

## SERVICE ADJUSTMENTS

### Service Mode

Most of the alignments for this chassis are software-driven; adjustments are made by modifying parameter values via the service menu. When parameter values are modified, the corresponding T-chip (U2001) registers, tuner (U501) registers and EEprom (U3102 and U8302) locations are updated. Parameters are grouped as follows:

**Group 0** - Instrument/Chassis Parameters

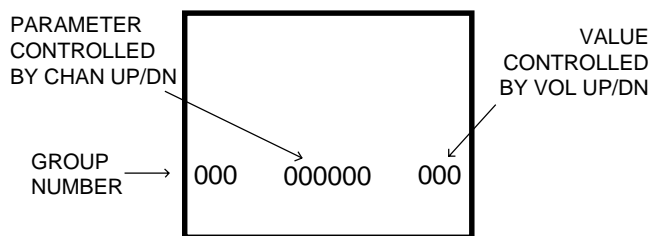
**Group 1** - Tuner Parameters

A complete list of the software chassis alignment parameters is shown in Table 1.

### Entering the Service Mode

1. Press and release the POWER button to turn the instrument on.
2. Press and *hold* the MENU button.
  - a. Press and release the POWER button.
  - b. Press and release the VOL+ button.
3. Release the MENU button.

The instrument will display the following menu:



The CH  $\wedge$  and CH  $\vee$  buttons on the front panel (or the remote transmitter) are used to change the parameter (P) number. The VOL + and VOL - buttons are used to change the parameter value (V).

**NOTE:** Attempting to change the parameter number (using CH  $\wedge$  or CH  $\vee$ ) at this point will cause the instrument to exit the service mode. A valid security code must be entered (using VOL + or VOL -) before selecting an alignment parameter.

### Security Codes

When the service mode is first turned on, the parameter will be "0", which does not correspond to an alignment. This is the security code parameter, the purpose of which is to prevent accidental entry into the parameter groups. The value for parameter "0" must be correctly set to access the two parameter groups as follows:

Group 0 - set value to 76

Group 1 - set value to 77

### Changing Parameters

Once the proper Security Code has been entered, the CH  $\wedge$  and CH  $\vee$  buttons can be used to change the parameter number.

### Changing Values

The VOL + and VOL - buttons can be used to change the value of the parameter selected.

### Changing Groups

To select a different parameter group, press CH  $\wedge$  or CH  $\vee$  to return to parameter "0" and enter the security code that corresponds to the desired group.

### Setup Service Line

The Menu button may be used to enable the vertical collapse setup line. The button functions as a toggle. The setup line has the following characteristics:

- Video source is set to ground through the grounded input pin of the video matrix switch;
- Brightness is set to 10 IRE;
- Vertical is disabled.

When the setup line is toggled off, the characteristics modified above will return to their prior settings.

**Note:** Changing to another parameter, with Channel-Up/Down, will toggle the Setup Service Line **OFF**.

### Exiting The Service Mode

The service mode can be exited at any time by pressing the POWER button. No additional steps are required to write new data into the EEprom(s); new data is entered as parameter values are changed.

### High Voltage

High voltage on this chassis is NOT adjustable. To check high voltage connect a VTVM with high voltage probe to the picture tube high voltage anode, negative lead to picture tube ground strap (use 500 volt scale).

**NOTE:** The meter (VTVM with high voltage probe) used for measuring high voltage must have a resistance of 1000 megohm or more and be accurate within 5% or better.

Nominal high voltage for this chassis (at maximum beam current) is 23 kV (19 inch), 24 kV (20 inch) and 25.5 kV (27 inch) when measured with a VTVM (with high voltage probe) and must not exceed 26.9kV (19 inch), 27.5kV (20 inch), and 27 kV (27 inch) under any circumstances.

### X-Radiation Protection Shutdown Check

**NOTE:** When service is required, especially in the horizontal deflection, high voltage, or regulated B+ circuits the X-Radiation Protection circuit should be tested for proper operation as follows:

1. Apply 120 volts AC using a variac (variable AC) transformer for accurate AC input voltage.
2. Allow for instrument warm up and adjust user controls or maximum brightness and contrast levels.
3. Locate the x-ray protect test stakes labeled XRP1 and XRP2(J4901 located to the rear and center of the chassis).
4. Momentarily short stake XRP1 to stake XRP2. The instrument must shutdown and then restart.

## SERVICE MENU CHART

NOTE: When in the Service Menu Mode, channel up/dn will change the parameter # and volume +/- will change the value range. To perform a channel change, while in the service menu mode, use the digit keys on the remote transmitter to direct enter a channel number . To access channels 100 thru 125, press and hold the channel 1 button on the remote control until the number 1, and two dashes are displayed on the screen, then press the second two digits.

Parameter # Chan to Change	Parameter Name	Value Range Vol to adjust	Comment:
0 00	Pass No. for Serv. adjust	Must set to 76	May not advance until value set

## Service Adjustment Parameters

0 01	Horiz. Phase	00-15	
0 02	Vertical DC	00-63	
0 03	Vertical S Correction	00-15	
0 04	Vertical size	00-127	
0 05	Red Bias	00-127	Press Menu button for setup line
0 06	Green Bias	00-127	Press Menu button for setup line
0 07	Blue Bias	00-127	Press Menu button for setup line
0 08	Red Drive	00-63	
0 09	Green Drive	00-63	
0 10	Blue Drive	00-63	
0 11	Sub-Brightness	00-127	
0 12	RF AGC	00-63	
0 13	FM Level	00-31	
0 14	VCO Tuning	00-127	
0 15	APC Detector Adjust	00-63	Defeat IF AGC
0 16	Tint Preset	00-127	
0 17	Color Preset	00-127	
0 18	Video Level	00-07	
0 19	Vertical Linearity	00-15	
0 20	Vertical Countdown Mode	00-03	

Table 1 - Chassis Alignment Parameters

**SERVICE ADJUSTMENTS (Continued)**[Return to Start](#)**Test Equipment Required**

Digital Voltmeter

Dual Trace Oscilloscope

MTS Signal Generator (B&amp;K 2009 or equivalent)

NTSC Signal Generator (B&amp;K 1249 or equivalent)

DC Power Supply-Well regulated, variable DC bias supply

TAG001 Service Generator (stock # 215568).

NOTE: All alignment adjustments, are bus controlled. They are accessible only through entry of the correct code. See the parameter # and value range adjustment chart in this service data. The following alignments must be performed in the order given.

**APC Offset**

Test Point:	U1001 pin 12 (AFT out)	Main PCB
Adjust:	Parameter 15	

1. Enter parameter # 15 (see chart).
2. Connect a voltmeter to U1001 pin 12 (AFT out).
3. Short U1001 pin 11 (IF AGC) to ground.
4. With no signal applied, adjust the APC Offset value range for 3.8VDC.
5. Remove the short from the IF AGC.

**PLL Tuning (IF VCO Free Run)**

Test Point:	U1001 pin 12 (AFT out)	Main PCB
Adjust:	Parameter 14	

1. Enter parameter # 14 (see chart).
2. Tune the instrument to receive a color bar signal.
3. Connect a DC voltmeter to U1001 pin 12 (AFT out).
4. Adjust the PLL Tuning value range for 3.8VDC.

**Video Level**

Test Point:	P 2301 pin 3 (Q2301 - E)	Main PCB
Adjust:	Parameter 18	

1. Enter parameter # 18 (see chart).
2. Tune the instrument to receive a color bar signal.
3. Connect a scope probe (500mV, 20usec/div.) to the emitter of Q2301.
4. Adjust value range to produce 1.0 volt p-p (sync to white)

**FM Level (Wideband Audio)**

Test Point:	TP1201 (WBA out)	Main PCB
Adjust:	Parameter 13	

1. Enter parameter # 13 (see chart).
2. Tune the instrument to receive 1kHz, L+R stereo audio from the MTS generator (PILOT off, SAP off).
3. Connect a scope probe (200mV, 200usec/div.) to TP1202 (WBA output).

4. Measure the 1kHz envelope (not the carrier waveform) as shown in Fig 1.
5. Adjust the FM Level value range to the step which gives the closest reading to 333mVp-p indication of the 1KHz component.

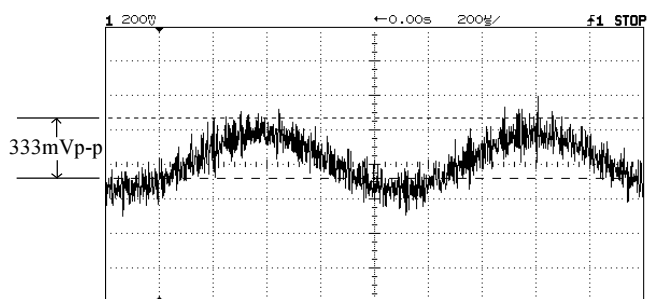


Fig. 1 - FM Level Alignment

**RF AGC**

Test Point:	C2306+ (RF AGC)	Main PCB
Adjust:	Parameter #6	Range: 0 - 63

The RF AGC has been preset at the time of manufacture for optimum operation over a wide range of RF signal input conditions. Readjustment should not be required unless—the tuner has been repaired, IC 1001 has been replaced, IC3101 has been replaced, IC3201 has been replaced, or unusual signal conditions exist such as:

- a. Cable TV—adjacent channel interference.
- b. Picture bending and/or channel 6 color beats which are usually due to excessive RF signal input. This occurs when the receiver location is too close to the transmitting tower. It may also occur when the receiver is connected to an antenna distribution system where the RF signal has been amplified. The signal should be attenuated at the antenna input to a more satisfactory level.
- c. Picture Noise caused by “broadcast noise” or weak signal. If the broadcast is “clean” and the received signal is at least 1 mV, the picture will be noise free in any area.

NOTE: Adjustment of the RF AGC parameters may not have any visible effect except under unusual conditions. Adjusting the RF AGC to one extreme of its parameter limits will usually provide a relatively poor signal-to-noise ratio, while adjustment to the other extreme of its parameter limits will cause a degradation of overload conditions such as channel 6 color beats or Cable TV adjacent channel interference. If the RF AGC parameter setting is adjusted, check all local channels for proper operation. Use weakest local signal to adjust RF AGC parameter setting.

1. Disconnect RF source from the antenna connector.
2. Connect the sweep/marker generator to the IF input (SF2301 pin 1); use SF2301 pin 2 as ground reference. Set the generator for a 45.75MHz marker, 450mVrms.

[Return to Start](#)

## SERVICE ADJUSTMENTS (Continued)

[Return to Start](#)

NOTE: Signal level must be set accurately. Measure the input signal level at SF2301 pin 1 with the signal connected. Signal level must be set to within  $\pm 1\%$ .

NOTE: Signal leakage around the SAW filter will be a problem unless proper precautions are taken. The leads used to connect the signal source to SF2301 must be shielded to within 1/2" of the circuit board.

3. Connect the DC voltmeter across C2306.
4. Adjust *RF AGC* (parameter #12) to the step which gives a reading closest to +3.8VDC.

### Tint/Color Preset (Fig. 2)

Test Point:	TP5005	Kine PCB
Adjust:	Parameter 16 (Tint Preset)	
	Parameter 17 (Color Preset)	

1. Tune the instrument to receive a color bar signal.
2. Turn the Autocolor feature off.
3. Connect a scope probe (50V/10usec/div.) to the blue kine drive output (TP5005).
4. Adjust chassis parameter 16, Tint Preset, to set the amplitude of the cyan bar equal to the magenta bar.
5. Adjust chassis parameter 17, Color Preset, to set the amplitude of the blue bar equal to the white bar.
6. Repeat steps 4 and 5 until both conditions are met.
7. If both conditions can not be met, set both the Tint Preset and Color Preset chassis parameters to value = 64.

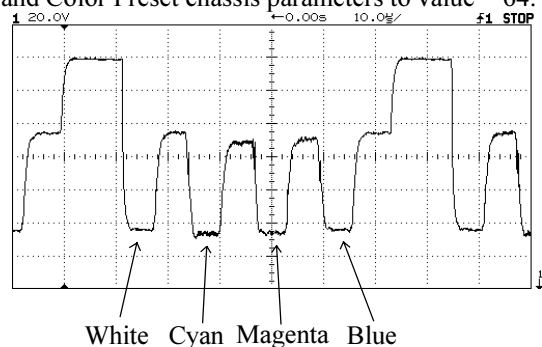


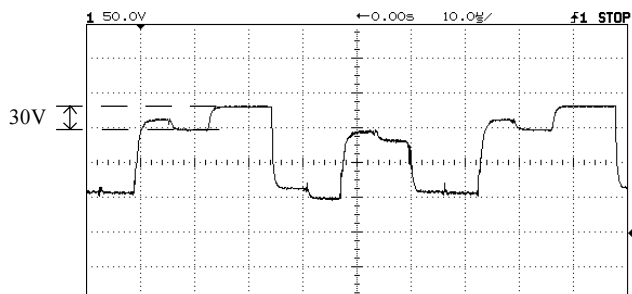
Fig. 2 - Tint/Color Preset

### Sub-Brightness (Fig. 3)

Test Point:	TP5003	Kine PCB
Adjust:	Parameter 11 (Sub-Brightness)	

1. Tune the instrument to receive a color bar signal.
2. Reset the Picture Controls (use the customer control menu).
3. Write down the parameter values for the RGB drive and RGB bias adjustments.
4. Set the RGB Drive parameters to value = 32, RGB Bias parameters to value = 5 and the Sub-Brightness parameter to value = 63.

5. Connect a scope probe (50V/10usec/div.) to the red kine drive output (TP5003).
6. Adjust chassis parameter 11, Sub-Brightness, for a 30 volt blanking reserve.
7. Return the RGB drive and RGB bias parameters to their original values.



### Focus Adjust

Adjust focus control to provide best overall picture focus.

Fig. 3 - Sub-Brightness Adjustment

### Horizontal Phase

Test Point:	Observe Display
Adjust:	Parameter 1

1. Enter parameter # 01 (see chart).
2. Adjust value range to center picture left to right.

### Vertical DC Adjust

Test Point:	Observe Display
Adjust:	Parameter 2

1. Enter parameter # 02 (see chart).
2. Adjust value range to center picture top to bottom.

### Vertical S Correction

Adjust:	Parameter 3
Value:	6,12

1. Enter parameter # 03 (see chart).
2. Set the value range to 6 for 19/20" tubes and 12 for the 25 and 27" tubes.

### Vertical Size

Test Point:	Observe Display
Adjust:	Parameter 4

1. Enter parameter # 04 (see chart).
2. Adjust value range to provide approximately 1/4 inch overscan at top and bottom of screen.

[Return to Start](#)

## SERVICE ADJUSTMENTS (Continued)

[Return to Start](#)**Color Temperature**

Test Point:	Q5001-C (Red Drive)	Kine PCB
	Q5002-C (Green Drive)	Kine PCB
	Q5003-C (Blue Drive)	Kine PCB
Adjust:	Parameter 5 (Red Bias)	
	Parameter 6 (Green Bias)	
	Parameter 7 (Blue Bias)	
	Parameter 8 (Red Drive)	
	Parameter 9 (Green Drive)	
	Parameter 10 (Blue Drive)	
	Screen Control	

1. Preset customer Video controls to mid-range.
  2. Disconnect all signal sources.
  3. Preset red, green and blue drive parameter values to mid-range (approximate setting of 32).
  4. Preset red, green and blue bias parameters values to 5.
  5. Press the Menu button for setup line. Adjust the screen control to just produce a centerline (red, green or blue).
- NOTE: The Menu button may be used to enable the vertical collapse setup line. The button functions to toggle the line On/Off. Changing to another parameter will turn the setup line **OFF**.
6. Enter parameter #s for the remaining two bias control colors and adjust to produce a white setup line. (**Reminder:** Changing to another parameter will turn the setup line **OFF**. Press the Menu button for a setup line.)
  7. Set brightness and contrast controls to maximum.
  8. Tune the instrument to receive a grey scale signal.
  9. Enter access codes for the color drive controls (8 for red, 9 for green and 10 for blue) in random sequence. Adjust their respective parameters to obtain a 6500 degree kelvin color temperature (warm white) raster.
  10. Check the low light to high light gray scale tracking (black and white picture). Should any color other than gray or white be dominant in low light to high light areas the color temperature settings have not been properly performed. Repeat the procedure if necessary.

NOTE: Color bias adjustments affect the low light (dark) areas while color drive adjustments affect the high light (white) areas.

**Tuner Adjustments:**

Manual Alignment begins with band 2 coils then band 1 coils and finishes with band 3 coils.

**Band 2 Manual Alignment**

Test Points:	U7401 pin 5 (Loop Fil2)	Main PCB
	U1001 PIN 11 (IF AGC)	Main PCB
Adjust:	L7304 (Band 2 Osc)	Main PCB
	L7110 (Band 2 Sgl)	Main PCB
	L7111 (Band 2 Pri)	Main PCB
	L7113 (Band 2 Sec)	Main PCB

1. Connect the TAG001 Service Generator as described in the TAG001 user's manual.
2. Connect the DC voltmeter to U7401 pin 5 (Loop Fil2).
3. Set the service generator for Channel 50 output. Tune the instrument to receive Channel 50.

4. Adjust (knife) the *Band 2 Oscillator* coil (L7304) for 23.7VDC (0.3VDC).
5. Connect the DC voltmeter to U1001 pin 11 (IF AGC).
6. Select parameter #31 and record its present value, then adjust parameter #31 through its range (0 - 62). If a "null" in the AGC voltage appears, the *Band 2 Single-Tuned* coil (L7110) alignment is acceptable; return parameter #31 to the recorded value and proceed to the next step. If a "null" does not appear, adjust (knife) the *Band 2 Single-Tuned* coil (L7304) and repeat this step.
7. Select parameter #32 and record its present value, then adjust parameter #32 through its range (0 - 62). If a "null" in the AGC voltage appears, the *Band 2 Secondary* coil (L7113) alignment is acceptable; return parameter #32 to the recorded value and proceed to the next step. If a "null" does not appear, adjust (knife) the *Band 2 Secondary* coil (L7113) and repeat this step.
8. Select parameter #33 and record its present value, then adjust parameter #33 through its range (0 - 62). If a "null" in the AGC voltage appears, the *Band 2 Primary* coil (L7111) alignment is acceptable; return parameter #33 to the recorded value and proceed to the next step. If a "null" does not appear, adjust (knife) the *Band 2 Primary* coil (L7111) and repeat this step.

**Band 1 Manual Alignment**

Test Points:	U7401 pin 5 (Loop Fil2)	Main PCB
	U1001 PIN 11 (IF AGC)	Main PCB
Adjust:	L7115 (Band 1 Sgl)	Main PCB
	L7112 (Band 1 Pri)	Main PCB
	L7114 (Band 1 Sec)	Main PCB
	L7305 (Band 1 Osc)	Main PCB

1. Connect the TAG001 Service Generator as described in the TAG001 user's manual.
2. Connect the DC voltmeter to U7401 pin 5 (Loop Fil2).
3. Set the service generator for Channel 17 output. Tune the instrument to receive Channel 17.
4. Adjust (knife) the *Band 1 Oscillator* coil (L7305) for 20.0VDC (0.3VDC).
5. Reconnect the DC voltmeter to U1001 pin 11 (IF AGC).
6. Select parameter #13 and record its present value, then adjust parameter #13 through its range (0 - 62). If a "null" in the AGC voltage appears, the *Band 1 Single-Tuned* coil (L7115) alignment is acceptable; return parameter #13 to the recorded value and proceed to the next step. If a "null" does not appear, adjust (knife) the *Band 1 Single-Tuned* coil (L7115) and repeat this step.
7. Select parameter #14 and record its present value, then adjust parameter #14 through its range (0 - 62). If a "null" in the AGC voltage appears, the *Band 1 Secondary* coil (L7114) alignment is acceptable; return parameter #14 to the recorded value and proceed to the next step. If a "null" does not appear, adjust (knife) the *Band 1 Secondary* coil (L7114) and repeat this step.
8. Select parameter #15 and record its present value, then adjust parameter #15 through its range (0 - 62). If a "null" in the AGC voltage appears, the *Band 1 Primary* coil (L7112) alignment is acceptable; return parameter #15 to the recorded value and proceed to the next step. If a "null" does not appear, adjust (knife) the *Band 1 Primary* coil (L7112) and repeat this step.

[Return to Start](#)



## SERVICE ADJUSTMENTS (Continued)

[Return to Start](#)

the recorded value and proceed to the next step. If a "null" does not appear, adjust (knife) the *Band 1 Primary* coil (L7112) and repeat this step.

**Band 3 Manual Alignment**

Test Points:	U7401 pin 5 (Loop Fil2)	Main PCB
	U1001 PIN 11 (IF AGC)	Main PCB
Adjust:	L7102 (Band 3 Sgl)	Main PCB
	L7104 (Band 3 Pri)	Main PCB
	L7105 (Band 3 Sec)	Main PCB
	L7303 (Band 3 Osc)	Main PCB

1. Connect the TAG001 Service Generator as described in the TAG001 user's manual.
2. Connect the DC voltmeter to U7401 pin 5 (Loop Fil2).
3. Set the service generator for Channel 125 output. Tune the instrument to receive Channel 125.
4. Adjust (knife) the *Band 3 Oscillator* coil (L7303) for 23.2VDC (0.3VDC).
5. Reconnect the DC voltmeter to U1001 pin 11 (IF AGC).
6. Select parameter #55 and record its present value, then adjust parameter #55 through its range (0 - 62). If a "null" in the AGC voltage appears, the *Band 3 Single-Tuned* coil (L7102) alignment is acceptable; return parameter #55 to the recorded value and proceed to the next step. If a "null" does not appear, adjust (knife) the *Band 3 Single-Tuned* coil (L7102) and repeat this step.
7. Select parameter #56 and record its present value, then adjust parameter #56 through its range (0 - 62). If a "null" in the AGC voltage appears, the *Band 3 Secondary* coil (L7105) alignment is acceptable; return parameter #56 to the recorded value and proceed to the next step. If a "null" does not appear, adjust (knife) the *Band 3 Secondary* coil (L7105) and repeat this step.
8. Select parameter #57 and record its present value, then adjust parameter #57 through its range (0 - 62). If a "null" in the AGC voltage appears, the *Band 3 Primary* coil (L7104) alignment is acceptable; return parameter #57 to the recorded value and proceed to the next step. If a "null" does not appear, adjust (knife) the *Band 3 Primary* coil (L7104) and repeat this step.

**Electronic RF Alignment**

Test Point:	U1001 PIN 11 (IF AGC)	Main PCB
Adjust:	Parameter #'s 1 thru 54	Range: 0 - 62

1. Connect the TAG001 Service Generator as described in the TAG001 user's manual.
2. Connect the DC voltmeter to U1001 pin 11 (IF AGC).
3. Set the service generator for Channel 2 output. Tune the instrument to receive Channel 2.
4. Adjust *Channel 2 Secondary* (parameter #1) for minimum DC voltage.
5. Adjust *Channel 2 Primary* (parameter #2) for minimum DC voltage.
6. Adjust *Channel 2 Single-Tuned* (parameter #3) for

minimum DC voltage.

7. Repeat steps 4 through 6. The adjustments must be repeated to assure correct alignment.
8. Change the service generator and the instrument to Channel 6. Adjust *CH6 Sec/Pri/Sgl* (parameter #'s 4, 5 and 6) for minimum DC voltage, then repeat the adjustment.
9. Change the service generator and the instrument to Channel 98. Adjust *CH98 Sec/Pri/Sgl* (parameter #'s 7, 8 and 9) for minimum DC voltage, then repeat the adjustment.
10. Change the service generator and the instrument to Channel 15. Adjust *CH15 Sec/Pri/Sgl* (parameter #'s 10, 11 and 12) for minimum DC voltage, then repeat the adjustment.
11. Change the service generator and the instrument to Channel 17. Adjust *CH17 Sec/Pri/Sgl* (parameter #'s 13, 14 and 15) for minimum DC voltage, then repeat the adjustment.
12. Change the service generator and the instrument to Channel 18. Adjust *CH18 Sec/Pri/Sgl* (parameter #'s 16, 17 and 18) for minimum DC voltage, then repeat the adjustment.
13. Change the service generator and the instrument to Channel 9. Adjust *CH9 Sec/Pri/Sgl* (parameter #'s 19, 20 and 21) for minimum DC voltage, then repeat the adjustment.
14. Change the service generator and the instrument to Channel 29. Adjust *CH29 Sec/Pri/Sgl* (parameter #'s 22, 23 and 24) for minimum DC voltage, then repeat the adjustment.
15. Change the service generator and the instrument to Channel 39. Adjust *CH39 Sec/Pri/Sgl* (parameter #'s 25, 26 and 27) for minimum DC voltage, then repeat the adjustment.
16. Change the service generator and the instrument to Channel 46. Adjust *CH46 Sec/Pri/Sgl* (parameter #'s 28, 29 and 30) for minimum DC voltage, then repeat the adjustment.
17. Change the service generator and the instrument to Channel 50. Adjust *CH50 Sec/Pri/Sgl* (parameter #'s 31, 32 and 33) for minimum DC voltage, then repeat the adjustment.
18. Change the service generator and the instrument to Channel 51. Adjust *CH51 Sec/Pri/Sgl* (parameter #'s 34, 35 and 36) for minimum DC voltage, then repeat the adjustment.
19. Change the service generator and the instrument to Channel 61. Adjust *CH61 Sec/Pri/Sgl* (parameter #'s 37, 38 and 39) for minimum DC voltage, then repeat the adjustment.
20. Change the service generator and the instrument to Channel 75. Adjust *CH75 Sec/Pri/Sgl* (parameter #'s 40, 41 and 42) for minimum DC voltage, then repeat the adjustment.
21. Change the service generator and the instrument to Channel 101. Adjust *CH101 Sec/Pri/Sgl* (parameter #'s 43, 44 and 45) for minimum DC voltage, then repeat the adjustment.

[Return to Start](#)

**SERVICE ADJUSTMENTS (Continued)**[Return to Start](#)

22. Change the service generator and the instrument to Channel 114. Adjust *CH114 Sec/Pri/Sgl* (parameter #'s 46, 47 and 48) for minimum DC voltage, then repeat the adjustment.
23. Change the service generator and the instrument to Channel 122. Adjust *CH122 Sec/Pri/Sgl* (parameter #'s 49, 50 and 51) for minimum DC voltage, then repeat the adjustment.
24. Change the service generator and the instrument to Channel 125. Adjust *CH125 Sec/Pri/Sgl* (parameter #'s 52, 53 and 54) for minimum DC voltage, then repeat the adjustment.

**Electronic Tuner Alignment Parameters**

Parameter # Chan to Change	Parameter Name	Value Range Volume to adjust
1 01	Ch. 2 secondary	00-62
1 02	Ch. 2 primary	00-62
1 03	Ch. 2 single	00-62
1 04	Ch. 6 secondary	00-62
1 05	Ch. 6 primary	00-62
1 06	Ch. 6 single	00 62
1 07	Ch. 98 secondary	00-62
1 08	Ch. 98 primary	00-62
1 09	Ch. 98 single	00-62
1 10	Ch. 15 secondary	00-62
1 11	Ch. 15 primary	00-62
1 12	Ch. 15 single	00 62
1 13	Ch. 17 secondary	00-62
1 14	Ch. 17 primary	00-62
1 15	Ch. 17 single	00-62
1 16	Ch. 18 secondary	00-62
1 17	Ch. 18 primary	00-62
1 18	Ch. 18 single	00-62
1 19	Ch. 9 secondary	00-62
1 20	Ch. 9 primary	00-62
1 21	Ch. 9 single	00-62
1 22	Ch. 29 secondary	00-62
1 23	Ch. 29 primary	00-62
1 24	Ch. 29 single	00-62
1 25	Ch. 39 secondary	00-62
1 26	Ch. 39 primary	00-62
1 27	Ch. 39 single	00-62

Parameter # Chan to Change	Parameter Name	Value Range Volume to adjust
1 28	Ch. 46 secondary	00-62
1 29	Ch. 46 primary	00-62
1 30	Ch. 46 single	00-62
1 31	Ch. 50 secondary	00-62
1 32	Ch. 50 primary	00 62
1 33	Ch. 50 single	00-62
1 34	Ch. 51 secondary	00-62
1 35	Ch. 51 primary	00-62
1 36	Ch. 51 single	00-62
1 37	Ch. 61 secondary	00-62
1 38	Ch. 61 primary	00-62
1 39	Ch. 61 single	00 62
1 40	Ch. 75 secondary	00-62
1 41	Ch. 75 primary	00-62
1 42	Ch. 75 single	00-62
1 43	Ch. 101 secondary	00-62
1 44	Ch. 101 primary	00-62
1 45	Ch. 101 single	00-62
1 46	Ch. 114 secondary	00-62
1 47	Ch. 114 primary	00-62
1 48	Ch. 114 single	00-62
1 49	Ch. 122 secondary	00-62
1 50	Ch. 122 primary	00-62
1 51	Ch. 122 single	00-62
1 52	Ch. 125 secondary	00-62
1 53	Ch. 125 primary	00 62
1 54	Ch. 125 single	00-62

[Return to Start](#)