

# Service Adjustments

## Safety Instructions

### X-Ray Radiation

- Excessive high voltage can produce potentially hazardous X-Ray Radiation. To avoid such hazards the high voltage must not exceed the specified limit. The nominal value of the high voltage of this receiver is 22kv at zero beam current (minimum brightness) under 220V/240V AC power source. The high voltage must not, under any circumstances, exceed 30kv. Each time a receiver requires servicing, the high voltage should be checked following the High Voltage Check procedure in this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
- The primary source of X-Ray Radiation in this TV receiver is the picture tube. For continued X-Ray Radiation protection, the replacement tube must be exactly the same type of tube as specified in the parts list.
- Some parts of this receiver have special safety related characteristics for X-Ray Radiation protection. For continued safety, parts replacement should be undertaken only after referring to the Product Safety Notice below.

### Product Safety Notice

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-Ray Radiation.

## General Adjustments

### B+ 110V Power Adjustment

#### Preparation:

- Tune in an air signal. Adjust the Brightness and Contrast controls for normal picture.
- Check that AC power line voltage is normal, (AC 220/240 volts 50 Hz).
- Connect a electronic voltmeter across C518 on the Main Board.

#### Adjustment & Check:

- Adjust the B+ and ADJ (VR501) for + 110 volt reading.

**Caution:** B+ voltage closely relates to the high voltage. To prevent hazardous X-Ray Radiation the B+ voltage must be properly adjusted to + 110 volts.

### Height Adjustment

#### Preparation:

- Tune in an active channel.

#### Adjustment & Check:

- The Height control (VR202) changes the size of the picture or pattern. Make final adjustment to overscan the mask about 10% vertically.

## Horizontal Phase Adjustment

### Preparation:

- Tune in the colour programme of Phillips pattern.

### Adjustment & Check:

- Adjust VR203 for the Horizontal Phase of the picture.

## Focus Adjustment

### Preparation:

- Tune in an active channel.

### Adjustment & Check:

- Adjust the Focus control for well defined scanning lines on the picture screen.

## High Voltage Check

### Preparation:

- Connect an accurate high voltage meter to the second anode of the picture tube.
- Turn on the receiver.
- Set the brightness and contrast controls to minimum (zero beam current).

### Adjustment & Check:

- Adjust the brightness control to both extremes to be sure the high voltage does not exceed the limit under any conditions. High voltage should be measured below 26KV.

**Note:** There is no high voltage on this chassis.

## AGC Delay Adjustment

### Preparation:

- Tune in the strongest station in your area.

### Adjustment & Check:

- Adjust the AGC Delay control (VR102) fully clockwise, then turn it counter clockwise until snow noise just disappears from the screen.

## White Balance Adjustment

### Preparation:

- Tune in a monochrome channel and warm up the set for about 15 minutes.
- Set the R, G, B, cut off controls VR402, VR404 and VR502 about position from maximum value and the G, B, drive controls (VR401 and VR403) at centre position.
- Rotate the screen control fully counter clockwise.
- Set the switch S201 to "Service" position.

### Adjustment & Check:

- Rotate the screen control gradually clockwise until the first horizontal line appears on the screen.
- If the first horizontal line is blue, adjust VR402 and VR405 to increase the red and green component level to get a white horizontal line.
- Set S201 to "Normal" position. Set luminance and contrast controls to "Normal" position. Adjust VR401 and VR403 to maintain a good white balance at the brightness part of the screen.
- Turn the brightness and contrast controls maximum and minimum. Observe the screen white balance, if it is not proper in high brightness condition, adjust R, G, B, cut off controls or G, B, drive controls respectively in

order to maintain a good white balance in both low and high luminance conditions.

## PAL Matrix Adjustment

### Preparation:

- Tune in the colour programme of Philips pattern.
- Set the colour control to obtain the proper colour.
- If the PAL matrix adjustment is incorrect the Venetian Blind would appear in the colour bars area. This case needs the adjustment.

### Adjustment & Check:

- Adjust DL Phase ADJ. coil (L201) to minimise the Venetian Blind.
- Next adjust 1H-DL ADJ. (VR201) to minimise the Blind.
- If the Venetian Blind still remains, adjust 1 H-DL Phase ADJ. Coil to minimise the Blind again.
- Repeat procedures 5 and 6, adjust the VR and coil until the Blind does not appear.

## On-Screen Display Alignment

### Preparation:

- Receive a test pattern.

### Adjustment & Check:

- Press the "Fun. Select" button.
- Press the "Fun. Up" button to maximum.
- Adjust L801 so that the OSD is symmetrically shown.

## Colour Purity Adjustment

### Preparation:

- Demagnetise the picture tube and cabinet using an external degaussing coil.
- Turn the contrast and brightness controls to maximum.
- Adjust red and blue bias controls (VR401 and VR405) to provide only a green raster. Advance the green bias control (VR403) if necessary.
- Loosen the clamp screw holding the yoke, and slide the yoke backward to provide vertical green belt (zone) in the picture screen.
- Remove the rubber wedges.

### Adjustment & Check:

- Rotate and spread the tabs of the purity magnet (see fig 1) around the neck of the picture tube until the green belt is in the centre of the screen. At the same time centre the raster vertically.
- Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
- Check the purity of the red and blue rasters by adjusting the Bias controls.
- Proceed with convergence adjustment.

## Centre Convergence Adjustment

### Preparation:

- Receive a crosshatch pattern with a colour bar signal generator.
- Adjust the brightness and contrast controls for well defined pattern.

### Adjustment & Check:

- Adjust two tabs of the 4-pole Magnets to change the angle between them (see fig 2) and obtain a blue vertical line in the centre area of the picture screen (see fig 3).

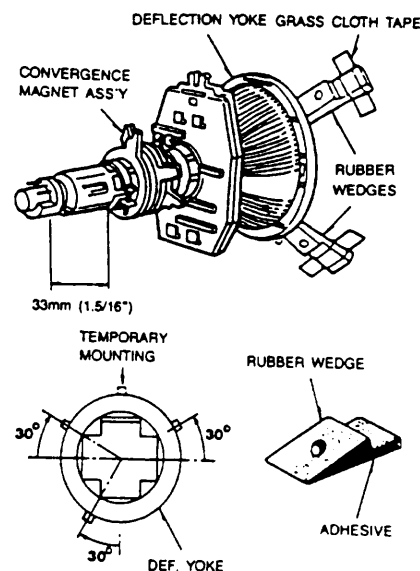


Fig 1.

- Turn both tabs at the same time keeping their angles constant to superimpose red and blue horizontal lines at the centre of the screen, (see fig 3).
- Adjust two tabs of 6-pole Magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
- Repeat adjustments 1, 2, and 3, keeping in mind red, green and blue movements because 4-Pole Magnets and make dot movement complex.

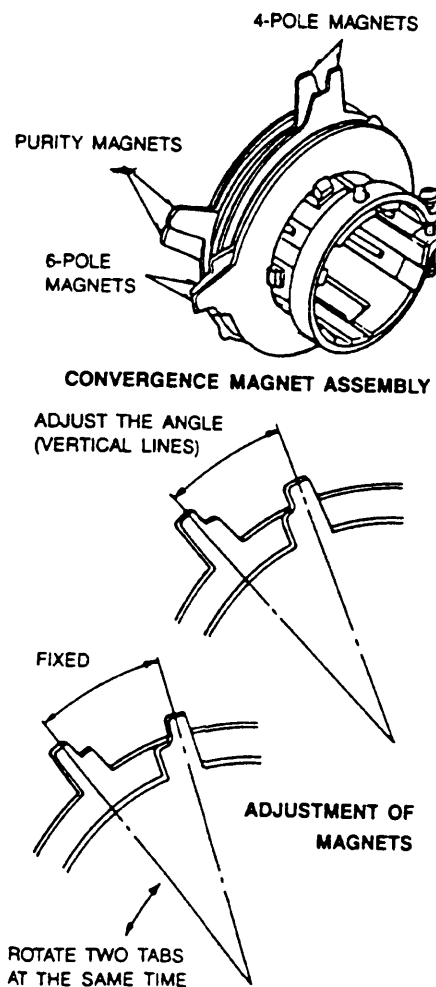


Fig 2.

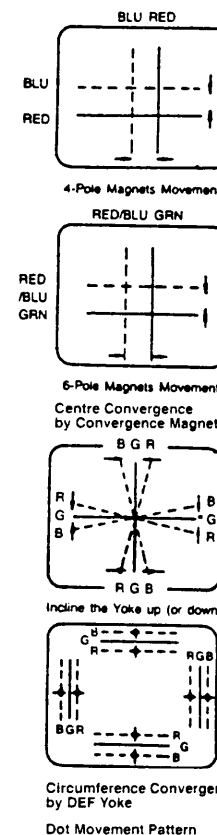


Fig 3.

## Circumference Convergence Adjustment

### Preparation:

- Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
- Place a wedge as shown in fig. 08, temporarily. Do not remove cover paper on adhesive part of the wedge.

### Adjustment & Check:

- Tilt front of the deflection yoke up or down to obtain better convergence in circumference (see fig 2). Push the mounted wedge into the space between picture tube and the yoke to hold the yoke temporarily.
- Place other wedge into bottom space and remove the cover paper to stick.
- Tilt the front of the yoke right or left to obtain better convergence in the circumference (see fig 3).
- Hold the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to hold the yoke.
- Detach the temporarily mounted wedge and put it in another upper space. Stick it on the picture tube to fix the yoke. After placing three wedges, re-check overall convergence.
- Tighten the screw firmly to hold the yoke tightly in place. Stick 3 adhesive tapes on wedges as shown in fig 1.

## Picture IF and AFC Adjustment

### Preparation:

- Apply 16.5VDC voltage across C318.
- Connect tuner pins BM and BU together.
- Apply 38.9 MHz, 15 mVrms CW to Tuner TP through 1 Kohm resistor in series with 0.001uf cap.

### Adjustment & Check:

- Adjust VR102 so that tuner AGC is about 4 VDC.
- Adjust the video detector, AGC is

- minimum.
- Repeat step 5 if tuner AGC saturation occurs.
- Now connect a 10 Kohm resistor across C139.
- Adjust VR101 so that the DC voltage of terminal # 24 (AFT output) will be 4.5V.
- remove the 10 Kohm resistor.
- Adjust the AFT Tank Coil L112 so that the 400Hz output of # 24 will be 4.5V.

**Note:** use 38.9 MHz for B/G system and 38.0 MHz for I/D system.

## SIF Adjustment

### Preparation:

- Apply 16.5VDC voltage across C318.
- Apply 5.5 MHz, 100m Vrms, 400Hz FM 50KHz Dev. signal pin 16 of IC102 through a 0.001uF capacitor.

### Adjustment & Check:

- Adjust SIF tank coil L112 so that 400Hz output of terminal # 11 will be the maximum of the lowest T.H.D.

## IF Traps Adjustment (for FTZ only)

### Preparation:

- Apply 16.5VDC voltage across C318.
- A sweep signal is applied to Tuner TP through 1K resistor in series with 0.001uf capacitor.
- Connect Tuner pins BM and BU together.
- Connect a suitable detector across R137.

### Adjustment & Check:

- Adjust L102 and L101 for maximum attenuation of 40.16 MHz and 31.9 MHz respectively.
- Adjust Tuner output coil for maximum value of 37.9 MHz.

## I/D SIF Adjustment

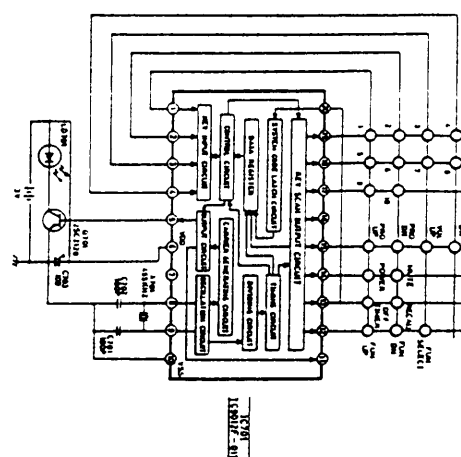
### Preparation:

- Apply 16.5VDC voltage across C318.
- Apply a 6.0 MHz, 100mVrms 400Hz FM 50KHz Dev. signal to the intersection point of C142 and R121.
- Connect an oscilloscope to pin 16 of IC102.

### Adjustment & Check:

- Adjust L114 for maximum amplitude signal.

## Remote Control Diagram



Main Diagram

