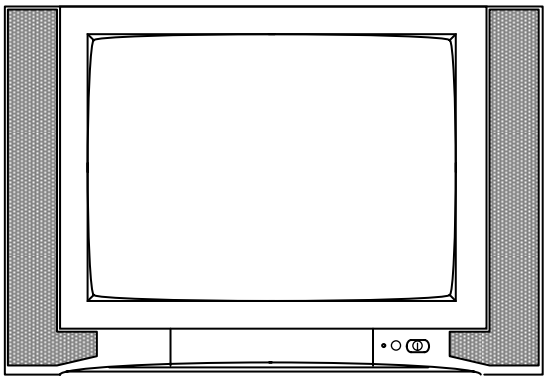
UOC TDA9341(9351)-2NAG SERIES
（PCB：CY-2529PD　VER 1.0）

SERVICE MANUAL

COLOUR TELEVISION



CONTENTS

SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (!) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards

4. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.** Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE: ( ) side GND, ISOLATED (NEUTRAL) : ( ) side GND and EARTH : ( ) side GND. Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time. If above note will not be kept, a fuse or any parts will be broken.

5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).

6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.

7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resitor to the anode button.

8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the
9. manufacturer's replacement components.

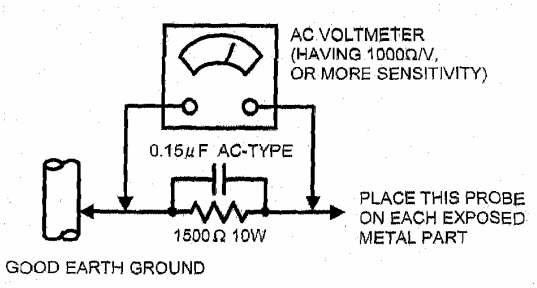
10. **Isolation Check**
(Safety for Electrical Shock Hazard)
After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

11. The surface of the TV screen is coated with a thin film which can easily be damaged. Be very careful with it when handle the TV. Should the TV screen become soiled, wipe it with a soft dry cloth. Never rub it forcefully. Never use any cleaner or detergent on it.

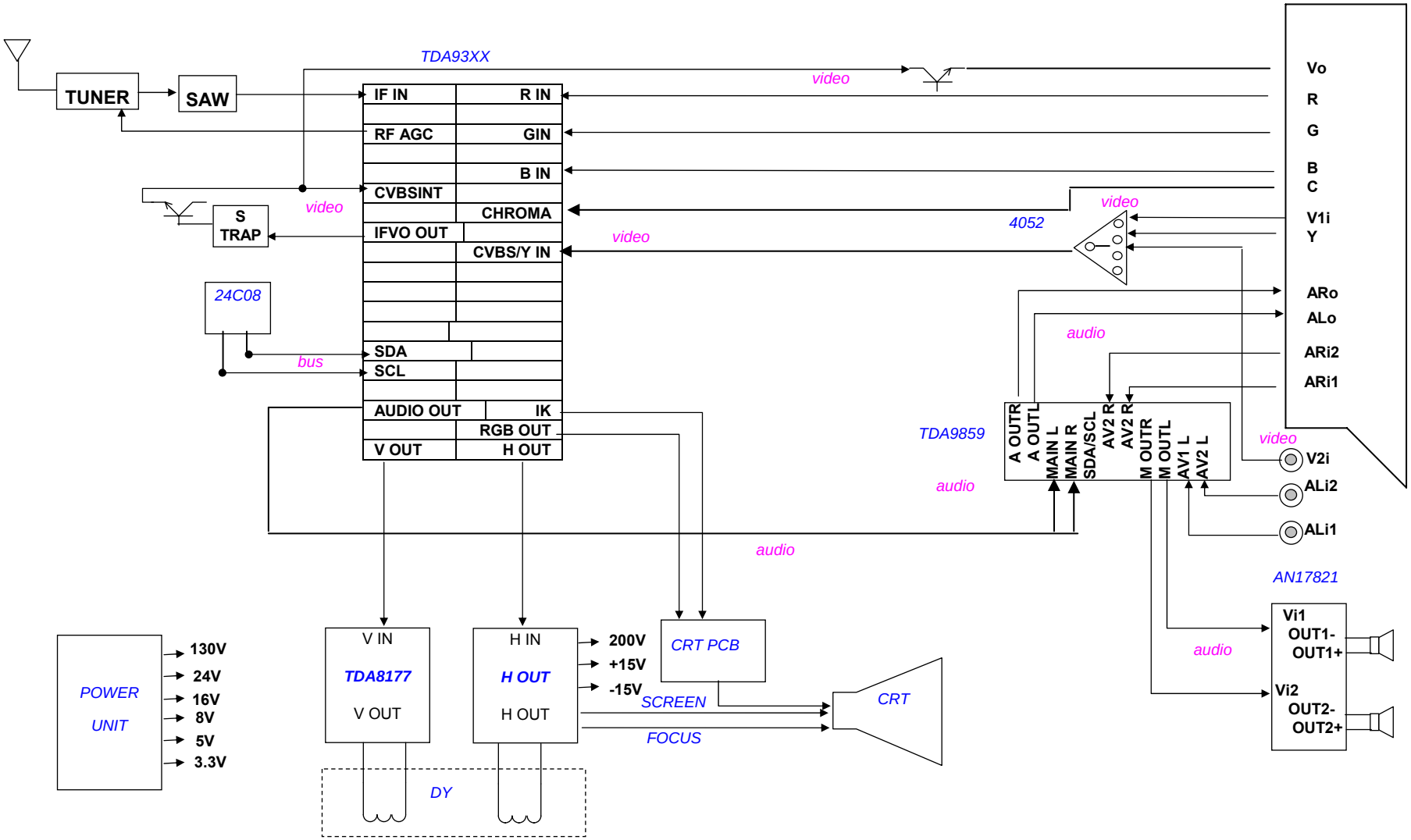
(1) Dielectric Strength Test
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.
(…Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a periode of one second.)
This method of test requires a test equipment not generally found in the service trade.

(2) Leakage Current Check
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

●Alternate Check Method
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500 Ω 10W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.).
This corresponds to 0.2mA AC (r.m.s.)



2 TV Block diagram

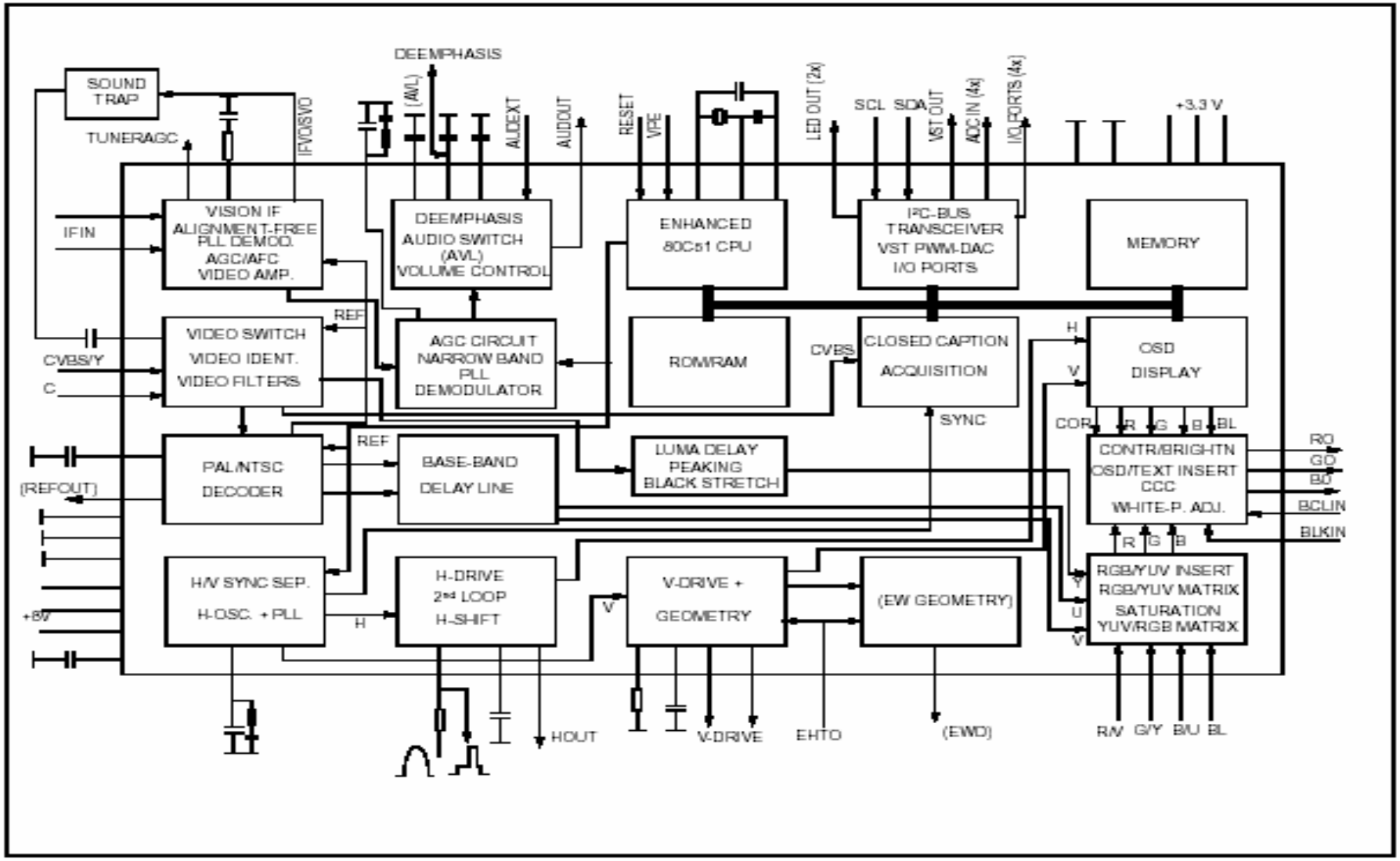


PHILIPS UOC FUNCTIONAL DIFFERENCE BETWEEN THE VARIOUS IC VERSIONS

IC VERSION	9350	9351	9352	9353	9360	9361	9362	9363	9364	9365	9366	9367	9380	9341	9382	9383	9384	9385	9386	9387	9388	9389	9370	9373	9375	9377	9378
TV rang	90	90	90	110	90	90	110	110	110	110	90	90	90	90	90	110	110	110	110	90	110	110	90	110	110	90	110
Mono inter-carrier multi-standard Sound demodulator (4.5-6.5MHz) With switch able centre frequency	√	√		√	√	√	√	√					√	√		√	√			√	√		√	√		√	√
Audio switch	√	√		√	√	√	√	√					√	√		√	√			√	√		√	√		√	√
Automatic volume leveling	√	√	√		√	√					√	√	√	√	√					√			√			√	
Automatic volume leveling or Subcarrier output (for comb filter applications)				√			√	√	√	√						√	√	√	√		√	√		√			√
QSS sound IF amplifier with Separate input and AGC circuit			√						√	√	√	√			√			√	√			√			√		
AM sound demodulator without Extra reference circuit										√									√								
PAL decoder	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√				√	√	√		
SECAM decoder		√	√	√		√		√		√		√		√	√		√		√								
NTSC decoder	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Horizontal geometry(E-W)				√			√	√	√	√						√	√	√	√		√	√		√	√		√
Horizontal and vertical zoom				√			√	√	√	√						√	√	√	√		√	√		√	√		√
ROM size	32-64k	32-64k	32-64k	32-64k	64-128	64-128	64-128	64-128	64-128	64-128	64-128	64-128	16-64k	16-64k	16-64k	16-64k	16-64k	16-64k	16-64k	16-64k	16-64k	16-64k	32-55k	32-55k	32-55k	32-55k	32-55k
User RAM size	1k	1k	1k	1k	2k	2k	2k	2k	2k	2k	2k	2k	1k	1k	1k	1k	1k	1k	1k	1k	1k	1k	2.25	2.25	2.25	2.25	2.25
Teletext	1 p	1p	1p	1p	10p	10p	10p	10p	10p	10p	10p	10p															
Closed captioning	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Block diagram TDA93xX PS/N2 series with mono intercarrier sound demodulator

BLOCK DIAGRAM



3.REPLACEMENT OF MEMORY IC

1. MEMORY IC.

   This TV uses memory IC. In the memory IC are memorized data for correctly operating the video and deflection circuits.

   When replacing memory IC, be sure to use IC written with the initial value of data.

2. PROCEDURE FOR REPLACING MEMORY IC

   (1) Power off

   Switch the power off and unplug the power cord from AC outlet.

   (2) Replace IC

   Be sure to use memory IC written with the initial data values.

   (3) Power On

   Plug the power cord into the AC outlet and switch the power On.

   (4) Check and set SYSTEM default value:

   1) Press “QV” key holding about 4 second and then press “MENU1” key on the Remote control unit. Or Press “TEST” key on the Remote control unit for factory used.
   2) The “TEST” will be displayed on the screen.
   3) Press digital key, (Mkey) and corresponding on-screen display will be appeared. Some time “PASSWORD” on-screen display will be appeared, you need to input 828.
   4) Check the setting value of the SYSTEM default value of Table below. If the value is different, select items by [CH+]/[CH-] keys and set value by [VOL+]/[VOL-] keys.
   5) Press “STANDBY” key again and return to the normal screen.

4.SERVICE ADJUSTMENT

B1 POWER SUPPLY

1. Receive normal colour bar signal.
2. Connect DC voltmeter to VD541- and isolated ground.
3. Adjust potentiometer in power unit to get the voltage as 110V ±1.0V for 21 inch hereinafter, 130 ±1.0V for 25 inch upwards.

FOCUS ADJUSTMENT

1. Receive a crosshatch signal.
2. While watching the screen, adjust the FOCUS VR to make the vertical and horizontal lines as fine and sharp as possible.

BUS CONTROL ADJUSTMENT

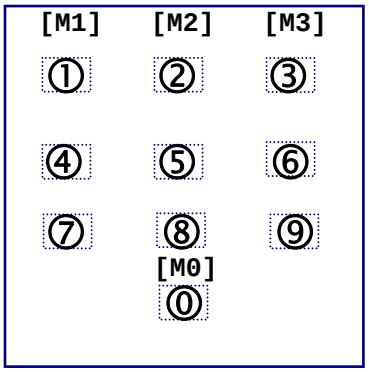
To enter BUS control mode, Press “TEST” key on the Remote control unit of factory.

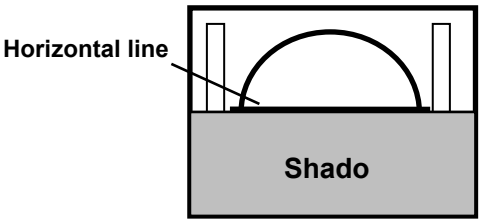
Press “0” to “4“ key, lock key +“5” to “9” (Mkey) and corresponding on-screen display will be appeared.

On TV screen “TEST” will be indicated, this means entered bus control mode.

And press following key, each function will be available.

Remote Hand Unit keys





[M1] menu

MENU0 Geometrical adjustment

Receive PAL standard Complete pattern signal.

Adjustment steps：

a) Adjust V. SLOPE, to the center horizontal line just appeare from half bottom shadow.

b) Adjust V. SIZE, to get 90% of vertical picture contents would be displayed on CRT.

c) Adjust V. SHIFT, the center horizontal line correspond to CRT vertical center.

d) Adjust H.SHIFT, to get the picture horizontal center correspond to CRT horizontal center.

Receive NTSC signal and repeat above [M0] and [M1] adjustment.

[M2] Menu

AGC Adjustment.

Receive 60dBμ(1mV)V_H colour bar pattern signal, adjust AGC value（voltage from high to low）, to noise reduce gradually and just disappeared point.

[M3] Menu

CRTcut off and white balance adjustment.

Receive white signal.

a) CRT cut off adjustment.

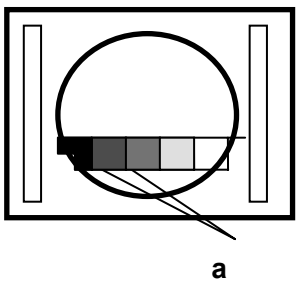
1. Select “SC”, then automatically vertical scan will be stopped.
2. Adjust SCREEN control on Flyback transformer to get the darkest single horizontal line (red, green, or blue, sometimes shows more yellow, more purple or more white).

b) White balance adjustment.

1. Select RD/BD menu.
2. Adjust RD/BD to get colour temperature as x=281, y=311

c) Sub-Brightness adjustment. (Use stair case signal)

1. Select SB menu.
2. Adjust SB to get the darkest step being cutoff.



I^2C standard UOC for export bus control adjustment item default setting **2006-10-12**

MI	Items	Variable	Preset	recommendation
M0	SUB CONTRAST	63	Sub contrast	63
	SUB COLOUR	63	Sub colour	63
	SUB SHARPNESS	63	Sub sharpness	63
	SUB TINT	63	Sub tint	32
	BASE TINT	63	BASE TINT	32
	VOL POINT	1/25/50/75	The1~4th point of S - curve	
	VOL VALUE	0~99	The volue of VALUE	20/40/60/80
M1	V. SLOPE	35	Picture vertical center adjustment	
	V. SHIFT	20	Vertical positions adjustment	
	V. SIZE	25	Vertical amplitude adjustment	
	V. SC	18	Vertical s-correction adjustment	
	H. SHIFT	15	Horizontal position adjustment	
	PROGRAM NO.	0		
M2	AGC	0~63	AGC take over	26
	SEARCH SPEED	0~3	Search speed	0
	SHIPPING			
M3	BT	0~100	brightness	50
	CT	0~100	contrast	75
	SC		Screen line	
	RB	0~63	R bais adjusted	32
	GB	0~63	G bais adjusted	32
	RD	0~63	R drive adjusted	32
	GD	0~63	G drive adjusted	32
	BD	0~63	B drive adjusted	32
	SB	0~63	Sub brightness	45
M4	OSD V.POS	0~28	Vertical position of OSD	15
	OSD H.POS	0~63	Horizital position of OSD	40
	OSD GR	0~15	OSD brightness	2
M5	CATHODE	0~15	CATHODE voltage adjust	4
	PP mode		PP mode select(standard / dynamic / mild/PIC WB)	standard
	Brightness	0~100	Brightness in pp mode	50
	Contrast	0~100	Contrast in pp mode	75
	Color	0~100	Color in pp mode	50
	Sharpness	0~100	Sharpness in pp mode	75
	Sc brightness	0~63	Brightness of screen line	45

	YD PAL	0~15	Y-delay adjustment for PAL signal	8
	YD NTSC	0~15	Y-delay adjustment for NTSC signal	8
	YD SECAM	0~15	Y-delay adjustment for SECAM signal	8
	YD AV PAL	0~15	Y-delay adjustment for PAL signal in AV mode	8
	RGB HS+	0~15	RBG hor. offset	8
M6	OSO	0/1	Switch –off in vertical over scan	1
	AGC SPEED	0~3	AGC speed	3
	FFI	0/1	Fast filter IF -PLL	0
	FSL	0/1	Forced slicing level for vertical sync	0
	FMWS	0/1	Widow selection of narrow-band sound PLL	0
	RPO	0/3	Ratio pre_overshoot	2
	NTSC Matrix	USA	NTSC matrix selection	1
	Vol pin	0~!	VOL PIN selection (Open drain)	0
	UOC VOL	0~1	The volume control of internal UOC	0
	FM ATT	0~63	Fm att gain	45
	SOFT CLIP	0~3	Soft clip adjust	2
	PEAK WHITE	0~15	Peak white adjust	4
	CORING	0~3	Coring adjust	1
M7	IF		Vision IF of RF (38/38.9/45.75058.75)	38.9
	D/K	ON/OFF	Sound system(6.5MHZ)	ON
	I	ON/OFF	Sound system(6.0MHZ)	ON
	B/G	ON/OFF	Sound system(5.5MHZ)	ON
	M	ON/OFF	Sound system(4.5MHZ)	OFF
	SIF PRI	B/G/DK/I/M	Force sound system as auto search	B/G
	AUTO SOUND	ON/OFF	Auto sound system as auto search	ON
	A V2	ON/OFF	AV2 selection	ON
	SVHS	ON/OFF	SVHS seletion	ON
	EURO	ON/OFF	Scart input seletio	ON
	YUV	ON/OFF	YUV seletion	OFF
	PIN 5	4.5M/RGB	Function selection(NTSC/RGB)	RGB
	VIDEO OUT	CVBS/IF	Selected video out (pin38)	CVBS
M8	FRENCH	ON/OFF	OSD language selection	ON
	RUSSIAN	ON/OFF	OSD language selection	ON
	TURKISH	ON/OFF	OSD language selection	ON
	FARSI	ON/OFF	OSD language selection	ON
	ARABIC	ON/OFF	OSD language selection	ON
	BULGARIAN	ON/OFF	OSD language selection	ON
	RUMANIAN	ON/OFF	OSD language selection	ON
	SPANISH	ON/OFF	OSD language selection	ON
	PORTUGUESE	ON/OFF	OSD language selection	ON

	ITALIAN	ON/OFF	OSD language selection	ON
	KEY BOARD	0/1		1
	GERMAN	ON/OFF	OSD language selection	ON
	DUTH	ON/OFF	OSD language selection	ON
	SWEDISH	ON/OFF	OSD language selection	ON
	NORWEGIAN	ON/OFF	OSD language selection	ON
	HUNGARIAN	ON/OFF	OSD language selection	ON
	POLISH	ON/OFF	OSD language selection	ON
	CZECH	ON/OFF	OSD language selection	ON
	SLOVENE	ON/OFF	OSD language selection	ON
	CROATIAN	ON/OFF	OSD language selection	ON
	MACEDONIAN	ON/OFF	OSD language selection	ON
	SERBIAN	ON/OFF	OSD language selection	ON
	GREEK	ON/OFF	OSD language selection	ON
M9	LOGO	ON/OFF	Logo selection	OFF
	AV MEM	ON/OFF		ON
	16:9 MODE	ON/OFF	16:9 selection	ON
	GAME	ON/OFF	GAME selection	ON
	CALENDAR	ON/OFF	CALENDAR selection	ON
	START ON	0/1	AC power on start selection	0
	ON DELAY	0~15	On delay time	0
	ON DELAY M	5~15	Factory On delay time	5

KEY BOARD: multiple-choice test(0/1)

0: Control keys input (Max. Limit voltage)

Function	POWER	MENU	TV/AV	V-	V+	P-	P+
Voltage	0	0.4125	0.825	1.2375	1.65	2.0625	2.475

1: Control keys input (Max. Limit voltage)

Function	POWER	MENU	TV/AV	V-	V+	P-	P+
Voltage		2.2	1.75	0.85	1.3	0.4	0.0

5. ICs functional description

UOC TDA93XX

SYMBOL	PIN	DESCRIPTION
STAND BY output.	1	In STAND BY mode, high level (Power OFF). For Power ON this pin will be reduced to low.
SCL	2	I^2C-bus clock line
SDA	3	I^2C-bus data line
TUNING	4	tuning Voltage (Vt) PWM output
P3.0/NTSC SW	5	Port 3.0 or NTSC output/SCART SW input, Forced NTSC selection, Low-level output, otherwise High output.
KEY	6	Control keys input *3
VOL	7	Sound Volume control PWM output
MUTE	8	Sound mute output
VSSC/P	9	Digit ground for µ-controller core and periphery
BAND1	10	Tuner Band selection output
BAND2	11	Tuner Band selection output
VSSA	12	Analog ground of teletext decoder and digital ground of TV-processor
SECPLL	13	SECAM PLL decoupling
VP2	14	2^{nd} supply voltage TV-processor(+8V)
DECDIG	15	decoupling digital supply of TV-processor
PH2LF	16	Phase-2 filter
PH1LF	17	Phase-1 filter
GND3	18	Ground 3 for TV-processor
DECBG	19	Band gap decoupling
AVL/EWD	20	Automatic volume leveling /EAST-WEST drive output
VDRB	21	Vertical drive B output
VDRA	22	Vertical drive A output
IFIN1	23	IF input 1
IFIN2	24	IF input 2
IREF	25	Reference current input
VSC	26	Vertical sawtooth capacitor
TUNER AGC	27	Tuner AGC output
AUDEEM/SIFIN1 *1	28	Audio deemphasis or SIF input
DECSDEM/SIFIN2	29	decoupling sound demodulator or SIF input 2
GND2	30	ground 2 for TV processor
SNDPLL/SIFAGC *1	31	narrow band PLL filter or AGC sound IF
AVL/SNDIF/REF0/ AMOUT *1	32	Automatic Volume Levelling / sound IF input / subcarrier reference output / audio deemphasis
HOUT	33	horizontal output
FBISO	34	flyback input/sandcastle output

AUDEXT/QSSO/ AMOUT *1	35	external audio output / QSS intercarrier out
EHTO	36	EHT/overvoltage protection input
PLL IF	37	IF-PLL loop filter
IFVO/SVO	38	IF video output / selected CVBS output
VP1	39	supply voltage TV processor
CVBS INT	40	internal CVBS input
GND1	41	ground for TV processor
CVBS/Y	42	CVBS/Y input
CHROMA	43	C input
AUDOUT/AMOUT *1	44	audio output /AM audio output (volume controlled)
INSSW2	45	2nd RGB / YUV insertion input
R2/VIN	46	2nd R input / V (R-Y) input / P_R input
G2/YIN	47	2nd G input / Y input
B2/UIN	48	2nd B input / U (B-Y) input / P_B input
BCLIN	49	beam current limiter input
BLKIN	50	black current input / V-guard input
RO	51	Red output
GO	52	Green output
BO	53	Blue output
VDDA	54	analog supply of Closed Caption decoder and digital supply of TV-processor (3.3 V)
VPE	55	OTP Programming Voltage
VDDC	56	digital supply to core (3.3 V)
OSCGND	57	oscillator ground supply
XTALIN	58	crystal oscillator input
XTALOUT	59	crystal oscillator output
RESET	60	reset
VDDP	61	digital supply to periphery (+3.3 V)
P1.0/INT1	62	TV/AV (AV1) / AV2 /S-VHS mode Output.
P1.1/T0	63	TV/AV (AV1) / AV2 /S-VHS mode Output.
P1.2/INT0	64	Remote control signal input.

Note

1. The function of pin 20, 28, 29, 31, 32, 35 and 44 is dependent on the IC version (mono intercarrier FM demodulator /QSS IF amplifier and East-West output or not) and on some software control bits. The valid combinations are given in table 1.

2. the vertical guard function can be controlled via pin 49 or pin 50. the selection is made by means of the IVG bit in subaddress 2BH.

TABLE 1

IC version	FM-PLL version				QSS version					
East-West Y/N	**N**		**Y**		**N**			**Y**		
CMB1/CMB0 bits	**00**	**01/10/11**	**00**	**01/10/11**	**00**	**01/10/11**		**00**	**01/10/11**	
AM bits	**-**	**-**	**-**	**-**	**-**	**0**	**1**	**-**	**0**	**1**
Pin 20	**AVL**		**EWD**		**AVL**			**EWD**		
Pin 28	**AUDEEM**				**SIFIN1**					
Pin 29	**DECSDEM**				**SIFIN2**					
Pin 31	**SNDPLL**				**SIFAGC**					
Pin 32	**SNDIF(1)**	**REFO(2)**	**AVL/SNDIF(1)**	**REFO(2)**	**AMOUT**	**REFO(2)**		**AMOUT**	**REFO(2)**	
Pin 35	**AUDEXT**				**AUDEXT**	**QSSO**	**AMOUT**	**AUDEXT**	**QSSO**	**AMOUT**
Pin 44	**AUDOUT**				**Controlled AM or audio out**					

Note

1. When additional (external) selectivity is required for FM-PLL system pin 32 can be used as sound IF input. This function is selected by means of SIF bit in subaddress 28H.

2. the reference output signal is only available for the CMB1/CMB0 setting of 0/1. for the other settings this pin is a switch output(see also 5 table 67).

AN7522/AN17821/AN7523/AN17823 Function : **audio output**

Symbol	PIN	Function	Symbol	PIN	Function
Vcc	1	Power supply	GND	7	ground
Out 1 (+)	2	Ch 1 output (+)	In 2	8	Ch 2 input
GND(out 1)	3	Ch 1Ground	VOL	9	Volume Control
Out 1 (-)	4	Ch 1 output (-)	Out 2 (-)	10	Ch 2 output (-)
Standby	5	Mute input	GND(out 2)	11	Ch 2 Ground
In 1	6	Ch 1 input	Out 2 (+)	12	Ch 2 output (+)

Note: AN7523 is pin 1 to 9, AN7522 is pin 1 to 12.

LA9302A/8177/LA78041/LA78040 Function : **vertical output**

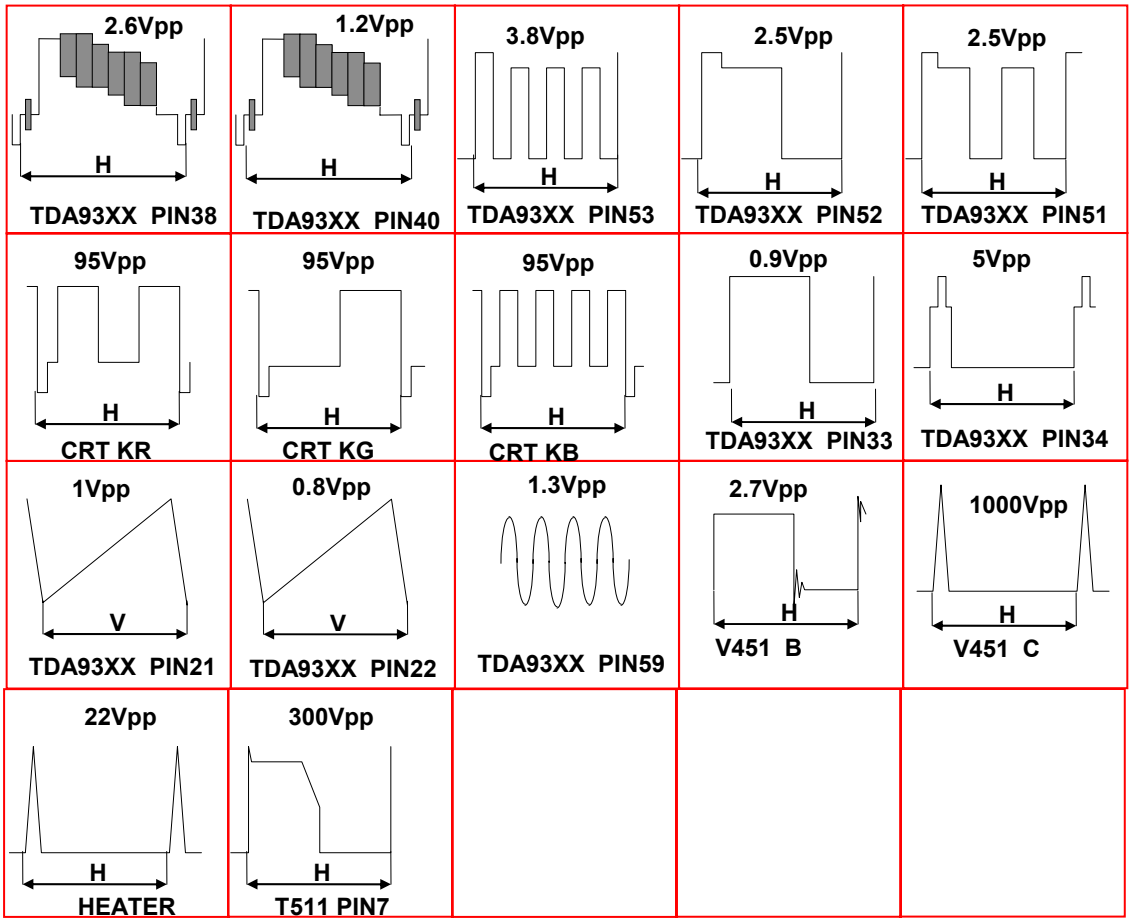
Symbol	**PIN**	**Function**	**Symbol**	**PIN**	**Function**
INV IN	**1**	**Input**	**V OUT**	**5**	**Vertical output**
VCC1	**2**	**Power**	**VCC2**	**6**	**Output power supply**
PUMP UP	**3**	**Pump up power**	**NON INV IN**	**7**	**Negative feedback**
GND	**4**	**Ground**			

TDA9859 Function : **Universal Sound processor**

Symbol	**Pin**	**Function**	**Symbol**	**Pin**	**Function**
AV1L	**1**	**AV1 Audio Left input**	**AV1R**	**32**	**AV1 Audio input Right**
P1	**2**	**Not used**	**P2**	**31**	**Not used**
MAINL	**3**	**Main Audio Left input**	**AV2R**	**30**	**AV2 Audio input Right**
CSMO	**4**	**Smoothing Capacitor**	**CPS1**	**29**	**Pseudo stereo Cap. 1**

MAINR	5	Main Audio Right input	AV2L	28	AV2 Audio input Left
VP	6	Power Supply	CPS2	27	Pseudo stereo Cap. 2
OUT R	7	Right Output	OUT L	26	Left Output
GND	8	Ground	MAD	25	Not used (GND)
LINOR	9	Line Output Right	LINOL	24	Line Output Left
LINIR	10	Line Input Right	LINIL	23	Line Input Left
CBR1	11	Bass Cap. Right 1	CBL1	22	Bass Cap. Left 1
CBR2	12	Bass Cap. Right 2	CBL2	21	Bass Cap. Left 2
Headphone R	13	Headphone-R output	Headphone L	20	Headphone-L output
CTR	14	Treble Cap. Right	CTL	19	Treble Cap. Left
MAINOR	15	Main Audio out Right	MAINOL	18	Main Audio out Left
SCL	16	I2C Bus clock	SDA	17	I2C Bus data

6. Test point Waveforms



7. IC voltages

TDA93XX

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
V	2.8	3.8	3.6	3.3	3.5	3.5	0.1	0.1	0	5.4	0.1	0	2.3	8	5	3
PIN	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
V	4	0	4	0.9	0.7	0.8	1.9	1.9	3.9	3.8	1.6	3.2	3.4	0	2.4	0.1
PIN	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
V	0.6	0.5	3.7	1.7	2.4	3.1	8	3.8	0	3.4	1.5	3.6	2.3	2.6	2.6	2.6
PIN	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
V	2.3	7.2	2.7	2.7	2.7	3.5	0	3.5	0.1	1.7	1.8	0	3.5	0.1	0.1	5

TDA8177

PIN	1	2	3	4	5	6	7
V	0.7	15	-12	-15	0.3	15.9	-0.07

AN 7522

PIN	1	2	3	4	5	6	7	8	9	10	11	12	
V	12	7	0	7	3.3	1.4	0	1.4	0	7	0	7	

TDA9859

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14
V	4.0	0	4.0	8.0	4.0	8.0	4.0	0	4.0	4.0	4.0	4.0	4.0	4.0
PIN	15	16	17	18	19	20	21	22	23	24	25	26	27	28
V	4.0	4.5	4.6	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0	4.0	4.0	4.0
PIN	29	30	31	32										
V	4.0	4.0	0	4.0										

8 Trouble shorting

8.1 No signai, can not receive program.

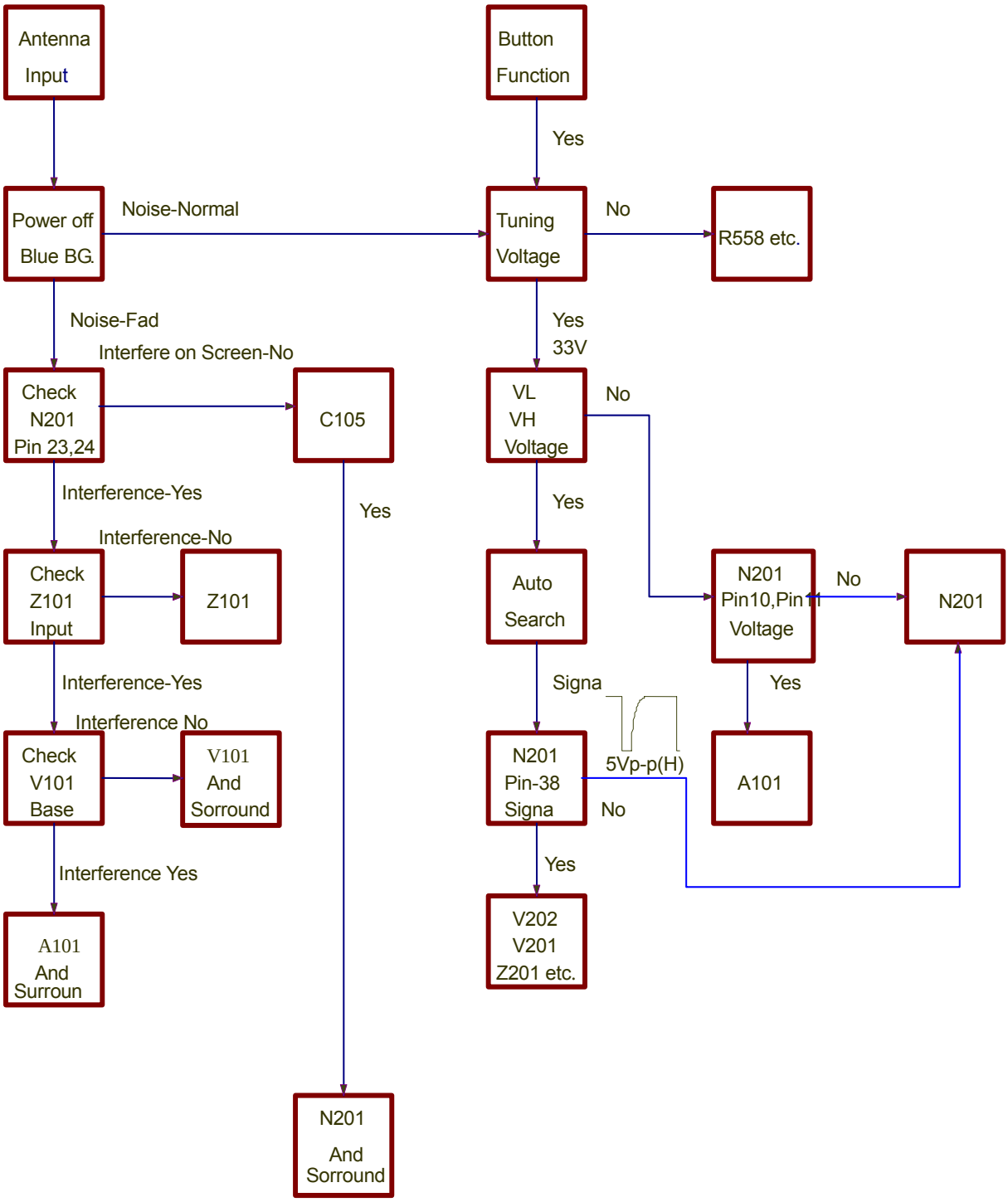


CHART A

8.2 Unusual AV picture.

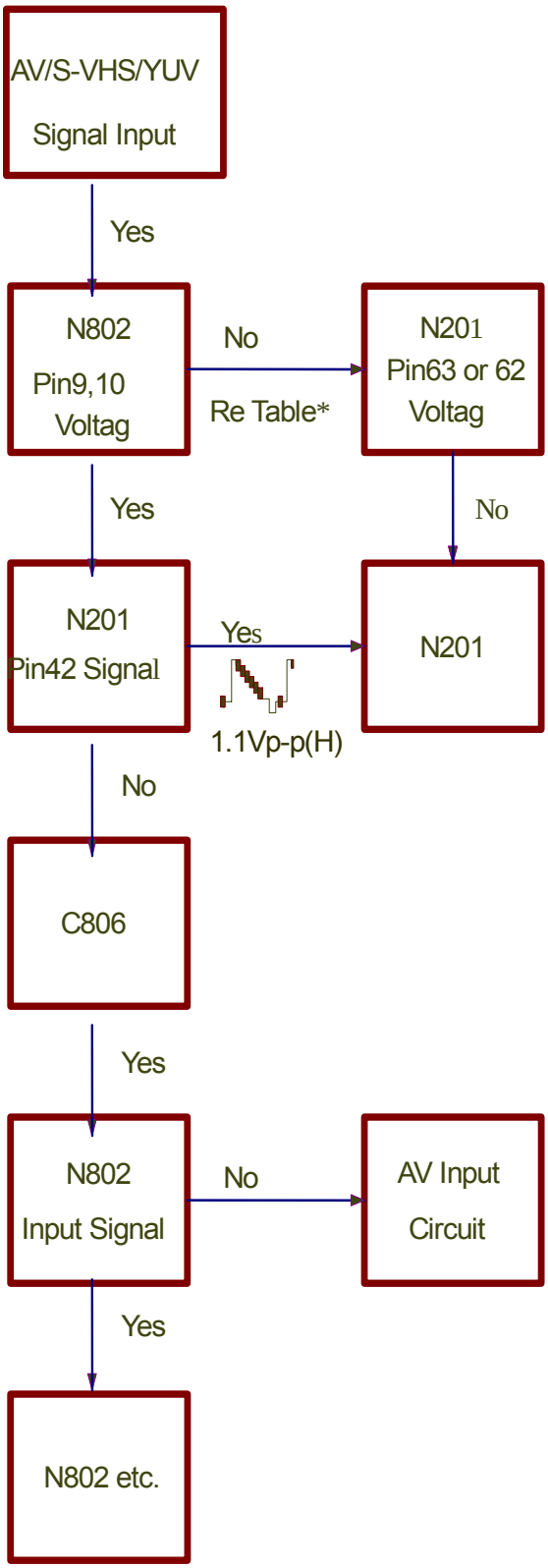


CHART B

8.3 One horizontal line.

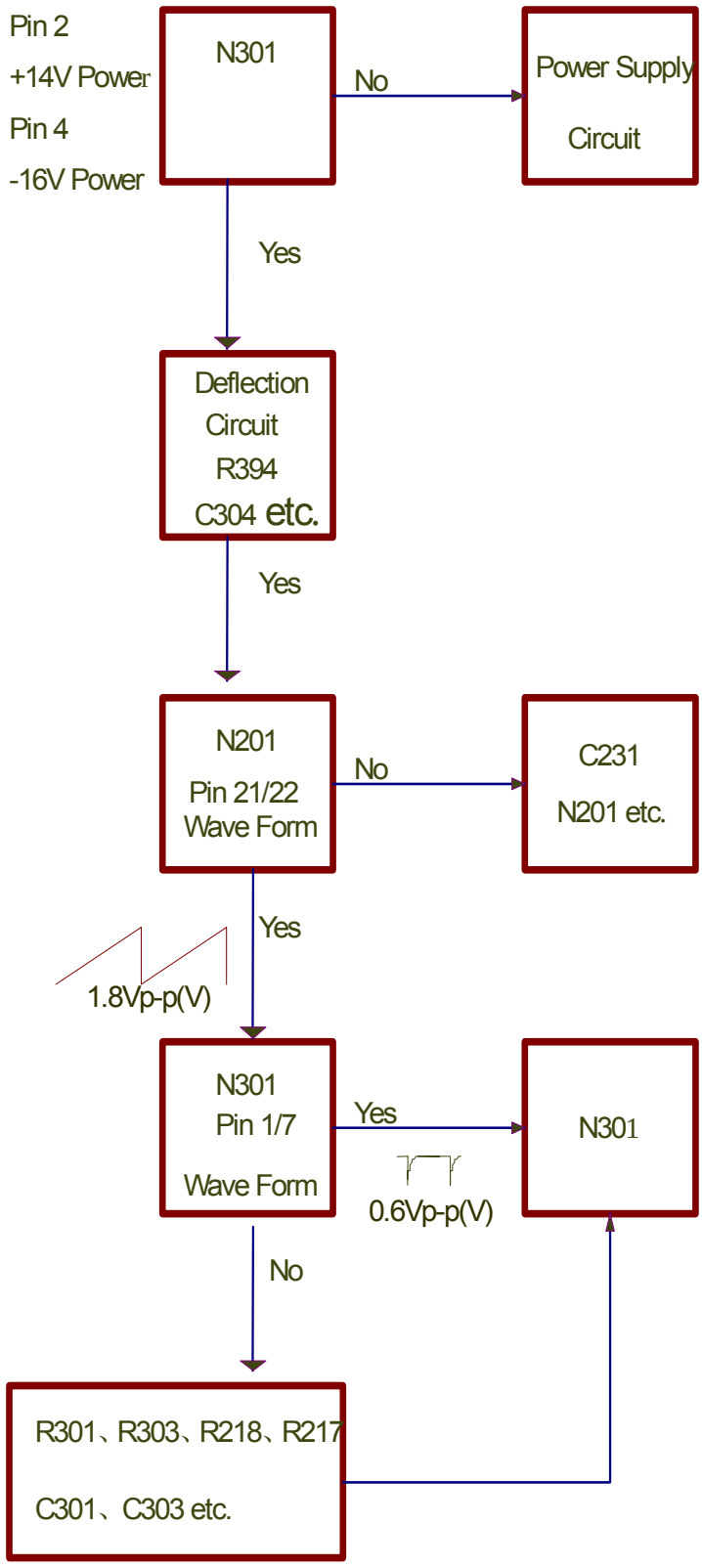


CHART C

8.4 No audio sound.

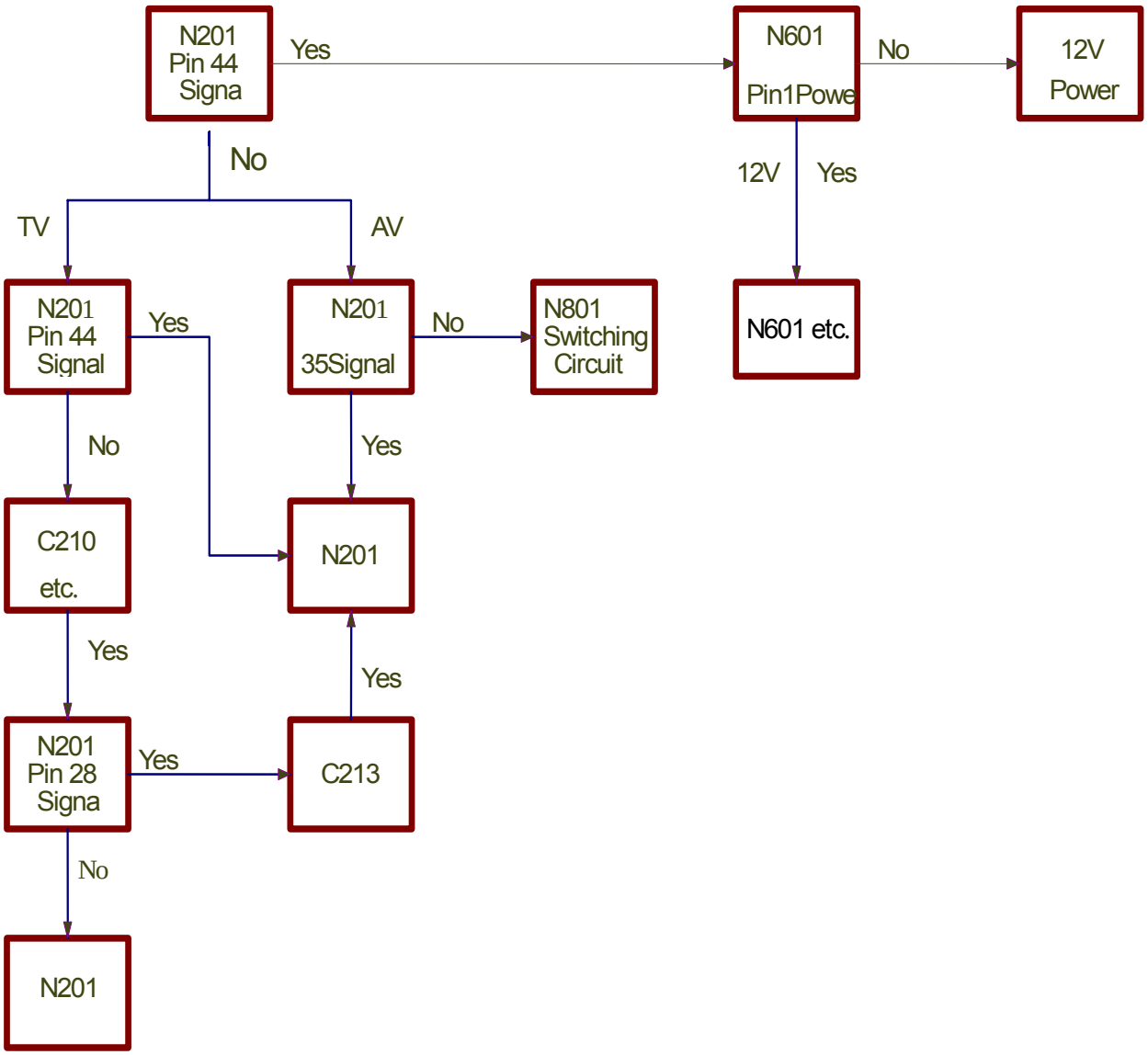

N201
Pin 44
Signa
Yes
N601
Pin1Powe
No
12V
Power
No
12V
Yes
TV
AV
N201
Pin 44
Signal
Yes
N201
35Signal
No
N801
Switching
Circuit
N601 etc.
No
Yes
C210
etc.
N201
Yes
Yes
N201
Pin 28
Signa
Yes
C213
No
N201

CHART D

8.5 No picture and sound.

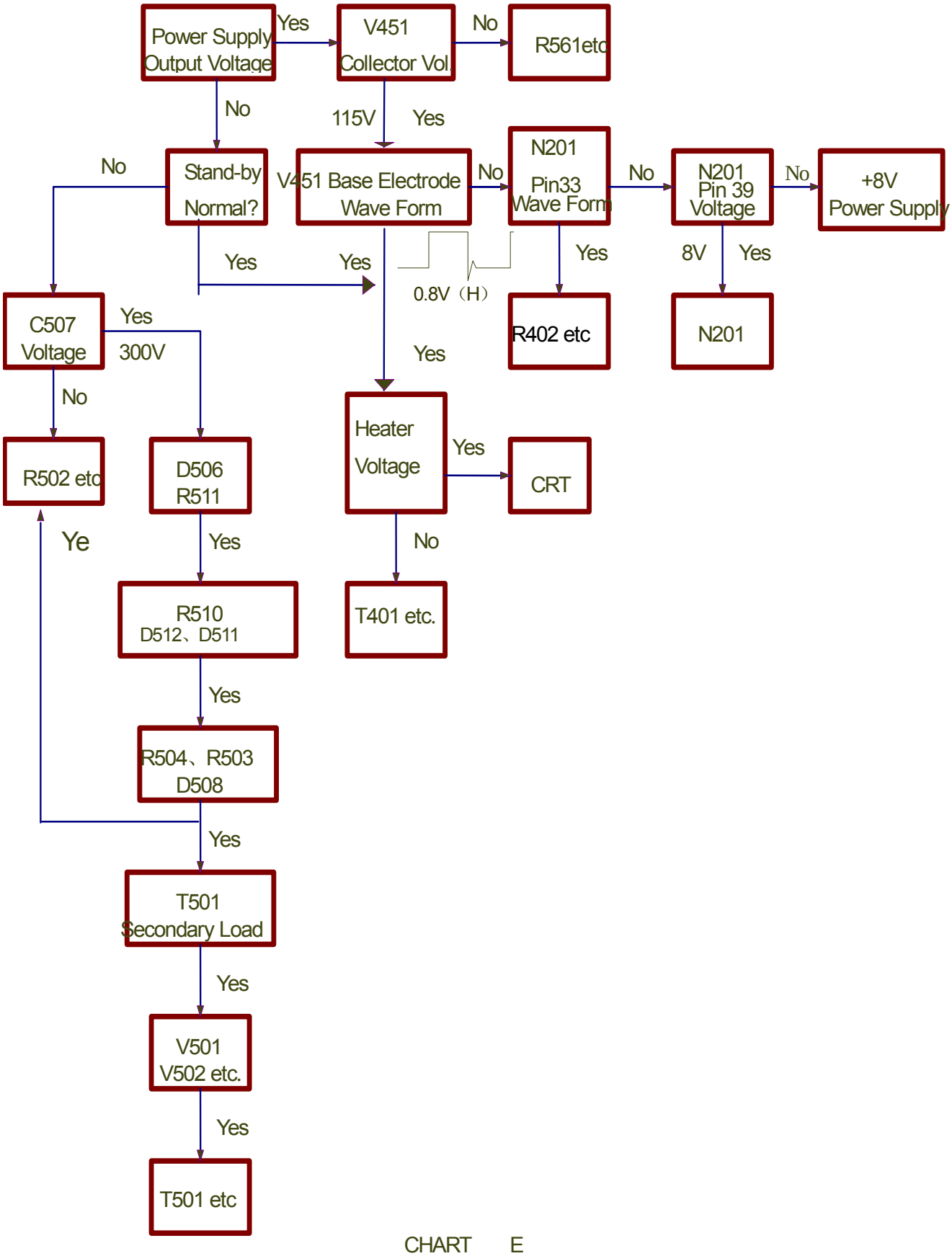
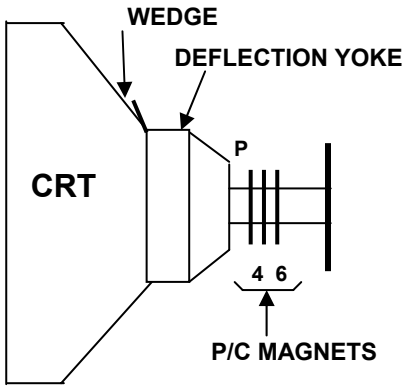


CHART E

8. PURITY / CONVERGENCE ADJUSTMENT

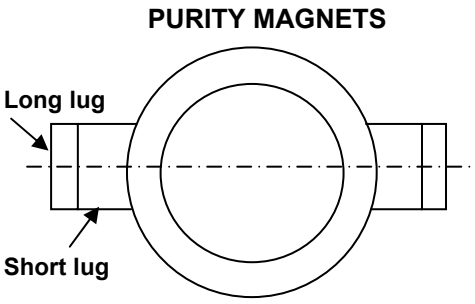
PURITY ADJUSTMENT

1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedges.
4. Input a green raster signal from the signal generator, and turn the screen to green raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig2)
7. Adjust the gap between two lugs so that the GREEN RASTER will come into the center of the screen. (Fig. 3)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Imput a crosshatch signal.
11. Verify that the screen is horizontal.
12. Input red and blue raster signals, and make sure that purity is properly adjusted.



P: PURITY MAGNET
4: 4-POLES (convergence magnets)
6: 6-POLES (convergence magnets)

Fig. 1



Bring the long lug over the short lug and position them horizontally.

Fig. 2

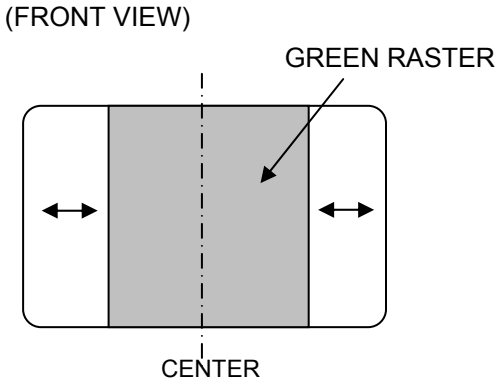


Fig. 3

STATIC CONVERGENCE ADJUSTMENT

1. Input a crosshatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen (Fig. 1) and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta (red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make the best convergence.

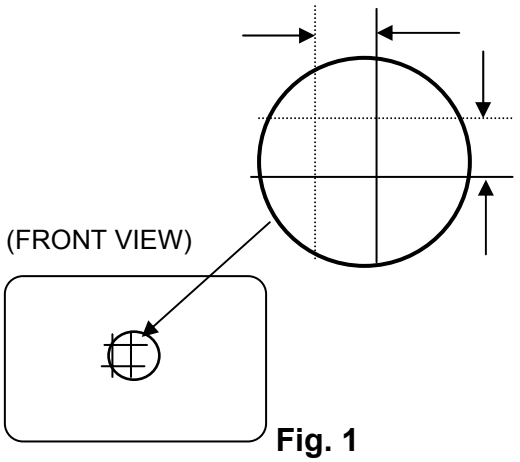


Fig. 1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make the best convergence.

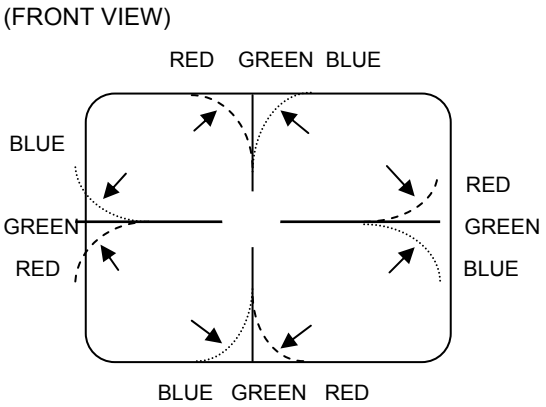


Fig.2

After adjustment, fix the wedge at the original position.
Fasten the retainer screw of the deflection yoke.
Fix the 6 magnets with glue.

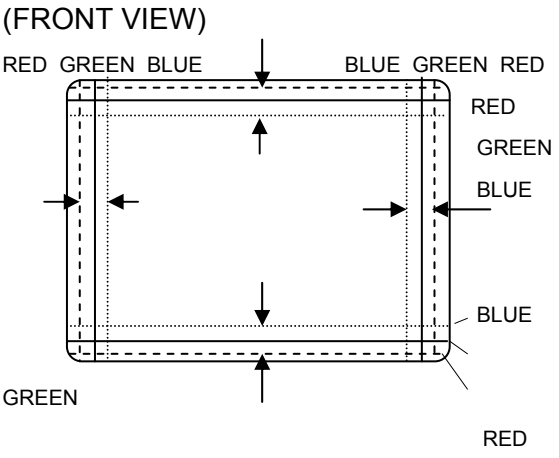


Fig. 3