SERVICE MANUAL

25"/29"/34"/38"

SOLID STATE

Color Television

Receiver

(NTSC-M MTS STEREO)
TOSHIBA I^2C IC
TB1253AN +TMP88PS38N

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

Document : SM - 74PM Date : 25-01-2002 Approved by : _____

Checked by : _____

(WU GUO XIAN)

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ART-TECH PROJECT ENGINEERING LTD

DATE :17-7-2001
MODEL :25″ ~ 38″

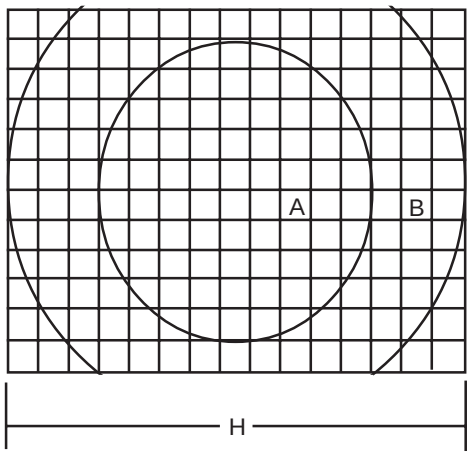
TV SPECIFICATION

SUPPLY VOLTAGE: AC110-220V ±10% 60Hz

1. SYSTEM	NTSC-M		
	NORMAL - TV	CATV	
2. CHANNEL L-VHF	2 - 6	(A-8) A - 5 ~ B	CH
H-VHF	7 - 13	C ~ W + 11	CH
UHF	14 - 69	W + 12 ~ W + 84	CH
3. SCANNING HORIZONTAL	15734 Hz		
VERTICAL	60 Hz		
4. VIF FREQUENCY	45.75 MHz		
5. SIF FREQUENCY	41.25 MHz		
6. CHROMA IF FREQUENCY	42.17 MHz		
7. INTER-CARRIER FREQUENCY	4.5 MHz		
8. ANTENNA INPUT IMPEDANCE	75 OHM		
9. CRT	25″	29″ 34″ 38″	

ITEMS OF MEASUREMENT	STANDARD				UNIT
10. VIDEO SENS. AT S/N 30db L-VHF	≤ 57				dbuv
H-VHF	≤ 57				dbuv
UHF	≤ 60				dbuv
11. SOUND SENS. AT S/N 30db L-VHF	≤ 42				dbuv
H-VHF	≤ 42				dbuv
UHF	≤ 48				dbuv
12. AGC CHARACTER	≥ 60				db
13. SELECTIVITY - 1.5 MHz	≥ 35				db
+ 8 MHz	≥ 40				db
14. COLOR SENS.	≤ 45				dbuv
15. COLOR LOCK-IN RANGE	≥ ±300				Hz
16. VERTICAL LOCK-IN RANGE	≥ 6				Hz
17. HORIZONTAL LOCK-IN RANGE	≥ 400				Hz
18. MAX BRIGHTNESS	≥ 80	≥80	≥70	≥65	cd/m2
19. MAX OUTPUT POWER					
MAX OUTPUT POWER PER EACH CHANNEL	≥ 4.5	≥4.5	≥5.0	≥5.5	w
20. OUTPUT POWER AT 10% THD					
OUTPUT POWER AT 10% THD	≥ 3.5	≥3.5	≥4.0	≥4.5	w
21. BUZZ	≤ -40				db
22. AFC RANGE	≥ ±1				MHz
23. MIN. VOL HUM	≤ 20				mV
24. RESOLUTION HORIZONTAL	≥ 250				LINES
VERTICAL	≥ 400				LINES
25. LINEARITY DISTORTION VERTICAL	≤ 8				%
HORIZONTAL	≤ 10				%

	25″ 29″ 34″ 38″ STANDARD	UNIT
26. RASTER DISTORTION	≤ 5	%
27. REMOTE CONTROL DISTANCE	≥ 5	METER
ANGLE	≥ +15	DEGREE
28. POWER CONSUMPTION (AT MAX. CONDITION)	≤ 120 ≤120 ≤150 ≤170	WATTS
POWER CONSUMPTION (AT MAX. CONDITION)	≤ 150 ≤150 ≤180 ≤180	WATTS
29. CONVERGENCE DISLOCATION AT AREA "A"	≤ 0.4	%
AREA "B"	≤ 0.8	%

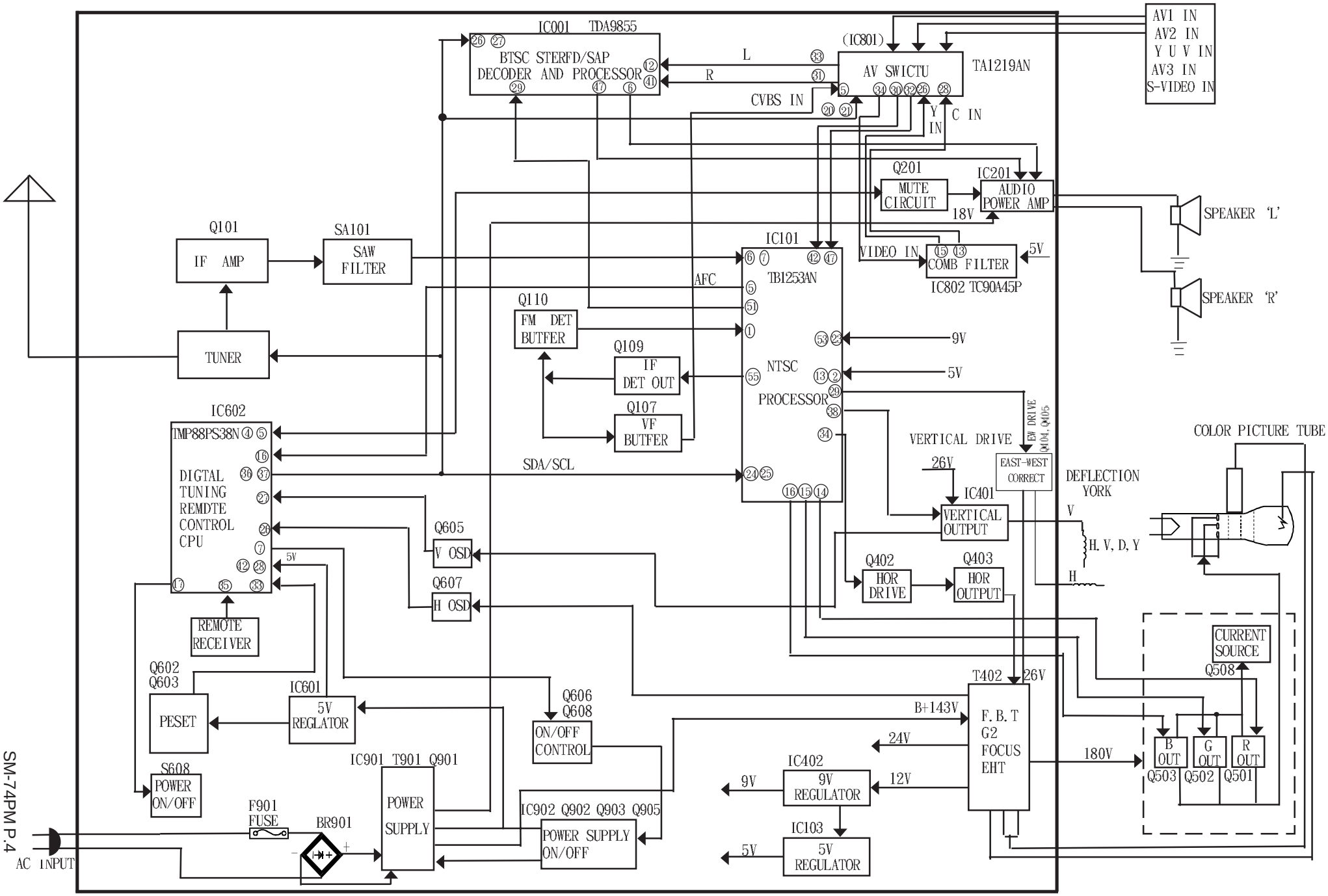


30. VIDEO INPUT LEVEL : 1.0Vp-p ± 3dB.

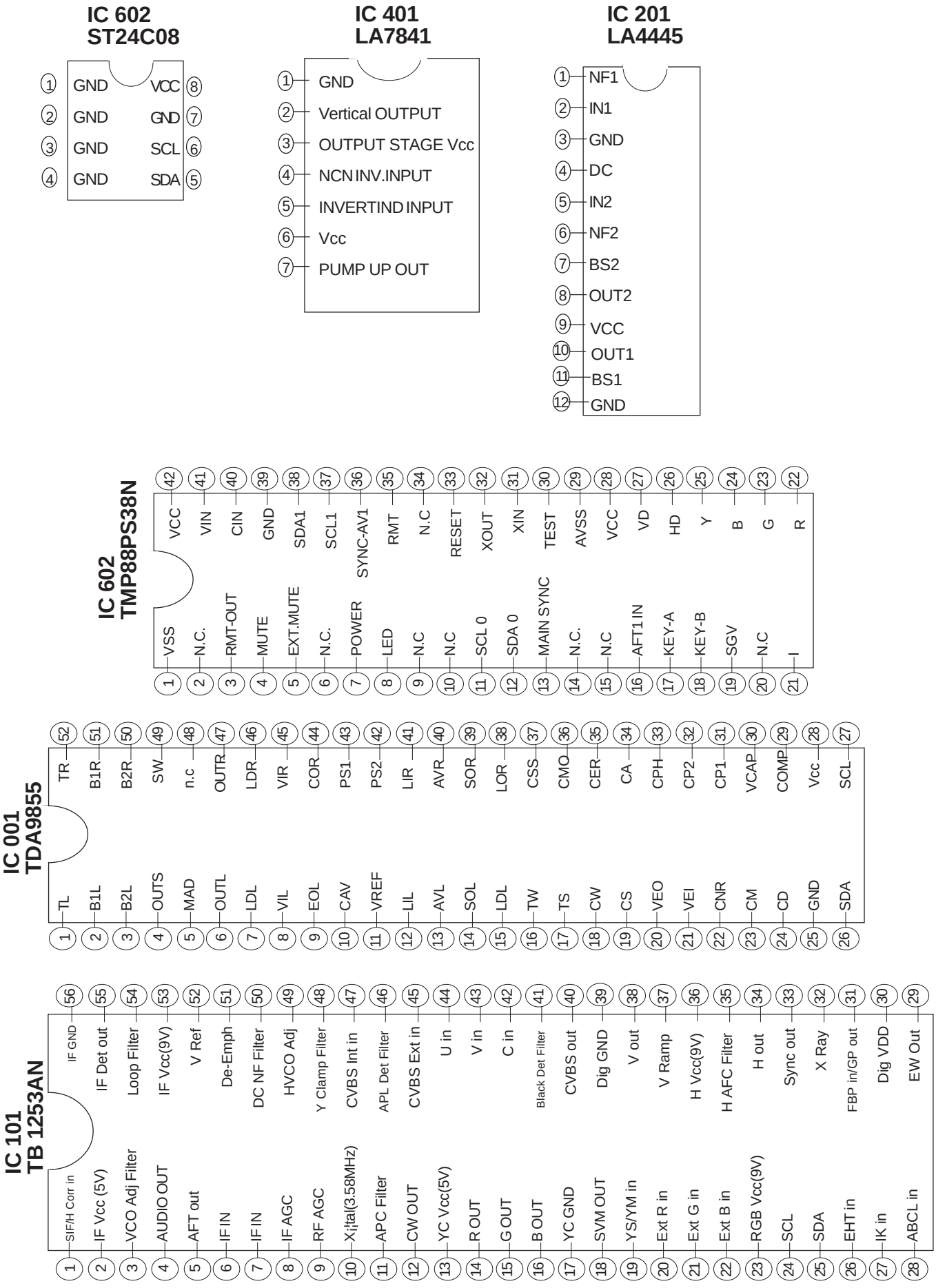
VIDEO OUTPUT LEVEL: 1.0Vp-p ± 3dB.

31. AUDIO INPUT LEVEL : 0.5VRms ± 3dB.

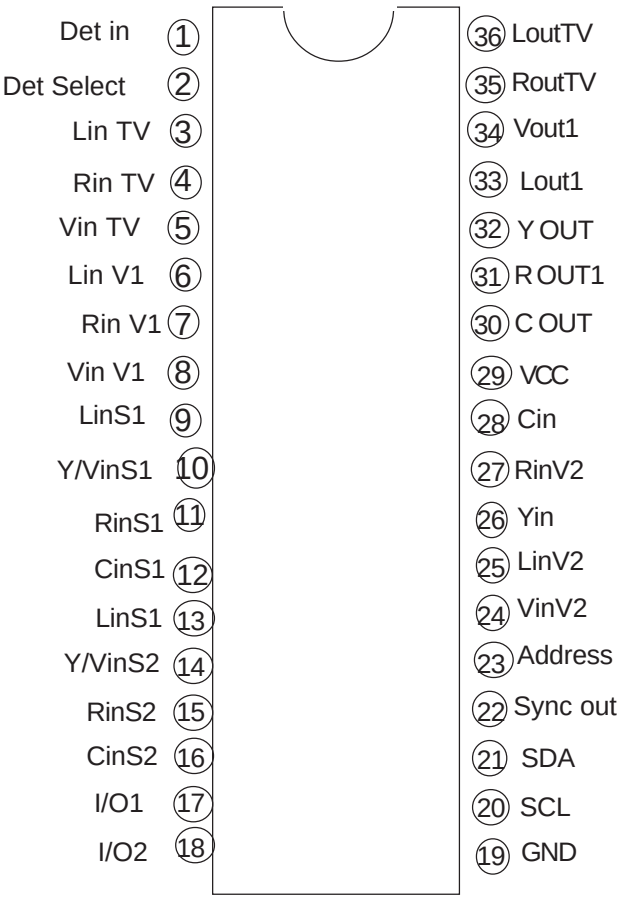
AUDIO OUTPUT LEVEL: 0.5VRms ± 3dB.



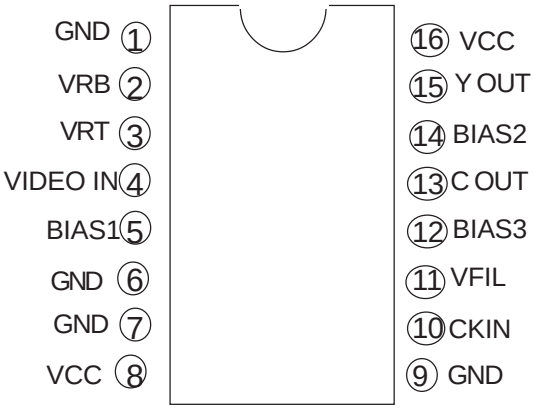
BLOCK DIAGRAM


IC 602
ST24C08
1 GND
2 GND
3 GND
4 GND
VCC 8
GND 7
SCL 6
SDA 5
IC 401
LA7841
1 GND
2 Vertical OUTPUT
3 OUTPUT STAGE Vcc
4 NCN INV.INPUT
5 INVERTIND INPUT
6 Vcc
7 PUMP UP OUT
IC 201
LA4445
1 NF1
2 IN1
3 GND
4 DC
5 IN2
6 NF2
7 BS2
8 OUT2
9 VCC
10 OUT1
11 BS1
12 GND
IC 602
TMP88PS38N
1 VSS
2 N.C.
3 RMT-OUT
4 MUTE
5 EXT.MUTE
6 N.C.
7 POWER
8 LED
9 N.C
10 N.C
11 SCL 0
12 SDA 0
13 MAIN SYNC
14 N.C.
15 N.C
16 AFT1 IN
17 KEY-A
18 KEY-B
19 SGV
20 N.C
21 I
22 R
23 G
24 B
25 Y
26 HD
27 VD
28 VCC
29 AVSS
30 TEST
31 XIN
32 XOUT
33 RESET
34 N.C
35 RMT
36 SYNC-AV1
37 SCL1
38 SDA1
39 GND
40 CIN
41 VIN
42 VCC
IC 001
TDA9855
1 TL
2 B1L
3 B2L
4 OUTS
5 MAD
6 OUTL
7 LDL
8 VIL
9 EOL
10 CAV
11 VREF
12 LIL
13 AVL
14 SOL
15 LDL
16 TW
17 TS
18 CW
19 CS
20 VEO
21 VEI
22 CNR
23 CM
24 CD
25 GND
26 SDA
27 SCL
28 Vcc
29 COMP
30 VCAP
31 CP1
32 CP2
33 CPH
34 CA
35 CER
36 CMO
37 CSS
38 LOR
39 SOR
40 AVR
41 LIR
42 PS2
43 PS1
44 COR
45 VIR
46 LDR
47 OUTR
48 n.c
49 SW
50 B2R
51 B1R
52 TR
IC 101
TB 1253AN
1 SIF/H Corr in
2 IF Vcc (5V)
3 VCO Adj Filter
4 AUDIO OUT
5 AFT out
6 IF IN
7 IF IN
8 IF AGC
9 RF AGC
10 X¡ital(3.58MHz)
11 APC Filter
12 CW OUT
13 YC Vcc(5V)
14 R OUT
15 G OUT
16 B OUT
17 YC GND
18 SVM OUT
19 YS/YM in
20 Ext R in
21 Ext G in
22 Ext B in
23 RGB Vcc(9V)
24 SCL
25 SDA
26 EHT in
27 IK in
28 ABCL in
29 EW Out
30 Dig VDD
31 FBP in/GP out
32 X Ray
33 Sync out
34 H out
35 H AFC Filter
36 H Vcc(9V)
37 V Ramp
38 V out
39 Dig GND
40 CVBS out
41 Black Det Filter
42 C in
43 V in
44 U in
45 CVBS Ext in
46 APL Det Filter
47 CVBS Int in
48 Y Clamp Filter
49 HVCO Adj
50 DC NF Filter
51 De-Emph
52 V Ref
53 IF Vcc(9V)
54 Loop Filter
55 IF Det out
56 IF GND

IC801
TA1219AN



IC802
TC94A45P



ALIGNMENT INSTRUCTION

I. PLEASE READ BEFORE ATTEMPTING SERVICE

1. Never disconnect any leads while receiver is in operation.
2. Disconnect all power before attempting any repairs.
3. Do not short any portion of the circuit while power is on.
4. For safety reasons, all parts replaced should be identical, (for parts and part numbers see parts list).
5. Before alignment the set must be pre-heated for 30 minutes or more and erase magnetism thoroughly from CRT front chassis frame by erase coil.

II. B+ ADJUSTMENT

1. Connect a digital voltmeter to C406 + and Ground.
2. Set Brightness Contrast to minimum.
3. Adjust SCREEN Volume on FBT until the picture can just been seen.
4. Adjust VR901 to obtain a reading of 143 ± 0.5V .

III. FACTORY ADJUSTMENT SERVICE REMOTE CONTROL

Press SERVICE REMOTE button to direct select item.

1. Use(↑) or (↓) button select item.
2. Use (←) (→)button to adjust item value.

*REMARK: Normal REMOTE CONTROL does not have this function.

IV. AGC ALIGNMENT

1. Receive CH69 (UHF) and input field strength.60 dBuV±2dB.
2. Connect a digital Voltmeter between the TUNER AGC Terminal and Ground.
3. Select R AGC item, Adjust the value to 3F, and then adjust the AGC voltage drop down 0.4V.

Remark: (1) The drop down voltage should be more than and tends to 0.4V.
(2) No Observable noise can be seen.

V. VERTICAL HEIGHT ADJUSTMENT

NTSC (60Hz)

1 . Receive Mono scope Pattern (60Hz).
2 . Select HIT item adjust value to normal regular picture.

VI. VERTICAL LINEARTY ADJUSTMENT

NTSC (60Hz) Adjustment

1 . Receive Cross hatch Pattern (60Hz)
2 . Select VLIN item adjust value to normal regular picture.

VII. VERTICAL S-CORRECTION ADJUSTMENT

1. Receive Cross hatch Pattern
2. Select VSC item adjust value to normal,regular picture.

VIII. VERTICAL CENTER ADJUSTMENT

NTSC (60Hz) Adjustment

(1). Receive Monscope Pattern (60Hz).

(2). Select VP60 item adjust value to obtain the picture at center.

IX. HORIZONTAL PHASE ADJUSTMENT

NTSC(60Hz)

(1).Receive Mono Scope Pattern (60Hz).

(2).Adjust HPOS item value to obtain regular Picture.The picture position.(see table XXIII)

X.EAST-WEST CORRECTION

(1)Receive Mono Scope Pattern (60Hz).

(2)Adjust DPC item to obtain a normal regular picture.

XI. SCANNING SIZE

(1)Receive Mono Scope Pattern (60Hz)

(2)Adjust WID item to obtain fa scanning size (see table XXIII)

XII. WHITE BALANCE ALIGNMENT STEP

(Degauss the picture by degaussing coil if necessary)

1.Receive a Black and White Pattern.
2.Select Remote (2) and (3) button adjust GCUT and BCUT to minimum value,Press(1) button adjust RCUT to middle value.
3.Press Picture mode, select Brightness and Contrast adjust value to minimum.
4.Turn off the screen voltage ON FBT.
5.Press Remote (-/--) button.
6.Turn on the screen control volume on Flyback transformer a horizontal red line appear.
7.Press (2) button to obtain a yellow line.
8.Press (3) button to obtain a white line.
9.Press (-/--) button again.
10.Press CH button select GDRV and BDRV item adjust value to make the picture uniformly white (9300^{O}K $\pm$ 3JND).

XIII. SUB-BRIGHTNESS ALIGNMENT

1. Receive a Colour Bar Pattern.
2. Set BRIGHTNESS, CONTRAST value to minimum.
3. Select BRTS item.
4. Adjust value until the brightness bar can just be seen.

VIV. FOCUS ALIGHMENT

1. Set the Brightness. sharpness and Contrast to middle position.
2. Receive a Mono scope Pattern.
3. Adjust focus control to obtain the sharpest picture.

XV. BTSC INPUT LEVEL ALIGNMENT

1. Receive a Colour Bar Pattern (set to 100%
   modulation at 300Hz mono).
2. Connect oscilloscope to monitor IC001 (TPL or TPR).
3. Adjust BTSC INPUT to obtain amplitude1.4V P-P ±5%.

XVI. BTSC STEREO/SAP AUTOMATIC ALIGNMENT

1. Connect the 10uF/16V Capacitors from IC001 EIL,EIR TO GND.
2. Receive PHILIPS 5418 TD Colour Bar Pattern
   (Set BTSC STEREO/SAP TEST 1.L=300Hz and
   R=3.1KHz 14% Modulation).
3. Into FACTORY SERVICE mode press REMOVE CONTROL
   Enter Factory mode,Press S.MPX to start automatic alignment.

XVII. V-CHIP SECRET CODE

Use secret code(3681) to enter the parental guideness menu and Charge the secret code to (0000).

XXI. SERVICE ITEM ADJUST

Continue pressing VOLUME (-) button on the TV set to MIN sound level,then press (RECALL) key on the remote control at the same time to enter the SERVICE mode.

Use (↑)(↓) to select item.

Use(←) (→)to adjust value.

Switch the power off to leave service mode.

XXII. HIGH POT TESTING

1. Short the L- pole and N- pole of AC line cord.
2. Switch on the power Switch of the TV set.
3. Connect the High Pot Tester (-) to L and N Pole, (+) to the METAL PART of CABINET.

CONDITION / SAFETY STD.	TEST STANDARN	TEST STANDARD FOR PRODUCTION
VDE.SAA	3.0KV 10mA / 1 MIN	≥3.5KV≤10mA/ ≥10 SEC.
UL	1.0KV 5mA / 1 MIN	≥1.25KV≤ 5mA/ ≥1 SEC.

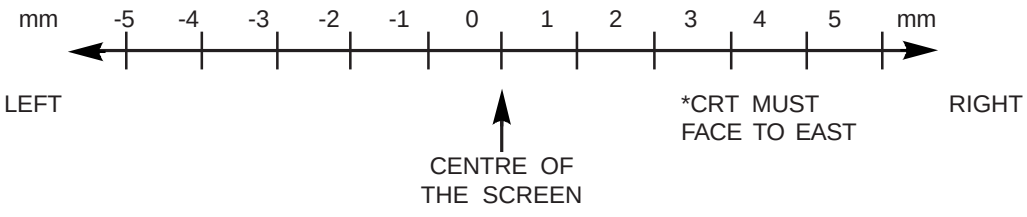
Remark :

(1). If no other specity, the strength of input signal should be 70dB±10dB.

(2). The High Pot Tester can have ≤ ±5% tolerance.

XXIII. PICTURE CERTER ALIGNMENT

DISTRICT	CENTRE POSITION (mm)	LIMIT (mm)	SCANNING SIZE (%)	SCANNING SIZE LIMIT (%)
GROUP A	-2	-5 ~ -1	90	88 ~ 94
GROUP B	0	-2 ~ +2	90	88 ~ 94
GROUP C	+3	0 ~ +5	90	88 ~ 94



REMARK : 1. Group A : AUSTRALIA, NEW ZEALAND, TAHITI, SOUTH,AMERICA.
2. Group B : HONG KONG, CHINA, AMERICA, CANADA, MALAYSIA, MEXICO.
3 Group C : ENGLAND, ITALY, GERMANY, RUSSIA, SWITZERLAND, JUGOSLAVIA, SPANISH.
* If the above countries are not include, please consult to Engineering Dept.

VOLTAGE TABLE FOR IC (ONLY FOR REFERENCE)

IC 101 TB1253AN				IC 601 TMP88PS38N				IC 001 TDA 9855				Q905 SE135		IC902 P621	
1	2.98	29	5.6	1	GND	22	0.13	1	4.2	27	3.8	1	135.3	1	61.2
2	5	30	3.2	2	NC	23	0.13	2	4.2	28	8.5	2	60.4	2	60.2
3	3.9	31	1	3	NC	24	0.13	3	4.2	19	4	3	GND	3	0.3
4	NC	32	0	4	5	25	1	4	4.2	30	8.4			4	7.7
5	2.6	33	4.7	5	5	26	4.5	5	NC	31	4.2				
6	1.7	34	1.8	6	NC	27	4.6	6	4.2	32	4.2	IC402 7809			
7	6.7	35	7	7	4.6	28	1	7	4	33	4.2				
8	2.8	36	9	8	5	29	GND	8	4.2	34	3.5	1	12		
9	4.2	37	4.1	9	NC	30	GND	9	4.2	35	7.1	2	GND		
10	3.3	38	4.6	10	NC	31	2.1	10	5.5	36	4.3	3	9		
11	3	39	GND	11	5	32	2.1	11	4.2	37	4.2				
12	6.8	40	NC	12	5	33	5	12	4.2	38	NC	IC103 KA7805			
13	5	41	1.7	13	4.5	34	NC	13	4.2	39	4.2				
14	2.6	42	2.3	14	NC	35	5	14	4	40	4.2	1	9		
15	2.6	43	2.4	15	NC	36	4.6	15	NC	41	4.2	2	GND		
16	2.6	44	2.5	16	2.7	37	4.2	16	4	42	4.2	3	5		
17	GND	45	2.2	17	5	38	4.1	17	4.1	43	4.2				
18	NC	46	2.1	18	5	39	GND	18	4.2	44	4.2	IC601 KA7805			
19	0.6	47	2.6	19	0	40	3.6	19	4.2	45	4.2				
20	2.2	48	2.2	20	NC	41	3.1	20	3.6	46	4.2	1	15.5		
21	2.2	49	3.5	21	1	42	5	21	2.5	47	4.2	2	GND		
22	2.2	50	4					22	4.2	48	NC	3	5		
23	8.7	51	3.7					23	0	49	4.2	IC102 PQ09RD21			
24	4.2	52	2.4					24	4	50	4.2				
25	4.2	53	8.7					25	0	51	4.2	1	IN	21.5	
26	3.5	54	2.4					26	4.1	52	4.2	2	OUT	9	
27	GND	55	4.2									3	GND	GND	
28	5.4	56	GND									4	SW	15.75	

NOTE: VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST	:	Maximum Position
BRIGHTNESS	:	Maximum Position
COLOR	:	Maximum Position
SIGNAL INPUT	:	70dB $\pm$ 10dB
CHANNEL SETTING	:	The Last Channel of UHF High
SIGNAL PATTERN	:	Colour Bar

VOLTAGE TABLE FOR IC (ONLY FOR REFERENCE)													
IC 602 ST24C08		IC 901 STRS6709		IC801 TA1219AN		IC 201 LA4445				IC 401 LA7841		IC 801 TC90A45P	
1	GND	1	297	1	6.75	1	1.2	29	8.6	1	GND	1	GND
2	GND	2	GND	2	2.85	2	0.03	30	3.55	2	14.2	2	2.2
3	GND	3	0	3	NC	3	GND	31	3.8	3	26.5	3	2.7
4	GND	4	0.7	4	NC	4	21.3	32	3.53	4	3.85	4	2.3
5	5	5	1.2	5	5	5	0.03	33	3.8	5	3.84	5	1.3
6	5	6	0	6	NC	6	1.2	34	4.2	6	26	6	GND
7	GND	7	0.3	7	NC	7	20.3	35	NC	7	2.75	7	GND
8	5	8	1.7	8	NC	8	10.8	36	NC			8	4.9
		9	8.5	9	5	9	21.5					9	GND
				10	5							10	2.2
				11	5							11	1.9
				12	0							12	3.3
				13	5							13	3.7
				14	5							14	1.6
				15	5							15	3.4
				16	GND							16	4.8
				17	0								
				18	NC								
				19	GND								
				20	4.1								
				21	4.1								
				22	NC								
				23	GND								
				24	5								
				25	5								
				26	4.96								
				27	5								
				28	4.9								

NOTE: VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST	:	Maximum Position
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SIGNAL INPUT	:	70dB $\pm$ 10dB
CHANNEL SETTING	:	The Last Channel of UHF High
SIGNAL PATTERN	:	Colour Bar

VOLTAGE TABLE FOR TRANSISTOR (ONLY FOR REFERENCE)							
SYMBOL	B (V)	C (V)	E (V)	SYMBOL	B (V)	C (V)	E (V)
Q001	4.2	GND	4.8	Q502	9.1	109.7	8.6
Q003	4.2	GND	4.83	Q503	9.1	108.7	8.6
Q004	3.16	5.30	2.5	Q504	3	8.6	2.5
Q005	3.2	5.25	2.5	Q505	3.1	8.6	2.6
Q101	1.86	8.64	1.1	Q506	3.1	8.6	2.6
Q102	1.8	GND	2.45	Q508	0.4	GND	1.1
Q104	0.02	9.12	-0.06	Q601	3.8	4.5	4.53
Q105	5.65	8.9	5	Q602	0.04	5	GND
Q106	3.7	8.7	3.03	Q603	0.65	0.04	GND
Q107	2.84	GND	3.5	Q605	0.47	4.6	GND
Q108	2.2	GND	2.85	Q606	4.8	5	4.1
Q109	2.16	GND	2.84	Q607	-0.078	4.5	GND
Q110	4.23	8.65	3.56	Q608	0.77	0	GND
Q111	0.63	GND	1.28	Q609	IN0.03	OUT15.8	GND
Q202	0.04	0	GND	Q610	0.7	0.03	GND
Q203	0.04	0	GND	Q801	4	8.6	3.3
Q204	22	22	21.4	Q802	3.3	8.6	2.63
Q205	22.6	22	22	Q803	3.24	8.6	2.57
Q401	6.42	-0.02	5.44	Q804	3.9	8.6	3.2
Q402	0.3	76.2	GND	Q805	1.7	8.6	1
Q403	160	-0.3	GND	Q806	3.7	8.6	3
Q404	5	0.53	5.5	Q807	3.3	GND	4
Q405	0.53	36.5	GND	Q901	7.6	67.6	8.5
Q501	9.1	111.6	8.6	Q902	67.9	16.4	68.7
				Q903	0	68	GND

NOTE: VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST	:	Maximum Position
BRIGHTNESS	:	Maximum Position
COLOR	:	Maximum Position
SIGNAL INPUT	:	70dB $\pm$ 10dB
CHANNEL SETTING	:	The Last Channel of UHF High
SIGNAL PATTERN	:	Colour Bar

SYMBOL	ITEM	PRESET DATA	25”~38” DATA
※	RCUT	28	3E
※	GCUT	28	98
※	BCUT	2D	70
※	GDRV	37	45
※	BDRV	2D	45
○	CNTX	7F	7F
○	BRTC	2D	2D
○	COLC	44	35
○	TNTC	36	36
○	SCOL	10	10
△	SCNT	08	08
○	CNTC	3F	3F
○	CNTN	08	08
○	BRTX	20	20
○	BRTN	20	20
○	COLX	35	35
○	COLN	00	00
○	TNTX	28	28
○	TNTN	28	28
○	ST3	30	30
○	SV3	30	30
○	SHPX	1A	1A
○	SHPN	1A	1A
※	TXCX	32	21
※	RGCN	16	16
△	ABL	27	27
△	DCBS	5B	5B
△	CLTM	08	08
△	CLVO	08	08
△	CLVD	08	08
※	HPOS	11	14
※	HIT	23	12
※	VP60	02	00
※	VLIN	09	0C
※	VSC	0D	08
※	DPC	1C	20
※	KEY	25	1F
※	WID	0F	14
※	CNR	05	08
○	VEHT	03	04
○	HEHT	01	01
※	RAGC	38	17
△	HAFC	09	09
○	V25	22	22
○	V50	3A	3A
※	BRTS	00	D7
△	FLGO	01	01
△	VSM	01	00
△	VSM1	00	00

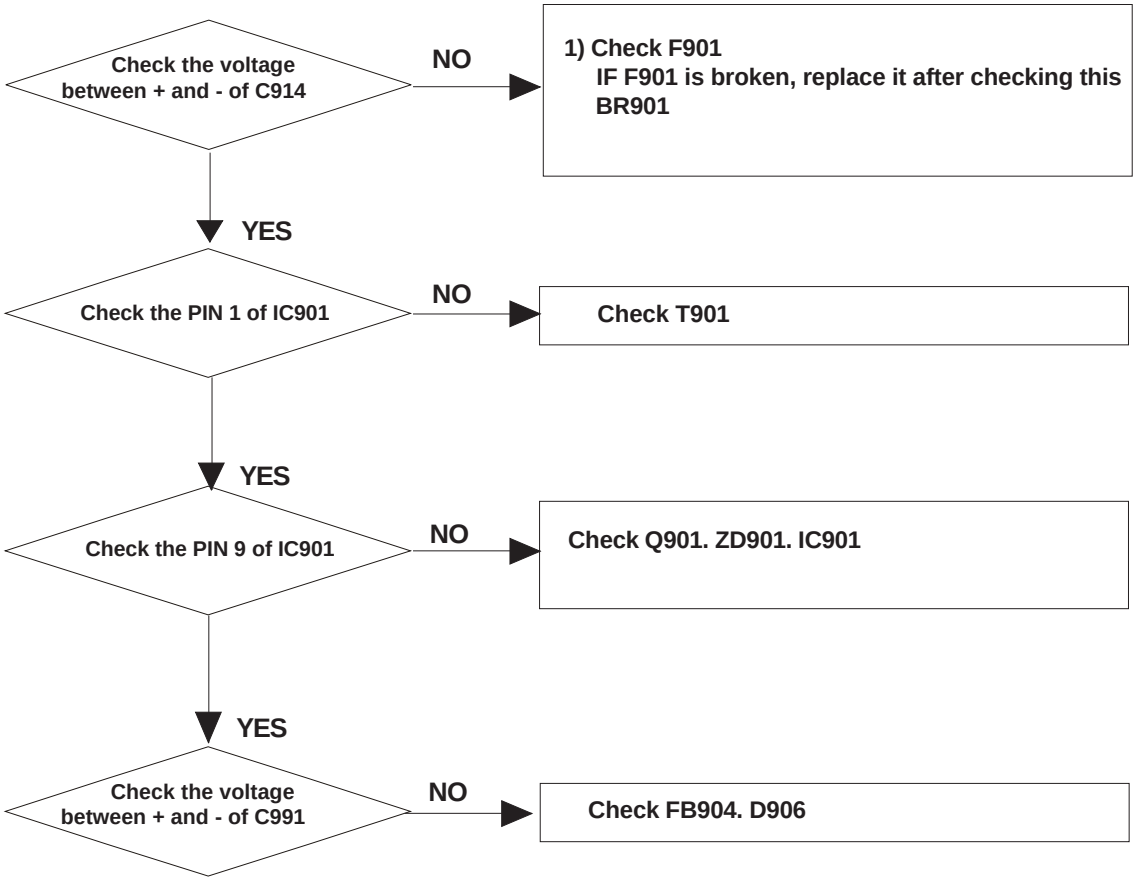
SYMBOL	ITEM	PRESET DATA	25”~38” DATA
△	VSM2	00	00
△	VSM3	03	00
△	MOD0	69	63
△	MOD1	34	57
△	MOD2	2F	27
△	MOD3	E0	A8
△	PYNX	28	28
△	PYNN	14	14
△	PYXS	22	22
△	PYNS	1A	1A
△	ONTM	00	00
△	AKB	00	00
△	STNT	10	10
△	SCOX	0F	0F
△	SCON	0F	0F
△	STNX	0F	0F
△	STNN	0F	0F
△	FLG1	04	04
△	FLG2	00	00
△	FLG3	02	02
△	VBLK	00	00
△	ACB	00	00
※	CNRT	0A	0C
※	CNRB	0C	0C
※	BTSC INPUT	12	06
※	BTSC ALI1	50	17
※	BTSC ALI2	75	17
※	BTSC ALI3	00	6C
○	CCD OSD	00	6F
○	CCD OSDF	00	80
○	OSDF	24	57
※	OSD	00	1B
△	OPT	0C	17

REMARK:

1. PRESET DATA is IC602 original Data .
2. 25” ~38” has been adjusted Data.
3. <※> Adjustable Data (different data in different TV set).
4. <○> Adjustable Data (only by Engineer approved).
5. <△> NON-Adjustable Data.

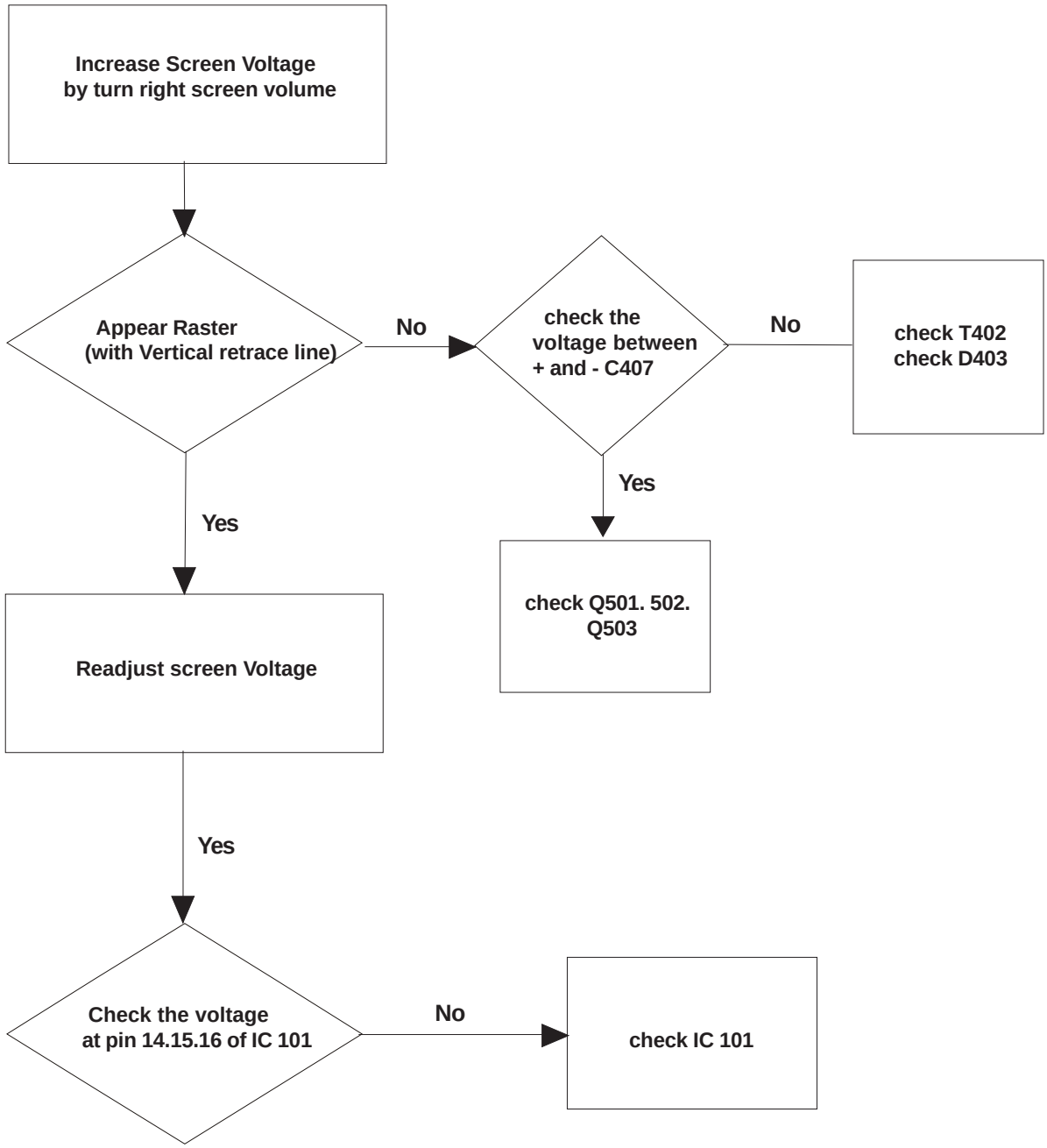
Trouble Shooting

1. No power

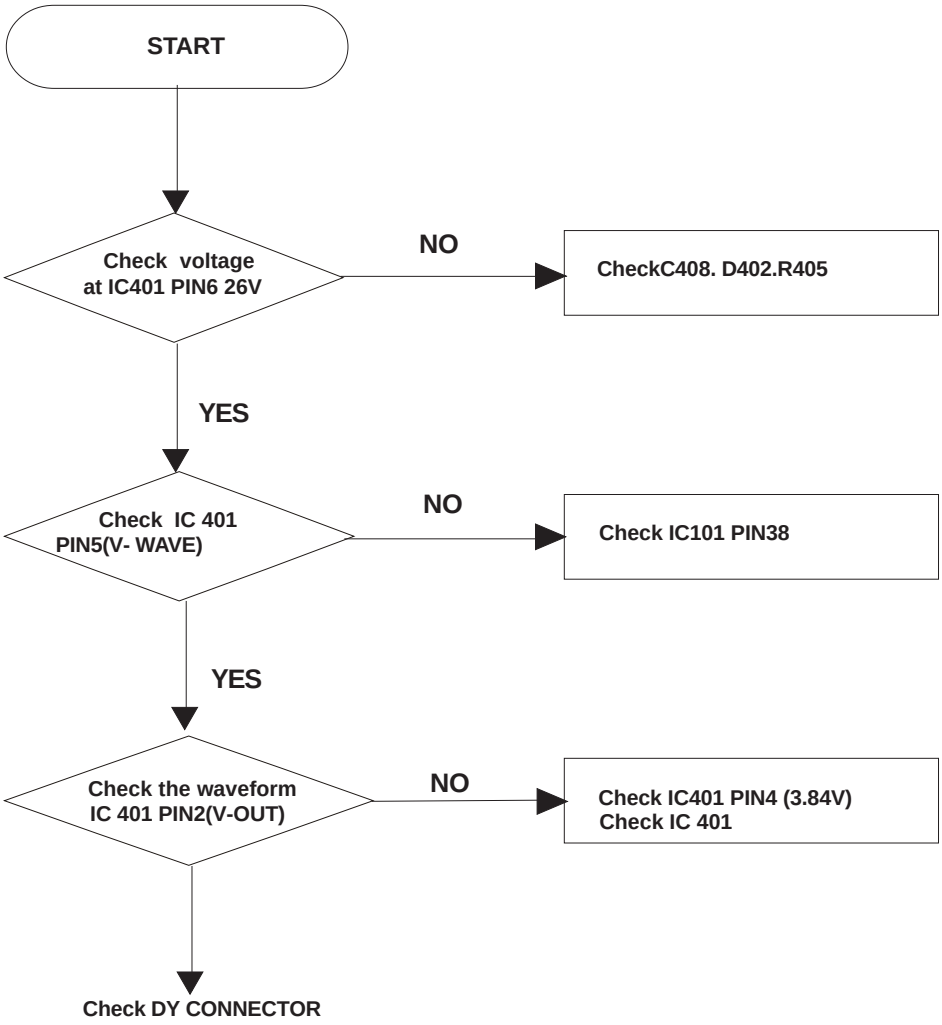


2.No Raster

Heater Voltage is OK but No Raster



3.Vertical Line(Reference Line)



4.No Sound(Picture OK)