

Self Diagnosis
Supported model

SERVICE MANUAL

FE-2 CHASSIS

MODEL	COMMANDER	DEST	CHASSIS NO.	MODEL	COMMANDER	DEST	CHASSIS NO.
KV-28HX15B	RM-947	FR	SCC-Q54X-A	KV-32HX15B	RM-947	FR	SCC-Q54W-A
KV-28HX15E	RM-947	ESP	SCC-Q53Y-A	KV-32HX15E	RM-947	ESP	SCC-Q53X-A
KV-28HX15U	RM-947	UK	SCC-R42A-A	KV-32HX15U	RM-947	UK	SCC-Q52Y-A

FD Trinitron



KV-28/32HX15



RM-947

TRINITRON[®] COLOR TV
SONY[®]

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CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR THE CARBON PAINTED ON THE CRT, AFTER REMOVAL OF THE ANODE CAP.

WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE WORK TO AVOID POSSIBLE SHOCK HAZARD DUE TO LIVE CHASSIS, THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARKED Δ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION

APRES AVOIR DECONNECTE LE CAP DE L'ANODE, COURT-CIRCUITER L'ANODE DU TUBE CATHODIQUE ET CELUI DE L'ANODE DU CAP AU CHASSIS METALLIQUE DE L'APPAREIL, OU AU COUCHE DE CARBONE PEINTE SUR LE TUBE CATHODIQUE OU AU BLINDAGE DU TUBE CATHODIQUE.

ATTENTION !!

AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENTION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS À LA SECURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MARQUE Δ SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIÈCES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT, NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY.

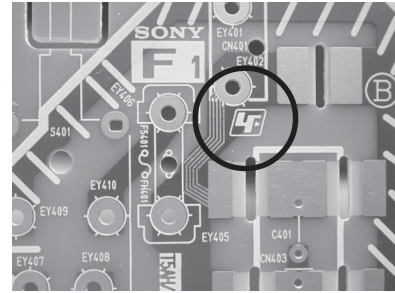
CAUTION

Lead Free Soldered Boards

The circuit boards listed below [Table 1] used in these models may have been processed using Lead Free Solder. The boards are identified by the LF logo located close to the board designation e.g. F1, H1 etc [see examples]. The servicing of these boards requires special precautions to be taken as outlined below.



example 1



example 2

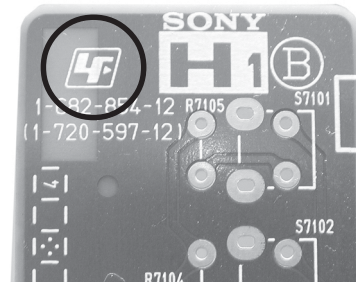


Table 1

Board	Function
A	Power Supply, Deflection, Video, Audio
C	R,G,B Out
D2	Smart Mode Deflection
F3	Lightning Discharge, Fuse, Line Filters
F5	AC Input, LED, SIRCS
H6	Headphone, SVHS and Phono
VM	Velocity Modulation

It is strongly recommended to use Lead Free Solder material in order to guarantee optimal quality of new solder joints. Lead Free Solder is available under the following part numbers :

Partnumber	Diameter	Remarks
7-640-005-19	0.3mm	0.25Kg
7-640-005-20	0.4mm	0.50Kg
7-640-005-21	0.5mm	0.50Kg
7-640-005-22	0.6mm	0.25Kg
7-640-005-23	0.8mm	1.00Kg
7-640-005-24	1.0mm	1.00Kg
7-640-005-25	1.2mm	1.00Kg
7-640-005-26	1.6mm	1.00Kg

Due to the higher melting point of Lead Free Solder the soldering iron tip temperature needs to be set to 370 degrees centigrade. This requires soldering equipment capable of accurate temperature control coupled with a good heat recovery characteristics.


For more information on the use of Lead Free Solder, please refer to <http://www.sony-training.com>

ITEM MODEL	Television System	Stereo System	Channel Coverage	Color System
B	B/G/H, D/K, I, L	GERMAN/NICAM Stereo	VHF : E2-E12, R1-R12, S01-S03 , F02-F10, B-Q UHF : E21-E69, F21-F69, B21-B69, R21-R69 CABLE TV : S01-S20 HYPER : S21-S41	PAL, SECAM NTSC4.43, NTSC3.58 (VIDEO IN)
E	B/G/H, D/K	GERMAN/NICAM Stereo	VHF : E2-E12, R1-R12, S01-S03 UHF : E21-E69, R21-R69 CABLE TV : S01-S20 HYPER : S21-S41	PAL, SECAM NTSC4.43, NTSC3.58 (VIDEO IN)
U	I	NICAM Stereo	UHF : B21-B69	PAL, SECAM NTSC4.43, NTSC3.58 (VIDEO IN)

Picture Tube	Flat Display FD Trinitron Approx 71 cm (28 inches) (KV-28HX15) Approx 82 cm (32 inches) (KV-32HX15)	Sound output	Right and Left speaker	2x14W (Music Power) 2x7W (RMS)
Input/Output Terminals [REAR]		General Specifications		
1: 21-pin Euro connector (CENELEC standard)	Inputs for Audio and Video signals. Inputs for RGB. Outputs of TV Video and Audio signals.	Power Requirements	220 - 240V	
2: 21-pin Euro connector	Inputs for Audio and Video signals. Inputs for S Video. Outputs of TV Video and Audio signals. (selectable)	Power Consumption	72W (KV-28HX15) 75W (KV-32HX15)	
Phono Jacks	Output Connectors variable for Audio Signals	Dimensions	Approx 884x517x548mm (KV-28HX15) Approx 933x562x572mm (KV-32HX15)	
		Weight	Approx 44.5kg (KV-28HX15) Approx 60.0kg (KV-32HX15)	
		Supplied Accessories	RM-947 Remote Commander (1) IEC designated R6 battery (2)	
		Other Features	Sleep Timer, Smartlink, Teletext, TV system autodetection	
Input/Output Terminals [FRONT]		Remote Control System : Infrared Control		
Headphone jack	stereo mini jack	Power requirements	3V dc 2 batteries IEC designation R6 (size AA)	
Audio inputs	phono jacks			
Video inputs	phono jacks			
S Video input	4 pin DIN			
Design and specifications are subject to change without notice.				

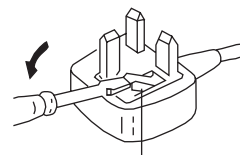
Model Name Item	KV-28HX15B ~ KV-32HX15B	KV-28HX15E ~ KV-32HX15E	KV-28HX15U ~ KV-32HX15U
Pal Comb	OFF	OFF	OFF
PIP	OFF	OFF	OFF
RGB Priority	ON	ON	ON
Woofers Box	OFF	OFF	OFF
Scart 1	ON	ON	ON
Scart 2	ON	ON	ON
Scart 3	OFF	OFF	OFF
Front in (3)	ON	ON	ON
Scart 4	OFF	OFF	OFF
Projector	OFF	OFF	OFF
Norm B/G	ON	ON	OFF
Norm I	ON	OFF	ON
Norm D/K	ON	ON	OFF
Norm AUS	OFF	OFF	OFF
Norm L	ON	OFF	OFF
Norm SAT	OFF	OFF	OFF
Norm M	OFF	OFF	OFF
Teletext	ON	ON	ON
Nicam Stereo	ON	ON	ON

WARNING (UK Models only)

The flexible mains lead is supplied connected to a **B.S. 1363** fused plug having a fuse of **5 AMP** rating. Should the fuse need to be replaced, use a **5AMP FUSE** approved by ASTA to **BS 1362**, ie one that carries the  mark.

IF THE PLUG SUPPLIED WITH THIS APPLIANCE IS NOT SUITABLE FOR THE OUTLET SOCKETS IN YOUR HOME, IT SHOULD BE CUT OFF AND AN APPROPRIATE PLUG FITTED. THE PLUG SEVERED FROM THE MAINS LEAD MUST BE DESTROYED AS A PLUG WITH BARED WIRES IS DANGEROUS IF ENGAGED IN A LIVE SOCKET.

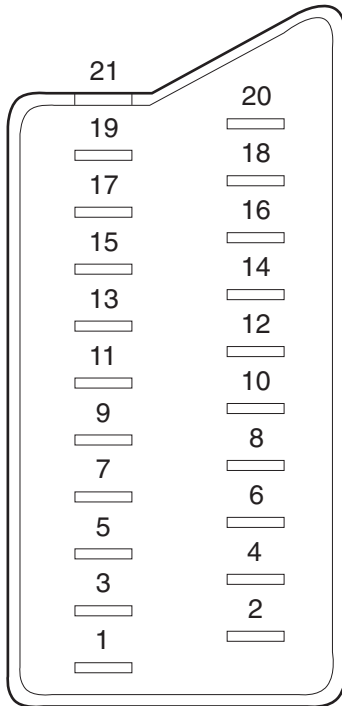
When an alternative type of plug is used, it should be fitted with a **5 AMP FUSE**, otherwise the circuit should be protected by a **5AMP FUSE** at the distribution board.



How to replace the fuse.
Open the fuse compartment with a screwdriver blade and replace the fuse.

FUSE

21 pin connector



Pin No	1	2	4	Signal	Signal level
1	○	○	○	Audio output B (right)	Standard level : 0.5V rms Output impedance : Less than 1kohm*
2	○	○	○	Audio input B (right)	Standard level : 0.5V rms Output impedance : More than 10kohm*
3	○	○	○	Audio output A (left)	Standard level : 0.5V rms Output impedance : Less than 1kohm*
4	○	○	○	Ground (audio)	
5	○	○	○	Ground (blue)	
6	○	○	○	Audio input A (left)	Standard level : 0.5V rms Output impedance : More than 10kohm*
7	○	●	●	Blue input	0.7 +/- 3dB, 75 ohms positive
8	○	○	○	Function select (AV control)	High state (9.5-12V) : Part mode Low state (0-2V) : TV mode Input impedance : More than 10K ohms Input capacitance : Less than 2nF
9	○	○	○	Ground (green)	
10	○	○	○	Open	
11	○	●	●	Green	Green signal : 0.7 +/- 3dB, 75 ohms, positive
12	○	○	○	Open	
13	○	○	○	Ground (red)	
14	○	○	○	Ground (blanking)	
15	○	-	-	Red input	0.7 +/- 3dB, 75 ohms, positive
	-	○	○	(S signal Chroma input)	0.3 +/- 3dB, 75 ohms, positive
16	○	●	●	Blanking input (Ys signal)	High state (1-3V) Low state (0-0.4V) Input impedance : 75 ohms
17	○	○	○	Ground (video output)	
18	○	○	○	Ground (video input)	
19	○	○	○	Video output	1V +/- 3dB, 75ohms, positive sync 0.3V (-3+10dB)
20	○	-	-	Video input	1V +/- 3dB, 75ohms, positive sync 0.3V (-3+10dB)
	-	○	○	Video input Y (S signal)	1V +/- 3dB, 75ohms, positive sync 0.3V (-3+10dB)
21	○	○	○	Common ground (plug, shield)	

○ Connected ● Not Connected (open) * at 20Hz - 20kHz

Rear Connection Panel



Front Connection Panel

S-Video socket



S Video socket pin configuration		
Pin No	Signal	Signal Level
1	Ground	-
2	Ground	-
3	Y (S signal) input	1V +/- 3dB 75ohm, positive Sync. 0.3V -3 +10dB
4	C (S signal) input	0.3V +/- 3dB 75ohm, positive Sync.

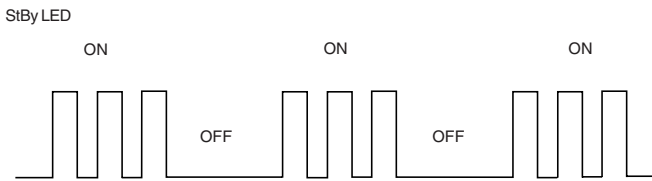
FE-2 SELF DIAGNOSTIC SOFTWARE

The identification of errors within the FE-2 chassis is triggered in one of two ways :- 1: Busy or 2: Device failure to respond to IIC. In the event of one of these situations arising the software will first try to release the bus if busy (Failure to do so will report with a continuous flashing LED) and then communicate with each device in turn to establish if a device is faulty. If a device is found to be faulty the relevant device number will be displayed through the LED (Series of flashes which must be counted) See table 1., non fatal errors are reported using this method. Each time the software detects an error it is stored within the NVM. See Table 2.

Table 1

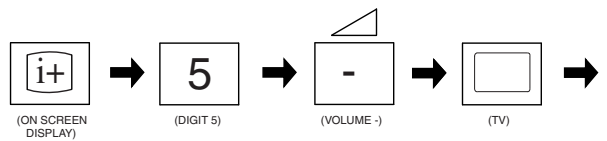
Error Message	LED Code
No error	00
Reserved	01
OCP (Over Current Protection)	02
Not Used	03
No Vertical Sync	04
IKR Error at power on	05
IIC bus clock and/or data lines low at power on	06
NVM no IIC bus acknowledge at power on	07
Not Used	08
Tuner no acknowledge at power on	09
Sound Processor Error	10
Jungle controller 8 volts error	11

Flash Timing Example : e.g. error number 3



How to enter into Table 2

1. Turn on the main power switch of the TV set and enter into the 'Standby Mode'.
2. Press the following sequence of buttons on the Remote Commander.



3. The following table will be displayed indicating the error count.

Table 2

ERROR MENU			
E02:	OCP	(0, 255)	0
E03:	OVP N/A	(0, 255)	0
E04:	VSYNC	(0, 255)	0
E05:	IKR	(0, 255)	0
E06:	IIC	(0, 255)	0
E07:	NVM	(0, 255)	0
E08:	JUNGLE	(0, 255)	0
E09:	TUNER	(0, 255)	0
E10:	SOUNDP	(0, 255)	0
E11:	8V	(0, 255)	0
E12:	EMMA	(0, 255)	0
E13:	PORT EX	(0, 255)	0
E14:	RTC	(0, 255)	0
WORKING TIME			
HOURS			1
MINUTES			22

Note: To clear the error count data press '80' on the Remote commander.

The operating instructions mentioned here are partial abstracts from the 'Operating Instruction Manual'. The page numbers of the 'Operating Instruction Manual' remain as in the manual.

Switching on the TV and automatically tuning in channels

The first time you switch on your TV, a sequence of menu screens appear on the TV enabling you to: 1) choose the language of the menu screen, 2) choose the country in which you wish to operate the TV, 3) adjust the picture slant, 4) search and store all available channels (TV broadcasts) and 5) change the order in which the channels (TV broadcasts) appear on the screen. However, if you need to change any of these settings at a later date, you can do this by selecting the appropriate option in the (Set Up menu) or by pressing the Auto Start-Up Button on the TV set.

1 Connect the TV plug to the mains socket (220-240V AC, 50Hz).

Press the on/off button on the TV set to turn on the TV. The first time you press this button, a **Language** menu displays automatically on the TV screen.

2 Press the or button on the remote control to select the language, then press the **OK** button to confirm your selection. From now on all the menus appear in the selected language.

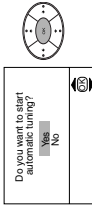
3 The Country menu appears automatically on the TV screen. Press the or button to select the country in which you will operate the TV set, then press the **OK** button to confirm your selection.

- If the country in which you want to use the TV set does not appear in the list, select „.“ instead of a country.
- To avoid wrong teletext characters for Cyrillic languages we recommend selecting 'Russia' if your own country does not appear in the list.

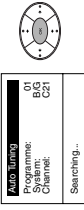
4 Because of the earth's magnetism, the picture might slant. The **Picture Rotation** menu allows you to correct the picture slants if it is necessary.

- a) If it is not necessary, press or to select **Not necessary** and press **OK**.
- b) If it is necessary, press or to select **Adjust now**, then press **OK** and correct any slant of the picture between -5 and +5 by pressing or . Finally press **OK** to store.

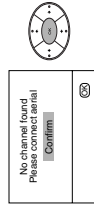
5 The Auto Tuning menu appears on the screen. Press the **OK** button to select **Yes**.



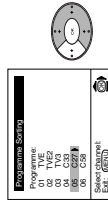
6 The TV starts to automatically search and store all available broadcast channels for you. This procedure could take some minutes. Please be patient and do not press any buttons, otherwise the automatic tuning will not be completed.



If no channels were found during the auto tuning process then a new menu appears automatically on the screen asking you to connect the aerial. Please connect the aerial (see page 7) and press **OK**. The auto tuning process will start again.



7 Alter all available channels are captioned and stored, the **Programme Sorting** menu appears automatically on the screen enabling you to change the order in which the channels appear on the screen.

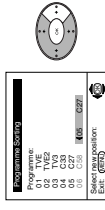


- a) If you wish to keep the broadcast channels in the tuned order, go to step 8.
- b) If you wish to store the channels in a different order:

i) Press the or button to select the programme number with the channel (TV Broadcast) you wish to rearrange, then press the button.

ii) Press the or button to select the new programme number position for your selected channel (TV Broadcast), then press .

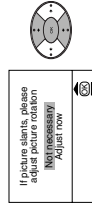
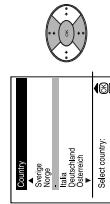
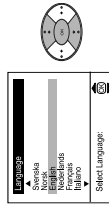
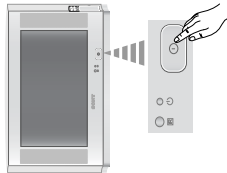
iii) Repeat steps b)1 and b)2 if you wish to change the order of the other channels.



MENU

8 Press the **MENU** button to remove the menu display from the TV screen.

Your TV is now ready for use.



Introducing and Using the Menu System

Your TV uses an on-screen menu system to guide you through the operations. Use the following buttons on the remote control to operate the menu system:

1 Press the **MENU** button on the remote control to display the menu on the TV screen.

2 • To highlight the desired menu or option, press **▲** or **▼**.

• To enter to the selected menu or option, press **▶**.

• To return to the last menu or option, press **◀**.

• To alter settings of your selected option, press **◄/►** or **◆** or **▶**.

• To confirm and store your selection, press **OK**.

3 Press the **MENU** button to remove the menu from the screen.

Menu Guide

PICTURE ADJUSTMENT

The "Picture Adjustment" menu allows you to alter the picture settings.

To do this: after selecting the item you want to alter, press **▶**, then press **◄/►** or **◆** repeatedly to adjust it and finally press **OK** to store the new adjustment.

- This menu also allows you to customise the picture mode based on the programme you are watching:

Mode **▶** **Personal** (for individual settings).

▶ **Live** (for live broadcast programmes, DVD and Digital Set Top Box receivers).

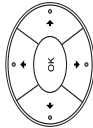
▶ **Movie** (for films).

- **Brightness, Colour and Sharpness** can only be altered if "Personal" mode is selected.

- **Hue** is only available for NTSC colour signal (e.g. USA video tapes).

- Select **Reset** and press **OK** to reset the picture to the factory preset levels.

MENU



MENU



SOUND ADJUSTMENT

The "Sound Adjustment" menu allows you to alter the sound settings.

To do this: after selecting the item you want to alter, press **▶**, then press **◄/►** or **◆** repeatedly to adjust it and finally press **OK** to store the new adjustment.

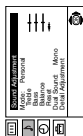
This menu also contains two submenus as following:

Mode **▶** **Personal** (for individual settings)

▶ **Rock**

▶ **Pop**

▶ **Jazz**



Detail Adjustment **▶** **Sound Effect**: **▶** **Off**: Normal effect.
▶ **Spatial**: Acoustic sound effect.

▶ **Auto volume**: **▶** **Off**: Volume level changes according to the broadcast signal. Volume level of the channels will stay the same.
▶ **On**: independent of the broadcast signal (e.g. in the case of advertisements).

▶ **TV Speakers**: **▶** **Off**: Sound from external amplifier connected to the audio outputs on the rear of the TV set.
▶ **On**: Sound from the TV set.

- **Treble and Bass** can only be altered if "Personal" mode is selected.

- Select **Reset** and press **OK** to reset the sound to the factory preset levels.

- In case of a bilingual broadcast select **Dual Sound** and set **A** for sound channel 1, **B** for sound channel 2 or **Mono** for mono channel if available. For a stereo broadcast you can choose **Stereo** or **Mono**.

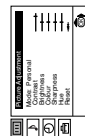
SLEEP TIMER

The "Sleep Timer" option in the "Timer" menu allows you to select a time period for the TV to switch itself automatically into the standby mode.

To do this: after selecting the option press **▶**, then press **◄/►** or **◆** to set the time period delay (max. of 4 hours) and finally press **OK** to store.

- While watching the TV, you can press the **⏻** button on the remote control to display the time remaining.

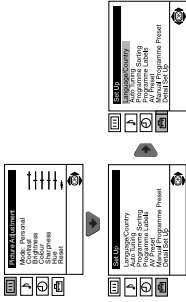
- One minute before the TV switches itself into standby mode, the time remaining is displayed on the TV screen automatically.



LANGUAGE / COUNTRY

The "Language/Country" option in the "Set Up" menu allows you to select the language that the menus are displayed in. It also allows you to select the country in which you wish to operate the TV set.

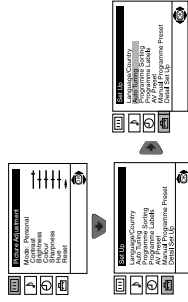
To do this: after selecting the option, press **▶** and then proceed in the same way as in the steps 2 and 3 of the section "Switching On the TV and Automatically Tuning".



AUTO TUNING

The "Auto Tuning" option in the "Set Up" menu allows you to automatically search for and store all available TV channels.

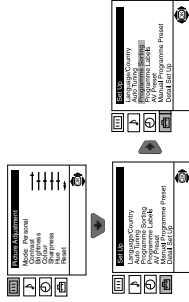
To do this: after selecting the option, press **▶** and then proceed in the same way as in TV steps 5 and 6 of the section "Switching On the TV and Automatically Tuning" on page 8.



PROGRAMME SORTING

The "Programme Sorting" option in the "Set Up" menu allows you to change the order in which the channels (TV broadcast) appear on the screen.

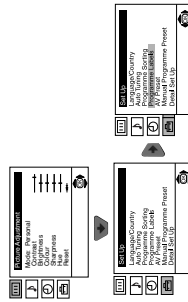
To do this: after selecting the option, press **▶** and then proceed in the same way as in step 7b) of the section "Switching On the TV and Automatically Tuning" on page 8.



PROGRAMME LABELS

The "Programme Labels" option in the "Set Up" menu allows you to name a channel using up to five characters (letters or numbers). To do this:

- 1 After selecting the option, press **▶**, then press **▶** or **◀** to select the programme number with the channel you wish to name.
- 2 Press **▶**. With the first element of the Label column highlighted, press **▶** or **◀** to select a letter or number (select "-" for a blank), then press **▶** to confirm this character. Select the other four characters in the same way. Finally press **OK** to store.

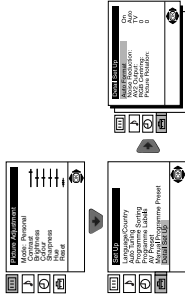


AUTO FORMAT

The "Auto Format" option in the "Detail Set Up" menu allows you to automatically change the aspect ratio of the screen.

To do this: after selecting the option, press **▶**. Then press **▶** or **◀** to select **On** (if you wish the TV set to automatically switch the screen format according to the broadcast signal) or **Off** (if you wish to keep your preference). Finally press **OK** to store.

Even if you have selected "On" or "Off" in the "Auto Format" option, you can always modify the format of the screen by pressing **⏏** repeatedly on the remote control to select one of the following formats:



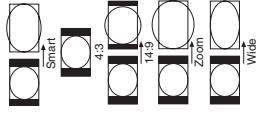
Smart: Imitation of wide screen effect for 4:3 broadcast.

4:3: Conventional 4:3 picture size, full picture information.

14:9: Compromise between 4:3 and 16:9 picture size.

Zoom: Widescreen format for letterbox movies.

Wide: For 16:9 broadcast. Full picture information.



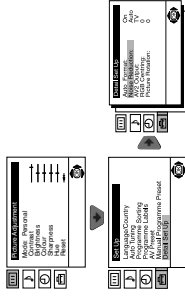
*Note: In "Smart", "Zoom" and "14:9" modes, parts of the top and bottom of the screen are cut off. Press **▶** or **◀** to adjust the position of the image on the screen (e.g. to read subtitles).*

NOISE REDUCTION

The "Noise Reduction" option in the "Detail Set Up" menu allows you to automatically reduce the picture noise visible in the broadcast signal.

To do this: after selecting the option, press **▶**. Then press **▶** or **◀** to select **Auto**. Finally press **OK** to confirm and store.

To cancel this function afterwards, select "Off" instead of "Auto" in the step above.



AV2 OUTPUT

The "AV2 Output" option in the "Detail Set Up" menu allows you to select the source to be output from the Smart connector (↔2/↔) in order you can record from this Smart any signal coming from the TV or from external equipment connected to the Smart connector (↔1/↔) or front connectors ↔3 and ↔3.

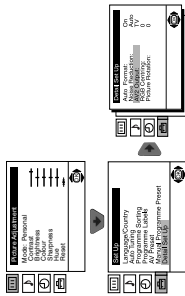
If your VCR supports SmartLink, this procedure is not necessary.

To do this, after selecting the option, press ↔. Then press ↔ or ↔ to select the desired output signal: **TV, AV1, AV3 or AUTO**.

Notes:

If you select "AUTO", the output signal will always be the same one that is displayed on the screen.

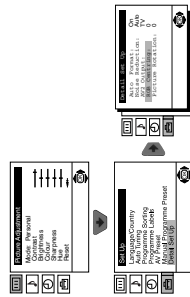
If you have connected a decoder to the smart connector (↔2/↔) or to a VCR connected to this smart, please remember to change back the "AV2 Output" to "AUTO" or "TV" for correct unscrambling.



RGB CENTRING

When connecting an RGB source, such as a "PlayStation", you may need to readjust the horizontal position of the picture. In that case, you can readjust it through the "RGB Centring" option in the "Detail Set Up".

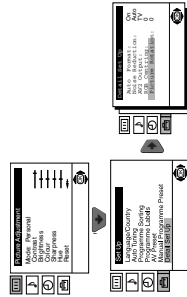
To do this: while watching an RGB source select the "RGB Centring" option and press ↔. Then press ↔ or ↔ to adjust the centre of the picture between -10 and +10. Finally press **OK** to confirm and store.



PICTURE ROTATION

Because of the earth's magnetism, the picture may slant. In this case, you can correct the picture slant by using the option "Picture Rotation" in the "Detail Set Up" menu.

To do this: after selecting the option, press ↔. Then press ↔ or ↔ to correct any slant of the picture between -5 and +5 and finally press **OK** to store.



Teletext

Teletext is an information service transmitted by most TV stations. The index page of the teletext service (usually page 100) gives you information on how to use the service. To operate teletext, use the remote control buttons as indicated below. Please ensure you use a channel (TV Broadcast) with a strong signal, otherwise teletext errors may occur.

To switch on Teletext :

After selecting the TV channel which carries the teletext service you wish to view, press ↔.

To select a Teletext page:

- Input 3 digits for the page number, using the numbered buttons.
- If you have made a mistake, retype the correct page number.
- If the counter on the screen continues searching, it is because this page is not available. In that case, input another page number.

To access the next or preceding page:

Press **PROGR +** (↔) or **PROGR -** (↔).

To superimpose teletext on to the TV:

Whilst you are viewing teletext, press ↔. Press it again to cancel teletext mode.

To freeze a teletext page:

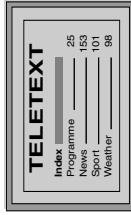
Some teletext pages have sub-pages which follow on automatically. To stop them, press ↔/↔. Press it again to cancel the freeze.

To reveal concealed information (e.g. answer to a quiz):

Press ↔/↔. Press it again to conceal the information.

To Switch Off Teletext:

Press ↔.

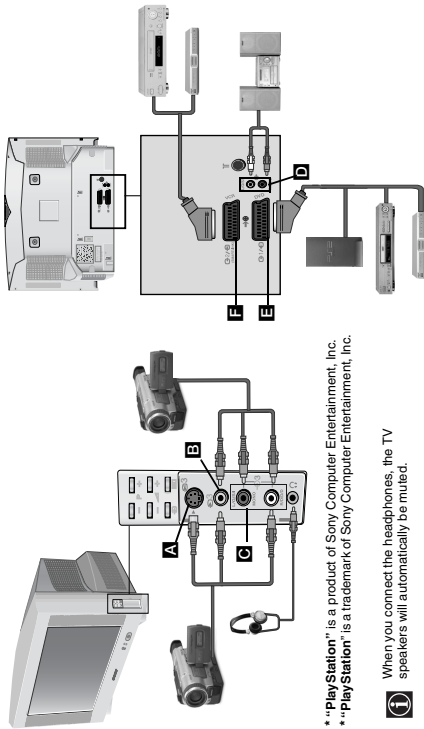


Fastext

Fastext service lets you access pages with one button push. When you are in Teletext mode and Fastext is being broadcast, a colour coded menu appears at the bottom of the teletext page. Press the colour button (red, green, yellow or blue) to access the corresponding page.

Connecting Optional Equipment

Using the following instructions you can connect a wide range of optional equipment to your TV set. (Connecting cables are not supplied).



**"PlayStation" is a product of Sony Computer Entertainment, Inc.
 ***"PlayStation" is a trademark of Sony Computer Entertainment, Inc.

When you connect the headphones, the TV speakers will automatically be muted.

Connecting a VCR:

To connect a VCR, please refer to the section "Connecting the aerial and VCR" of this instruction manual. We recommend you connect your VCR using a scart lead. If you do not have a scart lead, tune in the VCR test signal to the TV programme number "0" by using the "Manual Programme Preset" option. (for details of how to manually programme these presets, see page 14, step 3). Refer to your VCR instruction manual to find out how to find the output channel of your VCR.

Connecting a VCR that supports SmartLink:

SmartLink is a direct link between the TV set and the VCR. For more information on SmartLink, please refer to the instruction manual of your VCR. If you use a VCR that supports SmartLink, please connect the VCR by using a scart lead to the SCART **F**.

If you have connected a decoder to the scart (E) or through a VCR connected to this scart:

Select the "Manual Programme Preset" option in the "Set Up" menu and after entering in the "Decoder" option, select "On" (by using **↔** or **↵**). Repeat this option for each scrambling signal.

**This option is only available depending on the country you have selected in the 'Language/Country' menu.

Using Optional Equipment

- 1 Connect your equipment to the designated TV socket, as indicated in the previous page.
- 2 Switch on the connected equipment.
- 3 To watch the picture of the connected equipment, press the **↵** button repeatedly until the correct input symbol appears on the screen.

Symbol	Input Signals
↵ 1	Audio / video input signal through the scart connector E .
↵ 2	RGB input signal through the scart connector E . This symbol appears only if a RGB source has been connected.
↵ 2	Audio / video input signal through the scart connector F .
↵ 2	S Video input signal through the scart connector F .
↵ 3	Video input signal through the phono socket B and audio input signal through C .
↵ 3	S Video input signal through the phono socket A and audio input signal through C .

- 4 Press the **↵** button on the remote control to return to the normal TV picture.

For Mono Equipment

Connect the phono plug to the L/G/S/I socket on the front of the TV and select **↵**3 input signal using the instructions above. Finally, refer to the "Sound Adjustment" section of this manual and select "Dual Sound" "A" on the sound menu screen.

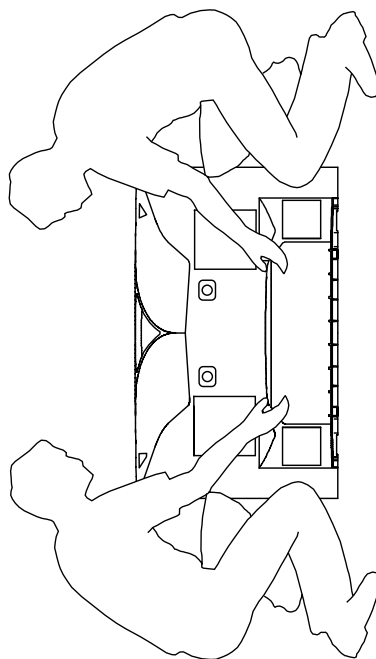
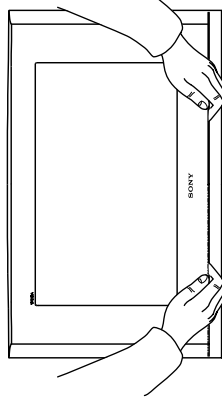
16 Additional Information

Lifting the TV Set

2-023-261-61



20233161



KV-28HX15U/32HX15U
<http://www.sony.net/>

Sony Corporation Printed in UK



Recyclable

Specifications


TV system:
Depending on your country selection:


Colour system:
PAL, SECAM
NTSC 3.58, 4.43 (only Video In)

Channel Coverage:
UHF: B21-B69





Picture Tube:
Flat Display FD Trinitron WIDE
28" (approx. 71 cm, measured diagonally)
32" (approx. 82 cm, measured diagonally)

Rear Terminals

 21-pin scart connector (CENELEC standard) including audio/video input, RGB input, TV audio/video output.

 2 (SMARTLINK)
21-pin scart connector (CENELEC standard) including audio/video input, S video input, selectable audio/video output and SmartLink interface.








Front Terminals

 3 S-video input – 4 pin DIN
 3 video input – phono jack
 3 audio input – phono jacks
 headphones jack

Design and specifications are subject to change without notice.

Troubleshooting

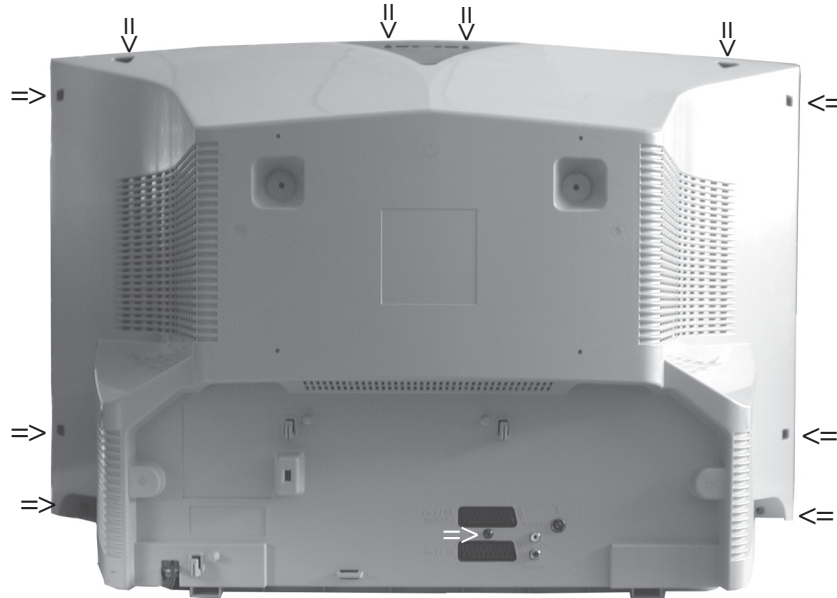
Here are some simple solutions to the problems which may affect the picture and sound.

Problem	Solution
No picture (screen is dark) and no sound.	<ul style="list-style-type: none"> Check the aerial connection. Plug the TV in and press the  button on the front of the TV. If the standby indicator  is on, press the  button on the remote control.
Poor or no picture (screen is dark), but good sound.	<ul style="list-style-type: none"> Using the menu system, select the "Picture Adjustment" menu and select "Reset" to return to the factory settings.
No picture or no menu information from equipment connected to the scart connector.	<ul style="list-style-type: none"> Check that the optional equipment is on and press the  button repeatedly on the remote control until the correct input symbol is displayed on the screen.
Good picture, no sound.	<ul style="list-style-type: none"> Press the  + button on the remote control. Check that the headphones are not connected.
No colour on colour programmes.	<ul style="list-style-type: none"> Using the menu system, select the "Picture Adjustment" menu and select "Reset" to return to factory settings.
Distorted picture when changing programmes or selecting teletext.	<ul style="list-style-type: none"> Turn off any equipment connected to the scart connector on the rear of the TV.
Wrong characters appear when viewing teletext.	<ul style="list-style-type: none"> Using the menu system, display the "Language/Country" menu and select the country in which you are operating the TV set. For cyrillic languages, we recommend selecting "Russia" if your own country does not appear in the list.
The TV picture is slanted	<ul style="list-style-type: none"> Using the menu system, select the "Picture Rotation" option in the "Detail Set Up" menu to correct the picture slant.
Noisy picture when viewing a TV channel.	<ul style="list-style-type: none"> Using the menu system, select the "Manual Programme Preset" menu and adjust Fine Tuning (AFT) to obtain a better picture reception. Using the menu system, select the "Noise Reduction" option in the "Detail Set Up" menu and select "Auto" to reduce the picture noise.
No unscrambled picture whilst viewing unscrambled channel with a decoder connected through the scart connector  .	<ul style="list-style-type: none"> Using the menu system, display the "Set Up" menu. Then select the "Detail Set Up" option and set "AV2 Output" to "TV".
Remote control does not function.	<ul style="list-style-type: none"> Replace the batteries.
The standby indicator  on the TV flashes.	<ul style="list-style-type: none"> Contact your nearest Sony service centre.

If you continue to experience problems, have your TV serviced by qualified personnel. Never open the casing yourself.

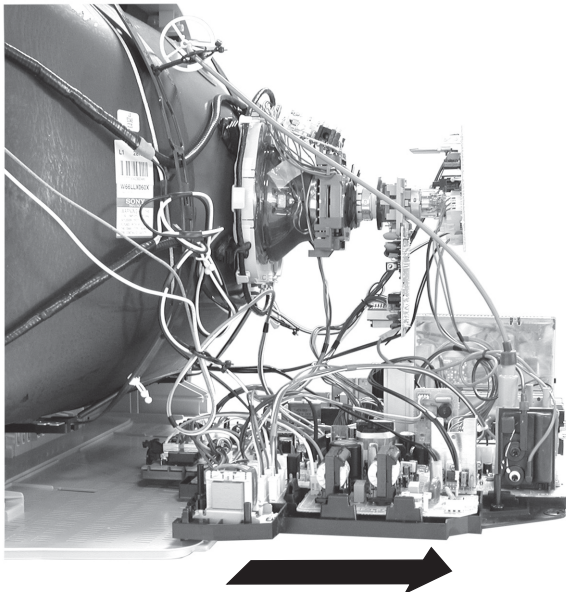
SECTION 2 DISASSEMBLY

2-1. Rear Cover Removal

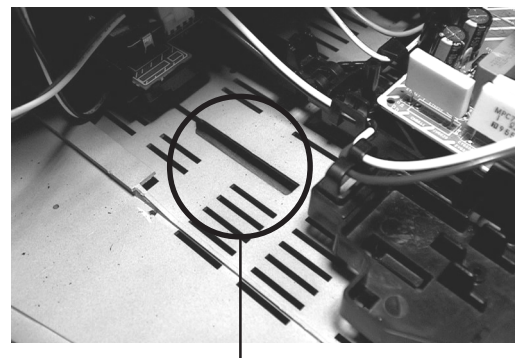


Remove the rear cover fixing screws indicated and withdraw the rear cover from the Beznet.

2-2. Chassis Removal and Refitting

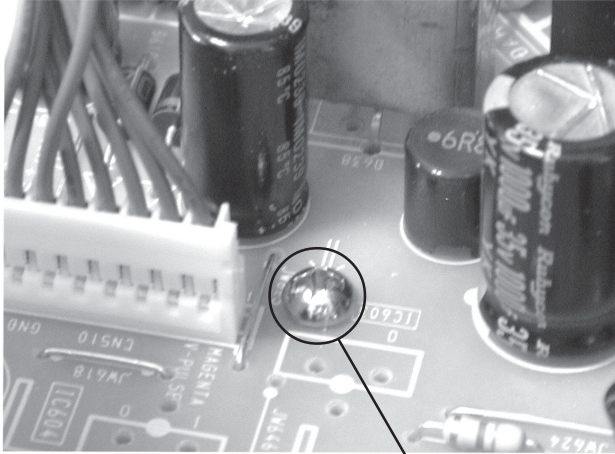


To remove lift the main bracket rear slightly and slide the chassis away from the beznet. Ensure that the interconnecting leads are released from their purse locks to prevent damage being caused.



When refitting the chassis ensure that the main bracket is located in the beznet guide slots before sliding the chassis forwards. Refit the interconnecting leads in their respective purse locks.

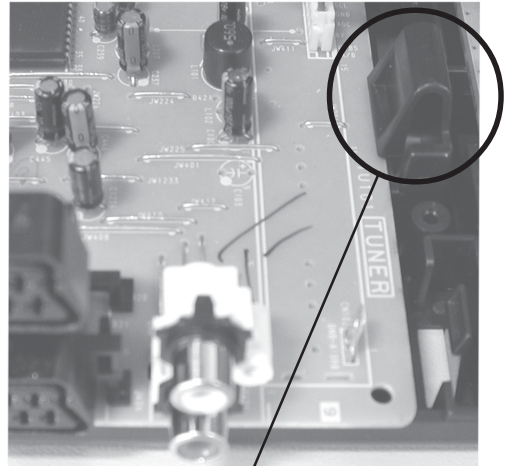
2-3. A Board Removal [Step 1]



Screw.

Remove the 3 screws securing the PWB to the main bracket. 1 can be seen in the photo above and the other 2 are either side of the FBT assembly.

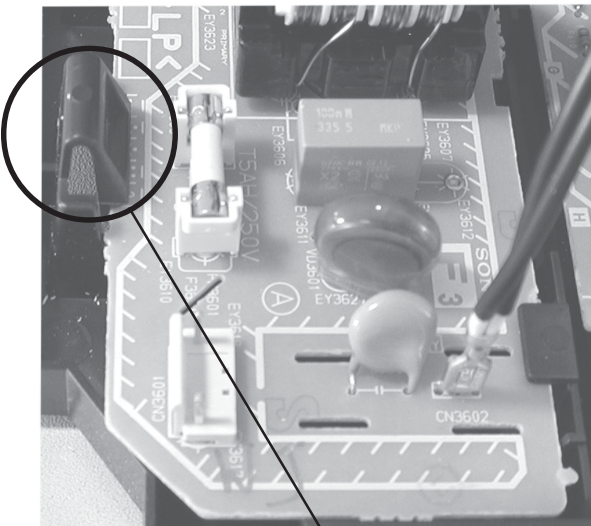
2-4. A Board Removal [Step 2]



Clip.

Release the 5 securing clips located around the side of the chassis and slide the PWB clear of the bracket.

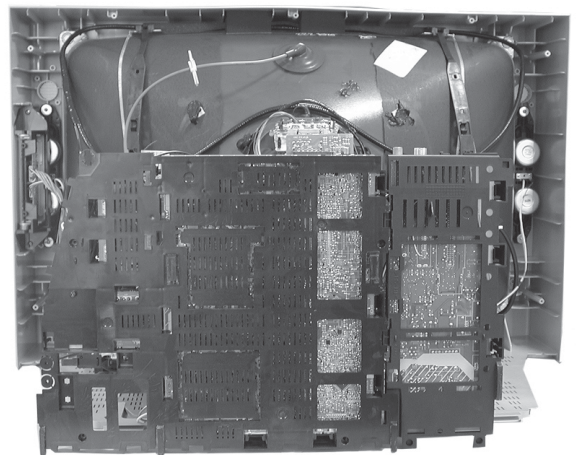
2-5. F3 Board Removal



Clip.

Release the 2 securing clips located along the side of the chassis and slide the PWB clear of the bracket.

2-6. Service Position

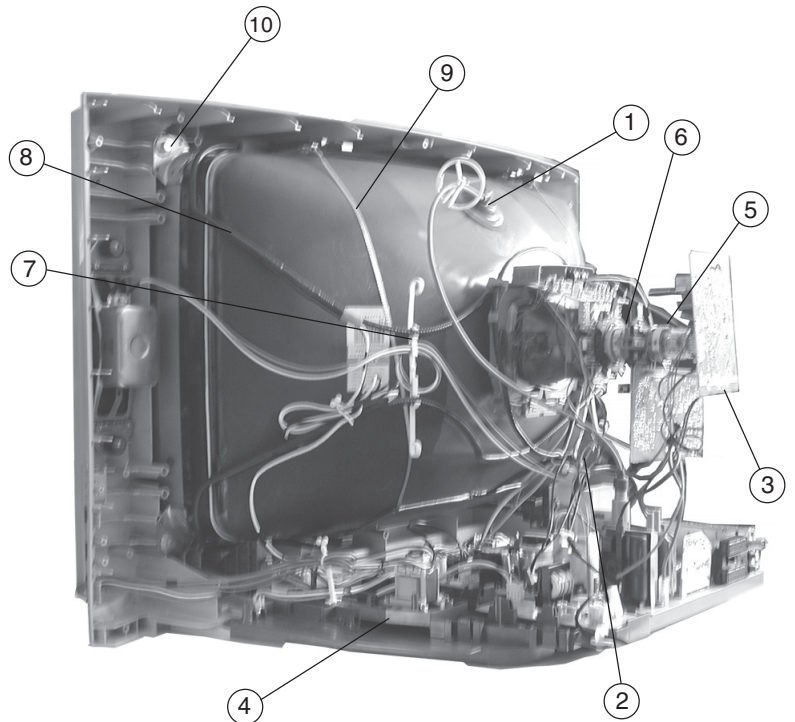
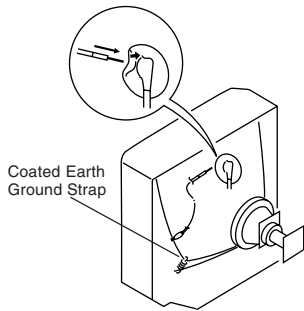


Position the chassis as indicated to access the solder side of the PWB's. To gain access to the A Board follow the instructions on page 16. [Removal and Replacement of the main bracket bottom plates].

2-7. Picture Tube Removal

WARNING: BEFORE REMOVING THE ANODE CAP

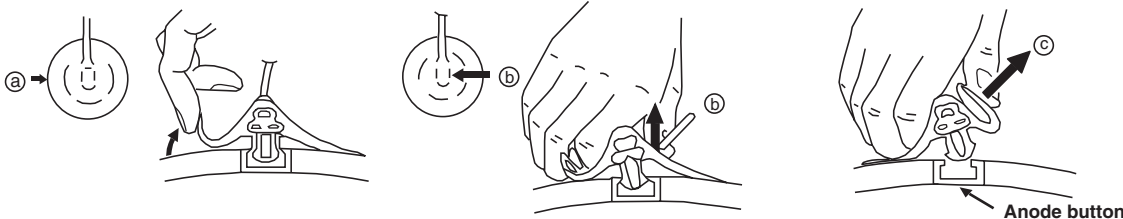
High voltage remains in the CRT even after the power is disconnected. To avoid electric shock, discharge CRT **before** attempting to remove the anode cap. Short between anode and CRT coated earth ground strap.



1. Discharge the anode of the CRT and remove the anode cap.
2. Unplug all interconnecting leads from the Deflection yoke, neck assy, degaussing coils and CRT grounding strap.
3. Remove the C Board from the CRT.
4. Remove the chassis assembly.
5. Loosen the Neck assembly fixing screw and remove.
6. Loosen the Deflection yoke fixing screw and remove.
7. Place the set with the CRT face down on a cushion and remove the Degaussing Coil holders.
8. Remove the Degaussing Coils.
9. Remove the CRT grounding strap and spring tensioners.
10. Unscrew the four CRT fixing screws [located on each CRT corner] and remove the CRT.
[Take care not to handle the CRT by the neck.]

Removal of the Anode-Cap

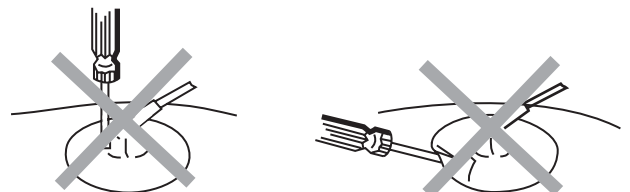
* REMOVING PROCEDURES.



- ① Turn up one side of the rubber cap in the direction indicated by the arrow (a)
- ② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow (b)
- ③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow (c)

How to handle the Anode-Cap

1. To prevent damaging the surface of the anode-cap do not use sharp materials.
2. Do not apply too great a pressure on the rubber, as this may cause damage to the anode connector.
3. A metal fitting called a shatter hook terminal is fitted inside the rubber cap.
4. Do not turn the rubber foot over excessively, this may cause damage if the shatter hook sticks out.



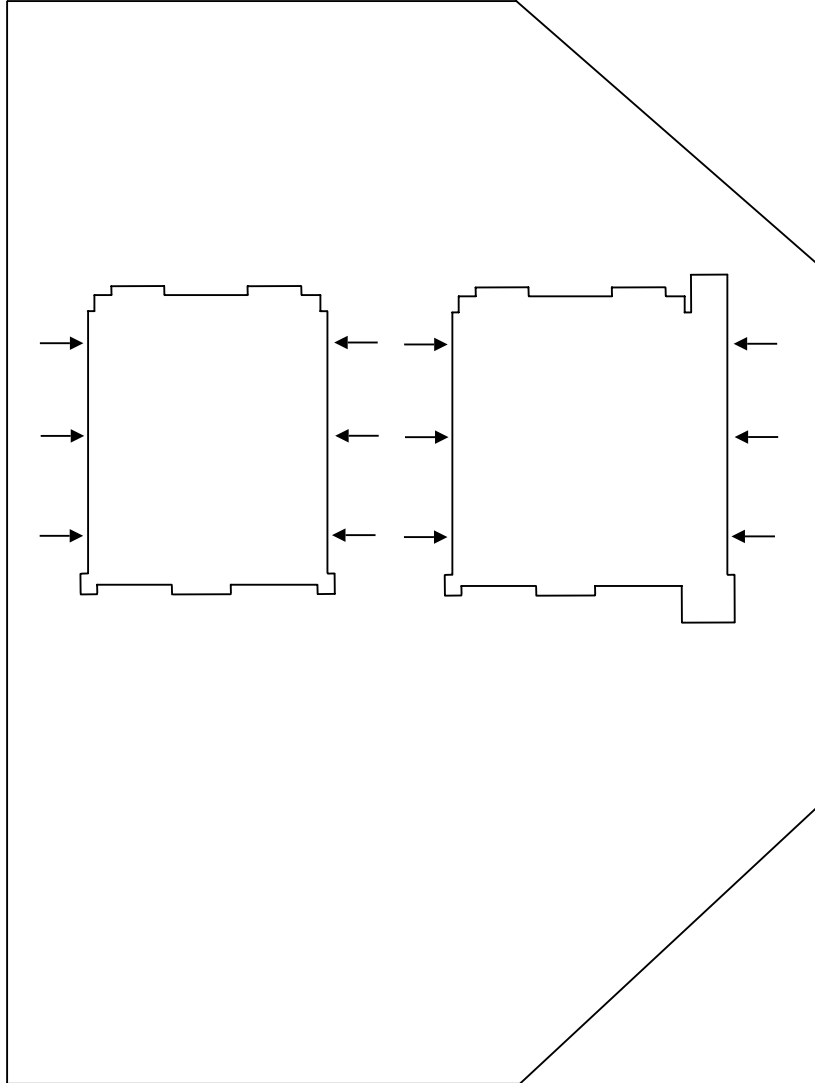
REMOVAL AND REPLACEMENT OF THE MAIN-BRACKET BOTTOM PLATES.

(1) REMOVING THE PLATES

In the event of servicing being required to the solder side of the A Board printed wiring board, the bottom plates fitted to the main chassis bracket require to be removed. This is performed by cutting the gates with a sharp wire cutter at the locations indicated by the arrows.

Note : There are 2 plates fitted to the main bracket.

Only remove the necessary plate to gain access to the printed wiring board.

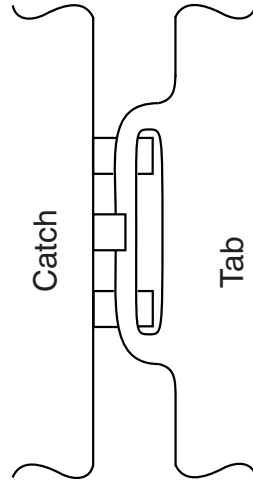


For safety reasons, on no account should the plates be re-moved and not refitted after servicing.

(2) REFITTING THE PLATES

Because the plates differ in size it is important that the correct plates are refitted in their original location.

Please note that the plates need to be rotated 180 degrees from their cut position to allow the tabs to be fitted into their catch positions.



SECTION 3 SET-UP ADJUSTMENTS

- When complete readjustment is necessary or a new picture tube is installed, carry out the following adjustments.
- Unless there are specific instructions to the contrary, carry out these adjustments with the rated power supply.
- Unless there are specific instructions to the contrary, set the controls and switches to the following settings :

Contrast 80% [or remote control normal]

Brightness 50%

Carry out the adjustments in the following order :

- 3-1. Beam Landing.
- 3-2. Convergence.
- 3-3. Focus.
- 3-4. White Balance.

Note : Test equipment required.

1. Color bar/pattern generator.
2. Degausser.
3. Oscilloscope.
4. Digital multimeter.

Preparation:

1. In order to reduce the influence of geomagnetism on the set's picture tube, face it in an easterly or westerly direction.
2. Switch on the set's power and degauss with the degausser.

3-1. Beam Landing

1. Input an all white signal from the pattern generator. Set the Contrast and Brightness to normal.
2. Set the pattern generator raster signal to Red.
3. Move the deflection yoke forward and adjust with the purity control so that the Red is at the centre and the Blue and Green take up equally sized areas on each side of the screen. [See Fig.3-1 - 3-3].
4. Move the deflection yoke backwards and adjust so that the entire screen becomes Red. [See Fig.3-1]
5. Switch the raster signal to Blue, then to Green and verify the condition.
6. When the position of the deflection yoke has been determined, fasten the deflection yoke with the screws.
7. If the beam does not land correctly in all the corners, use a magnet to correct it. [See Fig.3-4]

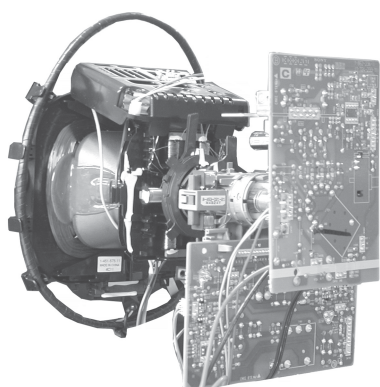


Fig. 3-1.

Caution :

High voltages are present on the Deflection yoke terminals - take care when handling the Deflection yoke whilst carrying out adjustments.

Fig. 3-2.

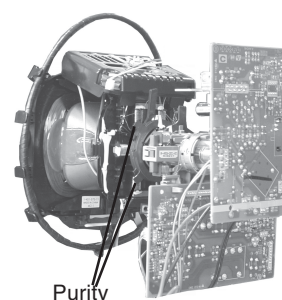


Fig. 3-3.

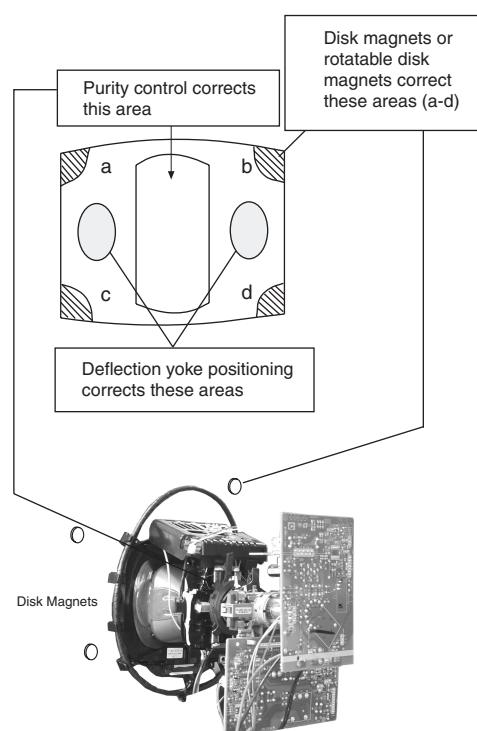
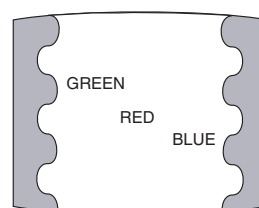


Fig.3-4

3-2. Convergence

Preparation:

- Before starting this adjustment, adjust the focus, horizontal size and vertical size.
- Minimize the Brightness setting.
- Input a dot pattern from the pattern generator.

Horizontal and Vertical Static Convergence

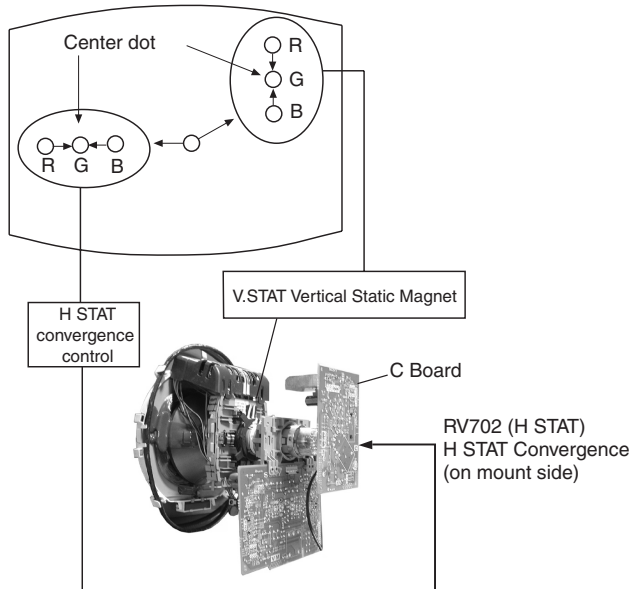
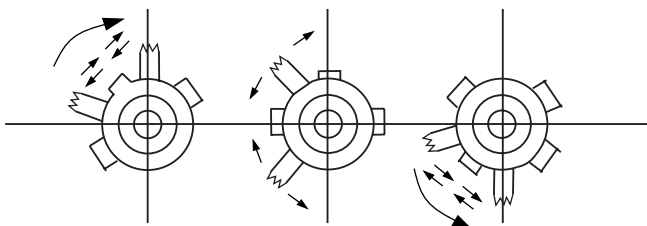


Fig.3-5

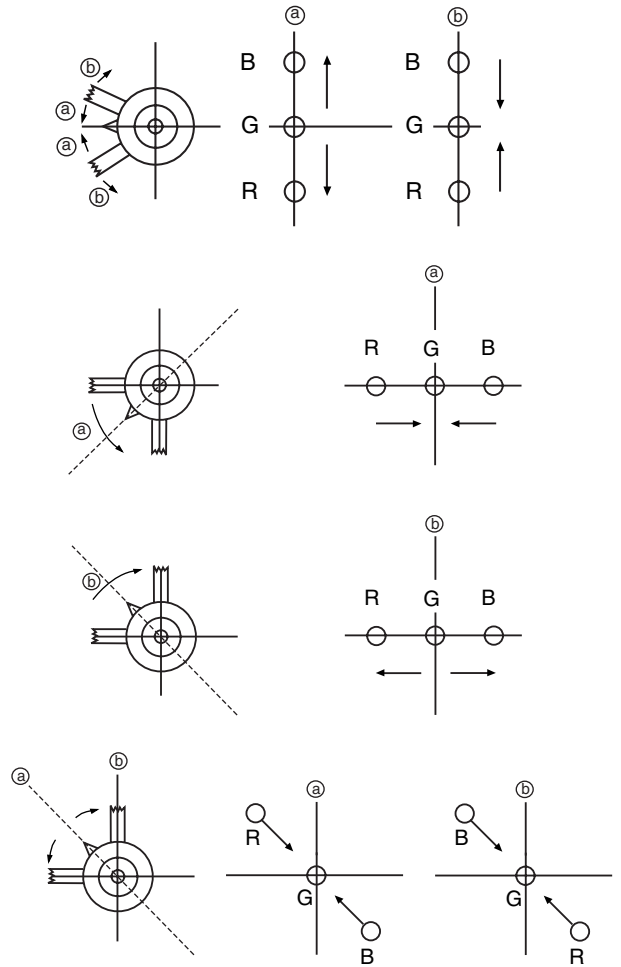
1. [Moving horizontally], adjust the H.STAT control so that the Red, Green and Blue points are on top of each other at the centre of the screen.
2. [Moving vertically], adjust the V.STAT magnet so that the Red, Green and Blue points are on top of each other at the centre of the screen.
3. If the H.STAT variable resistor is unable to bring the Red, Green and Blue points together at the centre of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V.STAT magnet in the manner indicated below.

[In this case, the H.STAT variable resistor and the V.STAT magnet influence each other].

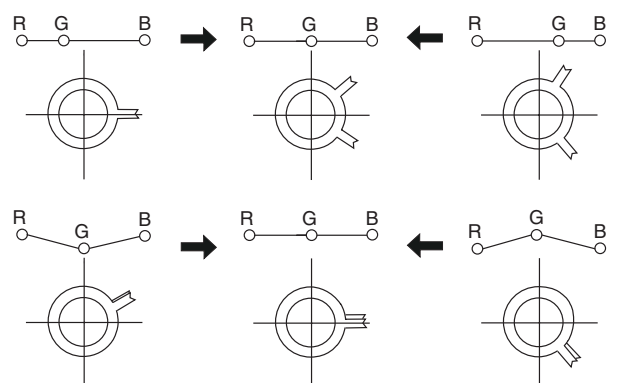
- Tilt the V.STAT magnet and adjust the static convergence by opening or closing the V.STAT magnet.



4. If the V.STAT magnet is moved in the direction of the (a) and (b) arrows, the Red, Green and Blue points move as indicated below.



Operation of the BMC (Hexapole) magnet.



The movement of the magnets interact with each other and so the respective dot position should be monitored while carrying out this adjustment.

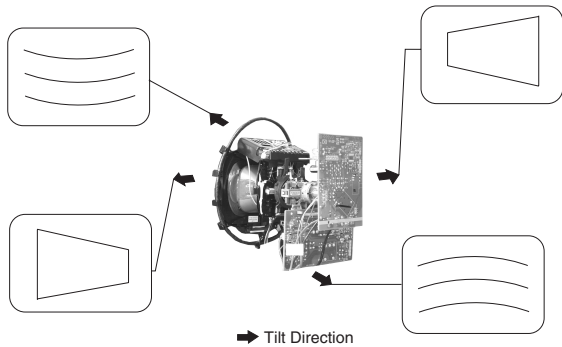
Use the H.STAT VR to adjust the Red, Green and Blue dots so that they coincide at the centre of the screen (by moving the dots in the horizontal direction).

Geometry Adjustment.

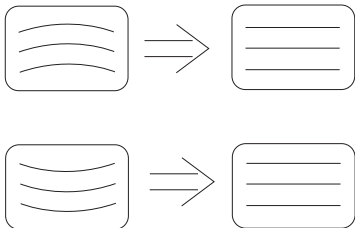
Preparation:

Before starting this adjustment, adjust the horizontal and vertical static convergence.

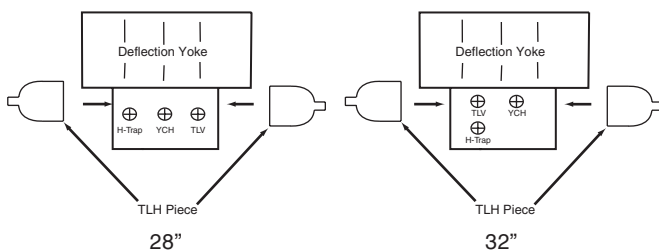
1. Remove the deflection yoke spacer.
2. Tilt the deflection yoke as indicated in the figure below and optimise the geometry.
Tilting the DY Up and Down a small amount will balance the upper and lower pin adjustment.
3. Re-install the deflection yoke spacers. Ensure 4 DY spacers are reinserted



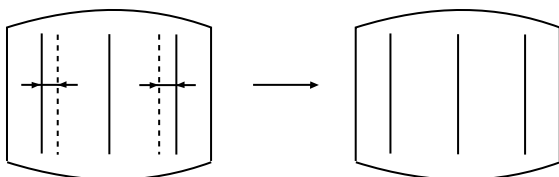
4. The H-Trap and T-B Pin may not achieve a good level due to a small tilt allowance on the square DY. Keep the DY in a straight position and adjust H-Trap pot (See diagram for HTIL Adjustment) and Y-Mg for T-B Pin, as below.



HTIL Adjustment

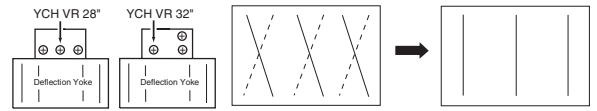


HTIL correction can be performed by adding **one** TLH correction assembly to the Deflection yoke.

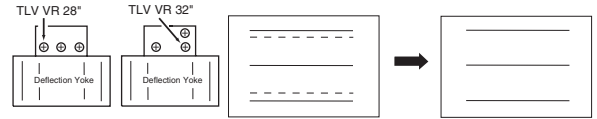


- APH Convergence parameter is electrically controlled. For this reason a TLH piece may not be required.
(APH = Red vertical lines on the edge of the screen).

YCH Adjustment

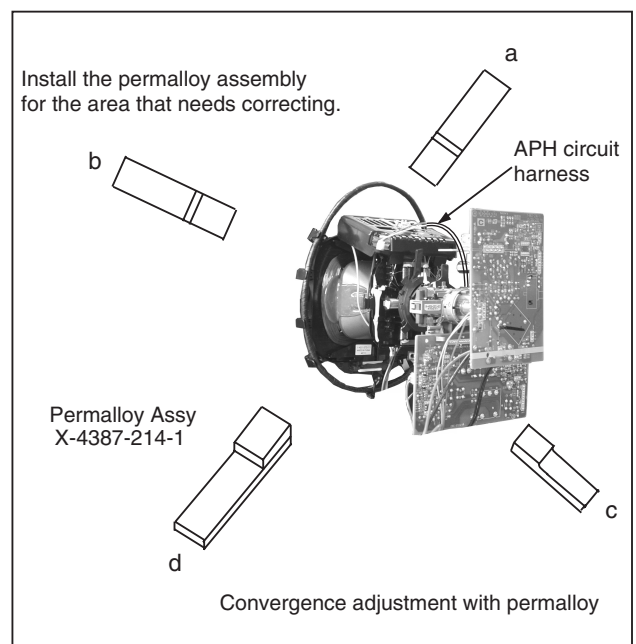
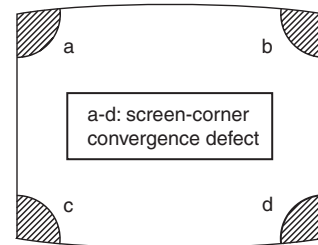


TLV Adjustment

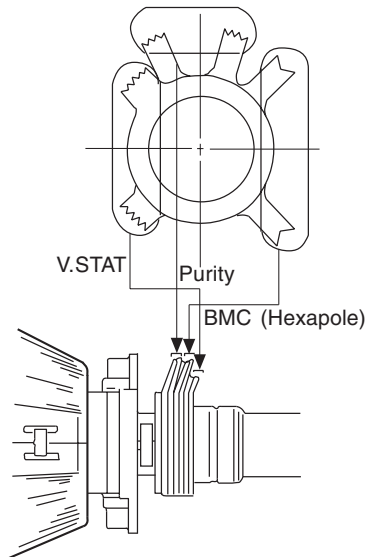


Screen Corner Convergence

If you are unable to adjust the corner convergence properly, this can be corrected with the use of permalloy magnets.

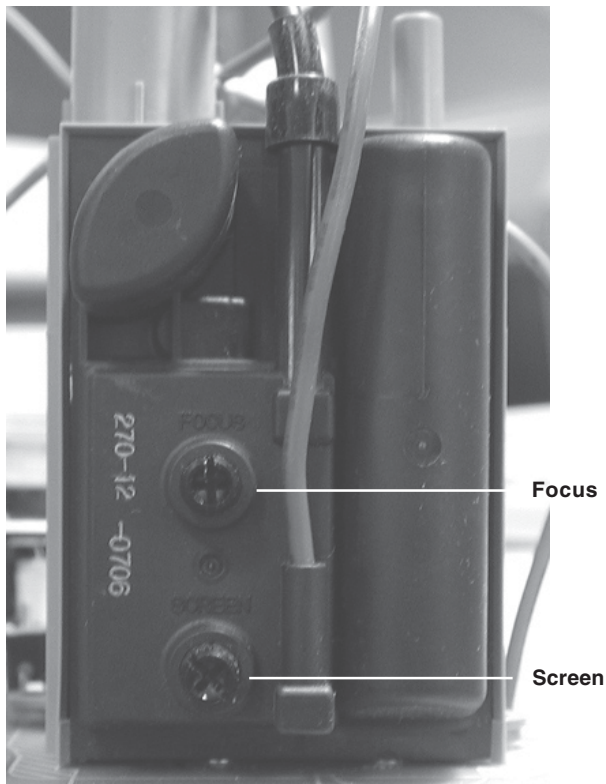


Layout of each control



3-3. Focus Adjustment

1. Receive a television broadcast signal.
2. Normalize the picture setting.
3. Adjust the focus control located on the flyback transformer to obtain the best focus at the centre of the screen.
Bring only the centre area of the screen into focus, the magenta-ring appears on the screen. In this case, adjust the focus to optimize the screen uniformly.



3-4. Screen (G2), White Balance

[Adjustment in the service mode using the remote commander]

G2 adjustment

1. Input a dot signal from the pattern generator.
2. Set the Picture, Brightness and Colour to minimum.
3. Apply 165V DC from an external power supply to the R, G and B cathodes of the CRT.
4. Whilst watching the picture, adjust the G2 control [SCREEN] located on the flyback transformer to the point just before the flyback return lines disappear.

White balance adjustment for TV mode

1. Input an all-white signal from the pattern generator.
2. Set the TV set or operation in Service Mode.
[See Page 21].
3. Select 'Service' from the on screen menu display and press 'Right Arrow'.
4. The 'Service' menu will appear on the screen.[See Page 21]
5. Set the 'Subcont' to MAX.
6. Set the 'R-Drive' to 50.
7. Adjust the 'G-Drive' and the 'B-Drive' so that the white balance becomes optimum.
8. Press the 'OK' button to write the data for each item.
9. Set the 'Subcont' to MIN.
10. Adjust the 'Cutoff Br.' with the left and right buttons on the remote commander so that the white balance becomes optimum.
11. Press the 'OK' button to write the data.

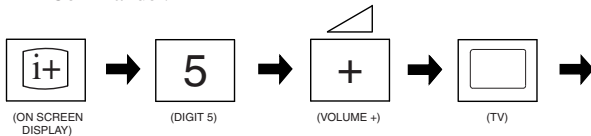
SECTION 4 CIRCUIT ADJUSTMENTS

4-1. Electrical Adjustments

Service adjustments to this model can be performed using the supplied remote Commander RM-947.

How to enter into the Service Mode

1. Turn on the main power switch and enter into the stand-by mode.
2. Press the following sequence of buttons on the Remote Commander.



'TT—' will appear in the upper right corner of the screen.
Other status information will also be displayed.

3. Press 'MENU' on the remote commander to obtain the following menu on the screen.

Geometry
Service
Design
Status
Sound
IF Adjust
Error menu
FE-2 Stereo v4.46
Factory data FFh FFh
MSP Device : MSP3411G

4. Move to the corresponding adjustment item using the up or down arrow buttons on the Remote Commander.
5. Press the right arrow button to enter into the required menu item.
6. Press the 'Menu' button on the Remote Commander to quit the Service Mode when all adjustments have been completed.

Note :

- After carrying out the service adjustments, to prevent the customer accessing the 'Service Menu' switch the TV set OFF and then ON.

ERROR MENU			
E02	OCP	(0, 255)	0
E03	OVP N/A	(0, 255)	0
E04	VSYNC	(0, 255)	0
E05	IKR	(0, 255)	0
E06	IIC	(0, 255)	0
E07	NVM	(0, 255)	0
E08	JUNGLE	(0, 255)	0
E09	TUNER	(0, 255)	0
E10	SOUNDP	(0, 255)	0
E11	8V	(0, 255)	0
WORKING TIME			
HOURS			7
MINUTES			22

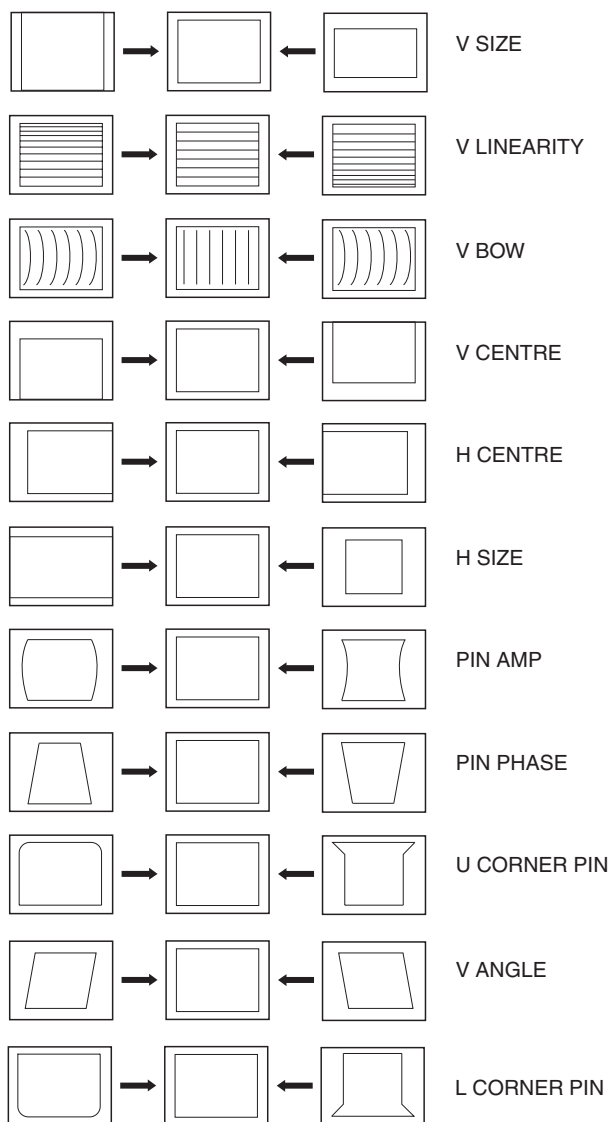
SERVICE		
Offset-R	(0, 63)	Adj
Offset-G	(0, 63)	Adj
R-Drive	(0, 63)	31
G-Drive	(0, 63)	Adj
B-Drive	(0, 63)	Adj
Peak-Freq	(0, 3)	0
Luma-Delay	(0, 15)	8
SC0	(0, 3)	3
White-Peak	(0, 15)	15
Subcont	(0, 15)	8
Subright	(0, 63)	30
Subcol	(0, 63)	Adj
Subsharp	(0, 63)	25
Cutoff Br.	(0, 63)	31
Br OSD	(0, 15)	10
Br TXT	(0, 15)	7

GEOMETRY		
V-Linearity	(0, 63)	Adj
V-Scroll	(0, 63)	32
Left-HBlk	(0, 15)	10
Right-HBlk	(0, 15)	7
V-Angle	(0, 63)	Adj
V-Bow	(0, 63)	Adj
H-Centre	(0, 63)	Adj
H-Size	(0, 63)	Adj
Pin-Amp	(0, 63)	Adj
U-Corner-Pin	(0, 63)	Adj
L-Corner-Pin	(0, 63)	Adj
Pin Phase	(0, 63)	Adj
V-Slope	(0, 63)	40
V-Size	(0, 63)	Adj
S-Correction	(0, 63)	Adj
V-Centre	(0, 63)	Adj
V-Zoom	(0, 63)	27
Magenta	(0, 63)	31

IF ADJUST		
AGC Adjust	(-16, +15)	+0
Automute		1
Audio Gain		0
L Gating		0

Deflection System Adjustment

1. Set the TV set or operation in Service Mode [See Page 21] and enter into the 'Geometry' service menu.
2. Select and adjust each item in order to obtain the optimum image.



GEOMETRY

V-Linearity	(0, 63)	Adj
V-Scroll	(0, 63)	32
Left-HBlk	(0, 15)	10
Right-HBlk	(0, 15)	7
V-Angle	(0, 63)	Adj
V-Bow	(0, 63)	Adj
H-Centre	(0, 63)	Adj
H-Size	(0, 63)	Adj
Pin-Amp	(0, 63)	Adj
U-Corner-Pin	(0, 63)	Adj
L-Corner-Pin	(0, 63)	Adj
Pin Phase	(0, 63)	Adj
V-Slope	(0, 63)	40
V-Size	(0, 63)	Adj
S-Correction	(0, 63)	Adj
V-Centre	(0, 63)	Adj
V-Zoom	(0, 63)	27
Magenta	(0, 63)	31

Sub Brightness Adjustment

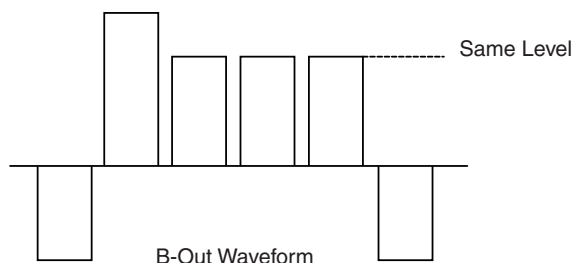
1. Input a Monoscope pattern.
2. Set the TV set or operation in Service Mode. [See Page 21].
3. Select 'Service' from the on screen menu display and press 'Right Arrow'.
4. The 'Service' menu will appear on the screen. [See Page 21].
5. Adjust the 'Sub-Brightness' data so that there is barely a difference between the 0 IRE and 10 IRE signal levels.

Sub Contrast Adjustment

1. Input a video signal that contains a small 100% white area on a black background.
2. Connect an digital voltmeter to Pin 10 of J701 [C Board].
3. Set the TV set or operation in Service Mode. [See Page 21].
4. Select 'Service' from the on screen menu display and press 'Right Arrow'.
5. The 'Service' menu will appear on the screen.[See Page 21]
6. Adjust the Sub-Contrast to obtain a voltage of 105 +/- 5V.

Sub Colour Adjustment

1. Receive a PAL colour bar signal.
2. Connect an oscilloscope to Pin 5 of CN003 [A Board].
3. Set the TV set for operation in Service Mode. [See Page 21].
4. Select 'Service' from the on screen menu display and press 'Right Arrow'.
5. The 'Service' menu will appear on the screen.[See Page 21]
6. Adjust the 'Sub Colour' so that the Cyan, Magenta and Blue colour bars are of equal levels as indicated below.

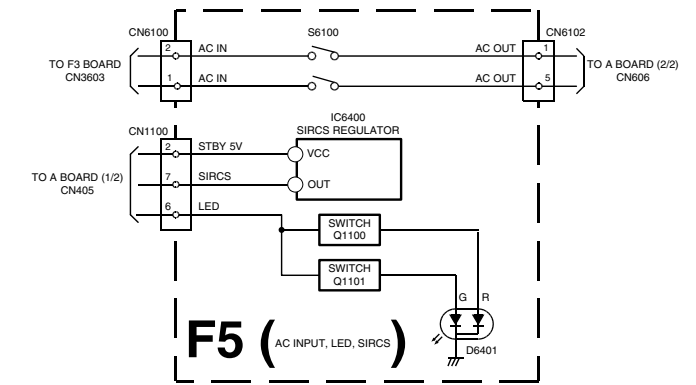
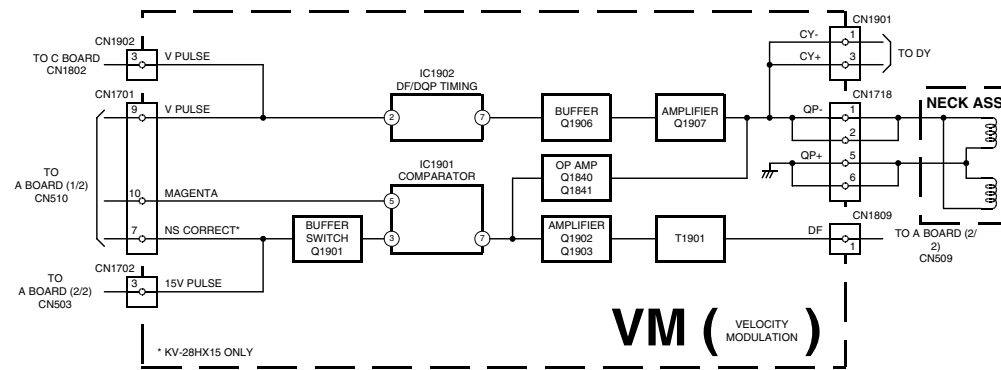
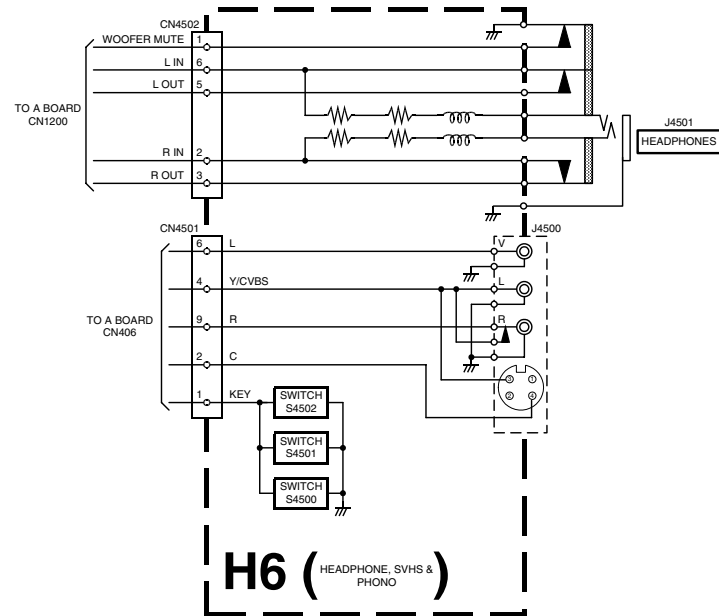
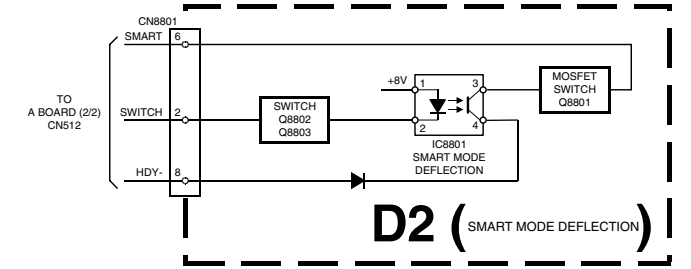
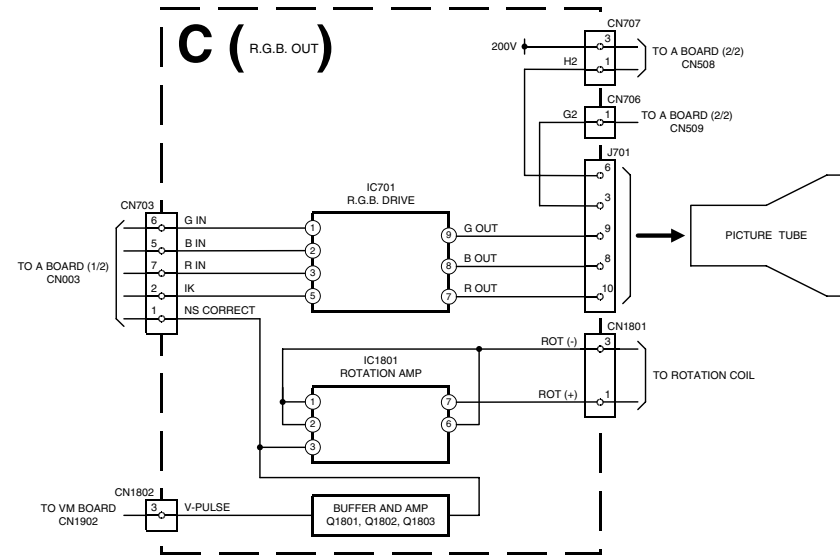
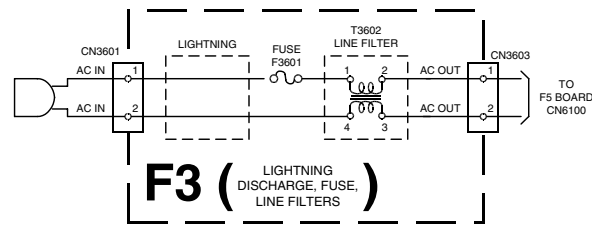


4-2. TEST MODE 2:

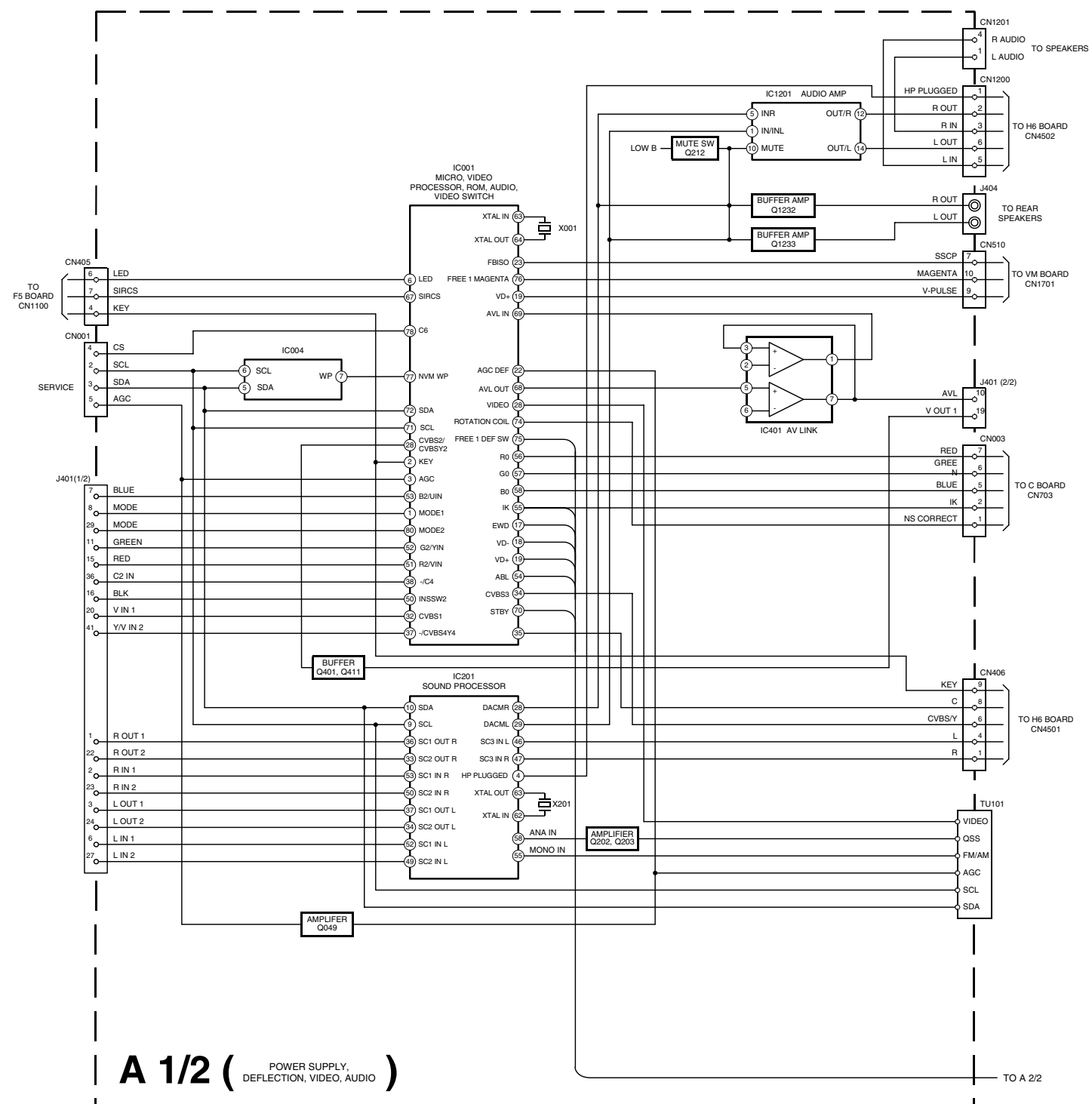
Test Mode 2 is available by programming the TV set for operation in Service Mode [As shown on Page 21], OSD 'TT' appears. The functions described below are available by selecting the two numbers. To release the 'Test mode 2', press 00, 10, 20 ... twice or switch the TV set into Stand-by mode. In 'TT Menu' mode, it is possible to remove the Menu from the screen by pressing the Speaker OFF button once. Pressing the Speaker OFF button a second time will cause the Menu to reappear. The function is kept even when the menu is not displayed on screen.

00	'TT' mode off
01	Picture maximum
02	Picture minimum
03	Set speaker/headphone Volume to 35%
04	Set speaker/headphone Volume to 50%
05	Set speaker/headphone Volume to 65%
06	Set speaker/headphone Volume to 80%
07	Ageing mode
08	Shipping Condition
11	Sub picture adjustment
12	Sub colour adjustment
13	Sub Brightness adjustment
14	Text H Position adjustment
15	Rotation Coil Test
16	Picture level 50%
19	Factory Mode Enable/Disable
21	Destination ADEKR
22	Destination BL
23	Destination ADEKR
24	Destination U
25	Destination ADEKR
26	Destination BL
27	Destination ADEKR
28	Destination ADEKR
31	Auto Shutoff Enable/Disable
36	Velocity Modulation (VM) OFF/ON test
41	Re-initialise NVM
43	Select Dual A sound
44	Select Dual B sound
45	Select Mono sound
46	Select Stereo sound
48	Set NVM as non virgin
49	Set NVM as virgin
53	FM Overmodulation Enable/Disable
55	Tuner selection (SONY/ALPS)
59	Select Model 3 Scarts + PIP or 2 Scarts
68	Enable/Disable X26 countermeasure (N problem)
73	Enable Zweiton D/K2 system (6.5/6.74)
74	Enable Zweiton D/K3 system (6.5/5.74)
78	Balance full right
79	Balance full left
87	Local keys test
99	Display Error and Working Time menu

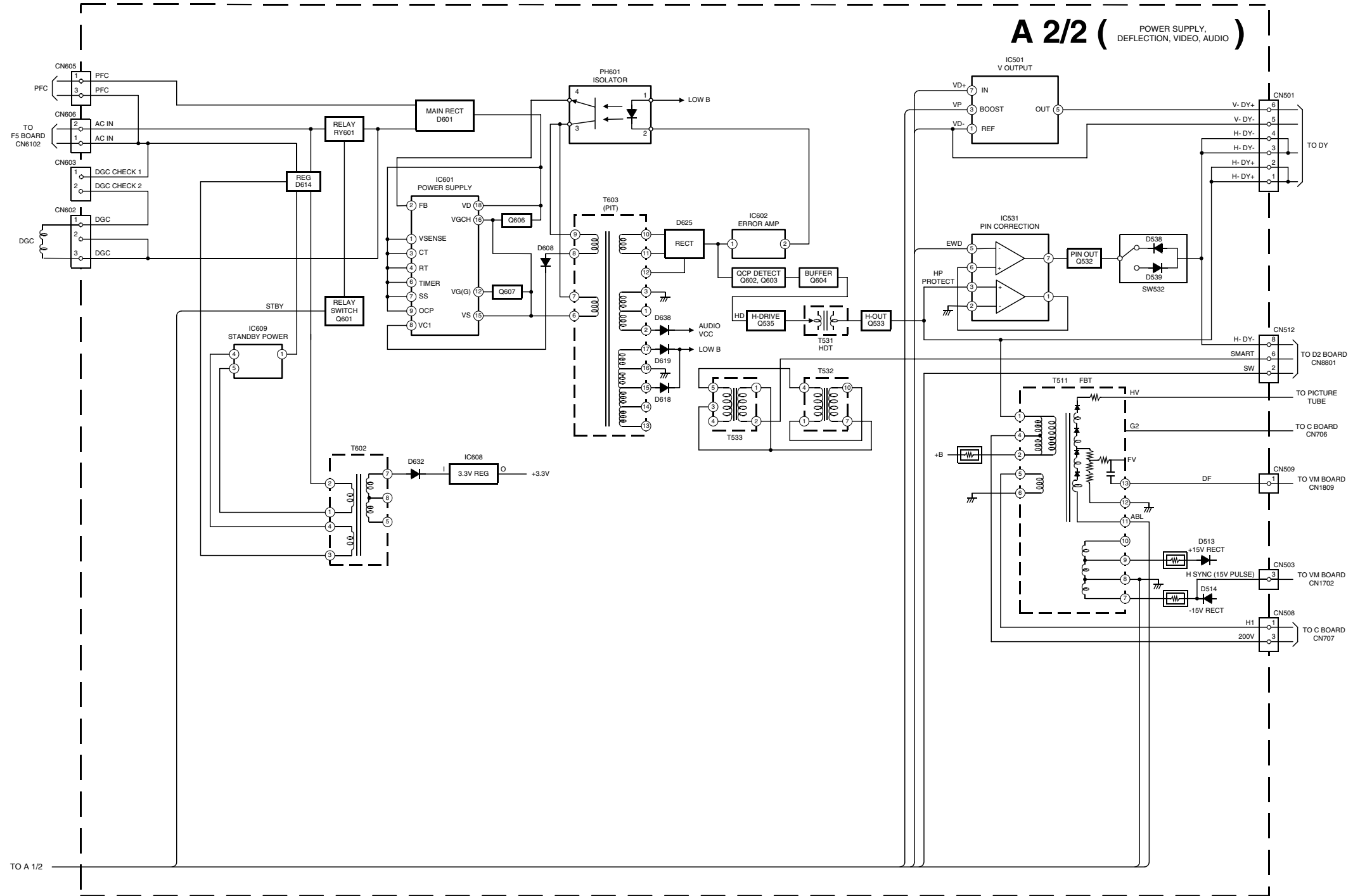
5-1. BLOCK DIAGRAMS (1)



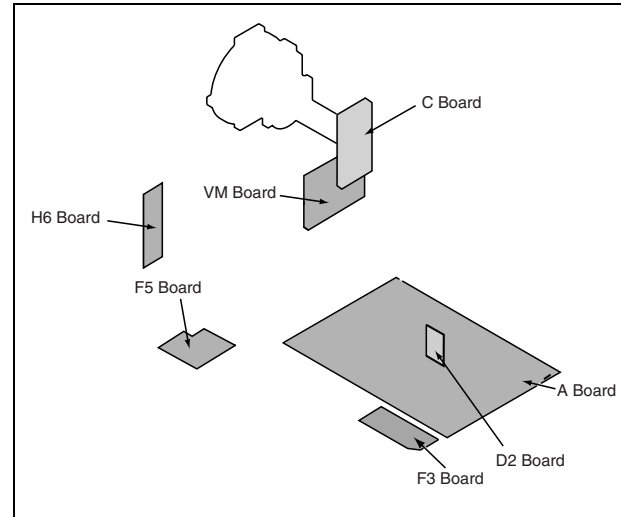
5-1. BLOCK DIAGRAMS (2)



5-1. BLOCK DIAGRAMS (3)



5-2. CIRCUIT BOARD LOCATION



5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note :

- All capacitors are in μF unless otherwise noted.
- pF : μF 50WV or less are not indicated except for electrolytic types.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch : 5mm
Electrical power rating : 1/4W

- Chip resistors are 1/10W
- All resistors are in ohms.
k = 1000 ohms, M = 1000,000 ohms
- : nonflammable resistor.
- : fusible resistor.
- : internal component.
- : panel designation or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- All voltages are in Volts.
- Readings are taken with a 10Mohm digital multimeter.
- Readings are taken with a color bar input signal.
- Voltage variations may be noted due to normal production tolerances.
- : B + bus.
- : B - bus.
- : RF signal path.
- : earth - ground.
- : earth - chassis.

Reference Information

RESISTOR	RN	:	METAL FILM
	RC	:	SOLID
	FPRD	:	NON FLAMMABLE CARBON
	FUSE	:	NON FLAMMABLE FUSIBLE
	RS	:	NON FLAMMABLE METAL OXIDE
	RB	:	NON FLAMMABLE CEMENT
	RW	:	NON FLAMMABLE WIREWOUND
		:	ADJUSTMENT RESISTOR
COIL	LF-8L	:	MICRO INDUCTOR
CAPACITOR	TA	:	TANTALUM
	PS	:	STYROL
	PP	:	POLYPROPYLENE
	PT	:	MYLAR
	MPS	:	METALIZED POLYESTER
	MPP	:	METALIZED POLYPROPYLENE
	ALB	:	BIPOLAR
	ALT	:	HIGH TEMPERATURE
	ALR	:	HIGH RIPPLE

Note : The components identified by shading and marked Δ are critical for safety. Replace only with the part numbers specified in the parts list.

Note : Les composants identifiés par une trame et par une marque Δ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

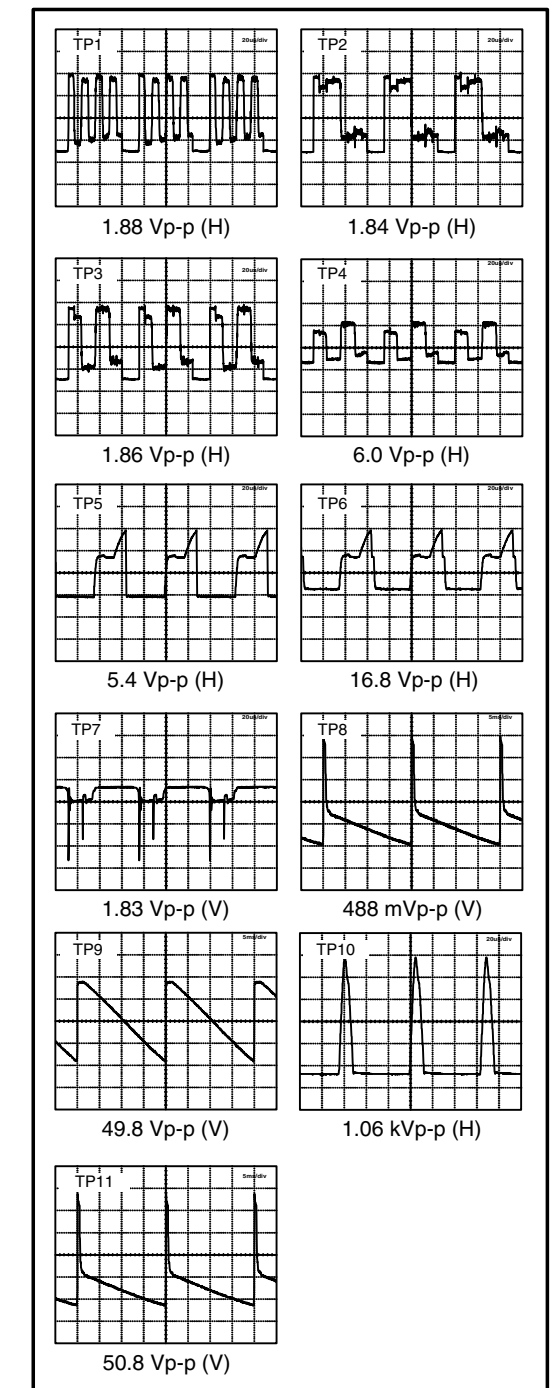
~ A Board IC Voltage Table ~

Ref No	Pin No	Voltage (V)	Ref No	Pin No	Voltage (V)
IC001	1	0	IC001	67	4.8
	2	3.2		68	0.4
	3	2.9		69	0
	5	0		70	0
	6	2.0		71	0
	8	2.3		72	0
	9	8.0		73	7.1
	10	5.0		74	5.0
	12	0		75	8.1
	13	0		76	-3.5
	14	4.0		77	0
	16	1.4		78	3.2
	17	1.5		79	3.2
	18	0		80	0
	19	0		1	0.3
	20	3.8		3	-12.6
	21	3.8		5	0.2
	22	5.0		6	13.9
26	0	7	0.3		
28	3.5	1	1.4		
29	3.6	2	2.3		
30	1.9	3	1.8		
31	0.3	5	2.4		
32	3.6	6	1.6		
34	1.9	7	6.4		
35	1.4	1	-80.4		
36	3.9	2	-80.5		
38	1.8	3	-80.2		
40	3.3	4	-80.2		
42	3.3	5	-81.5		
43	1.4	6	-81.6		
45	0	7	-77.8		
46	0	9	-81.8		
47	3.6	10	-76		
48	2.8	11	-81.9		
49	2.3	12	-79.4		
50	0.2	14	16.5		
51	2.5	15	11		
52	2.5	16	14.4		
53	2.5	18	86.4		
54	2.1	1	11		
55	5.2	3	4.9		
56	3.0	5	0		
57	3.1	6	0		
58	3.1	7	11.3		
59	3.2	9	0.3		
62	0	10	0		
63	0	12	0		
64	0	14	11.35		
65	0				

~ A Board Difference Table 1 ~

Ref	KV-28HX15	KV-32HX15
C508	0.047UF 50V	NOT FITTED
C542	0.001UF 10% 2KV	680PF 10% 2KV
C555	17000PF 3% 1.2KV	18000PF 3% 1.2KV
C570	2.2UF 20% 50V	NOT FITTED
C582	150PF 5% 50V	47PF 5% 50V
CLP000-1	NOT FITTED	PIN (45) WIRE
CN503	NOT FITTED	PLUG 3P
D535	EU-2	GP08D
D538	EU-2	GP08D
D625	FBIU4D7M1-B-4	D4SBL20UF1
L405	NOT FITTED	LEAD, JUMPER 5MM
L406	NOT FITTED	LEAD, JUMPER 5MM
L504	NOT FITTED	LEAD, JUMPER 5MM
Q570	2SC2412K-T-146-R	NOT FITTED
JR101	NOT FITTED	SHORT CHIP 0
R022	47K 5% 1/10W	39K 0.5% 1/10W
R034	1M 5% 1/10W	2.2M 5% 1/10W
R053	15K 5% 1/10W	82K 5% 1/10W
R455	SHORT CHIP 0	4.7UH
R505	6.8K 0.5% 1/10W	8.2K 0.5% 1/10W
R508	8.2K 0.5% 1/10W	10K 0.5% 1/10W
R513	220K 5% 1/10W	1M 5% 1/10W
R516	56K 1% 1/2W	47K 1% 1/2W
R517	18K 1% 1/4W	27K 1% 1/4W
R518	2.7K 5% 1/10W	6.8K 5% 1/10W
R521	220K 5% 1/10W	1M 5% 1/10W
R532	8.2K 5% 1/10W	4.7K 5% 1/10W
R534	100K 5% 1/10W	1M 5% 1/10W
R535	560K 5% 1/10W	390K 5% 1/10W
R538	100 5% 3W	200 5% 3W
R539	NOT FITTED	LEAD, JUMPER 17.5MM
R541	SHORT CHIP 0	NOT FITTED
R542	1M 5% 1/10W	NOT FITTED
R547	NOT FITTED	LEAD, JUMPER 7.5MM
R548	3.3 5% 1/4W	NOT FITTED
R549	NOT FITTED	LEAD, JUMPER 7.5MM
R561	680K 5% 1/10W	NOT FITTED
R562	39K 0.5% 1/10W	NOT FITTED
R569	10K 5% 1/10W	NOT FITTED
R570	1K 5% 1/10W	NOT FITTED
R571	270 5% 1/10W	NOT FITTED
R572	390 5% 1/10W	NOT FITTED
R600	390 0.5% 1/10W	120 0.5% 1/10W
R601	470 0.5% 1/10W	680 0.5% 1/10W
R1239	NOT FITTED	220 5% 3W

~ A Board Waveforms ~



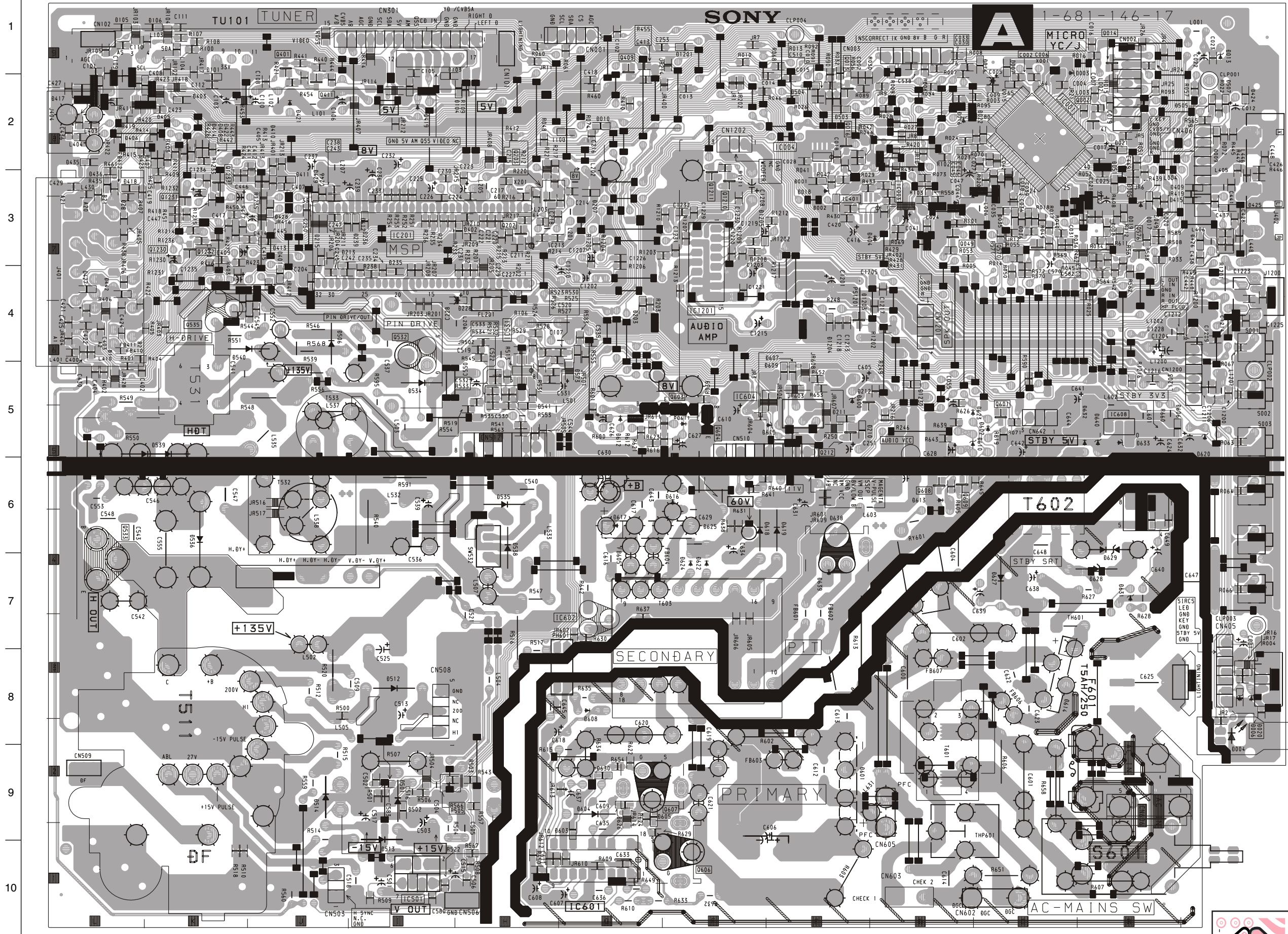
~ A Board Difference Table 2 ~

Ref	KV-28HX15B	KV-28HX15E	KV-28HX15U
TU101	1-693-555-14 FRONTEND (TUNER+IF)	1-693-556-14 FRONTEND (TUNER+IF)	1-693-557-14 FRONTEND (TUNER+IF)

~ A Board Semiconductor Voltage Table ~

Ref	(e)	(b)	(c)	Ref	(e)	(b)	(c)
Q013	0	0.7	0	Q604	0	0	2.5
Q016	0	0	3.3	Q608	0	0	5.6
Q212	0	0.7	0	Q609	5.6	5.6	0
Q401	4.8	4.2	1.8				
Q411	1.1	1.7	4.2	Ref	(s)	(g)	(d)
Q601	5.6	4.8	5.3	Q606	10.9	14.5	86.7
Q602	14.2	5.1	8	Q607	-82.4	-79.9	10.9
Q603	8	8	0	Q535	0	2.5	95.2

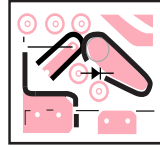
A B C D E F G H I J K L M N

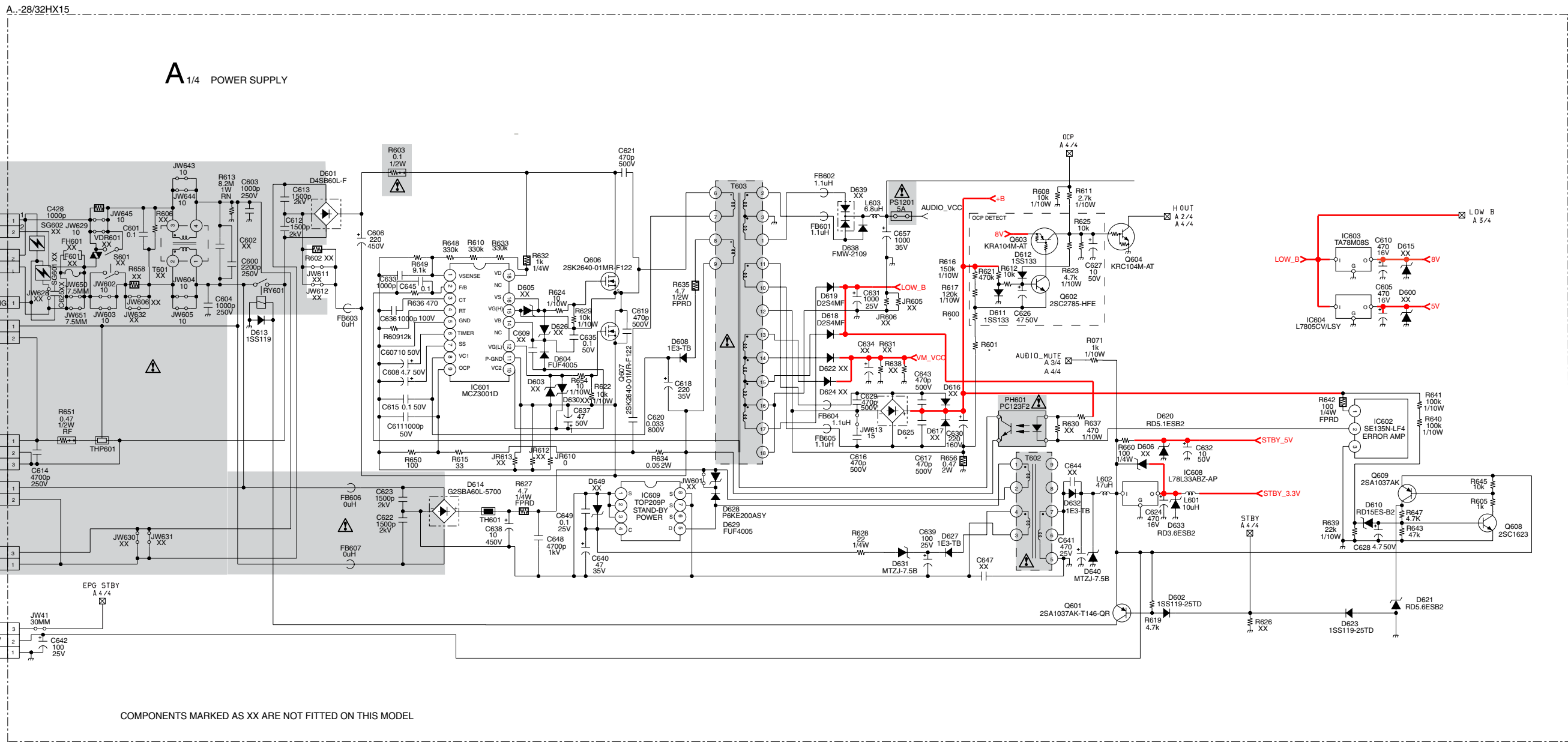


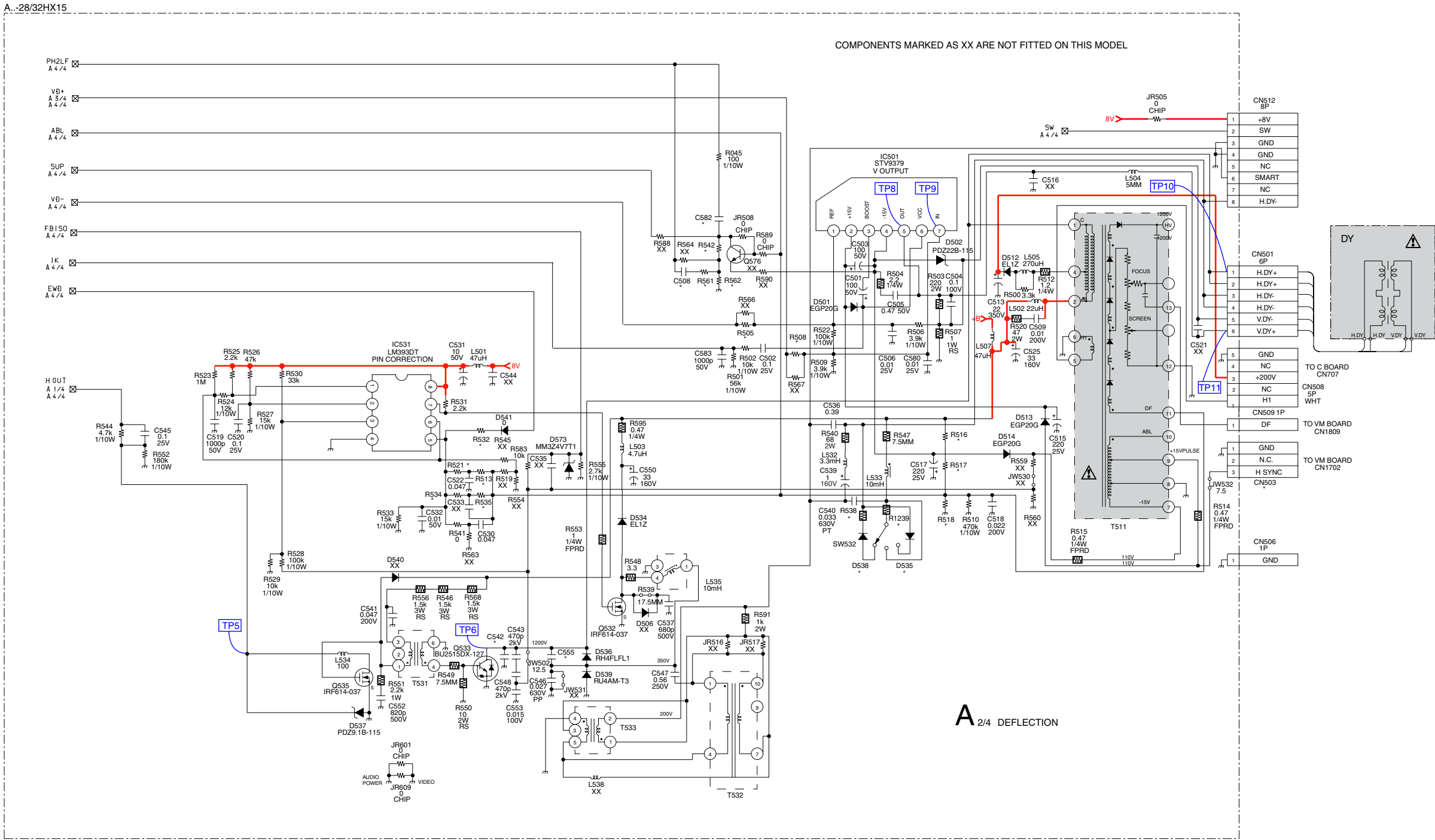
~ A Board Semiconductor Location Table ~

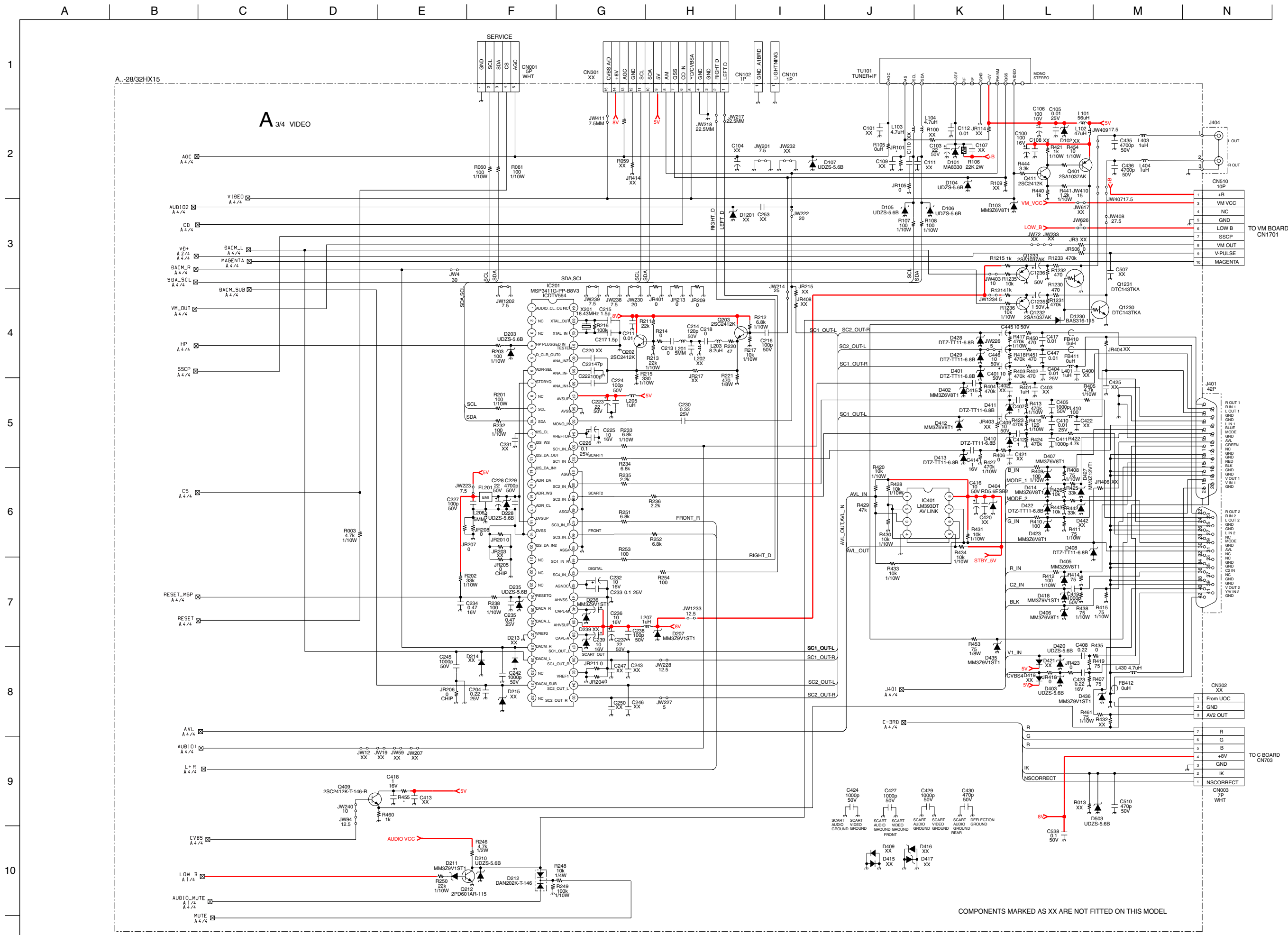
DIODE		TRANSISTOR			
D001	I-2	D421	C-2	D631	L-7
D002	I-3	D422	C-2	D632	K-5
D003	K-2	D423	C-2	D633	L-5
D004	M-4	D424	M-2	D638	I-6
D006	M-8	D427	A-4	D640	L-5
D007	K-1	D428	C-3	TRANSISTOR	
D008	L-3	D429	D-3	Q013	I-3
D010	G-2	D435	A-2	Q014	L-1
D011	F-2	D436	A-2	Q049	J-3
D013	M-1	D501	D-9	Q202	E-3
D016	J-2	D502	D-9	Q203	F-2
D018	I-3	D503	I-2	Q212	I-5
D020	M-8	D504	I-2	Q401	C-1
D021	L-2	D505	M-2	Q409	G-1
D022	J-2	D506	D-4	Q411	D-2
D035	K-3	D507	M-2	Q532	D-4
D036	K-3	D512	D-8	Q533	A-6
D051	L-3	D513	D-9	Q535	B-4
D101	B-1	D514	C-9	Q601	K-5
D103	E-1	D534	E-5	Q602	G-5
D104	E-2	D535	E-6	Q603	G-5
D105	A-1	D536	B-6	Q604	H-5
D106	B-1	D537	C-4	Q606	G-10
D107	B-2	D538	E-6	Q607	G-9
D207	F-3	D539	B-5	Q608	J-6
D210	I-5	D541	F-5	Q609	J-6
D211	I-5	D542	F-5	Q1210	H-3
D212	I-5	D573	F-5	Q1211	H-3
D228	E-4	D601	I-9	Q1230	B-3
D236	D-3	D602	J-5	Q1231	B-3
D239	D-3	D608	F-8	Q1232	B-3
D402	E-3	D610	J-5	Q1233	C-2
D403	B-2	D611	G-5	IC'S	
D404	I-3	D612	G-5	IC001	K-2
D405	B-2	D613	J-6	IC002	M-8
D406	B-2	D614	K-8	IC004	H-2
D407	B-2	D615	H-5	IC401	I-3
D408	B-2	D616	H-6	IC501	E-10
D410	C-2	D618	H-6	IC531	F-4
D411	C-3	D619	H-6	IC601	F-10
D412	D-3	D620	M-5	IC602	F-7
D413	C-3	D621	J-5	IC604	H-5
D414	B-2	D622	H-7	IC608	L-5
D418	B-3	D623	J-5	IC609	L-6
D419	E-2	D625	H-6	IC201	H-4
D420	B-2	D627	K-7		
		D628	L-7		
		D629	L-7		

~ A Printed Wiring Board Conductor side ~

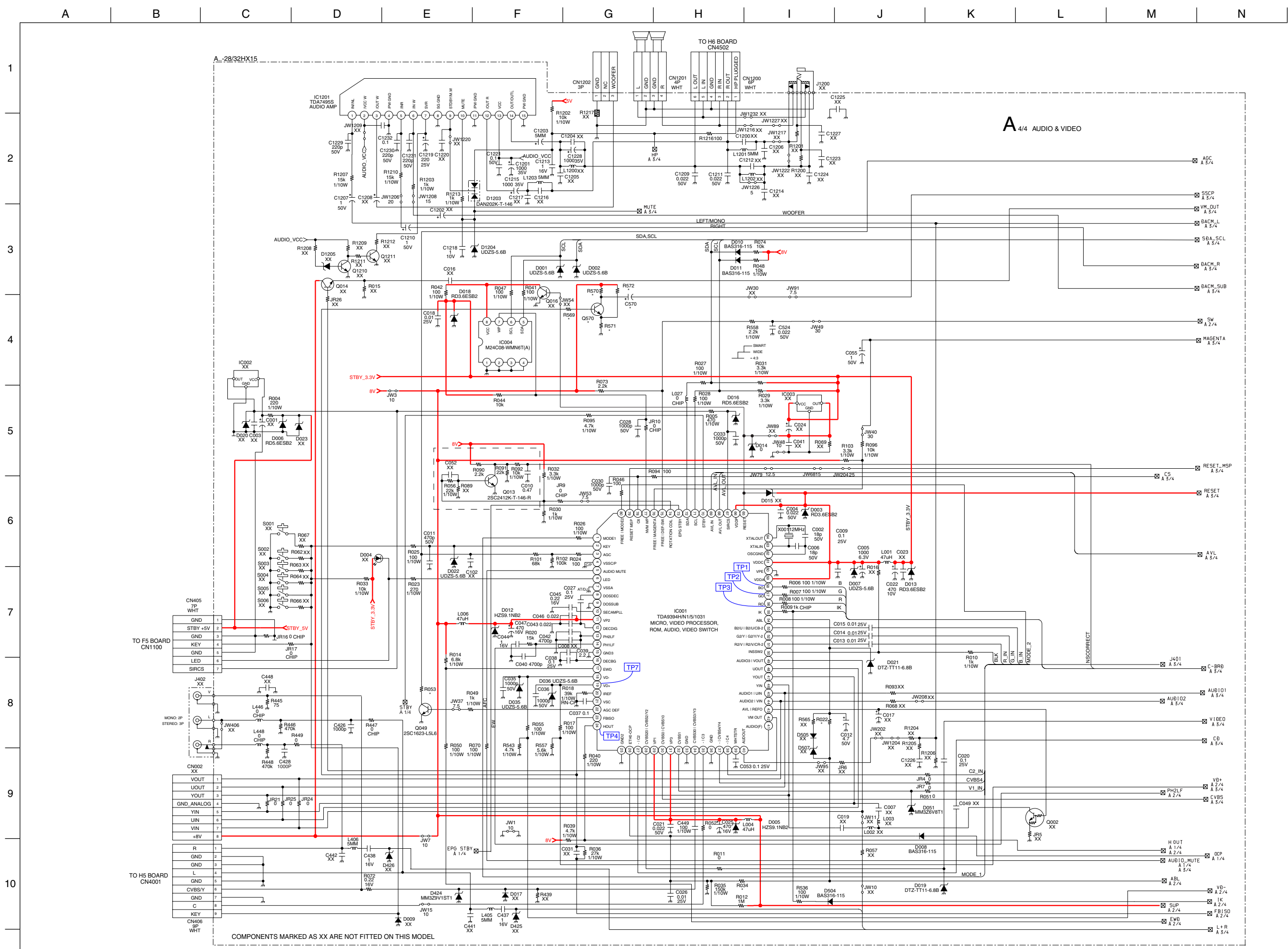
 NOTE:
Portions of the circuit marked as shown are high voltage areas. Use care to prevent electric shock during inspection or repair.



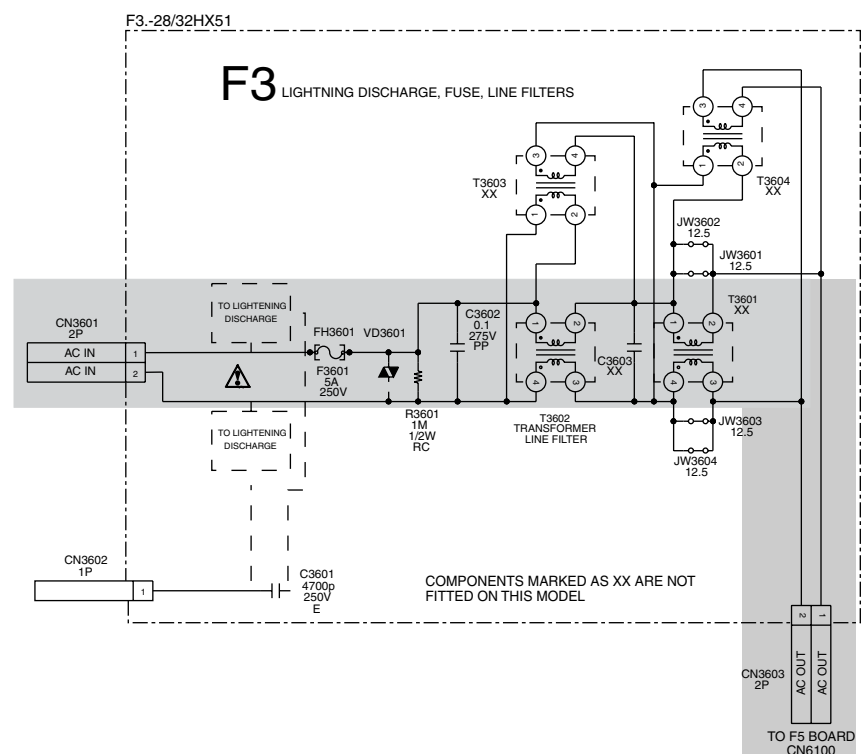




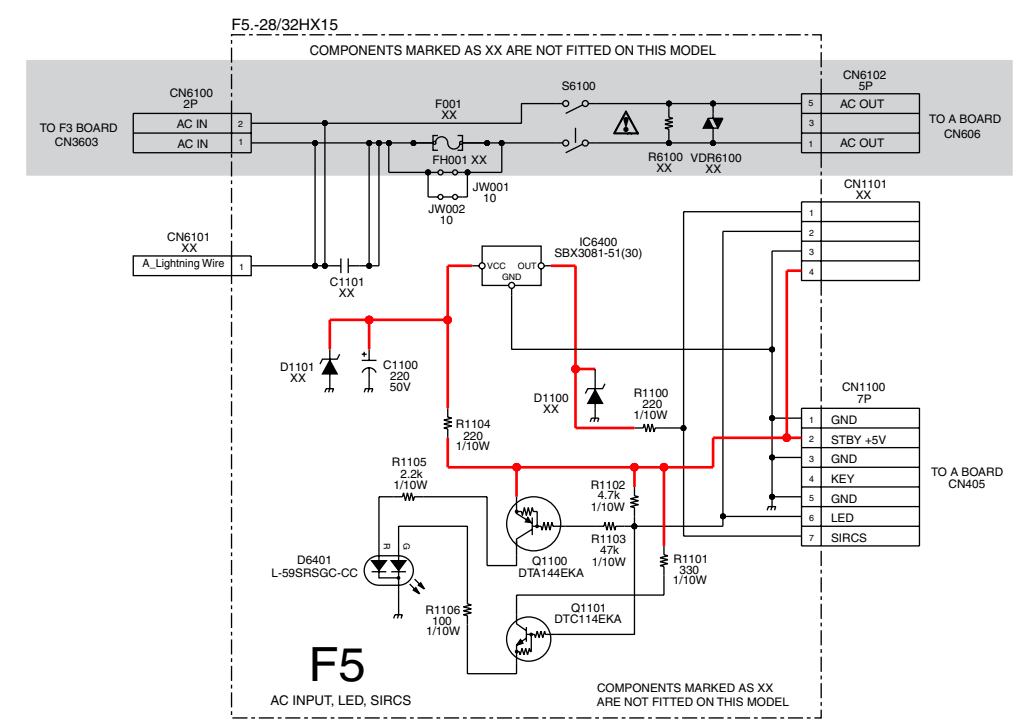
~ A Board Schematic Diagram [Video] Page 3/4 ~



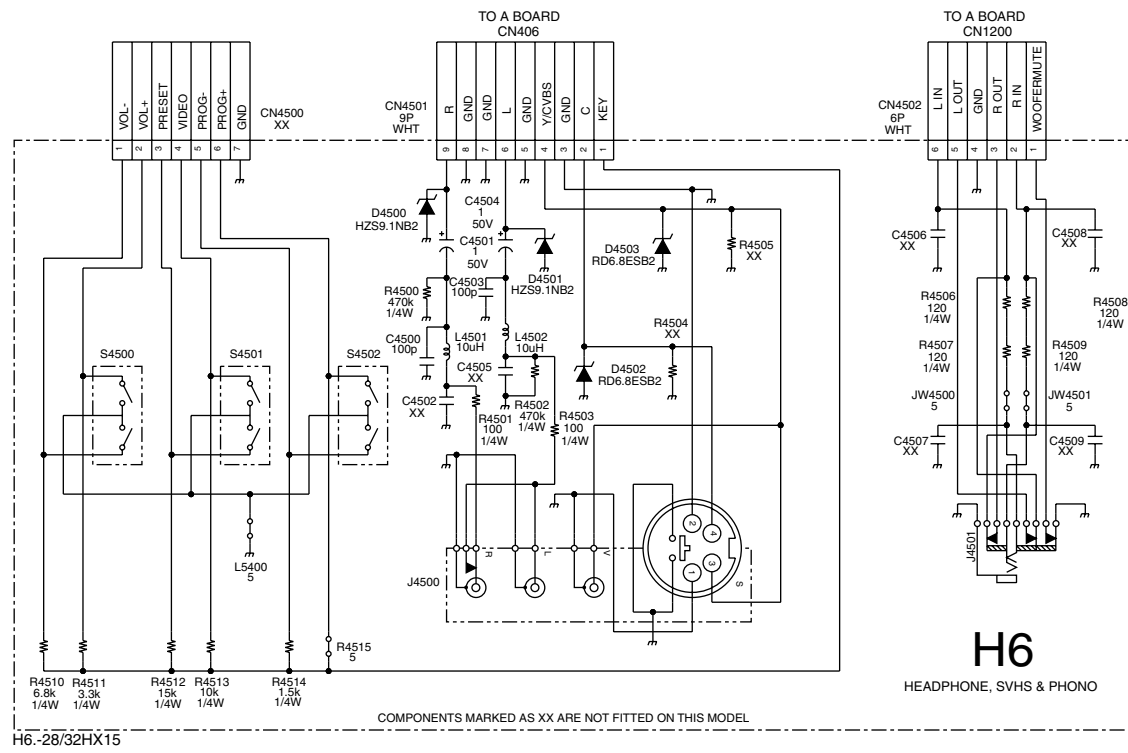
A 4/4 AUDIO & VIDEO



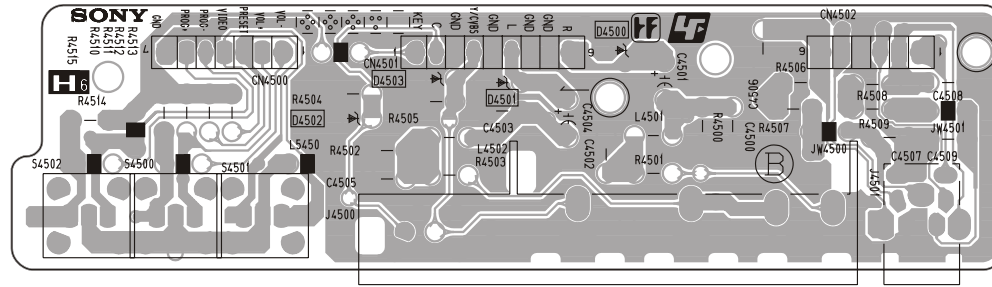
~ F3 Board Schematic Diagram [Lightning Discharge, Fuse, Line Filters] ~



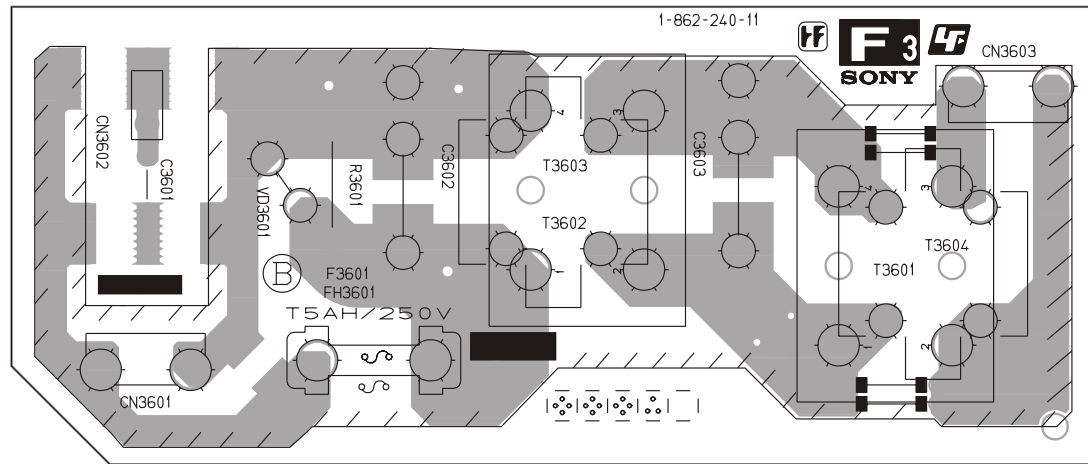
~ F5 Board Schematic Diagram [AC Input, LED, SIRCS] ~



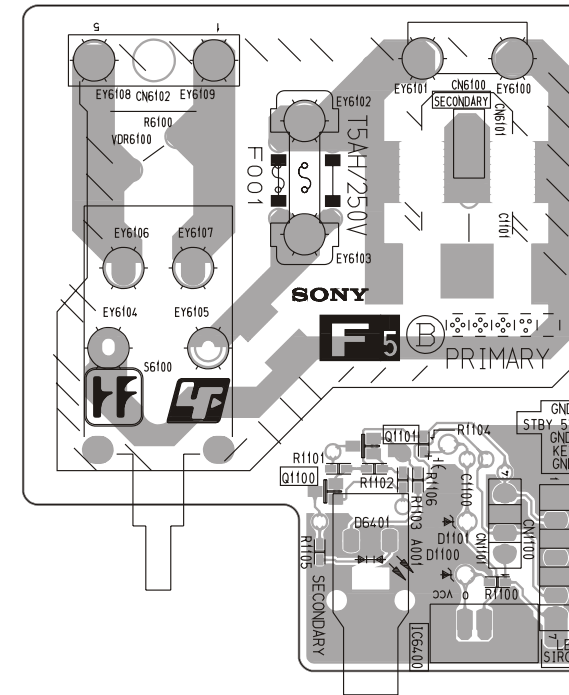
~ H6 Board Schematic Diagram [Headphone, SVHS & Phono] ~



~ H6 Printed Wiring Board Conductor Side ~



~ F3 Printed Wiring Board Conductor Side ~



~ F5 Printed Wiring Board Conductor Side ~

~ C Board Semiconductor Voltages ~

Ref	Anode	Cathode	Ref	Anode	Cathode	Ref	Anode	Cathode
D701	0.7	0	D706	131.8	199.4	D710	0	2.6
D702	154.4	199.4	D707	136.7	199.4	D1801	0	8.0
D703	0	0	D708	0	3.1	D1802	0	3.8
D705	0	0.7	D709	0	3.0	D1803	0	4.2

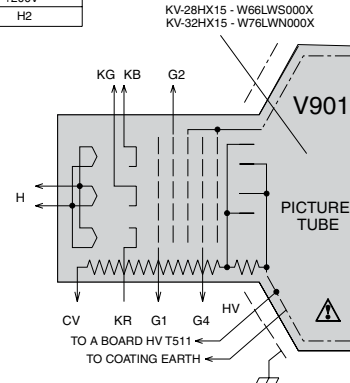
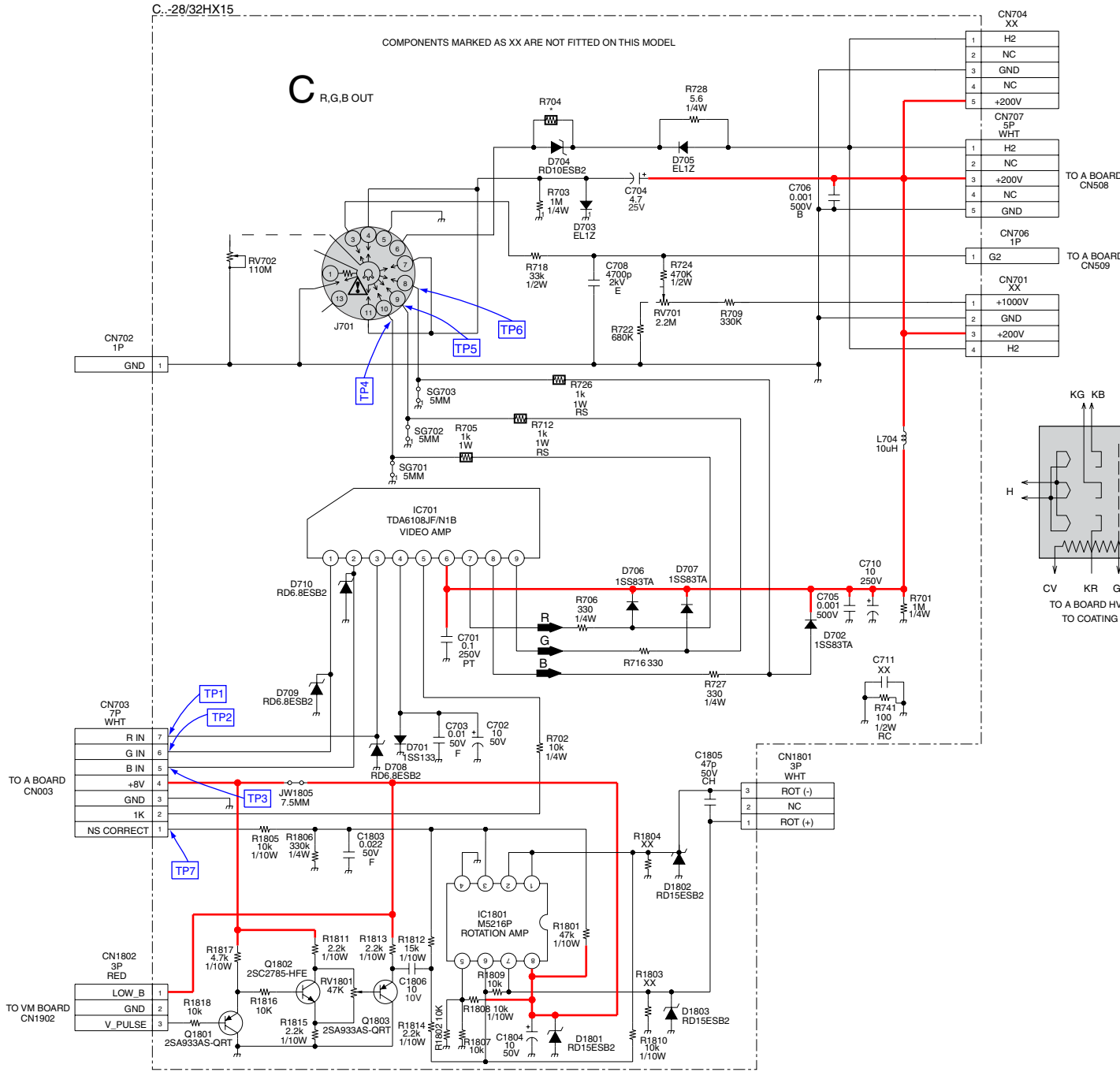
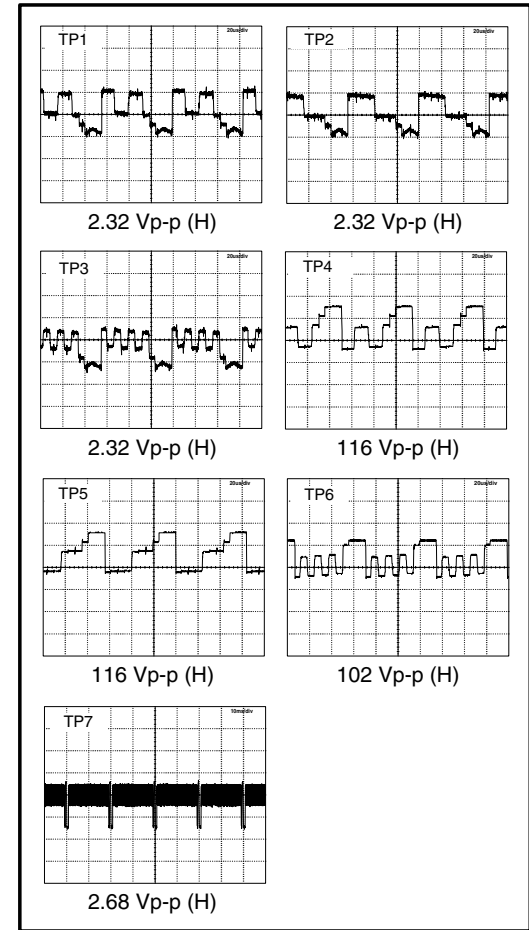
~ C Board Difference Table ~

Ref	KV-28HX15	KV-32HX15
R704	0.22 5% 2W	LEAD, JUMPER 15MM

~ C Board IC Voltages ~

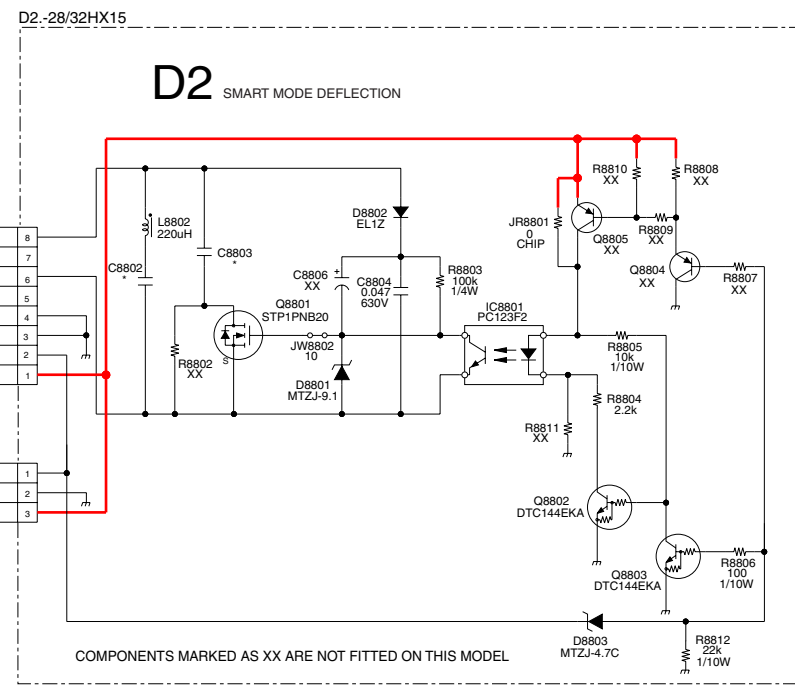
Ref No	Pin No	Voltage (V)	Ref No	Pin No	Voltage (V)
IC701	1	3.0	IC1801	1	3.8
	2	2.6		2	3.8
	3	3.1		3	3.8
	4	0.7		4	0
	5	6.3		5	4.0
	6	199		6	4.0
	7	133.5		7	4.2
	8	154.4		8	8.0
	9	136.2			

~ C Board Waveforms ~



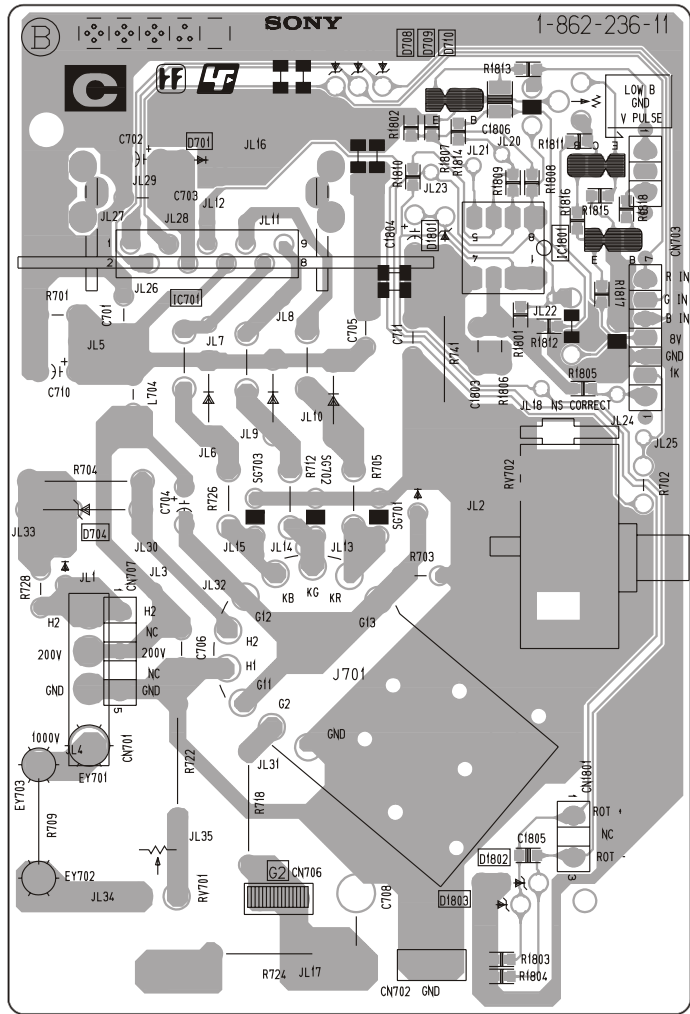
~ D2 Board Difference Table ~

Ref	KV-28HX15	KV-32HX15
C8802	0.12UF 5% 250V	0.1UF 5% 400V
C8803	0.033UF 5% 250V	30000PF 3% 1.2KV

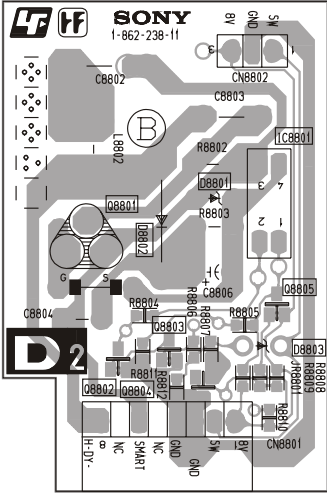


~ C Board Schematic Diagram [R-G-B Out] ~

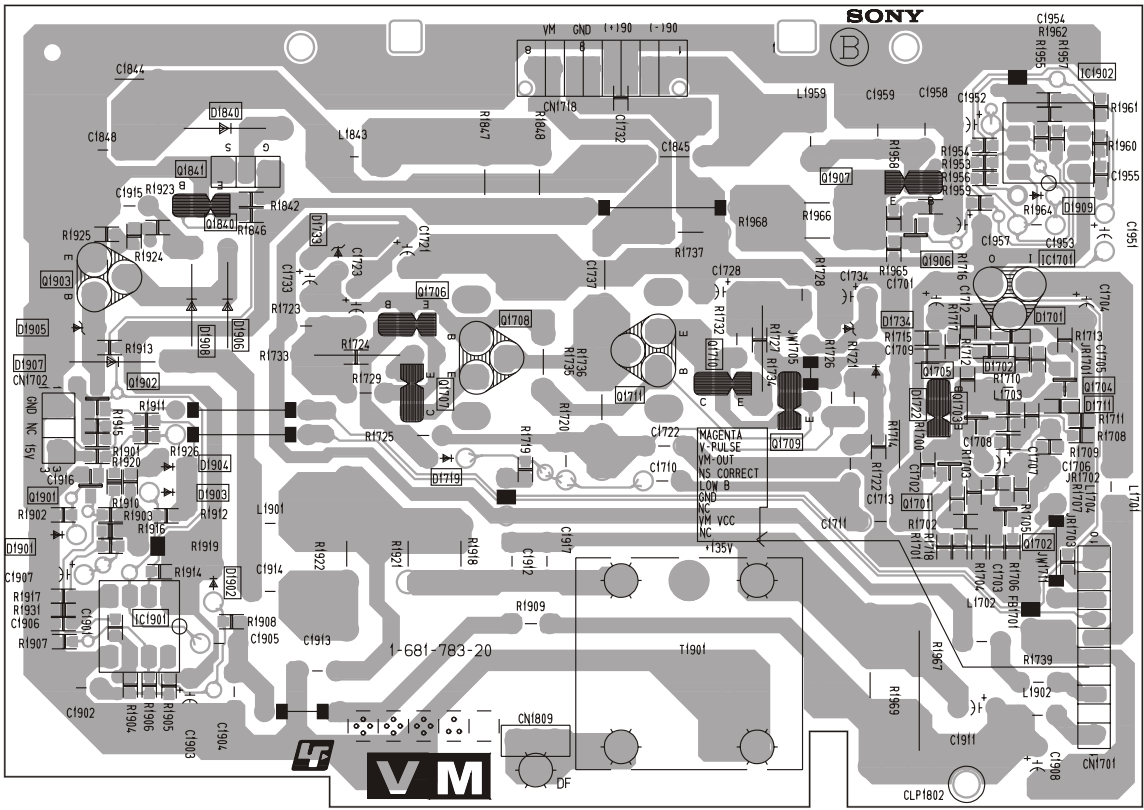
~ D2 Board Schematic Diagram [Smart Mode Deflection] ~



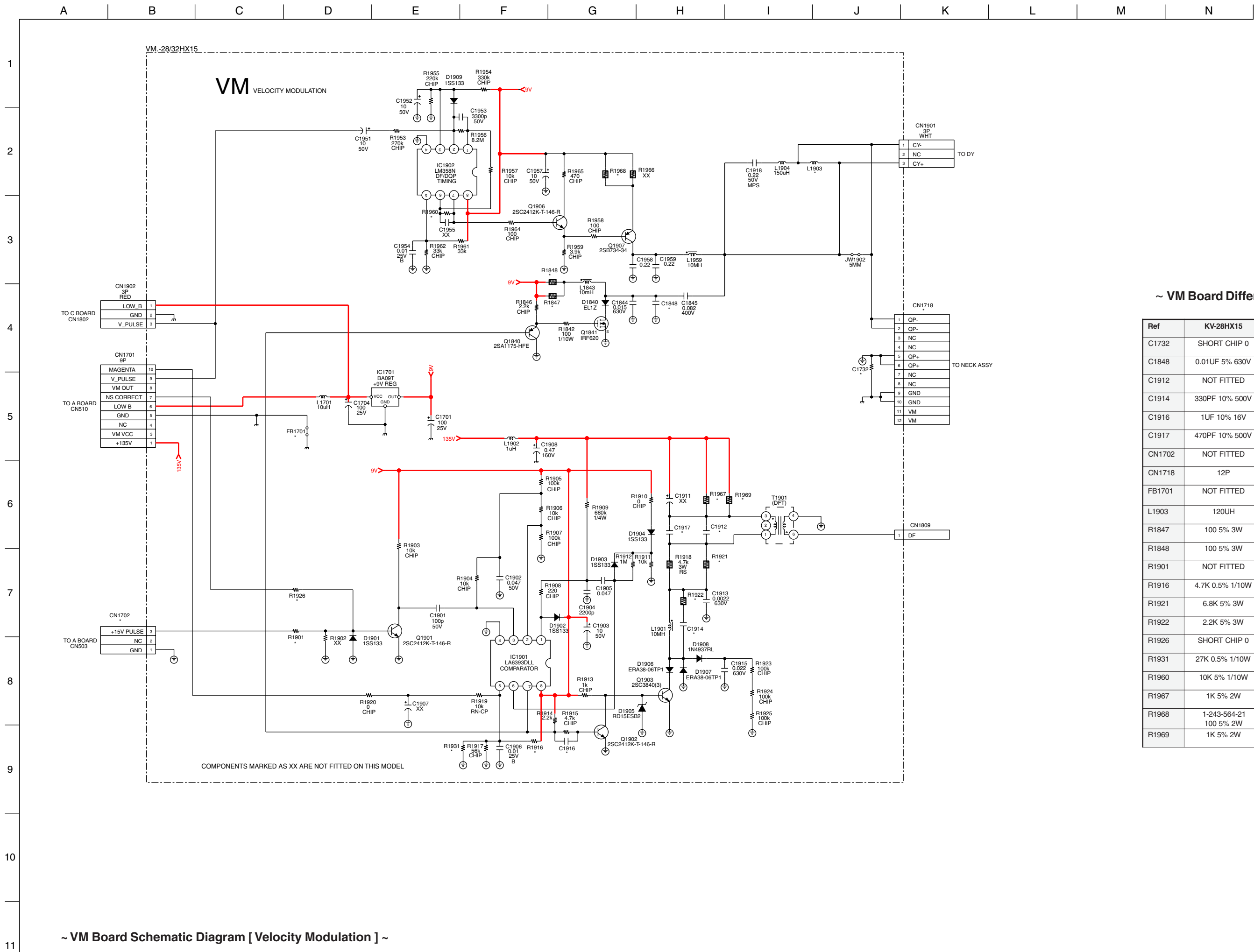
~ C Printed Wiring Board Conductor Side ~



~ D2 Printed Wiring Board Conductor Side~



~ VM Printed Wiring Board Conductor Side~



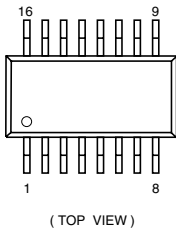
~ VM Board Difference Table ~

Ref	KV-28HX15	KV-32HX15
C1732	SHORT CHIP 0	0.01UF 10% 25V
C1848	0.01UF 5% 630V	0.0047UF 5% 630V
C1912	NOT FITTED	100PF 10% 500V
C1914	330PF 10% 500V	220PF 10% 500V
C1916	1UF 10% 16V	470PF 10% 50V
C1917	470PF 10% 500V	330PF 10% 500V
CN1702	NOT FITTED	3P
CN1718	12P	8P
FB1701	NOT FITTED	LEAD, JUMPER 5MM
L1903	120UH	47UH
R1847	100 5% 3W	56 5% 3W
R1848	100 5% 3W	56 5% 3W
R1901	NOT FITTED	47K 5% 1/10W
R1916	4.7K 0.5% 1/10W	3.9K 0.5% 1/10W
R1921	6.8K 5% 3W	4.7K 5% 3W
R1922	2.2K 5% 3W	1.5K 5% 3W
R1926	SHORT CHIP 0	NOT FITTED
R1931	27K 0.5% 1/10W	18K 0.5% 1/10W
R1960	10K 5% 1/10W	6.8K 0.5% 1/10W
R1967	1K 5% 2W	820 5% 2W
R1968	1-243-564-21 100 5% 2W	1-215-886-11 100 5% 2W
R1969	1K 5% 2W	820 5% 2W

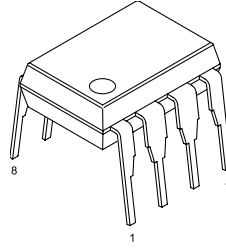
~ VM Board Schematic Diagram [Velocity Modulation] ~

5-4. SEMICONDUCTORS

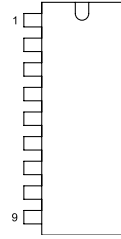
CXA1875AM-T4



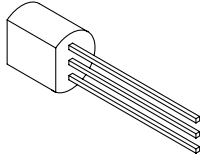
NJM4556AD



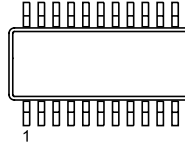
TDA6108JF/NIB



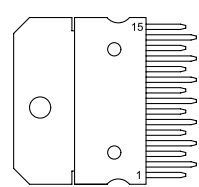
L78L33ABZ-AP
2SC3840(3)



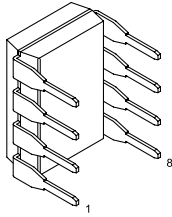
PCF8593/T118



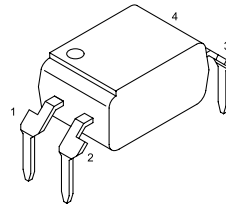
TDA7495S



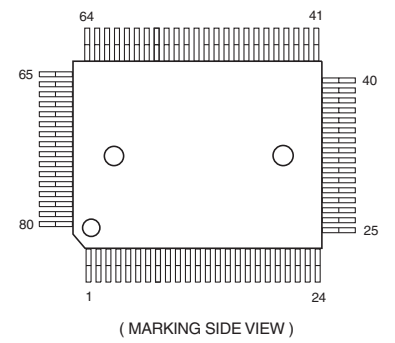
LA6393DLL



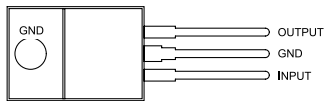
PC123F2



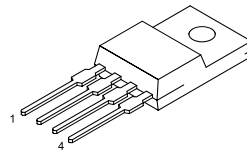
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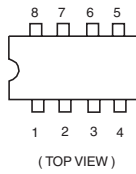
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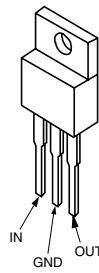
PQ05RF11
PQ3RF33



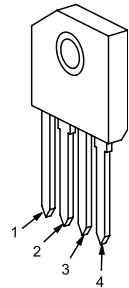
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LM393DT
LM393PS



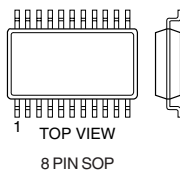
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SE-012N-LF4



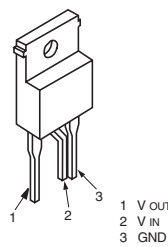
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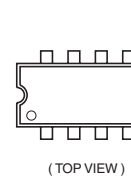
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MC14053 BDR2



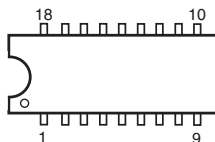
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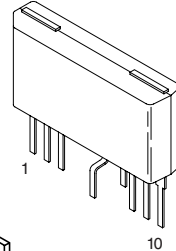
TOP209P



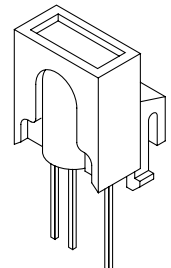
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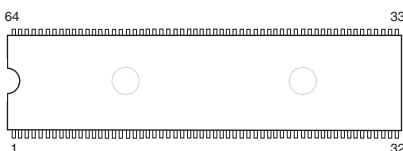
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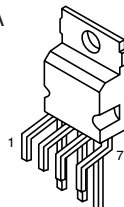
TSOP1740KS1



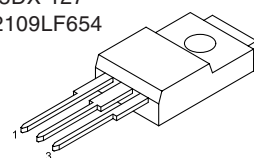
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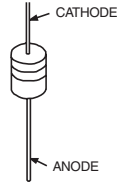
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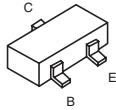
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BU2515DX-127
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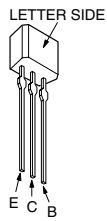
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 1SS133T-77
 ERA38-06
 FUF4005
 HZS9.1NB2
 MTZJ-4.7C
 MTZJ-T-77-9.1A
 MTZJ-33A
 MTZJ-7.5B
 P6KE200ASY
 RD3.6ES-B2
 RD5.1ESB2
 RD5.6ESB2
 RD6.8ES-B2
 RD10ESB2



2SA1162-G
 2SA1037AK-T146
 2SC1623-L5L6
 2SC2412K-T-146-R
 2SD601A-Q-TX
 DTC114EKA-T146
 DTC143TKA-T146
 DTC144EKA-T-146R



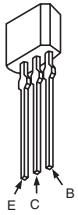
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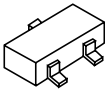
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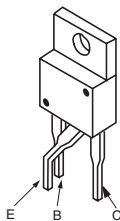
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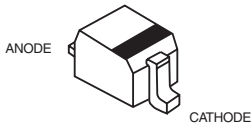
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 MA3047M-TX



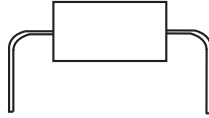
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 2SK2640-01MR-F122



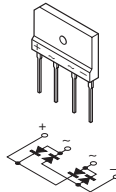
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 MM3Z12VT1
 MM3Z4V7T1
 MM3Z6V8T1
 MM3Z9V1ST1
 PDZ9.1B-115
 PDZ22B-115
 UdzSTE-175.6B



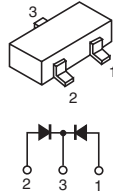
AG01ZV0
 D2S4MF



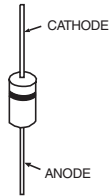
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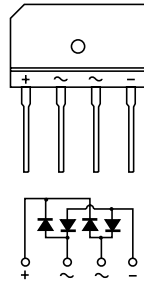
DAN202K



EGP20G
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 RJ43-LF-T2
 RK34-LF-T2
 RU-3AM
 RU-4AM-T3
 SARS01V0



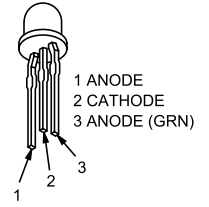
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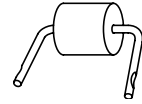
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 IRF620
 YG802C09RF122



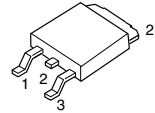
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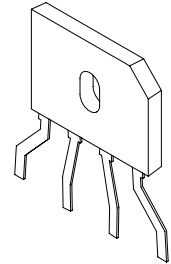
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UGB8BT-31

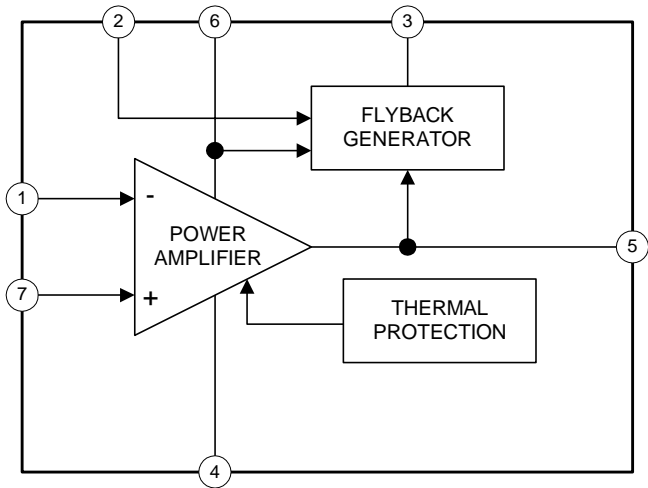


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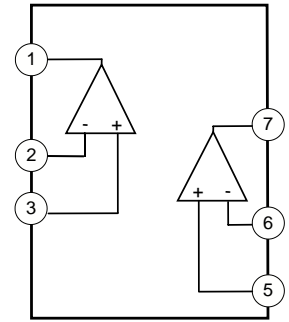


5-5. IC BLOCK DIAGRAMS

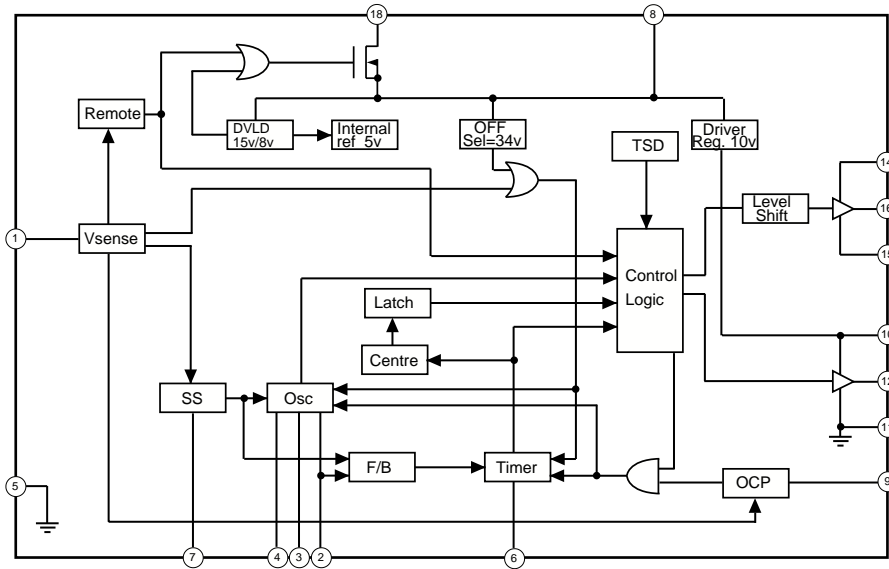
A BOARD IC501 STV9379A



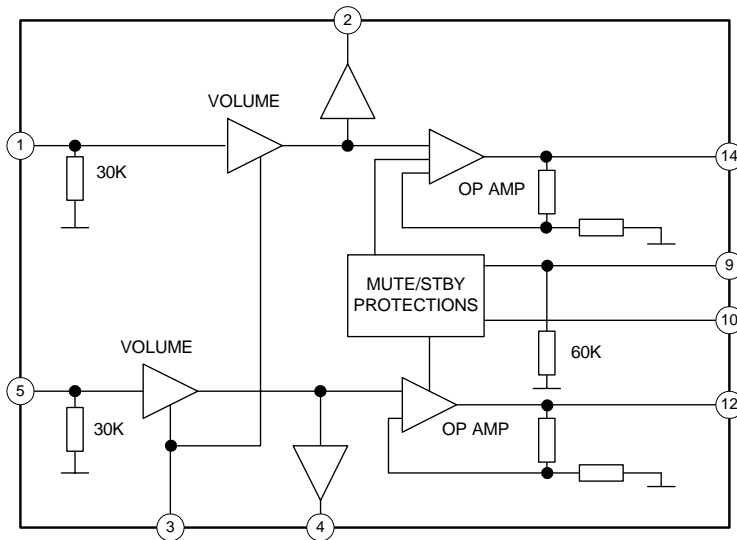
A BOARD IC401/IC531 LM393DT



A BOARD IC601 MCZ3001D



A BOARD IC1201 TDA7495S



SECTION 6 EXPLODED VIEWS

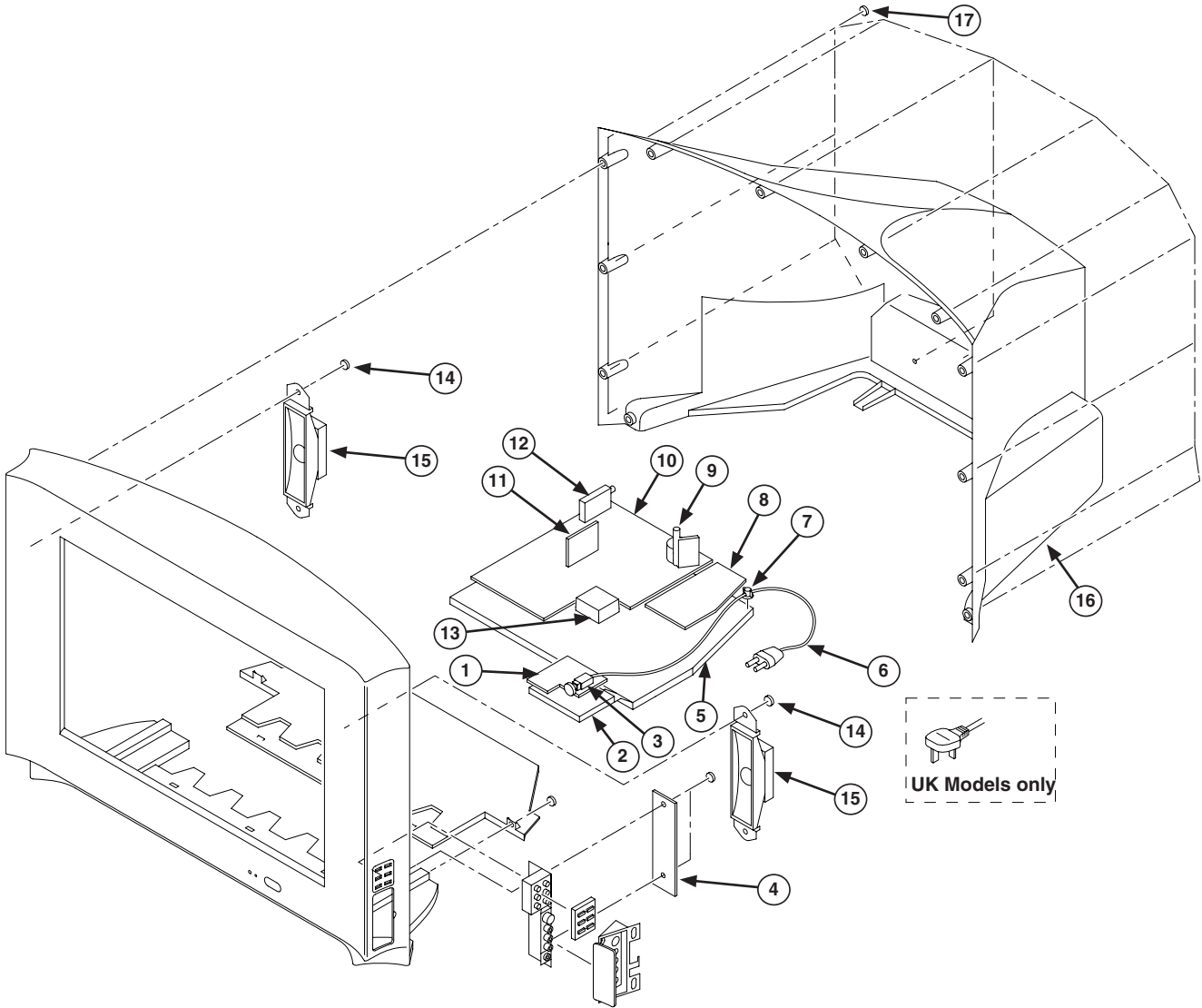
NOTE :

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remarks column.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

6-1. CHASSIS

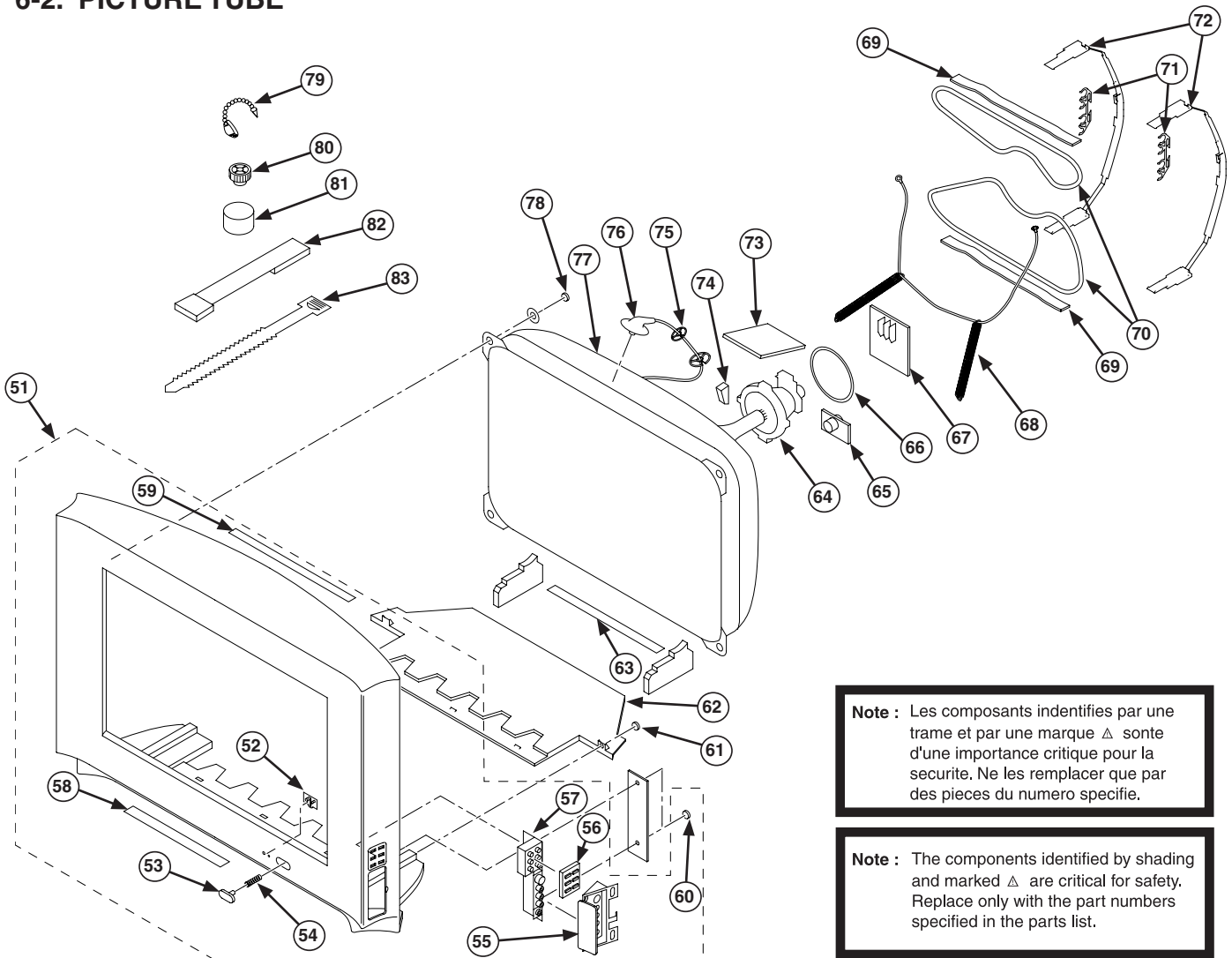
Note : Les composants identifiés par une trame et par une marque Δ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces du numéro spécifié.

Note : The components identified by shading and marked Δ are critical for safety. Replace only with the part numbers specified in the parts list.



REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
1	*A-1415-638-A	F5 BOARD, COMPLETE				*A-1066-084-A	A BOARD, COMPLETE (KV-28HX15U)
2	*4-102-697-11	F BRACKET				*A-1055-143-A	A BOARD, COMPLETE (KV-32HX15B)
3	Δ 1-786-649-11	SWITCH, AC POWER PUSH				*A-1062-001-A	A BOARD, COMPLETE (KV-32HX15E)
4	*A-1055-145-A	H6 BOARD, COMPLETE				*A-1062-000-A	A BOARD, COMPLETE (KV-32HX15U)
5	*4-206-048-12	BRACKET, MAIN		11		*A-1302-976-A	D2 BOARD, COMPLETE (KV-28HX15)
6	Δ 1-783-083-11	CORD, POWER (WITH FILTER)				*A-1302-957-A	D2 BOARD, COMPLETE (KV-32HX15)
	Δ 1-776-860-12	POWER CORD, FILTER (UK)		12		1-693-555-14	FRONTEND (TUNER+IF) (KV-28/32HX15B)
7	*4-202-531-01	AC CORD LOCK (SC)				1-693-556-14	FRONTEND (TUNER+IF) (KV-28/32HX15E)
8	*A-1055-144-A	F3 BOARD, COMPLETE				1-693-557-14	FRONTEND (TUNER+IF) (KV-28/32HX15U)
9	Δ 1-453-372-11	TRANSFORMER ASSY, FLYBACK (NX-4521//Z214) (KV-28HX15)		13		1-424-733-11	COIL, PFC CHOKE 65MH
	Δ 1-453-308-41	TRANSFORMER ASSY, FLYBACK (NX-4521//Z2B4) (KV-32HX15)		14		4-384-096-01	SCREW (4X16), TAPPING, +P
10	*A-1059-323-A	A BOARD, COMPLETE (KV-28HX15B)		15		1-825-859-11	LOUDSPEAKER (5.5X15CM)
	*A-1066-097-A	A BOARD, COMPLETE (KV-28HX15E)		16		4-103-127-11	COVER REAR (KV-28HX15)
				17		7-685-663-71	SCREW +BVTP 4X16 TYPE2 IT-3

6-2. PICTURE TUBE



Note : Les composants indentifiés par une trame et par une marque Δ sont d'une importance critique pour la securite. Ne les remplacer que par des pieces du numero specifique.

Note : The components identified by shading and marked Δ are critical for safety. Replace only with the part numbers specified in the parts list.

REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
51	X-2022-358-1	BEZNET ASSY (KV-28HX15)	52-60	69	4-089-228-01	SPRING, EXTENSION (KV-32HX15)	
	X-2021-252-1	BEZNET ASSY (KV-32HX15)	52-60	70	Δ 1-416-466-21	COIL, DEMAGNETIC (KV-28HX15)	
52	4-205-375-11	GUIDE LIGHT			Δ 1-416-769-11	COIL, DEMAGNETIC (KV-32HX15)	
53	4-102-532-31	POWER, BUTTON		71	4-079-355-01	CLIP DGC (KV-28HX15)	
54	4-202-964-11	SPRING			4-089-227-02	DGC CLIP (KV-32HX15)	
55	4-102-700-11	SIDE COVER		72	4-093-607-01	DGC HOLDER (KV-28HX15)	
56	4-102-698-11	MULTI BUTTON		73	*A-1302-977-A	VM BOARD, COMPLETE (KV-28HX15)	
57	*4-102-699-11	SIDE BRACKET			*A-1302-958-A	VM BOARD, COMPLETE (KV-32HX15)	
58	4-204-947-01	SHEET, BLOTING (680)		74	4-086-199-02	SPACER, DY	
59	4-204-947-11	SHEET, BLOTING (410)		75	*4-202-693-01	HOLDER, HV CABLE	
60	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3		76	Δ 1-251-946-21	CAP ASSY, HIGH-VOLTAGE (KV-28HX15)	
61	4-384-096-01	SCREW +BVTP 4X16 TYPE2 IT-3			Δ 1-251-946-11	CAP ASSY, HIGH-VOLTAGE (KV-32HX15)	
62	*4-103-133-01	CHASSIS BRACKET (KV-28HX15)		77	Δ 8-737-794-05	PICTURE TUBE (W66LWS000X) (KV-28HX15)	
	*4-102-519-11	CHASSIS BRACKET (KV-32HX15)			Δ 8-735-217-05	PICTURE TUBE (W76LWN000X) (KV-32HX15)	
63	4-204-947-11	SHEET, BLOTING (410)		78	4-036-188-01	SCREW, SELF TAPPING (KV-28HX15)	
64	Δ 8-451-540-11	DEFLECTION YOKE (Y28VECP-L) (KV-28HX15)			4-204-225-01	PT SCREW (KV-32HX15)	
	Δ 1-451-575-11	DEFLECTION YOKE (Y32VECP-T) (KV-32HX15)		79	4-308-870-00	CLIP, LEAD WIRE	
65	Δ 8-453-021-21	NECK ASSY, NA2919-M2		80	1-452-014-11	CIRCULAR DISC MAGNET B	
66	1-452-896-61	COIL, NA ROTATION (RT-200)		81	1-452-032-00	MAGNET, DISK	
67	*A-1063-719-A	C BOARD, COMPLETE (KV-28HX15)		82	X-4387-214-1	PERMALLOY ASSY, CORRECTION	
	*A-1415-641-A	C BOARD, COMPLETE (KV-32HX15)		83	3-701-007-00	BAND, BINDING	
68	4-200-433-01	SPRING, EXTENSION (KV-28HX15)					

SECTION 7 ELECTRICAL PARTS LIST

PARTS LISTING TABLE OF CONTENTS

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KV-28HX15E & KV-32HX15E	52
KV-28HX15U & KV-32HX15U	52
F3 BOARD COMPLETE Parts List :	52
H6 BOARD COMPLETE Parts List :	52
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Model	Parts common to all models listed in this manual
KV-28HX15	Parts that belong only to the model specified
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Model	Parts common to all models listed in this manual
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Note : Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
Parts indicated (XX) on the Schematic Diagram are not used in this model and therefore do not appear in the Parts List.

REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
* A-1059-323-A A Board Complete KV-28HX15B * A-1066-097-A A Board Complete KV-28HX15E * A-1066-084-A A Board Complete KV-28HX15U * A-1055-143-A A Board Complete KV-32HX15B * A-1062-001-A A Board Complete KV-32HX15E * A-1062-000-A A Board Complete KV-32HX15U				C112	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V
				C204	1-115-340-11	CERAMIC CHIP 0.22UF	10.00% 25V
				C211	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V
				C213	1-216-295-91	SHORT CHIP 0	
				C214	1-163-253-11	CERAMIC CHIP 120PF	5.00% 50V
				C215	1-163-084-00	CERAMIC CHIP 1.5PF	0.25PF 50V
				C216	1-163-117-00	CERAMIC CHIP 100PF	5.00% 50V
				C217	1-163-084-00	CERAMIC CHIP 1.5PF	0.25PF 50V
				C218	1-216-295-91	SHORT CHIP 0	
				C221	1-163-109-00	CERAMIC CHIP 47PF	5.00% 50V
				C222	1-163-117-00	CERAMIC CHIP 100PF	5.00% 50V
				C223	1-126-965-91	ELECT 22UF	20.00% 50V
				C224	1-163-117-00	CERAMIC CHIP 100PF	5.00% 50V
				C225	1-126-157-11	ELECT 10UF	20.00% 16V
				C226	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V
				C227	1-163-117-00	CERAMIC CHIP 100PF	5.00% 50V
				C228	1-126-965-91	ELECT 22UF	20.00% 50V
				C229	1-163-017-00	CERAMIC CHIP 0.0047UF	10.00% 50V
				C230	1-164-336-11	CERAMIC CHIP 0.33UF	25V
				C232	1-126-157-11	ELECT 10UF	20.00% 16V
				C233	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V
				C234	1-107-823-11	CERAMIC CHIP 0.47UF	10.00% 16V
				C235	1-164-005-11	CERAMIC CHIP 0.47UF	25V
				C236	1-126-157-11	ELECT 10UF	20.00% 16V
				C237	1-126-965-91	ELECT 22UF	20.00% 50V
				C238	1-163-117-00	CERAMIC CHIP 100PF	5.00% 50V
				C239	1-126-157-11	ELECT 10UF	20.00% 16V
				C242	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
				C245	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
				C401	1-126-964-11	ELECT 10UF	20.00% 50V
				C404	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V
				C405	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
				C407	1-164-346-11	CERAMIC CHIP 1UF	16V
				C408	1-127-715-91	CERAMIC CHIP 0.22UF	10% 16V
				C409	1-126-964-11	ELECT 10UF	20.00% 50V
				C410	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V
				C411	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
				C412	1-164-346-11	CERAMIC CHIP 1UF	16V
				C414	1-164-346-11	CERAMIC CHIP 1UF	16V
				C415	1-164-346-11	CERAMIC CHIP 1UF	16V
				C416	1-126-964-11	ELECT 10UF	20.00% 50V
				C417	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V
				C418	1-164-346-11	CERAMIC CHIP 1UF	16V
				C419	1-162-964-11	CERAMIC CHIP 0.001UF	10.00% 50V
				C423	1-127-715-91	CERAMIC CHIP 0.22UF	10% 16V
				C424	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
				C426	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
				C427	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
				C428	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
				C429	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
A Board Common Parts							
	* 4-102-022-01	PIN(30), WIRE					
	4-382-854-01	SCREW (M3X8), P, SW (+)					
		< CAPACITOR >					
C002	1-163-233-91	CERAMIC CHIP 18PF	5.00% 50V				
C004	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V				
C005	1-126-916-11	ELECT 1000UF	20.00% 6.3V				
C006	1-163-233-91	CERAMIC CHIP 18PF	5.00% 50V				
C009	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V				
C010	1-164-005-11	CERAMIC CHIP 0.47UF	25V				
C011	1-163-005-91	CERAMIC CHIP 470PF	10.00% 50V				
C012	1-126-963-11	ELECT 4.7UF	20.00% 50V				
C013	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V				
C014	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V				
C015	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V				
C018	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V				
C020	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V				
C021	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V				
C022	1-126-925-91	ELECT 470UF	20.00% 10V				
C025	1-126-935-11	ELECT 470UF	20.00% 16V				
C026	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V				
C027	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V				
C028	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V				
C030	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V				
C033	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V				
C035	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V				
C036	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V				
C037	1-136-244-11	FILM 0.1UF	2.00% 50V				
C038	1-163-038-91	CERAMIC CHIP 0.1UF	25V				
C039	1-164-505-11	CERAMIC CHIP 2.2UF	16V				
C040	1-163-017-00	CERAMIC CHIP 0.0047UF	10.00% 50V				
C042	1-162-625-11	CERAMIC CHIP 0.0047UF	5.00% 50V				
C043	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V				
C044	1-164-346-11	CERAMIC CHIP 1UF	16V				
C045	1-164-489-11	CERAMIC CHIP 0.22UF	10.00% 16V				
C046	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V				
C047	1-126-935-11	ELECT 470UF	20.00% 16V				
C053	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V				
C055	1-126-960-11	ELECT 1UF	20.00% 50V				
C100	1-126-933-11	ELECT 100UF	20.00% 16V				
C103	1-126-965-91	ELECT 22UF	20.00% 50V				
C105	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V				
C106	1-126-933-11	ELECT 100UF	20.00% 16V				

Note : The components identified by shading and marked Δ are critical for safety. Replace only with the part numbers specified in the parts list.

A

REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
C430	1-102-114-00	CERAMIC 470PF	10.00% 50V	C606	1-117-751-11	ELECT (BLOCK) 220UF	20.00% 450V
C435	1-163-017-00	CERAMIC CHIP 0.0047UF	10.00% 50V	C607	1-126-964-11	ELECT 10UF	20.00% 50V
C436	1-163-017-00	CERAMIC CHIP 0.0047UF	10.00% 50V	C608	1-126-963-11	ELECT 4.7UF	20.00% 50V
C437	1-164-346-11	CERAMIC CHIP 1UF	16V	C610	1-126-941-11	ELECT 470UF	20.00% 25V
C438	1-164-346-11	CERAMIC CHIP 1UF	16V	C611	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
C445	1-126-964-11	ELECT 10UF	20.00% 50V	C612	Δ 1-104-571-91	CERAMIC 0.0015UF	10.00% 2KV
C446	1-126-964-11	ELECT 10UF	20.00% 50V	C613	Δ 1-104-571-91	CERAMIC 0.0015UF	10.00% 2KV
C447	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V	C614	Δ 1-161-964-51	CERAMIC 0.0047UF	250V
C449	1-216-025-11	RES-CHIP 100	5% 1/10W	C615	1-115-339-11	CERAMIC CHIP 0.1UF	10.00% 50V
C501	1-126-968-11	ELECT 100UF	20.00% 50V	C616	1-165-127-11	CERAMIC 470PF	10.00% 500V
C502	1-163-038-91	CERAMIC CHIP 0.1UF	25V	C617	1-165-127-11	CERAMIC 470PF	10.00% 500V
C503	1-126-968-11	ELECT 100UF	20.00% 50V	C618	1-126-949-11	ELECT 220UF	20.00% 35V
C504	1-106-220-00	MYLAR 0.1UF	10.00% 100V	C619	1-165-127-51	CERAMIC 470PF	10.00% 500V
C505	1-137-194-81	FILM 0.47UF	5.00% 50V	C620	1-137-990-22	FILM 33000PF	3% 800V
C506	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V	C621	1-165-127-51	CERAMIC 470PF	10.00% 500V
C509	1-107-364-11	MYLAR 0.01UF	10.00% 200V	C622	Δ 1-104-571-91	CERAMIC 0.0015UF	10.00% 2KV
C510	1-163-005-91	CERAMIC CHIP 470PF	10.00% 50V	C623	Δ 1-104-571-91	CERAMIC 0.0015UF	10.00% 2KV
C513	1-107-662-11	ELECT 22UF	20.00% 350V	C624	1-126-935-11	ELECT 470UF	20.00% 16V
C515	1-104-666-11	ELECT 220UF	20.00% 25V	C626	1-126-967-11	ELECT 47UF	20.00% 50V
C517	1-115-781-11	ELECT 220UF	20.00% 25V	C627	1-126-964-11	ELECT 10UF	20.00% 50V
C518	1-106-375-12	MYLAR 0.022UF	5.00% 200V	C628	1-126-963-11	ELECT 4.7UF	20.00% 50V
C519	1-163-275-11	CERAMIC CHIP 0.001UF	5.00% 50V	C629	1-165-127-11	CERAMIC 470PF	10.00% 500V
C520	1-163-038-91	CERAMIC CHIP 0.1UF	25V	C630	1-107-641-11	ELECT 220UF	20.00% 160V
C522	1-137-374-11	MYLAR 0.047UF	5.00% 50V	C631	1-126-942-61	ELECT 1000UF	20.00% 25V
C524	1-163-037-11	CERAMIC CHIP 0.022UF	10.00% 50V	C632	1-126-964-11	ELECT 10UF	20.00% 50V
C525	1-123-024-21	ELECT 33UF	160V	C633	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V
C530	1-163-135-00	CERAMIC CHIP 560PF	5.00% 50V	C635	1-136-497-81	FILM 0.1UF	5.00% 50V
C531	1-126-964-11	ELECT 10UF	20.00% 50V	C636	1-136-479-11	FILM 0.001UF	5.00% 100V
C532	1-163-021-91	CERAMIC CHIP 0.01UF	10.00% 50V	C637	1-126-967-11	ELECT 47UF	20.00% 50V
C536	1-117-666-11	FILM 0.39UF	5.00% 250V	C638	1-107-679-91	ELECT 10UF	20.00% 450V
C537	1-102-002-00	CERAMIC 680PF	10.00% 500V	C639	1-104-665-11	ELECT 100UF	20.00% 25V
C538	1-165-319-11	CERAMIC CHIP 0.1UF	50V	C640	1-126-947-11	ELECT 47UF	20.00% 35V
C539	1-111-230-11	ELECT 1UF	20.00% 160V	C641	1-115-785-11	ELECT 470UF	20.00% 25V
C540	1-136-206-11	MYLAR 0.033UF	5.00% 630V	C642	1-104-665-11	ELECT 100UF	20.00% 25V
C541	1-106-383-00	MYLAR 0.047UF	10.00% 200V	C643	1-165-127-11	CERAMIC 470PF	10.00% 500V
C543	1-162-134-11	CERAMIC 470PF	10.00% 2KV	C645	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V
C545	1-164-004-11	CERAMIC CHIP 0.1UF	10.00% 25V	C648	1-125-782-91	CERAMIC 4700PF	10.00% 1KV
C546	1-129-719-61	FILM 0.027UF	5.00% 630V	C649	1-163-038-91	CERAMIC CHIP 0.1UF	25V
C547	1-115-519-11	FILM 0.56UF	5.00% 250V	C657	1-126-952-11	ELECT 1000UF	20.00% 35V
C548	1-162-134-11	CERAMIC 470PF	10.00% 2KV	C1201	1-126-952-11	ELECT 1000UF	20.00% 35V
C550	1-107-638-11	ELECT 33UF	20.00% 160V	C1203	1-535-303-00	LEAD, JUMPER (5.0MM)	
C552	1-102-212-00	CERAMIC 820PF	10.00% 500V	C1207	1-126-960-11	ELECT 1UF	20.00% 50V
C553	1-137-417-11	MYLAR 0.015UF	10.00% 100V	C1209	1-163-033-91	CERAMIC CHIP 0.022UF	50V
C580	1-162-970-11	CERAMIC CHIP 0.01UF	10.00% 25V	C1210	1-126-960-11	ELECT 1UF	20.00% 50V
C583	1-163-009-91	CERAMIC CHIP 0.001UF	10.00% 50V	C1211	1-163-033-91	CERAMIC CHIP 0.022UF	50V
C600	Δ 1-119-888-51	CERAMIC 2200PF	20.00% 250V	C1213	1-164-346-11	CERAMIC CHIP 1UF	16V
C601	Δ 1-137-999-11	FILM 0.1UF	275V	C1215	1-126-952-11	ELECT 1000UF	20.00% 35V
C603	Δ 1-119-887-51	CERAMIC 1000PF	20.00% 250V	C1218	1-109-982-11	CERAMIC CHIP 1UF	10.00% 10V
C604	Δ 1-119-887-51	CERAMIC 1000PF	20.00% 250V	C1219	1-104-666-11	ELECT 220UF	20.00% 25V
C605	1-115-758-11	ELECT 470UF	20.00% 16V	C1221	1-115-339-11	CERAMIC CHIP 0.1UF	10.00% 50V

Note : The components identified by shading and marked Δ are critical for safety. Replace only with the part numbers specified in the parts list.

A

REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
C1228	1-126-952-11	ELECT 1000UF	20.00% 35V	D019	8-719-978-33	DIODE DTZ-TT11-6.8B	
C1229	1-163-001-11	CERAMIC CHIP 220PF	10.00% 50V	D021	8-719-978-33	DIODE DTZ-TT11-6.8B	
C1230	1-163-001-11	CERAMIC CHIP 220PF	10.00% 50V	D022	8-719-069-55	DIODE UDZSTE-175.6B	
C1231	1-163-001-11	CERAMIC CHIP 220PF	10.00% 50V	D035	8-719-069-55	DIODE UDZSTE-175.6B	
C1232	1-115-339-11	CERAMIC CHIP 0.1UF	10.00% 50V	D036	8-719-069-55	DIODE UDZSTE-175.6B	
C1235	1-126-960-11	ELECT 1UF	20.00% 50V	D051	8-719-081-98	DIODE MM3Z6V8T1	
C1236	1-126-960-11	ELECT 1UF	20.00% 50V	D101	6-500-159-01	DIODE MA8330-M-TX	
< COATING LEAD >				D103	8-719-081-98	DIODE MM3Z6V8T1	
CLP1	* 4-102-022-01	PIN(30), WIRE		D104	8-719-069-55	DIODE UDZSTE-175.6B	
CLP2	* 4-102-022-01	PIN(30), WIRE		D105	8-719-069-55	DIODE UDZSTE-175.6B	
CLP3	* 4-102-022-01	PIN(30), WIRE		D106	8-719-069-55	DIODE UDZSTE-175.6B	
CLP4	* 4-102-022-01	PIN(30), WIRE		D107	8-719-069-55	DIODE UDZSTE-175.6B	
< CONNECTOR >				D203	8-719-069-55	DIODE UDZSTE-175.6B	
CN001	* 1-816-976-51	PLUG, CONNECTOR 5P		D207	6-500-028-01	DIODE MM3Z9V1ST1	
CN003	* 1-816-978-51	PLUG, CONNECTOR 7P		D210	8-719-069-55	DIODE UDZSTE-175.6B	
CN101	1-695-915-11	TAB (CONTACT)		D211	6-500-028-01	DIODE MM3Z9V1ST1	
CN102	1-695-915-11	TAB (CONTACT)		D212	8-719-914-43	DIODE DAN202K	
CN405	* 1-816-978-51	PLUG, CONNECTOR 7P		D228	8-719-069-55	DIODE UDZSTE-175.6B	
CN406	* 1-564-512-11	PLUG, CONNECTOR 9P		D235	8-719-069-55	DIODE UDZSTE-175.6B	
CN501	* 1-785-270-12	PIN, DY CONNECTOR (PC BOARD)		D236	6-500-028-01	DIODE MM3Z9V1ST1	
CN506	1-695-915-11	TAB (CONTACT)		D401	8-719-978-33	DIODE DTZ-TT11-6.8B	
CN508	* 1-816-976-51	PLUG, CONNECTOR 5P		D402	8-719-081-98	DIODE MM3Z6V8T1	
CN509	1-695-915-11	TAB (CONTACT)		D403	8-719-069-55	DIODE UDZSTE-175.6B	
CN510	1-691-771-11	PLUG (MICRO CONNECTOR) 9P		D404	8-719-109-89	DIODE RD5.6ESB2	
CN512	* 1-770-723-11	CONNECTOR, BOARD TO BOARD 8P		D405	8-719-081-98	DIODE MM3Z6V8T1	
CN602	Δ 1-508-765-13	PIN, CONNECTOR (5MM PITCH) 3P		D406	8-719-081-98	DIODE MM3Z6V8T1	
CN603	Δ * 1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P		D407	8-719-081-98	DIODE MM3Z6V8T1	
CN605	Δ * 1-691-960-11	PIN, CONNECTOR (PC BOARD) 3P		D408	8-719-978-33	DIODE DTZ-TT11-6.8B	
CN606	Δ * 1-695-292-11	PIN, CONNECTOR (POWER)		D410	8-719-978-33	DIODE DTZ-TT11-6.8B	
CN642	* 1-816-974-51	PLUG, CONNECTOR 3P		D411	8-719-978-33	DIODE DTZ-TT11-6.8B	
CN1200	* 1-816-977-51	PLUG, CONNECTOR 6P		D412	8-719-081-98	DIODE MM3Z6V8T1	
CN1201	* 1-816-975-51	PLUG, CONNECTOR 4P		D413	8-719-978-33	DIODE DTZ-TT11-6.8B	
CN1202	* 1-816-974-51	PLUG, CONNECTOR 3P		D414	8-719-081-98	DIODE MM3Z6V8T1	
< DIODE >				D418	6-500-028-01	DIODE MM3Z9V1ST1	
D001	8-719-069-55	DIODE UDZSTE-175.6B		D420	8-719-069-55	DIODE UDZSTE-175.6B	
D002	8-719-069-55	DIODE UDZSTE-175.6B		D422	8-719-978-33	DIODE DTZ-TT11-6.8B	
D003	8-719-109-69	DIODE RD3.6ESB2		D423	8-719-081-98	DIODE MM3Z6V8T1	
D005	8-719-929-15	DIODE HZS9.1NB2		D424	6-500-028-01	DIODE MM3Z9V1ST1	
D006	8-719-109-89	DIODE RD5.6ESB2		D427	8-719-082-01	DIODE MM3Z12VT1	
D007	8-719-069-55	DIODE UDZSTE-175.6B		D428	8-719-978-33	DIODE DTZ-TT11-6.8B	
D008	8-719-074-43	DIODE BAS316-115		D429	8-719-978-33	DIODE DTZ-TT11-6.8B	
D010	8-719-074-43	DIODE BAS316-115		D435	6-500-028-01	DIODE MM3Z9V1ST1	
D011	8-719-074-43	DIODE BAS316-115		D436	6-500-028-01	DIODE MM3Z9V1ST1	
D012	8-719-929-15	DIODE HZS9.1NB2		D501	8-719-979-85	DIODE EGP20G	
D013	8-719-109-69	DIODE RD3.6ESB2		D502	8-719-081-90	DIODE PDZ22B-115	
D014	1-216-295-91	SHORT CHIP 0		D503	8-719-069-55	DIODE UDZSTE-175.6B	
D016	8-719-109-89	DIODE RD5.6ESB2		D504	8-719-074-43	DIODE BAS316-115	
D018	8-719-109-69	DIODE RD3.6ESB2		D512	8-719-302-43	DIODE EL1Z	
				D513	8-719-979-85	DIODE EGP20G	
				D514	8-719-979-85	DIODE EGP20G	

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REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
D534	8-719-302-43	DIODE EL1Z		IC004	8-759-675-65	IC M24C08-WMN6T(A)	
D536	6-500-951-01	DIODE RH4FLFL1		IC201	6-700-411-02	IC MSP3411G-PP-B8V3	
D537	8-719-070-62	DIODE PDZ9.1B-115		IC401	8-759-665-11	IC LM393DT	
D539	8-719-312-10	DIODE RU4AM-T3		IC501	8-759-696-71	IC STV9379A	
D541	1-216-295-91	SHORT CHIP 0		IC531	8-759-665-11	IC LM393DT	
D573	8-719-082-00	DIODE MM3Z4V7T1		IC601	8-759-670-30	IC MCZ3001D	
D601	8-719-510-53	DIODE D4SB60L		IC602	8-749-016-19	IC SE135N-LF4	
D602	8-719-991-33	DIODE 1SS133T-77		IC603	6-702-992-01	IC TA78M08S	
D604	8-719-083-94	DIODE FUF4005		IC604	8-759-648-20	IC L7805CV/LSY	
D608	6-500-175-01	DIODE 1E3-TB		IC608	8-759-591-02	IC L78L33ABZ-AP	
D610	8-719-110-41	DIODE RD15ESB2		IC609	8-759-468-89	IC TOP209P	
D611	8-719-991-33	DIODE 1SS133T-77		IC1201	8-759-831-57	IC TDA7495S	
D612	8-719-991-33	DIODE 1SS133T-77				< SOCKET >	
D613	8-719-991-33	DIODE 1SS133T-77					
D614	6-500-465-01	DIODE G2SBA60L-5700		J401	* 1-766-296-41	CONNECTOR, DUAL SCART	
D618	8-719-022-97	DIODE D2S4MF		J404	1-793-987-11	JACK, PIN 2P	
D619	8-719-022-97	DIODE D2S4MF				< COIL >	
D620	8-719-109-85	DIODE RD5.1ESB2		L001	1-408-611-31	INDUCTOR 47UH	
D621	8-719-109-89	DIODE RD5.6ESB2		L004	1-408-611-31	INDUCTOR 47UH	
D623	8-719-991-33	DIODE 1SS133T-77		L006	1-408-611-31	INDUCTOR 47UH	
D627	6-500-175-01	DIODE 1E3-TB		L027	1-216-295-91	SHORT CHIP 0	
D628	6-500-954-01	DIODE P6KE200ARL		L101	1-412-534-31	INDUCTOR 56UH	
D629	8-719-083-94	DIODE FUF4005		L102	1-408-611-31	INDUCTOR 47UH	
D631	8-719-921-63	DIODE MTZJ-7.5B		L103	1-412-002-31	INDUCTOR 4.7UH	
D632	6-500-175-01	DIODE 1E3-TB		L104	1-412-002-31	INDUCTOR 4.7UH	
D633	8-719-109-69	DIODE RD3.6ESB2		L201	1-535-303-00	LEAD, JUMPER (5.0MM)	
D638	6-500-069-01	DIODE FMW-2109LF654		L203	1-408-602-31	INDUCTOR 8.2UH	
D640	8-719-921-63	DIODE MTZJ-7.5B		L205	1-408-591-11	INDUCTOR 1UH	
D1203	8-719-914-43	DIODE DAN202K		L206	1-535-303-00	LEAD, JUMPER (5.0MM)	
D1204	8-719-069-55	DIODE UDZSTE-175.6B		L207	1-408-591-11	INDUCTOR 1UH	
D1230	8-719-074-43	DIODE BAS316-115		L401	1-410-993-42	INDUCTOR 1UH	
		< FERRITE BEAD >		L403	1-410-993-42	INDUCTOR 1UH	
FB410	1-414-760-21	FERRITE 0UH		L404	1-410-993-42	INDUCTOR 1UH	
FB411	1-414-760-21	FERRITE 0UH		L410	1-216-025-11	RES-CHIP 100 5% 1/10W	
FB412	1-414-760-21	FERRITE 0UH		L430	1-412-002-31	INDUCTOR 4.7UH	
FB601	1-469-578-11	FERRITE 1.1UH		L446	1-216-295-91	SHORT CHIP 0	
FB602	1-469-578-11	FERRITE 1.1UH		L448	1-216-295-91	SHORT CHIP 0	
FB603	1-412-911-11	FERRITE 0UH		L501	1-414-187-11	INDUCTOR 47UH	
FB604	1-469-578-11	FERRITE 1.1UH		L502	1-412-529-11	INDUCTOR 22UH	
FB605	1-469-578-11	FERRITE 1.1UH		L503	1-412-521-31	INDUCTOR 4.7UH	
FB606 Δ	1-412-911-11	FERRITE 0UH		L505	1-412-542-41	INDUCTOR 270UH	
FB607 Δ	1-412-911-11	FERRITE 0UH		L507	1-412-533-21	INDUCTOR 47UH	
		< FILTER >		L532	1-412-553-11	INDUCTOR 3.3MH	
FL201	1-239-803-11	FILTER, EMI		L533	1-406-989-21	INDUCTOR 10MH	
		< IC >		L534	1-216-025-11	RES-CHIP 100 5% 1/10W	
IC001	6-702-097-02	IC TDA9394H/N1/5/1031		L535	1-419-633-21	INDUCTOR 10MH	
				L601	1-408-603-31	INDUCTOR 10UH	
				L602	1-408-611-31	INDUCTOR 47UH	

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REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
L603	1-412-523-41	INDUCTOR	6.8UH	JR206	1-216-295-91	SHORT CHIP	0
L1201	1-535-303-00	LEAD, JUMPER	(5.0MM)	JR207	1-216-295-91	SHORT CHIP	0
L1203	1-535-303-00	LEAD, JUMPER	(5.0MM)	JR208	1-216-295-91	SHORT CHIP	0
		< PHOTOCOUPLER >		JR209	1-216-295-91	SHORT CHIP	0
				JR211	1-216-296-11	SHORT CHIP	0
PH601 Δ	8-749-010-64	PHOTO COUPLER	PC123F2	JR213	1-216-295-91	SHORT CHIP	0
		< PROTECTOR MODULE >		JR401	1-216-295-91	SHORT CHIP	0
				JR418	1-216-296-11	SHORT CHIP	0
PS1201 Δ	1-533-597-31	IC LINK	5A 90V	JR423	1-216-296-11	SHORT CHIP	0
		< TRANSISTOR >		JR505	1-216-295-91	SHORT CHIP	0
				JR506	1-216-296-11	SHORT CHIP	0
Q013	8-729-901-81	TRANSISTOR	2SC2412K-T-146-R	JR508	1-216-295-91	SHORT CHIP	0
Q049	8-729-120-28	TRANSISTOR	2SC1623-L5L6	JR601	1-216-295-91	SHORT CHIP	0
Q202	8-729-901-81	TRANSISTOR	2SC2412K-T-146-R	JR609	1-216-295-91	SHORT CHIP	0
Q203	8-729-901-81	TRANSISTOR	2SC2412K-T-146-R	JR610	1-216-295-91	SHORT CHIP	0
Q212	8-729-422-33	TRANSISTOR	2SD601A-Q-TX	R003	1-216-065-91	RES-CHIP	4.7K 5% 1/10W
				R004	1-216-033-00	RES-CHIP	220 5% 1/10W
Q401	8-729-026-49	TRANSISTOR	2SA1037AK-T146-R	R005	1-216-041-00	RES-CHIP	470 5% 1/10W
Q409	8-729-901-81	TRANSISTOR	2SC2412K-T-146-R	R006	1-216-025-11	RES-CHIP	100 5% 1/10W
Q411	8-729-901-81	TRANSISTOR	2SC2412K-T-146-R	R007	1-216-025-11	RES-CHIP	100 5% 1/10W
Q532	8-729-053-33	TRANSISTOR	IRF614-037	R008	1-216-025-11	RES-CHIP	100 5% 1/10W
Q533	8-729-049-08	TRANSISTOR	BU2515DX-127	R009	1-216-049-11	RES-CHIP	1K 5% 1/10W
				R010	1-216-049-11	RES-CHIP	1K 5% 1/10W
Q535	8-729-053-33	TRANSISTOR	IRF614-037	R011	1-216-295-91	SHORT CHIP	0
Q601	8-729-026-49	TRANSISTOR	2SA1037AK-T146-R	R012	1-216-121-11	RES-CHIP	1M 5% 1/10W
Q602	8-729-119-78	TRANSISTOR	2SC2785-HFE	R014	1-216-069-00	RES-CHIP	6.8K 5% 1/10W
Q603	8-729-037-17	TRANSISTOR	KRA104M-AT	R017	1-216-025-11	RES-CHIP	100 5% 1/10W
Q604	8-729-036-60	TRANSISTOR	KRC104M-AT	R018	1-208-820-11	METAL CHIP	39K 0.5% 1/10W
				R020	1-216-077-91	RES-CHIP	15K 5% 1/10W
Q606	8-729-053-36	TRANSISTOR	2SK2640-01MR-F122	R023	1-216-035-00	RES-CHIP	270 5% 1/10W
Q607	8-729-053-36	TRANSISTOR	2SK2640-01MR-F122	R024	1-216-025-11	RES-CHIP	100 5% 1/10W
Q608	8-729-120-28	TRANSISTOR	2SC1623-L5L6	R025	1-216-025-11	RES-CHIP	100 5% 1/10W
Q609	8-729-026-49	TRANSISTOR	2SA1037AK-T146-R	R026	1-216-025-11	RES-CHIP	100 5% 1/10W
Q1230	8-729-027-56	TRANSISTOR	DTC143TKA-T146	R027	1-216-025-11	RES-CHIP	100 5% 1/10W
				R028	1-216-025-11	RES-CHIP	100 5% 1/10W
Q1231	8-729-027-56	TRANSISTOR	DTC143TKA-T146	R029	1-216-061-91	RES-CHIP	3.3K 5% 1/10W
Q1232	8-729-026-49	TRANSISTOR	2SA1037AK-T146-R	R030	1-216-821-11	METAL CHIP	1K 5% 1/10W
Q1233	8-729-026-49	TRANSISTOR	2SA1037AK-T146-R	R031	1-216-061-91	RES-CHIP	3.3K 5% 1/10W
		< RESISTOR >		R032	1-216-061-91	RES-CHIP	3.3K 5% 1/10W
JR4	1-216-295-91	SHORT CHIP	0	R033	1-216-073-91	RES-CHIP	10K 5% 1/10W
JR7	1-216-295-91	SHORT CHIP	0	R035	1-216-101-00	RES-CHIP	150K 5% 1/10W
JR9	1-216-295-91	SHORT CHIP	0	R036	1-216-083-00	RES-CHIP	27K 5% 1/10W
JR10	1-216-295-91	SHORT CHIP	0	R039	1-216-065-91	RES-CHIP	4.7K 5% 1/10W
JR16	1-216-296-11	SHORT CHIP	0	R040	1-216-033-00	RES-CHIP	220 5% 1/10W
				R041	1-216-025-11	RES-CHIP	100 5% 1/10W
JR17	1-216-295-91	SHORT CHIP	0	R042	1-216-025-11	RES-CHIP	100 5% 1/10W
JR21	1-216-818-11	METAL CHIP	560 5% 1/10W	R044	1-216-073-91	RES-CHIP	10K 5% 1/10W
JR24	1-216-295-91	SHORT CHIP	0	R045	1-216-025-11	RES-CHIP	100 5% 1/10W
JR25	1-216-295-91	SHORT CHIP	0	R046	1-216-025-11	RES-CHIP	100 5% 1/10W
JR105	1-216-295-91	SHORT CHIP	0	R047	1-216-025-11	RES-CHIP	100 5% 1/10W
JR201	1-216-295-91	SHORT CHIP	0				
JR204	1-216-296-11	SHORT CHIP	0				
JR205	1-216-296-11	SHORT CHIP	0				

REF.NO.	PART.NO	DESCRIPTION	REMARK			REF.NO.	PART.NO	DESCRIPTION	REMARK		
R048	1-216-073-91	RES-CHIP	10K	5%	1/10W	R252	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R049	1-216-049-11	RES-CHIP	1K	5%	1/10W	R253	1-216-025-11	RES-CHIP	100	5%	1/10W
R050	1-216-025-11	RES-CHIP	100	5%	1/10W	R254	1-216-025-11	RES-CHIP	100	5%	1/10W
R051	1-216-295-91	SHORT CHIP	0			R401	1-410-993-42	INDUCTOR	10H		
R052	1-216-295-91	SHORT CHIP	0			R402	1-216-041-00	RES-CHIP	470	5%	1/10W
R055	1-216-025-11	RES-CHIP	100	5%	1/10W	R403	1-216-113-00	RES-CHIP	470K	5%	1/10W
R056	1-216-081-00	RES-CHIP	22K	5%	1/10W	R404	1-216-113-00	RES-CHIP	470K	5%	1/10W
R060	1-216-025-11	RES-CHIP	100	5%	1/10W	R405	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R061	1-216-025-11	RES-CHIP	100	5%	1/10W	R406	1-216-296-11	SHORT CHIP	0		
R070	1-216-025-11	RES-CHIP	100	5%	1/10W	R407	1-216-022-00	RES-CHIP	75	5%	1/10W
R071	1-216-049-11	RES-CHIP	1K	5%	1/10W	R408	1-216-022-00	RES-CHIP	75	5%	1/10W
R072	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V	R409	1-216-025-11	RES-CHIP	100	5%	1/10W
R073	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	R410	1-216-025-11	RES-CHIP	100	5%	1/10W
R074	1-216-073-91	RES-CHIP	10K	5%	1/10W	R411	1-216-022-00	RES-CHIP	75	5%	1/10W
R090	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	R412	1-216-025-11	RES-CHIP	100	5%	1/10W
R091	1-216-081-00	RES-CHIP	22K	5%	1/10W	R413	1-216-113-00	RES-CHIP	470K	5%	1/10W
R092	1-216-073-91	RES-CHIP	10K	5%	1/10W	R414	1-216-022-00	RES-CHIP	75	5%	1/10W
R094	1-216-025-11	RES-CHIP	100	5%	1/10W	R415	1-216-022-00	RES-CHIP	75	5%	1/10W
R095	1-216-065-91	RES-CHIP	4.7K	5%	1/10W	R416	1-216-027-00	RES-CHIP	120	5%	1/10W
R096	1-216-073-91	RES-CHIP	10K	5%	1/10W	R417	1-216-113-00	RES-CHIP	470K	5%	1/10W
R101	1-216-093-91	RES-CHIP	68K	5%	1/10W	R418	1-216-113-00	RES-CHIP	470K	5%	1/10W
R102	1-216-097-11	RES-CHIP	100K	5%	1/10W	R419	1-216-022-00	RES-CHIP	75	5%	1/10W
R103	1-216-061-91	RES-CHIP	3.3K	5%	1/10W	R420	1-216-073-91	RES-CHIP	10K	5%	1/10W
R105	1-414-813-11	FERRITE	0UH			R421	1-216-049-11	RES-CHIP	1K	5%	1/10W
R106	1-215-900-11	METAL OXIDE	22K	5%	2W	R422	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R107	1-216-025-11	RES-CHIP	100	5%	1/10W	R423	1-216-113-00	RES-CHIP	470K	5%	1/10W
R108	1-216-025-11	RES-CHIP	100	5%	1/10W	R424	1-216-113-00	RES-CHIP	470K	5%	1/10W
R201	1-216-025-11	RES-CHIP	100	5%	1/10W	R425	1-216-085-91	RES-CHIP	33K	5%	1/10W
R202	1-216-085-91	RES-CHIP	33K	5%	1/10W	R426	1-216-073-91	RES-CHIP	10K	5%	1/10W
R203	1-216-025-11	RES-CHIP	100	5%	1/10W	R427	1-216-113-00	RES-CHIP	470K	5%	1/10W
R211	1-216-081-00	RES-CHIP	22K	5%	1/10W	R428	1-216-073-91	RES-CHIP	10K	5%	1/10W
R212	1-216-069-00	RES-CHIP	6.8K	5%	1/10W	R429	1-216-089-91	RES-CHIP	47K	5%	1/10W
R213	1-216-081-00	RES-CHIP	22K	5%	1/10W	R430	1-216-073-91	RES-CHIP	10K	5%	1/10W
R214	1-216-295-91	SHORT CHIP	0			R431	1-216-073-91	RES-CHIP	10K	5%	1/10W
R215	1-216-037-00	RES-CHIP	330	5%	1/10W	R433	1-216-073-91	RES-CHIP	10K	5%	1/10W
R216	1-216-097-11	RES-CHIP	100K	5%	1/10W	R434	1-216-073-91	RES-CHIP	10K	5%	1/10W
R217	1-216-073-91	RES-CHIP	10K	5%	1/10W	R435	1-216-295-91	SHORT CHIP	0		
R220	1-216-017-91	RES-CHIP	47	5%	1/10W	R438	1-216-022-00	RES-CHIP	75	5%	1/10W
R221	1-216-190-00	RES-CHIP	470	5%	1/8W	R440	1-216-049-11	RES-CHIP	1K	5%	1/10W
R232	1-216-025-11	RES-CHIP	100	5%	1/10W	R441	1-216-051-00	RES-CHIP	1.2K	5%	1/10W
R233	1-216-069-00	RES-CHIP	6.8K	5%	1/10W	R442	1-216-085-91	RES-CHIP	33K	5%	1/10W
R234	1-216-069-00	RES-CHIP	6.8K	5%	1/10W	R443	1-216-073-91	RES-CHIP	10K	5%	1/10W
R235	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	R444	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R236	1-216-057-00	RES-CHIP	2.2K	5%	1/10W	R445	1-216-022-00	RES-CHIP	75	5%	1/10W
R238	1-216-025-11	RES-CHIP	100	5%	1/10W	R446	1-216-113-00	RES-CHIP	470K	5%	1/10W
R246	1-260-107-11	CARBON	4.7K	5%	1/2W	R447	1-216-295-91	SHORT CHIP	0		
R248	1-249-429-11	CARBON	10K	5%	1/4W	R448	1-216-113-00	RES-CHIP	470K	5%	1/10W
R249	1-216-097-11	RES-CHIP	100K	5%	1/10W	R449	1-216-295-91	SHORT CHIP	0		
R250	1-216-081-00	RES-CHIP	22K	5%	1/10W	R450	1-216-041-00	RES-CHIP	470	5%	1/10W
R251	1-216-069-00	RES-CHIP	6.8K	5%	1/10W	R451	1-216-041-00	RES-CHIP	470	5%	1/10W

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REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
R453	1-216-171-00	RES-CHIP	75 5% 1/8W	R609	1-218-873-11	METAL CHIP	12K 0.5% 1/10W
R454	1-216-001-00	RES-CHIP	10 5% 1/10W	R610	1-215-481-00	METAL	330K 1% 1/4W
R460	1-216-049-11	RES-CHIP	1K 5% 1/10W	R611	1-216-059-00	RES-CHIP	2.7K 5% 1/10W
R461	1-216-022-00	RES-CHIP	75 5% 1/10W	R612	1-249-429-11	CARBON	10K 5% 1/4W
R462	1-216-178-00	RES-CHIP	150 5% 1/8W	R613	Δ 1-218-265-11	METAL	8.2M 5% 1W
R500	1-216-061-91	RES-CHIP	3.3K 5% 1/10W	R615	1-215-385-00	METAL	33 1% 1/4W
R501	1-216-091-00	RES-CHIP	56K 5% 1/10W	R616	1-216-101-00	RES-CHIP	150K 5% 1/10W
R502	1-216-073-91	RES-CHIP	10K 5% 1/10W	R617	1-216-099-00	RES-CHIP	120K 5% 1/10W
R503	1-215-888-00	METAL OXIDE	220 5% 2W	R619	1-216-065-91	RES-CHIP	4.7K 5% 1/10W
R504	1-249-385-11	CARBON	2.2 5% 1/4W	R621	1-216-113-00	RES-CHIP	470K 5% 1/10W
R506	1-216-665-11	METAL CHIP	3.9K 0.5% 1/10W	R622	1-216-073-91	RES-CHIP	10K 5% 1/10W
R507	1-216-349-00	METAL OXIDE	1 5% 1W	R623	1-216-065-91	RES-CHIP	4.7K 5% 1/10W
R509	1-216-665-11	METAL CHIP	3.9K 0.5% 1/10W	R624	1-216-001-00	RES-CHIP	10 5% 1/10W
R510	1-216-113-00	RES-CHIP	470K 5% 1/10W	R625	1-216-073-91	RES-CHIP	10K 5% 1/10W
R512	1-249-382-11	CARBON	1.2 5% 1/4W	R627	1-249-389-11	CARBON	4.7 5% 1/4W
R514	1-249-377-11	CARBON	0.47 5% 1/4W	R628	1-247-791-91	CARBON	22 5% 1/4W
R515	1-249-377-11	CARBON	0.47 5% 1/4W	R629	1-216-073-91	RES-CHIP	10K 5% 1/10W
R520	1-215-884-11	METAL OXIDE	47 5% 2W	R632	1-249-417-11	CARBON	1K 5% 1/4W
R522	1-216-097-11	RES-CHIP	100K 5% 1/10W	R633	1-215-481-00	METAL	330K 1% 1/4W
R523	1-216-121-11	RES-CHIP	1M 5% 1/10W	R634	1-217-625-00	METAL	0.05 10% 2W
R524	1-216-075-00	RES-CHIP	12K 5% 1/10W	R635	1-260-300-11	CARBON	4.7 5% 1/2W
R525	1-216-057-00	RES-CHIP	2.2K 5% 1/10W	R636	1-249-413-11	CARBON	470 5% 1/4W
R526	1-216-089-91	RES-CHIP	47K 5% 1/10W	R637	1-216-041-00	RES-CHIP	470 5% 1/10W
R527	1-216-077-91	RES-CHIP	15K 5% 1/10W	R639	1-208-814-91	METAL CHIP	22K 0.5% 1/10W
R528	1-216-097-11	RES-CHIP	100K 5% 1/10W	R640	1-208-830-11	METAL CHIP	100K 0.5% 1/10W
R529	1-216-073-91	RES-CHIP	10K 5% 1/10W	R641	1-216-097-11	RES-CHIP	100K 5% 1/10W
R530	1-216-085-91	RES-CHIP	33K 5% 1/10W	R642	1-249-405-11	CARBON	100 5% 1/4W
R531	1-216-057-00	RES-CHIP	2.2K 5% 1/10W	R643	1-216-089-91	RES-CHIP	47K 5% 1/10W
R533	1-216-077-91	RES-CHIP	15K 5% 1/10W	R645	1-216-073-91	RES-CHIP	10K 5% 1/10W
R536	1-216-025-11	RES-CHIP	100 5% 1/10W	R647	1-216-065-91	RES-CHIP	4.7K 5% 1/10W
R540	1-215-912-11	METAL OXIDE	150 5% 3W	R648	1-215-481-00	METAL	330K 1% 1/4W
R543	1-216-065-91	RES-CHIP	4.7K 5% 1/10W	R649	1-208-805-11	METAL CHIP	9.1K 0.5% 1/10W
R544	1-216-065-91	RES-CHIP	4.7K 5% 1/10W	R650	1-208-758-11	METAL CHIP	100 0.5% 1/10W
R546	1-215-918-00	METAL OXIDE	1.5K 5% 3W	R651	Δ 1-220-926-11	FUSIBLE	0.47 10% 1/2W
R550	1-215-880-00	METAL OXIDE	10 5% 2W	R654	1-216-001-00	RES-CHIP	10 5% 1/10W
R551	1-215-871-11	METAL OXIDE	2.2K 5% 1W	R656	1-216-365-00	METAL OXIDE	0.47 5% 2W
R552	1-216-848-11	METAL CHIP	180K 5% 1/10W	R660	1-247-807-31	CARBON	100 5% 1/4W
R553	1-249-381-11	CARBON	1 5% 1/4W	R1202	1-216-073-91	RES-CHIP	10K 5% 1/10W
R555	1-216-059-00	RES-CHIP	2.7K 5% 1/10W	R1203	1-216-049-11	RES-CHIP	1K 5% 1/10W
R556	1-215-918-00	METAL OXIDE	1.5K 5% 3W	R1207	1-216-077-91	RES-CHIP	15K 5% 1/10W
R557	1-216-067-00	RES-CHIP	5.6K 5% 1/10W	R1210	1-216-077-91	RES-CHIP	15K 5% 1/10W
R558	1-216-057-00	RES-CHIP	2.2K 5% 1/10W	R1213	1-216-049-11	RES-CHIP	1K 5% 1/10W
R568	1-215-918-00	METAL OXIDE	1.5K 5% 3W	R1214	1-216-049-11	RES-CHIP	1K 5% 1/10W
R583	1-216-073-91	RES-CHIP	10K 5% 1/10W	R1215	1-216-049-11	RES-CHIP	1K 5% 1/10W
R589	1-216-295-91	SHORT CHIP	0	R1216	1-216-025-11	RES-CHIP	100 5% 1/10W
R591	1-215-892-11	METAL OXIDE	1K 5% 2W	R1230	1-216-041-00	RES-CHIP	470 5% 1/10W
R595	1-249-377-11	CARBON	0.47 5% 1/4W	R1231	1-216-113-00	RES-CHIP	470K 5% 1/10W
R603	Δ 1-202-933-61	FUSIBLE	0.1 10% 1/2W	R1232	1-216-041-00	RES-CHIP	470 5% 1/10W
R605	1-216-049-11	RES-CHIP	1K 5% 1/10W	R1233	1-216-113-00	RES-CHIP	470K 5% 1/10W
R608	1-216-073-91	RES-CHIP	10K 5% 1/10W	R1235	1-216-073-91	RES-CHIP	10K 5% 1/10W

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REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
R1236	1-216-073-91	RES-CHIP 10K 5% 1/10W				< TRANSISTOR >	
		< RELAY >		Q570	8-729-901-81	TRANSISTOR 2SC2412K-T-146-R	
RY601 Δ	1-755-388-11	RELAY (AC POWER)				< RESISTOR >	
		< SWITCH >		JR101	NOT FITTED		
SW532	1-572-707-11	SWITCH, LEVER		R022	1-216-089-91	METAL CHIP 47K 5% 1/10W	
		< TRANSFORMER >		R034	1-216-121-11	RES-CHIP 1M 5% 1/10W	
T511 Δ	1-453-372-11	TRANSFORMER ASSY FLYBACK NX-4521//Z214		R053	1-216-077-91	RES-CHIP 15K 5% 1/10W	
T531	1-437-210-11	TRANSFORMER, HORIZONTAL DRIVE		R455	1-216-295-91	SHORT CHIP 0	
T532	1-435-802-21	TRANSFORMER, PIN MODULATION		R505	1-218-867-11	METAL CHIP 6.8K 0.5% 1/10W	
T533	1-437-812-31	TRANSFORMER, HORIZONTAL LINEAR		R508	1-218-869-11	METAL CHIP 8.2K 0.5% 1/10W	
T602 Δ	1-431-732-31	TRANSFORMER, CONVERTER (SRT)		R513	1-216-105-91	RES-CHIP 220K 5% 1/10W	
T603 Δ	1-435-976-12	TRANSFORMER, CONVERTER (PIT)		R516	1-214-907-00	METAL 56K 1% 1/2W	
		< THERMISTOR >		R517	1-215-451-00	METAL 18K 1% 1/4W	
TH601	1-803-586-41	THERMISTOR		R518	1-216-059-00	RES-CHIP 2.7K 5% 1/10W	
THP601 Δ	1-803-951-11	THERMISTOR, PTC		R521	1-216-105-91	RES-CHIP 220K 5% 1/10W	
		< CRYSTAL >		R532	1-216-071-00	RES-CHIP 8.2K 5% 1/10W	
X001	1-578-774-71	VIBRATOR, CRYSTAL		R534	1-216-097-11	RES-CHIP 100K 5% 1/10W	
X201	1-760-628-11	VIBRATOR, CRYSTAL		R535	1-216-115-00	RES-CHIP 560K 5% 1/10W	
				R538	1-243-531-21	METAL OXIDE 100 5% 3W	
				R539	NOT FITTED		
				R541	1-216-295-91	SHORT CHIP 0	
				R542	1-216-121-11	RES-CHIP 1M 5% 1/10W	
				R547	NOT FITTED		
				R548	1-249-387-11	CARBON 3.3 5% 1/4W	
				R549	NOT FITTED		
				R561	1-216-117-00	RES CHIP 680K 5% 1/10W	
				R562	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
				R569	1-216-073-91	RES-CHIP 10K 5% 1/10W	
				R570	1-216-049-11	RES-CHIP 1K 5% 1/10W	
				R571	1-216-035-00	RES-CHIP 270 5% 1/10W	
				R572	1-216-039-00	RES-CHIP 390 5% 1/10W	
				R600	1-218-837-11	METAL CHIP 390 0.5% 1/10W	
				R601	1-218-839-11	METAL CHIP 470 0.5% 1/10W	
				R1239	NOT FITTED		
A Board Variant Parts 28HX15							
		< CAPACITOR >				< CAPACITOR >	
C508	1-163-035-00	CERAMIC CHIP 0.047UF 50V		C508	NOT FITTED		
C542	1-161-754-00	CERAMIC 0.001UF 10.00% 2KV		C542	1-162-116-00	CERAMIC 680PF 10.00% 2KV	
C555	1-136-086-00	FILM 17000PF 3.00% 1.2KV		C555	1-117-650-11	FILM 18000PF 3.00% 1.2KV	
C570	1-126-961-11	ELECT 2.2UF 20.00% 50V		C570	NOT FITTED		
C582	1-163-255-11	CERAMIC CHIP 150PF 5.00% 50V		C582	1-163-243-11	CERAMIC CHIP 47PF 5.00% 50V	
		< COATING LEAD >				< COATING LEAD >	
CLP0001	NOT FITTED			CLP0001	* 4-042-408-02	PIN(45), WIRE	
		< CONNECTOR >					
CN503	NOT FITTED						
		< DIODE >					
D535	8-806-326-11	DIODE EU-2					
D538	8-806-326-11	DIODE EU-2					
D625	6-500-246-01	DIODE FBIU4D7M1-B-4					
		< COIL >					
L405	NOT FITTED						
L406	NOT FITTED						
L504	NOT FITTED						

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A F3 H6

REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
< CONNECTOR >				A Board Variant Parts KV-28HX15B & KV-32HX15B			
CN503	* 1-816-974-51	PLUG, CONNECTOR 3P		< TUNER >			
< DIODE >				TU101	1-693-555-14	FRONTEND (TUNER+IF)	
D535	8-719-908-03	DIODE GP08D		A Board Variant Parts KV-28HX15E & KV-32HX15E			
D538	8-719-908-03	DIODE GP08D		< TUNER >			
D625	8-719-062-39	DIODE D4SBL20UF1		TU101	1-693-556-14	FRONTEND (TUNER+IF)	
< COIL >				A Board Variant Parts KV-28HX15U & KV-32HX15U			
L405	1-535-303-00	LEAD, JUMPER (5.0MM)		< TUNER >			
L406	1-535-303-00	LEAD, JUMPER (5.0MM)		TU101	1-693-557-14	FRONTEND (TUNER+IF)	
L504	1-535-303-00	LEAD, JUMPER (5.0MM)		* A-1055-144-A F3 Board Complete			
< TRANSISTOR >				* 4-374-846-01 COVER, CAPACITOR, CAP TYPE			
Q570	NOT FITTED			< CAPACITOR >			
< RESISTOR >				C3601	1-113-924-11	CERAMIC	0.0047UF 20.00% 250V
JR101	1-216-295-91	SHORT CHIP	0	C3602	Δ 1-137-999-11	FILM	0.1UF 275V
R022	1-216-689-11	METAL CHIP	39K 0.5% 1/10W	< CONNECTOR >			
R034	1-216-129-00	RES-CHIP	2.2M 5% 1/10W	CN3601	Δ * 1-580-843-11	PIN, CONNECTOR (POWER)	
R053	1-216-095-00	RES-CHIP	82K 5% 1/10W	CN3602	1-695-915-11	TAB (CONTACT)	
R455	1-412-002-31	INDUCTOR	4.7UH	CN3603	Δ * 1-580-843-11	PIN, CONNECTOR (POWER)	
R505	1-216-673-11	METAL CHIP	8.2K 0.5% 1/10W	< FUSE >			
R508	1-216-675-91	METAL CHIP	10K 0.5% 1/10W	F3601	Δ 1-576-232-21	FUSE (H.B.C.) 5A/250V	
R513	1-216-121-11	RES-CHIP	1M 5% 1/10W	FH3601	Δ 1-533-725-11	FUSE HOLDER	
R516	1-214-905-11	METAL	47K 1% 1/2W	< RESISTOR >			
R517	1-215-455-00	METAL	27K 1% 1/4W	R3601	Δ 1-202-719-00	SOLID	1M 10% 1/2W
R518	1-216-069-00	RES-CHIP	6.8K 5% 1/10W	< TRANSFORMER >			
R521	1-216-121-11	RES-CHIP	1M 5% 1/10W	T3602	Δ 1-433-488-31	TRANSFORMER, LINE FILTER	
R532	1-216-065-91	RES-CHIP	4.7K 5% 1/10W	< VARISTOR >			
R534	1-216-121-11	RES-CHIP	1M 5% 1/10W	VD3601	Δ 1-803-830-31	VARISTOR (ERZV14D621)	
R535	1-216-295-91	RES-CHIP	390K 5% 1/10W	* A-1055-145-A H6 Board Complete			
R538	1-215-913-11	METAL OXIDE	220 5% 3W	* 4-102-022-01 PIN(30), WIRE			
R539	1-535-143-41	LEAD, JUMPER (17.5MM)		< CAPACITOR >			
R541	NOT FITTED			C4500	1-102-106-00	CERAMIC	100PF 10.00% 50V
R542	NOT FITTED			C4501	1-126-960-11	ELECT	1UF 20.00% 50V
R547	1-535-143-71	LEAD, JUMPER (7.5MM)		C4503	1-102-106-00	CERAMIC	100PF 10.00% 50V
R548	NOT FITTED			C4504	1-126-960-11	ELECT	1UF 20.00% 50V
R549	1-535-143-71	LEAD, JUMPER (7.5MM)					
R561	NOT FITTED						
R562	NOT FITTED						
R569	NOT FITTED						
R570	NOT FITTED						
R571	NOT FITTED						
R572	NOT FITTED						
R600	1-218-825-11	METAL CHIP	120 0.5% 1/10W				
R601	1-218-843-11	METAL CHIP	680 0.5% 1/10W				
R1239	1-215-913-11	METAL OXIDE	220 5% 3W				

REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
< CONNECTOR >				< DIODE >			
CN4501	* 1-564-512-11	PLUG, CONNECTOR 9P		D8801	8-719-923-60	DIODE MTZJ-T-77-9.1A	
CN4502	* 1-816-977-51	PLUG, CONNECTOR 6P		D8802	8-719-302-43	DIODE EL1Z	
< DIODE >				< IC >			
D4500	8-719-929-15	DIODE HZS9.1NB2		IC8801	8-749-010-64	PHOTO COUPLER PC123F2	
D4501	8-719-929-15	DIODE HZS9.1NB2		< COIL >			
D4502	8-719-109-97	DIODE RD6.8ESB2		L8802	1-406-979-11	INDUCTOR 220UH	
D4503	8-719-109-97	DIODE RD6.8ESB2		< TRANSISTOR >			
< SOCKET >				Q8801	6-550-878-01	TRANSISTOR STP19NB20	
J4500	1-794-442-11	TERMINAL BLOCK (LIGHT ANGLE), S		Q8802	1-801-806-11	TRANSISTOR DTC144EKA	
J4501	1-750-264-31	JACK		Q8803	1-801-806-11	TRANSISTOR DTC144EKA	
< COIL >				< RESISTOR >			
L4501	1-408-603-31	INDUCTOR 10UH		JR8801	1-216-864-11	SHORT CHIP 0	
L4502	1-408-603-31	INDUCTOR 10UH		R8803	1-249-441-11	CARBON 100K 5% 1/4W	
L5400	1-535-303-00	LEAD, JUMPER (5.0MM)		R8804	1-216-825-11	METAL CHIP 2.2K 5% 1/10W	
< RESISTOR >				R8805	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R4500	1-247-895-91	CARBON 470K 5% 1/4W		R8806	1-216-809-11	METAL CHIP 100 5% 1/10W	
R4501	1-247-807-31	CARBON 100 5% 1/4W		R8812	1-218-879-11	METAL CHIP 22K 0.5% 1/10W	
R4502	1-247-895-91	CARBON 470K 5% 1/4W		D2 Board Variant Parts KV-28HX15			
R4503	1-247-807-31	CARBON 100 5% 1/4W		< CAPACITOR >			
R4506	1-249-406-11	CARBON 120 5% 1/4W		C8802	1-117-660-21	FILM 0.12UF 5.00% 250V	
R4507	1-249-406-11	CARBON 120 5% 1/4W		C8803	1-117-665-11	MYLAR 0.033UF 5.00% 250V	
R4508	1-249-406-11	CARBON 120 5% 1/4W		D2 Board Variant Parts KV-32HX15			
R4509	1-249-406-11	CARBON 120 5% 1/4W		< CAPACITOR >			
R4510	1-249-427-11	CARBON 6.8K 5% 1/4W		C8802	1-107-846-11	FILM 0.1UF 5.00% 400V	
R4511	1-247-843-11	CARBON 3.3K 5% 1/4W		C8803	1-117-655-11	FILM 30000PF 3.00% 1.2KV	
R4512	1-249-431-11	CARBON 15K 5% 1/4W		* A-1302-977-A VM Board complete KV-28HX15			
R4513	1-215-445-00	METAL 10K 1% 1/4W		* A-1302-958-A VM Board complete KV-32HX15			
R4514	1-249-419-11	CARBON 1.5K 5% 1/4W		VM Board Common Parts			
R4515	1-535-303-00	LEAD, JUMPER (5.0MM)		* 1-816-974-51	PLUG, CONNECTOR 3P		
< SWITCH >				< CAPACITOR >			
S4500	1-762-816-11	SWITCH, TACTIL		C1701	1-104-665-11	ELECT 100UF 20.00% 25V	
S4501	1-762-816-11	SWITCH, TACTIL		C1704	1-104-665-11	ELECT 100UF 20.00% 25V	
S4502	1-762-816-11	SWITCH, TACTIL		C1844	1-129-716-00	FILM 0.015UF 5.00% 630V	
* A-1302-976-A D2 Board complete KV-28HX15				C1845	1-129-725-00	FILM 0.082UF 5.00% 400V	
* A-1302-957-A D2 Board complete KV-32HX15				C1901	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
D2 Board Common Parts				< CONNECTOR >			
< CAPACITOR >				CN8801	* 1-778-770-11	CONNECTOR, BOARD TO BOARD (PLUG)	
C8804	1-136-207-11	MYLAR 0.047UF 5.00% 630V		< CAPACITOR >			
< CONNECTOR >				C1701	1-104-665-11	ELECT 100UF 20.00% 25V	
< CAPACITOR >				C1704	1-104-665-11	ELECT 100UF 20.00% 25V	
C1701	1-104-665-11	ELECT 100UF 20.00% 25V		C1844	1-129-716-00	FILM 0.015UF 5.00% 630V	
C1704	1-104-665-11	ELECT 100UF 20.00% 25V		C1845	1-129-725-00	FILM 0.082UF 5.00% 400V	
C1844	1-129-716-00	FILM 0.015UF 5.00% 630V		C1901	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C1845	1-129-725-00	FILM 0.082UF 5.00% 400V		< CONNECTOR >			
C1901	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V		< CAPACITOR >			

REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
C1902	1-137-374-11	MYLAR	0.047UF	5.00%	50V		
C1903	1-126-964-11	ELECT	10UF	20.00%	50V		
C1904	1-130-475-00	MYLAR	0.0022UF	5.00%	50V		
C1905	1-137-374-11	MYLAR	0.047UF	5.00%	50V		
C1906	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V		
C1908	1-109-954-11	ELECT	0.47UF	20.00%	160V		
C1913	1-129-898-00	FILM	0.0022UF	5.00%	630V		
C1915	1-136-205-11	MYLAR	0.022UF	5.00%	630V		
C1918	1-137-190-91	FILM	0.22UF	5.00%	50V		
C1951	1-126-964-11	ELECT	10UF	20.00%	50V		
C1952	1-126-964-11	ELECT	10UF	20.00%	50V		
C1953	1-137-367-11	MYLAR	0.0033UF	5.00%	50V		
C1954	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V		
C1957	1-126-964-11	ELECT	10UF	20.00%	50V		
C1958	1-137-190-91	FILM	0.22UF	5.00%	50V		
C1959	1-137-190-91	FILM	0.22UF	5.00%	50V		
< CONNECTOR >							
CN1701	1-691-771-11	PLUG (MICRO CONNECTOR)	9P				
CN1809	1-695-915-11	TAB (CONTACT)					
CN1901	* 1-564-506-11	PLUG, CONNECTOR	3P				
CN1902	* 1-564-506-11	PLUG, CONNECTOR	3P				
< DIODE >							
D1840	8-719-302-43	DIODE EL1Z					
D1901	8-719-991-33	DIODE 1SS133T-77					
D1902	8-719-991-33	DIODE 1SS133T-77					
D1903	8-719-991-33	DIODE 1SS133T-77					
D1904	8-719-991-33	DIODE 1SS133T-77					
D1905	8-719-110-41	DIODE RD15ESB2					
D1906	8-719-970-87	DIODE ERA38-06					
D1907	8-719-970-87	DIODE ERA38-06					
D1908	6-500-953-01	DIODE 1N4937RL					
D1909	8-719-991-33	DIODE 1SS133T-77					
< IC >							
IC1701	8-759-394-36	IC BA09T					
IC1901	8-759-659-67	IC LA6393DLL					
IC1902	8-759-008-70	IC LM358N					
< COIL >							
L1701	1-408-603-31	INDUCTOR	10UH				
L1843	1-406-989-21	INDUCTOR	10MH				
L1901	1-406-677-11	INDUCTOR	10MH				
L1902	1-414-177-11	INDUCTOR	1UH				
L1904	1-412-539-11	INDUCTOR	150UH				
L1959	1-406-677-11	INDUCTOR	10MH				
< TRANSISTOR >							
Q1840	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q1841	8-729-926-76	TRANSISTOR IRF620					
Q1901	8-729-901-81	TRANSISTOR 2SC2412K-T-146-R					
Q1902	8-729-901-81	TRANSISTOR 2SC2412K-T-146-R					
Q1903	8-729-043-95	TRANSISTOR 2SC3840 (3)					
Q1906	8-729-901-81	TRANSISTOR 2SC2412K-T-146-R					
Q1907	8-729-140-97	TRANSISTOR 2SB734-34					
< RESISTOR >							
R1842	1-216-809-11	METAL CHIP	100	5%	1/10W		
R1846	1-216-825-11	METAL CHIP	2.2K	5%	1/10W		
R1903	1-216-833-11	METAL CHIP	10K	5%	1/10W		
R1904	1-216-833-11	METAL CHIP	10K	5%	1/10W		
R1905	1-216-845-11	METAL CHIP	100K	5%	1/10W		
R1906	1-216-833-11	METAL CHIP	10K	5%	1/10W		
R1907	1-216-845-11	METAL CHIP	100K	5%	1/10W		
R1908	1-216-813-11	METAL CHIP	220	5%	1/10W		
R1909	1-215-489-00	METAL	680K	1%	1/4W		
R1910	1-216-864-11	SHORT CHIP	0				
R1911	1-216-833-11	METAL CHIP	10K	5%	1/10W		
R1912	1-216-857-11	METAL CHIP	1M	5%	1/10W		
R1913	1-216-821-11	METAL CHIP	1K	5%	1/10W		
R1914	1-216-825-11	METAL CHIP	2.2K	5%	1/10W		
R1915	1-216-829-11	METAL CHIP	4.7K	5%	1/10W		
R1917	1-216-842-11	METAL CHIP	56K	5%	1/10W		
R1918	1-215-921-11	METAL OXIDE	4.7K	5%	3W		
R1919	1-218-871-11	METAL CHIP	10K	0.5%	1/10W		
R1920	1-216-864-11	SHORT CHIP	0				
R1923	1-216-845-11	METAL CHIP	100K	5%	1/10W		
R1924	1-216-845-11	METAL CHIP	100K	5%	1/10W		
R1925	1-216-845-11	METAL CHIP	100K	5%	1/10W		
R1953	1-216-850-11	METAL CHIP	270K	5%	1/10W		
R1954	1-216-851-11	METAL CHIP	330K	5%	1/10W		
R1955	1-216-849-11	METAL CHIP	220K	5%	1/10W		
R1956	1-218-463-11	RES-CHIP	8.2M	5%	1/10W		
R1957	1-216-833-11	METAL CHIP	10K	5%	1/10W		
R1958	1-216-809-11	METAL CHIP	100	5%	1/10W		
R1959	1-216-828-11	METAL CHIP	3.9K	5%	1/10W		
R1961	1-216-839-11	METAL CHIP	33K	5%	1/10W		
R1962	1-216-839-11	METAL CHIP	33K	5%	1/10W		
R1964	1-216-809-11	METAL CHIP	100	5%	1/10W		
R1965	1-216-817-11	METAL CHIP	470	5%	1/10W		
< TRANSFORMER >							
T1901	1-433-849-12	TRANSFORMER, FERRITE (DFT)					

Note : The components identified by shading and marked Δ are critical for safety. Replace only with the part numbers specified in the parts list.



REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
VM Board Variant Parts 28HX15							
< CAPACITOR >				< FERRITE BEAD >			
C1732	1-216-295-91	SHORT CHIP	0	FB1701	1-535-303-00	LEAD, JUMPER (5.0MM)	
C1848	1-136-601-11	FILM	0.001UF	5.00%	630V		
C1912	NOT FITTED			< COILS >			
C1914	1-102-030-00	CERAMIC	330PF	10.00%	500V		
C1916	1-127-573-11	CERAMIC CHIP	1UF	10.00%	16V		
C1917	1-102-228-00	CERAMIC	470PF	10.00%	500V		
< CONNECTOR >				< RESISTOR >			
CN1702	NOT FITTED			R1847	1-243-528-71	METAL OXIDE	56 5% 3W
CN1718	* 1-770-747-11	CONNECTOR, BOARD TO BOARD	12P	R1848	1-243-528-71	METAL OXIDE	56 5% 3W
< FERRITE BEAD >				R1901	1-216-089-91	RES-CHIP	47K 5% 1/10W
FB1701	NOT FITTED			R1916	1-216-665-11	METAL CHIP	3.9K 0.5% 1/10W
< COILS >				R1921	1-215-921-11	METAL OXIDE	4.7K 5% 3W
L1903	1-412-538-41	INDUCTOR	120UH	R1922	1-215-918-00	METAL OXIDE	1.5K 5% 3W
< RESISTOR >				R1926	NOT FITTED		
R1847	1-243-531-21	METAL OXIDE	100 5% 3W	R1931	1-216-681-11	METAL CHIP	18K 0.5% 1/10W
R1848	1-243-531-21	METAL OXIDE	100 5% 3W	R1960	1-218-867-11	METAL CHIP	6.8K 0.5% 1/10W
R1901	NOT FITTED			R1967	1-243-575-71	METAL OXIDE	820 5% 2W
R1916	1-216-667-11	METAL CHIP	4.7K 0.5% 1/10W	R1968	1-215-886-11	METAL OXIDE	100 5% 2W
R1921	1-215-922-11	METAL OXIDE	6.8K 5% 3W	R1969	1-243-575-21	METAL OXIDE	820 5% 2W
R1922	1-215-919-11	METAL OXIDE	2.2K 5% 3W	* A-1415-638-A F5 Board Complete			
R1926	1-216-295-91	SHORT CHIP	0	4-206-220-01	HOLDER, LED		
R1931	1-218-881-11	METAL CHIP	27K 0.5% 1/10W	< CAPACITOR >			
R1960	1-216-833-11	METAL CHIP	10K 5% 1/10W	C1100	1-126-969-11	ELECT	220UF 20.00% 50V
R1967	1-243-567-21	METAL OXIDE	1K 5% 2W	< CONNECTOR >			
R1968	1-243-564-21	METAL OXIDE	100 5% 2W	CN1100	* 1-564-510-11	PLUG, CONNECTOR	7P
R1969	1-243-576-21	METAL OXIDE	1K 5% 2W	CN6100	Δ * 1-580-843-11	PIN, CONNECTOR (POWER)	
VM Board Variant Parts 32HX15				CN6102	Δ * 1-691-291-11	PIN, CONNECTOR (PC BOARD)	5P
< CAPACITOR >				< DIODE >			
C1732	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V		
C1848	1-136-347-11	FILM	0.0047UF	5.00%	630V		
C1912	1-162-117-00	CERAMIC	100PF	10.00%	500V		
C1914	1-102-244-00	CERAMIC	220PF	10.00%	500V		
C1916	1-162-962-11	CERAMIC CHIP	470PF	10.00%	50V		
C1917	1-102-030-00	CERAMIC	330PF	10.00%	500V		
< CONNECTOR >				< IC >			
CN1702	* 1-564-506-11	PLUG, CONNECTOR	3P	D6401	8-719-081-56	DIODE L-59SRSGC-CC	
CN1718	* 1-770-723-11	CONNECTOR, BOARD TO BOARD	8P	< TRANSISTOR >			
				IC6400	8-742-180-30	HYB IC SBX3081-51(30)	
				Q1100	8-729-027-38	TRANSISTOR DTA144EKA-T146	
				Q1101	8-729-027-43	TRANSISTOR DTC114EKA-T146	
				< RESISTOR >			
				R1100	1-216-813-11	METAL CHIP	220 5% 1/10W
				R1101	1-216-815-11	METAL CHIP	330 5% 1/10W
				R1102	1-216-829-11	METAL CHIP	4.7K 5% 1/10W
				R1103	1-216-841-11	METAL CHIP	47K 5% 1/10W
				R1104	1-216-813-11	METAL CHIP	220 5% 1/10W

Note : The components identified by shading and marked Δ are critical for safety. Replace only with the part numbers specified in the parts list.

F5 C

REF.NO.	PART.NO	DESCRIPTION	REMARK
R1105	1-216-825-11	METAL CHIP 2.2K 5%	1/10W
R1106	1-216-809-11	METAL CHIP 100 5%	1/10W

< SWITCH >

S6100	Δ 1-786-649-11	SWITCH, AC POWER PUSH
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*** A-1063-719-A C Board Complete KV-28HX15**
*** A-1415-641-A C Board Complete KV32HX15**

C Board Common Parts

4-382-854-01	SCREW (M3X8), P, SW (+)
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< CAPACITOR >

C701	1-136-189-00	MYLAR	0.1UF	10.00%	250V
C702	1-126-964-11	ELECT	10UF	20.00%	50V
C703	1-101-004-00	CERAMIC	0.01UF		50V
C704	1-107-651-11	ELECT	4.7UF	20.00%	250V
C705	1-162-318-11	CERAMIC	0.001UF	10.00%	500V

C706	1-162-318-11	CERAMIC	0.001UF	10.00%	500V
C708	1-115-350-51	CERAMIC	0.0047UF		2KV
C710	1-107-652-11	ELECT	10UF	20.00%	250V
C1803	1-101-005-00	CERAMIC	0.022UF		50V
C1804	1-126-964-11	ELECT	10UF	20.00%	50V

C1805	1-163-243-11	CERAMIC CHIP 47PF	5.00%	50V
C1806	1-165-875-11	CERAMIC CHIP 10UF	10%	10V

< CONNECTOR >

CN702	1-695-915-11	TAB (CONTACT)
CN703	* 1-564-510-11	PLUG, CONNECTOR 7P
CN706	1-695-915-11	TAB (CONTACT)
CN707	* 1-564-508-11	PLUG, CONNECTOR 5P
CN1801	* 1-564-506-11	PLUG, CONNECTOR 3P

CN1802	* 1-564-506-11	PLUG, CONNECTOR 3P
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< DIODE >

D701	8-719-991-33	DIODE 1SS133T-77
D702	8-719-901-83	DIODE 1SS83
D703	8-719-302-43	DIODE EL1Z
D705	8-719-302-43	DIODE EL1Z
D706	8-719-901-83	DIODE 1SS83

D707	8-719-901-83	DIODE 1SS83
D708	8-719-109-97	DIODE RD6.8ESB2
D709	8-719-109-97	DIODE RD6.8ESB2
D710	8-719-109-97	DIODE RD6.8ESB2
D1801	8-719-110-41	DIODE RD15ESB2

D1802	8-719-110-41	DIODE RD15ESB2
D1803	8-719-110-41	DIODE RD15ESB2

REF.NO.	PART.NO	DESCRIPTION	REMARK
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< IC >

IC701	8-759-562-43	IC TDA6108JF/N1B
IC1801	8-759-603-37	IC M5216P

< SOCKET >

J701	Δ 1-251-732-11	SOCKET, CRT
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< COIL >

L704	1-414-183-41	INDUCTOR	10UH
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< TRANSISTOR >

Q1801	8-729-026-39	TRANSISTOR 2SA933AS-QT
Q1802	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q1803	8-729-026-39	TRANSISTOR 2SA933AS-QT

< RESISTOR >

R701	1-247-903-00	CARBON	1M	5%	1/4W
R702	1-249-429-11	CARBON	10K	5%	1/4W
R703	1-247-903-00	CARBON	1M	5%	1/4W
R705	1-215-869-11	METAL OXIDE	1K	5%	1W
R706	1-249-411-11	CARBON	330	5%	1/4W

R712	1-215-869-11	METAL OXIDE	1K	5%	1W
R716	1-249-411-11	CARBON	330	5%	1/4W
R718	1-202-814-11	SOLID	33K	10%	1/2W
R726	1-215-869-11	METAL OXIDE	1K	5%	1W
R727	1-249-411-11	CARBON	330	5%	1/4W

R728	1-249-390-11	CARBON	5.6	5%	1/4W
R741	1-202-549-00	SOLID	100	20%	1/2W
R1801	1-216-841-11	METAL CHIP	47K	5%	1/10W
R1805	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1806	1-247-891-00	CARBON	330K	5%	1/4W

R1807	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1808	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1809	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1810	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1811	1-216-825-11	METAL CHIP	2.2K	5%	1/10W

R1812	1-216-835-11	METAL CHIP	15K	5%	1/10W
R1813	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1814	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1815	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1816	1-216-833-11	METAL CHIP	10K	5%	1/10W

R1817	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R1818	1-216-833-11	METAL CHIP	10K	5%	1/10W

< RESISTOR VARIABLE >

RV702	1-241-656-11	RES, ADJ, METAL FILM 110M
RV1801	1-241-787-11	RES, ADJ, CERMET 47K

Note : The components identified by shading and marked Δ are critical for safety. Replace only with the part numbers specified in the parts list.

C

REF.NO.	PART.NO	DESCRIPTION	REMARK	REF.NO.	PART.NO	DESCRIPTION	REMARK
C Board Variant Parts 28HX15				MISCELLANEOUS			
		< RESISTOR >		Δ	1-786-649-11	SWITCH, AC POWER PUSH	
R704	1-216-361-00	METAL OXIDE 0.22 5% 2W		Δ	1-783-083-11	CORD, POWER (WITH FILTER)	
		< RESISTOR >		Δ	1-776-860-12	POWER CORD, FILTER (UK)	
		< RESISTOR >		Δ	1-453-372-11	TRANSFORMER ASSY, FLYBACK (NX-4521//Z214) (KV-28HX15)	
		< RESISTOR >		Δ	1-453-308-41	TRANSFORMER ASSY, FLYBACK (NX-4521//Z2B4) (KV-32HX15)	
R704	1-535-143-31	LEAD, JUMPER (15.0MM)			1-693-555-14	FRONTEND (TUNER+IF) (KV-28/32HX15B)	
		< RESISTOR >			1-693-556-14	FRONTEND (TUNER+IF) (KV-28/32HX15E)	
		< RESISTOR >			1-693-557-14	FRONTEND (TUNER+IF) (KV-28/32HX15U)	
		< RESISTOR >			1-424-733-11	COIL, PFC CHOKE 65MMH	
		< RESISTOR >			1-825-859-11	LOUDSPEAKER (5.5X15CM)	
		< RESISTOR >		Δ	8-451-540-11	DEFLECTION YOKE (Y28VECP-L) (KV-28HX15)	
		< RESISTOR >		Δ	1-451-575-11	DEFLECTION YOKE (Y32VECP-T) (KV-32HX15)	
		< RESISTOR >		Δ	8-453-021-21	NECK ASSY, NA2919-M2	
		< RESISTOR >			1-452-896-61	COIL, NA ROTATION (RT-200)	
		< RESISTOR >		Δ	1-416-466-21	COIL, DEMAGNETIC (KV-28HX15)	
		< RESISTOR >		Δ	1-416-769-11	COIL, DEMAGNETIC (KV-32HX15)	
		< RESISTOR >		Δ	1-251-946-21	CAP ASSY, HIGH-VOLTAGE (KV-28HX15)	
		< RESISTOR >		Δ	1-251-946-11	CAP ASSY, HIGH-VOLTAGE (KV-32HX15)	
		< RESISTOR >		Δ	8-737-794-05	PICTURE TUBE (W66LWS000X) (KV-28HX15)	
		< RESISTOR >		Δ	8-735-217-05	PICTURE TUBE (W76LWN000X) (KV-32HX15)	
		< RESISTOR >			1-452-014-11	CIRCULAR DISC MAGNET B	
		< RESISTOR >			1-425-032-00	MAGNET, DISK	
		< RESISTOR >		ACCESSORIES AND PACKAGING MATERIALS			
		< RESISTOR >			*4-102-985-01	CUSHION UPPER (KV-28HX15)	
		< RESISTOR >			*2-023-257-01	CUSHION UPPER (KV-32HX15)	
		< RESISTOR >			*4-102-986-01	CUSHION LOWER (KV-28HX15)	
		< RESISTOR >			*2-023-258-01	CUSHION LOWER (KV-32HX15)	
		< RESISTOR >			*4-102-984-01	INDIVIDUAL CARTON (KV-28HX15)	
		< RESISTOR >			*2-023-259-01	INDIVIDUAL CARTON (KV-32HX15)	
		< RESISTOR >			*4-395-957-01	BAG, PROTECTION (KV-28HX15)	
		< RESISTOR >			*4-029-168-01	BAG, PROTECTION (KV-32HX15)	
		< RESISTOR >			2-023-261-11	INSTRUCTION MANUAL (ITALIAN/GERMAN/FRENCH/DUTCH) (KV-28/32HX15B)	
		< RESISTOR >			2-023-261-21	INSTRUCTION MANUAL (ENGLISH) (KV-28/32HX15B)	
		< RESISTOR >			2-023-261-31	INSTRUCTION MANUAL (GERMAN/GREEK) (KV-28/32HX15E)	
		< RESISTOR >			2-023-261-41	INSTRUCTION MANUAL (ITALIAN) (KV-28/32HX15E)	
		< RESISTOR >			2-023-261-51	INSTRUCTION MANUAL (NORWEGIAN/SPANISH/SWEDISH/DANISH/FINNISH/PORTUGUESE) (KV-32HX15E)	
		< RESISTOR >			2-023-261-61	INSTRUCTION MANUAL (ENGLISH) (KV-32HX15U)	
		< RESISTOR >		REMOTE COMMANDER			
		< RESISTOR >			1-478-614-11	REMOTE COMMANDER (RM-947)	

TRACE

A new TV Repair Assistance Tool that combines ease of use and powerful PC software tools to allow you to save valuable time during many TV repairs.



The TRACE interface connects to the PC's serial port. It provides connection to the TV's I²C bus and can be provided with an InfraRed transmitter (optional).

The interface is powered by a standard 9 V PP3 battery for portable use, and can also be powered by an external 9V/25mA DC power supply.

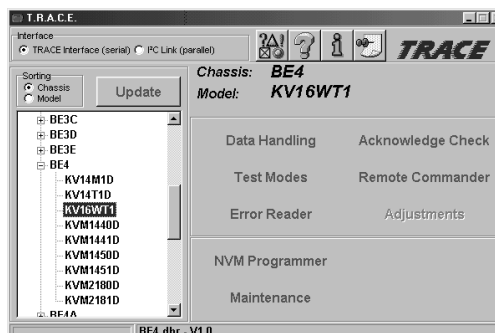
The TRACE software that is supplied with the interface allows you to:

- Read, restore and compare NVM contents via the I²C bus
- Acknowledge check of all I²C devices in the TV set
- Read Error Codes (emulation of the Error Reader tool)

With the optional IR Add-on kit, the following features can be added:

- Remote Commander emulation
- User programmable Functional Check through Infrared
- Fast and documented Test Mode setting of all Sony TV chassis

Additional features such as Adjustments and Troubleshooting are available in chassis-dependent software modules. Please contact your local Sony Service organisation for the latest information.



Note: For workshops already using the existing I²C Link parallel port interface (9-948-320-30), this software can be used as well, replacing the TV Data Handling software (9-948-340-50), but Error Reader and IR functions can only be accessed with the TRACE interface.

Partnumbers: TRACE Starter Kit (TRACE interface + software): 9-948-320-70
TRACE Software (for users of the I²C Link interface): 9-948-340-80
TRACE IR Add-on (IR interface + Remote Commander software): 9-948-320-80

PC requirements: IBM-compatible PC with operating system Windows95, Windows98, or WindowsNT*.

* WindowsNT only supported with TRACE interface