

ADJUSTMENTS

SET-UP ADJUSTMENTS

The following adjustments should be made when a complete realignment is required or a new picture tube is installed.

Perform the adjustments in the following order:

1. Color purity
2. Convergence
3. White balance

Notes:

The purity/convergence magnet assembly and rubber wedges need mechanical positioning.
For some picture tubes, purity/ convergence adjustments are not required.

1. **Color Purity Adjustment**

Preparation:

Before starting this adjustment, adjust the vertical sync, horizontal sync, vertical amplitude and focus.

- 1.1 Face the TV set north or south.
- 1.2 Connect the power plug into the wall outlet and turn on the main power switch of the TV set.
- 1.3 Operate the TV for at least 15 minutes.
- 1.4 Degauss the TV set using a specific degaussing coil.
- 1.5 Set the brightness and contrast to maximum.
- 1.6 Counter clockwise rotate the R /B low brightness potentiometers to the end and rotate the green low brightness potentiometer to center.
- 1.7 Receive green raster pattern signals.
- 1.8 Loosen the clamp screw holding the deflection yoke assembly and slide it forward or backward to display a vertical green zone on the screen. Rotate and spread the tabs of the purity magnet around the neck of the CRT until the green zone is located vertically at the center of the screen.
- 1.9 Slowly move the deflection yoke assembly forward or backward until a uniform green screen is obtained.
- 1.10 Tighten the clamp screw of the assembly temporarily. Check purity of the red raster and blue raster until purities of the three rasters meet the requirement.

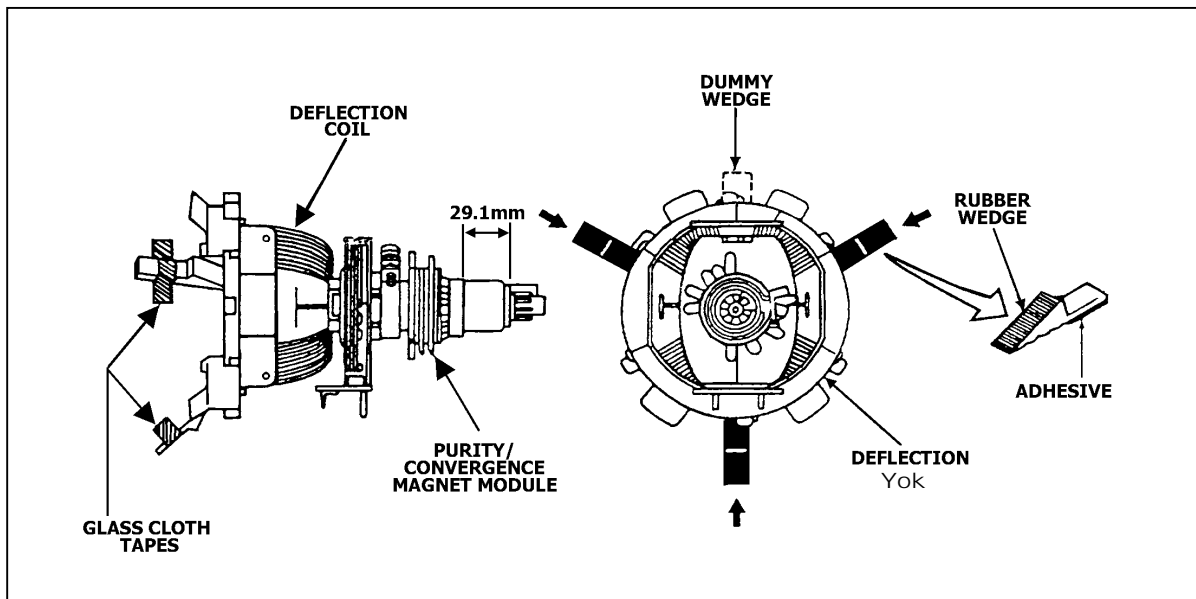


Fig. 1

2. Convergence Adjustment

Preparation:

Before attempting any convergence adjustment, the TV should be operated for at least 15 minutes.

2.1 Center convergence adjustment

2.1.1 Receive dot pattern.

2.1.2 Adjust the brightness/contrast controls to obtain a sharp picture.

2.1.3 Adjust two tabs of the 4-pole magnet to change the angle between them and red and blue vertical lines are superimposed each other on the center of the screen.

2.1.4 Turn both tabs at the same time keeping the angle constant to superimpose red and blue horizontal on the center of the screen.

2.1.5 Adjust two tabs of the 6-pole magnet to superimpose red/blue line and green line.

2.1.6 Remember red and blue movement. Repeat steps 2.1.3 ~ 2.1.5 until optimal convergence is obtained.

2.2 Circumference convergence adjustment

2.2.1 Loosen the clamp screw holding the deflection yoke assembly and allow it tilting.

2.2.2 Temporarily put the first wedge between the picture tube and deflection yoke assembly. Move front of the deflection yoke up or down to obtain better convergence in circumference. Push the mounted wedge in to fix the yoke temporarily.

2.2.3 Put the second wedge into bottom.

2.2.4 Move front of the deflection yoke to the left or right to obtain better convergence in circumference.

2.2.5 Fix the deflection yoke position and put the third wedge in either upper space. Fasten the

deflection yoke assembly on the picture tube.

- 2.2.6 Detach the temporarily mounted wedge and put it in either upper space. Fasten the deflection yoke assembly on the picture tube.
- 2.2.7 After fastening the three wedges, recheck overall convergence and ensure to get optimal convergence. Tighten the lamp screw holding the deflection yoke assembly.

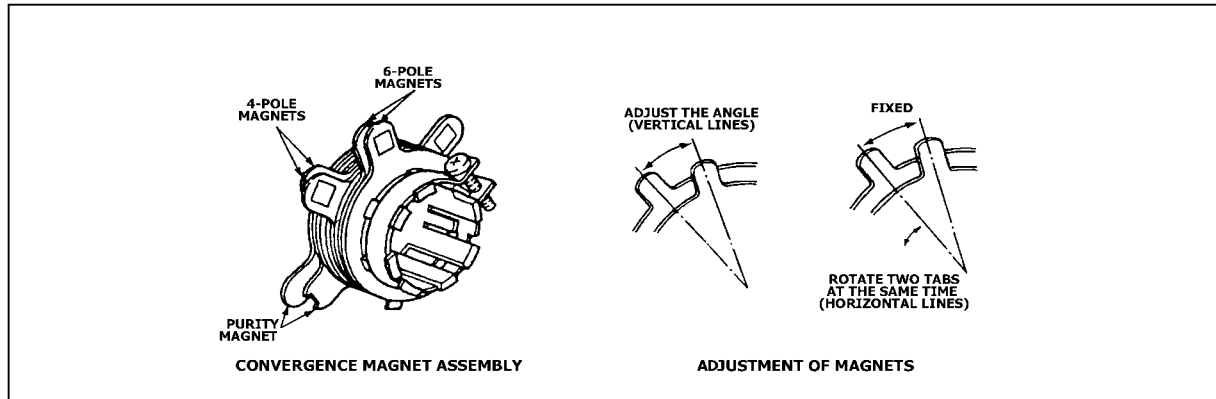


Fig. 2

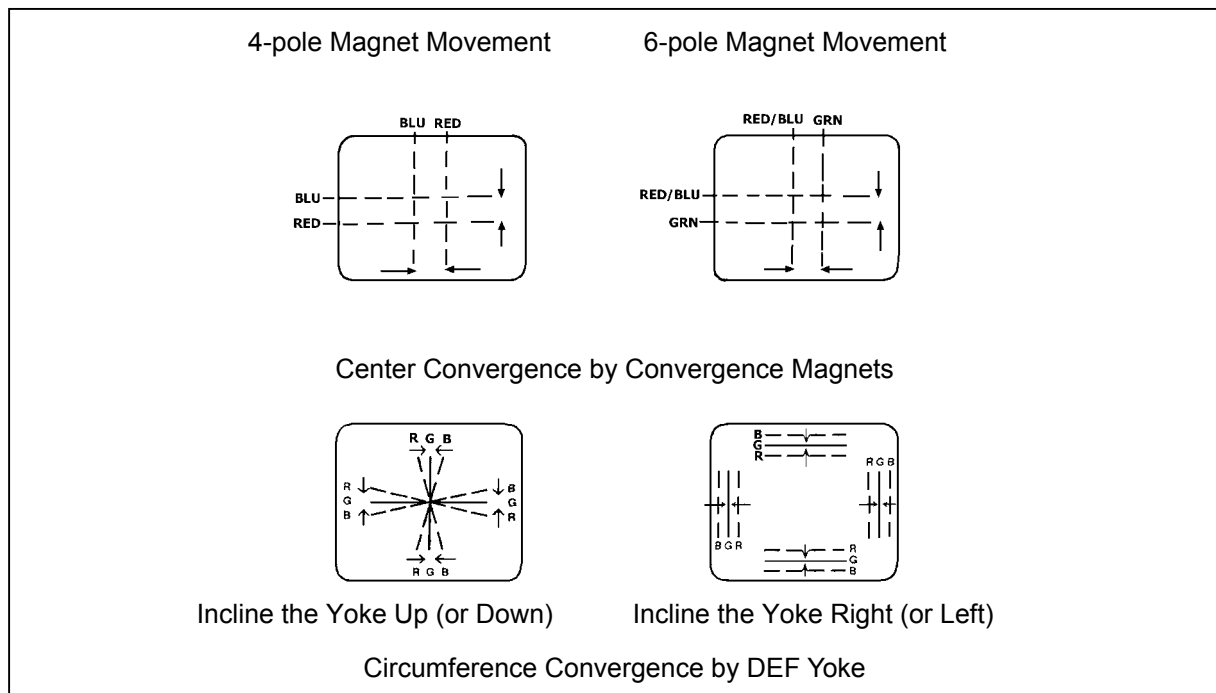


Fig.3

3. White Balance Adjustment

Generally, white balance adjustment is made with professional equipment. It's not practical to get good white balance only through manual adjustment. For TVs with I²C bus control, change the bus data to adjust white balance.

CIRCUIT ADJUSTMENTS

Preparation:

Circuit adjustments should be made only after completion of set-up adjustments.

Circuit adjustments can be performed using the adjustable components inside the TV set. For TVs with I²C bus control, first change the bus data.

1. Degaussing

A degaussing coil is built inside the TV set. Each time the TV is powered on, the degaussing coil will automatically degauss the TV. If the TV is magnetized by external strong magnetic field, causing color spot on the screen, use a specific degausser to demagnetize the TV in the following ways. Otherwise, color distortion will be shown on the screen.

- 1.1 Power on the TV set and operate it for at least 15 minutes.
- 1.2 Receive red full-field pattern.
- 1.3 Power on the specific degausser and face it to the TV screen.
- 1.4 Turn on the degausser. Slowly move it around the screen and slowly take it away from the TV.
- 1.5 Repeat the above steps until the TV is degaussed completely.

2. Confirmation and Adjustment for Voltage

Caution: +B voltage has close relation to high voltage. To prevent X-ray radiation, set +B voltage to the rated value.

- 2.1 Make sure that the supply voltage is within the range of the rated value.
- 2.2 Connect a digital voltmeter to the voltage output terminal of the main PCB. Power on the TV and set the brightness and sub-brightness to minimum. Ensure that the voltage from the main PCB reads as follows.
- 2.3 Regulate voltage adjustment components on the power section until the +B the voltage reaches the rated value.

Table 2

Test Point	Voltage (V)
Negative of VD851	118V \pm 2V
Negative of VD852	17V \pm 1V
Negative of VD854	11V \pm 1V
Negative of VD857	14V ^{+1V} _{-1.5V}
Positive of C874	9V \pm 0.5V
Positive of C878	5V \pm 0.5V
Positive of C800	5V \pm 0.25V

Note:

It's impossible to check the power part separately from the main chassis board as the part is mounted on the main chassis board. The power components, etc. should be checked for burnout when power-on. If burned out, do not power on the TV again until the cause is found out.

3. High Voltage Inspection

Measure voltages of test points on the main PCB with the digital voltmeter. Measure the CRT high voltage with the high-voltage testing equipment and heater voltage with the high-frequency effective voltmeter. The rated values are shown as below.

Table 3

Test Point	Voltage (V)
Negative of VD603	$25 \pm 1.5V$ $27 \pm 1.5V$ (for BSC68V1 FBT only)
Negative of VD855A	$190 \pm 5.0V$
CRT anode	$25 \pm 1.5KV$
Heater	$6.3 \pm 0.3V_{rms}$

4. Focus Adjustment

Caution: Dangerously high voltages are present inside the TV. Extreme caution should be exercised when working on the TV with the back removed.

- 4.1 After removing the back cover, look for the FBT on the main PCB. There should be a FCB on the FBT.
- 4.2 Power on the TV and preheat it for 15 min.
- 4.3 Receive a normal TV signal. Rotate knob of the FCB until you get a sharp picture.

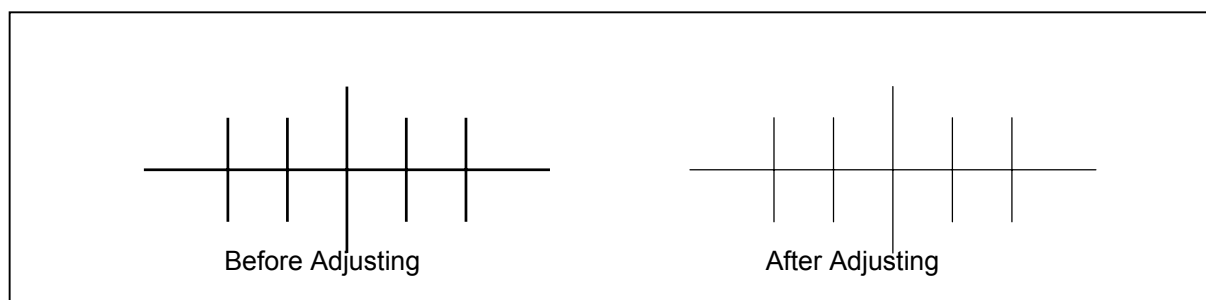


Fig. 4

5. Safety Inspection

5.1 Inspection for insulation and voltage-resistant

Perform safety test for all naked metal of the TV. Supply high voltage of 3000V AC, 50Hz (limit current of 10mA) between all naked metal and cold ground. Test every point for 3 sec. and ensure no arcing and sparking.

5.2 Requirements for insulation resistance

Measure resistance between naked metal of the TV and feed end of the power cord to be infinity

with a DC-500 high resistance meter and insulation resistance between the naked metal and degaussing coil to be over 20M .

6. SERVICE mode

6.1 To enter the DESIGN/SERVICE mode

Set the volume to 0. Then press and hold the MUTE button on the remote control, and press the MENU button on the TV to enter the SERVICE mode. In this case, red “ S ” is displayed on the upper center of the screen. To exit from the S mode, turn off the TV set by the POWER button on the remote control.

Caution: The user service mode adjustment can be changed only when service personnel adjust the whole set data during servicing. As the control data have dramatic effects on functions and performance of the TV, service personnel should not tell user how to enter the SERVICE mode to avoid improper data settings.

6.2 Adjustments and bus data (CH08T0606)

Table 4 Function Description for Bus Data

	Bit	Function Description	Status
MODE0	Bit7.6	Audio system options (available during auto search and use of AUTO button)	00: B/G 01: I 10: D/K 11: M
	Bit5	SECAM INHIBIT	00: SECAM gate pulse width, 2.2 usec 01: 2.0 usec 10: 1.8 usec 11: SECAM demodulation inhibit
	Bit4		
	Bit3	V MUTE	When changing channels: 0: Y-MUTE 1: RGB MUTE
	Bit2	SECAM	0: No 1: Yes
	Bit1	AUTO2	0: PAL 1: Without PAL
	Bit0	Power-on modes	0: Memory on 1: Soft on

(continued)

MODE1	Bit7	Write-in LOGO	0: No	1: Yes
	Bit6	Refresh AV terminals in main cycle	0: Yes (Recommended)	1: No
	Bit5	RF NTSC options	0: No	1: Yes
	Bit4	Screen saver	0: No	1: Yes
	Bit3	M	0: No	1: Yes
	Bit2	D/K	0: No	1: Yes
	Bit1	I	0: No	1: Yes
	Bit0	B/G	0: No	1: Yes
MODE2	Bit7	With Channel Lock, horizontal AFC is off?	0: Yes (Recommended)	1: No
	Bit6	Mono system	1: Yes	0 : No
	Bit5	Single language	1: Yes	0 : No
	Bit4	TA1343 woofer or MDB output mode options	0: Mono output	1: Overlapped to main channel (Recommended)
	Bit 3	Pull down sub menus?	1: Yes	0 : No
	Bit 2	Auto language options	0 0 0	ENGLISH
	Bit 1		0 0 1	FRENCH
	Bit.0		0 1 0	GERMAN
			0 1 1	RUSSIAN
			1 0 0	INDONE
1 0 1			MALAY	
1 1 0			FARSI	
	1 1 1		ARABIC	
MODE3	BIT 7	Small character processor	1: Old	0: New (Recommended)

(continued)

	BIT 6	Waiting time when changing channels with 0-9 buttons	1: Fast (1 sec.) 0: Slow (2 sec.) (Recommended)
	BIT 5	DVD option	1: No 0: Yes (Recommended)
	BIT.4	Step length setting for lighting up gradually during power-on	1: Large step (Recommended) 0 : Small step
	BIT 3	Numeral in Arabic indicated in local language?	0: No 1: Yes
	BIT 2	PWM output option	0: No 1: Yes
	BIT 1	Instant on	1: Yes 0 : No
	BIT 0	AV Switch 4053 option	0: No 1: Yes
MODE4	BIT 7	Audio processing IC (SOUND menu)	0: No 1: Yes
	BIT 6	Woofer option in SOUND menu	0: No 1: Yes
	BIT 5	TA1343 option	0: No 1: Yes
	BIT 4	No use	0: No 1: Yes
	BIT 3	NJW1161 option (SRS IC)	0: No 1: Yes
	BIT 2	NJW1160 option (BBE IC & SRS IC)	0: No 1: Yes
	BIT 1	NJW1137 option (BBE IC)	0: No 1: Yes
	BIT 0	Soft IIC option	0: No 1: Yes
OPT	Bit 7	No use	
	Bit 6	VCO adjustments	0: PIF VCO functions (PIFVCO = 10) during auto search and search ; 1: PIFVCO = 10 during turn-on , and PIFVCO = 00 in Normal mode

	Bit 5	No use	
	Bit 4	Large-amplitude AFT switch when no signal	1: Off 0: On
	Bit 3	Audio gain switch in MONO mode	0 : 927mVrms at 25kHz/dev 1 : 500mVrms at 25kHz/dev
	Bit 2	Y-MUTE when changing channels	0: No 1: Yes
	Bit 1	Turn-on logo display? (Logo write-in function required)	1: Yes 0: No
	Bit 0	No use	
OSD	Horizontal position of OSD		
RCUT	R cut off		
GCUT	G cut off		
BCUT	B cut off		
GDRV	G drive		
BDRV	B drive		
CNTX	Contrast Max.		
BRTC	Bright center		
CNTC	Contrast center		
CNTN	Contrast Min.		
BRTX	Bright Max.		
BRTN	Bright Min.		
HPOS	50hz horizontal phase	00: -3usec 10: 01F: +3usec	
VP50	V phase (50Hz)	0: V phase delay, 0H 7: 7H	
HIT	V size	00: -50% 20: 0% 3F: 50%	

(continued)

SERVICE MANUAL

HPS	Adjusting difference between horizontal centers in PAL and NTSC		
VP60	V phase (60Hz)	0: V phase delay, 0H	7: 7H
HITS	Adjusting difference between vertical amplitudes in PAL and NTSC		
VLIN	V-linearity	0: -15%	8: 0% F: 15%
VSC	V-S correction	0: -16%	8: 0% F: 16%
VLIS	Adjusting difference between vertical linear in PAL and NTSC		
VSS	Shift data of 50 Hz/ 60 Hz Correction		
HIT69	Vertical amplitude in 16:9 mode (PAL)		
HIT69S	Vertical amplitude in 16:9 mode (NTSC)		
V01	Volume output data at 1%		
V25	Volume output data at 25%		
V50	Volume output data at 50%		
V100	Volume output data at 100%		
STBY	Bit 3.2	VCD standby	00: Normal 01: Normal 10: Normal 11: VCD standby
	Bit 1.0	IF standby	00: Normal 01: Normal 10: Normal 11: IF standby
VCEN	Vertical centering		00: -32% 20: 0% 3F: 30%
LANG	Bit 7	Arabic	1: Yes 0: No
	Bit 6	Farsi	1: Yes 0: No
	Bit 5	Malay	1: Yes 0: No
	Bit 4	Indonesian	1: Yes 0: No
	Bit 3	Russian	1: Yes 0: No
	Bit 2	German	1: Yes 0: No
	Bit 1	French	1: Yes 0: No
	BIT 0	English	1: Yes 0: No

Table 5 Bus Data

Item	Data	Item	Data	Item	Data	Item	Data
*MODE0	84	SCNT	09	HPOS	11	BSNS	00
*MODE1	1F	CNTC	40	VP50	01	MOD	40
*MODE2	1B	CNTN	08	HIT	18	STBY	00
*MODE3	18	BRTX	19	HPS	04	SVM	00
*MODE4	60	BRTN	20	VP60	02	VBLK	00
*LANG	FF	COLX	35	HITS	01	UCOM	00
NOT MENU	9E	COLN	00	VLIN	05	VTST	00
MEUN ICON	FB	TNTX	28	VSC	00	PYNX	26
MAIN MEUN	91	TNTN	28	VLIS	00	PYNN	1B
MEUN CHAR	07	ST3	25	VSS	00	PYXS	22
MEUN CHAR HIGH	02	SV3	30	VCEN	16	PYNS	1E
BBE	9C	ST4	20	HIT69	14	BASC	40
OSDF	64	SV4	30	HIT69S	01	BASX	70
OSD	20	SVD	30	SBY	05	TREC	40
*OPT	60	ASSH	07	SRY	09	BALC	40
RCUT	40	SHPX	3F	BRTS	00	BAS1	64
GCUT	20	SHPN	20	RAGC	20	BAS2	20
BCUT	20	TXCX	3F	HAFC	09	BAS3	50
GDRV	40	RGCN	1F	*V01	15	TRE1	64
BDRV	40	ABL	2C	*V25	4D	TRE2	20
CNTX	7F	DCBS	13	*V50	65	TRE3	50
BRTC	40	CLTO	26	*V100	7F	TA1343-06	6C
COLC	40	CLTM	22	WOOFER	40	NO USE	00
TNTC	48	CLTS	20	STAT	00	NO USE	64
TNTCAV	48	CLVO	24	FLG0	06	WON1	01
COLP	F8	CLVD	20	FLG1	08	WON2	00
COLS	40	DEF	01	REFP	00	NOIS	01
DCOL	20	AKB	00	RSNS	00	VATT	70
SCOL	07	SECD	18	GSNS	00		

Notes:

- ① The data sheet may differ dependent on different models.
- ② The data sheet may differ dependent on different CRTs for the same model.
- ③ Refer to table 4 set the data marked with “*” depending on functions of TVs.