COIL SKIPPER |
| L104 | 157934 | 2861415-001 | COIL SWEEPER |
| L601 | 157929 | 2873085-001 | ★ COIL LINE CHOKE |
| L2701 | 153921 | 2841228-219 | COIL 33UH |
| L3105 | 149171 | 2841228-234 | COIL 560UH |
| L3201 | 149173 | 2841228-221 | COIL 47UH |
| L3202 | 154050 | 2841228-220 | COIL 39UH |
| L3203 | 149170 | 2841228-112 | COIL 8.2UH |
| L3204 | 149171 | 2841228-234 | COIL 560UH |
| L3205 | 149173 | 2841228-221 | COIL 47UH |
| L3206 | 149176 | 2841228-217 | COIL 22UH |
| L3207 | 149173 | 2841228-221 | COIL 47UH |
| L3208 | 149175 | 2841228-214 | COIL 12UH |
| L3301 | 149167 | 2841228-223 | COIL 68UH |
| L3302 | 149167 | 2841228-223 | COIL 68UH |
| L3303 | 149176 | 2841228-217 | COIL 22UH |
| L3304 | 149168 | 2841228-224 | COIL 82UH |
| L3305 | 149176 | 2841228-217 | COIL 22UH |
| L3306 | 149176 | 2841228-217 | COIL 22UH |
| L3401 | 149177 | 2841271-001 | COIL 36UH |
| L3402 | 157189 | 1467370-005 | COIL 62UH |
| L3403 | 157190 | 1467370-006 | COIL 20UH |
| L3404 | 149176 | 2841228-217 | COIL 22UH |
| L3405 | 149175 | 2841228-214 | COIL 12UH |
| L3501 | 157191 | 2873326-002 | COIL .069UH |
| L3502 | 157191 | 2873326-002 | COIL .069UH |
| L3505 | 157194 | 2872884-002 | COIL 0.22UH |
| L3506 | 157193 | 2873326-016 | COIL .235UH |
| L3507 | 157193 | 2873326-016 | COIL .235UH |
| L3508 | 157194 | 2872884-002 | COIL 0.22UH |
| L3509 | 157188 | 1467370-001 | COIL 10UH |
| L3511 | 157195 | 1496280-003 | COIL .33UH |
| L4107 | 153920 | 2843031-001 | COIL 18MH |
| L4108 | 153920 | 2843031-001 | COIL 18MH |
| L5101 | 157187 | 2872884-017 | COIL 5.6UH |
| L5901 | 157187 | 2872884-017 | COIL 5.6UH |
| L6101 | 159579 | 2871333-007 | COIL OSD 1MHZ ADJ |
| L6102 | 149195 | 1467370-003 | COIL OSD 6MHZ ADJ |
| L6103 | 159577 | 2873601-146 | COIL 270UH |
| L6104 | 159578 | 2873601-150 | COIL 390UH |
| P1 | 158674 | 2861623-109 | CONNECTOR 9 PIN |
| P2 | 158675 | 2861084-204 | CONNECTOR 4 PIN |
| P3 | 158020 | 2861623-011 | CONNECTOR 11 PIN |
| P4 | 158673 | 2861084-102 | CONNECTOR 2 PIN |
| P5 | 158676 | 2861084-105 | CONNECTOR 5 PIN |
| P6 | 158673 | 2861084-102 | CONNECTOR 2 PIN |
| P7 | 149182 | 1477678-104 | CONNECTOR 5 PIN |
| P8 | 149182 | 1477678-104 | CONNECTOR 2 PIN |
| P9 | 158673 | 2861084-102 | CONNECTOR 2 PIN |
| P11 | 158021 | 2861623-004 | CONNECTOR 4 PIN |
| P12 | 149180 | 1477678-001 | CONNECTOR 2 PIN |
| P101 | 157525 | 1467740-071 | CONNECTOR 8 PIN |
| P1101 | 157524 | 2861623-107 | CONNECTOR 7 PIN |
| P5601 | 157525 | 1467740-071 | CONNECTOR 8 PIN |
| P6102 | 149180 | 1477678-001 | CONNECTOR 2 PIN |
| P6103 | 159639 | 2861623-008 | CONNECTOR 8 PIN |
| P6104 | 149182 | 1477678-104 | CONNECTOR 5 PIN |
| P6105 | 158019 | 2861623-010 | CONNECTOR 10 PIN |
| P6106 | 149180 | 1477678-001 | CONNECTOR 2 PIN |
| P6107 | 149180 | 1477678-001 | CONNECTOR 2 PIN |
| P6109 | 157525 | 1467740-071 | CONNECTOR 8 PIN |
| Q101 | 145395 | 1417318-007 | TRANSISTOR SWEEP |
| Q102 | 146847 | 1417306-013 | TRANSISTOR INVERTER |
| Q401 | 151326 | 1417360-001 | TRANSISTOR GAIN STAGE |
| Q402 | 151326 | 1417360-001 | TRANSISTOR OUTPUT DRIVER |
| Q403 | 143794 | 1417306-012 | TRANSISTOR AFT AMP |
| Q404 | 143794 | 1417306-012 | TRANSISTOR AFT REF AMP |
| Q405 | 156262 | 1417382-002 | TRANSISTOR SEARCH OSC |
| Q2001 | 155882 | 1417422-001 | TRANSISTOR REGULATOR |
| Q2002 | 145776 | 1417303-003 | TRANSISTOR CURRENT LIMITER |
| Q2003 | 146847 | 1417306-013 | TRANSISTOR DRIVER |
| Q2004 | 145395 | 1417318-007 | TRANSISTOR REGULATOR |
| Q2005 | 140979 | 1417364-001 | TRANSISTOR REGULATOR |
| Q2006 | 146847 | 1417306-013 | TRANSISTOR CURRENT LIMITER |
| Q2007 | 146847 | 1417306-013 | TRANSISTOR CURRENT LIMITER |
| Q2501 | 146847 | 1417306-013 | TRANSISTOR RF AMP |
| Q2502 | 146847 | 1417306-013 | TRANSISTOR OUTPUT DET SW |
| Q2503 | 146847 | 1417306-013 | TRANSISTOR OUTPUT DET SW |
| Q2504 | 150247 | 1417411-003 | TRANSISTOR GAIN CONTROL |
| Q2505 | 145776 | 1417303-003 | TRANSISTOR AGC AMP |
| Q2506 | 145776 | 1417303-003 | TRANSISTOR SYNC STRIPPER |
| Q2507 | 146847 | 1417306-013 | TRANSISTOR CLAMP |
| Q2701 | 146847 | 1417306-013 | TRANSISTOR VIDEO DRIVER |
| Q3101 | 146847 | 1417306-013 | TRANSISTOR N-LAC BUFFER |
| Q3102 | 149040 | 1417387-001 | TRANSISTOR N-LAC AMP |
| Q3103 | 146847 | 1417306-013 | TRANSISTOR N-LAC AMP |
| Q3104 | 146847 | 1417306-013 | TRANSISTOR N-LAC OUT DRIVER |
| Q3105 | 146847 | 1417306-013 | TRANSISTOR 716KHZ AMP |
| Q3107 | 146847 | 1417306-013 | TRANSISTOR CONTROL AMP |
| Q3201 | 146847 | 1417306-013 | TRANSISTOR PHASE CORRECTION |
| Q3202 | 146847 | 1417306-013 | TRANSISTOR VIDEO BUFFER |
| Q3301 | 146847 | 1417306-013 | TRANSISTOR DELAY VIDEO DRIVE |
| Q3303 | 146847 | 1417306-013 | TRANSISTOR VERT DETAIL |
| Q3304 | 146847 | 1417306-013 | TRANSISTOR CHROMA DRIVER |
| Q3305 | 145776 | 1417303-003 | TRANSISTOR CHROMA BUFFER |
| Q3306 | 146847 | 1417306-013 | TRANSISTOR LUMA BUFFER |
| Q3401 | 146847 | 1417306-013 | TRANSISTOR VIDEO BUFFER |
| Q3402 | 146847 | 1417306-013 | TRANSISTOR VIDEO AMP |
| Q3403 | 146847 | 1417306-013 | TRANSISTOR CLK PHASE SHIFTER |
| Q3404 | 146847 | 1417306-013 | TRANSISTOR CLOCK BUFFER |
| Q3405 | 146847 | 1417306-013 | TRANSISTOR XDCR DRIVER |
| Q3406 | 149041 | 1417351-002 | TRANSISTOR XDCR DRIVER |
| Q3407 | 146847 | 1417306-013 | TRANSISTOR XDCR DRIVER |
| Q3408 | 149041 | 1417351-002 | TRANSISTOR XDCR DRIVER |
| Q3409 | 146847 | 1417306-013 | TRANSISTOR VIDEO BLANKER |
| Q3412 | 151326 | 1417360-001 | TRANSISTOR NOISE CORING AMP |
| Q3413 | 146847 | 1417306-013 | TRANSISTOR NOISE CORING AMP |
| Q3501 | 149040 | 1417387-001 | TRANSISTOR BIAS SWITCH |
| Q4102 | 146847 | 1417306-013 | TRANSISTOR DECODER DEFEAT |
| Q4301 | 146847 | 1417306-013 | TRANSISTOR LEFT CH BUFFER |
| Q4302 | 146847 | 1417306-013 | TRANSISTOR RIGHT CH BUFFER |
| Q4501 | 149040 | 1417387-001 | TRANSISTOR CURRENT SOURCE |
| Q5101 | 145776 | 1417303-003 | TRANSISTOR LS DIGIT DRIVER |
| Q5102 | 145776 | 1417303-003 | TRANSISTOR MS DIGIT DRIVER |
| Q5103 | 146847 | 1417306-013 | TRANSISTOR DAXI STATUS INVERTER |
| Q5104 | 145395 | 1417318-007 | TRANSISTOR STEPPER OUTPUT |
| Q5105 | 146847 | 1417306-013 | TRANSISTOR STEPPER DRIVER |
| Q5106 | 149041 | 1417351-002 | TRANSISTOR STEPPER OUTPUT A |
| Q5107 | 145395 | 1417318-007 | TRANSISTOR STEPPER OUTPUT B |
| Q5108 | 146847 | 1417306-013 | TRANSISTOR LIFTER DRIVE |
| Q5109 | 149041 | 1417351-002 | TRANSISTOR LIFTER OUTPUT |
| Q5110 | 146847 | 1417306-013 | TRANSISTOR VERT DETAIL DRIVE |
| Q5111 | 146847 | 1417306-013 | TRANSISTOR STEPPER DRIVE C |
| Q5112 | 149041 | 1417351-002 | TRANSISTOR STEPPER OUTPUT C |
| Q5113 | 145776 | 1417303-003 | TRANSISTOR LED DISPLAY SELECT |
| Q5114 | 145776 | 1417303-003 | TRANSISTOR DISCRETE LED SELECT |
| Q5115 | 146847 | 1417306-013 | TRANSISTOR LOW VOLTAGE DET |
| Q5116 | 146847 | 1417306-013 | TRANSISTOR RESET SWITCH |
| Q5301 | 146847 | 1417306-013 | TRANSISTOR REV RAMP SWITCH |
| Q5302 | 146847 | 1417306-013 | TRANSISTOR FWD RAMP SWITCH |
| Q5303 | 146847 | 1417306-013 | TRANSISTOR KICK PULSE DRIVER |
| Q5304 | 145776 | 1417303-003 | TRANSISTOR KICK PULSE DRIVER |
| Q5305 | 159299 | 1417327-004 | TRANSISTOR KICK PULSE OUTPUT |
| Q5306 | 159300 | 1417328-003 | TRANSISTOR KICK PULSE OUTPUT |
| Q5901 | 159299 | 1417327-004 | TRANSISTOR REV FUNCTION SW |
| Q5902 | 146847 | 1417306-013 | TRANSISTOR FUNC DR REV |
| Q5903 | 159299 | 1417327-004 | TRANSISTOR FWD FUNCTION SW |
| Q5904 | 146847 | 1417306-013 | TRANSISTOR FUNC DR FWD |
| Q5905 | 145395 | 1417318-007 | TRANSISTOR FUNC MTR OUTPUT FWD |
| Q5906 | 145395 | 1417318-007 | TRANSISTOR FUNC MTR OUTPUT REV |
| Q5907 | 145776 | 1417303-003 | TRANSISTOR PAUSE LINE BUFFER |
| Q5908 | 146847 | 1417306-013 | TRANSISTOR SW DRIVER REV |
| Q5909 | 146847 | 1417306-013 | TRANSISTOR SW DRIVER FWD |
| Q5921 | 159300 | 1417328-003 | TRANSISTOR CURRENT SOURCE SW |
| Q5922 | 146847 | 1417306-013 | TRANSISTOR DRIVE AMP |
| Q5923 | 159299 | 1417327-004 | TRANSISTOR TURNTABLE MOTOR DRIVER B |
| Q5931 | 159300 | 1417328-003 | TRANSISTOR CURRENT SOURCE SW |
| Q5932 | 146847 | 1417306-013 | TRANSISTOR DRIVE AMP |

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**Replacement Parts Continued** (See Product Safety Note on first page of this parts list)

| SYMBOL NO. | STOCK NO. | DRAWING NO. | DESCRIPTION |
|---|---|---|---|
| Q5933 | 159299 | 1417327-004 | TRANSISTOR TURNTABLE MOTOR DRIVER A |
| Q5941 | 159300 | 1417328-003 | TRANSISTOR CURRENT SOURCE SWITCH |
| Q5942 | 146847 | 1417306-013 | TRANSISTOR DRIVE AMP |
| Q5943 | 159299 | 1417327-004 | TRANSISTOR TURNTABLE MOTOR DRIVER B |
| Q5951 | 159300 | 1417328-003 | TRANSISTOR CURRENT SOURCE SW |
| Q5952 | 146847 | 1417306-013 | TRANSISTOR DRIVE AMP |
| Q5953 | 159299 | 1417327-004 | TRANSISTOR TURNTABLE MOTOR DRIVER C |
| Q6101 | 157631 | 1417383-001 | TRANSISTOR ANT BUFFER SW |
| Q6102 | 146847 | 1417306-013 | TRANSISTOR CAV BUS RCVR |
| Q6103 | 146847 | 1417306-013 | TRANSISTOR LOW VOLT DET |
| Q6104 | 146847 | 1417306-013 | TRANSISTOR RESET SW |
| Q6105 | 146847 | 1417306-013 | TRANSISTOR CAV BUFFER |
| Q6106 | 157632 | 1417386-001 | TRANSISTOR PHASE DET DW |
| Q6107 | 149040 | 1417387-001 | TRANSISTOR PHASE DET UP |
| Q6108 | 157632 | 1417386-001 | TRANSISTOR PLAYER VIDEO SW |
| Q6109 | 157632 | 1417386-001 | TRANSISTOR CHAR VIDEO SW |
| Q6110 | 149040 | 1417387-001 | TRANSISTOR CHAR VIDEO AMP |
| Q6111 | 146847 | 1417306-013 | TRANSISTOR CAV BUS DRVR |
| Q6114 | 140076 | 1417309-001 | TRANSISTOR IR BUFFER AMP |
| Q6115 | 146847 | 1417306-013 | TRANSISTOR SYNC TIP BIAS AMP |
| Q6116 | 149040 | 1417387-001 | TRANSISTOR BIAS TRACKING |
| Q6117 | 146847 | 1417306-013 | TRANSISTOR RKM BUFFER |
| R1 | 156333 | 2872667-003 | RES CONTROL RADIUS SENSE |
| R401 | 153030 | 993113-203 | ★ RES MFFP1/4W 5% 120R |
| R411 | 829311 | 993218-722 | RES CF 1/4W 2% 11K |
| R412 | 829222 | 993218-705 | RES CF 1/4W 2% 2200R |
| R414 | 829010 | 993218-349 | RES CF 1/4W 5% 10R |
| R417 | 829022 | 993113-185 | ★ RES MFFP 1/4W 5% 22R |
| R601 | 502547 | 82283-106 | RES CC 1/2W 10% 4.7M |
| R2002 | 830B56 | 993291-319 | ★ RES MF 1/2W 5% .56R |
| R2003 | 830B56 | 993291-319 | ★ RES MF 1/2W 5% .56R |
| R2005 | 829156 | 993113-219 | ★ RES MFFP 1/4W 5% 560R |
| R2006 | 157214 | 990401-416 | RES MF 1/4W 1% 14.3K |
| R2007 | 157213 | 990401-401 | RES MF 1/4W 1% 10K |
| R2008 | 157212 | 990401-430 | RES MF 1/4W 1% 20K |
| R2009 | 157213 | 990401-401 | RES MF 1/4W 1% 10K |
| R2010 | 829068 | 993113-197 | ★ RES MFFP 1/4W 5% 68R |
| R2013 | 830A68 | 993273-345 | ★ RES CFFP 1/2W 5% 6.8R |
| R2014 | 830033 | 993290-189 | ★ RES MFFP 1/2W 5% 33R |
| R2016 | 157336 | 2815583-721 | RES CF 1/8W 2% 10K |
| R2017 | 157334 | 2815583-724 | RES CF 1/8W 2% 13K |
| R2019 | 829522 | 993218-477 | RES CF 1/4W 5% 2.2M |
| R2020 | 143848 | 1479265-013 | RES CONTROL 5V REF |
| R2024 | 830A10 | 2817720-325 | ★ RES CFFP 1/8W 5% 1R |
| R2025 | 829A27 | 993272-335 | ★ RES CFFP 1/4W 5% 2.7R |
| R2504 | 829010 | 993113-177 | ★ RES MFFP 1/4W 5% 10R |
| R2516 | 157335 | 2815583-722 | RES CF 1/8W 2% 11K |
| R2704 | 829115 | 993113-205 | ★ RES MFFP1/4W 5% 150R |
| R3101 | 829130 | 993218-684 | RES CF 1/4W 2% 300R |
| R3118 | 829010 | 993113-177 | ★ RES MFFP 1/4W 5% 10R |
| R3129 | 829110 | 993113-201 | ★ RES MFFP 1/4W 5% 100R |
| R3131 | 151270 | 1479265-047 | RES CONTROL DC BAL ADJ |
| R3202 | 147615 | 1479265-020 | RES CONTROL VIDEO LEVEL ADJ |
| R3213 | 829010 | 993113-177 | ★ RES MFFP 1/4W 5% 10R |
| R3221 | 157333 | 2815583-728 | RES CF 1/8W 2% 20K |
| R3222 | 157333 | 2815583-728 | RES CF 1/8W 2% 20K |
| R3304 | 151270 | 1479265-047 | RES CONTROL DELAY VIDEO ADJ |
| R3312 | 146175 | 1479265-019 | RES CONTROL CHROMA LEVEL ADJ |
| R3315 | 829133 | 993218-685 | RES CF 1/4W 2% 330R |
| R3316 | 829133 | 993218-685 | RES CF 1/4W 2% 330R |
| R3317 | 146175 | 1479265-019 | RES CONTROL VERT DETAIL LEVEL ADJ |
| R3322 | 829133 | 993218-685 | RES CF 1/4W 2% 330R |
| R3323 | 829133 | 993218-685 | RES CF 1/4W 2% 330R |
| R3324 | 829133 | 993218-685 | RES CF 1/4W 2% 330R |
| R3325 | 830113 | 993290-204 | ★ RES MFFP1/2W 5% 130R |
| R3326 | 829239 | 993218-711 | RES CF 1/4W 2% 3.9K |
| R3327 | 829239 | 993218-711 | RES CF 1/4W 2% 3.9K |
| R3328 | 143849 | 1479265-009 | RES CONTROL LUMA CHANNEL ADJ |
| R3329 | 143849 | 1479265-009 | RES CONTROL CHROMA CHANNEL ADJ |
| R3402 | 146175 | 1479265-019 | RES CONTROL MOD DEPTH ADJ |
| R3404 | 157995 | 2815583-707 | RES CF 1/8W 2% 2700R |
| R3407 | 157339 | 2815583-704 | RES CF 1/8W 2% 2K |
| R3408 | 157994 | 2815583-715 | RES CF 1/8W 2% 5.6K |
| R3412 | 146175 | 1479265-019 | RES CONTROL VC XD GAIN ADJ |
| R3418 | 147960 | 993272-341 | ★ RES CFFP1/4W 5% 4.7R |
| R3419 | 143848 | 1479265-013 | RES CONTROL PHASE DET GAIN ADJ |
| R3424 | 157340 | 2815583-469 | RES CF 1/8W 5% 1M |
| R3438 | 147040 | 993218-472 | RES CF 1/4W 5% 1.3M |
| R3441 | 147040 | 993218-472 | RES CF 1/4W 5% 1.3M |
| R3442 | 147040 | 993218-472 | RES CF 1/4W 5% 1.3M |
| R3443 | 829322 | 993218-729 | RES CF 1/4W 2% 22K |
| R3446 | 829022 | 993113-185 | ★ RES MFFP1/4W 5% 22R |
| R3449 | 829033 | 993113-189 | ★ RES MFFP 1/4W 5% 33R |
| R3452 | 157340 | 2815583-469 | RES CF 1/8W 5% 1M |
| R3464 | 829110 | 993113-201 | ★ RES MFFP 1/4W 5% 100R |
| R3509 | 829068 | 993113-197 | ★ RES MFFP 1/4W 5% 68R |
| R3510 | 829068 | 993113-197 | ★ RES MFFP 1/4W 5% 68R |
| R3511 | 829310 | 993218-721 | RES CF 1/4W 2% 10K |
| R3515 | 829247 | 993218-713 | RES CF 1/4W 2% 4700R |
| R3524 | 829130 | 993218-684 | RES CF 1/4W 2% 300R |
| R3529 | 829239 | 993218-711 | RES CF 1/4W 2% 3.9K |
| R3531 | 829115 | 993218-677 | RES CF 1/4W 2% 150R |
| R3532 | 829010 | 993218-349 | RES CF 1/4W 5% 10R |
| R4111 | 151270 | 1479265-047 | RES CONTROL 716KHZ VCO FREQ ADJ |
| R4112 | 151270 | 1479265-047 | RES CONTROL 905KHZ VCO FREQ ADJ |
| R4127 | 151371 | 1479265-049 | RES CONTROL L+R LEVEL ADJ |
| R4128 | 151371 | 1479265-049 | RES CONTROL |
| R4140 | 829010 | 993113-177 | ★ RES MFFP 1/4W 5% 10R |
| R4141 | 829010 | 993113-177 | ★ RES MFFP 1/4W 5% 10R |
| R4203 | 829522 | 993218-477 | RES CF 1/4W 5% 2.2M |
| R4204 | 829522 | 993218-477 | RES CF 1/4W 5% 2.2M |
| R4205 | 829522 | 993218-477 | RES CF 1/4W 5% 2.2M |
| R4206 | 829522 | 993218-477 | RES CF 1/4W 5% 2.2M |
| R4209 | 829239 | 993218-711 | RES CF 1/4W 2% 3.9K |
| R4210 | 829175 | 993218-694 | RES CF 1/4W 2% 750R |
| R4213 | 157333 | 2815583-728 | RES CF 1/8W 2% 20K |
| R4214 | 829322 | 993218-729 | RES CF 1/4W 2% 22K |
| R4303 | 151371 | 1479265-049 | RES CONTROL |
| R4305 | 829320 | 993218-728 | RES CF 1/4W 2% 20K |
| R4306 | 157333 | 2815583-728 | RES CF 1/8W 2% 20K |
| R4308 | 157333 | 2815583-728 | RES CF 1/8W 2% 20K |
| R4310 | 829522 | 993218-477 | RES CF 1/4W 5% 2.2M |
| R4311 | 829320 | 993218-728 | RES CF 1/4W 2% 20K |
| R4312 | 157333 | 2815583-728 | RES CF 1/8W 2% 20K |
| R4317 | 157333 | 2815583-728 | RES CF 1/8W 2% 20K |
| R4503 | 157333 | 2815583-728 | RES CF 1/8W 2% 20K |
| R4504 | 157338 | 2815583-708 | RES CF 3K 2% 1/8W |
| R4505 | 157332 | 2815583-752 | RES CF 1/8W 2% 200K |
| R4506 | 157333 | 2815583-728 | RES CF 1/8W 2% 20K |
| R4507 | 157377 | 2815583-711 | RES CF 1/8W 2% 3.9K |
| R4508 | 829210 | 993218-697 | RES CF 1/4W 2% 1K |
| R4509 | 157376 | 2815583-737 | RES CF 1/8W 2% 47K |
| R4510 | 829147 | 993218-689 | RES CF 1/4W 2% 470R |
| R4615 | 829147 | 993218-689 | RES CF 1/4W 2% 470R |
| R4616 | 829147 | 993218-689 | RES CF 1/4W 2% 470R |
| R5126 | 829239 | 993218-711 | RES CF 1/4W 2% 3.9K |
| R5127 | 829047 | 993113-193 | ★ RES MFFP 1/4W 5% 47R |
| R5138 | 829010 | 993117-177 | ★ RES MFFP 1/4W 5% 10R |
| R5139 | 829010 | 993113-177 | ★ RES MFFP 1/4W 5% 10R |
| R5156 | 829010 | 993218-349 | ★ RES CF 1/4W 5% 10R |
| R5157 | 829010 | 993218-349 | RES CF 1/4W 5% 10R |
| R5303 | 159641 | 2815583-731 | RES CF 1/8W 2% 27K |
| R5304 | 159642 | 2815583-739 | RES CF 1/8W 2% 56K |
| R5305 | 159643 | 2815583-725 | RES CF 1/8W 2% 15K |
| R5308 | 159644 | 2815583-745 | RES CF 1/8W 2% 100K |
| R5309 | 829010 | 993113-177 | ★ RES MFFP 1/4W 5% 10R |
| R5315 | 147040 | 993218-472 | RES CF 1/4W 5% 1.3M |
| R5917 | 830022 | 993290-185 | ★ RES MFFP 1/2W 5% 22R |
| R5923 | 829110 | 993113-201 | ★ RES MFFP 1/4W 5% 100R |
| R5926 | 830A10 | 2817720-325 | ★ RES CFFP 1/8W 5% 1R |
| R5933 | 829110 | 993113-201 | ★ RES MFFP 1/4W 5% 100R |
| R5936 | 830A10 | 2817720-325 | ★ RES CFFP 1/2W 5% 1R |
| R5943 | 829110 | 993113-201 | ★ RES MFFP 1/4W 5% 100R |
| R5946 | 830A10 | 2817720-325 | ★ RES CFFP 1/2W 5% 1R |
| R5923 | 829110 | 993113-201 | ★ RES MFFP 1G4W 5% 100R |
| R5956 | 145384 | 993273-325 | ★ RES CFFP 1/2W 5% 1.0R |
| R6169 | 151267 | 1479265-046 | RES CONTROL SYNC TIP ADJ |
| S1 | 156527 | 2831429-004 | ★ SWITCH POWER |
| S2 | 157639 | 1495451-026 | ★ SWITCH AC OFF |
| S3 | 156527 | 2831429-004 | ★ SWITCH POWER |
| S4 | 157519 | 2860855-001 | SWITCH CADDY SENSE |
| S5 | 157519 | 2860855-001 | SWITCH SPINE SENSE |
| S6 | 157519 | 2860855-001 | SWITCH SIDE ID |
| S7 | 157519 | 2860855-001 | SWITCH MECHANISM PLAY |
| S8 | 157519 | 2860855-001 | SWITCH CADDY REVERSE |
| S9 | 157518 | 2860855-004 | SWITCH MECHANISM LOAD |
| S10 | 157519 | 2860855-001 | SWITCH LANDING |
| S11 | 157519 | 2860855-001 | SWITCH ARM HOME |
| S3501 | 158002 | 2816401-502 | SWITCH CHANNEL SELECT |
| S5601 THRU S5607 | 157861 | 2861083-001 | SWITCH FUNCTION MEMBRANE |
| T1 | 156300 | 2816285-001 | ★ TRANSFORMER POWER |
| U2001 | 149018 | 1421754-001 | IC REF AMP/BUFFER/ERROR AMP |
| U2501 | 149019 | 1465648-001 | IC SYNC DETECTOR |

*Continued on next page*

NOTE: SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPERATELY. OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.

| | | | |
|---|---|---|---|
| 1 | 159573 | 2831493-004 | ★ CABINET, TOP |
| 2 | 158241 | 2816230-119 | SCREW |
| 3 | 157868 | 2873332-003 | ROD, DOOR PUSH |
| 4 | 157862 | 2861423-002 | COVER, CABLE |
| 5 | 157566 | 2873364-001 | SPRING, POWER BUTTON |
| 6 | 157863 | 2873405-001 | NUT, PUSH |
| 7 | 159645 | 2861019-003 | BUTTON, POWER SWITCH |
| 8 | 159572 | 2831482-003 | ★ CABINET, FRONT |
| 9 | 157580 | 2861032-002 | PIVOT, DISC (LEFT) |
| 10 | 157858 | 2816456-508 | DOOR, CADDY |
| 11 | 159646 | 2831471-003 | BUTTONS, 7 FUNCTION |
| 12 | 159580 | 2816419-504 | PANEL, FRONT ASSEMBLY |
| 13 | 157579 | 2861032-001 | PIVOT, DISC (RIGHT) |
| 14 | 157578 | 2844064-001 | CLIP, GROUND |
| 15 | 157522 | 2831443-001 | SPINDLE, RECEIVER |
| 16 | 157565 | 2843699-001 | WIRE, CAMSIDE REC |
| 17 | 157590 | 2873329-002 | COVER, GEAR |
| 18 | 157592 | 2873380-002 | BELT |
| 19 | 157584 | 2861432-001 | PULLEY, & GEAR 1ST REDUCTION |
| 20 | 157560 | 480366-005 | RETAINER, RING |
| 21 | 157576 | 2861026-002 | GEAR, & PINION |
| 22 | 157585 | 2873003-001 | GEAR, POWER ASSIST |
| 23 | 157573 | 2844062-001 | WASHER, SHIM |
| 24 | 157608 | 2831483-003 | RAIL |
| 25 | 155094 | 93610-105 | WASHER |
| 28 | 157564 | 2843631-001 | SPRING, CADDY LOCKOUT |
| 29 | 157575 | 2861014-001 | ARM, LOCKOUT CADDY LEFT |
| 30 | 155099 | 2841782-001 | SCREW |
| 31 | 157545 | 2873055-004 | HUB, ASSEMBLY POWER ASSIST |
| 32 | 157586 | 2873004-001 | SHAFT, HUB POWER ASSIST |
| 88 | 157547 | 2873323-001 | SPACER, SWITCH |
| 89 | 157539 | 2861408-001 | SHIELD, POWER SWITCH |
| 90 | 157540 | 2861424-002 | CAP, POWER SWITCH |
| 91 | 157997 | 2843605-001 | SCREW |
| 92 | 157533 | 2844007-001 | SPRING, SWEEPER EXTENSION |
| 93 | 157870 | 2844022-002 | CLIP, GROUNDING |
| 94 | 157526 | 2831703-001 | COVER, BOTTOM |
| 95 | 157558 | 2873377-001 | BUSHING, BASE PAN |
| 96 | 157552 | 2873349-002 | FOOT, PAD |
| 97 | 157536 | 2844048-001 | PLATE, REINFORCING |
| 98 | 157546 | 2873302-002 | NUT, ADJUSTING |
| 99 | 157530 | 2843689-002 | SCREW, HEIGHT ADJUSTMENT |
| 100 | 157559 | 2873389-001 | WASHER, GUARD ADJ NUT |
| 101 | 159571 | 2861433-001 | PANEL |
| 102 | 157849 | 2843683-001 | PLATE, THRUST |
| 103 | 157598 | 2873065-003 | GEAR, 3RD REDUCTION |
| 104 | 157597 | 2873011-001 | GEAR, 2ND REDUCTION |
| 105 | 157601 | 2843624-001 | GEAR |
| 106 | 157596 | 2873064-001 | GEAR, 1ST REDUCTION |
| 107 | 157600 | 2861047-001 | LEVER |
| 108 | 157609 | 2861050-002 | BRACKET |
| 109 | 157937 | 2812595-507 | PLUNGER |
| 110 | 157998 | 93600-115 | SCREW |
| 111 | 157648 | 2812593-502 | ARM, PICKUP LESS CARTRIDGE |
| 112 | 157876 | 2873068-001 | LATCH |
| 113 | 157883 | 2873337-002 | SPRING, LIFTER LOCK |
| 114 | 157875 | 2812595-505 | COVER, CARTRIDGE |
| 115 | 157877 | 2873083-001 | CLIP |
| 116 | 157886 | 2812595-504 | LIFTER, ACTUATOR ASSEMBLY |
| 117 | 157882 | 2873072-001 | SHAFT, LIFTER |
| 118 | 157888 | 2844023-002 | PLUNGER, LOCK |
| 119 | 157874 | 2873374-001 | BEARING |
| 120 | 157881 | 2861049-002 | RACK, STEPPER DRIVER |
| 121 | 157890 | 2843659-004 | SPRING, LOCK |
| 122 | 157889 | 93605-402 | RETAINER, E-RING |

*Continued on next page*

**Replacement Parts Continued** (See Product Safety Note on first page of this parts list)

| SYMBOL NO. | STOCK NO. | DRAWING NO. | DESCRIPTION |
|---|---|---|---|
| 123 | 157936 | 2831713-001 | COIL, KICKER/SKIPPER |
| 124 | 157938 | 2812595-506 | COIL, ARM STRETCHER ASSEMBLY |
| 125 | 157878 | 2873088-001 | GASKET, GROUNDING |
| 126 | 157879 | 2844073-001 | RETAINER, PUSH-ON |
| 127 | 157887 | 2861088-001 | ACTUATOR, SWEEPER |
| 128 | 157891 | 2843659-003 | SPRING, SWEEPER PLUNGER |
| 129 | 157884 | 2873312-001 | ROLLER |
| 130 | 157885 | 2812595-503 | ARM, SWEEPER |
| | 157521 | 1490104-004 | RETAINER, WIRE TOP LOCKING |
| | 157555 | 2873363-001 | RETAINER, WIRE SIDE LOCKING |

## REMOTE PREAMP

### MCY005C

| | | | |
|---|---|---|---|
| MCY 005C | 158664 | 2844138-503 | ‡ MODULE COMPLETE |
| C901 | 146365 | 2840361-551 | CAP LYTC 4.7UF R 35V |
| C902 | 141868 | 2840361-161 | CAP LYTC 1UF R 50V |
| C903 | 146439 | 2841288-363 | CAP LYTC .47UF M 85C 50V |
| C904 | 143879 | 1491407-91M | CAPCD 1000PF M Z5P 50V |
| C905 | 143879 | 1491407-91M | CAPCD 1000PF M Z5P 50V |
| C906 | 147971 | 2843235-31M | CAPCD .01UF M Z5P 50V |
| C907 | 141868 | 2840361-161 | CAP LYTC 1UF R 50V |
| C908 | 145315 | 1491408-52M | CAPCD 2700PF K Z5P 50V |
| C909 | 146211 | 2840362-141 | CAP LYTC 10UF R 25V |
| C910 | 141868 | 2840361-161 | CAP LYTC 1UF R 50V |
| C911 | 147971 | 2843235-31M | CAPCD .01UF M Z5P 50V |
| CR901 | 119597 | 1471872-010 | DIODE |
| CR903 | 119597 | 1471872-010 | DIODE |
| CR904 | 119597 | 1471872-010 | DIODE |
| CR902A/B | 150711 | 2815416-001 | DIODE PHOTO |
| L901 | 157642 | 1445867-008 | COIL |
| Q901 | 148070 | 1417411-001 | TRANSISTOR |
| Q902 | 145410 | 1417330-011 | TRANSISTOR |
| Q903 | 148061 | 1417333-002 | TRANSISTOR |
| Q904 | 148061 | 1417333-002 | TRANSISTOR |
| R903 | 157643 | 2861160-001 | NETWORK |
| | 157640 | 2840591-002 | COVER, REAR |
| | 133319 | 938316-013 | GROMMET |

## REMOTE TRANSMITTER ASSEMBLY

### CRK36A

| | | | |
|---|---|---|---|
| | 156533 | 1457638-501 | ‡ TRANSMITTER, REMOTE |
| C1001 | 157810 | 2841205-009 | CAP LYTC 3.3UF 50V |
| C1002 | 157811 | 2841245-301 | CAPCD .1UF M Z5U 50V |
| C1003 | 148060 | 2840392-82M | CAPCT 150PF K Z5P 0050V |
| C1004 | 148060 | 2840392-82M | CAPCT 150PF K Z5P 0050V |
| C1005 | 157809 | 1490300-371 | CAP LYTC 2.2UF 63V |
| C1006 | 145396 | 2840392-92M | CAPCD 180PF M Z5P 50V |
| CR1001 | 148056 | 2811593-001 | DIODE LED |
| CR1002 | 148056 | 2811593-001 | DIODE LED |
| PW1000 | 159568 | 2844126-502 | CIRCUIT COMPLETE |
| Q1001 | 148996 | 1417318-003 | TRANSISTOR |
| Q1002 | 146847 | 1417306-013 | TRANSISTOR |
| Q1003 | 157808 | 1417347-005 | TRANSISTOR |
| Q1004 | 142190 | 1417330-001 | TRANSISTOR |
| Q1005 | 146847 | 1417306-013 | TRANSISTOR |
| R1014 | 159569 | 2861600-001 | NETWORK |
| U1001 | 157806 | 1421774-001 | IC |
| Y1001 | 157804 | 1422271-004 | CRYSTAL |
| | 159566 | 2831396-001 | BUTTONS |
| | 159563 | 2831336-002 | CASE, BOTTOM |
| | 159564 | 2831397-002 | CASE, TOP |
| | 157801 | 2870620-002 | CONNECTOR, EDGE BOARD |
| | 157803 | 2872801-001 | CONTACT, BATTERY |
| | 157791 | 2860777-001 | DOOR, BATTERY |
| | 157793 | 2841285-002 | FOOT |
| | 157799 | 2831334-002 | HOLDER, L BATTERY |
| | 157800 | 2831334-001 | HOLDER, R BATTERY |
| | 159567 | 2831507-001 | SWITCH, KIT CONTACT AND SPACER |
| | 157789 | 2860775-001 | LENS, IR |
| | 159565 | 2831398-001 | OVERLAY |
| | 129796 | 1444961-001 | SPRING, BATTERY CONTACT |
| | 157797 | 2844414-001 | SPRING, GROUND |

## STYLUS CARTRIDGE

| | | |
|---|---|---|
| 154216 | 2816412-501 | CARTRIDGE, VIDEO PICKUP |

## TOOLS & LUBES

| | | |
|---|---|---|
| 149073 | 2812522-503 | • CADDY, LESS DISC |
| 153394 | | DISC, STEREO ALIGNMENT |
| 156529 | | • GAUGE, TURNTABLE HEIGHT |
| 149053 | 2811825-002 | LUBRICANT, OIL |
| 149247 | 2811870-001 | LUBRICANT, RYKON |
| 151303 | | • TOOL, HEX 2.5MM |
| 159251 | | • TOOL, LIFTER ALIGNMENT |

## INCLUDED ACCESSORIES

| | | |
|---|---|---|
| AH011 | 2871056-001 | ADAPTER, 75 OHM COAX TO 300 OHM TWIN LEAD OUTPUT |
| AH018 | 2871464-001 | ADAPTER, 75 TO 300 OHM W/90 DEGREE PUSH-ON COAX CONNECTOR |
| | 2816991-001 | BATTERIES, 1.5V AA |
| | 2817354-001 | BOOK, INSTRUCTION |
| AH010 | 2871472-001 | CABLE, 300 OHM EXTENSION 5 FEET |
| 153938 | 2872677-001 | CABLE, STEREO |
| AH004 | 2873052-001 | CABLE, RF |
| | 2817358-001 | CARD, SIMPLIFIED INSTRUCTIONS |
| 156533 | 1457638-501 | ‡ TRANSMITTER, REMOTE CRK36A |