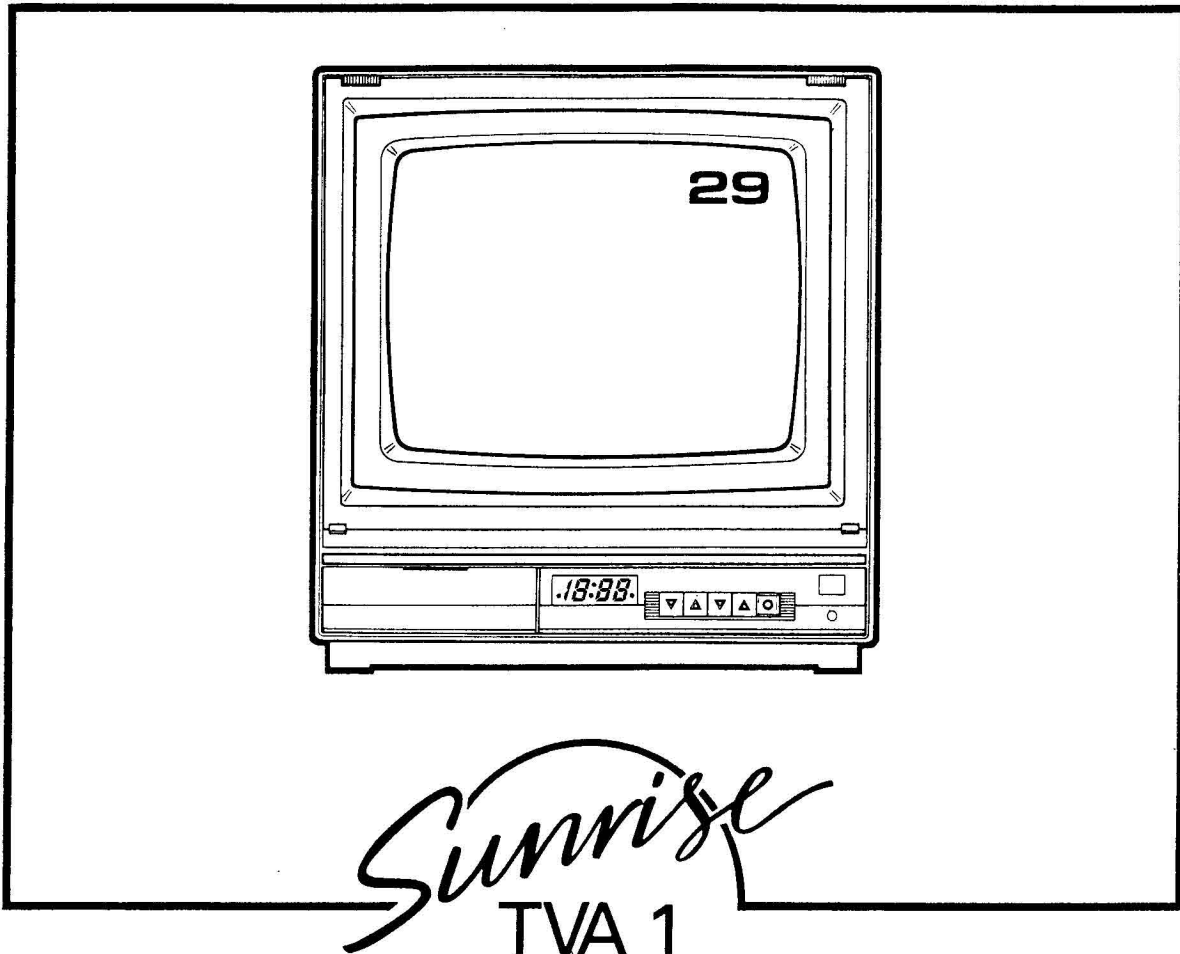


# HiNARI

# Service Manual



## FEATURES

- 14" Portable Colour Television.
- Wake-up Alarm Function.
- Digital Clock & Time.
- Infra Red Remote Control.
- 30 Channels. On-screen Channel Display.
- Voltage Synthesizer Tuning. Tying.

## SPECIFICATIONS

TV Broadcasting	PAL-1
Receiving Channels	UHF 21-69
Number of Preset Program	30 (0-29)
Channel Indicator	On Screen Display
RF Aerial Input	75 ohm Unbalanced
Picture Tube	36 cm (14")
	90 Degree In-Line Gun
Timer On Clock	Return to standby after 2 hours.
Timer On Screen	Return to standby after 30, 60, 90 mins.

Speaker  
 Audio Output Power  
 Operating Voltage  
 Power Consumption  
 Dimensions  
 Net Weight  
 Infrared Remote Control  
 Features

Dia. 89 mm 16 ohm  
 1.5W max  
 AC 240V 50Hz  
 70W  
 380x385x400mm (WxHxD)  
 13 kg

Effective Distance  
 Power

Standby, 0-9 and 10- and 20-key Keypad, Random Access Program Select, Program Down-Up, Volume Down-Up, Mute, Colour/Brightness Down-UP Off Timer, Display

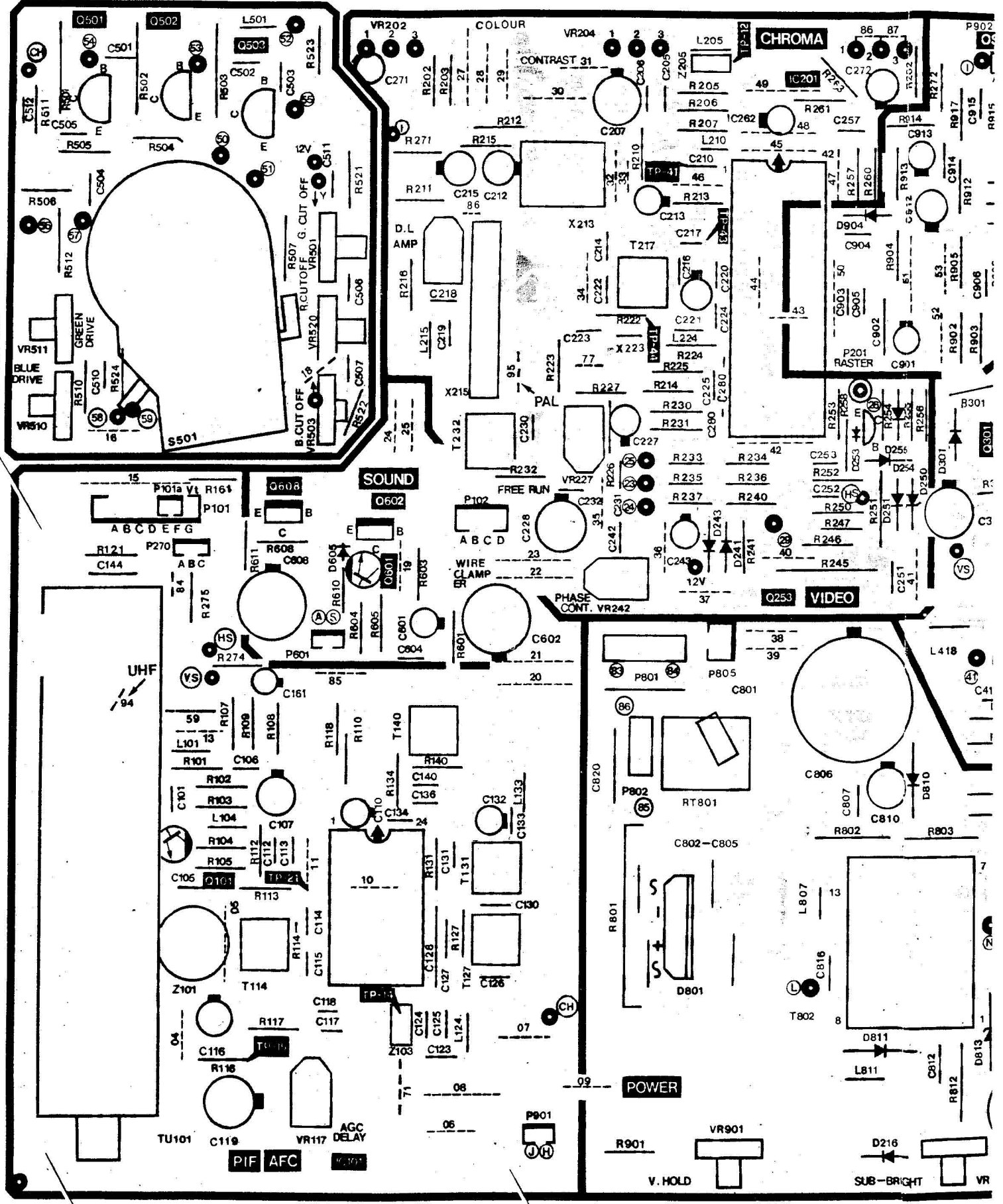
Dimensions  
 Net Weight

8 meters  
 3V Batteries, 2 x type AAA or type UM4, 1.5V Alkaline batteries, NOT included  
 170x59x15mm (LxWxH)  
 80g

\* Design and specifications subject to change without prior notice.

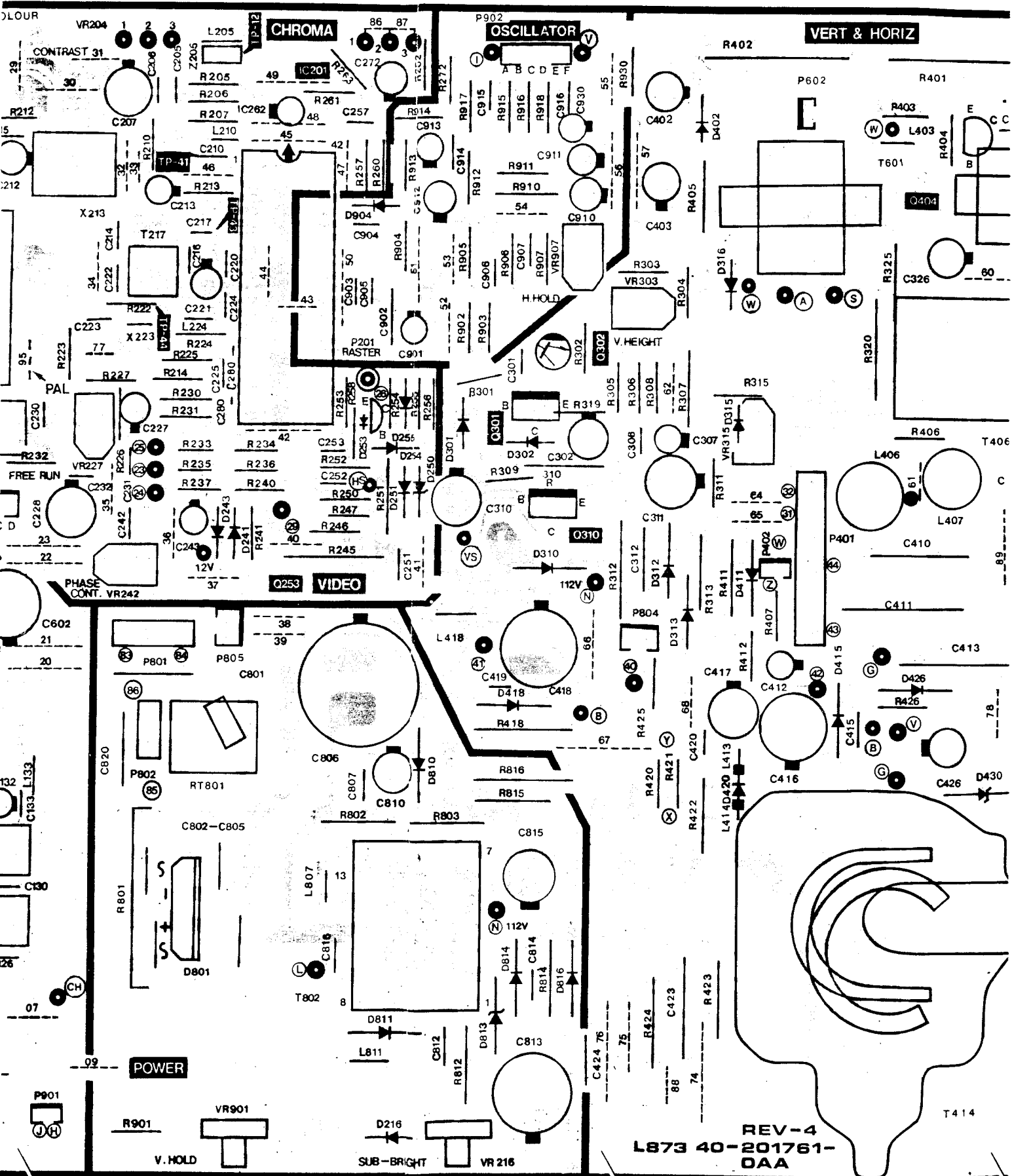
40-201761-OAA MAIN BOARD

MR3.5x8 + NUT M3.5

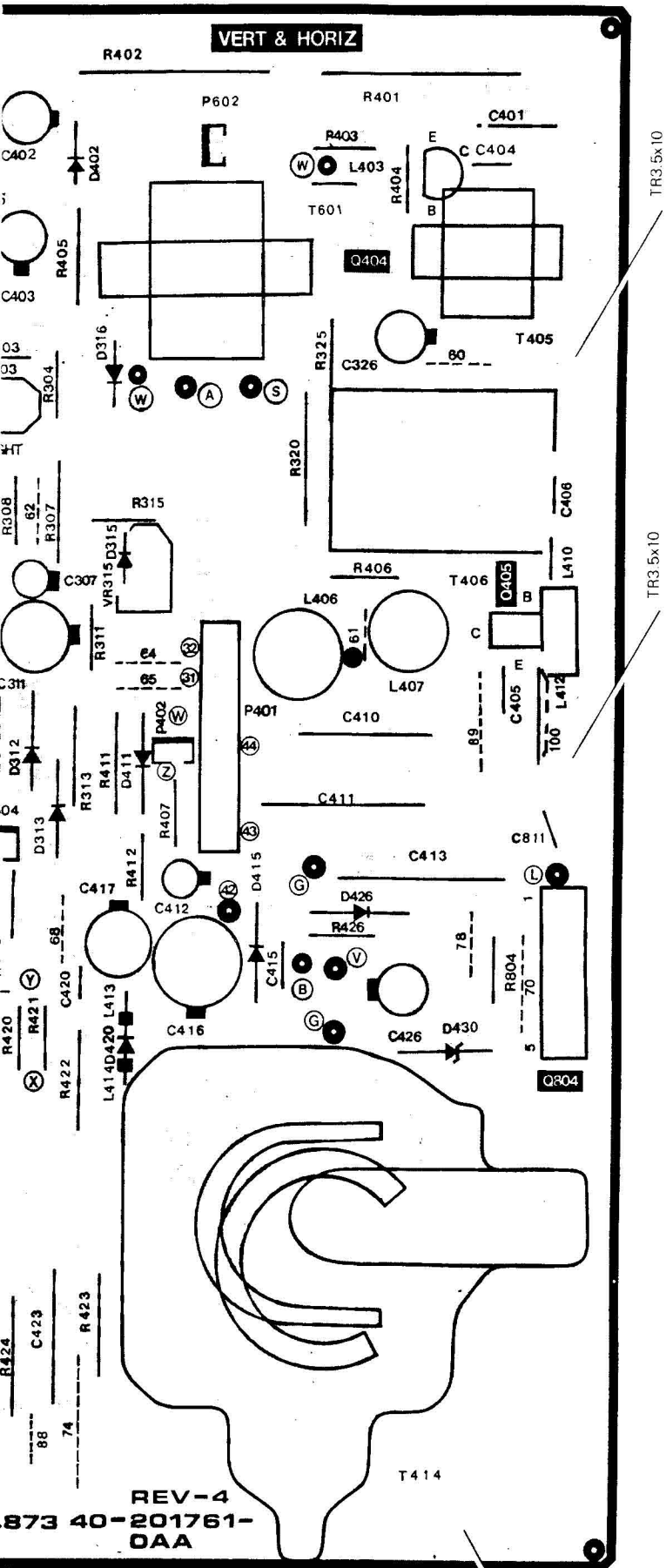


SRT3.5x8

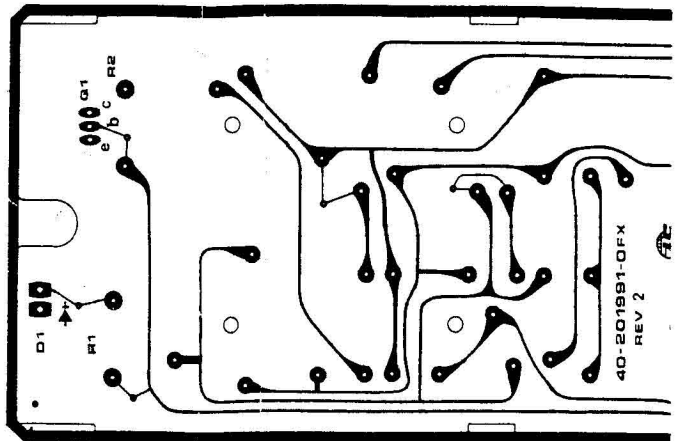
SPT3.5x8



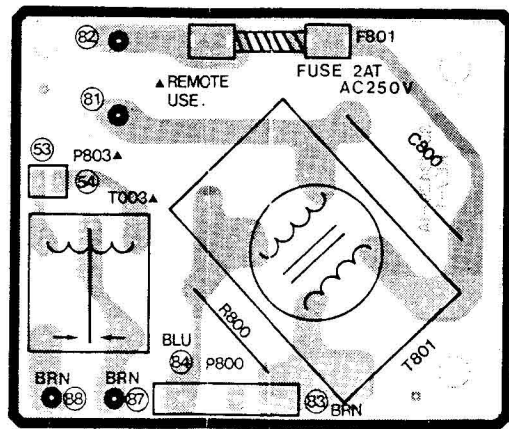
REV-4  
 L873 40-201761-  
 DAA



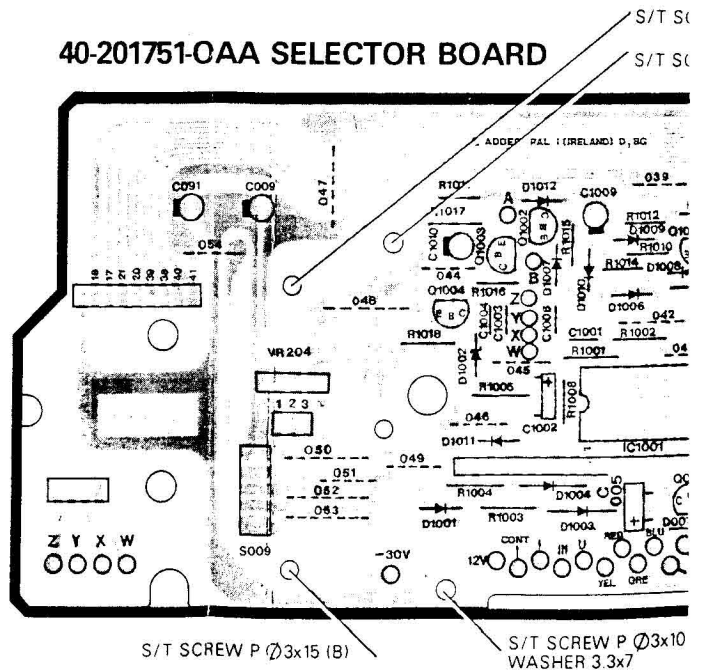
40-201991-OFX IR TRANSMITTER



33-134291-AAA POWER BOARD



40-201751-OAA SELECTOR BOARD



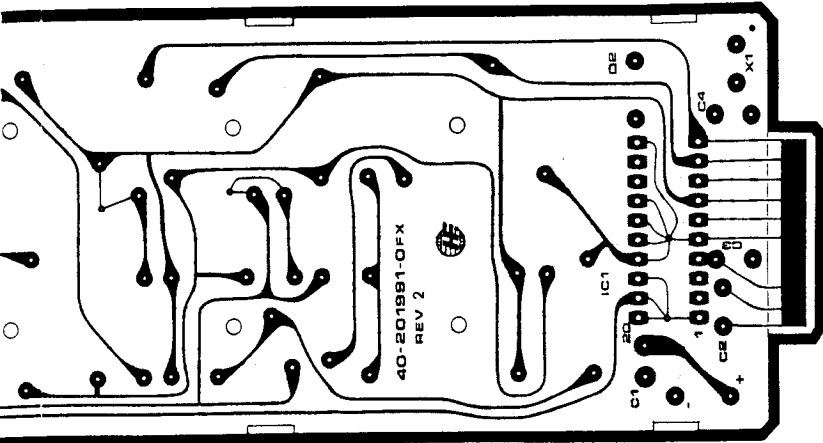
SPT3.5x8

SPT3.5x8

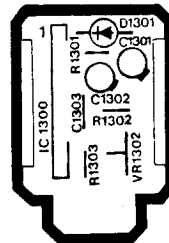
S/T SCREW P Ø3x15 (B)

S/T SCREW P Ø3x10 WASHER 3.3x7

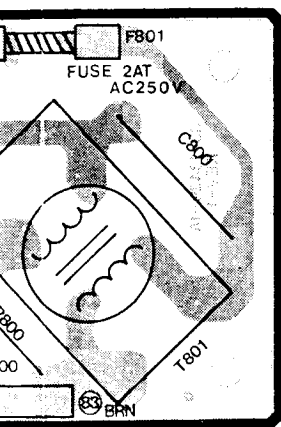
IR TRANSMITTER



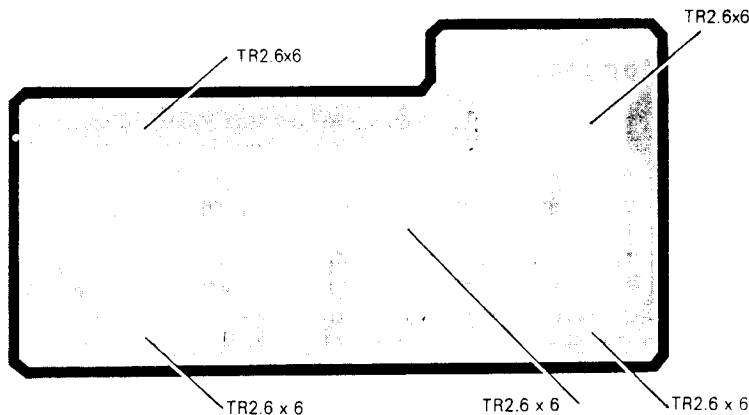
40-200831-OAA IR PRE AMPLIFIER



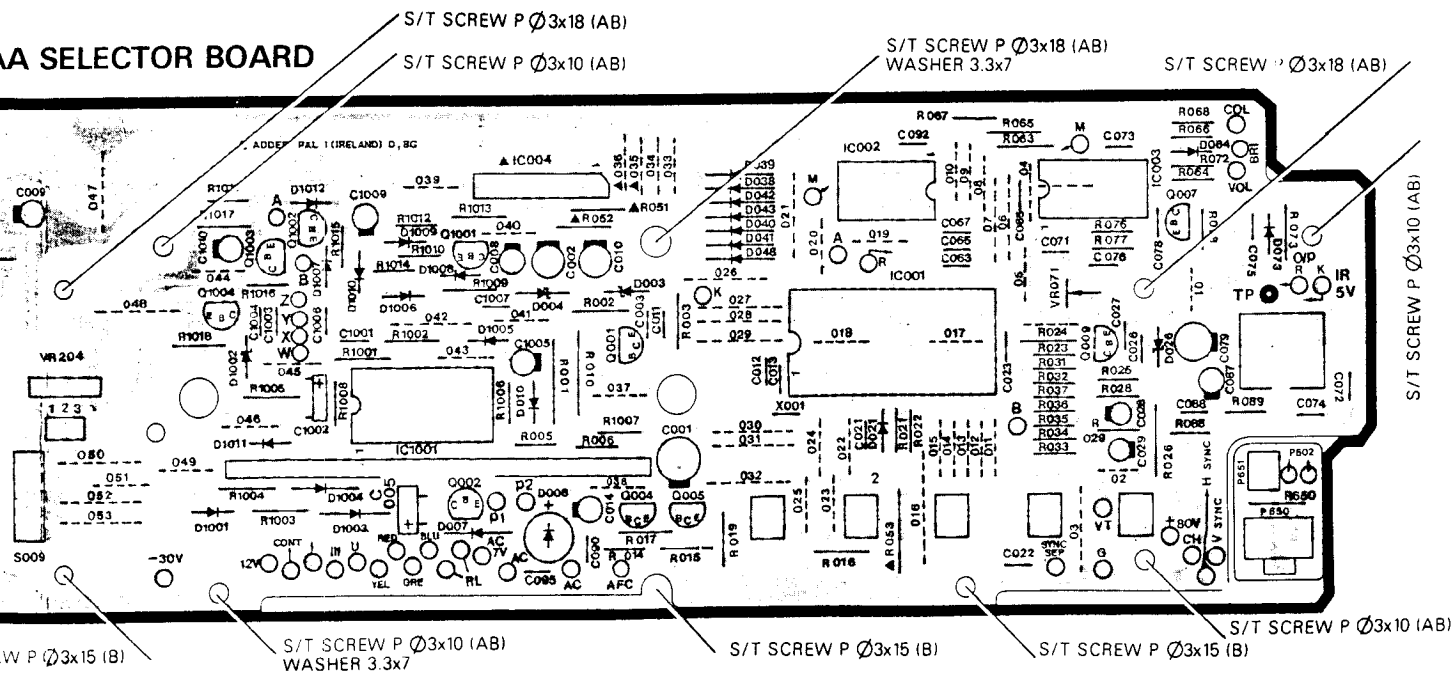
POWER BOARD



33-139713-0FZ CONTROL KEY



VIDEO SELECTOR BOARD

















# SERVICE ADJUSTMENTS

## FOCUS ADJUSTMENT

Adjust focus control on the horizontal output transformer (T414) for maximum overall definition and fine detail with brightness and contrast controls set at normal viewing levels.

## DELAY AGC ADJUSTMENT

1. Connect TV channel signal generator to antenna jack.
2. Adjust TV channel signal generator output level to 1.585 mV (64dBu), channel 21.
3. Turn AGC delay control (VR117) on main board to fully clockwise position and set AFT to on position.
4. Turn VR117 counter clockwise slowly until snow noise just disappears on screen.

## HORIZONTAL OSCILLATOR ADJUSTMENT

Turn the horizontal oscillator control (VR907) clockwise and counter clockwise to find the pull in range of the horizontal oscillator. Then turn VR907 to the centre of the pull in range.

## HORIZONTAL CENTERING ADJUSTMENT

At nominal 240V AC line voltage, adjust horizontal centering control (VR242) until there is equal amount of overscanning on left and right side of screen.

## VERTICAL CENTERING ADJUSTMENT

At nominal 240V AC line voltage, adjust vertical centering control (VR315) until there is equal amount of overscanning at top and bottom of screen.

## SUB-BRIGHT ADJUSTMENT

1. Connect test pattern generator (PAL-I signal, 1.585 mV 64 dBu, channel 21) to antenna jack through TV channel signal generator.
2. Set the contrast, brightness and colour controls to minimum.
3. Adjust sub-bright control (VR216) until the whole screen just become completely dark.

## COLOUR SYNC, ADJUSTMENT

1. Connect colour bar pattern generator (PAL-I signal, 1.585 mV 64dBu, channel 21) to antenna jack through TV channel signal generator and allow the TV set warm up for 5 minutes.
2. Connect test point TP-43 to chassis ground with a jumper.
3. Connect a 10K ohm resistor across pin 2 and pin 12 of IC201 so as to turn off colour killer.
4. Adjust colour sync. control (VR227) so that the colour bar pattern stands still or drifts slowly across the picture screen.
5. Remove the 10K ohm resistor and the jumper.

## WHITE BALANCE ADJUSTMENT

1. Connect grey scale pattern generator (PAL-I signal, 1.585 mV 64dBu, channel 21) to antenna jack through TV channel signal generator and allow the TV set warm up for 15 minutes.
2. Set colour control to minimum.
3. Set brightness control to normal viewing level and contrast control to maximum.
4. Set the green drive (VR511), blue drive (VR510), red cut off (VR520), green cut off (VR501) and blue cut off (VR503) controls to center of their rotation ranges.
5. Disconnect the raster terminal on the main board and short terminals (J) and (H) with a jumper.
6. Rotate the screen control on horizontal drive transformer (T414) gradually from fully counter clockwise position clockwise until a dim horizontal line appears on the screen.
7. Rotate VR501 and VR503 until a dim white line is obtained.
8. Remove the jumper and connect back the raster terminal.
9. Set brightness control to maximum.
10. Adjust VR511 and VR510 until a good white balance at the brightest column is obtained.

11. Adjust VR501 and VR503 until a good white balance column is obtained.
12. Repeat steps 10 and 11 until good white balance is obtained at the brightest and the least bright columns.

# GENERAL ALIGNMENT

## TEST EQUIPMENT:

- Video IF sweep/marker generator — capable of generating 39.5MHz.
- Oscilloscope — wide band.
- Power supply — a well filtered DC power supply capable of 12V DC, 100 volts and at least 250 mA of current.
- Sound IF sweep/marker generator — capable of generating 6MHz.

A warm-up period of at least 15 minutes should be allowed for stabilization of equipment such as sweep/marker generator.

## SIGNAL OVERLOAD

Use of excessive signal from the sweep/marker generator can overload the receiver circuits. To determine that this condition is not present, the response curve is true, turn the sweep/marker generator output to minimum and then gradually increase the sweep output until the response curve is distorted. If the configuration, such as flattening at the top or dropping at the bottom, decrease the sweep output to restore the proper response. The oscilloscope gain should be run as high as possible to observe the pattern with the peak-to-peak values specified, thus requiring less sweep output from sweep/marker generator and less chance of overloading markers from the sweep/marker generator should not cause a response.

## CAUTION

Remove the AC power plug before making any test equipment adjustments.

## IF ALIGNMENT

1. Remove IF link cable from tuner.
2. Supply 12V DC to pin 20 of IC101 and bias pin 5 of figure 1.

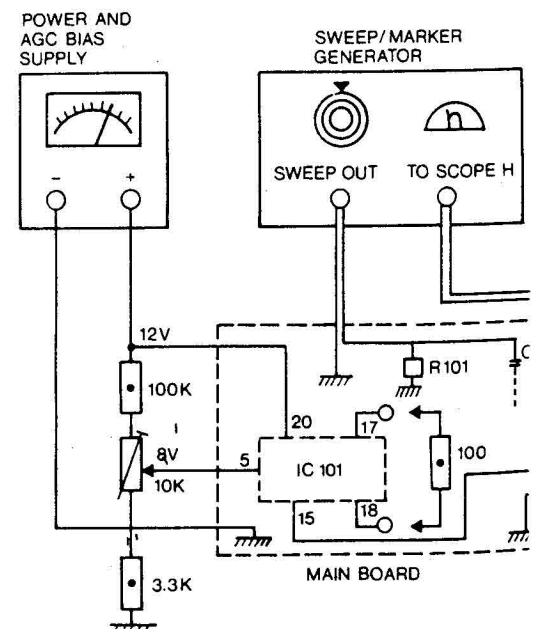


Fig.1 Picture I-F Sweep Alignment

until a good white balance at the least bright  
 il good white balance is obtained on both the  
 ht columns.

## MENT

erator — capable of generating markers at

ered DC power supply capable of supplying 16  
 at least 250 mA of current.

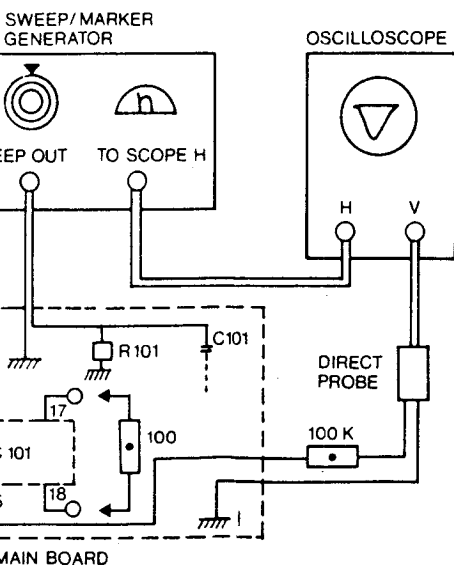
erator — capable of generating markers at  
 6MHz.

5 minutes should be allowed for proper  
 as sweep/marker generator and oscilloscope.

e sweep/marker generator can cause overloading  
 rmine that this condition is not present and that  
 the sweep/marker generator output to zero and  
 sweep output should not change the  
 xcept in amplitude. If the response changes in  
 g at the top or dropping below the base line at  
 o output to restore the proper configuration.  
 r run as high as possible to maintain a usable  
 alues specified, thus requiring a lower power  
 erator and less chance of overload. Insertion of  
 generator should not cause distortion of the

ore making any test equipment connections.

uner.  
 IC101 and bias pin 5 of IC101 to 8V as shown in



Alignment

3. Connect video IF sweep/marker generator output to junction of R101 and C101.
4. Connect oscilloscope direct probe to IC101 pin 15 through a 100K ohm resistor.
5. Adjust T127 for maximum gain at 39.5MHz
6. Connect a 100 ohm resistor across IC101 pins 17 and 18.
7. Adjust T114 for maximum gain at 39.5MHz.

### AFT ALIGNMENT

1. Remove IF link cable from tuner.
2. Supply 12V DC to pin 20 of IC101 and bias pin 5 of IC101 to 8V as shown in figure 2.

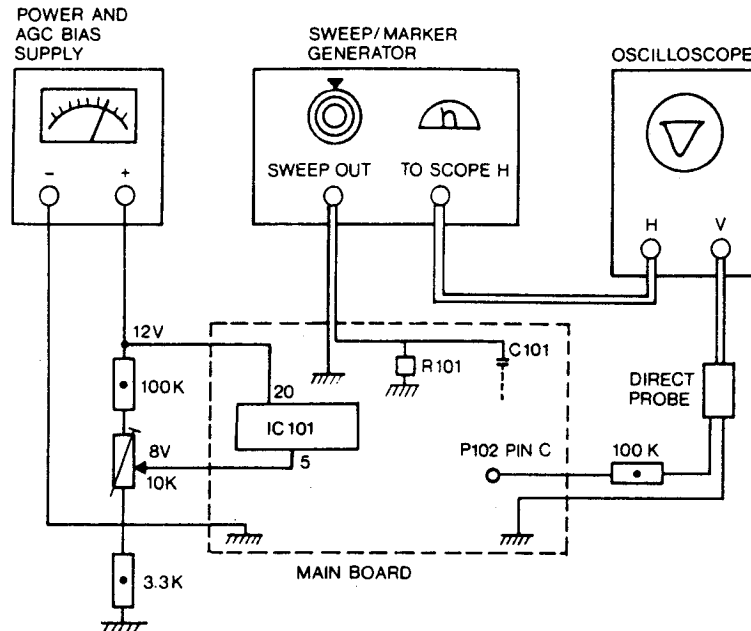


Fig.2 AFT Alignment

3. Connect video IF sweep/marker generator output to junction of R101 and C101.
4. Slide AFT switch to on position.
5. Connect oscilloscope direct probe to pin D of connector P102.
6. Adjust T131 for response shown in figure 3.

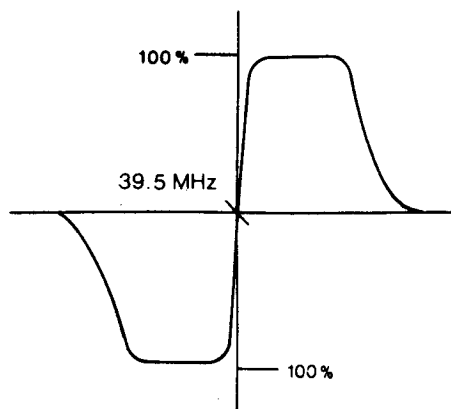


Fig.3 AFC Responses

### SIF DETECTOR

1. Remove IF link c
2. Supply 12V DC
3. Connect a 1K o
4. Connect sound capacitor as shc

### POWER AND AGC BIAS SUPPLY

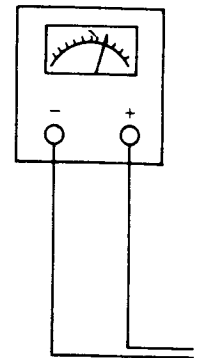


Fig.4 Sound De

5. Connect oscillos a 1uF capacitor.
6. Adjust T104 for i

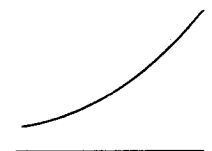
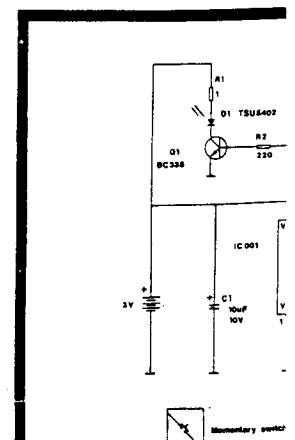


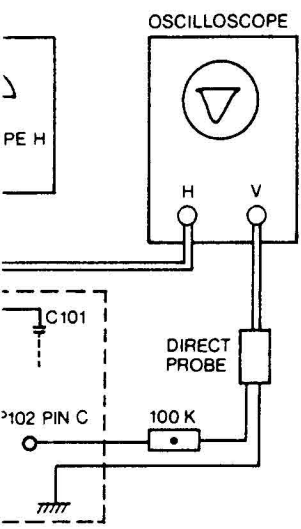
Fig.5 Sound De

### IR TRANSMITTER



output to junction of R101 and  
 n 15 through a 100K ohm  
 s 17 and 18.

in 5 of IC101 to 8V as shown in



output to junction of R101 and  
 of connector P102.

### SIF DETECTOR COIL ALIGNMENT

1. Remove IF link cable from tuner.
2. Supply 12V DC to pin 20 of IC101.
3. Connect a 1K ohm resistor across pin 5 and 12 of IC101.
4. Connect sound IF sweep/marker generator output to TP14 through a 0.01u capacitor as shown in figure 4.

SELE

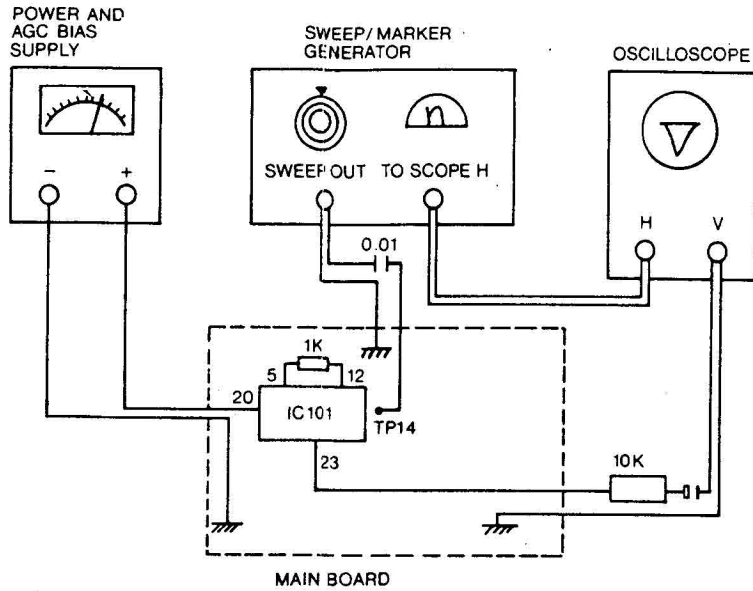


Fig.4 Sound Detector Alignment

5. Connect oscilloscope probe to IC101 pin 23 through a 10K ohm resistor and a 1uF capacitor.
6. Adjust T104 for response shown in figure 5.

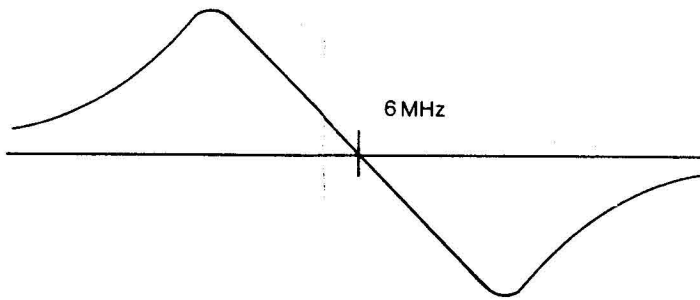
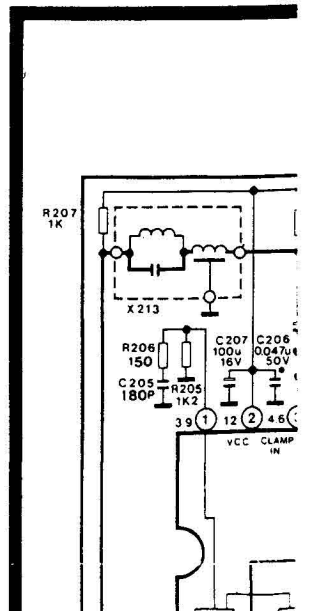
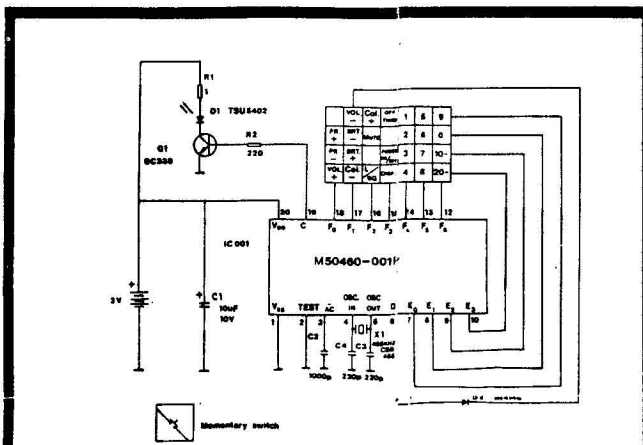


Fig.5 Sound Detector Response Curve

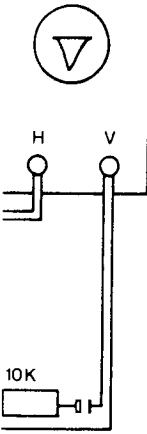
### IR TRANSMITTER



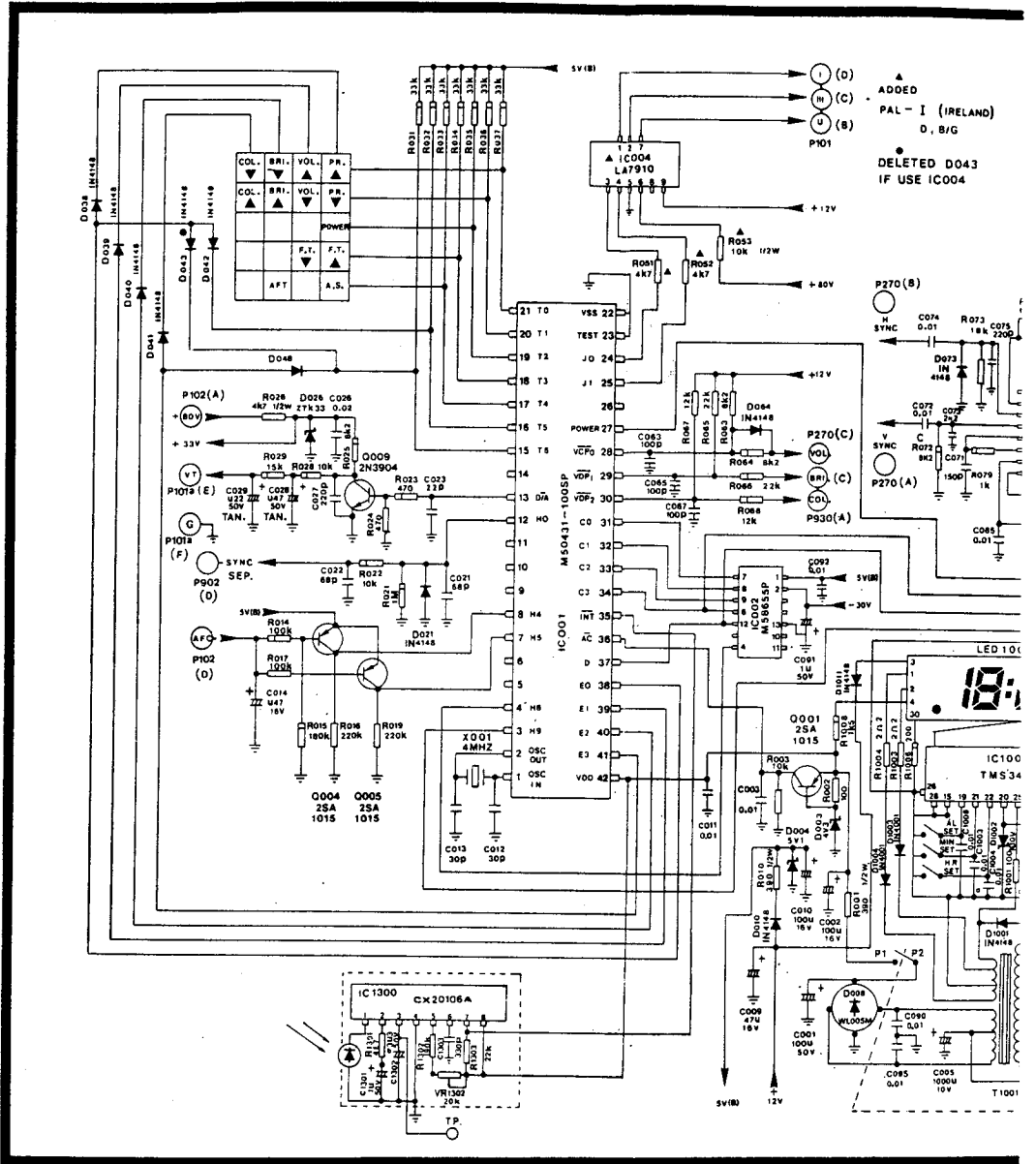
# SELECTOR BOARD

ough a 0.01u

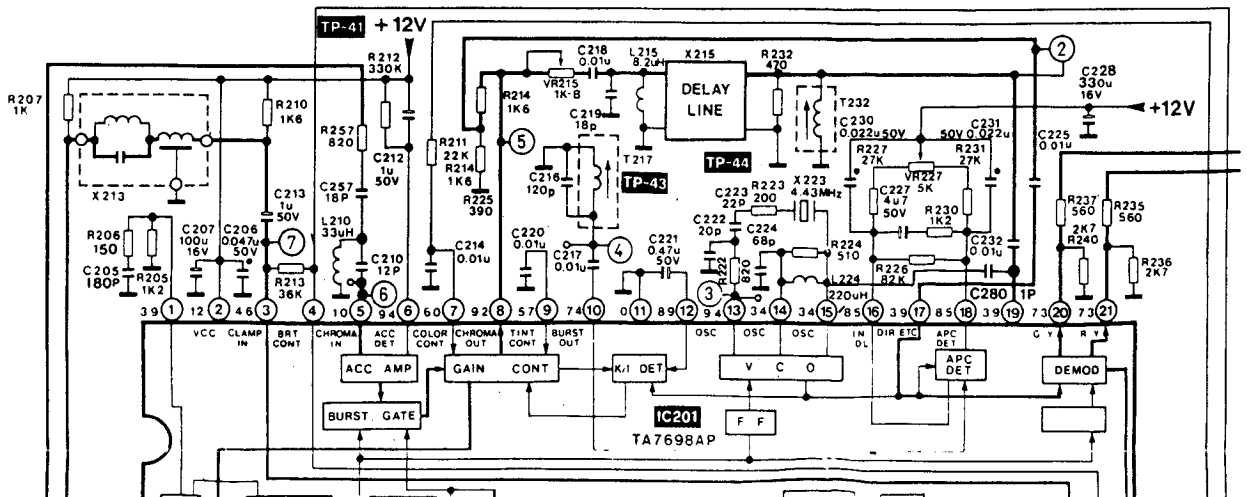
OSCILLOSCOPE



m resistor and



## 2 CHROMA DECODER







## 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 24.5 kv at zero beam current (minimum brightness) under 220/240 volts AC power source. The high voltage must not, under any circumstances, exceed 26.5 kv. B+ voltage closely relates to the high voltage. To prevent hazardous X-RAY RADIATION, the B+ voltage must be not exceed +124 volts.
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 23,000 volts are present when this receiver is operating. Operation of the receiver outside the cabinet or with the back board 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. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.
3. When replacing parts or circuit boards, wind the lead wires around terminals before soldering.
4. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10mm away from circuit board.
5. Keep wires away from high voltage or high temperature components.
6. This receiver can be operated under AC 220/240 volts, 50 Hz. NEVER connect to DC supply or any other power or frequency.
7. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screwheads, metal overlays, control shafts etc. to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a 220/240 AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5000 ohms per volt or more sensitivity in the following manner:  
Connect a 1500 ohm 10 watt resistor, paralleled by a 0.15 mfd, AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 ohm resistor and 0.15 mfd capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.3 volts RMS. This corresponds to 0.2 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

Good earth  
such as a v  
pipe, condu

### OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 220/240 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 for best picture, make sure that 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 schematic diagram. These are measured.
2. The circuits are subject to change.

### EXPRESSION

#### VALUE OF RESISTOR, CAPACITOR and

1. Resistance is shown in ohm, k = 1,000, M = 1,000,000.
2. Unless otherwise noted in schematic are expressed in mfd and the value is in microfarads.
3. Unless otherwise noted in schematic are expressed in uH, and the value is in microhenries.

This manual is the latest at the time of printing, and does not include the modifications by the constant improvement of product, which may be made after the printing.

## HINARI CONSUMER ELECTRONICS LTD

20-22 Payne Street, Port Dundas, Glasgow G4 0LF. Tel: 041-332 7795

Because we continually strive to improve our products, we may change specifications without prior notice.

# CTIONS

## CAUTION: "SAFETY PRECAUTION"

X-RAY RADIATION in this TV re tube. For continued X-RAY ion, the replacement tube must be type tube as specified in the

receiver have special safety-ics for X-RAY RADIATION inued safety, parts replacement n only after referring to the NOTICE below.

ration of the receiver outside the

n the precautions necessary

shock hazard before removing

e. The picture tube is highly

hassis parts list

soldering.

Keep the resistor 10mm away

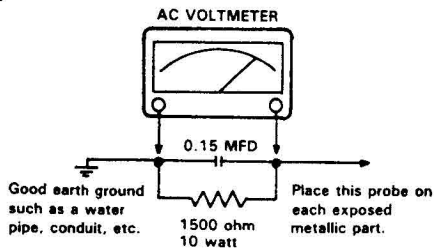
AC supply or any other power or

Check on the exposed metallic control shafts etc. to be sure the ctly into a 220/240 AC outlet (do 5000 ohms per volt or more

, between a known good earth measure the AC voltage across y at the AC outlet and repeat ot exceed 0.3 volts RMS. This ial shock hazard and must be

## 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.



### 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 are subject to change without notice.

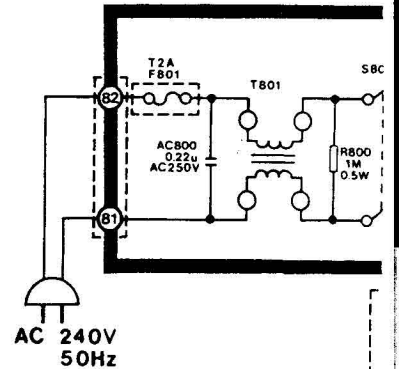
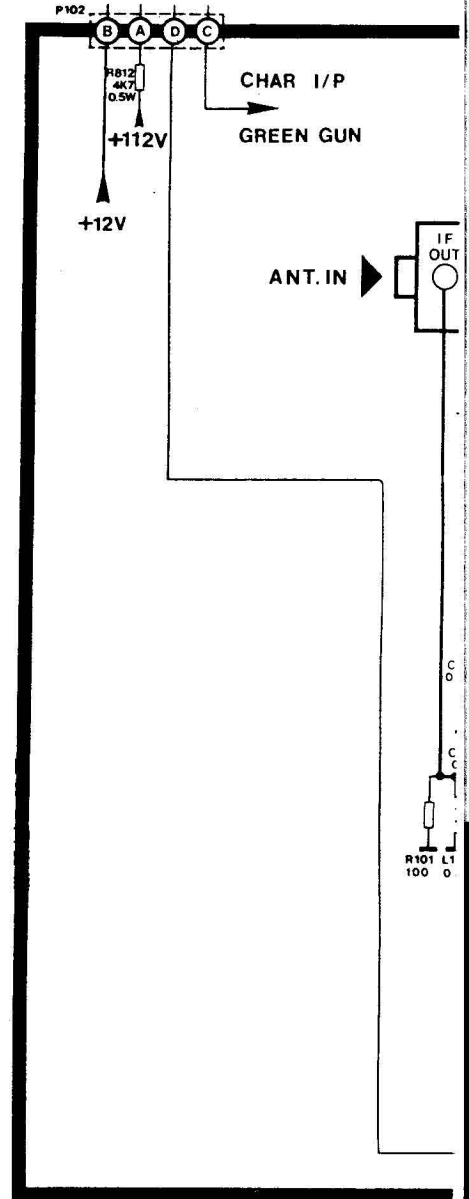
### EXPRESSION

#### VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k = 1,000, M = 1,000,000.
2. Unless otherwise 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 uH, and the values less than 1 in H.

does not include the modifications y be made after the printing.

## MAIN BOARD

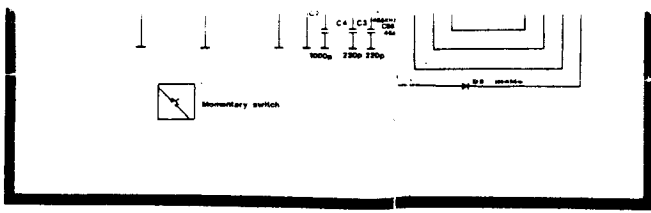


LECTRONICS LTD

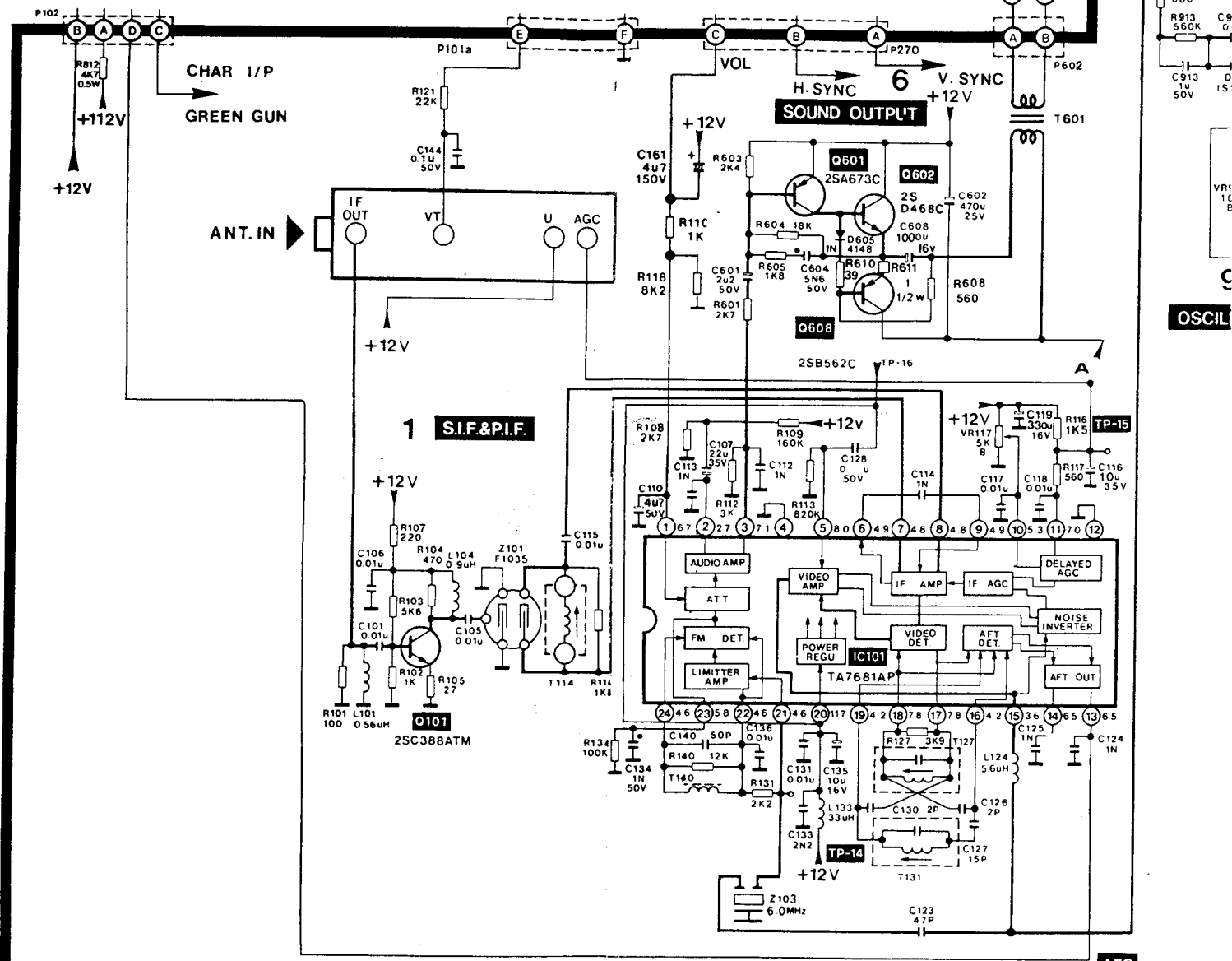
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may change specifications without prior notice.

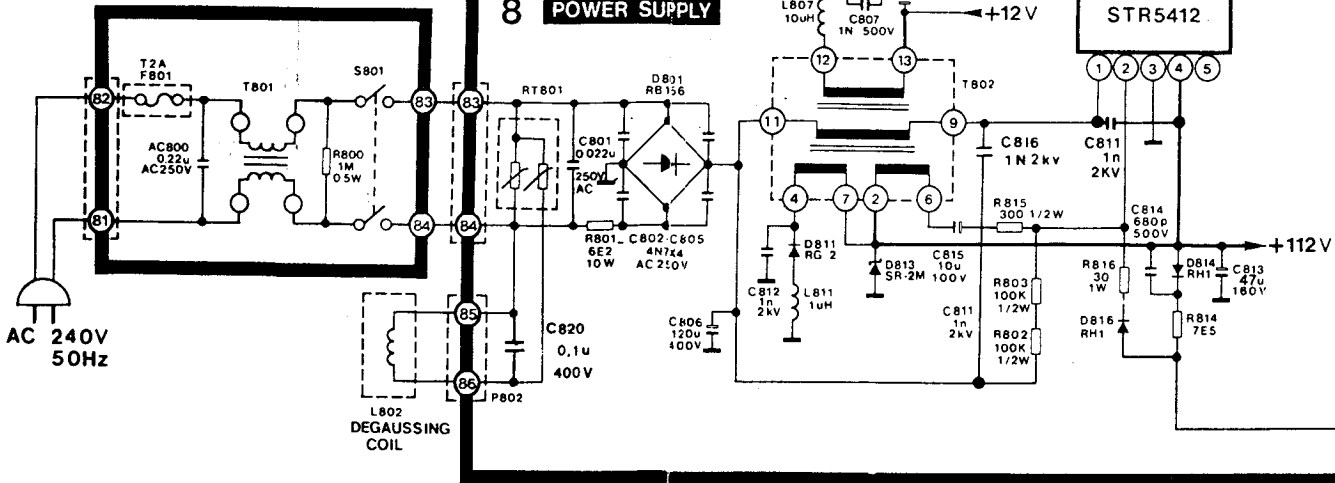
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**MAIN BOARD**

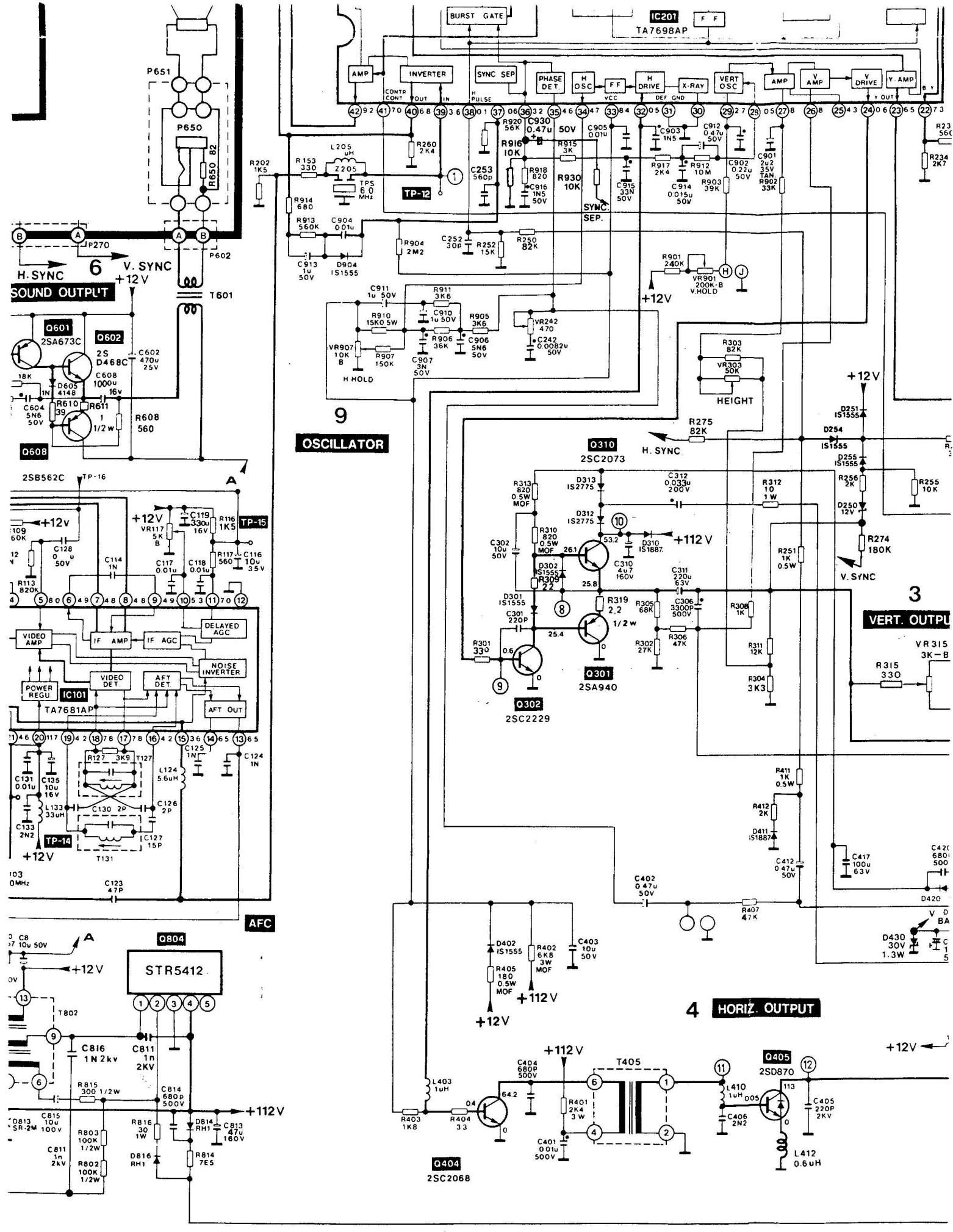


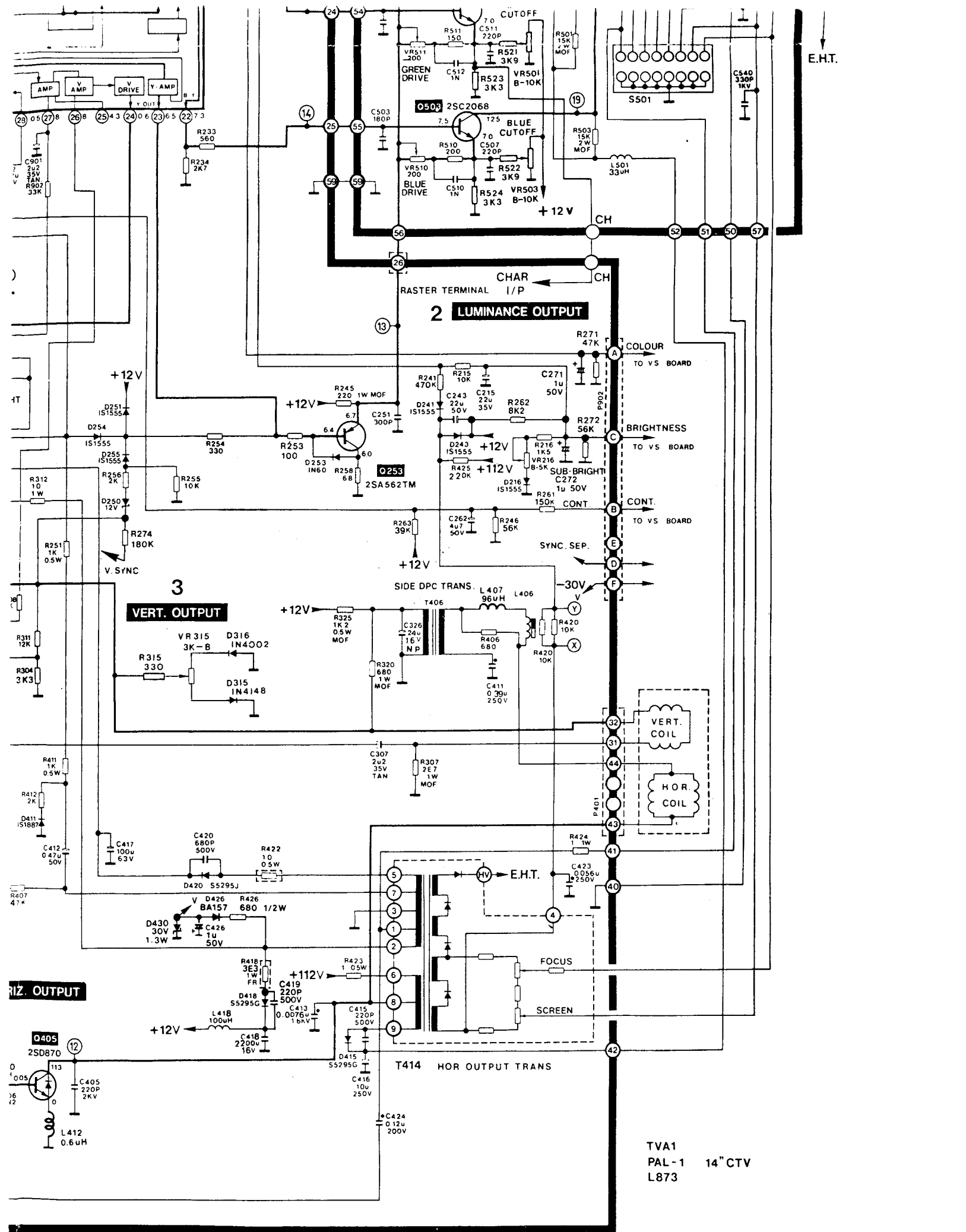
**8 POWER SUPPLY**



**OSCIL**

**AFC**





TVA1  
PAL-1 14" CTV  
L873

(SUBJECT TO CHANGE WITHOUT NOTICE)