

## General Information

1993

Covers Models:

Toshiba 2100 TB5

Toshiba 2101 TB5

Toshiba 2102 TB7

Toshiba 2103 TB5

CRT's:

TB5/TB7 - A51KSV40X01

TBT - A51JRV40X05

Main Power Buttons:

2100 TB5 - 23443465

2101 TB5 - 23443500

2102 TB7 - 23441067

## Matrix

Item	See Model
Trouble Shooting Guides	Toshiba 2100 RBT 91/92 Book.
AC Power Diagram	Toshiba 2100 RBT 91/92 Book.
PIF & SIF Diagrams	Toshiba 2100 RBT 91/92 Book.
Text Diagram	Toshiba 1400 TBT

## Specifications

Input Power Rating	95 W, AC240V, 50Hz
Aerial Input Impedance	75 ohm unbalanced type for UHF
Receiving Channels	
PAL-I Standard	UHF 21 - 68
Intermediate Frequencies:	
Picture IF	39.5 MHz
Sound IF	33.5 MHz
Picture Tube	90 degree deflection (51CM)
Sound Output	3.0W (at 10% harmonic distortion), Max 4.5W
Speakers	70mm x 60mm oval
Aux Terminals	Headphone Jack, 21 pin socket, S-VIDEO/AUDIO socket, A/V Input socket

## Recommended Safety Parts

Item	Part No.	Description
C440	24095916	PF, 9100pF, 1600V
C463	24212222	CD, 2200pF, ±10%
F801	23144896	Fuse, 2.0A
L462	23227245	Deflection Yoke, YS-58324
Q404	23314375	Transistor, ON4409
R113	24383560	OMF, 56ohm, 2W
R327	24547689	FR, 6.8 ohm, 1W
R416	24007566	Cement, 2k ohm, 5W
R444	24007768	Cement, 15 ohm, 10W
R529	24007642	Cement, 5600 ohm, 5W
R802	24007932	Cement, 6.2 ohm, 10W
R821	24007778	Cement, 180 ohm, 7W
R825	24531620	FR, 62 ohm, 1/2W
R826	24007552	Cement, 8200 ohm, 5W
R837	24000900	FR, 0.47 ohm, ±10%, 1W

## Service Adjustments

### Safety Instructions

#### X-Ray Radiation Precaution

1: The E.H.T. must be checked every time the receiver is serviced to ensure that the C.R.T. does not emit X-ray radiation as a result of excessive E.H.T. voltage. The nominal E.H.T. for this receiver is 27.5kV at zero beam current (minimum brightness) operating at 240v a.c. The maximum E.H.T. voltage permissible in any operating circumstances must not exceed 29.0 kV. When checking the E.H.T. use the 'High Voltage Check' procedure in this manual using an accurate E.H.T. voltmeter.

2: The only source of X-Ray radiation in this receiver is the C.R.T. To prevent X-ray radiation, the replacement C.R.T. must be identical to the original fitted as specified in the Parts List.

3: Some components used in this receiver have safety related characteristics preventing the C.R.T. from emitting X-ray radiation.

### Installation and Service Adjustments

#### +120 Volt Power Supply Adjustment (R851)

**Caution:** +B voltage closely relates to the high voltage. To prevent hazardous X-RAY RADIATION, the +B voltage must be properly adjusted to +120 volts.

- 1: Tune in an active channel. Adjust the BRIGHTNESS and CONTRAST Controls for normal picture.
- 2: Check that the AC power line voltage is normal. (AC 240v, 50 Hz)
- 3: Connect a digital voltmeter to both leads of C451.
- 4: Adjust R851 for 120v reading on the meter.
- 5: Remove the digital voltmeter.

#### High Voltage Check

**Caution:** There is no HIGH VOLTAGE ADJUSTMENT on this chassis.

- 1: Connect an accurate high voltage meter to the second anode of the picture tube.
- 2: Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to minimum (zero beam current).
- 3: High voltage will be measured below 29.0 kV.
- 4: Rotate the BRIGHTNESS Control to both extremes to be sure the high voltage does not exceed the limit of 29.0 kV under any conditions.

#### Height Adjustment

- 1: Receive the WG PHILIPS pattern, and set the contrast and colour to minimum and the brightness to centre.
- 2: Change the VERT POSITION SW (S301) so the round shape in the pattern is located in the centre of screen.
- 3: HEIGHT Control (R351) changes the size of the picture or pattern having an equal effect on the top and bottom. Make final adjustment to overscan the mask 2cm at top and bottom.

#### Horizontal Centre Adjustment

- 1: Receive the WG PHILIPS pattern.
- 2: Set the contrast and colour to minimum and the brightness to centre.
- 3: Adjust H. CENTRE USER Control (R452) to the click (centre) position.
- 4: Adjust H. CENTRE SUB Control (r451) so the pattern centre can be located at the screen centre.

#### Focus Adjustment

Adjust FOCUS Control on FLYBACK TRANS. (T461) for well defined scanning lines in the centre area of the screen.

#### Delayed R-F AGC Adjustment

- 1: Tune the set in the strongest station in your area.
- 2: Turn AGC DELAY Control (R151) on PIF Board to fully counterclockwise position.
- 3: Adjust AGC DELAY Control clockwise until noise (snow) disappears on the screen.

#### PAL MATRIX Adjustment

- 1: Tune in the colour programme of the Philips pattern.
- 2: Set the COLOUR Control to obtain the proper colour.
- 3: If the PAL MATRIX adjustment is incorrect, the Venetian Blind would appear in the colour bars area. This case needs the adjustment.
- 4: At the first, adjust DL PHASE ADJ.

- Coil (L551) to minimise the Venetian Blind.
- 5: Next adjust 1H-DL ADJ. VR (R551) to minimise the blind.
- 6: If the Venetian Blind still remains, adjust 1H-DL PHASE ADJ. Coil (L551) to minimise the Blind again.
- 7: Repeat procedures 5 and 6, adjust the R551 and L551 until the Blind does not appear.

#### CRT Grey Scale Adjustment

- 1: Tune in active channel.
- 2: Turn the SCREEN Control (on T461) fully counterclockwise.
- 3: Rotate the RED, GREEN and BLUE CUT OFF Controls (R557, R558, R559) counterclockwise to the minimum.
- 4: Set the GREEN and BLUE DRIVE Controls (R252, R253) to the mid position.
- 5: Set the SERVICE SW. (S202) in the H. line position.
- 6: Short temporarily terminal of RASTER CHIP on the CRT DRIVE Board.
- 7: Set the CONTRAST and COLOUR Controls to minimum and the BRIGHTNESS Control to centre position.
- 8: Open the terminal of RASTER CHIP on the CRT DRIVE Board.
- 9: Rotate the SCREEN Control gradually clockwise until the first line appears slightly on the screen. Set the SCREEN Control to this position.
- 10: Adjust the CUT OFF Controls to obtain the slightly lighted horizontal lines in the same levels of three colours (RED, GREEN and BLUE). The lines may look white if the CUT OFF Controls are adjusted properly.
- 11: Return the SERVICE SW. (S202) in the receiving position.
- 12: Set the BRIGHTNESS Control to the maximum and COLOUR Control to the minimum.
- 13: Adjust the BLUE and GREEN DRIVE Controls (R252/R253) to obtain proper white-balanced picture in high light areas.
- 14: Set the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls and DRIVE Controls to obtain a good white balance in both low and high light areas.

#### Sub-Brightness Adjustment

- 1: Tune in a colour programme.
- 2: Set the CONTRAST Control to the maximum and the BRIGHTNESS Control to the centre.
- 3: Set the COLOUR Control to the minimum.

- 4: Set the SUB-BRIGHT. Control (R255) to the centre and leave the receiver for five minutes in this state.
- 5: Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
- 6: Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
- 7: If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

#### SIF DET (L651) Adjustment

- 1: Connect SIF generator to pin 16 of IC101 through 0.01mF capacitor.
- 2: Connect the oscilloscope to pin 9 of IC101.
- 3: Set up the SIF generator as described below.  
Sound carrier frequency: 6.0 MHz  
Modulation frequency: 1000Hz  
Frequency deviation: ±15kHz  
Signal level: 80 dBm (50 W load)
- 4: Adjust L651 for the maximum response of 1000Hz det-out on scope.

#### Picture I-F Sweep Alignment

**General:** Refer to fig. 1 for test equipment connection.

#### Preliminary Steps:

- 1: Disconnect the IF Board from the Main Board.
- 2: Supply +12 volts to the IF Board (pin 1 of P101)
- 3: Connect the detector to pin 18 of IC101.

#### Sweep/Marker Generator:

Connect to pin 6 of P101 as shown in fig. 1 on the IF Board.  
Set to 30 ~ 40 MHz sweep with signal level of 75 ~ 85 dBm.

#### Oscilloscope:

Connect through the detector probe to the pin 18 of IC101 on the IF Board.

**Step:** Detector Coil.

#### Sweep/Marker Generator:

39.5 MHz Marker "ON"

**Adjust:** L151

#### Remarks:

Supply +2 to +3 volts to pin of

IC101 to set the output level for 0.4 Vp-p on the scope.  
Adjust L151 so that the marker position (39.5 MHz) on the response can lower to minimum.

After completing the above steps, disconnect the equipment and re-solder the links on the Main Board, and adjust the AGC Delay control (R151) following DELAYED RF AGC ADJUSTMENTS.

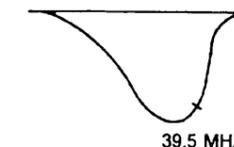


Fig. 2

#### AFC Alignment

#### General:

Refer to fig. 3 for test equipment connection.

#### Preliminary Steps:

- 1: Disconnect the IF Board from the Main Board.
- 2: Supply +12 volts to the IF Board. (pin 1 of P101).
- 3: Turn AGC DELAY Control (R151) on the IF Board fully clockwise.

#### DVM:

Connect to the resistor R171 (e in fig. 3) and ground.

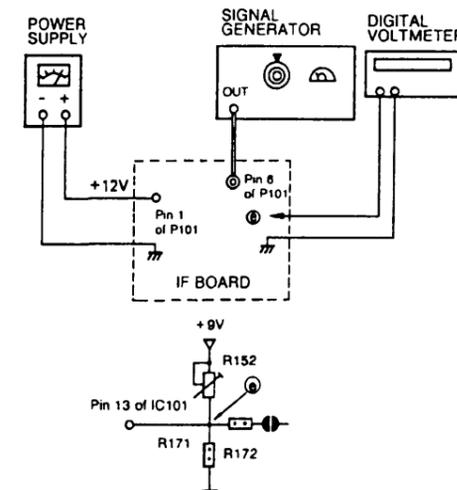


Fig. 3

#### Step 1:

AFC Balance (R152)

#### Signal Generator:

NO SIGNAL

#### Adjust:

R152

## Recommended Safety Parts Cont'd.

Item	Part No.	Description
R920	24000906	FR, 2.4 ohm, 2W
RF80	24531100	FR, 10 ohm, 1/2W
S801	23145434	Switch, Power, 2C2P
T401	23224983	Transformer, Horiz. Drive, TLN1039
T461	23236245	Transformer, Flyback, AT2078/21
T803	23217074	Transformer, Converter, 47003593
V901	A5541139	Picture Tube, A51JRV40X(MW), SVC
V901A	23902353	Socket, CRT, 10P

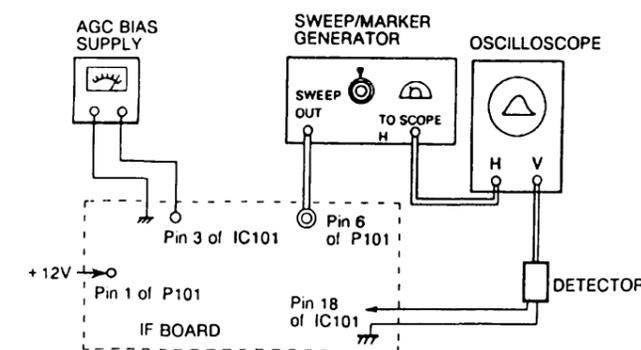


Fig. 1

## Service Adjustments Cont'd.

**Remarks:**  
 \* Short the pin 1 of IC101 to the ground.  
 \* Adjust R152 for 4.5 volts at the point e in fig. 3.

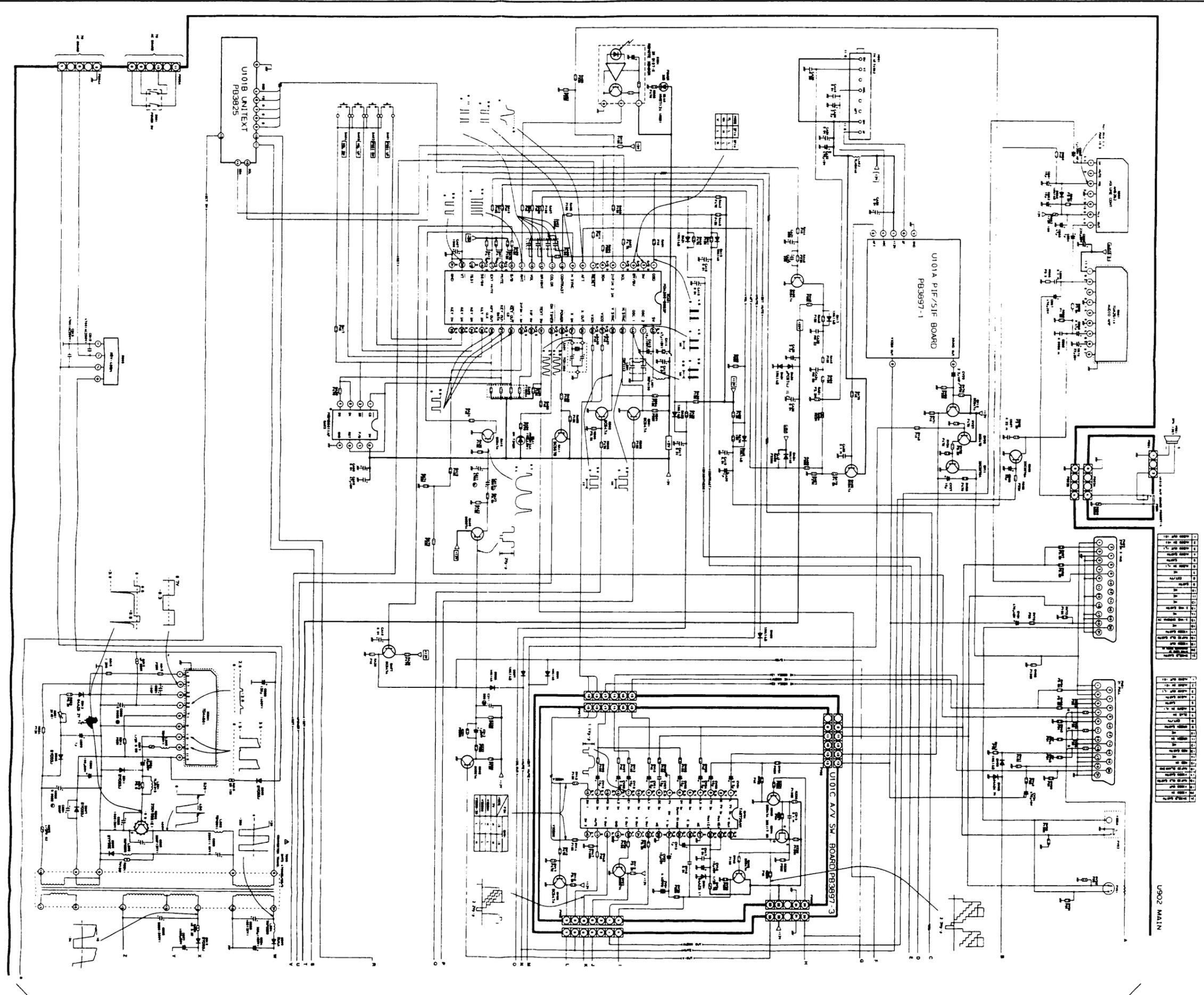
**Step 2:**  
 AFC Coil (L152)

Signal Generator:  
 39.5 MHz  
 CARRIER WAVE  
 (LEVEL: 75 TO 85 dBm)

**Adjust:**  
 L152

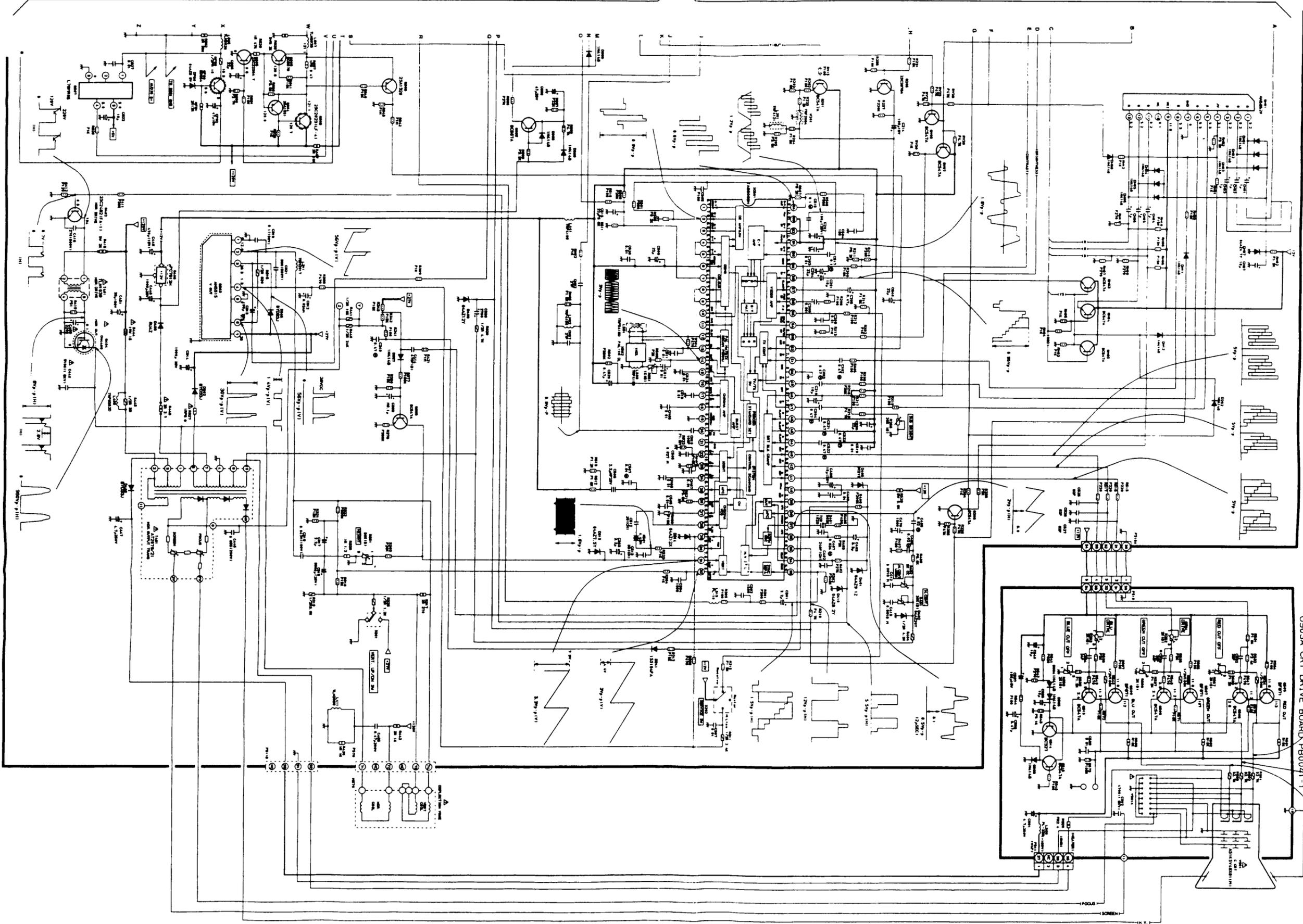
**Remarks:**  
 \* Remove the short of pin 1 of IC101.  
 \* Connect IF carrier wave to the pin 6 of P101 in fig. 3.  
 \* Adjust L152 for 2.5 volts on the meter at the point e.

## Main Diagram



Main Diagram Cont'd.

1



BOARD PB3898/PB3977(01B5)

U903A CRT DRIVE BOARD PB004-1

