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Park Ridge, New Jersey 07656

CONFIDENTIAL

Service Bulletin
TV Products

CSV-1

Model: **KP-57XBR10W, KP-65XBR10W** **No.** **531**

Subject: **Improved Service Adjustment Procedure For The RA-4W Chassis Models** **Date:** April 27, 2001

Solution:

(1330) Procedure to Improved picture Quality

The procedures below should be followed if the customer is complaining of poor picture quality. Although these procedures were written for the RA-4W chassis they can also be applied to the RA-3 & RA-4 chassis in most cases.

Note: **Test equipment required:**

1. Pattern Generator (with component (Y, Pb, Pr) outputs)
   Ex. Leader 408 or Quantum Data 801GG

Important Notes:

- **Pre-Aging of the TV:** Age the TV set before attempting to adjust the set (especially focus) by one of the recommended amounts below. Aging Conditions: Apply an all white signal 100-IRE, minimum 30 min to a maximum of 1 hr. (over an hour, causes the CRTs to heat past the optimum adjustment point), ***OR*** TV signal (with moving picture) minimum 2 hrs (no maximum time applies). If this method of aging is used, be sure to coordinate with the customer/dealer beforehand so that the set is ready upon your arrival. Use Vivid picture mode setting on TV.

- **Order of Adjustments:** Please follow the order of adjustments as stated in this document. This will maximize results while minimizing readjustment.

- **Confirmation / Adjustment Method:** This procedure first instructs the technician to confirm whether an adjustment is necessary. The technician should only perform the adjustment if the confirmation indicates that it is required.

- **Method on how to Turn Off the CRTs**: To perform some adjustments, it will be necessary to turn off the CRTs, which can be done in the Service mode by doing the following: Select adjustment category "MCP1", adjustment item # 07 "RON", #08 "GON", or #09 "BON". The applicable CRT is on when its data is "01", and off when its data is "00".

- **Accessing the internal generator through the service mode.** Select Category PJE MODE using the 2 or 5 remote button. Repeated pressing of the remote button #6 will allow you to cycle through the crosshatch, dots, and white signal video pattern.

Continue on next page

Service data adjustment to Improve Edge Enhancement in NTSC mode:
Change the Service data in both categories MCP4 and MCP5. (Categories)
The adjustment item “SYS” data should be changed from 2 to 1 in both TV and Video modes.
Write the new Service data settings.

Screen Adjustment G-2/ Sub-bright adjustment:
Equipment required: Darkened Room and/or a heavy blanket to cover the set.
Signal Applied/Input: Select Video 1 input / No signal applied
Adjust points: G2 (Screen Controls) VRs for RGB and Sub-Brightness register
Conditions: Darken Room preferred. If not possible, a blanket must cover the front of the screen.

- Standard Picture Mode (reset mode to ensure proper setting of this mode)
- Turn off ALL the CRT outputs in Service mode.

Confirmation Procedure:

1. To confirm proper setting (with all 3 CRTs OFF), the screen should ALMOST be at cut-off.
2. If not, check Sub-Bright Data in the service mode. Service data Range is usually 21 to 25 in the Service menu, category "MCP2", adjustment item 01 "SBRT".
3. If the picture is still not at almost cut-off, proceed to the adjustment procedure below.

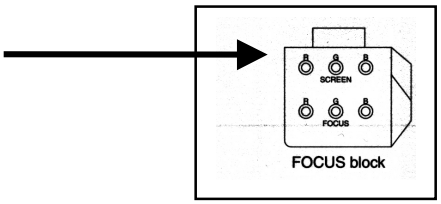
Important Notes on G2 setup: It is **crucial** that the G2 adjustment be done as accurately as possible. If it is off even slightly, white balance and focus can be greatly affected. Also, if the G2 is set incorrectly, it may cause an intermittent video shutdown condition, due to the affect on the IK circuit.
Therefore, the following procedure must be adhered to:

- The room should be as dark as possible.
- Also, a **blanket (standard heavy mover’s blanket used to protect furniture) is required for this procedure**. The blanket must be placed over the technician and the front of the TV screen to minimize the ambient light. Only with this method can the technician see the correct adjustment level**.**

Adjustment Procedure:

1. Turn the green screen control on the Focus Block until retrace lines appear and gradually turn it back until the point where you can see the retrace line disappears, just before cutoff.
2. Turn the red screen control on the Focus Block until retrace lines appear and gradually turn it back until the point where you can see the retrace line disappears, just before cutoff.
3. Turn the blue screen control on the Focus Block until retrace lines appear and gradually turn it back until the point where you can see the retrace line disappears, just before cutoff.
4. **If the screen still appears too bright after proper G-2 adjustment, please adjust the sub-bright control down until screen cut-off.** (Service data Range is usually 21 to 25 in the Service menu, category "MCP2", adjustment item 01 "SBRT").

Screen Controls Located on Focus Block

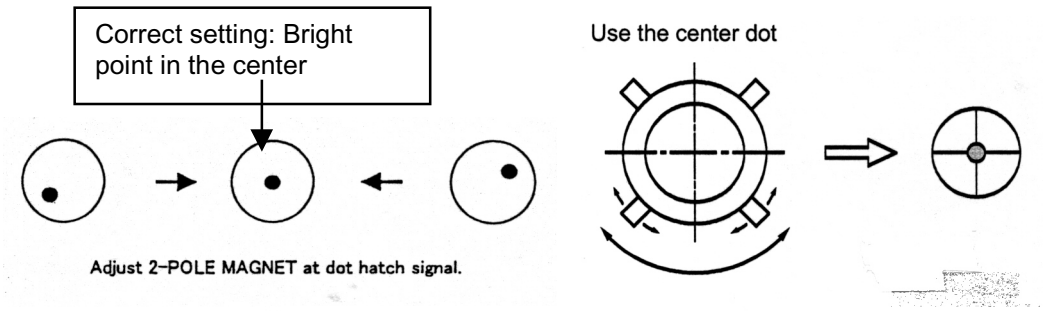


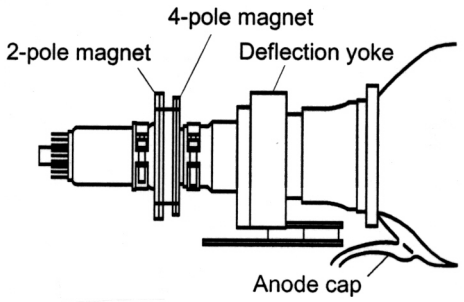
Green, Red & Blue CRT 2 Pole Magnet Confirmation / Adjustment:

Equipment required: Pattern Generator
Signal Applied/Input: Dot Hatch Pattern (100-IRE) / Video 1 input
Adjust points: Confirmation: RGB Focus VRs Adjustment: 2 Pole Magnets on CRTs
Conditions: Brightness to 50% and Picture to 100%

Confirmation/ Adjustment Procedure for 2 Pole Magnet Adjustment:

1. Turn off Red and Blue CRTs.
2. Turn G VR to the CCW (over-focus) and view the center luminance point, which must be in the center of the dot. (See diagram below).
3. Rotate the VR back and forth to verify that the luminance point remains in the center. If it does, this adjustment is not required. If the luminance point does not remain in the center, you must perform the 2 Pole Magnet adjustment. Note: In the large majority of cases, this adjustment will not be needed.
4. Adjust the 2-Pole Magnet on the CRT to center the luminance spot.
5. Set the VR for best focus
6. **Perform the same procedures for the Red and Blue CRTs**.

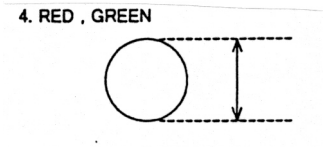




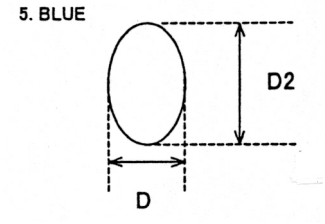
4-Pole Magnet Confirmation / Adjustment for the Green & Red & Blue CRTs:

(Same setup/conditions as for the 2-Pole magnet adjustment)

1. Turn off the red and blue CRTs.
2. Turn the green focus control on the Focus Block to the CW and the spot will become larger.
3. The dot should be round. If it is oval, perform the following steps.
4. Adjust the two tabs (the tabs towards the bell of the CRT) until the spot becomes round.
5. **Red Adjustment: Perform the same procedure for the Red CRT 4-Pole Magnet. Adjust if necessary, see following illustration.**
6. **Blue Adjustment: Perform the same procedure as the Green CRT, however the shape should be a slight vertical oval (not round) in the center of the screen. Adjust if necessary, see the following illustration.**



Red and Green dot should be round



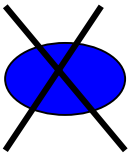
The Blue dot should be Oval in shape. The vertical should be 1.5 x the horizontal size

Blue De-Focus adjustment (The blue focus needs to be slightly defocused so to produce a more pleasing picture). Same setup/conditions as for the previous adjustment, except select the **Vivid mode (**reset the Vivid Mode to ensure proper settings).

Confirmation / Adjustment:

Correct: blue dot in center of the screen has a vertical oval →

Incorrect: blue dot in center of the screen has a horizontal oval →

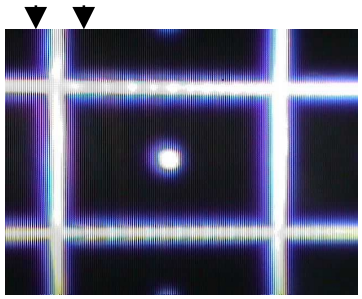


1. Adjust the blue focus VR to the CW (under focus) slightly while looking at the left side of the screen.
2. When the blue horizontal luminance line (not flare) starts to increase in size, stop turning the VR. The Vertical or Horizontal width of the blue luminance line should be no larger than x1.5 the size of the green line.
3. Turn the green CRT back on to confirm the size of blue in reference to green.

NOTE: This adjustment will of course make a slight blue outline visible on the white lines, however an additional blue flare may be seen *(halo around the blue luminance lines).* If the additional blue flaring is seen, (see picture below) it may be necessary to adjust the blue lens mechanical focus. The blue flare should be minimized as much as possible; adjust to best position, which has the least amount of flare.

See photo below: Far left side should have a slight blue edge in Vivid mode with a 100-IRE hatch.

Blue Flaring →



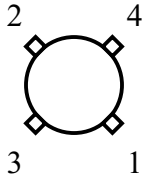
Example:
If too much blue flare is seen, then adjust blue mechanical lens focus

CRT/ Lens Focus adjustment:

Equipment required: Pattern Generator
Signal Applied/Input: All white 100-IRE signal for aging & crosshatch for adjustments
Adjust points: Mechanical lens adjust and adjustment of the electrical focus VRs
Conditions: Set must be pre-aged as describe in the front section of this document, under Important Notes.

1. Apply a crosshatch pattern to one of the video inputs.
2. Start with the Green CRT, therefore turn off the other two CRTs in the Service mode.
3. Two persons, one to adjust the lens, and one to watch the front of the picture will achieve better overall adjustment results. If a second person is not available, apply a white sheet of paper on the inside of the screen. Then by looking at the paper's reflection in the sets mirror, adjusting the mechanical lens as in the next step.
4. Adjust the mechanical lens of the Green CRT first (loosen the wing nut on the lens. Adjust the lens to achieve proper (equal) balance between left and right sides of the picture, while also achieving good center focus. Focus in the center area of the screen should be better than in the corner areas.
5. If proper balance cannot be achieved, then loosen all lens screws and re-seat the lens (see the drawing below for the locations of the lens screws). Then create a just-snug condition *(each screw's washer is slightly compressed)* with the screws and try to adjust the focus again.

ONLY IF PROPER BALANCE STILL CANNOT BE ACHIEVED, remove lens screws and rotate the lens 90°. Reinstall the lens screws in the new pilot holes. The new pilot holes will not have had screws installed previously, so you should expect to feel some resistance while installing the screws. Tighten the screws by following torque sequence shown in the drawing below, but do not completely seat the screws (over-torque). Perform lens re-adjustment again. With a 100-IRE crosshatch pattern, you may see a slight amount of blue or red halo on the green crosshatch lines. This is caused by the prism effect of the green CRT lens. However, try to minimize the amount of blue or green flare seen on the screen while maintaining sharper more defined lines. If red halo is seen on the green lines re-adjust the focus lens to eliminate reddish colored flare.



←Torque sequence applied to lens. If slight tilt / rocking motion is noticed, lean lens to the # 3 or # 4 position and begin torque sequence. Start at position No.1 and tighten until each screw's washer is slightly compressed.

1. IMPORTANT: After the mechanical focus is performed, adjust the electrical focus on the focus block for a final touch-up. Once again, try to achieve proper balance between center and corners while keeping center slightly better.

2. Red mechanical lens adjustment should apply the same method as described for green, except for the color of the flare, which will be red to a yellowish red. Try to

minimize or eliminate this flare as much as possible.

White balance adjustment:

Equipment required: pattern generator with 100 IRE all white pattern.
Optional: white balance meter.
Signal Applied/Input: 100 IRE all white pattern
Adjust points: Registers accessed in the service mode
Conditions:
This adjustment must be done in Standard picture mode for both the Neutral and Warm settings, however, please check color tracking to determine if this adjustment is necessary. To do this, apply a B&W signal and check it at both high and low brightness settings to verify the grayscale and white levels do not have color tinting. If the set checks good for color tracking, it is not necessary to do this procedure. Please note if the G2 was adjusted, it is most likely the white balance should be adjusted.

Provided below are two methods to adjust white balance. One with a white balance meter (preferred) and one without.

Preliminary setup for White Balance Confirmation / Adjustment
In Standard picture mode
All other user controls at their reset condition. To reset the user controls, press the rest button on the remote control while Standard picture mode is active. Under the Standard Mode Menu (customer menu/user controls), select "COLORTEMP" and set it to Neutral. Check the white balance in both high (100-IRE) and low (20-IRE) IRE all white signal. If a low IRE signal is not available, then reduce the picture level until an appearance of 20-IRE signal is seen on the screen. This is approx. 3 bars (display dashes that illustrate level) up from minimum picture adjustment on the picture bar-graph display on the screen. Proceed to the adjustment section below if the color temperature (tracking) appears to be incorrect for either the high or low IRE input signal. A white balance meter can be used to confirm the white balance if available. If adjustment is required, perform the white balance adjustments by either method below.

Adjustment with a white balance meter: (Preferred Method)

1. For the High-level IRE all white signal adjust R/G to 1.05 and B/G to 0.9. (Adjust by RDRIV, BDRIV in MCP1)
2. For the Low-IRE adjustment, adjust picture level to 3 bars up from minimum on the picture bar-graph display if the IRE input signal level cannot be adjusted to 20-IRE. (Adjust RCUT, and BCUT in adjustment category "MCP1" the same as above, i.e. R/G to 1.05 and B/G to 0.9.
3. After low-level white adjustment (cutoff adjustment) repeat the high level adjustment to achieve proper white balance tracking.
4. Confirm the adjustment with COLORTEMP set to WARM mode. Picture should become slightly more reddish; if not, repeat the adjustments shown above. In addition, confirm adjustment by switching to a black and white broadcast movie if

available.

Adjustment without white balance meter:

1. The 100 IRE all-white signal must be adjusted by eye. Adjust RDRIV, BDRIV in MCP1 to make the white as pure as possible.
2. Adjust picture level to 3 bars up from minimum on the picture bar-graph display if the IRE input signal level cannot be adjusted to 20 IRE. Adjust RCUT, and BCUT in adjustment category "MCP1" by eye to make the gray as pure as possible.
3. After low-level white adjustment (cutoff adjustment) repeat the high level adjustment to achieve proper white balance tracking.
4. Confirm the adjustment with COLORTEMP set to WARM mode. The picture should be slightly more reddish; if not, repeat the adjustments above. Please also confirm adjustment by switching to black and white broadcast movie if available. If a B&W signal is not available, turn the color off using the customer controls. In some sets, the customer controls may not entirely eliminate all color, thus in this case, an external B&W signal needs to be applied. Below are typical white balance data ranges for each model.

ADJ.	**KP65XBR10W**	**KP57XBR10W**
RDRIV	28~33	35~40
BDRIV	22~23	15~20
RCUT	51~57	55~60
BCUT	40~42	32~38

Geometry/ Convergence adjustment:

Equipment required: pattern generator (should have 1080i Y,Pb,Pr capability)
Signal Applied/Input: Crosshatch (for 1080i adjustment, signal must be applied to Video 5 input)
Adjust points: Registers accessed in the service mode
Conditions: Multiple Modes will require to be checked for mis-convergence and geometry.

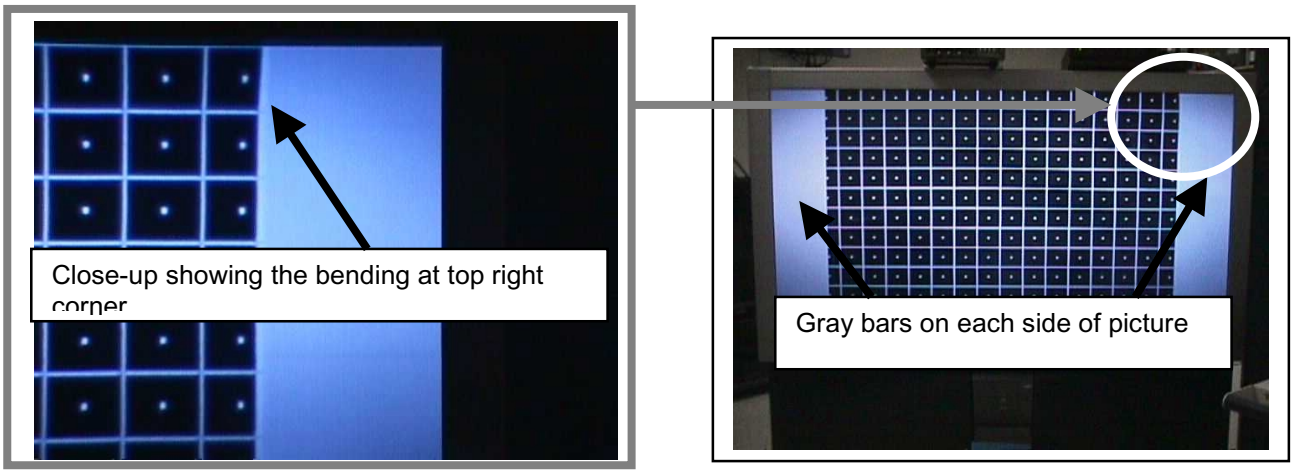
1. **Normal/Full**
2. **Wide-Zoom**
3. **Zoom**
4. **1080i mode: (Video 5 input Only)**

IMPORTANT NOTE: For each mode, use the remote to enter the modes above (in the order listed) and check for correct geometry and convergence. If adjustment is required, use the Fine Adjustment Mode to correct the distortion. After adjusting each mode (while still in the Fine Adjust Mode) write the data into memory (Muting, then Enter) and then activate the Flash Focus (button on front of set) before going to the next mode.

- Either darken the room or shield the screen from ambient light so the Flash Focus works properly.
- Do not adjust sizing, position or centering, as it may cause mis-operation of the Flash Focus circuit, causing major convergence and geometry mis-adjustment.

Start with the Normal Mode (this will also adjust the Full mode simultaneously. Full and Normal modes share the same adjustment data). Special Geometry adjustments are required in Normal mode (4:3 mode with gray bars on sides):

1. Touch up top and bottom areas where the gray bars begin. Adjust these areas as needed in the fine adjustment mode (see Fine Mode Adjust in the Reference Section), green first, followed by red and blue. This will ensure gray bar edges are straight in 4:3 mode. The inboard edges of the gray bars should be completely straight, top to bottom. See following illustrations:



2. Change Normal mode to FULL mode and adjust all four corners to straighten out vertical lines at the sides of the screen.
3. Also adjust the convergence as needed in all modes. Pay special attention to center outside areas.
4. While still in the Fine adjust Mode, write the data into memory and then activate Flash Focus on the front of the set.

Check / Adjust Wide Zoom Mode: If the mode checks OK, continue to other modes, if not, please adjust in Fine Mode and Write the data into memory and then activate Flash Focus on the front of the set.

Very Important:

If Wide Zoom mode needs to be adjusted and data is written into memory, the set will automatically resets VSCO in category VDSP to 0 FOR ALL MODES. Wide Zoom mode uses data 0 for VSCO, however, you must manually set the data back to 7 in ALL the other modes or else the vertical size adjustment will be incorrect.

Check / Adjust Zoom Mode: If the mode checks OK, continue to other modes, if not, please adjust in Fine Mode and Write the data into memory and then activate Flash Focus on the front of the set.

Check / Adjust the 1080i Mode: To be able to check and adjust this mode, you must either have a 1080i video signal or a 1080i generator. If you do not have either of these, you cannot perform this adjustment, therefore proceed to the next adjustment. If you do have either one of these items, then proceed with this adjustment.

Apply a 1080i signal to the Video 5 input and go into service mode. Turn on internal crosshatch signal and adjust as needed. Please note, a 1080i signal MUST BE APPLIED to the Video 5 input for the internal crosshatch generator to enter the 1080i mode. If this is not done, the pattern displayed will not be 1080i but stay in the NTSC 480i mode. Please note: If a 1080i crosshatch generator is available, use this signal to adjust rather than using the internal pattern (this is a preferable method). If the mode checks OK, continue to the next step, if not, adjust the set in the Fine Mode. After any new data is written (by pressing "MUTING: then "ENTER"), press "Flash Focus" in service mode so that TV can calculate the new offset data.

Final Check:

Now check each mode with a live video signal to verify correct operation. If problems still exist, please readjust. If a 1080i source is available, please check this mode.

Final steps, please enter the menu and select the **Video Icon** and view the set in **Standard** Picture Mode and then in the **Vivid** Picture mode. When **Vivid** is selected, please lower the brightness level slightly (10%). Blacks should appear black, not gray. Please select the mode that looks best to the dealer. Please Circle the Mode you selected to leave the set in**: Standard / Vivid**). Also, confirm that the **Dynamic Picture Function is ON** (in the Video Icon Menu).

SUPPORT DOCUMENTATION SECTION:

KP-(57/65) XBR10W PICTURE QUALITY QUESTIONNAIRE

SERVICE MANUAL INFORMATION

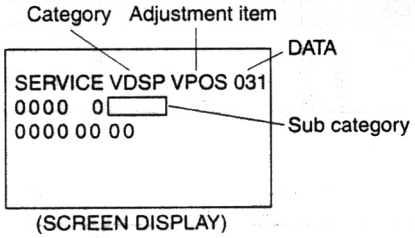
- **Method of setting the Service Adjustment Mode.**
- **Writing new data into memory**
- **Memory confirmation Method**
- **Adjustment buttons on the remote:**
- **Fine Adjustment Mode for Green, Red and Blue Convergence and Geometry**
- **Auto-Registration Error Code list**

- **Method of setting the Service Adjustment Mode.**

SERVICE MODE PROCEDURE

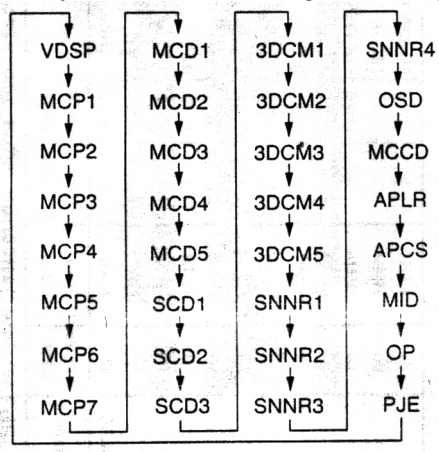
1. Standby mode. (Power off)
2. DISPLAY → 5 → VOL (+) → TV POWER
   on the Remote Commander.
   (Press each button within a second.)

SERVICE MODE ADJUSTMENT



3. The screen displays the item being adjusted.
4. The category is reached by using the remote buttons 2 and 5.
5. The Adjustment item is selected using remote buttons 1 and 4.
6. The Data is changed using remote buttons 3 and 6.

Using the remote 2 or 5 button you will search through the category shown in the chart below.



The acronyms above are the titles of the different adjustment categories. See the Service Mode charts for the definition of the various categories. Example: VDSP (Vertical Deflection Signal Processor).

1. If you want to recover the original data (if you did not save any changes) press the **0** then **Enter** button on the remote.

Writing new data into memory.

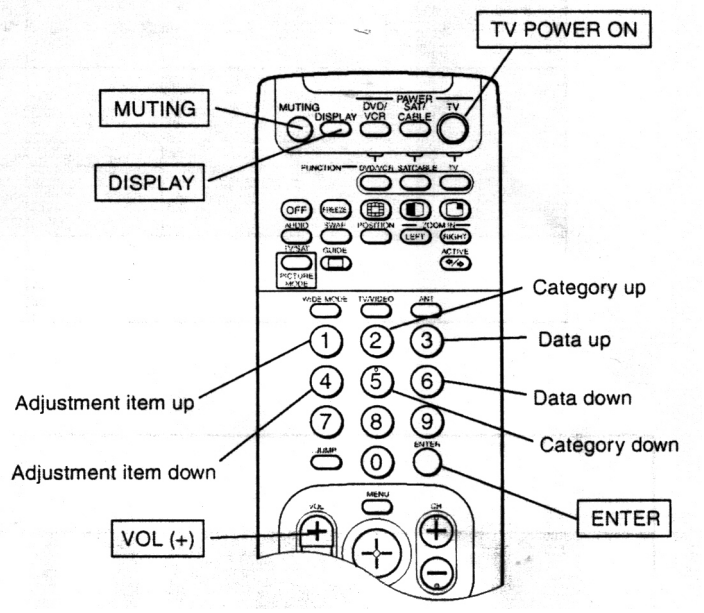
1. After adjusting the data it must be placed into memory (writing). This is done using the **muting** button (the data turns red) then the **Enter** button. (The data turns green)

Memory confirmation Method:

1. After finishing all adjustments and saving the data changes, remove the AC plug from the outlet, and then plug in again.
2. Turn unit on to Service Mode.

3. Check the data and confirm it retained the changes you made.

Adjustment buttons on the remote:



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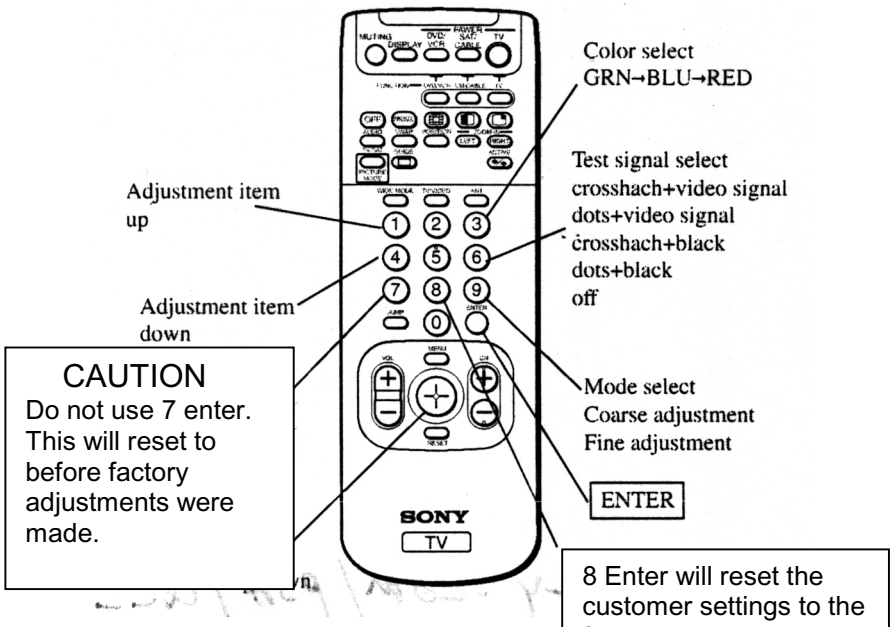
Note: When the category PJE is selected, which displays an internally generated signal, several buttons on the remote commander will have different functions then listed above. Therefore, when in the PJE Mode, refer to section Registration Adjustment (PJE). **Function of buttons of remote commander for PJE mode**

Registration Adjustments (PJE)

Function of the Remote Buttons in PJE Mode



CAUTION
Do not use 7 enter. This will reset to before factory adjustments were made.

8 Enter will reset the customer settings to the factory settings. Also will reset the service Data to the last saved data entries.

IMPORTANT:
Separate adjustments are required for the multiple modes and MUST be done in the following order. (Each mode will require a separate adjustment.)

Full (Normal) Mode
Wide Zoom Mode
Zoom Mode
1080I (video 5 input mode)

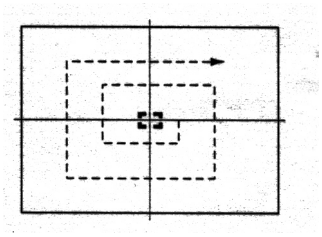
In all these modes, both color and geometry adjustments are required.

In order to do the 1080I (Video 5) mode adjustment, you must follow this procedure.
Connect green component from the 1080 generator to the green video 5 input.

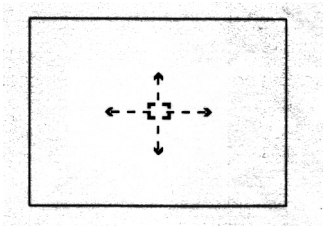
Video 5 forced 1080I mode setting OP 03 1080 to 001 in the
Service Mode.

Fine Adjustment Mode for Green, Red and Blue Convergence and Geometry:

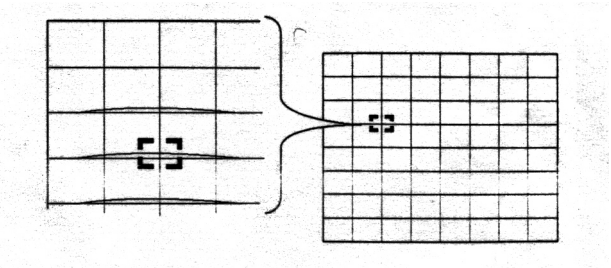
1. Press the 9 button on the remote. This puts you in the fine mode.
   The green cursor (in the green mode) appears on the center of the screen.
   (Pressing the 3 button will change the mode to Red or Blue)
2. Using the remotes 1 or 4 button, or the remote joystick, moves the cursor
   (See below) around the screen in a square-pattern.



Pressing the remote joystick the cursor turns green to white. When it is white the cursor can be moved up and down left or right around the screen.



Press once again the joystick button and the cursor stops and returns green, and you can adjust the miss-convergence in the cursor area.



Press the remote 9 button again to exit the fine mode and revert back to the coarse mode.
Store the new adjustment data values by using the remote buttons **Muting** then **Enter.**

IMPORTANT:

The adjustments above must be repeated for the different modes in the order below.
Full (Normal) Mode
Wide Zoom Mode
Zoom Mode
1080I (video 5 input mode)
In all these modes, both color and geometry adjustments are required.

Final Check:

1. Store the new adjustment data values by using the remote buttons M**uting** then **Enter.**
2. Press the FLASH FOCUS button on the front panel.
   (The Offset values are now automatically stored.)
3. Check that no error message appears.
4. If you get an error check the centering adjustment.
5. See the Auto Registration Error Code List for an explanation of the error code displayed.

3-11. AUTO REGISTRATION ERROR CODE LIST

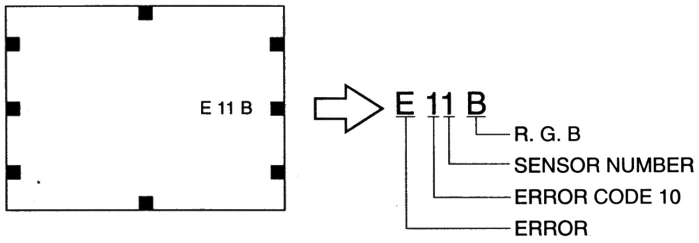
If an error code is displayed after the set has been fully adjusted, correctly, please check the following items: position, tilt and sizing. If either of these adjustments are off, even slightly, the auto-registration pattern will not hit the four sensors properly. This occurs when the internal generator patterns is being flashed on the screen for the sensors to read. Therefore, auto registration (called auto-focus) cannot operate properly causing an error code to be displayed. In order for this function to operate properly, correct position, tilt and size must be adjusted properly.

[ERROR CODE LIST]

ERROR CODE	DISCRIPTION	NOTE
00	No Error	
10	Sensor Output Level Low	* Check wiring, beam position, sensor.
20	Sensor Output Level High	* Check OP-amp circuit.
30	Adjustment Loop Counter Overflow	0 : " CENT V " 1 : " CENT H " 2 : " SKEW V " 3 : " SKEW H "
40	Regi Data Overflow	Same as Loop Counter Overflow
50	Regi Data Overflow	Same as Loop Counter Overflow
60	Offset Overflow	Same as Loop Counter Overflow * Check beam position. If need, adjust " PWM2 " for H error, " V CENT (main) for V error. * " PWM2 " is usually 34 or 36.
70	Offset Overdrow	Same as Counter Overflow * Check beam position. If need, adjust " PWM2 " for H error, " V CENT (main) for V error.
80	Green " V SKEW " too tilt	* Adjust Green beam righ or left sensopr, or Green DY tilt.

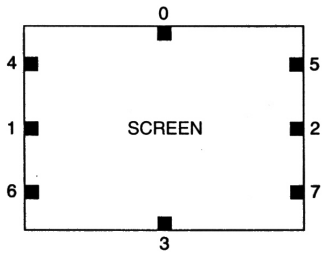
* In case of multiple error, last error is displayed.

• ERROR CODE SCREEN DISPLAY



* Error code will be displayed on center of screen for 3 seconds.

[SENSOR POSITION]



0 : UPPER SENSOR
1 : LEFT SENSOR
2 : RIGHT SENSOR
3 : LOWER SENSOR
4 : UL SENSOR
5 : UR SENSOR
6 : LL SENSOR
7 : LR SENSOR

• ERROR CODE DISPLAY IN REGI SERVICE MODE