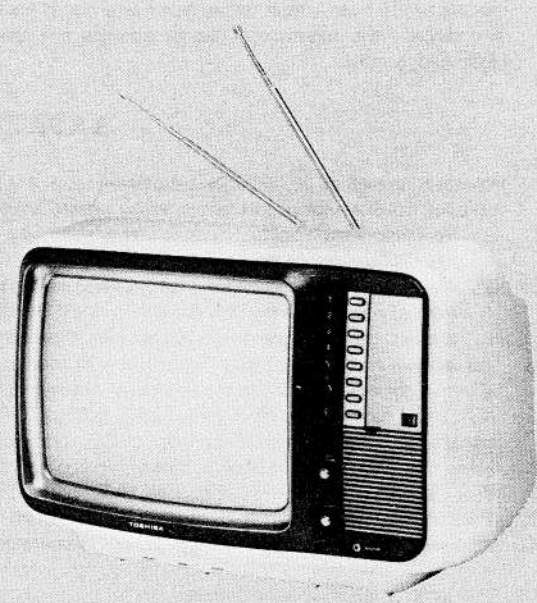
SERVICE DATA
FILE NO.020-330

TOSHIBA

COLOR TELEVISION

C-1480F



The TV set is equipped with a 21-pin socket corresponding to the peri television.

SPECIFICATIONS

POWER INPUT RATING:	78 watts (nominal), AC 115 or 230 volts, 50 Hz	
AERIAL INPUT IMPEDANCE:	75 ohm unbalanced type for VHF and UHF	
RECEIVING CHANNELS:	Any of 11 VHF channels	channels 2 to 12
	Any of 49 UHF channels	channels 21 to 69
INTERMEDIATE FREQUENCIES:	Picture I-F carrier frequency	VHF, UHF 32.7 MHz
	Sound I-F carrier frequency	39.2, 43.85 MHz
COLOUR SUB-CARRIER FREQUENCIES:	B-Y 4, 25000 MHz ±2 kHz, R-Y 4, 40625 MHz ±2 kHz	
CHASSIS CONSTRUCTION:	IC Solid State, Horizontal Chassis	
PICTURE TUBE:	370 HZB22 (VY), 33.5 cm-diagonal	
SOUND OUTPUT:	0.7 watt (at 10% harmonic distortion)	
	Maximum 1.0 watt	
SPEAKER:	Oval, 7 × 10 cm	
CONVERGENCE:	Magnetic	
FOCUS:	Electrostatic	
CABINET and TYPE:	Wooden, Table type	
DIMENSION:	Height	348 mm
	Width	493 mm
	Depth	407 mm
WEIGHT (NET):	16.5 kg	
CHASSIS NO:	TAS920	

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 24.5kv at zero beam current (minimum brightness) under a 230v (115v) AC power source. The high voltage must not, under any circumstances, exceed 26.0kv.
   Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure on page 15 of this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

1. Potentials as high as 22,000 volts are present when this receiver is operating. Operation of the receiver outside the cabinet or with the back cover removed involves a shock hazard from the receiver.
   1 Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment.
   2 Always discharge the picture tube anode to the receiver chassis to keep off the shock hazard before removing the anode cap.
   3 Perfectly discharge the high potential of the picture tube before handling the tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled.
2. This receiver has been adjusted in the factory to operate on AC 230v, 50 Hz. But it is possible to change for use with AC 115 volts, 50 Hz. Connect your SET to the voltage of Alternating Current indicated by the AC-LINE INDICATOR located on the rear of the SET. If it is necessary to reset the AC-LINE INDICATOR, be sure to match the voltage indicated on the AC-LINE INDICATOR with that actually applied. NEVER connect to DC supply or any other power or frequency.
3. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.
4. When replacing parts of circuit boards, wind the lead wires around terminals before soldering.
5. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10 mm away from circuit board.
6. Keep wires away from high voltage or high temperature components.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by shading on the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY RADIATION.

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1. SUMMARY

This new colour television model is all Solid-State table type, primarily composed of 1 LSI's, 1 MSI's, 9 IC, 2 PSF, 75 transistors, 92 diodes and a picture tube of 33.5 cm in-line gun slotted mask type.
A plug-in system is adopted for connecting Main PC (Printed Cirucit) Board with a Chroma PC module. This will allow easy replacement of module which facilitate rapid and correct inspection and remedy in troubleshooting.
The chassis is provided with nine PC boards and one module (chroma circuit). The In-Line Gun Picture Tube has simiplified the dynamic convergence adjustment. That is, although a conventional Delta-Gun System requires twelve-position adjustment, the In-Line Gung System requires only two-position adjustments. This implies that an advanced accuracy of convergence is allowed by the In-Line Gun System.

2. FRONT CONTROLS VIEW

FRONT CONTROLS

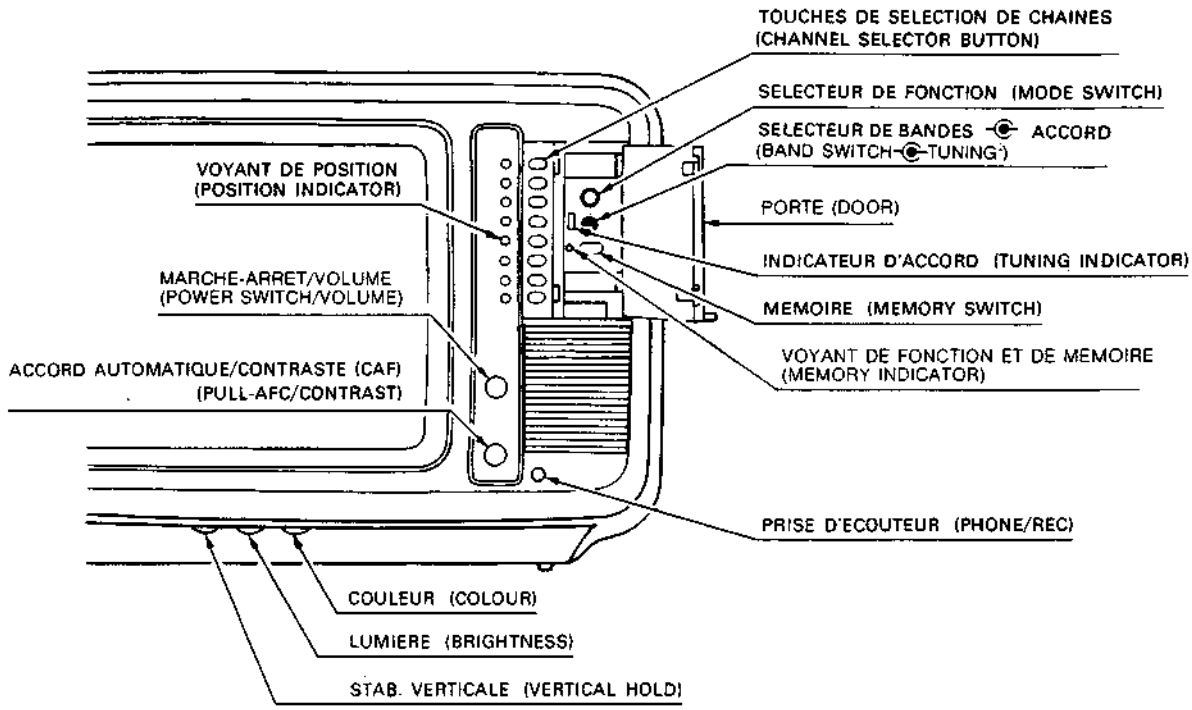


Figure 1.

3. MECHANICAL DISASSEMBLIES

3-1. BACK COVER REMOVAL (See figure 2)

1. Detach the aerial cable or aerial matching trans from aerial terminal.
2. Remove 5 screws (A) and 2 screws (B) from the back cover.
3. Remove the back cover.

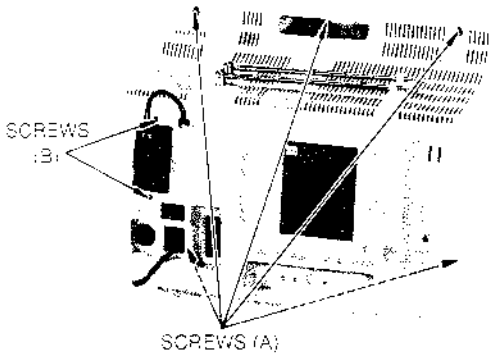


Figure 2.

3-2. DRAWING OUT AND SERVICING THE CHASSIS (See figure 3)

1. Remove a screw (C) securing the chassis from bottom board of cabinet.
2. Unfasten the leads which are fastened at the cabinet or others.
3. Draw out the chassis from cabinet.

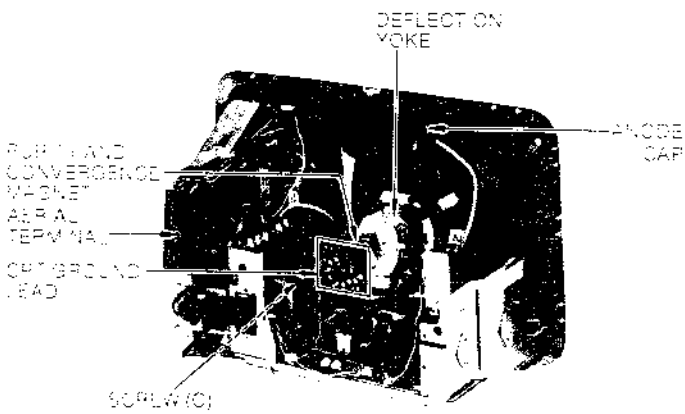


Figure 3. Chassis View

3-3. SELECTOR BLOCK REMOVAL (See figure 4)

1. Unfasten the leads which are fastened at the selector block.
2. Loosen 2 screws (D) which hold the SELECTOR BLOCK to the front control panel.
3. Remove 2 screws (E) which hold the SELECTOR BLOCK to the front control panel.
4. Remove the SELECTOR BLOCK from the front control panel.

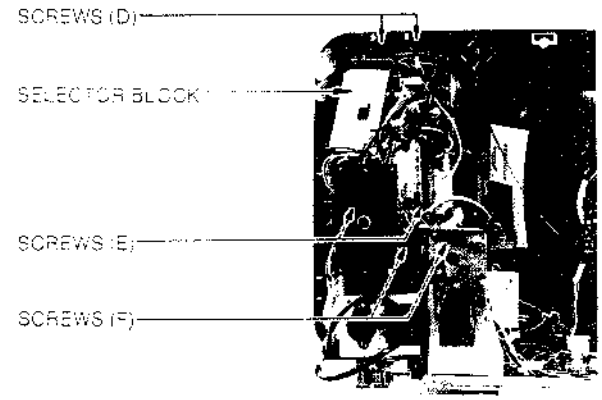


Figure 4.

3-4. FRONT CONTROL VR. BRACKET REMOVAL (See figure 4)

Following the steps under "3-3. SELECTOR BLOCK REMOVAL" proceed as follows.

1. Remove 2 screws (F) which hold the FRONT CONTROL VR. BRACKET to the front control panel.
2. Remove the FRONT CONTROL VR. BRACKET from the front control panel.

3-5. VHF/UHF TUNER REMOVAL (See figure 5)

Following the steps under "3-3 SELECTOR BLOCK REMOVAL" proceed as follows:

1. Disconnect all the leads from the VHF UHF Tuner. However before doing so, record the original lead connections.
2. Remove 2 screws (G) which hold VHF Tuner to the Tuner bracket.
3. Remove 2 screws (H) which hold UHF Tuner to the Tuner bracket.
4. Remove the VHF UHF Tuner.

3-6. KEY BOARD REMOVAL (See figure 5)

Following the steps under "3-3 SELECTOR BLOCK REMOVAL" proceed as follows:

1. Disconnect all the leads from the Key Board. However before doing so record the original lead connections.
2. Remove 2 screws (I) which hold Key Board to the tuner bracket.
3. Remove the Key Board.

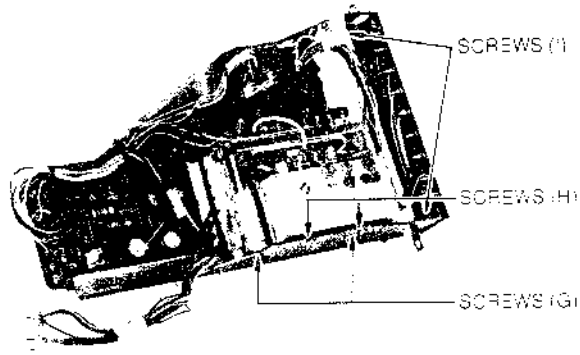


Figure 5.

3-7. CHASSIS REMOVAL (See figure 6)

Following the steps under "3-2 DRAWING OUT AND SEPARATING THE CHASSIS", "3-3 SELECTOR BLOCK REMOVAL", "3-4 FRONT CONTROL VR BRACKET REMOVAL" and "3-5 VHF UHF TUNER REMOVAL" proceed as follows:

1. Detach the CRT ground lead from CRT SOCKET BOARD. (See figure 3).
2. Detach the deflector yoke leads (6P connector) from MAIN BOARD.
3. Detach the picture tube anode cap and CRT SOCKET BOARD from the picture tube.
4. Detach 7P connector of selector unit leads, phono plug of F cable, 3P connector of source out put trans. leads from MAIN BOARD.
5. Detach 4P connector from POWER-I BOARD.
6. Detach 3P connector from POWER-II BOARD.
7. Detach 3P connector of Degaussing Coil lead from POWER-II BOARD.
8. Detach 3P connector from SF. PCTOR BOARD.
9. Remove the chassis.

Notice: Carefully discharge the high potential of the picture tube anode to the neck of chassis before removing the anode cap.

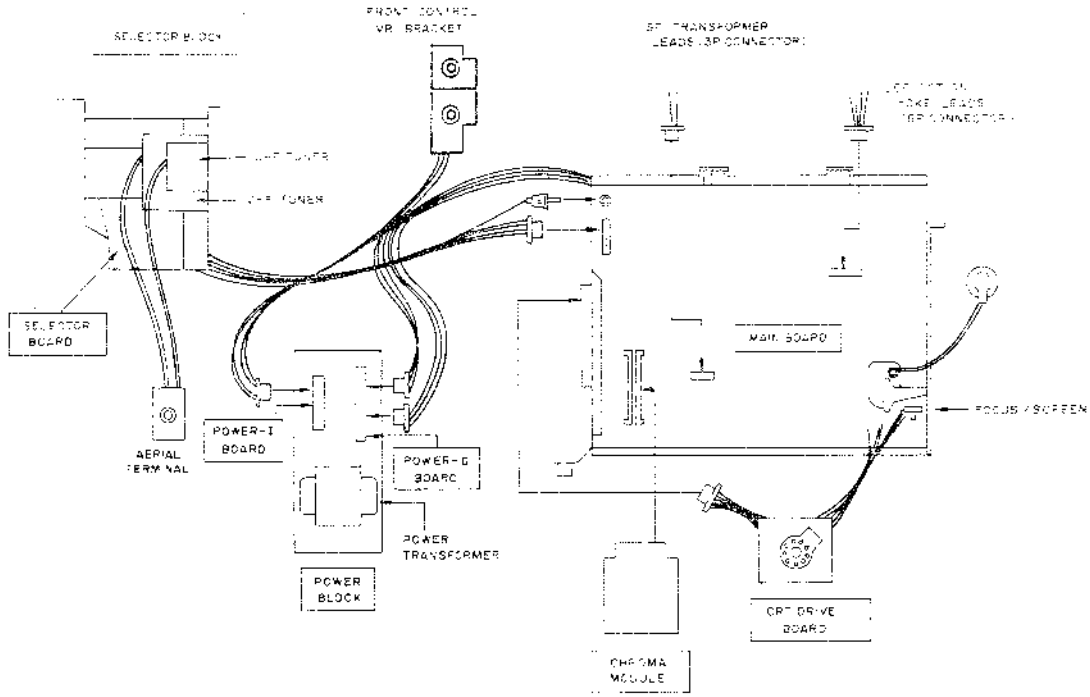


Figure 6.

3-8. POWER CORD REPLACEMENT (See figure 7)

When the power cord replacement is required. Proceed with the following steps.

1. Unsolder the power cord on the terminals of POWER-1 BOARD.
2. Spread the nail with a screw driver (flat) to open the holder cover.
3. Take out the power cord from the power cord holder.
4. To put on a new power cord, reverse the above procedures.

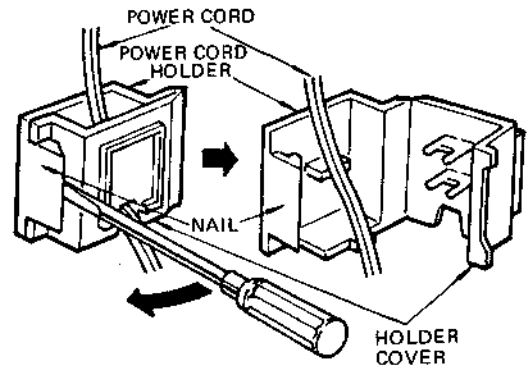


Figure 7. Power Cord Replacement

3-9. PICTURE TUBE REMOVAL (See figure 8)

After following instruction under "3-2. DRAWING OUT AND SERVICING THE CHASSIS" and "3-7. CHASSIS REMOVAL" proceed as follows:

1. Place the cabinet with the front down on a rolled pad or suitable cushion placed near the top edge of the picture tube mask.
2. Remove the purity and convergence assembly from the picture tube neck.
3. Loosen the deflection yoke clamp screw and remove the yoke.
4. After removing four screws securing picture tube to the cabinet, grasping the face plate of the picture tube with both hands, take out the picture tube from the cabinet.
5. Detach the picture tube ground lead which is attached to the picture tube lugs with spring.

Notice: Perfectly discharge the high potential of the picture tube before handling the tube.

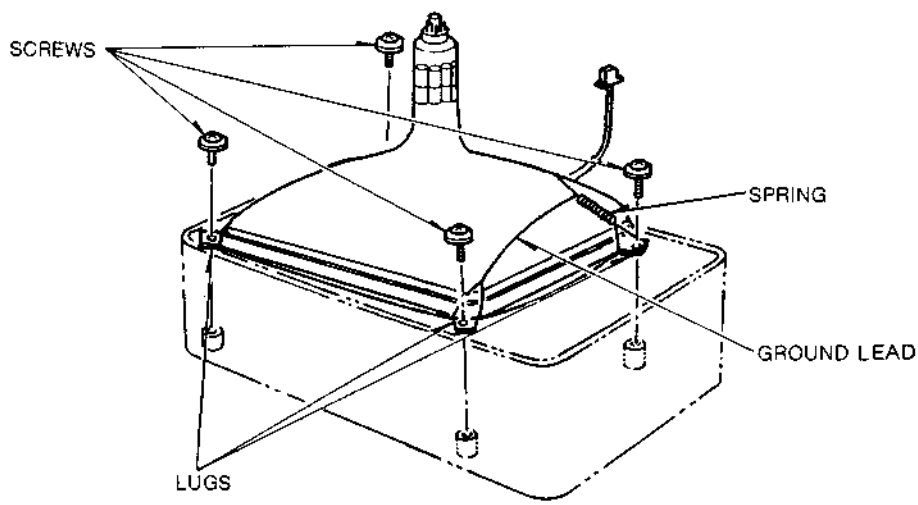


Figure 8. Picture Tube Removal

4. BLOCK DIAGRAM

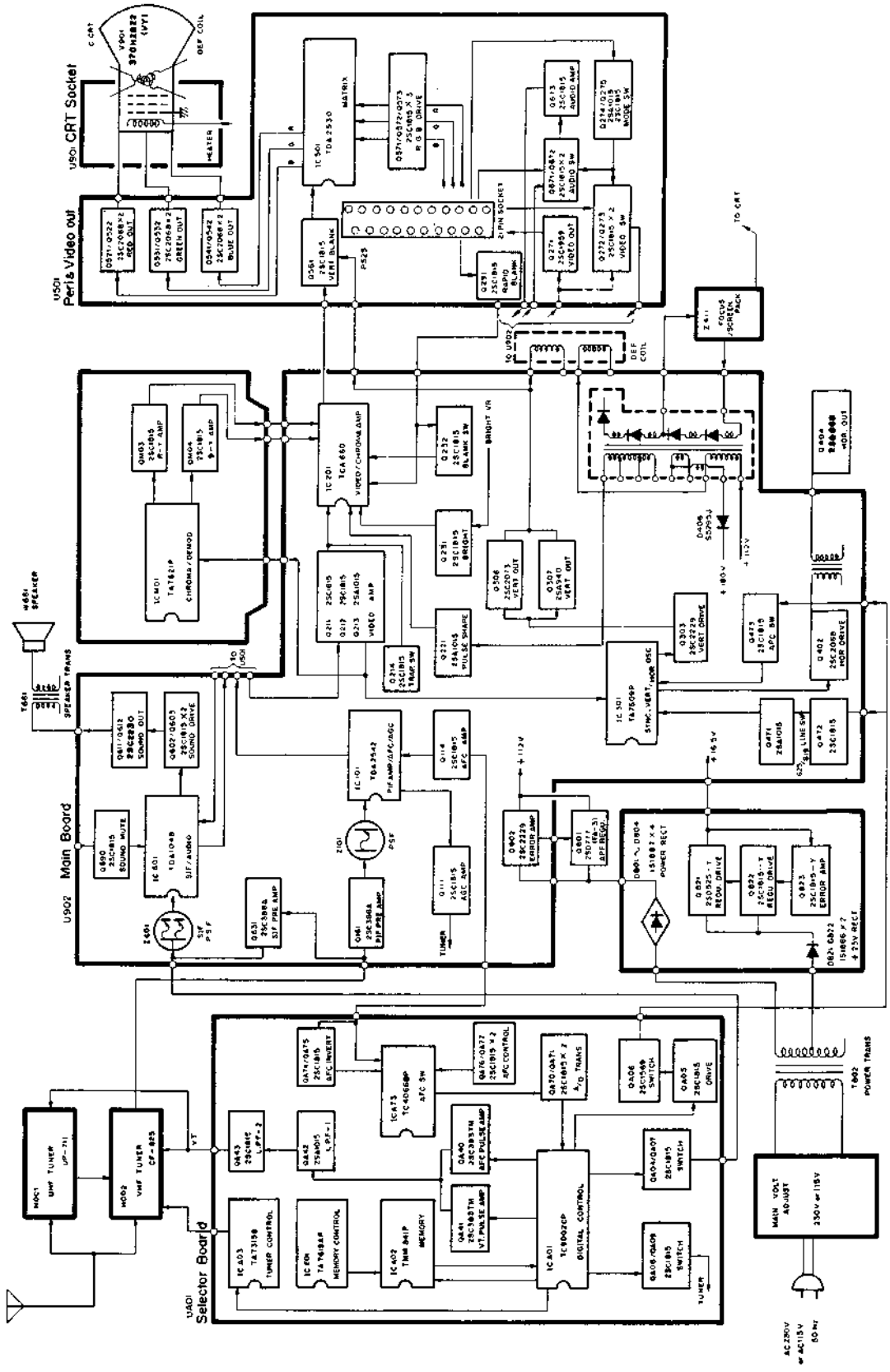
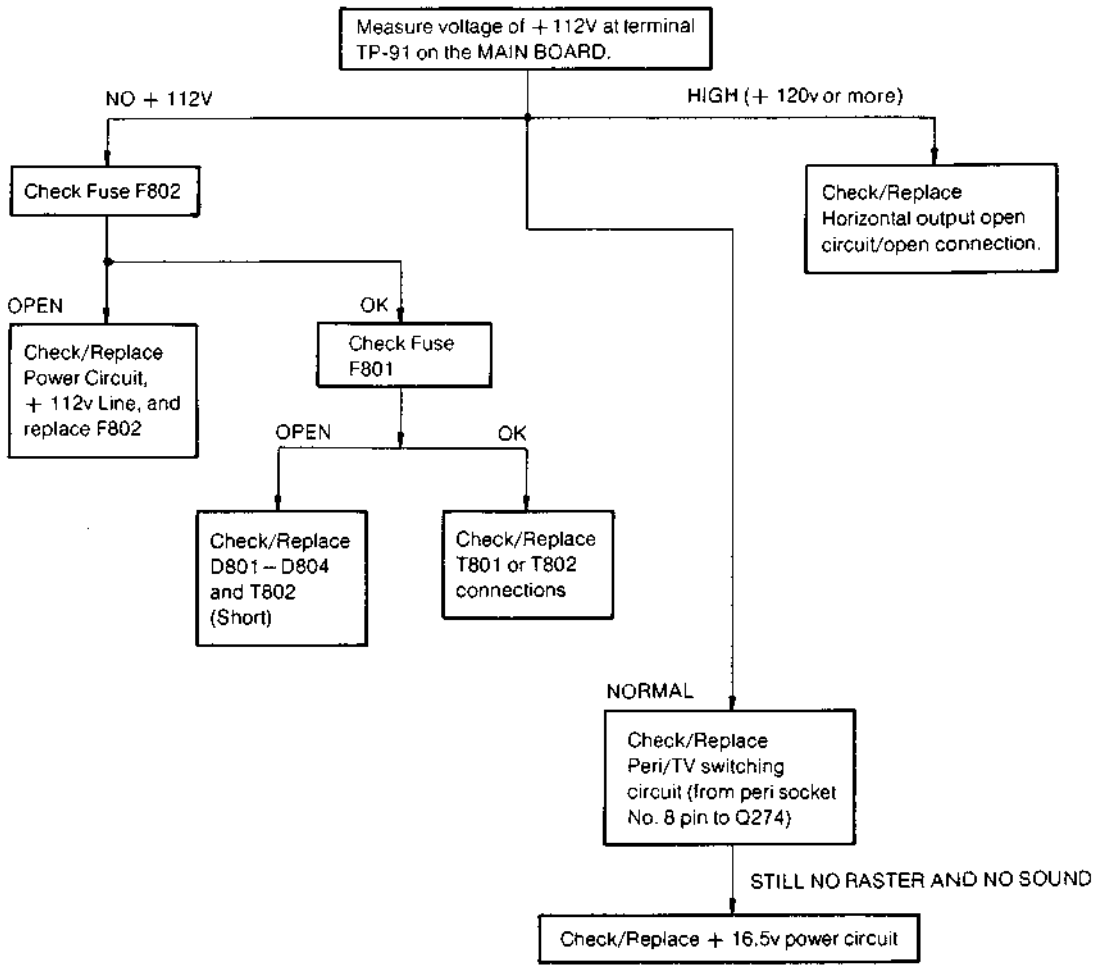


Figure 9. Block Diagram

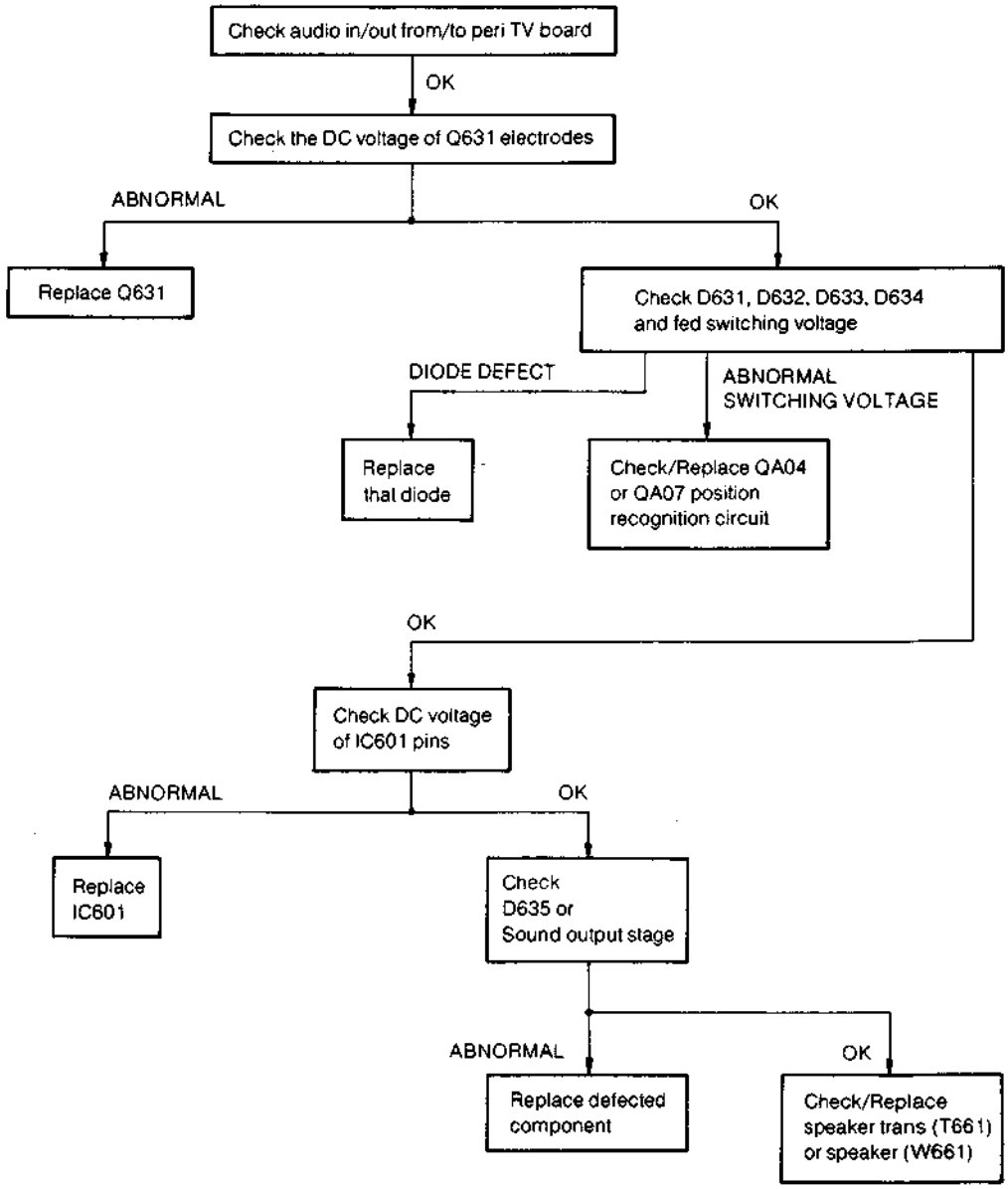
5. TROUBLESHOOTING CHART

The following charts are devoted to troubleshooting which, if followed carefully, will assist you in tracking down a fault to the correct stage.
In order to utilize the charts (fault trees), firstly establish the complaint, i.e. – No Raster, No Sound.
Locate the chart applicable and then progress through the various alternatives until a final block indicates the offending components or stage.

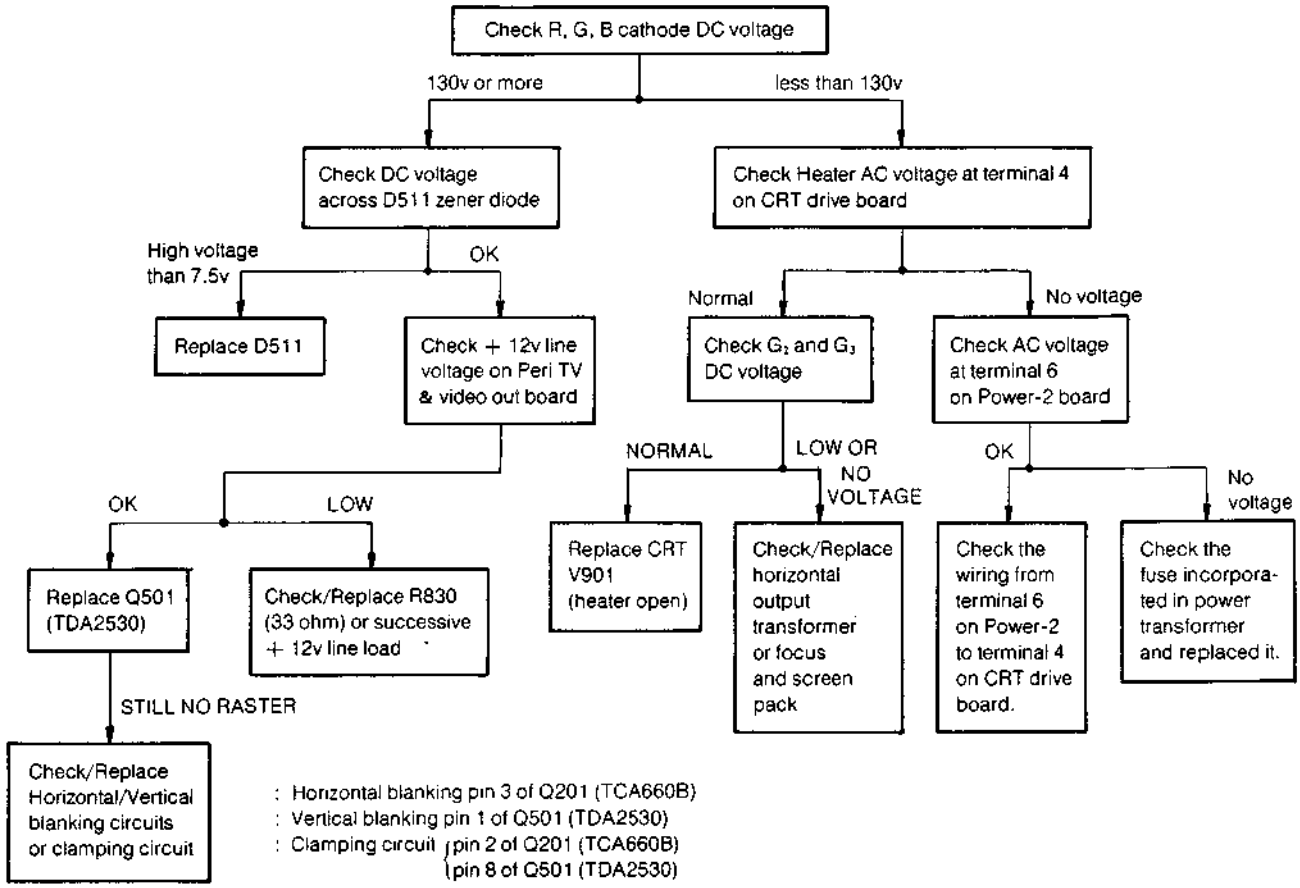
5-1. NO RASTER AND NO SOUND



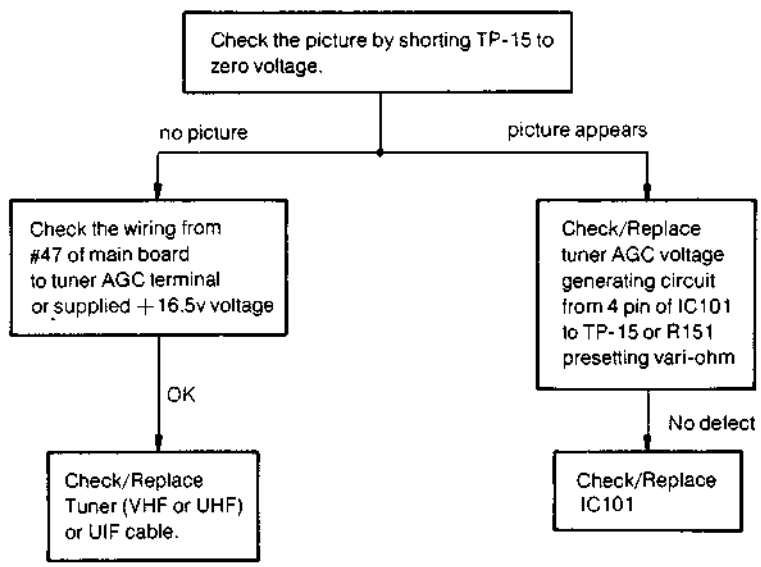
5-2. PICTURE OK AND SOUND WEAK (OR NO SOUND)



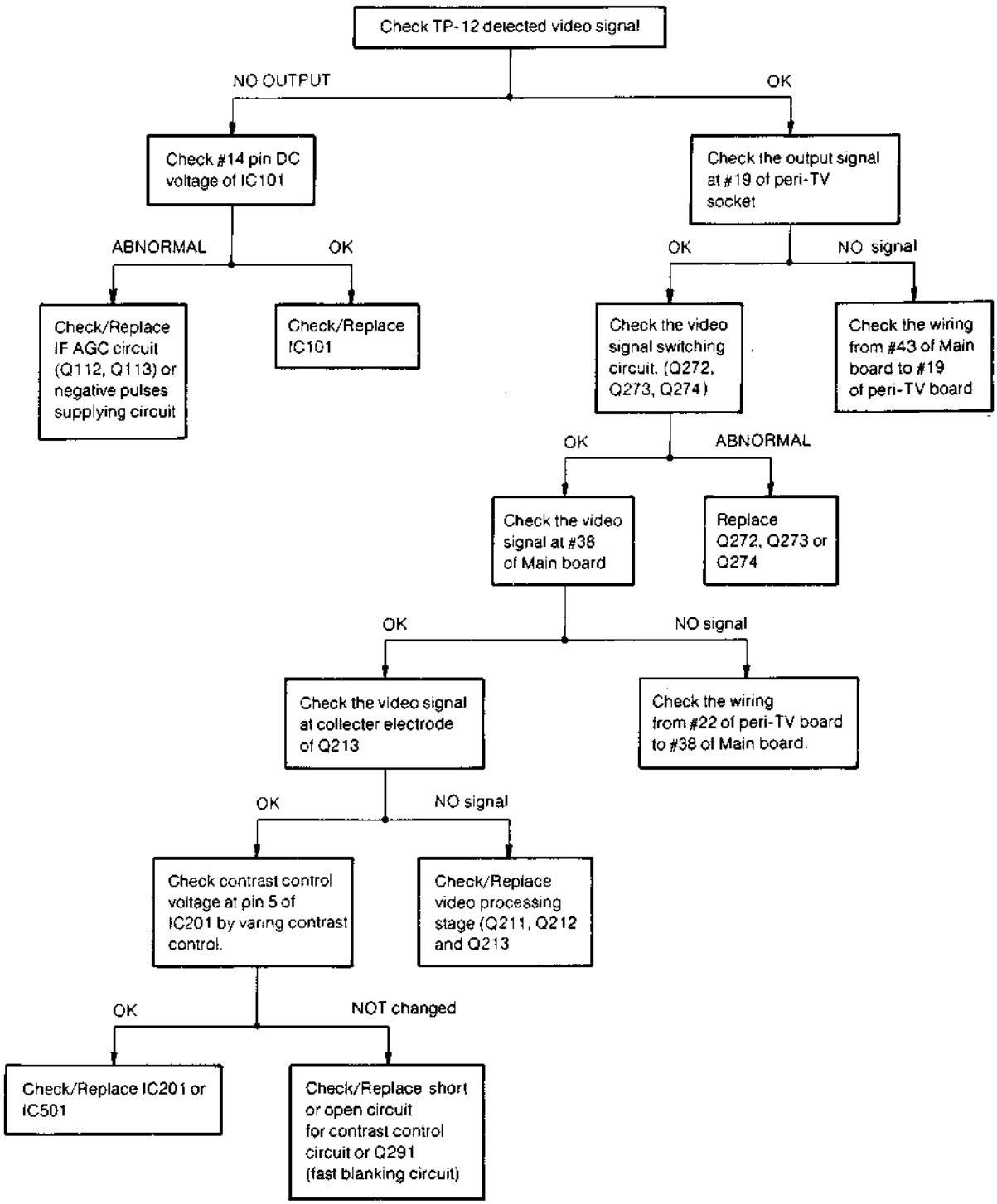
5-3. NO RASTER AND SOUND OK



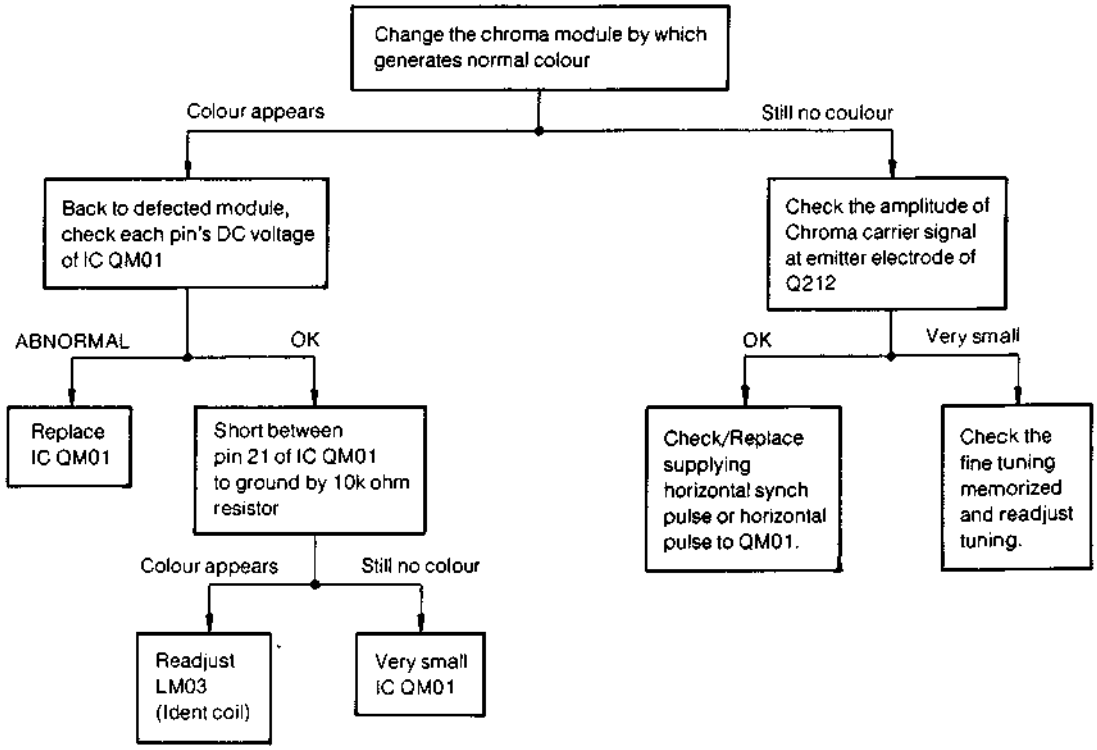
5-4. NO PICTURE (RASTER REMAINS) AND NO SOUND



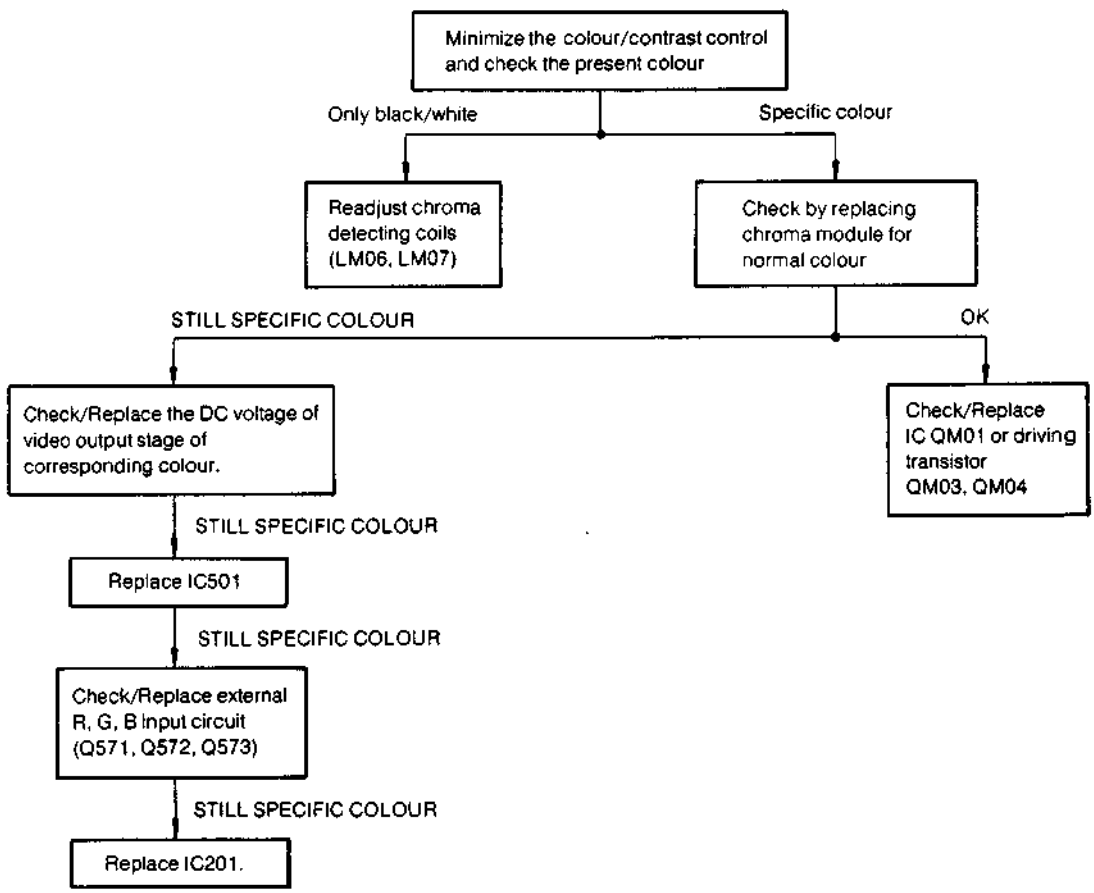
5-5. NO PICTURE (RASTER REMAINS) AND SOUND OK



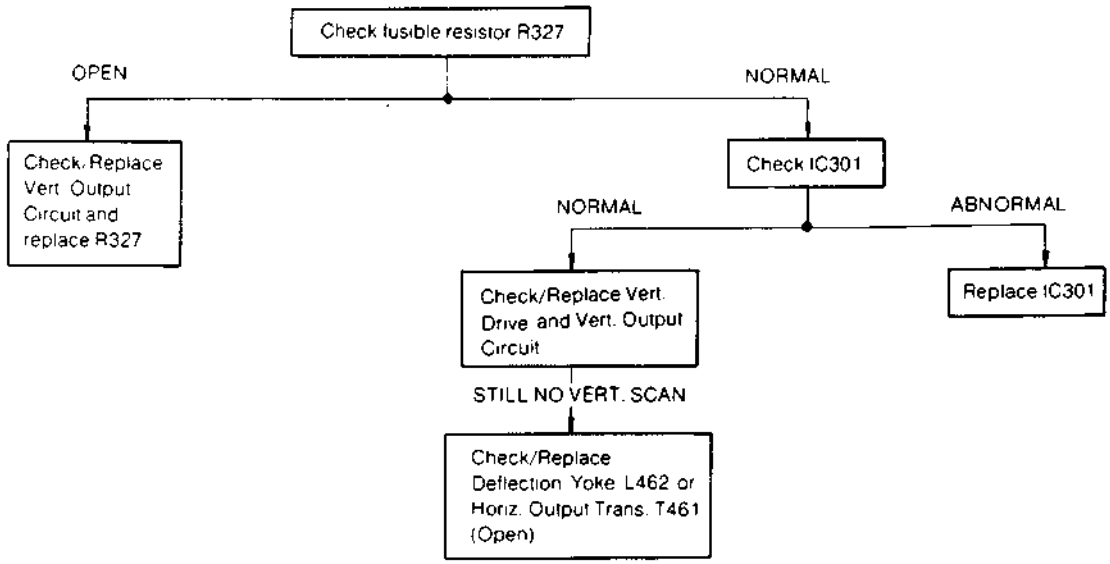
5-6. NO COLOUR



5-7. SPECIFIC TINTED COLOUR



5-8. NO VERT. SCAN (ONE HORIZ. LINE RASTER)



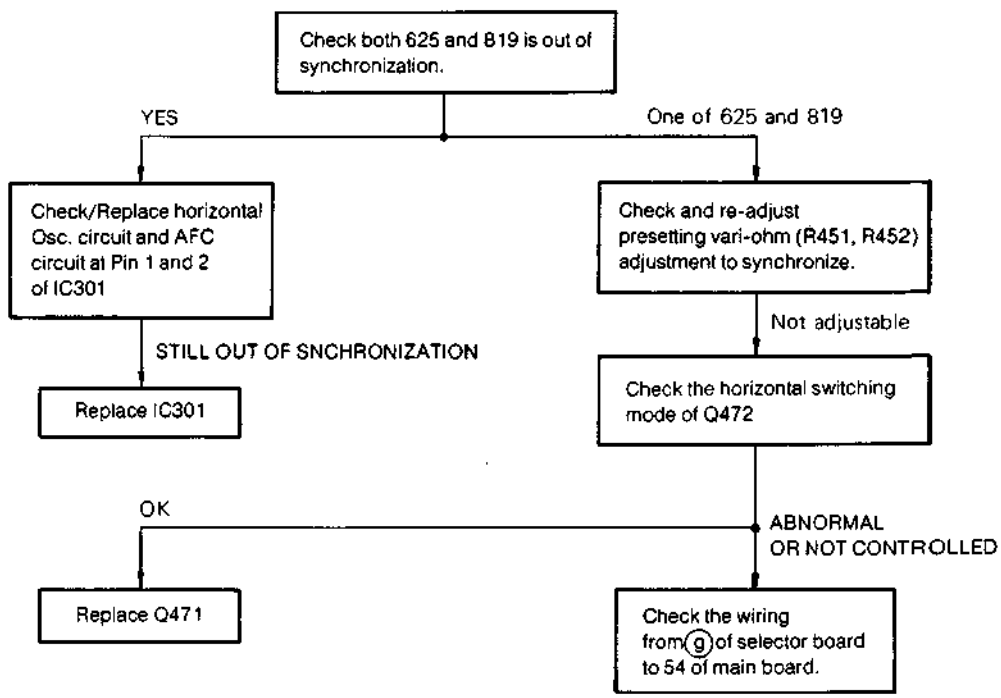
5-9. OUT OF VERT. SYNC. AND HORIZ. SYNC.

Check/Replace Sync Sep Circuit from Ⓔ of Q202 to Pin ⑯ of IC301 and IC301

5-10. OUT OF VERT. SYNC.

Check/Replace Vert OSC. Circuit and Vert. Hold Circuit connected to Pins ⑩, ⑫ and ⑬ of IC301
Check/Replace IC301

5-11. OUT OF HORIZ. SYNC



6. CHASSIS TOP AND REAR VIEWS

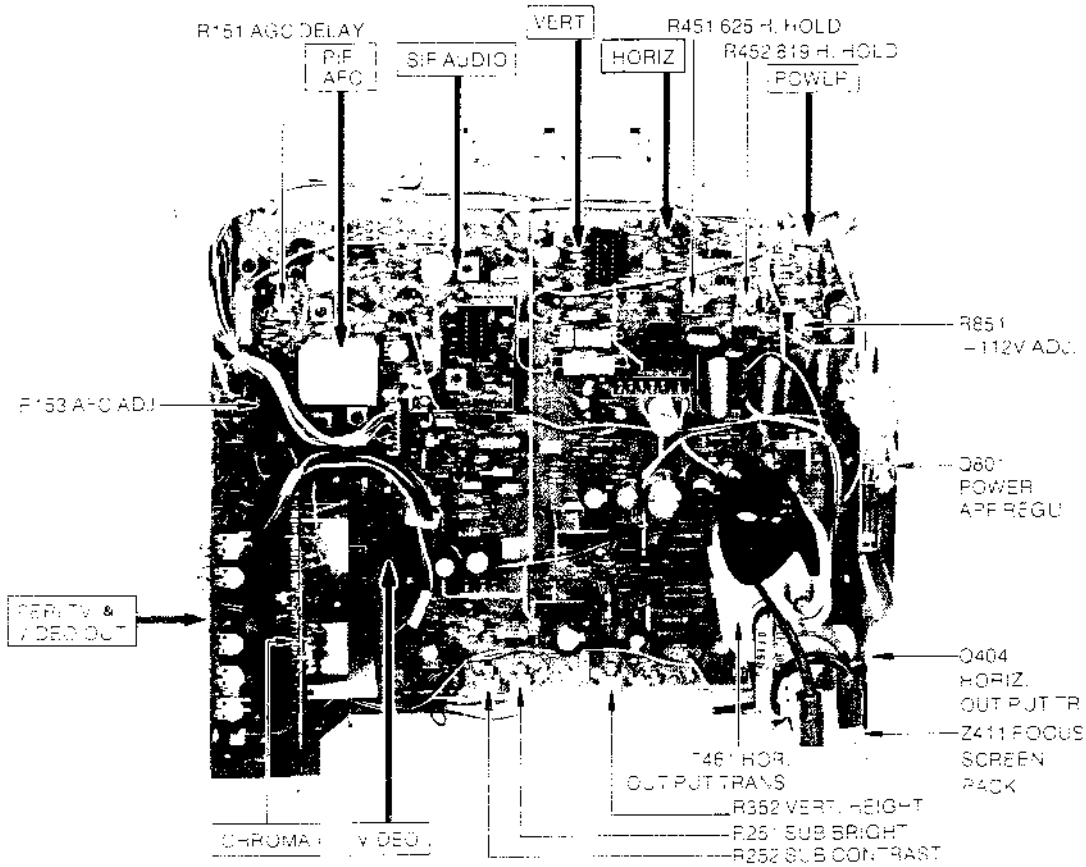


Figure 10. Chassis Top View

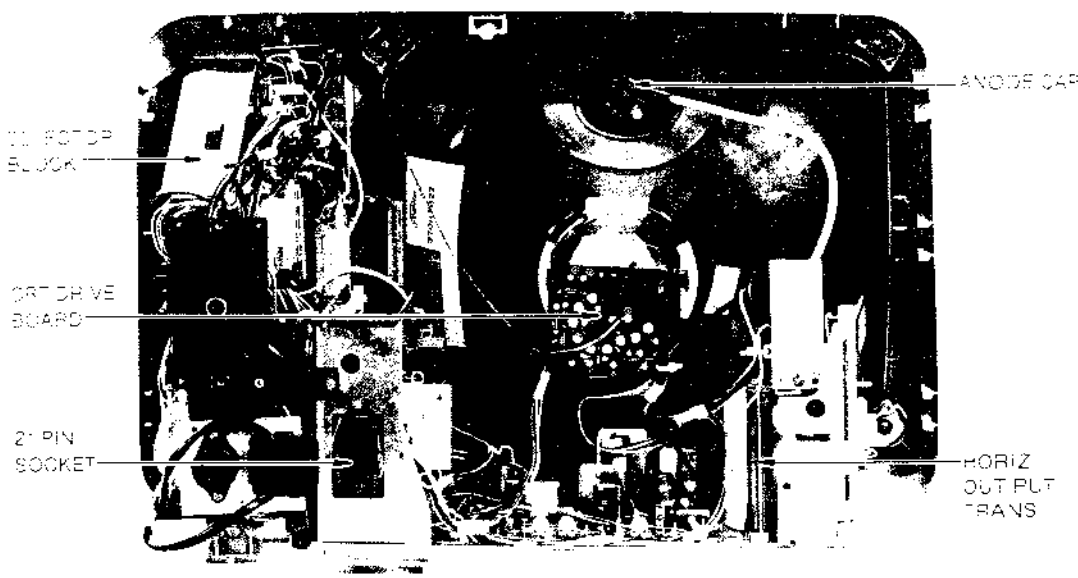


Figure 11. Chassis Rear View

7. SERVICING AID

EXTENSION CABLE

The extension cable is available when servicing the Chroma Module outside the chassis.
This extension cable is;
Part No. 23177997..... Extension Cable, 13P, for Chroma Module.
This extension cable will allow rapid inspection and remedy in troubleshooting.
However, as improper response may sometimes be caused by the stray pick-up or stray capacitance of the extension cable, the use of them should be confined to the minimum.

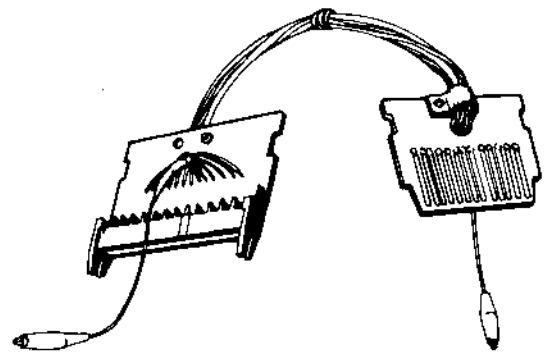


Figure 12. Extension Cable

WARNING: BEFORE SERVICING THE CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

8. INSTALLATION AND SERVICE ADJUSTMENTS

8-1. GENERAL INFORMATIONS

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending on the particular location in which the receiver is operated.

This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials.
Plug the power cord into a convenient 230 (115) volts 50 Hz AC power outlet. Never connect to direct current or any other power outlet or frequency.

Turn the receiver ON and adjust the FINE TUNING for best picture detail with the AFC Switch in OFF position.

Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST, and COLOUR Controls to obtain natural colour or B/W picture. Set the AFC Switch to ON.

8-2. AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessay, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off at least 10 minutes in order that the automatic degaussing circuit operates properly.

Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2 meters before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures, as mentioned later.

8-3. +112 VOLT POWER SUPPLY ADJUSTMENT

CAUTION: B + voltage closely relates to the high voltage. To prevent hazardous X-RAY RADIATION, the B+ **voltage must be properly adjusted to** +112 volts.

1. Tune in an active channel. Adjust the BRIGHTNESS and CONTRAST Controls for normal picture.
2. Check that the AC power line voltage is normal. (AC 230 (115) volts, 50 Hz).
3. Connect a VTVM between Terminal TP-91 on MAIN Board (See page 22) and chassis ground.
4. Adjust the B + ADH, (R851) on MAIN Board (See page 22) for +112 volts reading. Remove the VTVM.

8-4. HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis. The +112 volt power supply must be properly adjusted to insure the correct high voltage.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to minimum (zero beam current).
3. High voltage will be measured below 25.0 kv.
4. Rotate the BRIGHTNESS Control to both extremes to be sure the high voltage does not exceed the limit of 25.0 kv under any conditions.

8-5. HORIZONTAL OSCILLATOR ADJUSTMENT

If there is an indication of unstable horizontal sync., jitter or pulling of the picture although the AGC system is properly adjusted, it will be necessary to adjust the HORIZONTAL HOLD.

1. If these conditions appear on the screen with the channel selector at 1 to 6 position.
   ① Tune the receiver to any active channel with the channel selector at 1 to 6 position and turn the Knob R451 (625 HORIZONTAL HOLD) counterclockwise (or clockwise) until the picture is horizontally out of synchronization.
   ② Turn the Knob R451 clockwise (or counterclockwise) to the pull-in point, then rotate it clockwise (or counterclockwise) for 30° from the pull-in point.
2. And if the same conditions present at 7 or 8 position.
   ① Tune the receiver to any active channel with the channel selector at 7 or 8 position and turn the Knob R452.(819 HORIZONTAL HOLD) counterclockwise (or clockwise) until the picture is out of synchronization.
   ② Rotate the Knob R452 clockwise (or counterclockwise) for 35° from the pull-in point.

8-6. VERTICAL OSCILLATOR ADJUSTMENT

If the picture moves up or down on the screen adjust the VERTICAL HOLD Control (R351) until there is a single image without vertical movement.

8-7. HEIGHT ADJUSTMENT

HEIGHT Control (R352) on the MAIN Board changes the size of the picture or pattern, having an equal effect on the top and bottom. Make final adjustment to overscan the mask 1.5 cm at top and bottom.

8-8. FOCUS ADJUSTMENT

Adjust FOCUS Control on FOCUS PACK Z411 for well defined scanning lines in the centre area of the screen.

8-9. AGC ADJUSTMENT

1. Connect a white pattern signal generator to the receiver.
2. Connect the direct probe to terminal TP12 on the Main Board.
3. Adjust AGC VR (R152) on the Main Board for 3.0 Vp-p on scope (See figure 13).

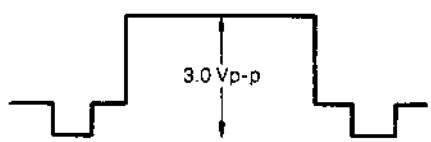


Figure 13. AGC Adjustment

8-10. DELAYED R-F AGC ADJUSTMENTS

1. Tune the set in the strongest station in your area.
2. Turn AGC DELAY Control (R151) on the MAIN Board to fully counterclockwise position.
3. Adjust AGC DELAY Control clockwise until noise (snow) disappears from the screen.

8-11. AFC (Automatic Frequency Control) FIELD ALIGNMENT

1. Place AFC Switch in OFF position. Tune the set to an active channel and adjust fine tuning for best picture.
2. Place AFC Switch in ON position, and adjust Trans. (L171) on MAIN Board for best picture. Picture quality should be the same as that obtained in Step 1.
3. Check the AFC PULL-IN action by turning the FINE TUNING Control clockwise and counterclockwise.

8-12. SECAM COLOUR KILLER THRESHOLD ADJUSTMENT

1. Receive the SECAM colour signal.
2. Adjust LM03 so the SECAM colour is obtained.

8-13. SECAM CHROMA DET. COIL ADJUSTMENT

1. Receive colour bar signal.
2. Adjust the CHROMA DET. COILS (LM06, LM07) so that the black and white parts are the same as white balance at the black and white signal reception.

8-14. SIF DET. COIL ADJUSTMENT (This adjustment needs the oscilloscope)

1. Tune in a programme which has a pure tone. (For example 400 Hz or 1 kHz)
2. Connect the probe of oscilloscope to Terminal TP-21 on the Main Board.
3. Adjust SIF DET. COIL L602 (See figure 21) so that the detected signal amplitude (pure tone) goes to maximum.

8-15. COLOUR PURITY ADJUSTMENT

Note: Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

Purity adjustment requires Rubber Wedge kit.

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Turn the CONTRAST and BRIGHTNESS Controls to maximum.
3. Adjust RED and BLUE CUT OFF controls (R552 and R554) to provide only a green raster. Advance the GREEN CUT OFF Control (R553 if necessary.
4. Loosen the clamp screw holding the yoke, and slide the yoke backward or forward to provide vertical green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See figure 15) around the neck of the picture tube until a green belt is obtained in the centre of the screen. And at the same time, centre the raster vertically by adjusting the magnet.
7. Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw.
8. Check the purity of the red and blue raster by adjusting the CUT OFF Controls.
9. Tighten the clamp screw of the yoke temporarily.
10. Obtain a white raster; referring to "CRT GREY SCALE ADJUSTMENT".
11. Proceed with convergence adjustment.

8-16. CRT GREY SCALE ADJUSTMENT

1. Tune in an active channel.
2. Set the COLOUR Control to minimum.
3. Disconnect the terminal P901 on the CRT SOCKET Board.
4. Turn the SCREEN Control (Z411) full counterclockwise.
5. Set the GREEN and BLUE DRIVE Controls (R557, R556) to the mid position.
6. Set the RED, GREEN and BLUE CUT OFF Controls (R552, R553, R554) to the mid position.
7. Short temporarily terminals #23 and #22 on the Main Board with a jumper wire.
8. Short temporarily terminals Ⓙ and Ⓗ on the Main Board with a jumper wire.
9. Rotate the SCREEN Control (Z411) gradually clockwise until the second horizontal colour line following the first line appears slightly on the screen. Then turn fully counterclockwise the two CUT OFF Controls corresponding to the colours of the first and the second horizontal lines to eliminate the lines.
10. Set the SCREEN Control to the position where the third horizontal line lights slightly on the screen.
11. Adjust the two CUT OFF Controls set to the minimum in item 9 above to obtain the slightly lighted horizontal line in the same levels of three (red, green, blue) colours. (The line may look like white if the CUT OFF Controls are adjusted properly.)
12. Remove a jumper wire between terminals Ⓙ and Ⓗ and reconnect the RASTER TERMINAL.
13. Remove a jumper wire between terminals #23 and #22 on the Main Board.
14. Rotate the BRIGHTNESS and CONTRAST Controls to the maximum.
15. Adjust the BLUE and GREEN DRIVE Controls to obtain proper white-balanced picture in high light areas.
16. Rotate the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls and DRIVE Controls to obtain a good white balance in both low and high light areas.

8-17. SUB-BRIGHTNESS ADJUSTMENT

1. Tune in a colour programme.
2. Set the CONTRAST Control to the maximum and the BRIGHTNESS Control to the centre.
3. Set the COLOUR to the centre.
4. Set the SUB-BRIGHT. Control (R251) to the centre and leave the receiver for five minutes in this state.
5. Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
6. Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
7. If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the Controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

8-18. CONVERGENCE ADJUSTMENTS

Note: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

■ **Centre Convergence Adjustment**

1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST Controls for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 15) and superimpose red and blue vertical lines in the centre area of the picture screen. (See figure 15.)
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the centre of the screen. (See figure 16.)
5. Adjust two tabs of 6-Pole Magents to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 with understanding red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets have mutual affection and it makes dots movement complex.

■ **Circumference Convergence Adjustment**

1. Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
2. Put a wedge as shown in figure 14 temporarily. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure 16.) Push the mounted wedge into the space between picture tube and the yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convegence in circumference. (See figure 14.)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. Stick 3 adhesive tapes on wedges as shown in figure 14.

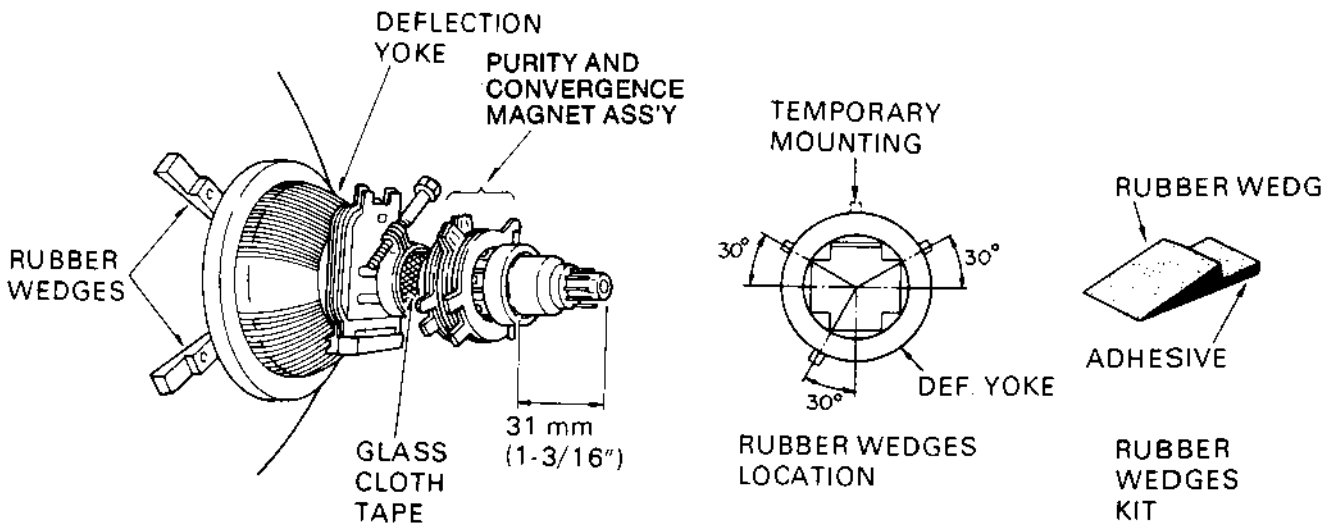
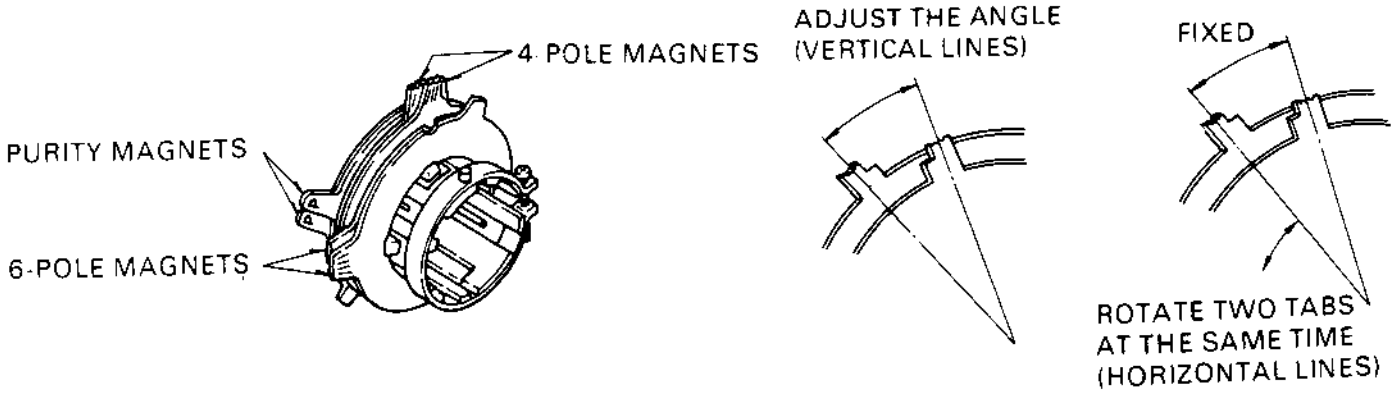


Figure 14.



CONVERGENCE MAGNET ASSEMBLY

ADJUSTMENT OF MAGNETS

Figure 15.

4-POLE MAGNETS MOVEMENT

6-POLE MAGNETS MOVEMENT

Centre Convergence by Convergence Magnets

INCLINE THE YOKE UP (OR DOWN)

INCLINE THE YOKE RIGHT (OR LEFT)

Circumference Convergence by DEF. Yoke

Figure 16. Dot Movement Pattern

9. GENERAL ALIGNMENT INSTRUCTIONS

9-1. GENERAL

Alignment is an exacting procedure and should be under-taken only when necessary.

The test equipment specified or its equivalent is required to properly perform the alignment procedures which are outlined on the following pages. Use of equipment which does not meet these requirements may result in the inability to properly align the receiver.

It is essential that bias values as specified are maintained during alignment to insure proper results.

9-2. EQUIPMENT TERMINATIONS

Alignment pads are designed for correct matching of the equipment to the circuits involved. Failure to use proper matching will result in responses which cannot be depended upon as representing the true operation of the receiver. The pads should be constructed as compactly as possible with all unshielded leads not in excess of 2.5 cm long.

9-3. SIGNAL OVERLOAD

Use of excessive signal from the sweep generator can cause overloading of receiver circuits. To determine that this condition is not present and that the response curve is true, turn the sweep generator output to zero and then gradually increase the output until a response is obtained. Further increase of the sweep output should not change the configuration of the response except in amplitude. If the response changes in configuration, just as flattening at the top or dropping below the base line at the bottom, decrease the sweep output to restore the proper configuration. The oscilloscope gain should be as high as possible to maintain a useable pattern with the peak-to-peak values specified, thus requiring a lower output from the sweep generator and less chance of overload.

Insertion of markers from the marker generator should not cause distortion of the response.

9-4. TEST EQUIPMENTS

OSCILLOSCOPE (WIDE BAND)
COLOUR-BAR/DOT/CROSSHATCH GENERATOR
TV SWEEP MARKER ALIGNMENT GENERATOR
VACUUM TUBE VOLTMETER
VOLT-OHM MILLIAMMETER
MARKER GENERATOR
POWER AND AGC BIAS SUPPLY
DIRECT LOW CAPACITY PROBE
SOUND SIGNAL GENERATOR
VIDEO SWEEP GENERATOR
MATCHING PAD (See figure 17)
DEGAUSSING COIL–Demagnetized picture tube and chassis.

MICROSCOPE–Microscope of approximately 12 power for phosphor dot observation in the colour picture tube.

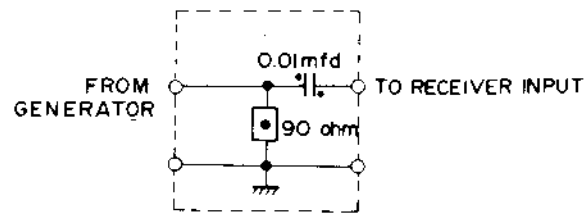


Figure 17. Matching Pad

10. PICTURE I-F SWEEP ALIGNMENT

GENERAL ..... Refer to figures 18 and 19 for test equipment connection and alignment points.

PRELIMINARY STEPS .....
1. Disconnect the I-F cable from the input jack "P501" and the tuner leads from the plug "P510" on the Main Board. (See figure 21.)
2. Supply +12v to terminal "#46" on the Main Board.
3. Supply +3.5~4.5 volts bias to terminal "TP-14" on the Main Board fully clockwise.
4. Turn AGC DELAY Control (R151) on the Main Board fully clockwise.

SWEEP/MARKER GENERATOR ..... Connect to the input jack "P501" on the Main Board. Tune to 25 ~ 40 MHz sweep.

OSCILLOSCOPE ..... Connect with direct probe to terminal "TP-12" on the Main Board through 100k ohm resistor.

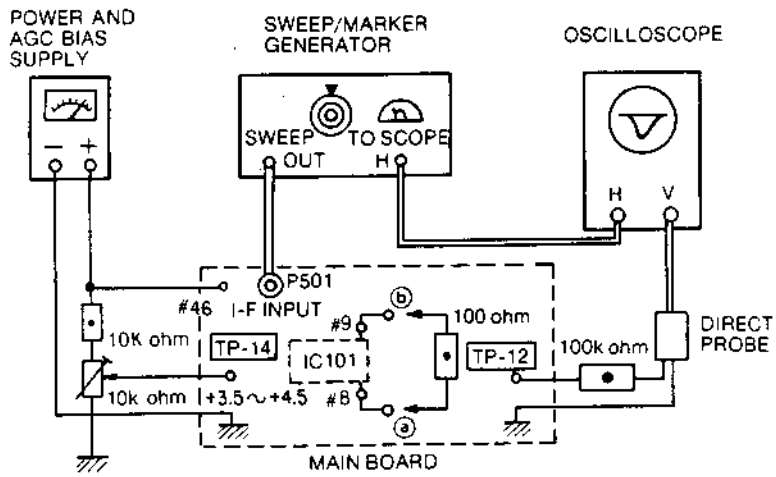


Figure 18. Picture I-F Sweep Alignment

STEP	SWEEP/MARKER GENERATOR	ADJUST	REMARKS
L103 ALIGNMENT Set Oscilloscope gain for 0.1 v/cm. Adjust sweep output for easy alignment. (See figure 19.) Adjust +3.5~4.5 volts bias to terminal "TP-14" on the Main Board.			
Detector Coil	32.7 MHz Marker "ON"	L103	Adjust L103 for maximum gain at 32.7 MHz on SCOPE. (See figure 19.)
OVERALL RESPONSE ALIGNMENT Observe with 0.5 volt P-P on SCOPE. Adjust sweep output for easy alignment. (0.1 v/cm) Attach 100 ohm resistor between point ⓐ and ⓑ (pins #8 and #9 of IC101) of the foil side of the Main Board. (See figure 21.) Adjust +3.5~4.5 volts bias to terminal "TP-14" on the Main Board.			
I-F Overall Response	34.7 MHz Marker "ON"	L102	Adjust L102 for maximum gain at 34.7 MHz on SCOPE. (See figure 19.)
After completing the above steps, disconnet equipment and adjust the AGC DELAY Control (R151) folloing DELAYED R-F AGC ADJUSTMENT on page 16.			

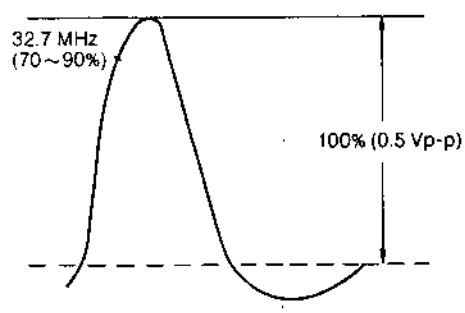


Figure 19. Magnified Response Curve

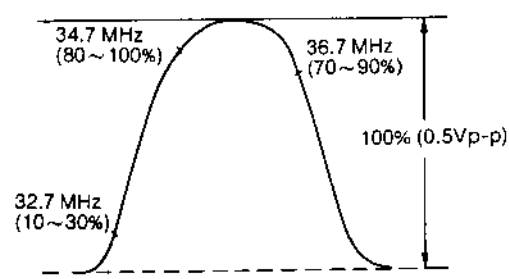
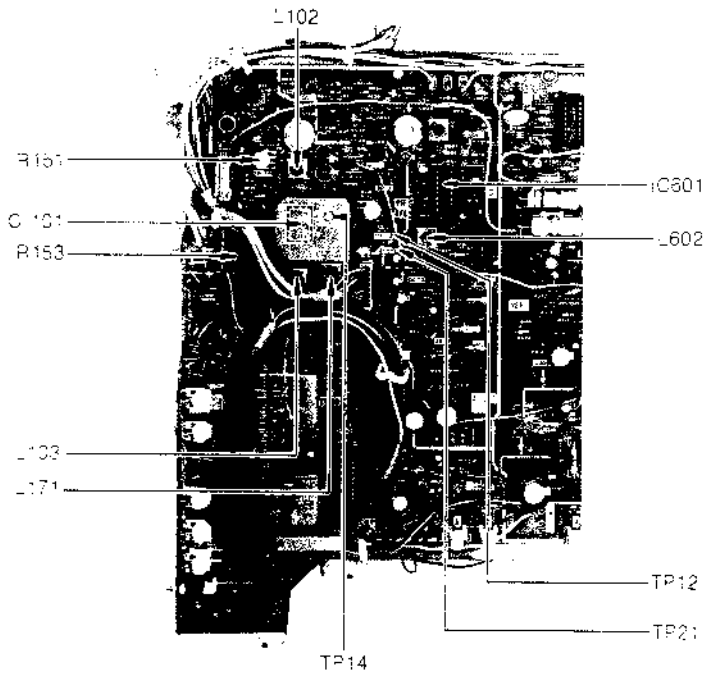


Figure 20. Overall Response Curve

TOP VIEW



BOTTOM (FOIL) SIDE

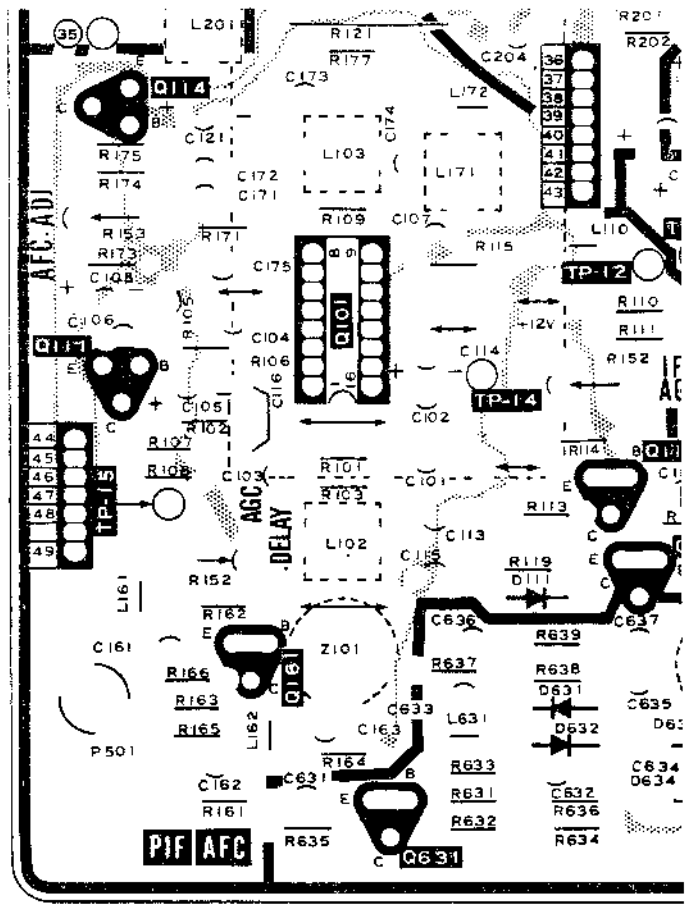
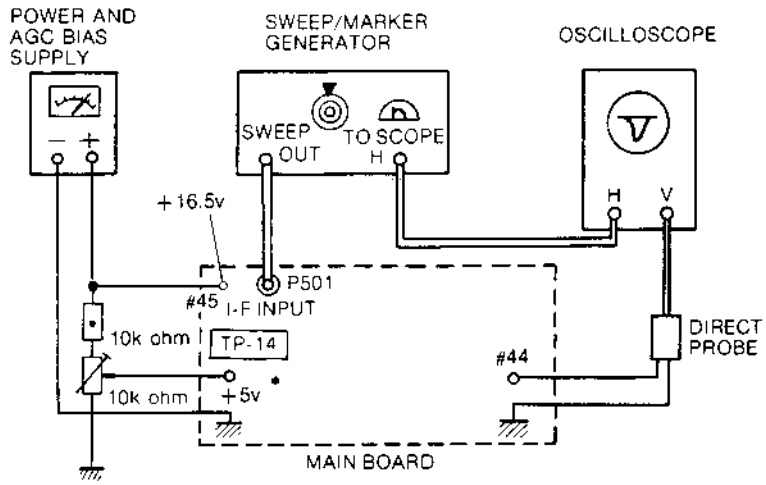


Figure 21. Picture I-F, AFC, and the Other Alignment Point

11. AFC ALIGNMENT

GENERAL..... Refer to figure 21 and 22 for alignment points and test equipments connection.
PRELIMINARY STEPS..... Follow the same steps as given under PICTURE I-F SWEEP ALIGNMENT on page 21. Connect the tuner leads "M510" to socket "P510" on the Main Board.
SWEEP/MARKER GENERATOR..... Connect to the input jack "P501" on the Main Board. Tune to 25 ~ 40 MHz sweep.
OSCILLOSCOPE..... Connect direct probe to terminal #44 on the Main Board.



* Add +5v to TP-14 at AFC Balance Adjustment only.

Figure 22. AFC Alignment

STEP	SWEEP/MARKER GENERATOR	ADJUST	REMARKS
1. AFC Balance	NO SIGNAL	R153	Supply +5 volts bias to terminal "TP-14" on the Main Board. Pull AFC Switch out to the ON position. Connect the ground side of VTVM to Terminal #21 and hot side of pin #1 of ICA73 on the SELECTOR BOARD. Adjust R153 (BALANCE ADJUST) for +0.6 volt reading on meter.
2. Primary fo	32.7 MHz	L171	Remove the power supply (+5 volts) from the terminal "TP-14" on the Main Board. Remove the VTVM. Conncet Direct Probe to Terminal #44 on the Main Board. Adjust L171 for the response shown in figure 23.

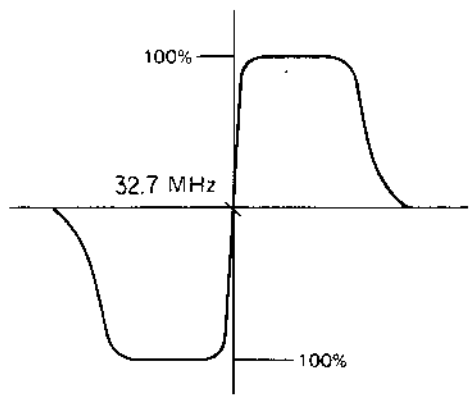


Figure 23. AFC Responses

12. SECAM COLOUR ALIGNMENT

12-1. BELL FILTER ALIGNMENT (See figure 25)

1. Receive a colour bar pattern.
2. Connect synchroscope to pin 25 of QM01 (TA7621P).
3. Adjust LM02 so that each bar of R-Y becomes even respectively.

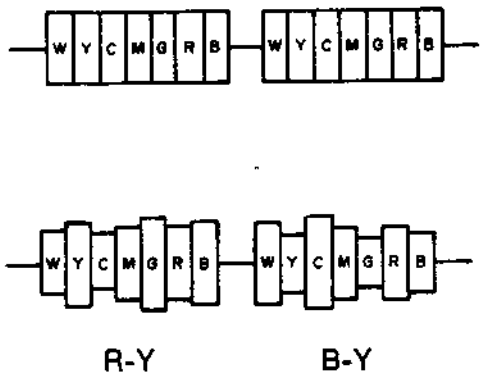


Figure 24.

12-2. SECAM COLOUR KILLER ALIGNMENT

1. Receive a colour signal.
2. Connect a VTVM to TP-M3.
3. Adjust LM03 so the DC voltage is minimum.

12-3. SECAM CHROMA DET. COIL ALIGNMENT (See figure 26)

1. Receiver a colour bar pattern.
2. Connect synchroscope to terminal M4 on the CHROMA MODULE.
3. Adjust LM06 so that non colour part and Horiz Blanking part are on the same level. (R-Y)
4. Further, change connection of synchroscope from terminal M4 to terminal M5 and adjust LM07 the same as above.

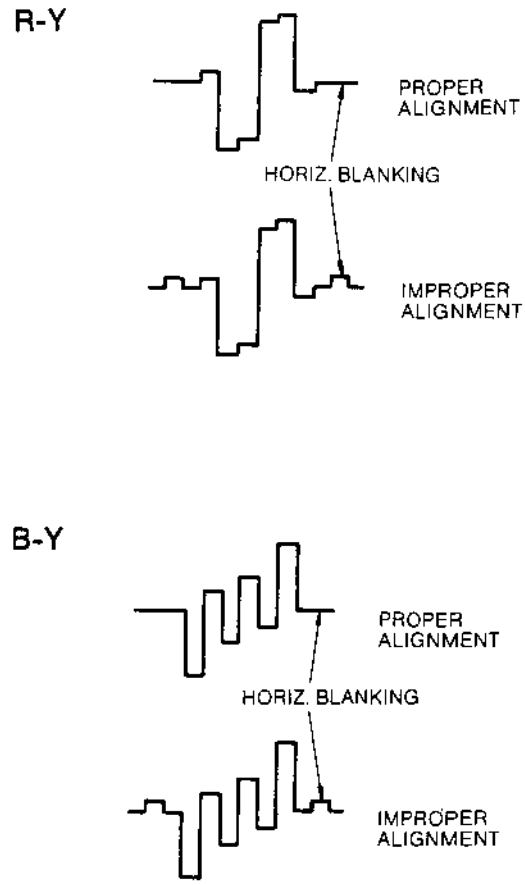


Figure 25.

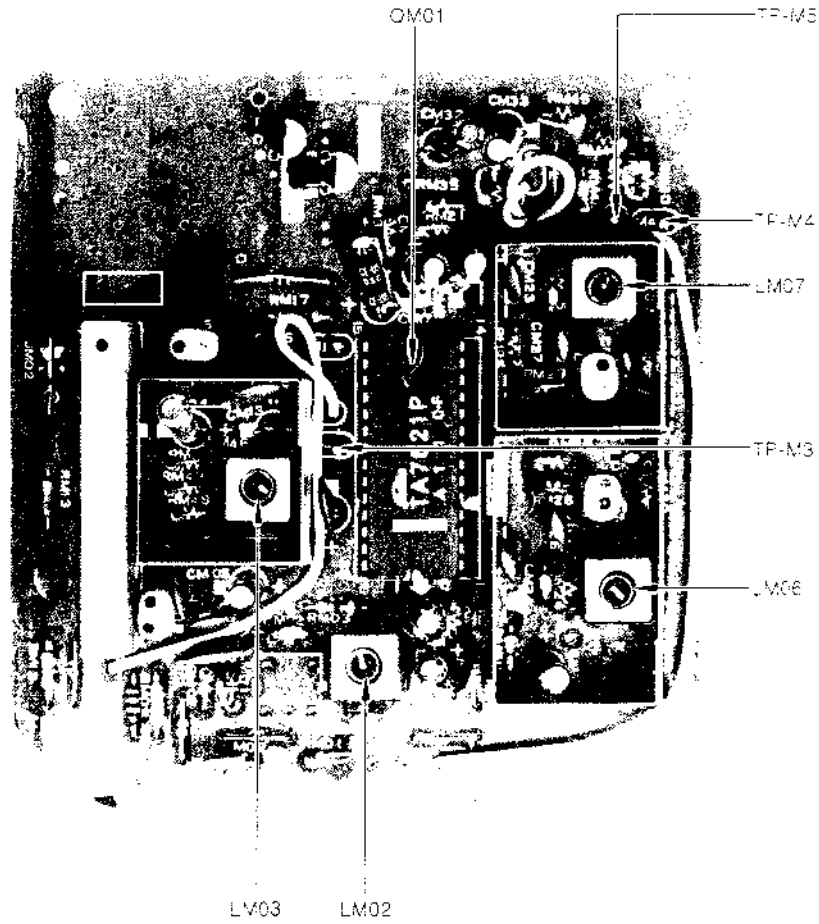


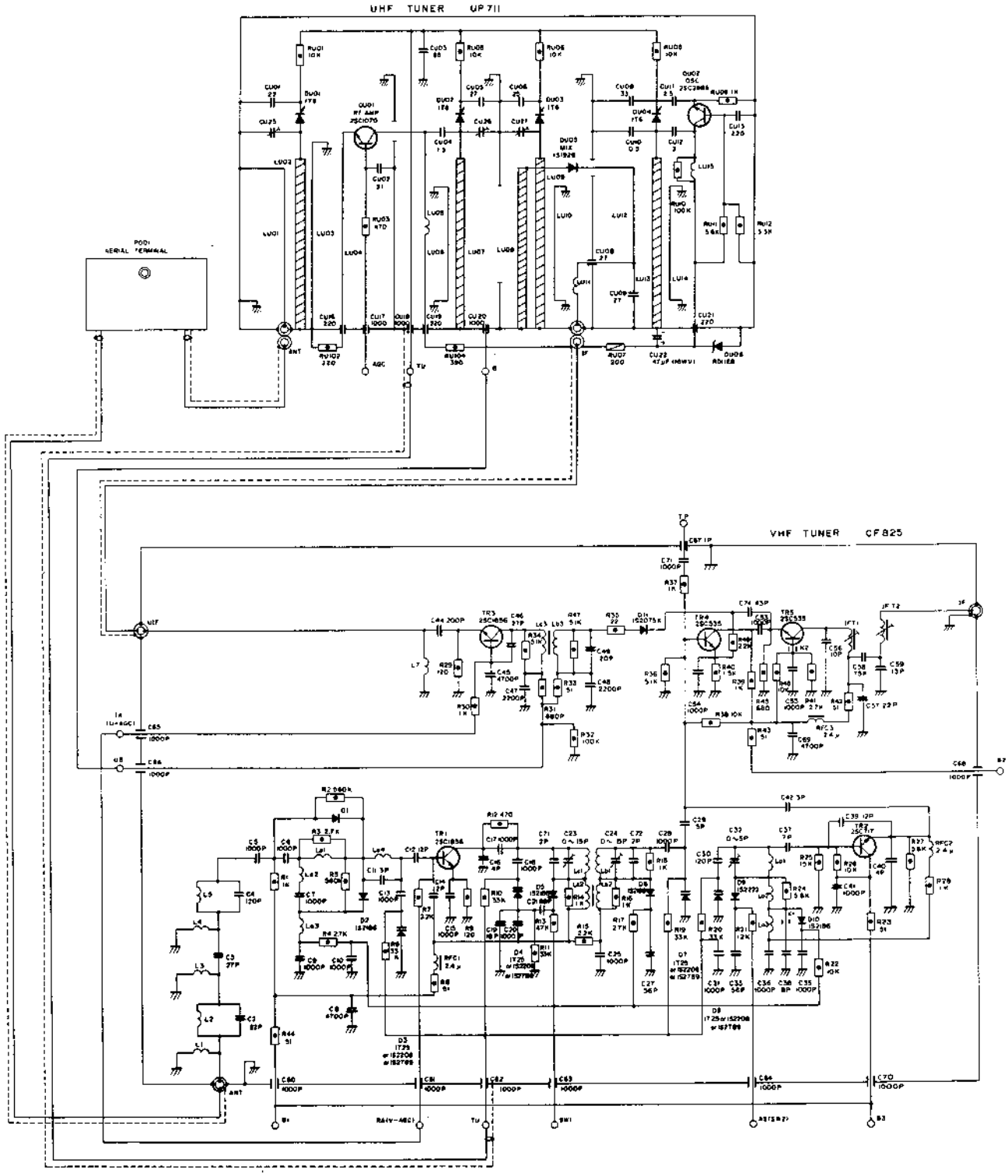
Figure 26. Chroma Module

13. CHROMA TRAP (4.43 MHz) ALIGNMENT

13-1. CHROMA TRAP (L201)

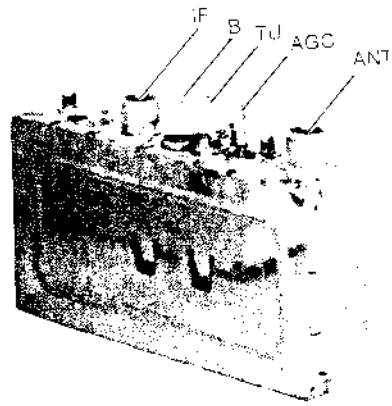
1. Tune the receiver to easting in colour. A Colour bar pattern, for example, PHILIPS pattern is more available for the this alignment.
2. Connect oscilloscope through 10:1 probe to TP-47R on the CRT Socket Board.
3. Adjust CHROMA trap L201 on the Main Board so as to minimize the chroma component in colour bar area.

14. VHF/UHF TUNER INFORMATION

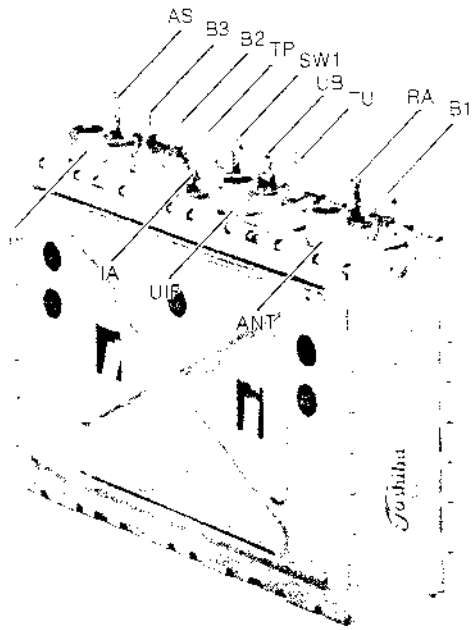


15. VHF/UHF TUNER

15-1. UHF TUNER



15-2. VHF TUNER



16. CABINET EXPLODED VIEW AND REPAIR PARTS LIST

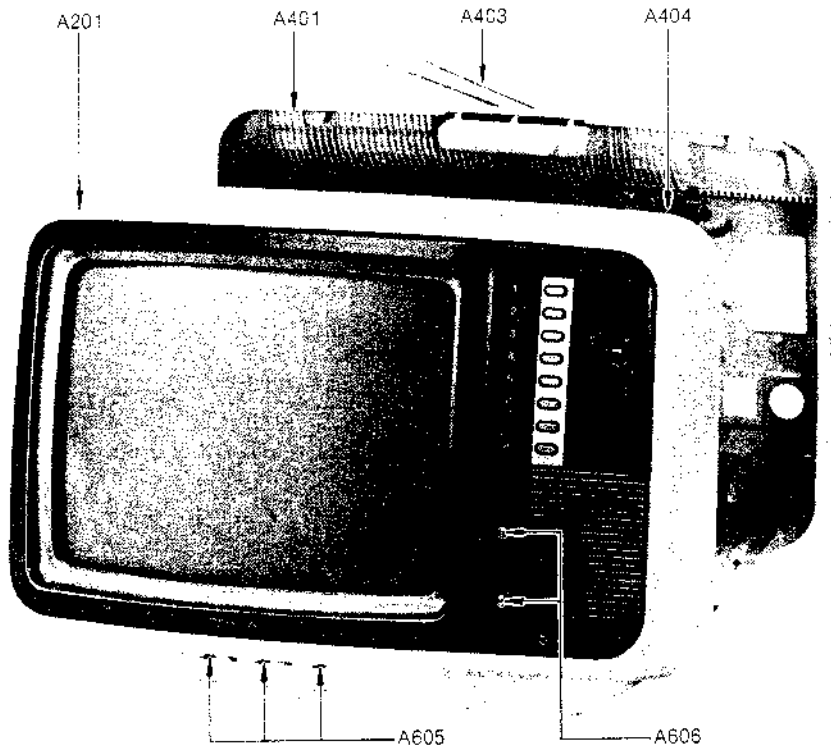


Figure 27. Cabinet Exploded View

CABINET REPAIR PARTS LIST

Schematic Location	Part No.	Description
A201	23824141	Front Cover
A401	23803032	Back Cover
A403	23124076	Telescopic Rod Aerial
A404	23142339	Aerial Balun Trans.
A605	23826858	Knob, COLOUR, BRIGHT, VERT. HOLD (3 used)
A606	23826084	Knob, POWER SWITCH/VOLUME, AFC/CONTRAST (2 used)

17. CHASSIS PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The shaded areas in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

AVVREVUATUIBS: Capacitors..... CD: Ceramic Disk, PF: Plastic Film, EL: Electrolytic
Resistors ..... CF: Carbon Film, CC: Carbon Composition, MF: Metal Film,
OMF: Oxide Metal Film, VR: Variable Resistor, FR: Fusible Resistor

Schematic Location	Part No.	Description
PERI TV & VIDEO OUT PUT BOARD		
U501	23139436	Peri TV & Video Out Put Board Assembly, PW2377
CAPACITORS		
C271	24635220	EL, 22μF, 35v
C272,C273	24633101	EL, 100μF, 16v
C295	24212102	CD, 1000pF, 50v
C511	24692104	PF, 0.1μF, ±5%, 50v
C521	24436330	CD, 33pF, ±5%, 50v
C531	24436390	CD, 39pF, ±5%, 50v
C541	24436270	CD, 27pF, ±5%, 50v
C562,C563 C564	24636010	EL, 1μF, 50v
C565,C571 C572,C573 C671	24633100	EL, 10μF, 16v
C591,C592 C593	24434030	CD, 3pF, ±0.5pF, 500v
C672	24636229	EL, 2.2μF, 50v
C673	24634101	EL, 100μF, 25v
C674	24212221	CD, 220pF, ±10%, 50v
C902	24214103	CD, 0.01μF, ±10%, 500v
RESISTORS		
R271,R276 R574,R581 R588	24360153	CF, 15k ohm, 1/8w
R272,R677	24360392	CF, 3900 ohm, 1/8w
R273	24360301	CF, 300 ohm, 1/8w
R274,R567 R674	24360332	CF, 3.3k ohm, 1/8w
R275	24360560	CF, 56 ohm, 1/8w
R278,R284	24360303	CF, 30k ohm, 1/8w
R279,R292 R295,R565	24360103	CF, 10k ohm, 1/8w
R280,R283	24360470	CF, 47 ohm, 1/8w
R281,R575 R582,R589 R675	24360101	CF, 100 ohm, 1/8w
R282,R561	24360102	CF, 1000 ohm, 1/8w
R285	24360203	CF, 20k ohm, 1/8w

Schematic Location	Part No.	Description
R286,R576 R583,R590	24360820	CF, 82 ohm, 1/8w
R287	24360390	CF, 39 ohm, 1/8w
R288	24360100	CF, 10 ohm, 1/8w
R289	24360221	CF, 220 ohm, 1/8w
R290	24360222	CF, 2200 ohm, 1/8w
R291,R528 R538,R548	24360152	CF, 1500 ohm, 1/8w
R296	24360750	CF, 75 ohm, 1/8w
R521,R531 R541	24380561	CF, 560 ohm, 1/8w
R522,R532 R542	24383223	OMF, 22k ohm, 2w
R523,R533 R543	24381222	OMF, 2.2k ohm, 1/2w
R524,R534 R544	24381683	OMF, 68k ohm, 1/2w
R525,R535 R545,R680	24360822	CF, 8200 ohm, 1/8w
R526,R536 R563 R571,R572 R578,R579 R585	24360471	CF, 470 ohm, 1/8w
R527,R537 R547,R681 R682	24360272	CF, 2700 ohm, 1/8w
R546,R676 R678	24360681	CF, 680 ohm, 1/8w
R552,R553 R554,R556 R557	24061771	VR, 10k ohm, 0.3w
R564,R573 R580,R587	24360104	CF, 100k ohm, 1/8w
R568,R569	24360562	CF, 5.6k ohm, 1/8w
R586,R562	24360561	CF, 560 ohm, 1/8w
R592,R593 R594	24946102	CC, 1k ohm, 1/2w
R671	24360333	CF, 33k ohm, 1/8w
R672	24360224	CF, 220k ohm, 1/8w
R673	24360823	CF, 82k ohm, 1/8w
R679	24360123	CF, 12k ohm, 1/8w

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The shaded areas in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

Schematic Location	Part No.	Description
COILS AND TRANSFORMERS		
L521,L531 L541	23261053	Coil, AZ9246G, Choke
SEMICONDUCTORS		
IC501	23119826	Integrated Circuit, TDA-2530, MATRIX
Q271	A6319302	Transistor, 2SC1959-Y
Q272,Q273 Q275,Q291 Q561,Q571 Q572,Q573 Q671,Q672 Q673	A6317547	Transistor, 2SC1815-Y
Q274	A6534045	Transistor, 2SA1015-Y
Q521,Q522 Q531,Q532 Q541,Q542	A6319400	Transistor, 2SC2068
D271,D521 D522,D531	A7246711	Diode, 1S1555 (TV)
D532,D541 D542,D561 D511	A7110102	Zener Diode, 0.5Z6.8L
MISCELLANEOUS		
P521	23164790	Plug 10P
P525	23116562	Socket, 21P
P551	23164789	Plug, 9P
IC501A	23116947	Socket, 16P

SECAM CHROMA MODULE

U502	23148802	Secam Chroma Module Assembly, FM-523
CAPACITORS		
CM01,CM02	24436101	CD, 100pF, 50v
CM03	24436151	CD, 150pF, 50v
CM04,CM34	24636010	EL, 1μF, 50v
CM05,CM17 CM20,CM21 CM32,CM33	24633100	EL, 10μF, 16v
CM06,CM07 CM08,CM14 CM15	24232103	CD, 10000pF, +80%, −20%, 50v
CM13	24867473	PF, 47000pF, ±5%, 50v
CM19	24633330	EL, 33μF, 16v

Schematic Location	Part No.	Description
CM22,CM23	24232102	CD, 1000pF, ±80%, −20%, 50v
CM24	24357080	CD, 8pF, ±0.25pF, 50v
CM25	24340080	CD, 8pF, 50v
CM26,CM27	24436201	CD, 200pF, ±5%, 50v
CM28,CM29	24436120	CD, 12pF, ±5%, 50v
CM30	24212681	CD, 680pF, ±10%, 50v
CM31	24212821	CD, 820pF, ±10%, 50v
CM46	24636478	EL, 0.47μF, 50v
CM50	24436331	CD, 330pF, ±5%, 50v
CM61	24692102	PF, 1000pF, ±5%, 50v
CM63	24212102	CD, 1000pF, ±10%, 50v
CM64	24617997	EL, 2.2μF, 50v
RESISTORS		
RM01	24380751	CF, 750 ohm, 1/8w
RM02,RM42	24380272	CF, 2.7k ohm, 1/8w
RM03	24360471	CF, 470 ohm, 1/8w
RM04	24380104	CF, 100k ohm, 1/8w
RM07,RM28 RM29	24380152	CF, 1.5k ohm, 1/8w
RM12	24360333	CF, 33k ohm, 1/8w
RM13	24360103	CF, 10k ohm, 1/8w
RM15	24360391	CF, 390 ohm, 1/8w
RM16,RM62	24360272	CF, 2700 ohm, 1/8w
RM17	24360681	CF, 680 ohm, 1/8w
RM19	24381151	OMF, 150 ohm, 1/2w
RM20	24360431	CF, 430 ohm, 1/8w
RM21,RM48	24380431	CF, 430 ohm, 1/8w
RM24,RM25	24380432	CF, 4.3k ohm, 1/8w
RM30	24380681	CF, 680 ohm, 1/8w
RM31	24380331	CF, 330 ohm, 1/8w
RM33	24380153	CF, 15k ohm, 1/8w
RM35	24380223	CF, 22k ohm, 1/8w
RM40	24380103	CF, 10k ohm, 1/8w
RM41	24380472	CF, 4.7k ohm, 1/8w
RM43	24380622	CF, 6.2k ohm, 1/8w
RM44	24360562	CF, 5.6k ohm, 1/8w
RM45	24380332	CF, 3.3k ohm, 1/8w
RM49	24380101	CF, 100 ohm, 1/8w
RM54	24380151	CF, 150 ohm, 1/8w
RM55	24380333	CF, 33k ohm, 1/8w
RM61	24360182	CF, 1800 ohm, 1/8w
RM63	24360102	CF, 1000 ohm, 1/8w
RM64	24941225	CC, 2.2M ohm, 1/4w
	or 24945225	CC, 2.2M ohm, 1/4w

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Schematic Location	Part No.	Description
COILS AND TRANSFORMERS		
LM02	23272987	Coil, TRF5415, Filter
LM03	23272989	Coil, TRF5413, Ident Detector
LM04,LM05	23283829	Coil, TRF4829J, Peaking
LM06,LM07	23272988	Coil, TRF5414
LM08,LM09	23283121	Coil, TRF4121J, Peaking
SEMICONDUCTORS		
ICM01	B0355900	IC, TA7621P, Secam Demod
QM03,QM04 QM05	A6317547	NPN, Transistor, 2SC1815-Y
DM02,DM03 DM61	A7246711	Diode, 1S1555 (TV)
MISCELLANEOUS		
XM01	23153992	1H, Delay Line, Secam

POWER-1 BOARD

U801	23139441	Power-1 Board Assembly, PW2372
CAPACITORS		
C813	24098011	MP, 0.1μF, ±20%, AC 250v
	or 24099971	Paper, 0.1μF, ±20%, AC 450v
COILS AND TRANSFORMERS		
T801	23211984	Coil, TRF3015, Line Filter
MISCELLANEOUS		
⚠ F801	23144959	Fuse, 3.15A
F801A	23165102	Fuse Holder for P.C. Board

POWER-2 BOARD

U802	23139440	Power-2 Board Assembly, PW2373
CAPACITORS		
C801	24095309	PF, 0.1μF, ±20%, 160v
C802,C803 C804,C803	CD, 4700pF, +100, −0%, 160v	
C806	24640985	EL, 470μF, 160v
C821	24636102	EL, 1000μF, 50v
C822	24634221	EL, 220μF, 25v
C823,C824	24636479	EL, 4.7μF, 50v
RESISTORS		
R821,R822	24360103	CF, 10k ohm, 1/8w
R823	24360222	CF, 2200 ohm, 1/8w
R824	24360472	CF, 4700 ohm, 1/8w
R825	24378272	CF, 2700 ohm, 1/8w

Schematic Location	Part No.	Description
R852	24061954	VR, 2k ohm, 1/2w, B-Type
R880	24000987	Posistor, 10 ohm, 125v
SEMICONDUCTORS		
Q821	A6841475	NPN, Transistor, 2SD525Y
Q822,Q823	A6317547	Transistor, 2SC1815-Y
D801,D802 D803,D804	A7568719	Diode, 1S1887
D821,D822	A7568615	Diode, 1S1886
D823	A7286120	Zener Diode, 02Z6.2w, FA-1
MISCELLANEOUS		
F802	23144925	Fuse, 1.2A
F802A,F803A	23165102	Fuse holder for P.C. Board
F803	23144969	Fuse, 0.63A

CRT SOCKET BOARD

U901	23139439	CRT Socket Board Assembly, PW2374
CAPACITORS		
C901	24210331	CD, 330pF, ±20%, 1kv
RESISTORS		
R901,R902 R903	24946392	OC, 3900 ohm, 1/2w
MISCELLANEOUS		
V901A	23116620	CRT, Socket

MAIN BOARD

U902	23139438	Main Board Assembly, PW2375
CAPACITORS		
C101,C104 C106,C107 C114,C161 C162,C163 C171,C172 C409,C502 C604,C606 C610,C611 C612,C631 C632,C633 C634,C635 C636,C637 C640	24232103	CD, 10000pF, +80%, −20%, 50v

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Schematic Location	Part No.	Description
C102,C601	24212102	CD, 1000pF, ±10%, 50v
C103	24602104	PF, 0.1μF, ±10%, 50v
C105,C108	24633330	EL, 33μF, 16v
C110	24436201	CD, 200pF, ±5%, 50v
C112	24632470	EL, 47μF, 10v
C113	24617982	EL, 10μF, 16v
C115	24635220	EL, 22μF, 35v
C116	24692104	PF, 0.1μF, ±5%, 50v
C121	24633331	EL, 330μF, 16v
C173,C174	24436758	CD, 0.75pF, 50v
C175	24538224	PF, 0.22μF, ±5%, 50v
C201,C231 C233	24633100	EL, 10μF, 16v
C203	24632101	EL, 100μF, 10v
C204	24436470	CD, 47pF, ±5%, 50v
C221	24436471	CD, 470pF, ±5%, 50v
C222,C224 C605	24436101	CD, 100pF, ±5%, 50v
C232,C241 C301,C308 C404,C406 C603,C608 C613	24636010	EL, 1μF, 50v
C242	24636100	EL, 10μF, 50v
C302	24868103	PF, 0.01μF, ±10%, 50v
C303	24212471	CD, 470pF, ±10%, 50v
C304	24692222	PF, 2200pF, ±5%, 50v
C305	24692153	PF, 0.015μF, ±5%, 50v
C306	24692224	PF, 0.22μF, ±5%, 50v
C307	24212392	CD, 0.0039μF, ±10%, 50v
C309	24617981	EL, 2.2μF, 50v
C310,C402	24636478	EL, 0.47μF, 50v
C311	24636101	EL, 100μF, 50v
C312	24635100	EL, 10μF, 35v
C313	24640989	EL, 4.7μF, 160v
C314	24828203	PF, 0.020μF, ±5%, 200v
C316	24636221	EL, 220μF, 50v
C317	24617997	EL, 2.2μF, 50v
C318	24219332	CD, 3300pF, ±20%, 500v
C401	24692822	PF, 0.0082μF, ±5%, 50v
C403,C472	24692562	PF, 5600pF, ±5%, 50v
C405	24598362	PF, 3600pF, ±5%, 50v
C407	24217102	CD, 1000pF, ±20%, 50v
C408,C810	24642339	EL, 3.3μF, 160v
C411	24212152	CD, 1500pF, ±10%, 50v

Schematic Location	Part No.	Description
C413	24214222	CD, 2200pF, ±10%, 500v
C414	24828473	PF, 0.047μF, ±5%, 250v
C416	24214681	CD, 680pF, ±10%, 500v
C431	24214221	CD, 220pF, ±10%, 500v
C432	24644100	EL, 10μF, 250v
⚠ C440	24095517	MT, 7500pF, ±5%, 1.6kv
⚠ C442	24828204	PF, 0.2μF, ±5%, 200v
⚠ C443	24828104	PF, 0.1μF, ±5%, 200v
C445	24833563	PF, 0.056μF, ±10%, 200v
C448	24640992	EL, 33μF, 160v
C471	24617998	EL, 1μF, 50v
C481	24642100	EL, 10μF, 160v
C482	24214561	CD, 560pF, ±10%, 500v
C483,C622	24642220	EL, 22μF, 160v
C501	24212681	CD, 680pF, ±10%, 50v
C602	24633220	EL, 22μF, 16v
C607	24635479	EL, 4.7μF, 50v
C609	24633470	EL, 47μF, 16v
C614	24828683	PF, 68000pF, ±5%, 200v
C615	24436300	CD, 30pF, ±5%, 50v
C616,C617	24214102	CD, 1000pF, ±10%, 500v
C618	24085040	EL, 2.2μF, 250v
C621	24633101	EL, 100μF, 16v
C808	24642330	EL, 33μF, 160v
C809	24634102	EL, 1000μF, 25v
C830	24633221	EL, 220μF, 16v
RESISTORS		
R101,R109	24360222	CF, 2200 ohm, 1/8w
R102,R308	24360393	CF, 39k ohm, 1/8w
R103,R106 R107,R333	24360331	CF, 330 ohm, 1/8w
R105	24380104	CF, 100k ohm, 1/8w
R108,R306	24360242	CF, 2400 ohm, 1/8w
R110,R214 R223	24360272	CF, 2700 ohm, 1/8w
R111,R175 R617	24360332	CF, 3.3k ohm, 1/8w
R112,R508 R607	24360682	CF, 6800 ohm, 1/8w
R113,R204 R217,R307 R616	24360392	CF, 3900 ohm, 1/8w
R114,R242 R315	24360302	CF, 3k ohm, 1/8w

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Schematic Location	Part No.	Description
R115,R235 R513	24360104	CF, 100k ohm, 1/8w
R118,R803	24946184	CC, 180k ohm, 1/2w
R119,R225 R637	24360223	CF, 22k ohm, 1/8w
R121	24383680	OMF, 68 ohm, 2w
R151	24061781	VR, 50k ohm, 0.3w
R152	24061786	VR, 1k ohm, 0.3w
R153	24061780	VR, 100k ohm, 0.3w
R161,R203 R241,R603	24360101	CF, 100 ohm, 1/8w
R162,R205 R206,R215 R233,R320 R472,R473 R602,R612 R632,R638 R639	24360102	CF, 1000 ohm, 1/8w
R163,R224 R631	24360562	CF, 5.6k ohm, 1/8w
R164,R633 R634	24360221	CF, 220 ohm, 1/8w
R165,R211 R601	24360561	CF, 560 ohm, 1/8w
R166,R635	24360270	CF, 27 ohm, 1/8w
R171,R202 R441,R442 R509,R605 R690	24360103	CF, 10k ohm, 1/8w
R173,R216 R470	24360273	CF, 27k ohm, 1/8w
R174,R471	24360683	CF, 68k ohm, 1/8w
R177	24360100	CF, 10 ohm, 1/8w
R201,R234 R303,R312	24360563	CF, 56k ohm, 1/8w
R207,R514 R636	24360153	CF, 15k ohm, 1/8w
R221	24360152	CF, 1500 ohm, 1/8w
R212	24360162	CF, 1600 ohm, 1/8w
R213	24360821	CF, 820 ohm, 1/8w
R222,R226 R511	24360123	CF, 12k ohm, 1/8w
R227,R331 R403,R404 R691	24360362	CF, 3600 ohm, 1/8w
R210	24360162	CF, 1.6k ohm, 1/8w

Schematic Location	Part No.	Description
R231,R232 R238,R305 R502,R504 R506,R604 R608	24360472	CF, 4700 ohm, 1/8w
R237,R314	24360473	CF, 47k ohm, 1/8w
R623	24360753	CF, 75k ohm, 1/8w
R243	24360134	CF, 130k ohm, 1/8w
R661	24360823	CF, 82k ohm, 1/8w
R244	24360154	CF, 150k ohm, 1/8w
R251	24061771	VR, 10k ohm, 0.3w
R252	24061770	VR, 20k ohm, 0.3w
R301	24360201	CF, 200 ohm, 1/8w
R302	24360564	CF, 560k ohm, 1/8w
R304,R515	24360132	CF, 1300 ohm, 1/8w
R309	24360244	CF, 240k ohm, 1/8w
R310	24360684	CF, 680k ohm, 1/8w
R311	24360363	CF, 36k ohm, 1/8w
R313	24360243	CF, 24k ohm, 1/8w
R316	24360912	CF, 9.1k ohm, 1/8w
R317,R318	24381122	OMF, 1.2k ohm, 1/2w
R321,R322	24360622	CF, 6.2k ohm, 1/8w
R323,R481	24983279	MF, 2.7 ohm, 1w
R327	24531100	FR, 10 ohm, 0.5w
R328	24382100	OMF, 10 ohm, 1w
R330	24360204	CF, 200k ohm, 1/8w
R352	24061769	VR, 50k ohm, 0.3w
R402,R507 R692	24360183	CF, 18k ohm, 1/8w
R405	24360363	CF, 36k ohm, 1/8w
R406	24378154	CF, 150k ohm, 1/8w
R407	24381391	OMF, 390 ohm, 1/2w
R408,R482	24382223	OMF, 22k ohm, 1w
R409	24384103	OMF, 10k ohm, 3w
R410	24000947	OMF, 15k ohm, 1/2w
R411	24360430	CF, 43 ohm, 1/8w
R415	24946272	CC, 2700 ohm, 1/2w
R416	24384242	OMF, 2.4k ohm, 3w
R428	24946220	CC, 22 ohm, 1/2w
R444	24982109	MF, 1 ohm, 1/2w
R451	24061783	VR, 10k ohm, 0.3w
R452	24061782	VR, 2k ohm, 0.3w
R474	24327363	MF, 36k ohm, 1/4w
R475	24383471	OMF, 470 ohm, 2w
R477,R501 R503,R505	24360471	CF, 470 ohm, 1/8w

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Schematic Location	Part No.	Description
R478	24360470	CF, 47 ohm, 1/8w
R479	24360111	CF, 110 ohm, 1/8w
R510	24360562	CF, 5600, 1/8w
R512	24360183	CF, 18k ohm, 1/8w
R606	24360623	CF, 62k ohm, 1/8w
R609	24360391	CF, 390 ohm, 1/8w
R613	24382222	OMF, 2200 ohm, 1w
R614	24382152	OMF, 1500 ohm, 1w
R615	24382363	OMF, 36k ohm, 1w
R621	24382910	OMF, 91 ohm, 1w
R622	24531561	FR, 560 ohm, 1/2w
R624	24360202	CF, 2k ohm, 1/8w
R625	24360151	CF, 150 ohm, 1/8w
R640	24941222	CC, 2.2k ohm, 1/4w
R801	24381432	OMF, 4.3k ohm, 1/2w
R802	24381392	OMF, 3.9k ohm, 1/2w
R804	24381470	OMF, 47 ohm, 1/2w
R805	24382163	OMF, 16k ohm, 1w
R806	24381473	OMF, 47k ohm, 1/2w
⚠ R807,R808	24003992	OMF, 18k ohm, 1/2w
⚠ R809	24378222	CF, 2.2k ohm, 1/8w
R830	24383330	OMF, 33 ohm, 2w
⚠ R851	24061787	VR, 500 ohm, 0.3w
COILS AND TRANSFORMERS		
L102	23262880	Coil, TRF1446
L103,L171	23262861	Coil, TRF1448
L110	23283569	Coil, PL-5.6, Peaking
L161,L631	23261976	Coil, TRF9228, Choke
L162	23261986	Coil, TRF9220, Choke
L172	23261996	Coil, TRF9203, Choke
L201	23252992	Coil, TRF2403
L405,L406	23261974	Coil, HC5-035
L407	23284109	Coil, PL-1
L411	23222686	Coil, TLN2040, Choke
L481	23221050	Coil, TLN1015, Horiz. Drive
L501	23283682	Coil, PL-6800, Peaking
L601	23262868	Coil, TRF1048
L602	23252955	Coil, TRF6411
⚠ T401	23224997	Transformer, TLN1027
⚠ T461	23226555	Transformer, TFB3055B, Horiz. Output

Schematic Location	Part No.	Description
SEMICONDUCTORS		
IC101	23119825	IC TDA2542, PIF, AFT
IC201	23119823	IC TCA660B, VIDEO, CHROMA
IC301	B0354901	IC, TA7609P FA-2, Sync, Vert, Horiz
IC601	23119824	IC TDA1048, SIF
Q111,Q112 Q113,Q114 Q211,Q212 Q214,Q231 Q232,Q472 Q473,Q602 Q603,Q690	A6317547	NPN Transistor, 2SC1815-Y
Q161,Q631	A6708871	NPN Transistor, 2SC388A-TM
Q213,Q221 Q471	A6534045	PNP Transistor, 2SA1015-Y
Q303,Q802	A6324922	NPN Transistor, 2SC2229-0
Q306	A6319550	NPN Transistor, 2SC2073
Q307	A6532320	PNP Transistor, 2SA940
Q402	A6319403	NPN Transistor, 2SC2068 (FA-1)
Q611,Q612	A6325020	NPN Transistor, 2SC2230-G
	or A6325010	NPN Transistor, 2SC2230-Y
Q802	23114887	NPN Transistor, 2SC2229-Y
D111,D221 D222,D223 D231,D232 D233,D234 D301,D303 D304,D309 D310,D312 D401,D501 D613,D805	A7246711	Diode, 1S1555 (TV)
D224	A7286500	Zener Diode, 1S2114A
D241,D502 D503,D611	A7246602	Diode, 1S1553 (TV)
D242	A7285900	Zener Diode, 1S211A
D302,D406	A7978855	Diode, S5295J
D305,D306	A7568475	Diode, TVR-2D
D307	A7568719	Diode, 1S1887
D471	A7572200	Diode, 1S1942
D481	A7568521	Diode, 1S1885
D482	A7568300	Diode, 1S1835
D631,D632 D633,D634 D635	A7288601	Diode, 1S2186FA-1
⚠ D806	A7286120	Zener Diode, 02Z6.2w, FA-1

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Schematic Location	Part No.	Description
MISCELLANEOUS		
P520	23164788	Plug 8P
P650	23163164	Module Socket, 13P
IC101A,IC201A IC301A,IC601A	23116947	IC Socket, 16P
S401	23146999	Relay, TSB4001
W201	23250971	Delay Line, TRF2037
Z101	A5610910	PSF, F1028B
Z601	A5613020	SSF, F1328
	SELECTOR BOARD	
UA01	23139437	Selector Board Assembly, PW2376
CAPACITORS		
CA11,CA12	24340121	CD, 120pF, ±5%, 50v
CA13 CE10,CE23	24636010	EL, 1μF, 50v
CA14	24633470	EL, 47μF, 16v
CA15	24602473	PF, 0.047μF, ±10%, 50v
CA16,CA20 CA30,CA31 CA32,CE02 CE03,CE04 CE05,CE09 CE20	24232103	CD, 10000pF, +80%, −20%, 50v
CA21	24641100	EL, 10μF, 100v
CA22	24602472	PF, 0.0047μF, ±10%, 50v
CA40,CA41	24436330	CD, 33pF, ±5%, 50v
CA42,CA46	24617999	EL, 47μF, 50v
CA43	24602473	PF, 0.047μF, ±10%, 50v
CA44	24602124	PF, 0.12μF, ±10%, 50v
CA45	24602154	PF, 0.15μF, ±10%, 50v
CE01	24633100	EL, 10μF, 16v
CE06	24640978	EL, 47μF, 160v
CE07	24602333	PF, 0.033μF, ±10%, 50v
CE08	24602104	PF, 0.1μF, ±10%, 50v
CE21,CE24	24641221	EL, 220μF, 100v
CE22	24635220	EL, 22μF, 35v
RESISTORS		
RA09,RA77	24360103	CF, 10k ohm, 1/8w
RA10,RA60 RA76	24380103	CF, 10k ohm, 1/8w
RA12,RA37 RA44	24380682	CF, 6.8k ohm, 1/8w

Schematic Location	Part No.	Description
RA13	24380133	CF, 13k ohm, 1/8w
RA14	24360204	CF, 200k ohm, 1/8w
RA15,RA79	24380393	CF, 39k ohm, 1/8w
RA16	24380224	CF, 220k ohm, 1/8w
RA17	24360680	CF, 68 ohm, 1/8w
RA18	24360101	CF, 100 ohm, 1/8w
RA19	24380123	CF, 12k ohm, 1/8w
RA20	24360132	CF, 1.3k ohm, 1/8w
RA21	24380362	CF, 3.6k ohm, 1/8w
RA24	24381221	OMF, 220 ohm, 1/2w
RA26	24917102	CF, 1k ohm, 1/8w
RA30, RA34	24380363	CF, 36k ohm, 1/8w
RA31	24360154	CF, 150k ohm, 1/8w
RA32,RA33	24360183	CF, 18k ohm, 1/8w
RA35	24380154	CF, 150k ohm, 1/8w
RA36	24360123	CF, 12k ohm, 1/8w
RA40,RA41	24380433	CF, 43k ohm, 1/8w
RA42,RA43	24380102	CF, 1k ohm, 1/8w
RA45	24380113	CF, 11k ohm, 1/8w
RA46	24380163	CF, 16k ohm, 1/8w
RA47,RA49	24380273	CF, 27k ohm, 1/8w
RA48	24380432	CF, 4.3k ohm, 1/8w
RA50	24360512	CF, 5.1k ohm, 1/8w
RA51	24060763	VR, 100k ohm, 1/10w
RA52,RA89	24380223	CF, 22k ohm, 1/8w
RA53,RA70 RA71	24380183	CF, 18k ohm, 1/8w
RA72,RA73	24380473	CF, 47k ohm, 1/8w
RA74,RA75 RA84,RA86 RA87,RA88	24380104	CF, 100k ohm, 1/8w
RA78,RA80	24380333	CF, 33k ohm, 1/8w
RA81	24380683	CF, 68k ohm, 1/8w
RA82	24380303	CF, 30k ohm, 1/8w
RA85	24360104	CF, 100k ohm, 1/8w
RA90	24941475	CC, 4700k ohm, 1/4w
RA98	24380752	CF, 7.5k ohm, 1/8w
RA99	24360273	CF, 27k ohm, 1/8w
RE01	24381363	OMF, 36k ohm, 1/2w
RE02	24383123	OMF, 12k ohm, 2w
RE03	24381471	OMF, 470 ohm, 1/2w
RE20	24383103	OMF, 10k ohm, 2w
RE21	24965152	OMF, 1500 ohm, 3w
RE22	24383392	OMF, 3.9k ohm, 2w
RE23	24982109	MF, 1 ohm, 1/2w

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The shaded areas of the schematic diagram and the parts list designate components which have special characteristics important for safety, and should be replaced only with types identical to those in the original circuit or specified in the parts list. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

Schematic Location	Part No.	Description
COILS AND TRANSFORMERS		
LA01	23283220	Coil, PL-22, Peaking
SEMICONDUCTORS		
ICA01	B0410045	LSI, TC9002CP, Digital Control
ICA02	B0428410	IC, TMM841P, Memory
ICA03	B0324721	IC TA7315BP Band Switch
ICE01	B0355810	IC, TA7619AP, Memory Control
QA04,QA05 QA07,QA08 QA09,QA43 QA70,QA71 QA74,QA75 QA76,QA77 QA78	A6317547	NPN Transistor, 2SC1815-Y
QA06	A678970A	NPN Transistor, 2SC1569
QA40,QA41	A6708371	NPN Transistor, 2SC383TM
QA42	A6534045	PNP Transistor, 2SA1015-Y
QA73	B0470662	Integrated Circuit, TC4066BP
QE10	A671656A	NPN Transistor, 2SC495-Y
QE11	A6532320	PNP Transistor, 2SA940
DA09,DA10 DA11,DA12 DA13,DA14 DA15,DA17 DA18,DA70 DA71,DA72 DA73,DA76 DA77,DA78 DE10,DE12	A7246711	Diode, 1S1555 (TV)
DA75	A7286120	Zener Diode, 02Z6.2W, FA-1
DE07,DE08 DE09	A7568300	Diode, 1S1835
DE11	A7110653	Zener Diode, 05Z24U
	or A7110652	Zener Diode, 05Z24L
DE20	23115878	Zener Diode, μPC574JC
MISCELLANEOUS		
P505	23164783	Plug 3P
P508	23164786	Plug 6P
ICA01A	23116843	IC, Socket, 42P
ICA02A,ICA73A	23116948	IC Socket, 14P
ICE01A	23116947	IC Socket, 16P
ZA01,ZA20	24000944	Resistor Block, 100 ohm, 1/8w
ZA03,ZA21	24094578	Capacitor Block, 0.01μF, +80%, −20%, 50v

Schematic Location	Part No.	Description
SA20	23145890	Push Switch
SA21	23145889	Push Switch

AFT SWITCH BOARD

UA04	23139311	AFT Switch Board Assembly, PW2539
CAPACITORS		
CA47	24212561	CD, 560pF, ±10%, 50v
CA48	24692222	PF, 2200pF, ±5%, 50v
CA49	24636010	EL, 1μF, 50v
RESISTORS		
RA91	24380362	CF, 3.6k ohm, 1/8w
RA92	24380103	CF, 10k ohm, 1/8w
RA93	24380102	CF, 1k ohm, 1/8w
RA94	24380101	CF, 100 ohm, 1/8w
RA95,RA96	24380223	CF, 22k ohm, 1/8w
RA97	24380473	CF, 47k ohm, 1/8w
SEMICONDUCTORS		
QA79,QA81	A6317547	NPN Transistor, 2SC1815-Y
QA80	A6534045	PNP Transistor, 2SA1015-Y
MISCELLANEOUS		
P515	23164783	Plug 3P

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

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Schematic Location	Part No.	Description
COMPONENTS NOT MOUNTED ON P.W. BOARDS		
CAPACITORS		
C191,C192 C194	24636010	EL, 1μF, 50v
C193	24867104	PF, 0.1μF, ±5%, 50v
C195	24636479	EL, 4.7μF, 50v
⚠ C463	24212222	CD, 2200pF, ±10%, 50v
⚠ C464	24442681	CD, 680pF, ±10%, 2kv
RESISTORS		
R191,R262	24360103	CF, 10k ohm, 1/8w
R192	24360222	CF, 2200 ohm, 1/8w
R193	24360272	CF, 2700 ohm, 1/8w
R253	24060170	VR, 10k ohm, 1/5w
R254	24060757	VR, 10k hom, 1/5w
R261	24360752	CF, 7500 ohm, 1/8w
R351	24058991	VR, 200k ohm, 1/5w
R555	24058997	VR, 2k ohm, 1/5w
R651	24055981	VR, 10k ohm, 1/2w (included in S801)
R661	24946470	CC, 47 ohm, ±10%, 1/2w
R810,R811	24007958	Cement, 200 ohm, 15W/6.8 ohm, 5w
COILS AND TRANSFORMERS		
⚠ L462	23227915	Deflection Yoke TDY3145A
or	23227914	Deflection Yoke, TDY3145B
L901	23200933	Degausing Coil, TSB2086
T661	23216968	Transformer, TSP1039, Speaker
⚠ T802	23213935	Transformer, TPW1176, Power
SEMICONDUCTORS		
⚠ Q404	A6847905	NPN Transistor, 2SD869
Q801	A6846004	NPN Transistor, 2SD777 (FA-3)
MISCELLANEOUS		
P001	23142756	Aerial Terminal Board, AT-773T
P661	23163061	Earphone Jack
P801	23176267	Power Cord
P802	23116944	Socket, Main Voltage Adjust
P802A	23164961	Plug, Main Voltage Adjust
S501	24060757	VR, 10k ohm, 1/5w (included in R256)
S801	24055981	Power Switch (included in R651)
V901M	23102989	Purity Magnet, MAG1006
W661	23151990A	Speaker, SPK1026
⚠ Z411	23115694	Focus Pack, TPA6014
Z411A,Z411B	23192985	Insulator Cap
Z411C	23192932	Insulator Cap
UA02	23145882	Key Board 8 position
ACCESORY		
Y101	23991967	Owner's Handbook
Y105	23152002	Earphone
PICTURE TUBE AND TUNERS		
⚠ V901	A5391739	Picture Tube 370HZB22 (VY)
H001	23121957	UHF Tuner UP-711
H002	23121853	VHF Tuner CF825

SCHEMATIC DIAGRAM <MODEL C-1480F>

OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 230/115 volts, colour bar signal
2. Voltages reading may vary ±20%.
3. The schematic shown is representative only.
4. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
5. Check FINE TUNING, AGC, BRIGHTNESS, CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position
6. Waveforms are taken using a standard colour bar signal.

NOTES:

1. D.C resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits subject to change without notice

EXPRESSION

VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k = 1,000, M = 1,000,000.
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.

RESISTOR

Type	Mark
Carbon Composition	S
Oxide Metal Film	P
Molded Carbon Film	P
Wire Wound	W
Cement	No Mark
Variable Resistor	
Positive Thermistor	
Negative Thermistor	

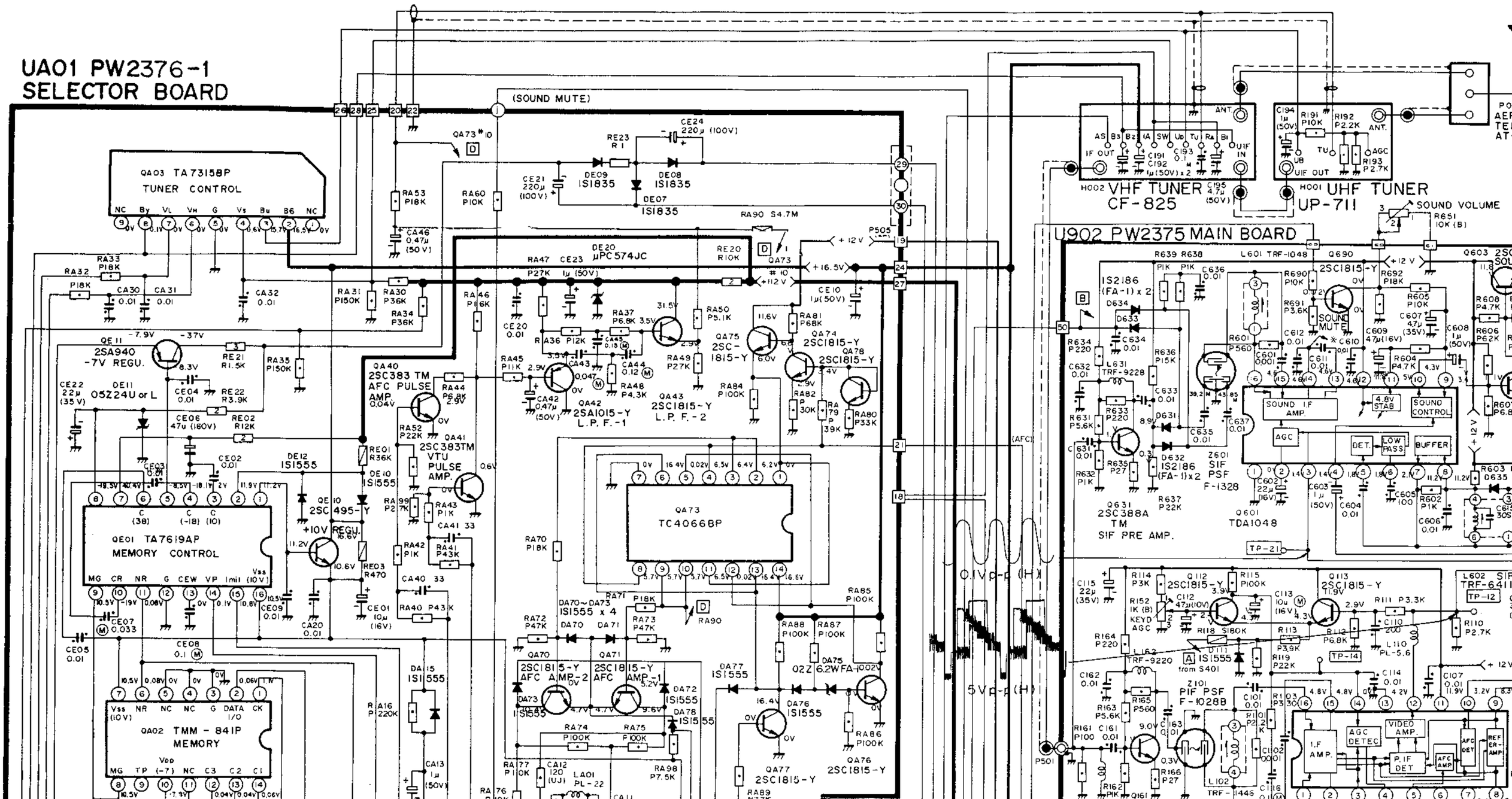
Table 1

Watt	Mark
1/16 W	
1/8 W	
1/4 W	
1/2 W	2
1 W	1
2 W	2
3 W	3
5 W	5
10 W	10
15 W	15
20 W	20
25 W	25

Table 2

CAPA

Volt
6.3V
10V
16V
25V
35V
50V
160 ~ 35
350 ~ 62
2.5K
Chemic
Chemic Non Po



PRESSION

UE OF RESISTOR, CAPACITOR and INDUCTOR

Resistance is shown in ohm, k = 1,000, M = 1,000,000.
Unless other wise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H

RESISTOR

Type	Mark
Carbon Composition	S
Oxide Metal Film	R
Insulated Carbon Film	P
Wire Wound	W
Cement	Not Mark
Variable Resistor	
Positive Thermistor	
Negative Thermistor	

Table 1

Watt	Mark
1/16 W	
1/8 W	
1/4 W	
1/2 W	
1 W	1
2 W	2
3 W	3
5 W	5
10 W	10
15 W	15
20 W	20
25 W	25

Table 2

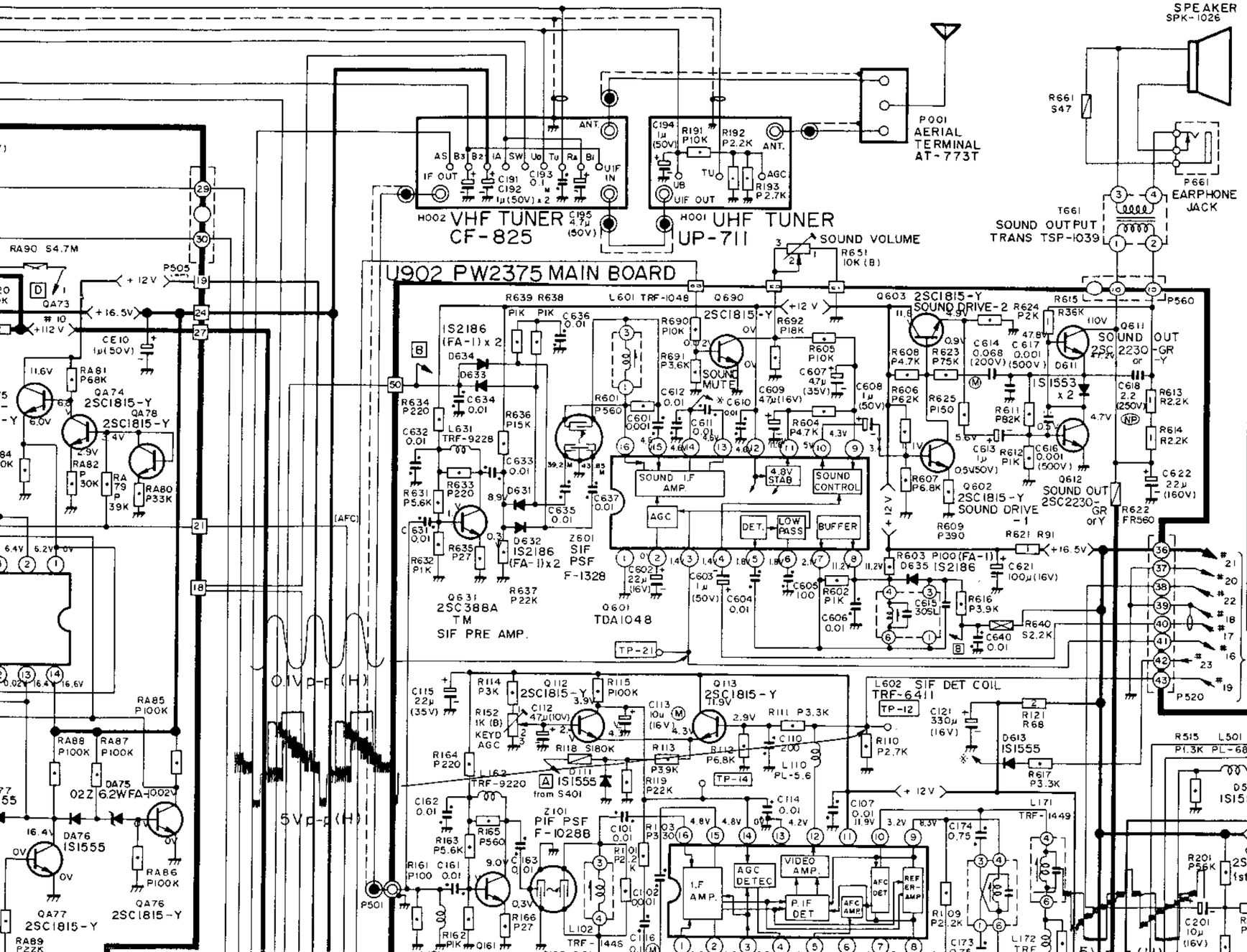
CAPACITOR

Volt	Mark
6.3V	
10V	
16V	
25V	
35V	
50V	
160 ~ 350V	
350 ~ 630V	
2.5KV	
Chemical	
Chemical Non Polar	

Table 3

1.8Vp-p(H)

U502 FM523 CHROMA MODULE



1.8Vp-p(H)

0.15Vp-p(H)

85 Vp-p(H)

85 Vp-p(H)

95 Vp-p(H)

U502 FM523 CHROMA MODULE

U501 PW2377 PERI TV & VIDEO OUT BOARD

U901 PW2374 CRT SOCKET BOARD

0.1Vp-p(H)

0.12Vp-p(H)

1.25Vp-p(H)

1.25Vp-p(H)

1Vp-p(H)

0.5Vp-p(H)

2.8Vp-p(H)

+16.5V

+12V

BELL FILTER

CHROMA DEMOD

TA7621P CHROMA DEMOD

ACC DET

IDENT DET.

PULSE A&D

SECAM SW.

KILLER BLANKER

FLIP FLOP

ACC AMP.

R-Y DEMO

B-Y DEMO

2nd VIDEO

BRIGHTNESS

CONTRAST

COLOUR

VERT HOLD

SUB BRIGHT

SUB CONTRAST

RED CUT OFF

GREEN CUT OFF

BLUE CUT OFF

RED DRIVE

GREEN DRIVE

BLUE DRIVE

BLUE AMP.

GREEN AMP.

RED AMP.

MATRIX

B-Y CLAMP

G-Y CLAMP

R-Y CLAMP

TDA-2530

2SC2068 x 2 RED OUT

2SC2068 x 2 GREEN OUT

2SC2068 x 2 BLUE OUT

2SC1815-Y

2SA1015-Y

1S1555

1S1553

CCRT 370HZB22 (VY)

AZ-9246-G

AZ9246G

05Z6.8L

from MAIN BOARD

from FOCUS/SCREEN PACK

from T461 HORIZ. OUTPUT TRANS.

PERI SOCKET

PERI TV. & VIDEO OUT BOARD

PERI SOCKET
IN / OUT SIGNAL

PIN	SIGNAL	SPEC
1	AUDIO OUT	100mVrms ± 3dB
2	AUDIO IN	100mVrms ± 3dB
3	AUDIO OUT	100mVrms ± 3dB
4	AUDIO EARTH	——
5	BLUE EARTH	——
6	AUDIO IN	100mVrms ± 3dB
7	BLUE IN	1Vp ± 3dB
8	PERI/TV	TV 0-1V PERI 10-12V
9	GREEN EARTH	——
10	NC	——
11	GREEN IN	1Vp ± 3dB
12	NC	——
13	RED EARTH	——
14	NC	——
15	RED IN	1Vp ± 3dB
16	RAPID BLANKING	0-0~0.4V 1-1~3.0V
17	VIDEO EARTH	——
18	RAPID & EARTH	——
19	VIDEO OUT	1Vp-p ± 3dB
20	VIDEO IN	1Vp-p ± 3dB
21	SHIELD EARTH	——

1.2Vp-p (H)

13Vp-p (H)

890Vp-p (H)

100Vp-p (H)

U801 PW 2372
POWER-1 BOARD

U802
PW-2373
POWER-2
BOARD

UA01
PW2376-2
SELECTOR
BOARD

UA04 AFT SW. BOARD PW2539

AC INPUT
AC 115V or 230V 50Hz
P801 AC CORD
AC SW.
S801
F801 3.15 AT
P580
TRF-3015 LINE FILTER
C813 0.1 (AC250V)
T801
P802A
P802 MAIN VOLT ADJ
T802 POWER TRANS TPW-1176
L901 DEGAUSS COIL TSB-2086
P584
M505
C802~C805 0.0047 x 4 (AC160V)
F802 1.2AT
C801 0.1 (AC160V)
POSISTOR R880
D801~D804 IS1887 x 4
C806 470μ (160V)
F803 630mA
C821 1000μ (50V)
D821 D822 IS1886 x 2 +23V RECT
Q822 2SC1815-Y REGU. DRIVE
Q823 2SC-1815-Y ERROR AMP.
D823 02Z6.2WFA-1 STD. VOLT
+16.5V REGU.
R852 2K (B) +16.5V ADJ
P583
P582
D805 IS1555 C810 3.3μ (160V)
TP-9
R807 R18K
R801 R4.3K R802 R3.9K R804 R47 C808 33μ (160V)
R803 S180K
Q802 2SC-2229 ERROR AMP.
R805 R16K R806 R47K R808 R18K R809 P2.2K (G)
D806 02Z-6.2WFA-1 STD. VOLT
R851 500(B) +112V ADJ
Q801 2SD777 (FA-3) APF REGU.
R810 W6.8 R811 W200
C809 1000μ (25V)
20Vp-p(H)
C830 220μ (16V)
R830 R33
S401 625/819 RELAY TSB4001
HEATER to CRT BOARD
D471 IS1942
R471 P68K R470 P27K
C471 1μ (K) (50V)
R475 R470
C472 5600
R477 P470
2SC-1815-Y
2SA1015-Y
Q402 2SC2068(FA-1) HOR. DRIVE
R408 R22K
L407 PL-1
C407 0.001
R411 V P43
C413 2200 (500V)
R415 S2.7K
T401 TLN-1027 HOR. DRIVE TRANS
R416 R2.4K
C416 680 (500V)
C414 0.047 (200V)
R428 S22
L405 HC5-035
Q404 2SD869 HOR. OUT
C464 680(YL) (2KV)
C463 2200
C432 10μ (250V)
C448 33μ (160V)
R482 R22K
+170V
D406 05205J +170V RECT.
C431 220 (500V)
L406 HC5-035
D482 IS1835
L481 TLN1015
C482 560 (500V)
D481 IS1885
R444 R1
C481
C483 22μ (160V)
R481 W2.7
S401 (819) (625)
C440 7500 (1.6KV)
1.2Vp-p (H)
13Vp-p (H)
890Vp-p(H)
5Vp-p(H)
+16.5V
+12V
+112V
+170V
TO VERT. HOLD
P530
C305 0.015 (M)
R304 P1.3K R305 P47K R306 P2.4K
C304 2200 M
C303 470
C301 1μ (50V)
D301 IS1555
C310 0.47μ (50V)
D310 IS1555
C306 1μ (50V)
C306 0.22 (M)
C309 2.2μ (50V)
R309 R302 P560K R303 P56K
C302 0.01
R307 P39K
R310 P680K
R308 P39K
R311 P36K
C308 3.3μ (160V)
C409 0.01
R407 R390
D401 IS1555
Q301 TA-7609P (FA-2)
SYNC. SEP.
HORIZ Vcc
VERT Vcc
VERT OSC
RAMP
FLIP-FLOP
PHAS DET
HOR OSC
HOR DRIVE
VERT DRIVE
AMP
R352 50K (B) VERT. HEIGHT
R330 P200K
R333 P330
Q303 2SC2229 VERT. DRIVE
C307 3900
C411 1500
C406 1μ (50V)
C404 1μ (50V)
R404 P3.6K
R403 P3.6K
C402 0.47μ (50V)
R402 P18K
R405 P36K
C403 5600 (M)
C401 8200 (M)
R451 10K (B) 625 H.HOLD
R406 P150K(G) R410 R15K(G)
R473 P1K V
R472 P1K
R452 20K (B) 819
R471 H. HOLD
R478 P47
Q473 2SC1815-Y
R479 P110
C405 3600
D302 S5295J +43V RECT.
D307 IS1887
D306 TVR-2D
D305 TVR-2D
D304 IS1555
Q306 2SC2073 VERT. OUT
D303 IS1555
D309 IS1555
D312 IS1555
Q307 2SA940 VERT. OUT
C311 100μ (50V)
C312 10μ (35V)
C313 4.7μ (160V)
C316 220μ (50V)
C318 3300 (500V)
R312 P56K
R313 P24K
R314 P47K
R320 P1K
R315 P3.6K
R316 P9.1K
C317 2.2μ (50V)
R323 R2.7
R327 FR10
R328 R10
R331 P3.6K
R321 P6.2K
R322 P6.2K
R238 P4.7K
R227 P3.6K
D233 IS1555
C314 0.02 (200V)
R317 R1.2K
R318 R1.2K
S401
(625) (819)
R201 P56K
C201 10μ (16V)
Q211 2SC1815-Y 1st VIDEO
R203 P100
R205 P1K
R202 P10K
R204 P3.9K
Q212 2SC-1815-Y 2nd VIDEO
R206 P1K
R210 P1.6K
R211 P560
R217 P3.9K
Q213 2SA1015-Y 3rd VIDEO
R212 P1.6K
R213 P820
R214 P2.7K
R215 P1K
W201 TRF-2037 Y-D/L
C203 100μ (10V)
C232 1μ (50V)
R509 P10K
P470
CLAMP & BRIGHT
G-Y MATRIX
VIDEO AMP
UNT COL
Q201 TCA6608
D234 IS1555
Q232 2SC1815-Y
R237 P47K
R225 P22K
R226 P12K
R233 P1K
C233 10μ (16V)
R234 P56K
R235 P100K
D231 IS1555
Q231 2SC1815-Y
R243 P130K
R244 P150K
C241 1μ (50V)
D242 02Z-5.6 A
R242 P3K
C242 10μ (50V)
D241 IS1553
Q221 2SA1015-Y
R223 P2.7K
D221 IS1555
C221 470
R221 P1.5K
R222 P12K
C222 100P
D222 IS1555
D224 02Z7.5A
R224 P5.6K
C224 100
R241 P100
R201 P56K
C163 0.01
R163 P5.6K
P560
C161 0.01
R161 P100
R162 P1K
R166 P27
Q161 2SC388A -TM
L161 TRF9228
P501
C102 0.01
R101 P2.2K
I.F AMP.
AGC DETEC
VIDEO AMP.
P.IF DET
AFC DET
AFC AMP
REF-AMP
R109 P2.2K
C173 0.75
L172 TRF 9213
L102 TRF-1448
C116 0.1 (M)
C106 0.01
C108 33μ(16V)
C105 33μ(16V)
C104 0.01
R106 P330
R171 P10K
C172 0.01
Q101 TDA2542
L103 TRF-1449
R177 P10
Q111 2SC1815-Y
R108 P2.4K
R107 P330
R151 50K (B) AGC DELAY
R102 P39K
R105 P100K
C103 0.1 (M)
Q114 2SC1815
C175 0.22
Z171 6.8V 0.01
R153 100K(B) AFC Adj
R174 P68K
R173 P27K
R175 P3.3K
TP-i5
S501 AFC SW.
OFF
ON
(AFC)
(AGC)
(GND)
(+16.5V)
(+12V)
(+112V)
P510

U801 PW 2372
POWER-1 BOARD

U802
PW-2373
POWER-2
BOARD

UA01
PW2376-2
SELECTOR
BOARD

UA04 AFT SW. BOARD PW2539

S501
AFC SW.

AC INPUT
P801 AC CORD
AC 115V or 230V 50Hz
AC SW.
F801 3.15 AT
LINE FILTER
T801 TRF-3015
S801
P802A
P802 MAIN VOLT ADJ
T802 POWER TRANS TPW-1176
L901 DEGAUSS COIL TSB-2086
P584
M505
C802~C805 0.0047 x 4 (AC160V)
F802 1.2AT
C801 0.1 (AC160V)
POSISTOR R880
D801~D804 ISI887 x 4
F803 630mAT
C821 1000μ (50V)
R821 P10K
Q822 2SC1815-Y REGU. DRIVE
C823 4.7μ (50V)
D821 D822 ISI886 x 2 +23V RECT
R822 P10K
Q823 2SC-1815-Y ERROR AMP.
C824 4.7μ (50V)
R823 P2.2K
R824 P4.7K
R825 P2.7K (G)
D823 02Z6.2WFA-1 STD. VOLT
R852 2K (B) +16.5V ADJ
Q821 2SD637T +16.5V REGU.
C822 220μ (25V)
P582
P583
S401 625/819 RELAY TSB4001
HEATER to CRT BOARD
C830 220μ(16V)
C809 1000μ (25V)
20Vp-p(H)
D805 ISI555
C810 3.3μ (160V)
TP-9b
R807 R18K
R801 R4.3K
R802 R3.9K
R804 R47
R803 S180K
C808 33μ (160V)
Q802 2SC-2229
R805 R16K
R806 R47K
R808 R18K
R809 P2.2K (G)
ERROR AMP.
D806 02Z-6.2WFA-1 STD. VOLT
R810 W6.8
R811 W200
Q801 2SD777(FA-3) APF REGU.
R851 500(B) +112V ADJ
112.7V
112.2
132V
+16.5V
+12V
+112V
+5V
TP-15
C108 33μ(16V)
C105 33μ(16V)
C104 0.01
R106 P330
R171 P10K
C172 0.01
TDA2542
L103 TRF-1449
R177 P10
C171 0.01
R153 100K(B) AFC Adj
R173 P27K
R174 P68K
R175 P3.3K
Q111 2SC1815-Y
R108 P2.4K
R107 P330
R102 P39K
R151 50K (B) AGC DELAY
R105 P100K
C103 0.1
Q114 2SC1815
(AFC)
(AGC)
(GND)
(+16.5V)
(+12V)
(+112V)
P510
C221 470
R221 P1.5K
D221 ISI555
R223 P2.7K
R222 P12K
C222 100P
D222 ISI555
Q221 2SA1015-Y 12.1V
D224 02Z7.5A
C224 100
R224 P5.6K
D241 ISI553
R241 P100
C242 10μ (50V)
C241 1μ (50V)
D242 02Z 5.6A
R242 P3K
D231 ISI555
Q231 2SC1815-Y 12V
R243 P130K
R244 P150K
R235 P100K
C233 10μ (16V)
R233 P1K
5.9V
6.5V
Q201 TCA660B
VIDEO AMP
R226 P12K
R225 P22K
D234 ISI555
R237 P47K
Q232 2SC1815-
D233 ISI555
R238 P4.7K
R227 P3.6K
D302 S5295J +43V RECT.
R327 FR10
D307 ISI887
C311 100μ (50V)
R317 R1.2K
D306 TVR-2D
D305 TVR-2D
R328 R10
C314 0.02 (200V)
R321 P6.2K
R322 P6.2K
D304 ISI555
R318 R1.2K
C312 10μ (35V)
C313 4.7μ (160V)
Q306 2SC2073 VERT. OUT
C316 220μ (50V)
C318 3300 (500V)
R316 P9.1K
R312 P56K
R314 P47K
R315 P3.6K
R320 P1K
D303 ISI555
D309 ISI555
D312 ISI555
R313 P24K
Q307 2SA940 VERT. OUT
R330 P200K
R352 50K (B) VERT. HEIGHT
R333 P330
Q303 2SC2229-O VERT. DRIVE
C317 22μ (50V)
R323 R2.7
S401
(625) (819)
C483 22μ (160V)
C481 10μ (160V)
R481 W2.7
D481 ISI885
D482 ISI835
L481 TLN1015
C440 7500 (1.6KV)
C482 560 (500V)
D406 S5295J +170V RECT.
C431 220 (500V)
L406 HC5-035
+170V
C448 33μ (160V)
R482 R22K
C432 10μ (250V)
T401 TLN-1027 HOR. DRIVE TRANS
Q404 2SD869 HOR. OUT
C463 2200
C464 680 (2KV)
72.7V
0.17
0.1V
Q402 2SC2068(FA-1) HOR. DRIVE
R408 R22K
L407 PL-1
C407 0.001
R411 V P43K
44V
C413 2200 (500V)
R415 S2.7K
R416 R2.4K
C416 680 (500V)
C414 0.047 (200V)
L405 HC5-035
R428 S22
R429 S22
C471 1μ (K) (50V)
R471 P68K
R470 P27K
D471 ISI942
R475 R470
R477 P470
C472 5600
Q471 H. HOLD
Q472
R472 P1K
R473 P1K V
R452 20K (B) 819
R36K (F)
R478 P47
Q473 2SC1815-Y
R479 P1K
C401 8200 (M)
C402 0.47μ (50V)
C403 5600 (M)
C405 3600
R405 P36K
R403 P3.6K
R404 P3.6K
C404 1μ (50V)
R406 R410 P150K(G)
R451 10K (B) 625 H. HOLD
C406 1μ (50V)
C411 1500
C307 3900
R333 P330
C409 0.01
R407 R390
D401 ISI555
Q301 TA-7609P (FA-2)
SYNC. SEP.
HORIZ Vcc
VERT Vcc
VERT OSC
RAMP
FLIP-FLOP
PHAS DET
HOR OSC
HOR DRIVE
VERT DRIVE
AMP
R309 P2.2K
C309 2.2μ (50V)
C306 0.22
R308 P39K
R310 P680K
C310 0.47μ (50V)
C308 1μ (50V)
D310 ISI555
R307 P3.9K
C303 470
C302 0.01
R303 P56K
R302 P560K
C301 1μ (50V)
D301 ISI555
R301 P200
R304 P1.3K R305 P4.7K R306 P2.4K
C305 0.015 (M)
P530
TO VERT. HOLD
R409 R10K
C408 3.3μ (160V)
C304 2200 M
1.2Vp-p (H)
13Vp-p(H)
890Vp-p(H)

QA02 TMM-841P MEMORY

QA01 TC9002CP DIGITAL CONTROL

ZA21 0.01 x 6 CONDENSER BLOCK

ZA20 100 x 6 RESISTOR BLOCK

ZA01 100 x 6

ZA03 0.01 x 6

DA09 ~ DA14 IS1555 x 6

DA01 ~ DA08 TLR103D

RA01 ~ RA08 S470 x 8

SA01 SELECT KEY SW.

UA02 KEY BOARD

S501 AFC SW.

TUNING VR MODE MEMORY IND. SW. BAND SW. MODE SW.

U801 PW2372 POWER-1 BOARD

AC INPUT P801 AC CORD

AC 115V or 230V 50Hz

AC SW. S801

F801 3.15 AT

LINE FILTER TRF-3015

P802 MAIN VOLT ADJ

T802 POWER TRANS TPW-1176

Q801 2SD777 (FA-3) APF REGU.

L901 DEGAUSS COIL TSB-2086

U802 PW-2373 POWER-2 BOARD

BRIDGE DIODE D801 ~ D804 IS1887 x 4

POSISTOR R880

F803 630mAT

+16.5V REGU.

+23V RECT

ERROR AMP.

STD. VOLT

UA01 PW2376-2 SELECTOR BOARD

UA04 AFT SW. BOARD PW2539

TDA2542

2SC1815-Y

2SC388A-TM

TRF-9228

TRF-1446

P.I.F AMP.

P.I.F DET

AGC DETEC

VIDEO AMP.

AFC DET.

AFC AMP.

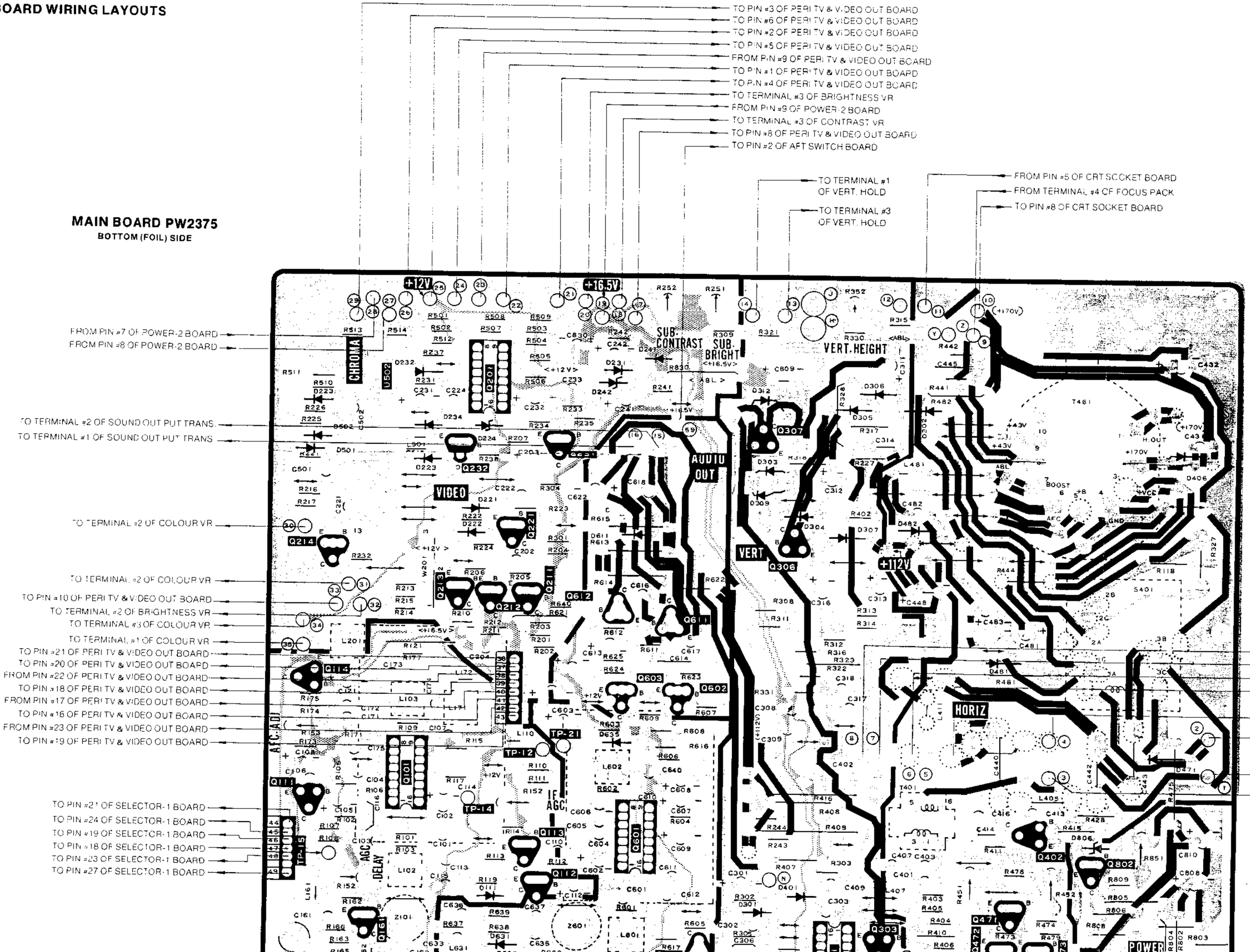
REF ER-AMP

1.F AMP.

AGC DELAY

P.C. BOARD WIRING LAYOUTS

MAIN BOARD PW2375
BOTTOM (FOIL) SIDE



TV & VIDEO OUT BOARD
TV & VIDEO OUT BOARD
TV & VIDEO OUT BOARD
TV & VIDEO OUT BOARD
ER: TV & VIDEO OUT BOARD
TV & VIDEO OUT BOARD
TV & VIDEO OUT BOARD
F BRIGHTNESS VR
OWER-2 BOARD
F CONTRAST VR
TV & VIDEO OUT BOARD
SWITCH BOARD

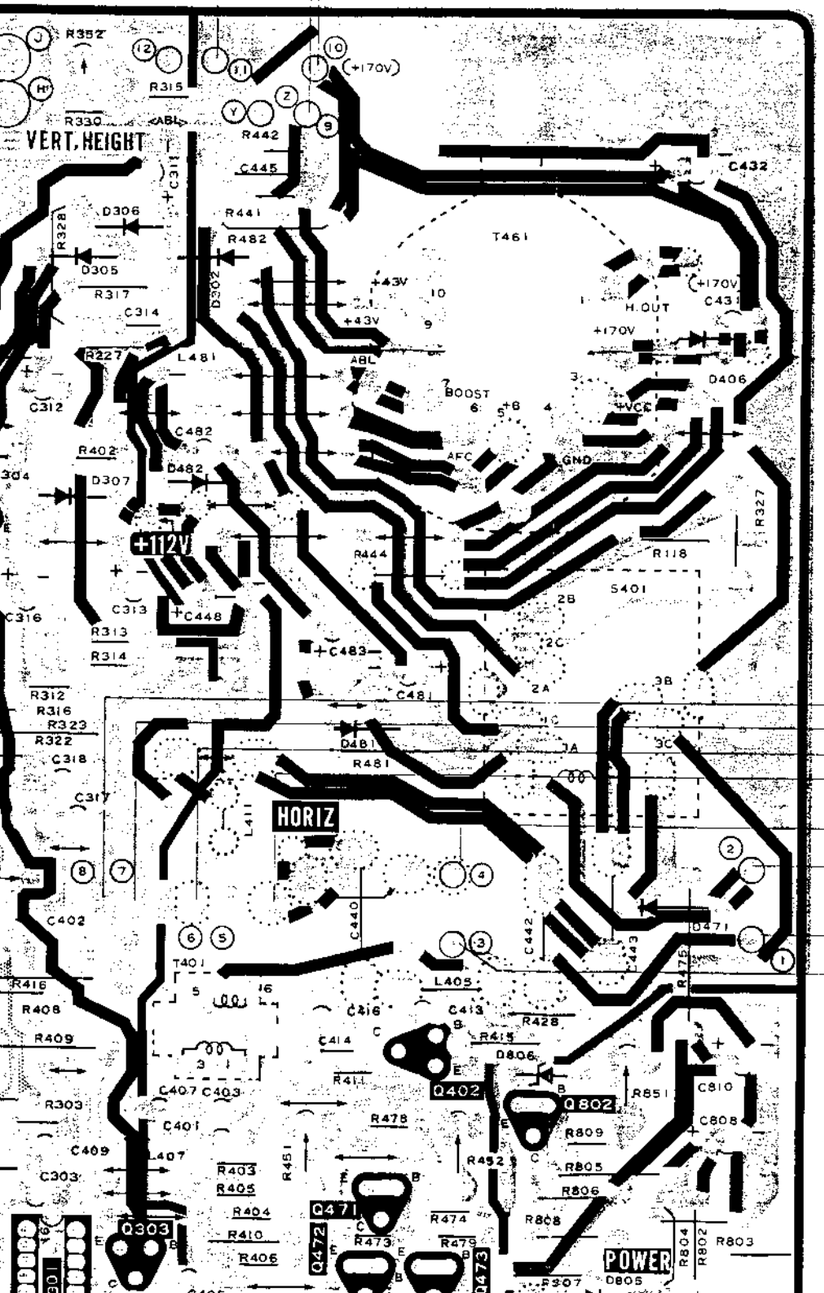
TO TERMINAL #1 OF VERT. HOLD

TO TERMINAL #3 OF VERT. HOLD

FROM PIN #5 OF CRT SOCKET BOARD

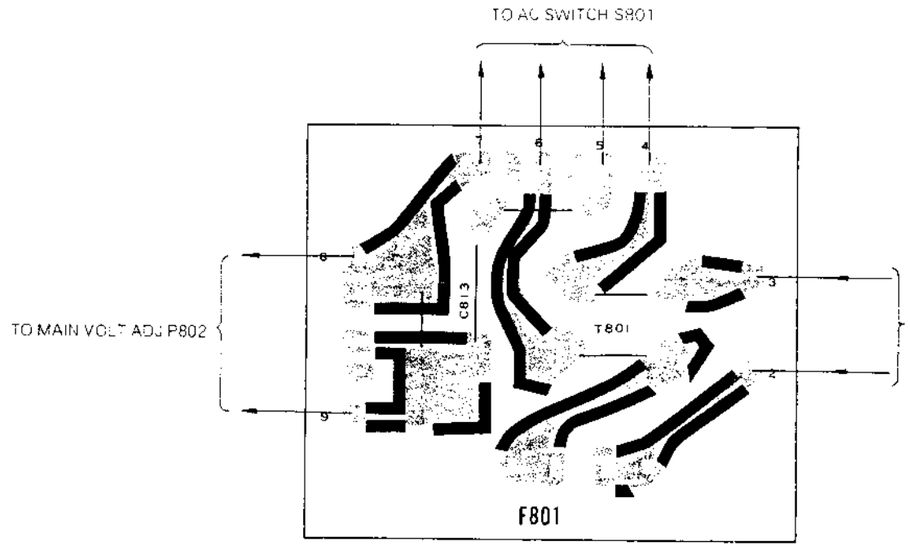
FROM TERMINAL #4 OF FOCUS PACK

TO PIN #8 OF CRT SOCKET BOARD



POWER-1 BOARD PW2372

BOTTOM (FOIL) SIDE



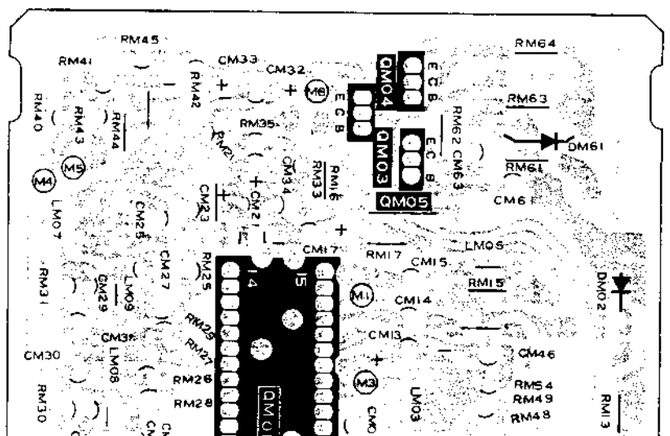
FROM PIN #41 OF MAIN BOARD

FROM PIN #39 OF MAIN BOARD

TO PIN #40 OF MAIN BOARD

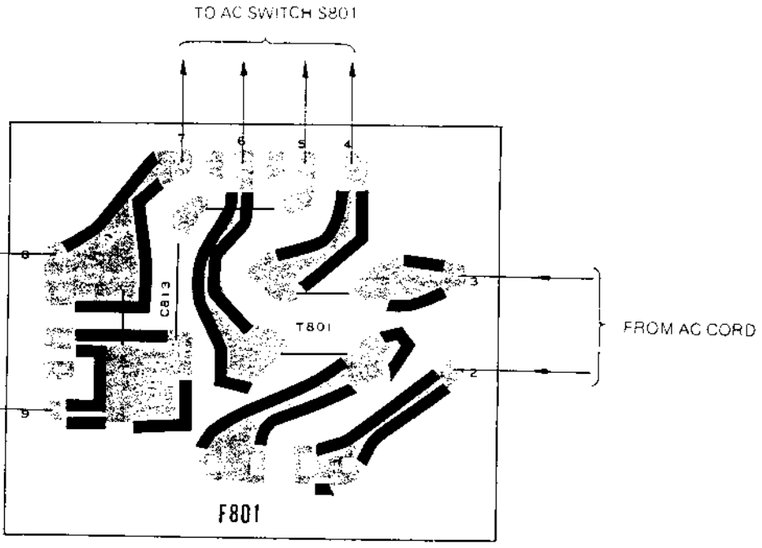
CHROMA MODULE FM523

BOTTOM (FOIL) SIDE



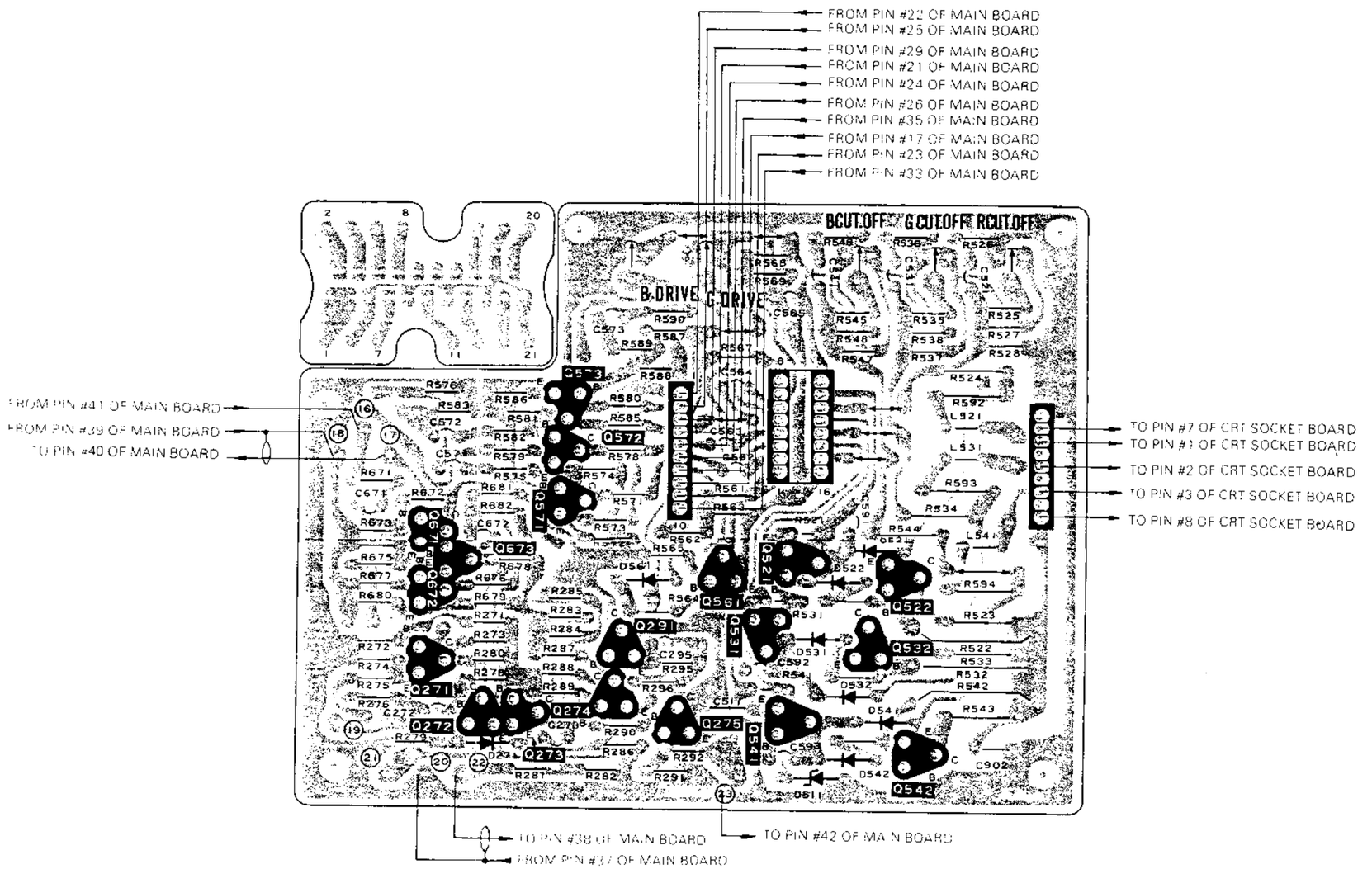
POWER-1 BOARD PW2372

BOTTOM (FOIL) SIDE



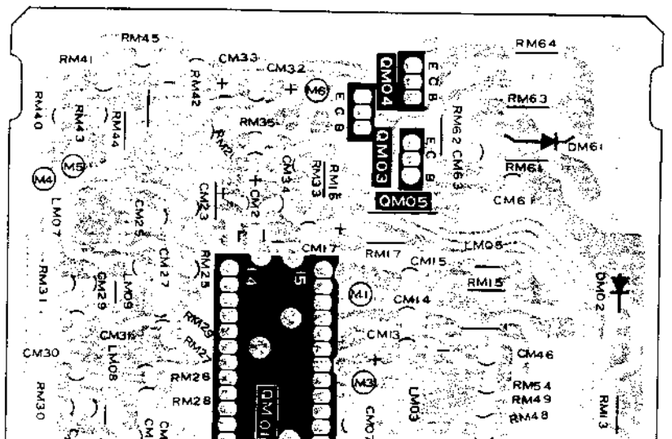
PERI TV 8 VIDEO OUT BOARD PW2377

BOTTOM (FOIL) SIDE



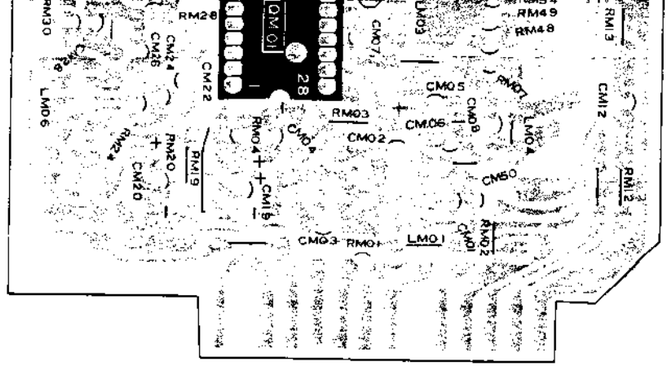
CHROMA MODULE FM523

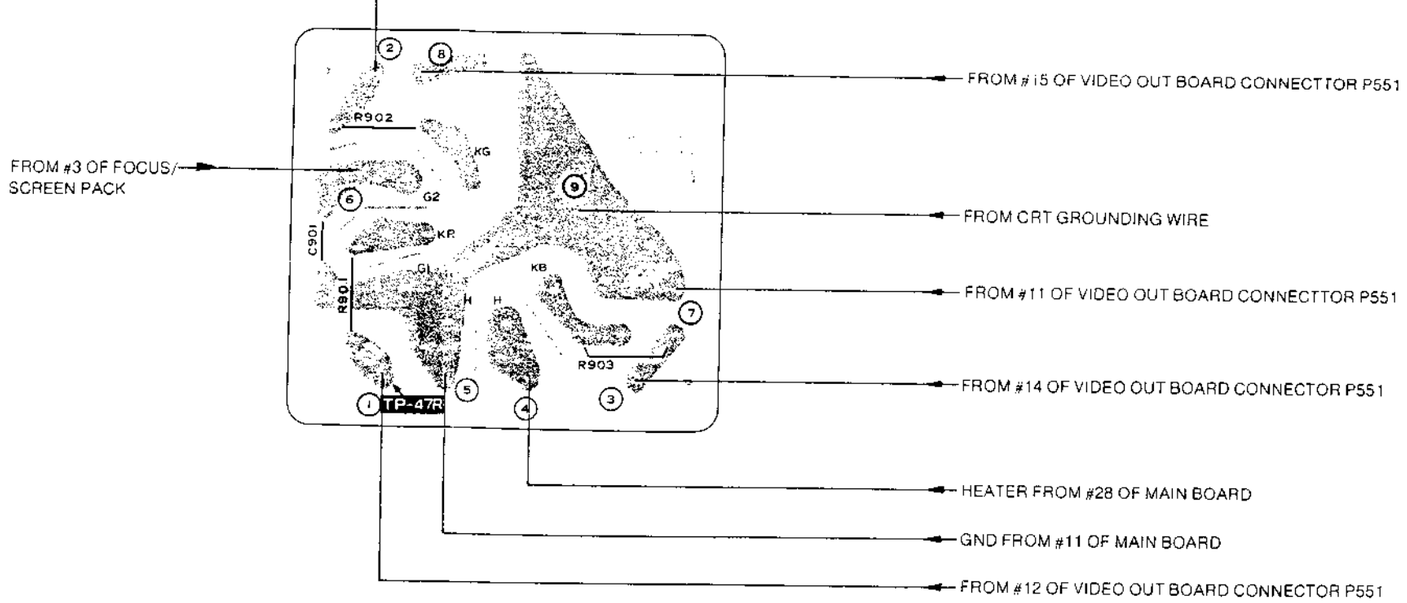
BOTTOM (FOIL) SIDE



CRT SOCKET BOARD PW2374

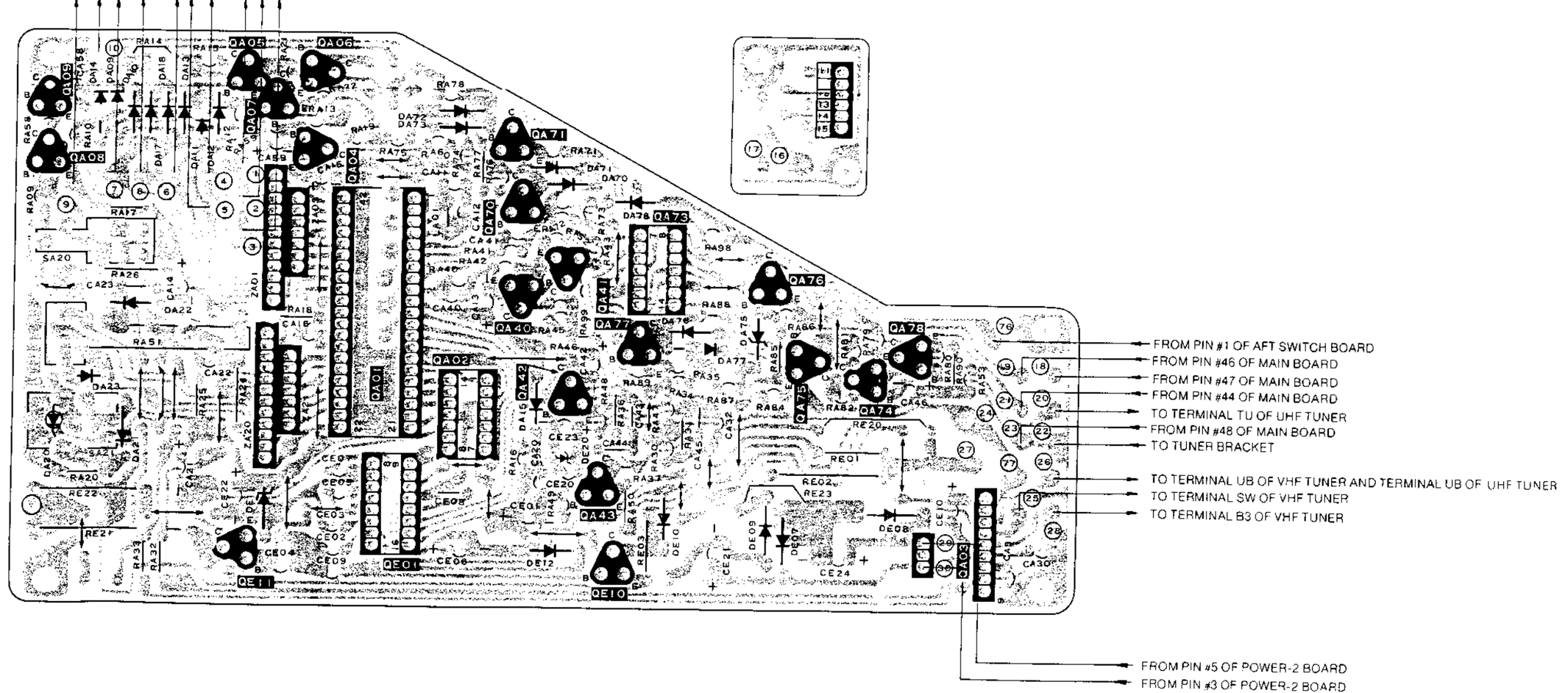
BOTTOM (FOIL) SIDE

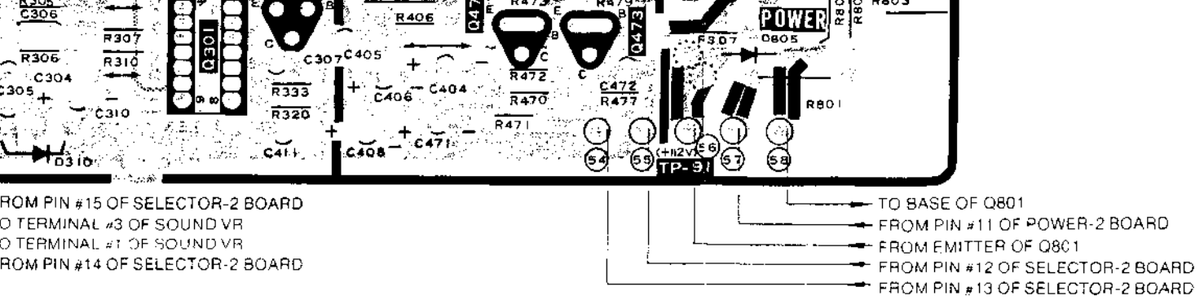




SELECTOR BOARD PW2376

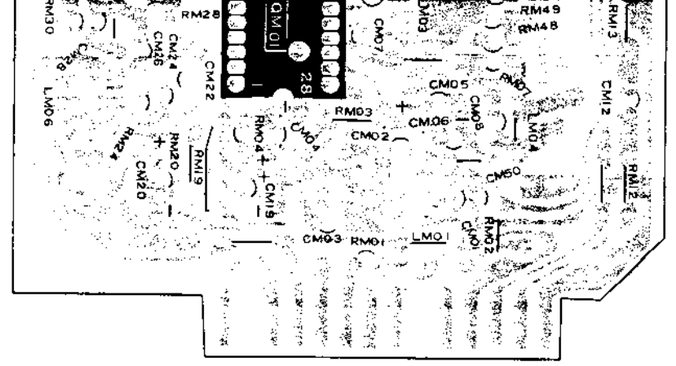
BOTTOM (FOIL) SIDE





FROM PIN #15 OF SELECTOR-2 BOARD
TO TERMINAL #3 OF SOUND VR
TO TERMINAL #1 OF SOUND VR
FROM PIN #14 OF SELECTOR-2 BOARD

TO BASE OF Q801
FROM PIN #11 OF POWER-2 BOARD
FROM EMITTER OF Q801
FROM PIN #12 OF SELECTOR-2 BOARD
FROM PIN #13 OF SELECTOR-2 BOARD



FROM #3 OF
SCREEN PAC

AFT SWITCH BOARD PW2539

BOTTOM (FOIL) SIDE

FROM PIN #19 OF MAIN BOARD
FROM PIN #27 OF MAIN BOARD
FROM PIN #59 OF MAIN BOARD

TO PIN #76 OF SELECTOR BOARD

IN # 19 OF MAIN BOARD

IN #27 OF MAIN BOARD

IN #28 OF MAIN BOARD

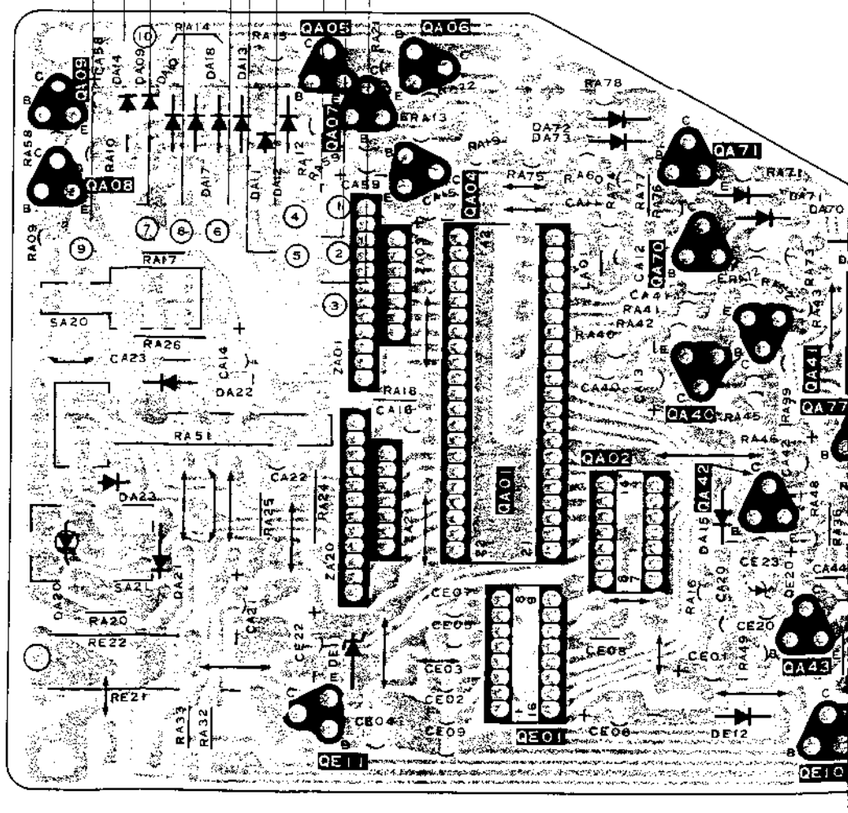
M TERMINAL #10 OF POWER TRANS

M TERMINAL #9 OF POWER TRANS.

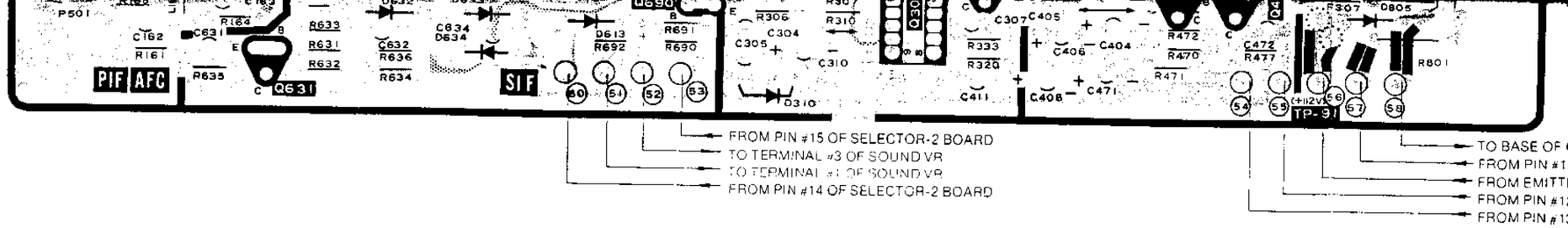
M TERMINAL #7 OF POWER TRANS.

TO PINS OF KEY BOARD

#9 #10 #7 #8 #6 #5 #4 #1 #2 #3

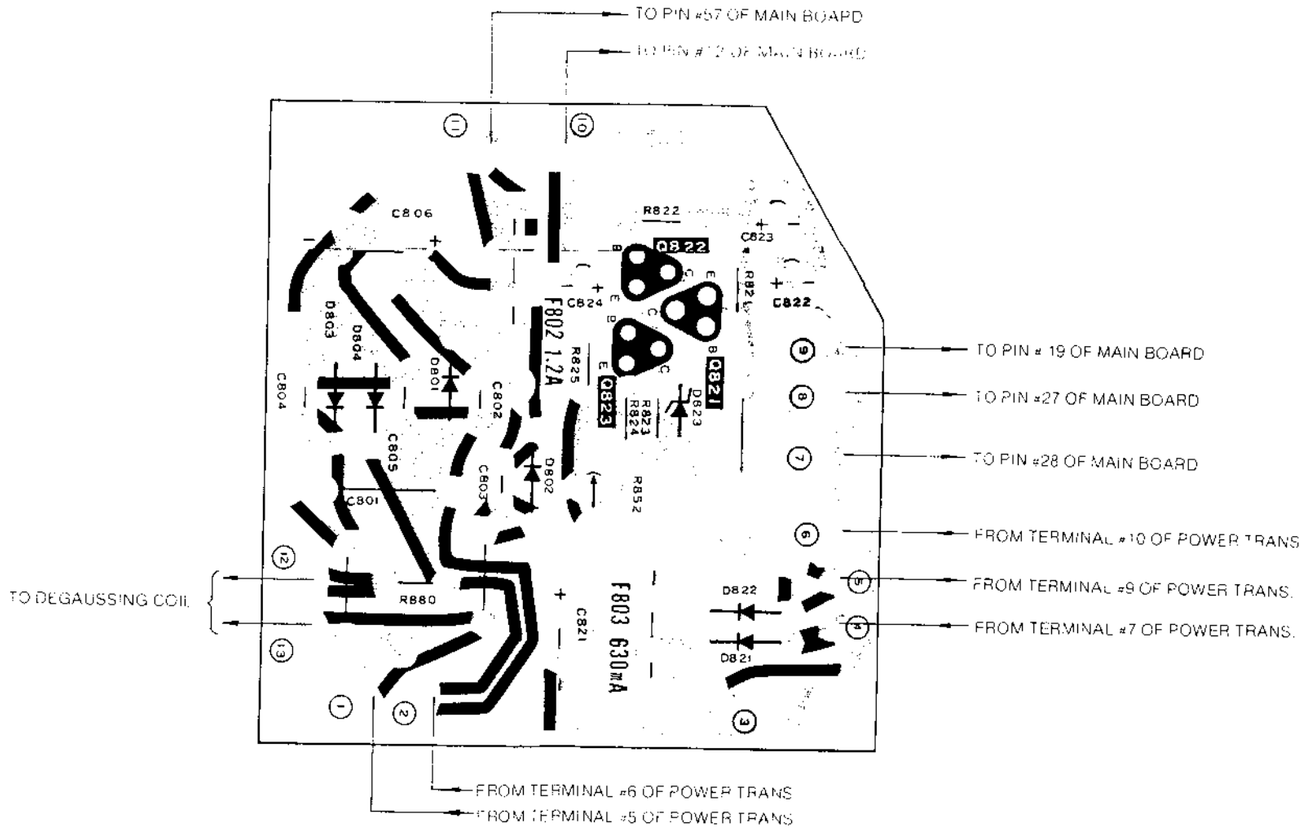


SELECTOR BOA
BOTTOM (FOI



POWER-2 BOARD PW2373

BOTTOM (FOIL) SIDE



AFT SWITCH BOARD P

BOTTOM (FOIL) SIDE