

## General Information

## Covers Models:

Toshiba 2535 DB

Chassis: C3SS

CRT's:

2535 DB - A59JMZ146X02

2835 DB - A66JMZ46X01LZX

## Remote Control:

23120267 (CT 9678)

## Door Flap:

2535 DB - 23425536

2835 DB - 23425524

## Main Power Button:

2535 DB - 23443775

2835 DB - 23443776

## Matrix

Item	See Model
NICAM Diagram	Toshiba 2939 DB

## Specifications

Input Power Rating:	
2835 DB	148 W, AC240V, 50Hz
2535 DB	141W, AC240V, 50Hz
Aerial Input Impedence	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
Colour Sub-Carrier	35.07 MHz
Picture Tube:	
2835 DB	110 degree deflection (66cm)
2535 DB	110 degree deflection (59cm)
Sound Output	10.0W x 2.5W x 2 (Surround)
Speakers	120mm x 80mm oval 2 pcs
Aux Terminals	21 pin socket, S-VIDEO/AUDIO INPUT socket, External speaker terminal
Features	
Video input of PAL/3.58N/4.43N, Teletext reception, Digital Stereo system, Dolby surround system, OFF timer	

## 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.

For continued safety, replacement component should only be made after referring to the Product Safety Notice.

## Installation and Service Adjustments

## General Information

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending upon the particular location in which the receiver is operated. This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials. Plug the power cord into a convenient 240v 50 Hz AC two pin power outlet. Turn the receiver ON. Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain natural colour or B/W picture.

## Automatic Degaussing

A degaussing coil is mounted around the

picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about one second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off for at least one hour in order that the automatic degaussing circuit operates properly. Should the chassis or parts of the cabinet become magnetised to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to about 2m before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures.

## 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 the minimum (zero beam current).
- 3: High voltage will be measured below 29.0 kV.

## Height Adjustment

- 1: Receive the UK PHILLIPS pattern and set the contrast, colour and brightness to centre.
- 2: Adjust HEIGHT Control (R351) so that white blocks at top and bottom of the picture are just masked.

## Horizontal Centre Adjustment

- 1: Receive the UK PHILLIPS pattern.
- 2: Set the contrast and colour and brightness to centre.
- 3: Adjust H. CENTRE USER Control (R452) 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 on the screen.

## RF AGC Adjustment

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

## SIF FM DET (LD05) Adjustment (NICAM Board)

- 1: Connect SIF generator through 0.01  $\mu$ F capacitor to pin DI of PD01 on NICAM Board.
- 2: Connect the oscilloscope to pin 9 of ICD03.
- 3: Set up the SIF generator as described below.  
Sound carrier frequency: 6.0 MHz  
Modulation frequency: 1000 Hz  
Frequency deviation:  $\pm 15$  kHz  
Signal level: 100 dBm (50 ohm load).
- 4: Adjust LG04 for the maximum response of 1000 Hz det-out on scope.

## APC VR (RD35) Adjustment (NICAM Board)

- 1: Supply +5v DC to +5v line of NICAM Board.
- 2: Connect SIF generator through 0.01mF capacitor to pin 7 of ICD01 on NICAM Board.
- 3: Connect frequency counter through 10:1 probe to TP of RD32.
- 4: Connect pin 13 of ICD01 through 10mF capacitor to ground.
- 5: Connect pin 4 of ICD01 to ground.
- 6: Set up SIF generator as described below.  
Sound carrier frequency: 6.5 MHz.  
Signal level: 200 mV.
- 7: Adjust RD35 for the frequency reading of 66.552 MHz on the counter.

## PAL Matrix Adjustment

- 1: Tune in the colour programme of the Phillips 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 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 the item 5 and 6 procedures, adjust the R551 and L551 until the Blind does not appear.

## C.R.T. Grey Scale Adjustment

- 1: Tune in an active channel.
- 2: Set the SERVICE SW. (S202) in the "H LINE" position.
- 3: Turn the SCREEN Control (on T461) fully counterclockwise.
- 4: By rotating the RED, GREEN and BLUE CUT OFF Controls (R557, R558, R559) to the mid position.
- 5: Set the GREEN and BLUE DRIVE Controls (R252, R253) to the centre.
- 6: Rotate the SCREEN Control gradually clockwise until the first line appears slightly on the screen.  
Set the SCREEN Control to this position.
- 7: 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 like white if the CUT OFF Controls are adjusted properly.
- 8: Set the SERVICE SW. (S202) in the "RECEIVE" position.
- 9: Set the CONTRAST and COLOUR Controls to minimum, and BRIGHTNESS Control to maximum.
- 10: Adjust the BLUE and GREEN DRIVE Controls (R252/R253) to obtain proper white-balanced picture in high light areas.

- 5: five minutes in this state.
- 6: 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.
- 7: Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
- 8: 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.

## Picture I-F Sweep Alignment

## General:

Refer to fig. 1 for test equipment connection.

## Preliminary Steps:

- 1: Supply +12 volts to the PIF Board.
- 2: Supply dc 2.5 ~ 3.0v to pin 16 of IC101.
- 3: Connect pin 6 of IC101 to ground through capacitor 10 mF.

## Sweep/Marker Generator:

Connect to pin BA of PIF Board as shown in fig. 1.  
Set to 30 ~ 40 MHz sweep with signal level of 80 ~ 90 dBm.

## Oscilloscope:

Connect to pin 7 of IC101 on the PIF Board through detector, see fig. below.

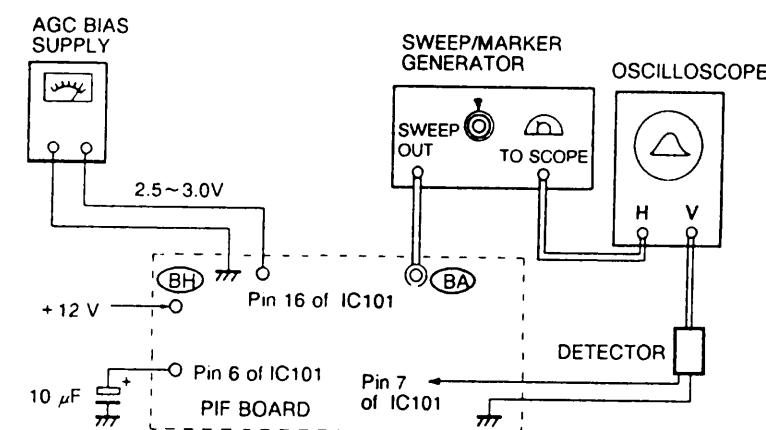


Fig 1.

- 11: 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 minimum and the BRIGHTNESS Control to the centre.
- 3: Set the COLOUR Control to the centre.
- 4: Set the SUB-BRIGHT. Control (R255) to the centre and leave the receiver for

Step: 39.5 MHz VCO Coil  
Sweep/Marker Generator: 39.5 MHz Marker "ON"  
Adjust: L151  
Remarks: Adjust L151 so that the marker position (39.5 MHz) on the response can get zero beat with VCO frequency. (See fig. 2 on next page)  
Remove the capacitor 10 mF on pin 6 of IC101.

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

## Recommended Safety Parts

Item	Part No.	Description
C423	24095755	PF, 0.47mf, 200V
C440	24082351	PF, 7200pF, $\pm 3\%$ , 1500V
C463	24212222	CD, 2200pF, $\pm 10\%$
C801, C804	24082318	PF, 0.1mF, $\pm 20\%$ , AC250V
C802, C803	24094656	CD, 2200pF, $\pm 20\%$ , AC400V
F801	23144473	Fuse, 5.0A
F803	23144874	Fuse, 0.8A
L462		DY, Supplied with V901
L901	23200203	Coil, Degaussing, TSB-2330AR
P801	23176897	Power Cord
Q404	A6872801	Transistor, 2SD2253
Q826	A8643106	Photo Coupler, TLP621(GR)
Q827	A6907751	IC, S1854

## Recommended Safety Parts Cont'd.

Item	Part No.	Description
R327	24339569	OMF, 5.6 ohm, 2W
R446	24533151	FR, 150 ohm, 2W
R448	24338338	OMF, 0.33 ohm, 1W
R801	24004914	Metal Glazed Resistor, 5.6M ohm, 1/2W
R864	24546479	FR, 4.7 ohm, 1/2W
R878	24531560	FR, 56 ohm, 1/2W
R884	24531120	FR, 12 ohm, 1/2W
R890	24000875	PTC Thermistor, 18 ohm, $\pm 20\%$ , 290V
RD01 (U902)	24000211	FR, 15 ohm, 1/2W
S801	23145434	Switch, Power, 2C2P
T401	23224336	Transformer, Horiz. Drive, TLN1083
T461	23236454	Transformer, Flyback, TFB4117AR
T801	23211891	Line Filter, TRF3164
T803	23217214	Transformer, Converter, TPW3283AR
V901	A5588639	Picture Tube, A66JMZ46X01LZX, SVC
V901A	23902067	Socket, CRT, 10P

Service Adjustments Cont'd.

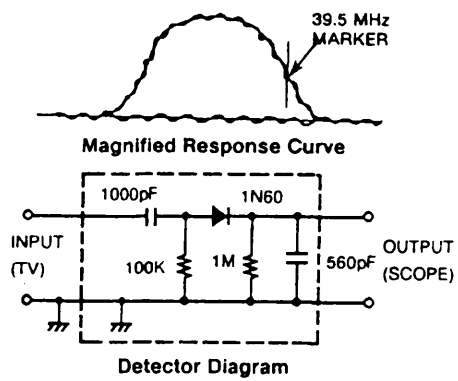


Fig 2.

**AFC Alignment**

General: Refer to fig. 3 for test equipment connection.

Preliminary Steps:

1: Supply +12 volts to the PIF Board.

DVM: Connect to the pin BN of P101A on PIF Board and ground.

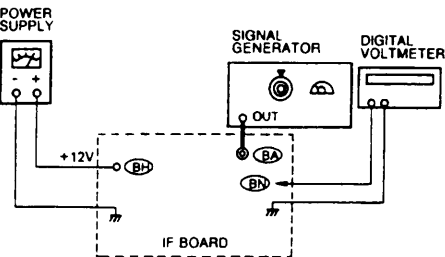


Fig 3.

**Step 1:**

AFC Balance (R153)

Signal Generator: NO SIGNAL

Adjust: R153

Remarks:

- \* Connect pin 16 of IC101 to the ground.
- \* Connect DVM to pin BN of P101A on PIF Board.
- \* Adjust R153 for 4.5 v reading on meter.

**Step 2:**

AFC Coil (L152)

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

Adjust: L152

Remarks:

- \* Remove the short of pin 16 of IC101.
- \* Connect IF carrier wave to the pin BA of P102A.
- \* Connect DVM to pin BN of P101A.
- \* Adjust L152 for 4.5 volts on the meter

**Adjustment Method for Servicing**

**Outline**

Since each IC used is of 1<sup>2</sup>C bus control type, readjustment of the TVs also needs adjustment through 1<sup>2</sup>C bus control. In the service mode, sub-bright, deflection system sub-adjustments, picture system

sub-adjustments can be made easily with user remote control unit.

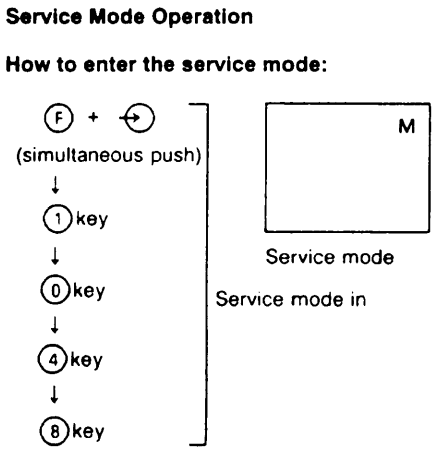


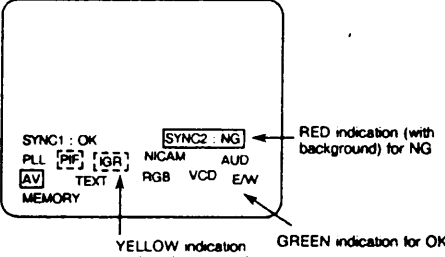



Fig 4.

**How to exit from the service mode:**

Exit the service mode by turning the power on/off with the remote control.

- Adjustment in the Service Mode**
- Service mode level adjustments:**
- 1: Push F +  key (simultaneous push) (item UP), or F +  key (simultaneous push) (item DN) to select item to be adjusted.
  - 2: Adjust with the level UP/DN (VOL UP/ DN key) key.
- Other service mode adjustments**
- F + 2 key (simultaneous push) cut off: (NO VERTICAL DEFLECTION) ON/OFF.
- Self Check**
- 1: Indicates sync signal and acknowledgement of each IC.
  - 2: Examples of display on screen.



- Fig 5.
- 3: Operation:
- 1: TV gets into service mode with key operation;
  - F +  → 1 key → 0 key → 4 key → 8 key.
  - 2: TV indicates screen with F + 4 key.

**Sub Data Additional Description**

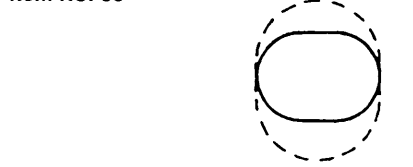
**Item No: 32**  
**Symbol: LVE**  
**Description: L-SECAM output level**

**Item No: 33**  
**Symbol: RFA**  
**Description: RF AGC**

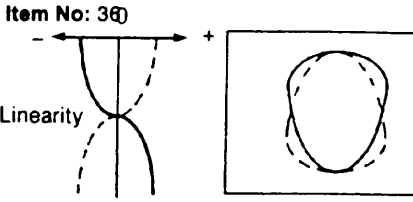
**Item No: 34**

**Symbol: HIT**  
**Description: V amplitude adjustment**

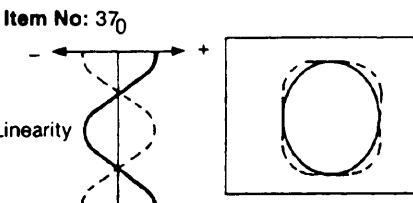
**Item No: 35**



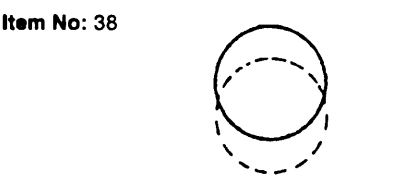
**Symbol: LIN**  
**Description: V linearity correction 1**



**Symbol: VSC**  
**Description: V linearity correction 2**



**Symbol: VPC**  
**Description: V picture position adjustment**

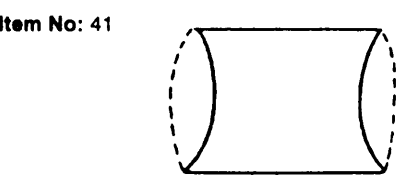


**Symbol: VCP**  
**Description: Setting of amount of V amplitude correction against variation of screen brightness**

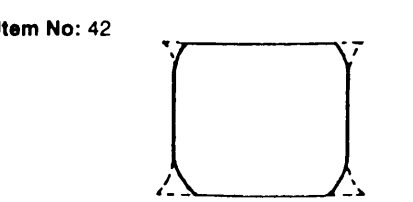
**Item No: 39**  
**Symbol: WID**  
**Description: H amplitude adjustment**



**Symbol: DPC**  
**Description: H pin-cushion distortion correction**

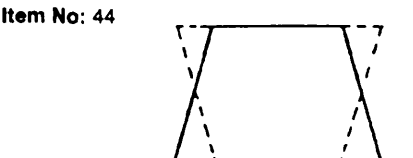


**Symbol: CNR**  
**Description: H pin-cushion distortion correction at four corners**

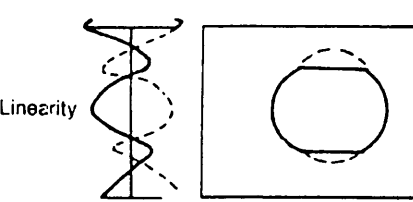


**Symbol: KEY**  
**Description: Pedestal distortion correction**

**Item No: 43**  
**Symbol: HCP**  
**Description: Setting of amount of H amplitude correction against variation of screen brightness**



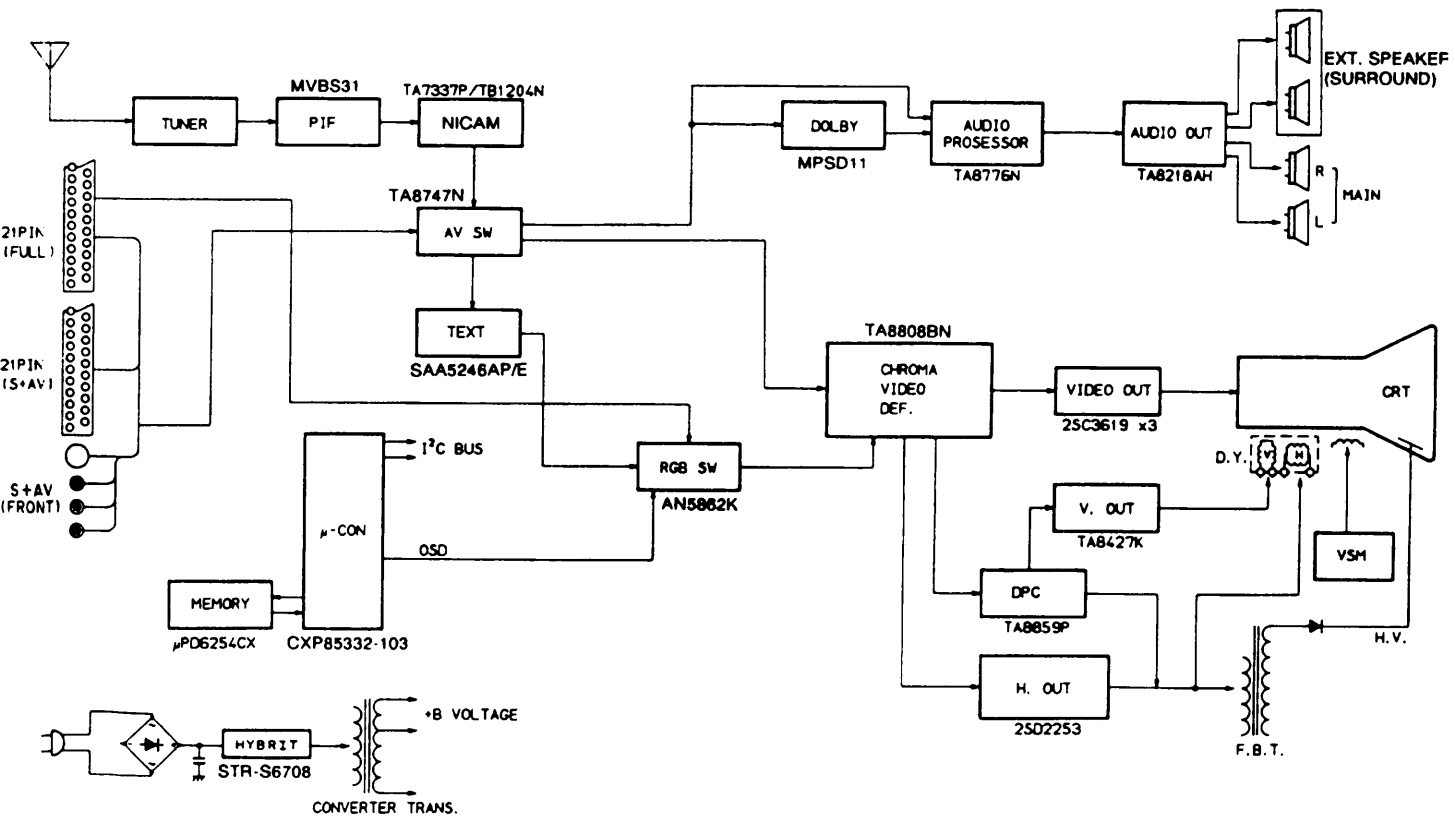
**Symbol: VMC**  
**Description: V linearity correction. Linearity balance at 1/4, 3/4 areas from top**



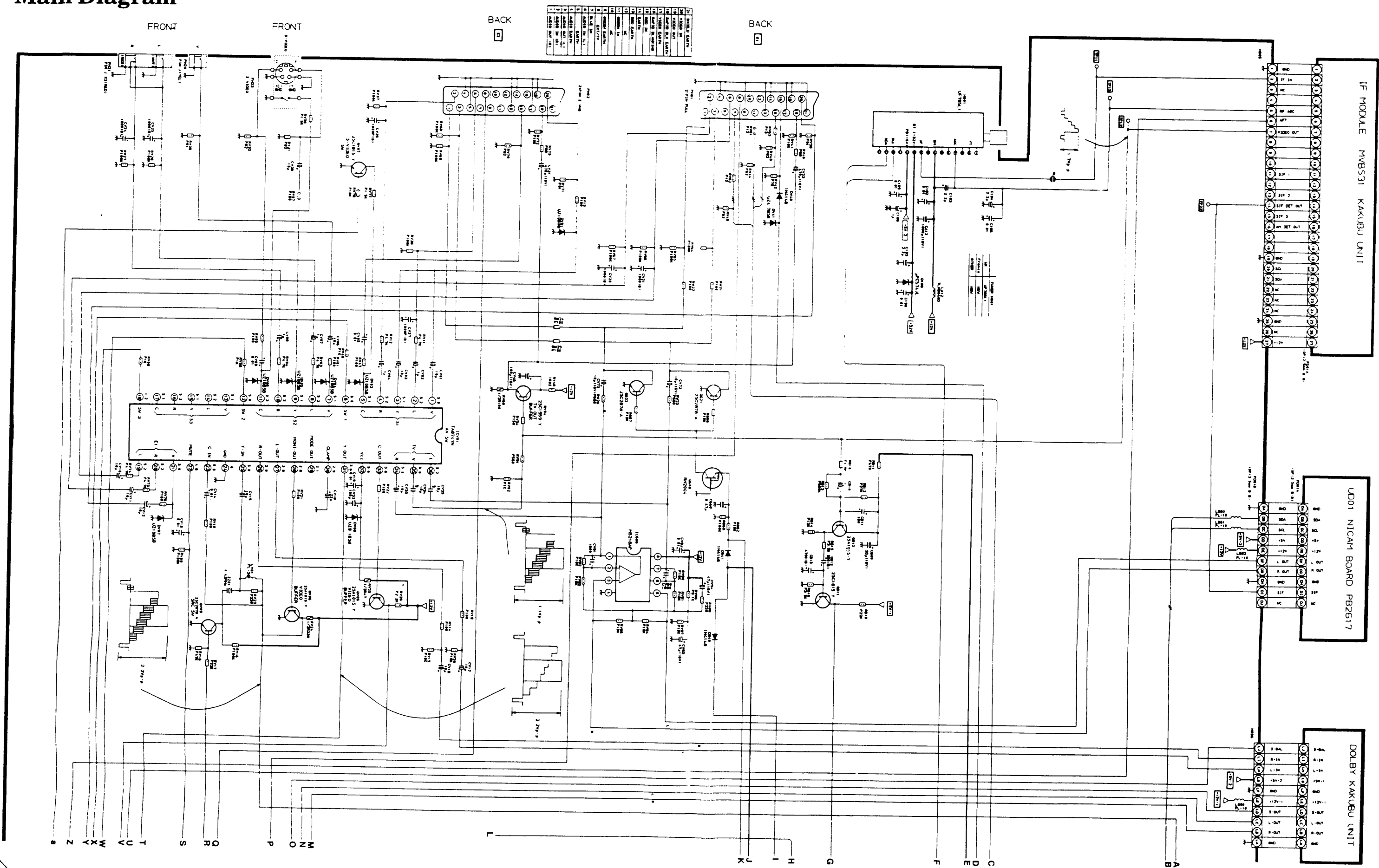
Part Difference Table

Part Location Number	2835 DB	2535 DB
C305	2.2MF (50V)	1MF (50V)
C306	3.300MF (25V)	4.700MF (25V)
R242	12K	18K
R303	56K	39K
R304	24K	39K
R306	47K	56K
R307	620K	470K
R309	750 OHM, 2W	470 OHM, 2W
R323	0.62 OHM, 1W	0.68 OHM, 1W
R334	560 OHM, 2W	750 OHM, 2W
R336	330 OHM, 2W	270 OHM, 2W
R340	270 OHM, 1W	390 OHM, 1W
L901	23200203	23200202
V901	A66JMZ46X01	A59JMZ46X02

Block Diagram

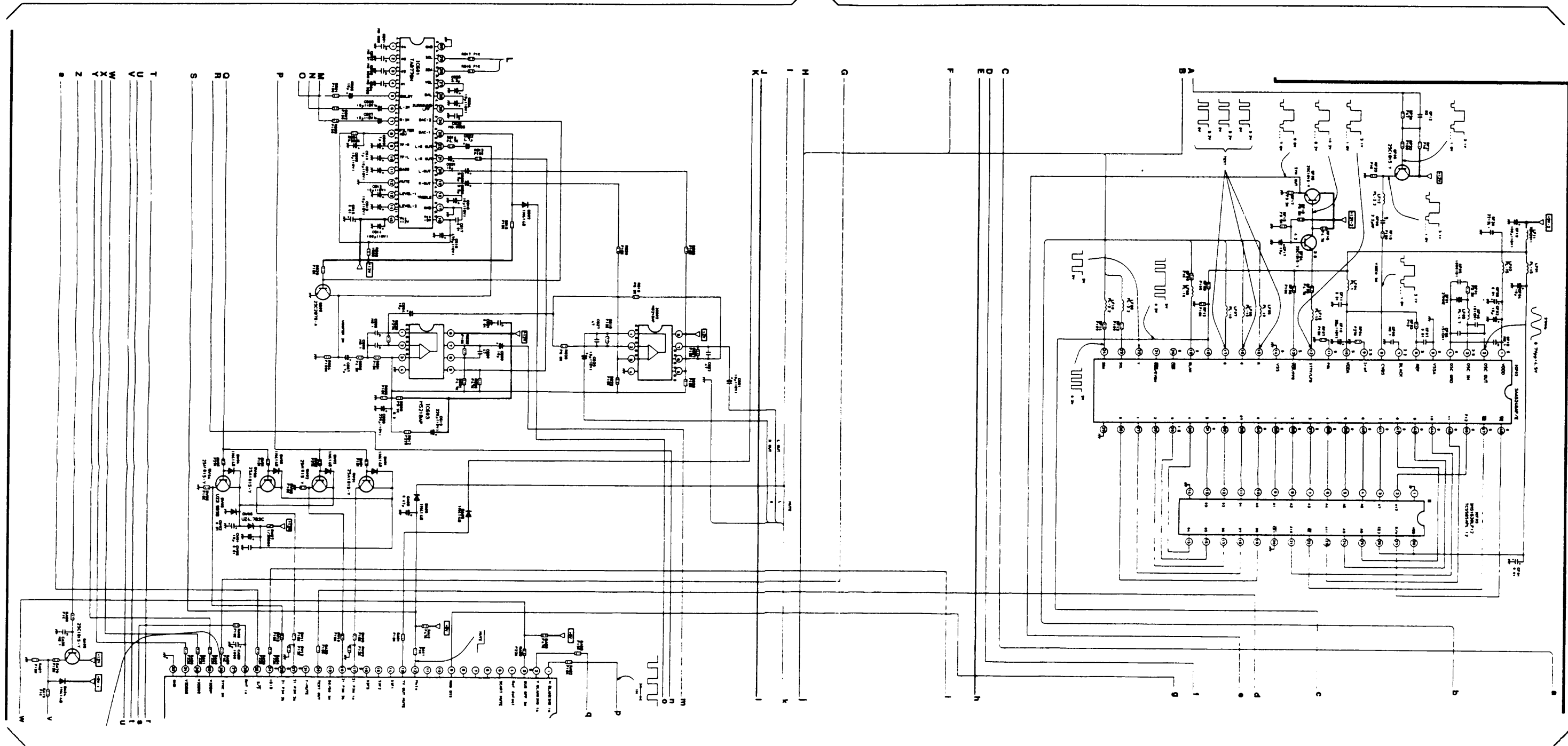


Main Diagram



Main Diagram Cont'd.

1



Continued at 2

## Main Diagram Cont'd.

2

