ENGLISH

SAFETY PRECAUTIONS

WARNING: The following precautions must be observed.

ALL PRODUCTS

Before any service is performed on the chassis an isolation transformer should be inserted between the power line and the product.

1. When replacing the chassis in the cabinet, ensure all the protective devices are put back in place.
2. When service is required, observe the original lead dressing. Extra precaution should be taken to ensure correct lead dressing in any high voltage circuitry area.
3. Many electrical and mechanical parts in HITACHI products have special safety related characteristics. These characteristics are often not evident from visual inspection, nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified by marking with a ⚠ on the schematics and the replacement parts list.
   The use of a substitute replacement component that does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list, may create electrical shock, fire, X-radiation, or other hazards.
4. Always replace original spacers and maintain lead lengths. Furthermore, where a short circuit has occurred, replace those components that indicate evidence of overheating.
5. Insulation resistance should not be less than 2M ohms at 500V DC between the main poles and any accessible metal parts.
6. No flashover or breakdown should occur during the dielectric strength test, applying 3kV AC or 4.25kV DC for two seconds between the main poles and accessible metal parts.
7. Before returning a serviced product to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock. The service technician must make sure that no protective device built into the instrument by the manufacturer has become defective, or inadvertently damaged during servicing.

CE MARK

1. HITACHI products may contain the CE mark on the rating plate indicating that the product contains parts that have been specifically approved to provide electromagnetic compatibility to designated levels.
2. When replacing any part in this product, please use only the correct part itemised in the parts list to ensure this standard is maintained, and take care to replace lead dressing to its original state, as this can have a bearing on the electromagnetic radiation/immunity.

PICTURE TUBE

1. The line output stage can develop voltages in excess of 25kV; if the E.H.T. cap is required to be removed, discharge the anode to chassis via a high value resistor, prior to its removal from the picture tube.
2. High voltage should always be kept at the rated value of the chassis and no higher. Operating at higher voltages may cause a failure of the picture tube or high voltage supply, and also, under certain circumstances could produce X-radiation levels moderately in excess of design levels. The high voltage must not, under any circumstances, exceed 29kV on the chassis (except for projection Televisions).
3. The primary source of X-radiation in the product is the picture tube. The picture tube utilised for the above mentioned function in this chassis is specially constructed to limit X-radiation. For continued X-radiation protection, replace tube with the same type as the original HITACHI approved type
4. Keep the picture tube away from the body while handling. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled

LASERS

If the product contains a laser avoid direct exposure to the beam when the cover is open or when interlocks are defeated or have failed.

Circuit Description

Audio

The sound stages consist of I301 (AV switch IC), I201 (processor IC) and I401 (output amplifier).
Audio input is via the phono sockets J401 and J402 to I301(AV switch IC) where the input selection process takes place.
Audio input 1 is via phono socket J401, R472, R304, E302/E301 pin 15 and C481 to pin 12 of I301.
Audio input 2 is via phono socket J402, R305, R307, E302/E301 pin 13 and C476 to pin 13 of I301.
Audio input S3 is via phono socket J402, R471, R302, E302/E301 pin 11 and C477 to pin 14 of I301.
From pin 11 of l301 the audio is taken via C452 to pin 6 of l201 where it can be controlled by the volume.

Volume control is performed by the DC voltage applied to pin 5 of I201. This is determined by the Pulse Width Modulation output from pin 2 of I001, which is then fed to I201 after filtering via R017/R028 etc.

From pin 50 of I201 it then applied to pin 3 of I401 via C421 and R413, amplified, then output to the speaker from pin 5.

Under no signal conditions, internal circuits in I201 prevents any sound output from being obtained.

The audio signal inputs via the AUDIO-IN phono sockets can also be applied as an output via the AUDIO-OUT sockets as these are linked together.

Luminance Circuitry

Video input is via the BNC/SVHS sockets J301 and J303 to I301(AV switch IC) where the input selection process takes place.
Video input 1 is via BNC socket J301, E302/E301 pin 9 and R353, C346 to pin 3 of I301.
Video input 2 is via BNC socket J301, E302/E301 pin 5 and R354, C347 to pin 5 of I301.
Video input S3 is via SVHS socket J303, E302/E301 pin 3 and R355, C349 to pin 7 of I301.
Selected video signals from pin 17 of I301 are applied to pin 15 of I201 via R404/R497 and C311 for luminance/chrominance processing and deflection synchronisation.

The video signal inputs via the VIDEO-1N BNC sockets (J301) can also be applied as an output via the VIDEO-OUT BNC sockets (J302) as these are linked together. The VIDEO-OUT BNC sockets (J302) have a 75Q terminating resistor which is automatically removed when connected by a BNC plug, allowing for only one termination resistor in the line as the next piece of equipment will become the load.

The luminance signal is added internally to the R.G.B matrix circuits of I201 and will be controlled by the brightness, contrast and blanking stages of the I201.
The luminance signal finally emerges with the R.G.B signals from pins 18, 19 and 20 of I201.
The voltages which control the contrast and brightness levels are output from pins 5 and 6 of I001, then applied to pins 25 and 17 of I201.
An automatic beam current limit circuit is employed on this chassis. Should the beam current start to rise, the voltage at pin 4 of the flyback transformer will fall. This fall is fed to Q752, turning the transistor on and pulling its emitter voltage low.
This fall in voltage is applied to pin 25 of I201 via D709/ R723 and R527, effectively reducing the contrast level and hence the beam current.

Chrominance Circuitry

Chrominance input S3 is via SVHS socket J303, E302/E301 pin 7 and C354, R522 to pin 16 of I201.

When operating input S3 via SVHS socket J303, the μP, I001 pin 15 is "high" turning on Q005 and pulling down pin 16 of I201 to around 4V from SV, this removes the luminance notch and allows pin 16 of I201 to be a chroma input.

When receiving PAL, I201 performs demodulation of the signal input to pin 15, and the R-y and B-y colour signals are output from I201 at pins 30 and 31. They are then fed to pins 14 and 16 of I501 which is a switch capacitor delay line.

The inputs at pins 14 and 16 are clamped, then fed via a buffer stage to internal delay lines, which are driven by a clock signal of 3 MHz, to obtain a delay period of 64p,S. This internal clock is generated from a 6 MHz voltage controlled oscillator, and line locked by the sandcastle pulse input at pin 5. Low pass filters after the delay line stages suppress the unwanted clock signals.

The undelayed and delayed signals are then added, with the resulting R-y and B-y signals being output from pins 11 and 12 via an internal buffer stage. These outputs are then returned to I201 at pins 28 and 29.

The IC contains clamping circuits and a DC colour saturation control, the level of which is set by the voltage applied to pin 26 from pin 4 of I001. The signals are then applied to a MATRIX circuit, and finally emerges from pins 18, 19 and 20 as the blue, green and red signals.

When receiving NTSC signals, pin 27 is between 0-5V operating as the hue contro1 originating from pin 3 of I001 via R063, R078, R116 and L052.

AV input control, Picture set-up control

I001 performs AV input selection, UP/ DOWN analogue control, on-screen display.
I002 is the memory IC which stores all data relating to the above functions, then transfers that information to I001 when required. I001 and I002 are both powered by the standby+5V supply.
X001, C026 and C027, connected between pins 41 and 42 supply I001 with a basic clock frequency to control all operating mode requirements.
I001 must be initially reset from switch on via Q004 and its circuit. As the +SV supply begins to rise from switch on, pin 43 of I001 is held "high" via R075, thus resetting the IC. The "high" is removed from this pin when C002 becomes charged via R015 and D003, causing Q004 to switch on, thus releasing the reset condition.
Contrast, colour, brightness, hue, sharpness and volume are all controlled from the push button controls on the front of the monitor which in turn produce DC level changes from pins 2 - 7 of I001. These changes are then applied to the relevant pins of I201.
AV selection control is via pins 11 and 12 of I001 to pins 4 and 6 of I301.
To select an AV, input pins 11 and 12 are set to relevant "highs" and "lows".
For input 1, pins 11 and 12 are both set to "low".
For input 2, pins 11 and 12 are set to "low" and "high" respectfully.
For input S3, pins 11 and 12 are set to "high" and "low" respectfully.

Pins 46, 47 and 48 form the in and out matrix for the front push button control operations.
Pins 49 and 50 provide clock and data information (I C). These are connected to the memory IC, I002.
When a command requiring an on-screen display is received by I001, a "high" is made available at pin 35. This is applied via D039A to pins 21 of I201 and blanks out a portion of the picture. The on-screen display information is then inserted into this portion, thus resulting in a clear display.
The character display is generated in I001 and outputted at pins 32, 33 and 34, the horizontal and vertical inputs at pins 36 and 37 determine the actual position of the on-screen display.

Protection mode

When a detection of a "low" is seen for a short period of time at pin 20 of I001, this causes the IC to latch into protection mode and will remove the drive supplied to the base of Q952 and as a result the +9V supply from I951 disappears also the +SV to part of I001. This places the monitor into protection mode operation, shutting down the E.H. T generation stages of I201 also pin 19 of I001 is taken "high" and "1ow" causing the illumination level of D001 to increase and flash.
Under certain fault conditions, i.e.

1. Increased H.T. supply, or low line oscillator frequency etc., an excess of E.H.T. could be developed. To prevent this happening, the rectified voltage of D701 is fed via potential divider R715, R716 and applied to pin 3 of the comparator I701. Should the E.H.T. rise excessively, the voltage level at pin 3 of I701 will exceed the threshold level determined by Z704 (5V1 Zener) at pin 2 and when this happens, the output at pin 1 of I701 becomes "high" causing Q705 to conduct and pulling pin 20 of I001 "low".
2. Excessive beam current can also occur under certain fault conditions, so this is prevented in the following manner. Should the H.T. current rise to the horizontal output stage, the increased voltage drop across R727 (sensing resistor) will cause Q704 to be turned on and a voltage will be applied to the base of Q705 via R729 causing Q705 to conduct and pulling pin 20 of I001 "low". This will then prevent further E.H.T. generation as previously described.
3. Short circuit of the +9V, +12V and+SV supply. Should either the+9V, +12V and+5V supply go short circuit this would cause either D953, D955 or D956 respectfully to conduct pulling pin 20 of I001 "low".

The following will take place after pin 20 of I001 goes "low" for the above options 1, 2 and 3:-

After a short period of time, the "low" at pin 20 of I001 causes the IC to latch into protection mode, and a "low" will be applied to the base of Q952, turning the transistor off. Consequently, Q953 is turned off and the +9V supply to I201 will be removed, thereby shutting down the deflection stages of the I.C. and preventing further E.H.T. generation.

Deflection Circuits

The deflection circuitry of I201 contains a sync. separator stage, horizontal oscillator and output stages, a vertical countdown and output stage.

Horizontal Stage

A composite video signal is applied to pin 15 of I201 and in turn applied to the internal sync. separator stages of the IC, An internal phase detector stage is provided with a sawtooth waveform, generated from the line pulse input to pin 38. The phase detector then compares this sawtooth waveform to the sync. pulse. Should any frequency drift occur a corrective output will be applied to the horizontal oscillator, thereby maintaining the desired phase relationship.

The components connected to pin 40 form a filter network for the phase detector and R721 connected to pin 39 provides manual phase control. The horizontal output emerges at pin 37 and is then applied to the base of the line transistor Q701.

T701 couples Q701 to the line output transistor Q702. Both these transistors are powered by the +B (H.T.) supply.

A line pulse available at pin 1 of the flyback transformer is rectified by D701, smoothed by C716 and provides approximately 180V to drive the video output transistors Q801, Q802 and Q803 on the C.R. T base.

Vertical Stage

The internal vertical sync. of I201 is fed to a triggered vertical divided stage, which counts down the horizontal frequency to obtain the vertical frequency. This eliminates the need for a conventional oscillator circuit and has the added advantage that no external frequency control is required.
C601 / C603 at pin 42 of the I.C. are used for ramp generation, producing the required sawtooth.
The vertical output from pin 43 of I201 is applied to pin 4 of I601 via R604. The components D601 and C605 determine the flyback generation time and the vertical output to drive the deflection coils is made available from pin 2.
A supply of around +25V is required for I601. This is obtained from pin 6 of the flyback transformer, rectified by D702 and smoothed by C719, then applied to pin 6 of I601.
The deflection current that occurs at the junction of C609 / R609 is added to the feedback from R607 / C608 etc., and the result is applied to pin 41 of I201. The values of R607 and C608 determine the linearity, whilst V601 sets the vertical height.

Power Supply Circuit

The A.C. input is rectified by D901 - 04 and produces approximately 300V at the collector of Q903.
Current flowing through R901, causes Q903 to initially turn on.
Secondary voltages are then induced in T901 and a feedback voltage is obtained via D905, L903 etc., and applied to Q903 base, maintaining the transistors operation.
This circuitry self oscillates at a frequency determined by the inductance of the transformer, the A.C. mains voltage and load conditions etc.
The secondary voltage induced in the S 1 - S2 winding is rectified by D951 to produce the +B (H.T.) which is smoothed by C952.
The S3 - S4 winding produces approximately+13V via D952 and smoothed by C954. It is then applied to Q953 and in conjunction with I951 produces the chassis +9V supply.
Q951 stage controls the H.T. regulation.
The base of Q951 is set to a pre- determined level by the resistor network R952, R921 R951.
Should the H.T. rise, the base current fed to Q951 will increase, turning the transistor on harder. This causes more current to flow through the opto-coupler I901.
An output is then produced from pin 5 of the opto-coupler, which is applied to the transistor network Q901 and Q902.
As these transistors control the on time of the power transistor Q903, a constant and regulated H.T. level is maintained.
Z952 offers protection to the H.T. circuits should the voltage level rise excessively by going short circuit switching off supply to any +B circuits.

Servicing

Picture And Control Adjustments

H.T. Adjustment:

4. Adjust R921 its centre position, then switch TV on.
5. Connect a voltmeter between the +ve side of C952 and ground.
6. Receive Philips test pattern and set brightness and contrast to maximum.
7. Allow approximately 1 minute for the TV to warm up thoroughly, then gradually turn R921 clockwise until voltmeter reads 108v ± 0v2.

Horizontal Phase and Amplitude:

1. Switch TV on, and receive Philips test pattern.
2. Set the brightness and contrast to their maximum settings.
3. Adjust R721 if picture is not centralised.

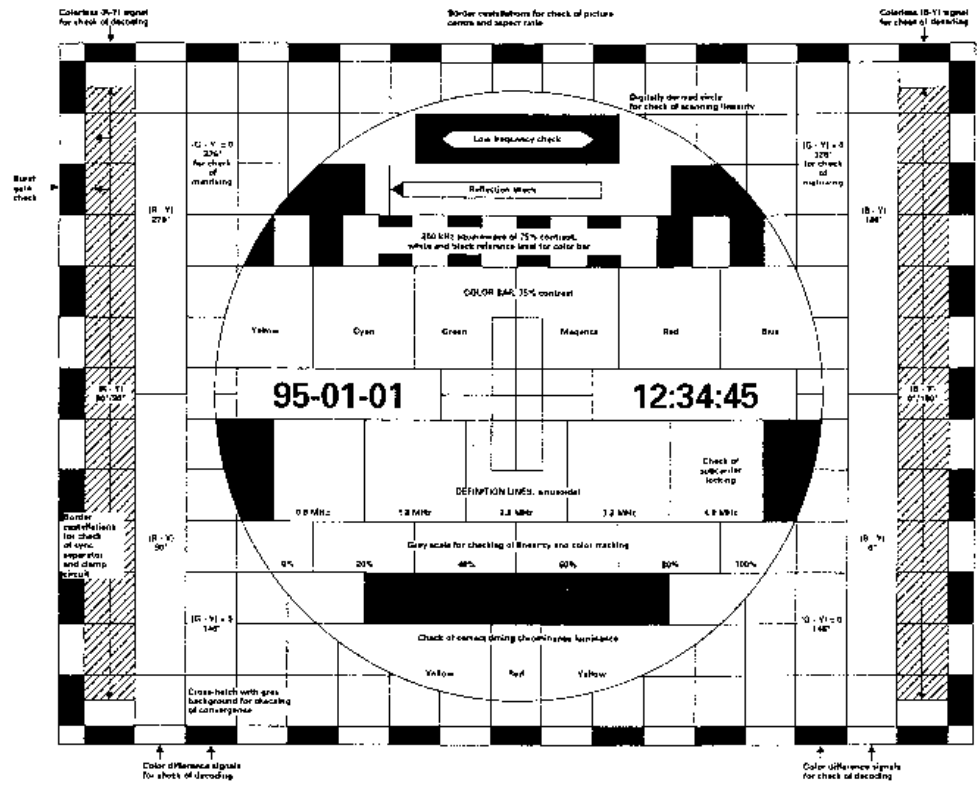
Vertical Centre and Height Adjustment:

1. Switch TV on, receive Philips test pattern, and wait 5 minutes.
2. Adjust contrast and brightness levels to their maximum setting.
3. If picture is not centred vertically, change position of shorting link on v. centre plug (see Position of Adjustment Control drawing, shown later) until desired result is obtained.
4. Adjust R621 to obtain the desired height.

Focus Adjustment:

1. Switch TV on and receive Philips test pattern.
2. Set the colour level to minimum, and the brightness and contrast to their maximum levels.
3. Adjust contrast so that the first two bars of the colour bar display are the same colour black, then adjust brightness to make the first two bars of the grey scale bar pattern the same colour black.
4. Adjust focus control knob on the flyback transformer for the best overall focus.

COMPOSITION OF TEST CARD PROVIDED BY PHILIPS PM5644 COLOR PATTERN GENERATOR



Cut Off And Screen Adjustment

Preparation:

i) Preset the red, green and blue background controls on the C.R.T. base to the positions shown (approximate mid point).
ii) Set the preset controls as follows:-
Contrast = minimum
Colour = minimum
Brightness = mid point
iii) Receive horizontal white line, or red raster pattern from a Philips pattern generator.

Method:

1. Adjust screen control on the flyback transformer until the horizontal line is just visible and its colour can be seen.
2. Do not touch the background control of the colour that is most prominent on the screen, but adjust the other two background controls until a reasonable white line is obtained.
3. Connect an oscilloscope probe to each of the R.G.B. cathodes in turn and leave connected to the one with the highest level.
4. Set customer brightness so that the cathode value is no greater than 140v as shown below.
5. Disconnect oscilloscope, and set screen control so that the white horizontal line is just visible once more.

White Balance

PREPARATION:

i. Set the preset controls as follows:- Contrast = minimum
   Colour = minimum
ii. Receive the white raster pattern.
iii. Obtain and set up a combined colour analyser and light meter, e.g. MINOLTA CA100.

METHOD:

1. Adjust brightness customer control so that the light output from the white raster reads Y = 1 $\rightarrow$ 2 cdm^{-2} on the light meter.
2. Next adjust the red and blue background controls to obtain the colour chromaticity co-ordinates of x = 304 y = 320. The above co-ordinates represent a colour temperature of 7400k.

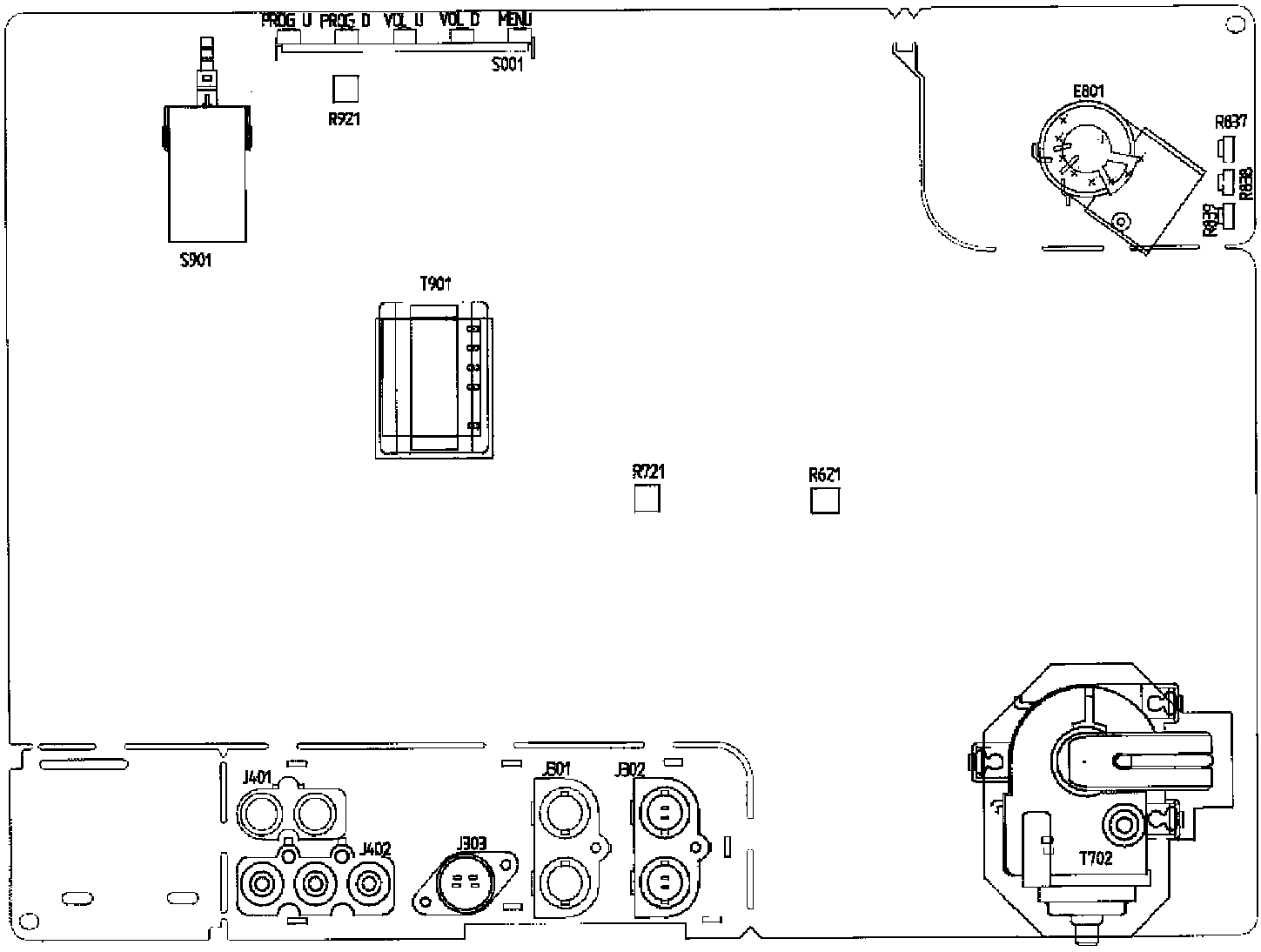
Protection Checks

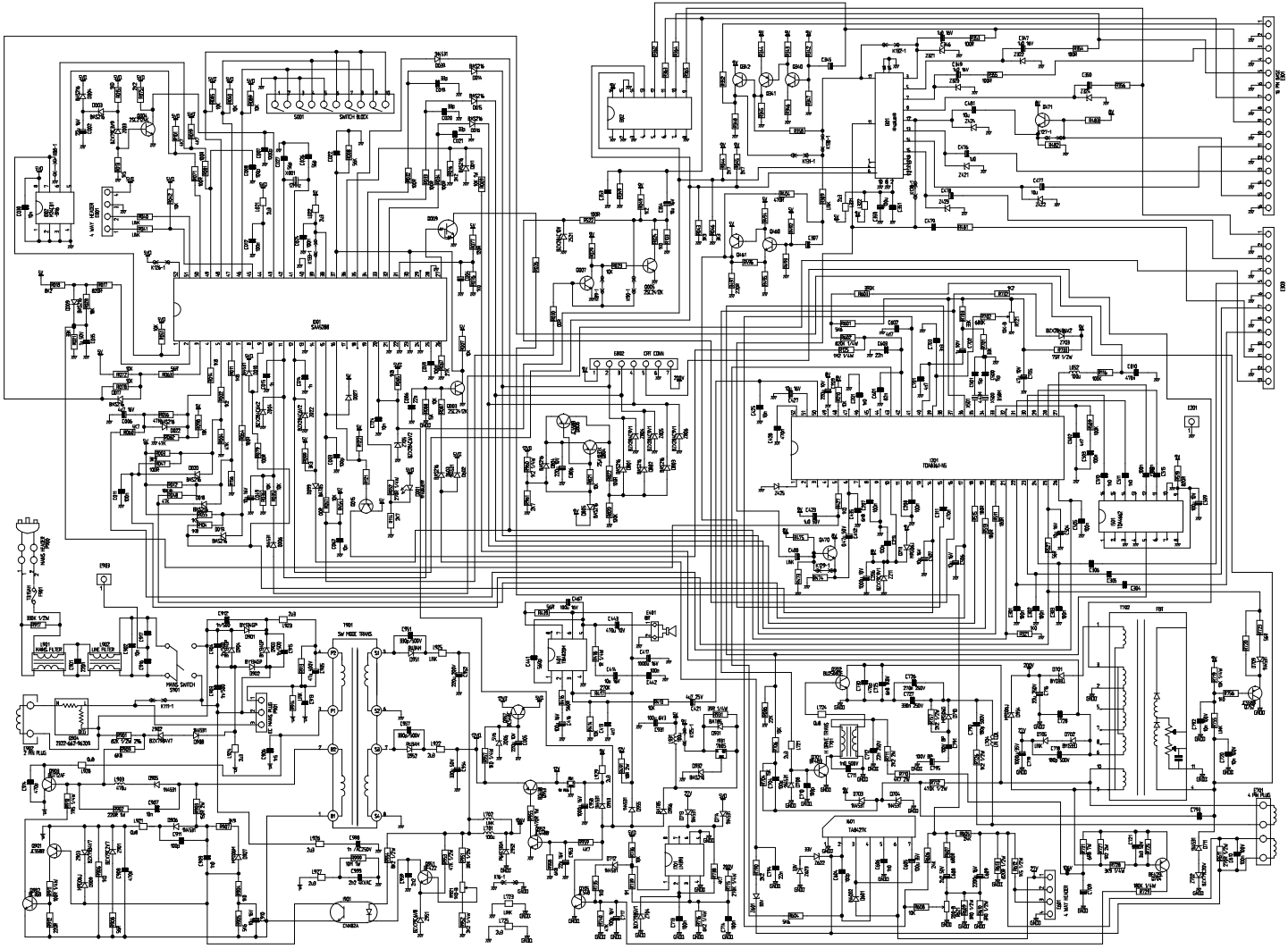
High Voltage Limit Check:

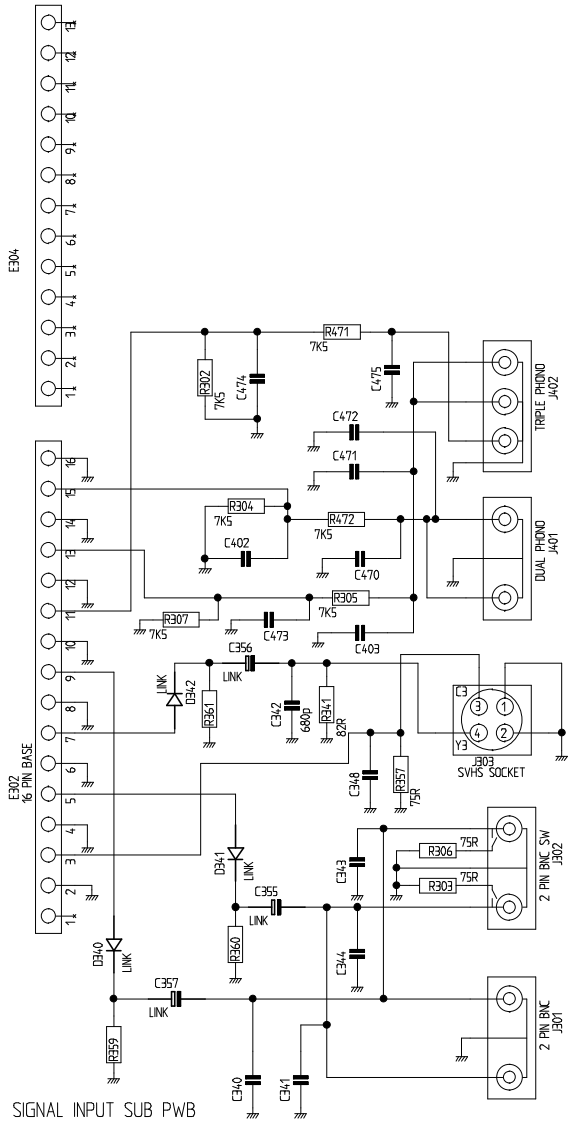
1. Switch TV on, receive Philips test pattern, and set contrast and brightness to their maximum levels.
2. Connect a resistor in parallel with R715, and ensure that the sound and picture disappear instantly.
3. Switch TV off remove resistor and wait 10-15 seconds.
4. Switch TV on again to ensure normal operation, then return contrast and brightness to their previous levels.

Anode/Focus s/c Check:

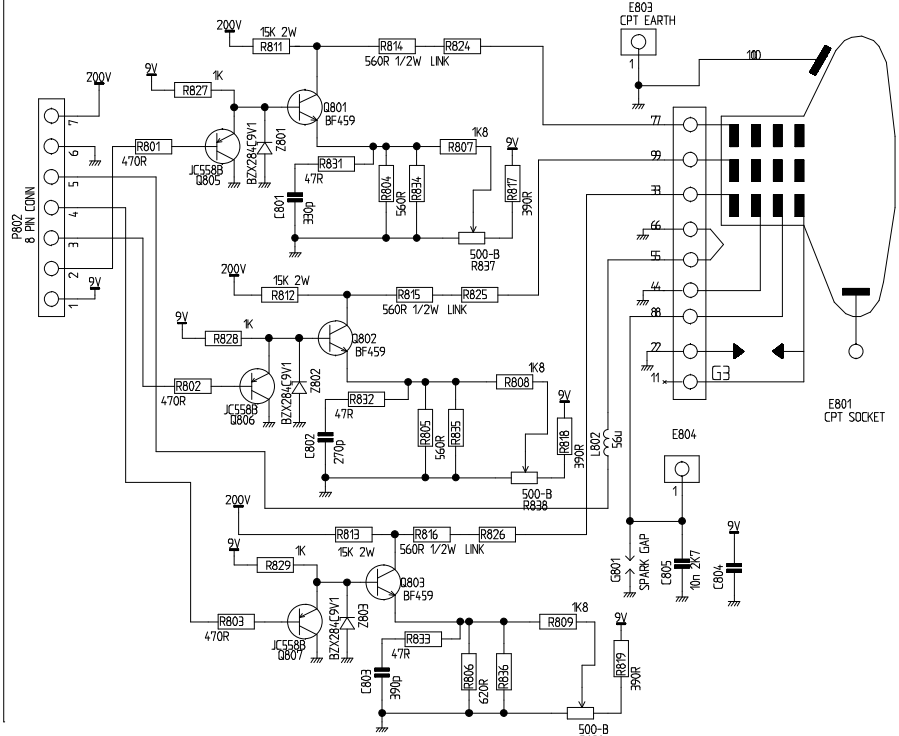
1. Switch TV on, receive Philips test pattern, and set the contrast and brightness levels to maximum.
2. Connect a 270R resistor from pin 9 of the flyback transformer to ground.
3. Check that sound and picture disappear instantly.
4. Switch TV off, remove resistor, and wait 10-15 seconds.
5. Switch TV on again to ensure normal operation, then return contrast and brightness to their previous levels.



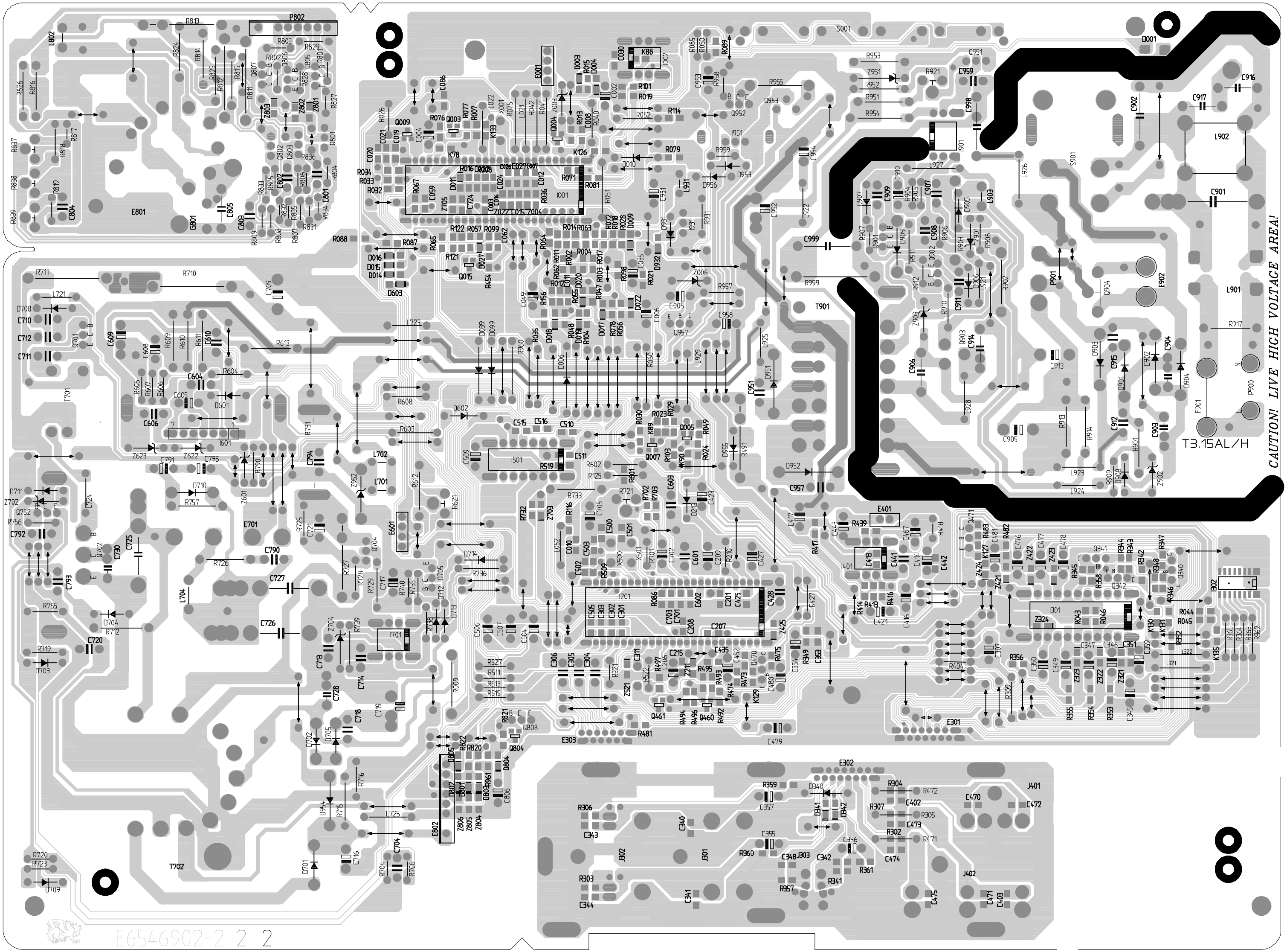




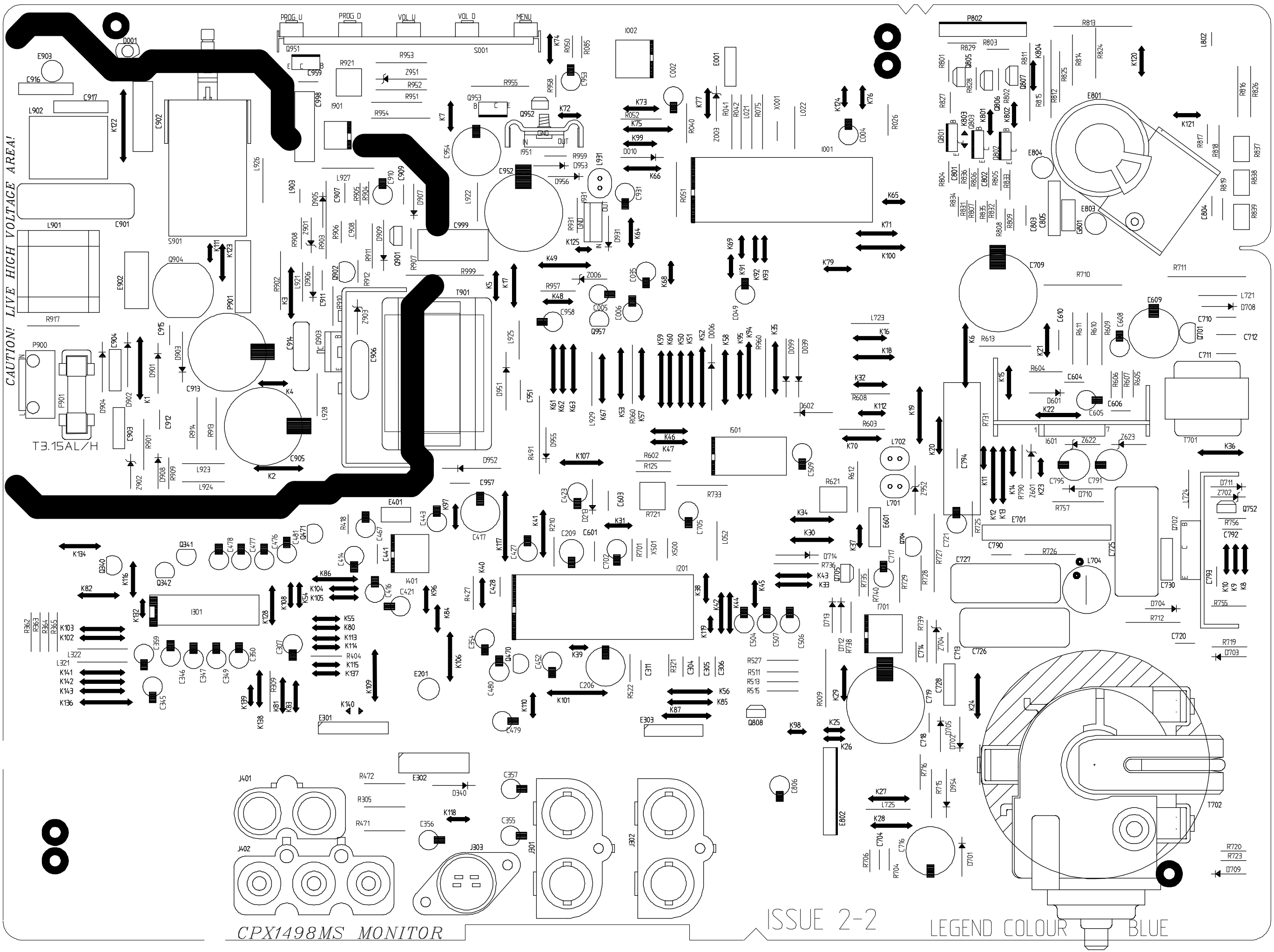
SIGNAL INPUT SUB PWB



CRT BASE



CAUTION! LIVE HIGH VOLTAGE AREA!
T3.15AL/H
E6546902-2 2 2



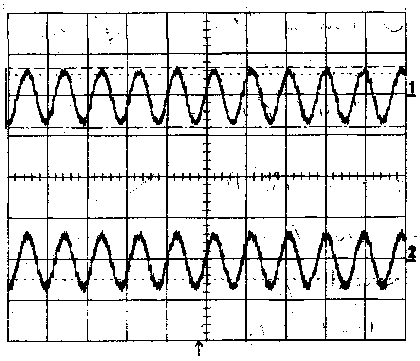
CAUTION! LIVE HIGH VOLTAGE AREA!
PROG U
PROG D
VOL U
VOL D
MENU
T3.15AL/H
CPX1498MS MONITOR
ISSUE 2-2
LEGEND COLOUR BLUE

Waveforms

Waveform 1

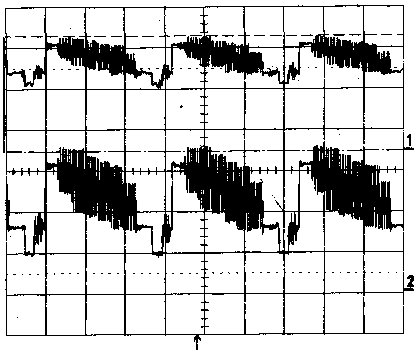
CH1 = I301 Pin 12
@ 1 m sec/cm
Sound I/p
1.47 P.P

CH2 = I301 Pin 11
@ 1 msec/cm
Sound o/p
1.47 P.P



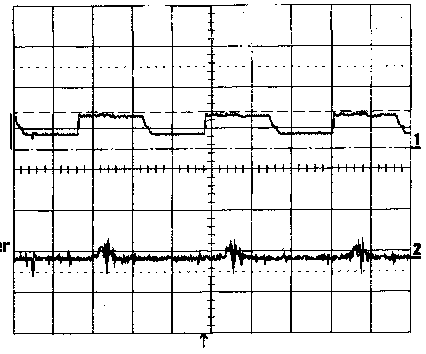
CH1 = I301 Pin 3
@ 20 secs
2.83 P.P

CH2 = I301 Pin 17
@ 20 secs
3.55 V P.P



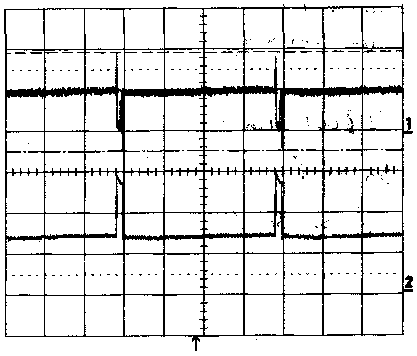
CH1 = Q701 Base
0.91 V P.P

CH2 = Q701 Emitter
187 mV P.P



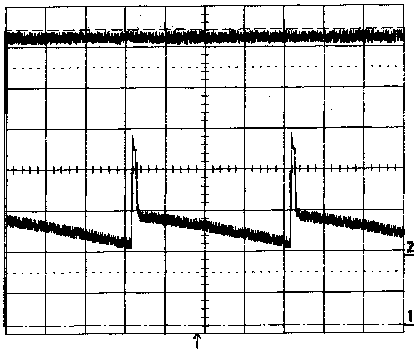
CH1 = I604 Pin 4
2.42 V P.P
@ 5m sec/cm

CH2 = I601 Pin 3
58.8 V P.P
@5m sec/cm



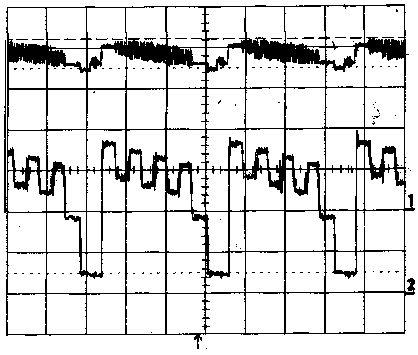
CH1 = I201 Pin 50
3.609 P.P
@ 5m sec/cm

CH2 = I601 Pin 2
60.9 V P.P
@5m sec/cm

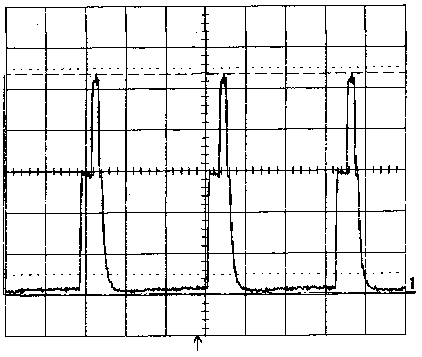


CH1 = I201
Pin 15
4.22 V P.P

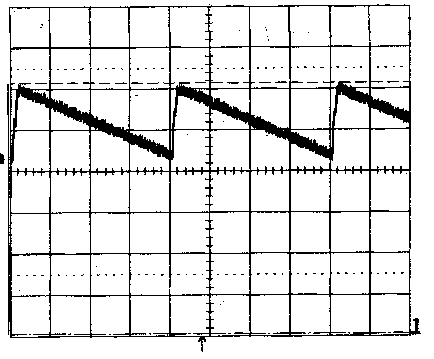
CH2 = I201
Pin 18
3.98 V P.P



I201 Pin 38
5.33 P.P

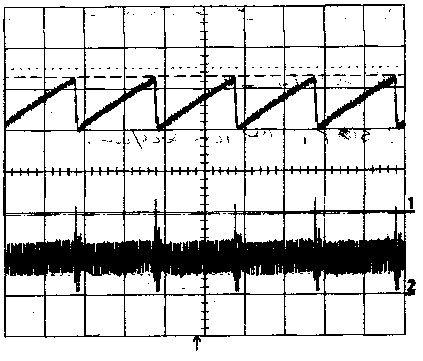


CH1 = I201 Pin 41
3.039 P.P
@ 5m secs/cm



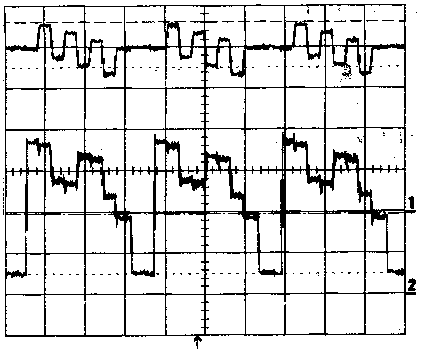
CH1 = I201 Pin 42
3.34 P.P
@ 10 msecs/cm

CH2 = I201 Pin 43
2.39 P.P
@ 10 msecs/cm



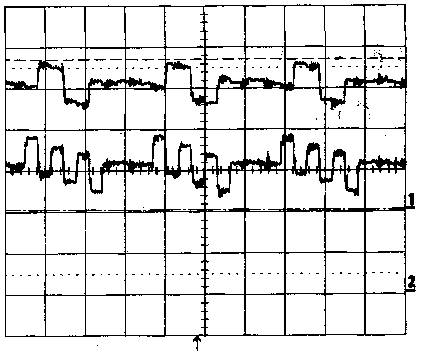
CH1 = I201 Pin 28
4.66 V P.P

CH2 = I201 Pin 20
3.91 V P.P

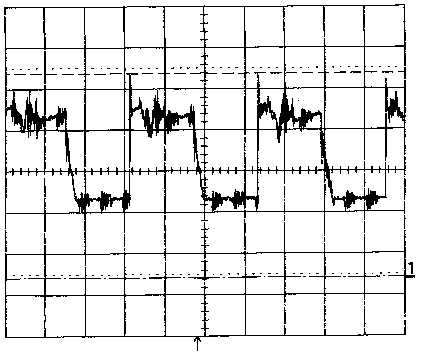


CH1 = I201 Pin 30
1.828 P.P

CH2 = I201 Pin 31
1.906 P.P

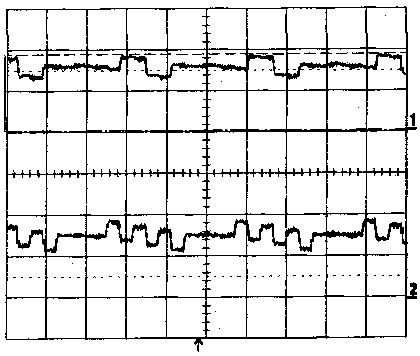


I201 Pin 37



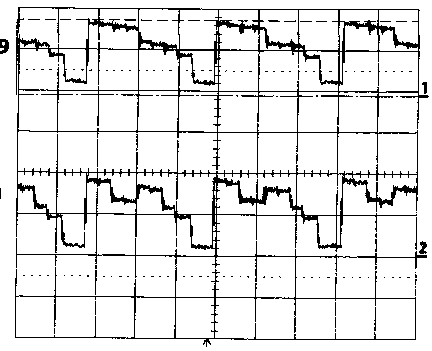
CH1 = I201 Pin 30
1.86 P.P

CH2 = I201 Pin 31
1.94 P.P

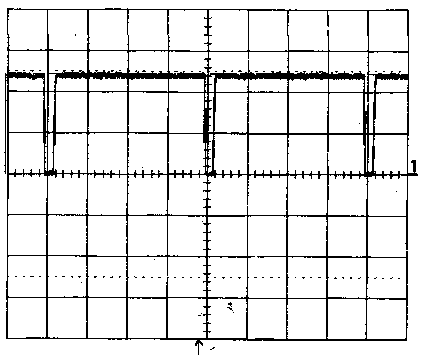


CH1 = I201 Pin 19

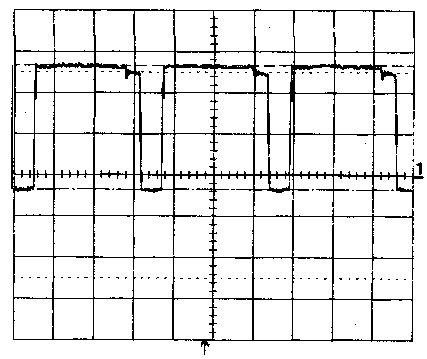
CH2 = I201 Pin 20
3.72 P.P



I001 Pin 37
at 5 msec/cm

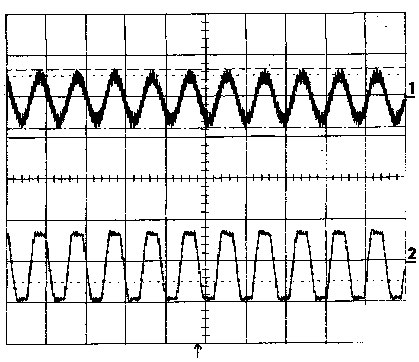


I001 Pin 36 (T models)



CH1 = I401 Pin 3
Sgnd Input
@ 1ms
1.44 V P.P

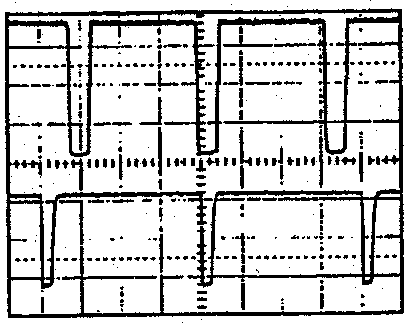
CH2 = I401 Pin 5
Sound o/P
@ 1ms
8.67 V P.P



The following waveforms were taken on a colour bar signal, using a 10:1 probe. All waveforms were displayed at 20μSecs per division unless otherwise stated.

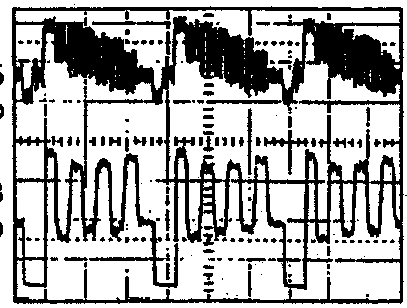
I001 pin 36
('T' models)
7v0 p.p

I001 pin 37
('T' model)
5v0 p.p
at 5m Secs/cm



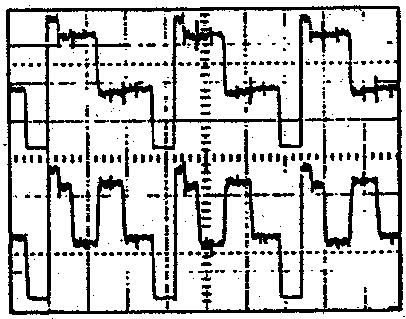
I201
pin 15
p.p

I201 pin 18
3v6 p.p



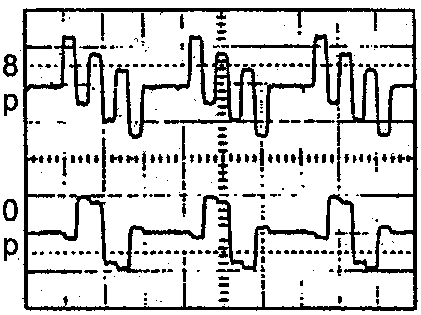
I201 pin 19
3v6 p.p

I201 pin 20
3v6 p.p



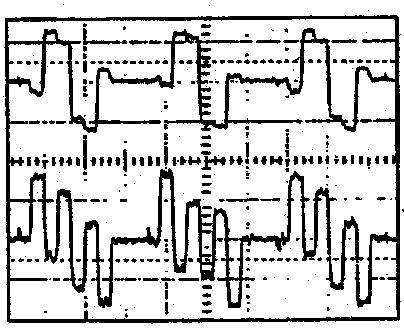
I201 pin 28
1v5 p.p

I201 pin 20
1v0 p.p

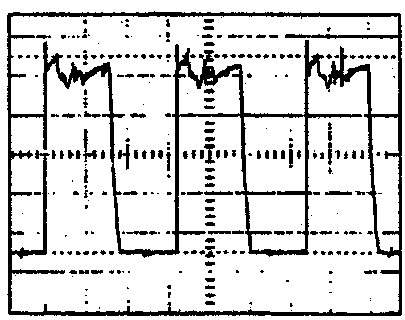


I201 pin 30
0v5 p.p

I201 pin 31
0v7 p.p

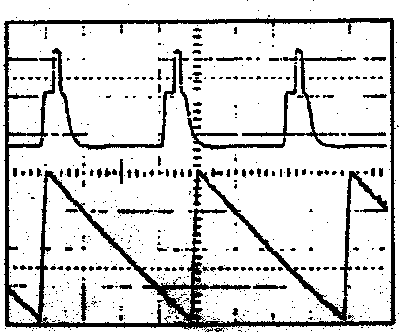


I201 pin 37
0v5 p.p



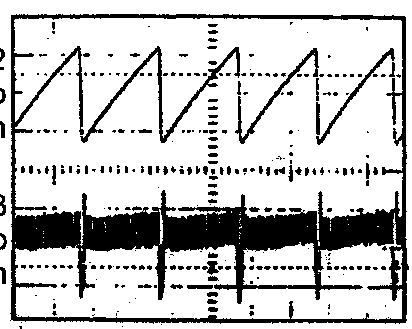
I201 pin 38
5v p.p

I201 pin 41
0v8 p.p
at 5m secs/cm



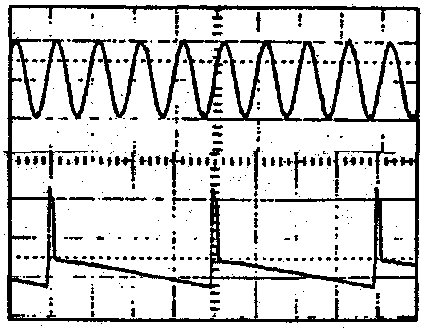
I201 pin 42
1v3 p.p
at 10m secs/cm

I201 pin 43
1v5 p.p
at 10m secs/cm



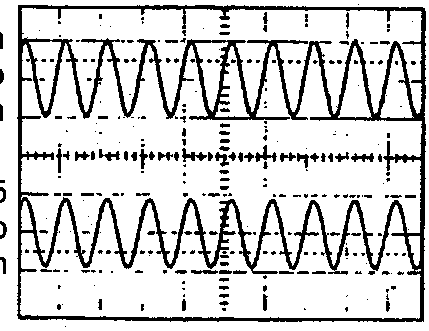
I201 pin 50
1v9 p.p
at 5m secs/cm

IC601 pin 2
50v p.p
5m secs/cm



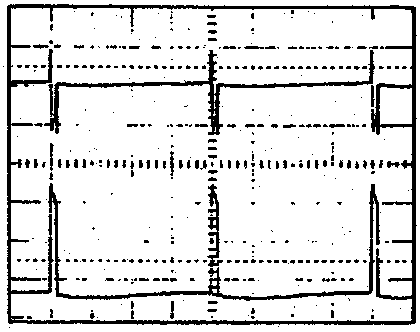
I401 pin
0v2 p.p
at 1m sec/cm

I401 pin 5
9v0 p.p
at 1m sec/cm



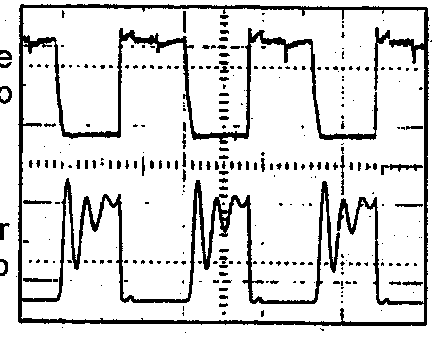
I601 pin 4
2v1 p.p
at 5m secs/cm

IC601 pin 3
30v p.p
at 5m secs/cm



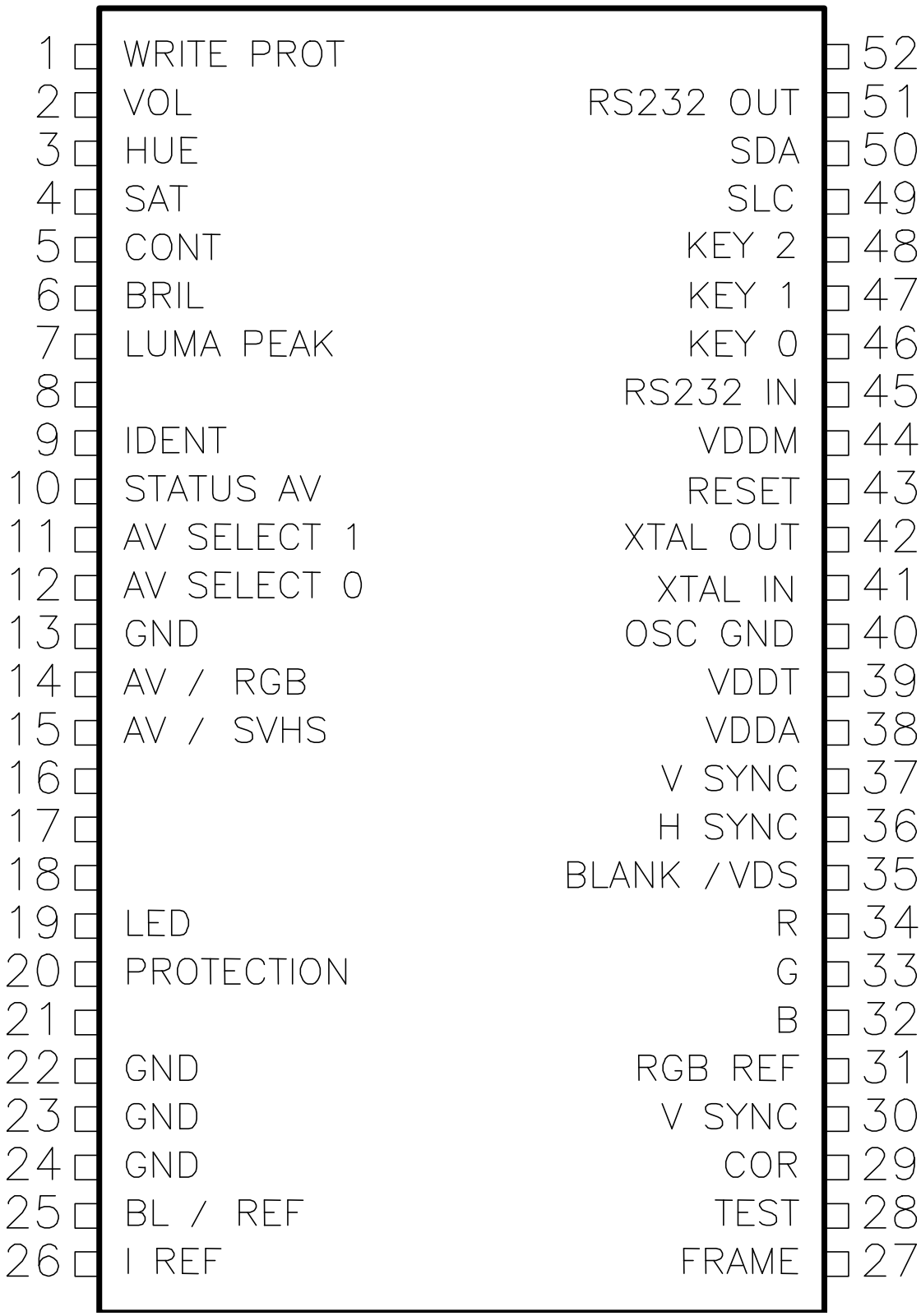
Q701 Base
0v6 p.p

Q701 Emitter
60v p.p

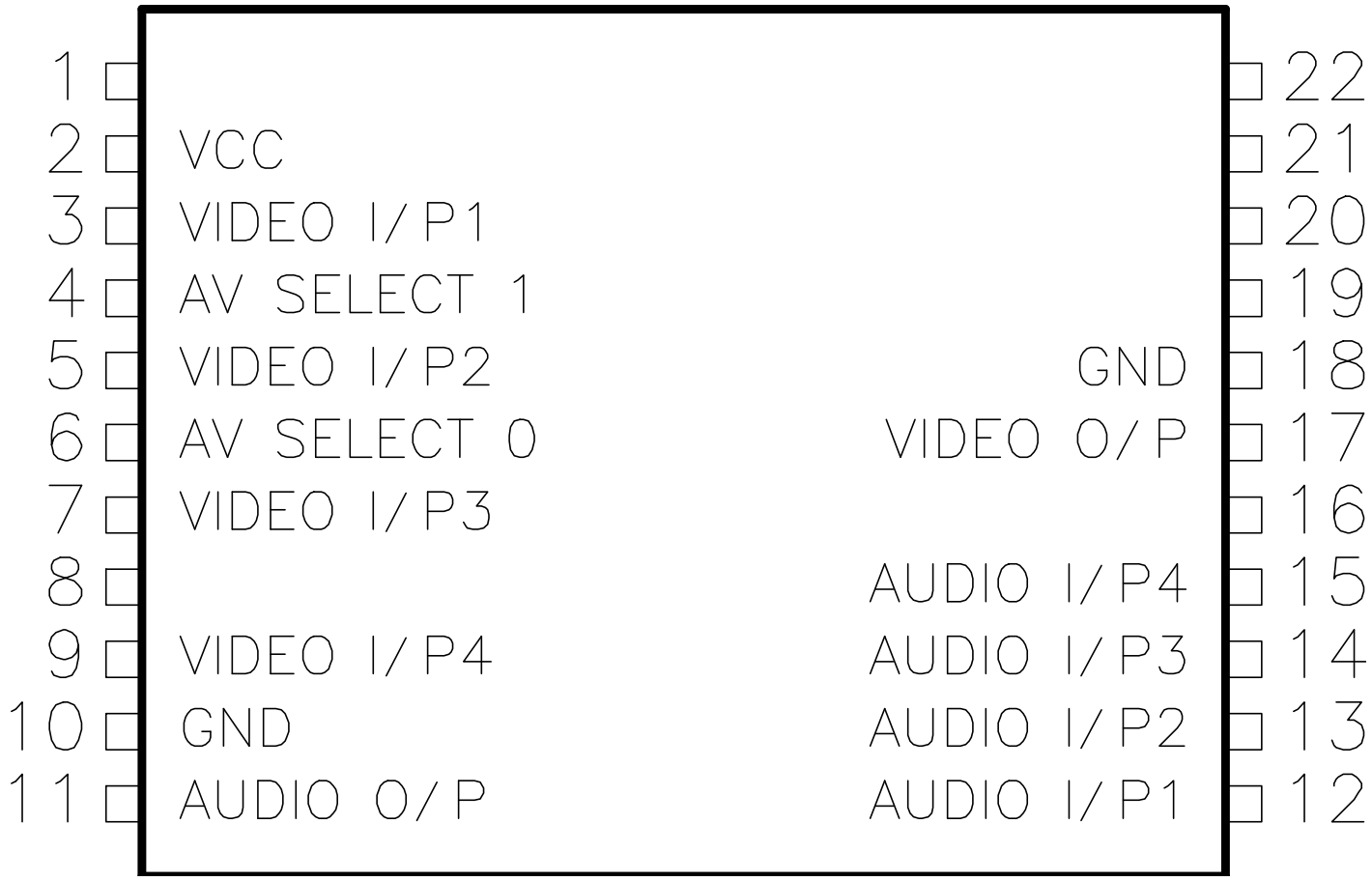


I001

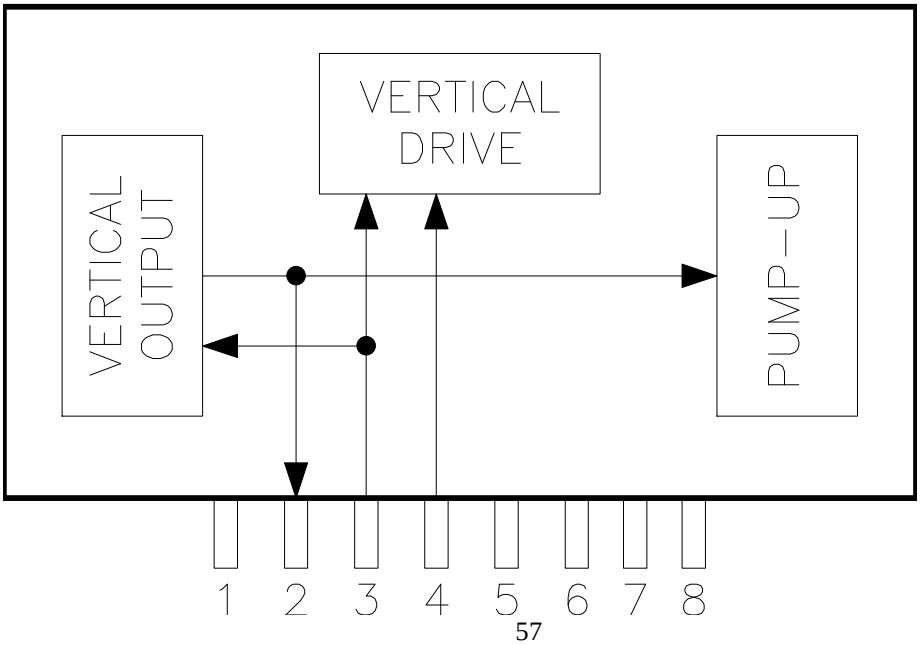
SAA5288



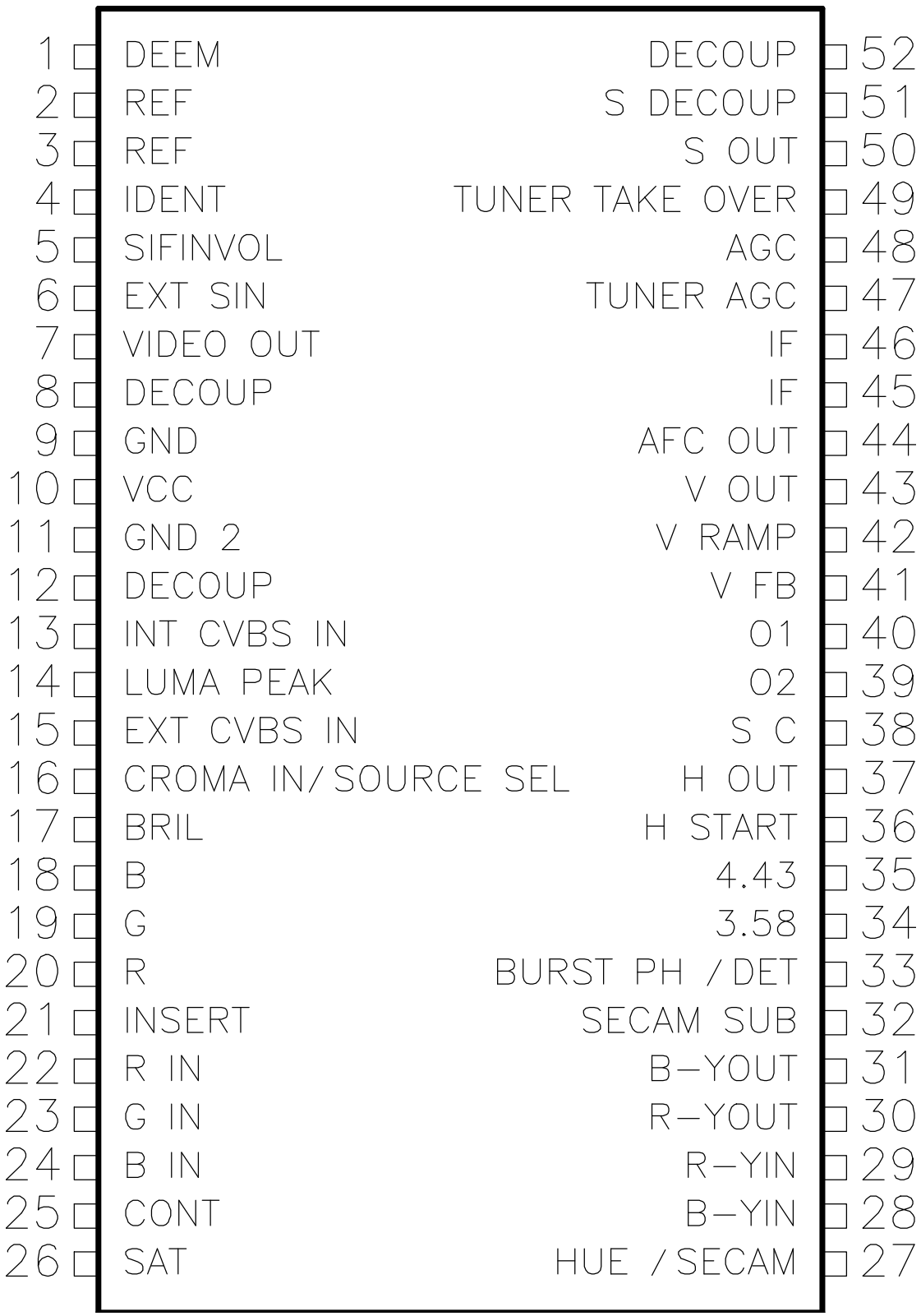
I301
M52472P



I601
TA427K

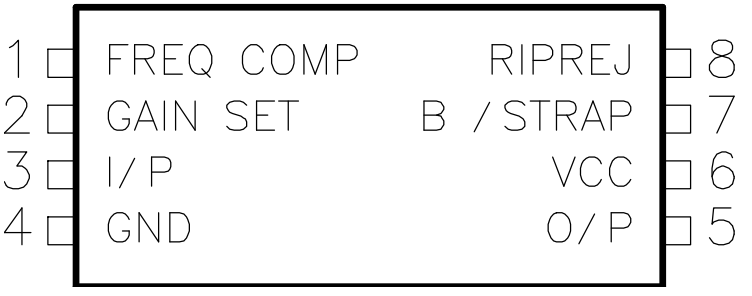


I201
TDA8361-N5



I002
M24C01-BN6

I401
TBA820M



I701
LM393P

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No. 00020
MAY 1999

HITACHI

OPERATING GUIDE FOR COLOUR MONITOR CPX1498MS

BEDIENUNGSANLEITUNG FÜR FARBMONITOR CPX1498MS

MODE D'EMPLOI DU MONITEUR COULEURS CPX1498MS

BEFORE OPERATING THIS EQUIPMENT

Mains Supply:

This equipment is designed to operate on 220-240V AC 50Hz only. Do not operate on DC power supplies or other voltages. Before connecting to the mains, please read the following instructions carefully.

IMPORTANT FOR THE UNITED KINGDOM

WORDING FOR CLASS 1 EQUIPMENT INSTRUCTION BOOKS AND LABELS

The mains lead on this equipment is supplied with a moulded plug incorporating a fuse, the value of which is indicated on the pin face of the plug. Should the fuse need to be replaced, an ASTA or BSI approved BS 1362 of the same rating must be used. If the fuse cover is detachable, never use the plug with the cover omitted. If a replacement fuse cover is required, ensure it is of the same colour as that visible on the pin face of the plug. Fuse covers are available from your dealer.

DO NOT cut off the mains plug from this equipment. If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then use an appropriate safety approved extension lead or consult your dealer.

Should it be necessary to change the mains plugs, this must be carried out by a competent person, preferably a qualified electrician.

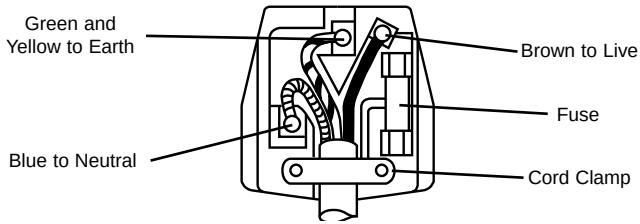
If there is no alternative to cutting off the mains plug, ensure that you dispose of it immediately, having first removed the fuse, to avoid a possible shock hazard by inadvertent connection to the mains supply.

WARNING: THIS EQUIPMENT MUST BE EARTHED

IMPORTANT

The wires in the mains lead are coloured in accordance with the following code;

Green and Yellow= Earth, Blue = Neutral, Brown = Live



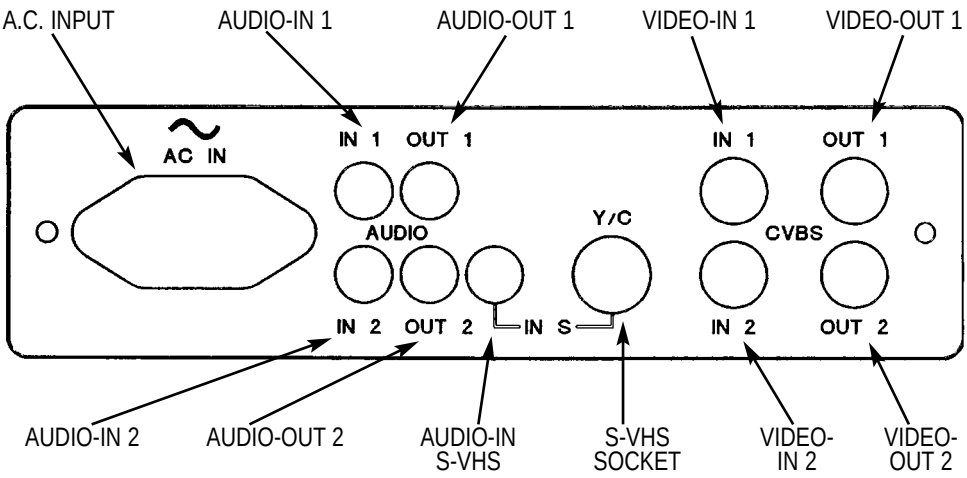
As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured GREEN and YELLOW must be connected to the terminal in the plug which is marked with the letter E or by the EARTH symbol ⏚ or coloured GREEN or GREEN and YELLOW. The wire coloured BLUE must be connected to the terminal with the letter N or coloured BLUE or BLACK. The wire coloured BROWN must be connected to the terminal marked with the letter L or coloured BROWN or RED.

SET-UP INSTRUCTIONS

Connect your equipment to the desired sockets of this monitor

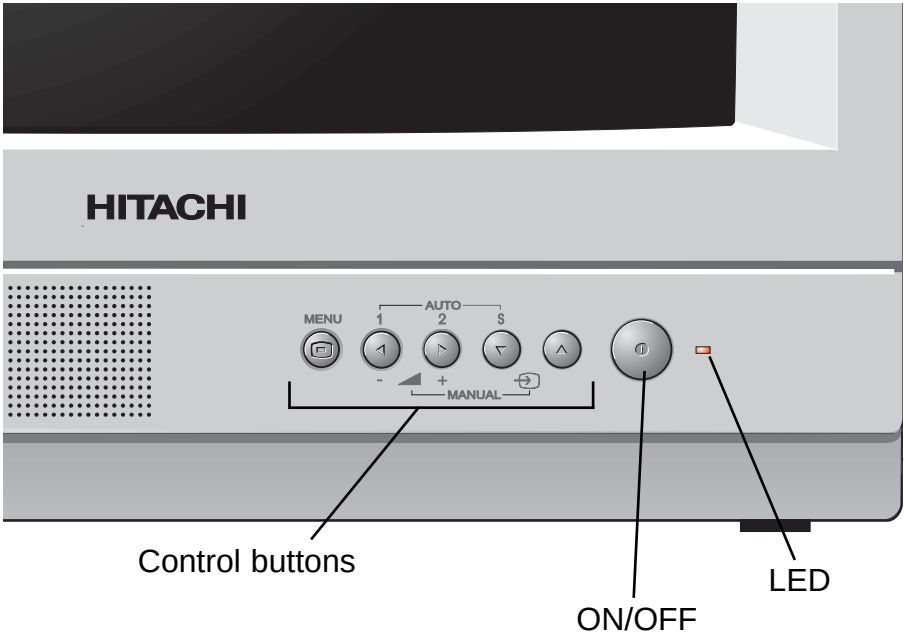
REAR VIEW



OUTPUT SIGNALS

If desired, the signal inputs to the Video-in and Audio-in sockets can also be input to other equipment, such as a VCR. Simply connect VCR to the Video-out and Audio-out sockets, using suitable connecting leads. Please refer to your VCR operating guide for further instructions. The Video-out sockets have a 75 Ω termination resistor which is automatically disconnected when a connection is made to them.

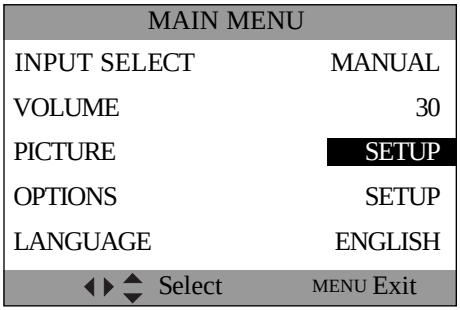
Switch on monitor and equipment. The red LED indicator on the front of the monitor will light.



Control of monitor

All control for this monitor other than on/off is via the five front control buttons, MENU ◄ ► ▲ ▼, using these buttons will allow you to navigate your way around the `on screen displays` (OSD) built into this monitor.

ON SCREEN DISPLAY (OSD) MENU STRUCTURE



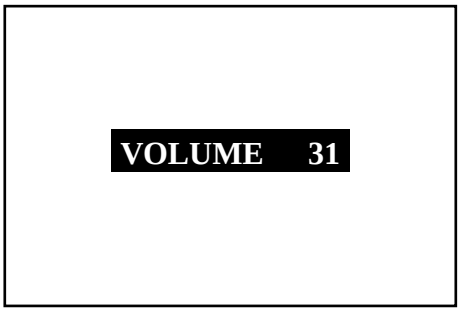
User Selection

MANUAL, AUTO

0-63

ENGLISH, GERMAN, FRENCH, SPANISH, DUTCH, ITALIAN, SYMBOL

Volume Menu



PICTURE/SETUP		
BRIGHTNESS	21	**0-63**
CONTRAST	30	**0-63**
COLOUR	16	**0-63**
HUE	14	**0-63**
SHARPNESS	18	**0-63**
OSD BACKGROUND	NO	**YES/NO**
◀ ▶ ▲ ▼ Select	MENU Exit	

User Selection

OPTIONS SETUP		
AV INPUTS	12S	**12S, 1-S and any other**
DWELL (s)	5	**combination 5 to 300 (sec)**
NAMES	SETUP	
OSD MODE	AUTO	**OFF, AUTO, PERMANENT**
◀ ▶ ▲ ▼ Select	MENU Exit	

User Selection

NAMES SETUP		
INPUT	3	**1, 2, 3, SVHS**
NAME	AISLE	**16 ALFA NUMERICS**
◀ ▶ ▲ ▼ Select	MENU Exit	

Volume adjustment

Volume adjustment (manual only)

In “manual” to increase or decrease the volume level temporarily, simply press ◄ button to decrease the level and press ► button to increase the level. Pressing either of these buttons will display the “volume menu” on the screen.

Volume adjustment (auto) and to store a volume level

To ensure that the volume level will always return to your preferred setting from switch on or when adjusting volume level, (the only way to adjust in AUTO mode), follow this procedure: -

a. Press the MENU button once and the “main menu” will then appear on the screen as shown with the *input select line* coloured blue (indicating that this function is available for adjustment).
b. Press the ▼ button once. The *volume line* will now become blue.
c. Press the ◄ or ► buttons to decrease or increase volume level to suit your personal preference.
d. The menu will stay on the screen for 20 seconds if no other operation is applied or you can press MENU button again and the menu will disappear. The new settings are now stored automatically.

Picture adjustments

a. Press the MENU button once and the “main menu” will then appear on the screen as shown with the *input select line* coloured blue (indicating that this function is available for adjustment)
b. Press the ▼ button twice. The *picture line* will now become blue.
c. Press the ◄ or ► buttons to change to the “Picture set-up” menu.

In “Picture set-up” menu : -

a. The *brightness line* will now be blue (indicating that this function is available for adjustment).
b. Press the ◄ or ► buttons to decrease or increase brightness level to suit your personal preference.
c. Press the ▼ button once. The *contrast line* will now become blue.
d. Press the ◄ or ► buttons to decrease or increase contrast level to suit your personal preference.
e. Repeat this procedure for the colour, hue (NTSC only) and sharpness.
f. The menu will stay on the screen for 20 seconds if no other operation is applied or you can press MENU button again and the menu will disappear. The new settings are now stored automatically.

Input select, Selection of video and audio inputs

a. Press the MENU button once and the “main menu” will then appear on the screen as shown with the *input select line* coloured blue (indicating that this function is available for adjustment).
b. Press the ◄ or ► buttons to show either “auto” or “manual”.

Manual

Once selected “manual” mode : -

a. The menu will stay on the screen for 20 seconds if no other operation is applied or you can press MENU button again and the menu will disappear. The new settings are now stored automatically.

Manual input selection

To select the various inputs : -

a. Press the ▲ or ▼ buttons to cycle through the various inputs in either direction.

Auto

In “auto” mode the display will sequence and wrap around through all the available inputs. The time that each input is displayed before the sequence continues (dwell time) is by the following procedure whilst in “main menu” : -

a. Press the ▼ button three times. The *options line* will now become blue.
b. Press the ◄ or ► buttons to change to the “Option set-up” menu.

In “Options set-up” menu : -

a. The *AV input line* will now be blue (indicating that this function is available for adjustment).
b. Press the ▼ button once. The *dwell line* will now become blue.
c. Press the ◄ or ► buttons to change the timing between 5 and 300 seconds
d. The menu will stay on the screen for 20 seconds if no other operation is applied or you can press MENU button again and the menu will disappear. The new settings are now stored automatically.

Auto override

To select the various inputs and suspend the auto function : -

a. Press the buttons 1, 2, or S to select and hold inputs 1, 2 or S respectively. For each selection “HOLD” will be displayed.
b. Another input can be held whilst the display is on alternative
c. To remove “hold” and resume operation press the button that was selected for hold.

Option selection

a. Press the MENU button once and the “main menu” will then appear on the screen as shown with the *input select line* coloured blue (indicating that this function is available for adjustment).
b. Press the ▼ button three times. The *options line* will now become blue.
c. Press the ◄ or ► buttons to change to the “Option set-up” menu.

In “Options set-up” menu : -

a. The *AV input line* will now be blue (indicating that this function is available for adjustment).
b. Press the ◄ or ► buttons to change to the video/audio inputs options required i.e. 12S, -2S, 1-S, 12-, 1--, -2-, --S
   For reference: 1 refers to input 1, 2 refers to input 2 and S refers to the SVHS input.
c. The menu will stay on the screen for 20 seconds if no other operation is applied or you can press MENU button again and the menu will disappear. The new settings are now stored automatically.

Language selection

a. Press the MENU button once and the “main menu” will then appear on the screen as shown with the *input select line* coloured blue (indicating that this function is available for adjustment).
b. Press the ▼ button four times. The *language line* will now become blue.
c. Press the ◄ or ► buttons to change to the alternative language options required i.e. English, German, Spanish, Dutch, Italian and Symbol.
d. The menu will stay on the screen for 20 seconds if no other operation is applied or you can press MENU button again and the menu will disappear. The new settings are now stored automatically.

OSD background

a. Press the MENU button once and the “main menu” will then appear on the screen as shown with the *input select line* coloured blue (indicating that this function is available for adjustment).
b. Press the ▼ button twice. The *picture line* will now become blue.
c. Press the ◄ or ► buttons to change to the “Picture set-up” menu.

In “Picture set-up” menu : -

a. The *brightness line* will now be blue (indicating that this function is available for adjustment).
b. Press the ▼ button five times. The *OSD mode line* will now become blue.
c. Press the ◄ or ► buttons to switch on or off the OSD background.

d. The menu will stay on the screen for 20 seconds if no other operation is applied or you can press MENU button again and the menu will disappear. The new settings are now stored automatically.

OSD mode

a. Press the MENU button once and the “main menu” will then appear on the screen as shown with the *input select line* coloured blue (indicating that this function is available for adjustment).
b. Press the ▼ button twice. The *OSD mode line* will now become blue.
c. Press the ◄ or ► buttons to show either “off”, “auto” or “permanent”.This allows the OSD to be on for a few seconds after any display change or on permanently.
d. The menu will stay on the screen for 20 seconds if no other operation is applied or you can press MENU button again and the menu will disappear. The new settings are now stored automatically.

Names

a. Press the MENU button once and the “main menu” will then appear on the screen as shown with the *input select line* coloured blue (indicating that this function is available for adjustment).
b. Press the ▼ button three times. The *options line* will now become blue.
c. Press the ◄ or ► buttons to change to the “Option set-up” menu.

In “Options set-up” menu : -

a. The *AV input line* will now be blue (indicating that this function is available for adjustment).
b. Press the ▼ button twice. The *names line* will now become blue.
c. Press the ◄ or ► buttons to change to the “Names set-up” menu.

In “Names set-up” menu : -

a. The *Input line* will now be blue (indicating that this function is available for adjustment).
b. Press the ◄ or ► buttons to select the input you wish to name. Once selected.
c. Press the ▲ or ▼ button once. The *name line* will now become blue.
d. Press the ◄ or ► buttons to highlight first position.
e. Press the ▲ or ▼ buttons to select the relevant character you wish to display. Once selected.
f. Press the ◄ or ► buttons to highlight second position.
g. Press the ▲ or ▼ buttons to select the relevant character you wish to display. Once selected.
h. Press the ◄ or ► buttons to highlight third position.

i. Repeat this procedure for all the remaining characters that you require up to 16 characters.
   Once selected.
j. The menu will stay on the screen for 40 seconds if no other operation is applied or you can press MENU button twice and the menu will disappear. The new settings are now stored automatically.

No sync
This is displayed in the middle of the screen when there is no sync or video on the selected input.

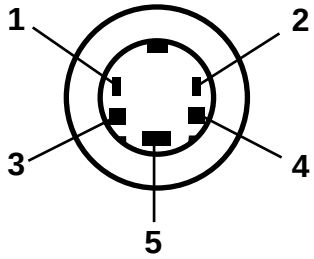
LED flashing
In the unlikely event that the LED flashes when the controls are not being used a fault has occurred.

SPECIFICATIONS

Picture Tube .....34cm Type A34EACO1X06
Mains Voltage.....220 - 240V AC 50 Hz
Power Consumption .....38 Watts
Speaker .....8 Ω
Dimensions (W x H x D) cm.....37 x 35.5 x 38.5
Weight .....8.8 kg

EXTERNAL CONNECTORS

S-VHS SOCKET

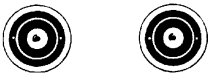


PIN NO.	FUNCTIONS	VOLTAGE LEVEL PEAK-PEAK
1	Chrominance input	0V7 above blanking at 75Ω impedance
2	Luminance input	1V0 at 75Ω impedance
3	Chrominance ground	
4	Luminance ground	
5	Frame ground	

PHONO CONNECTORS

Audio Output....0V5 nominal level
.....0V2 minimum
.....2V0 maximum at an impedance of less than 1KΩ.
Audio Input .....0V5 nominal level
.....2V0 maximum at an impedance of 10KΩ or more.

BNC CONNECTIONS



Video Input .....1V0 peak-peak at 75Ω impedance
Video Output .....1V0 peak-peak at 75Ω impedance