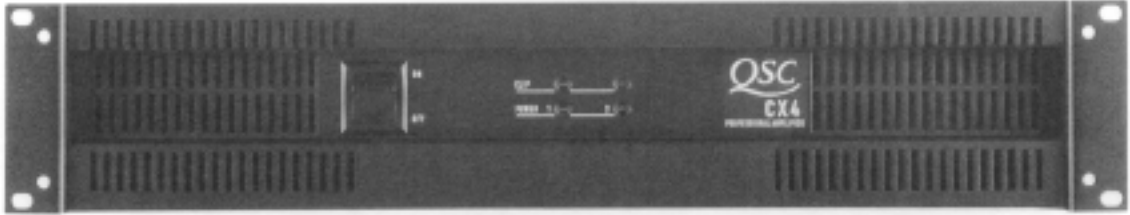


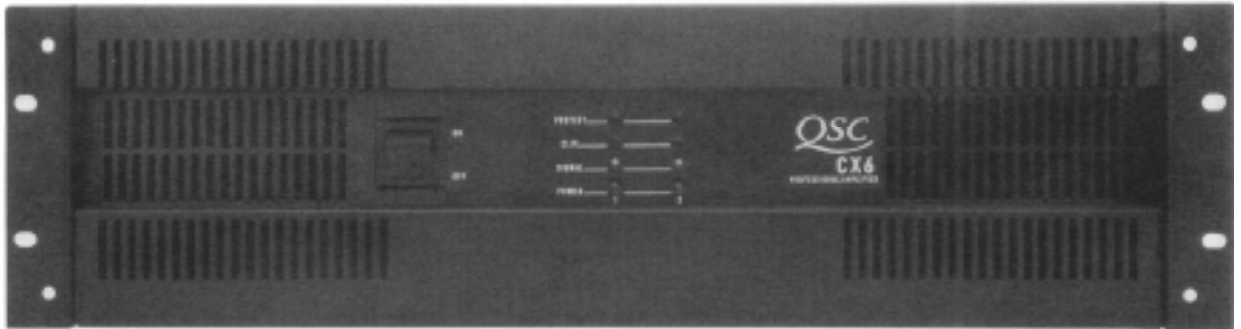


CX Series

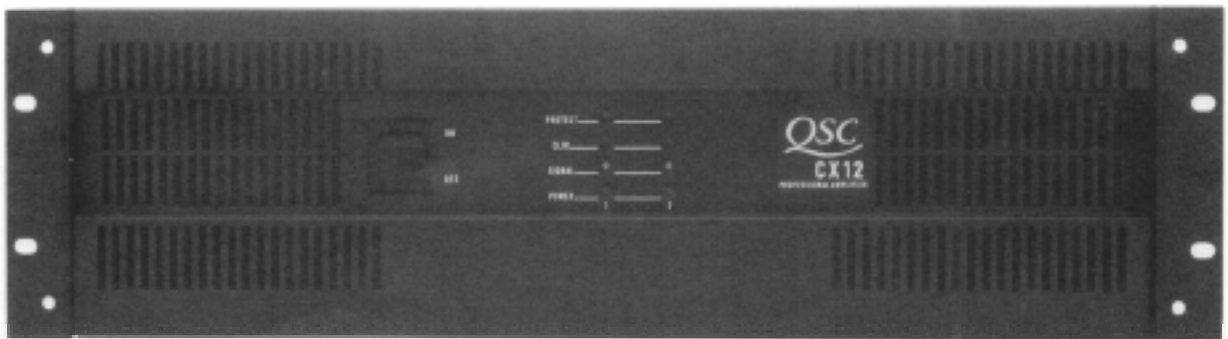
## CX4



## CX6



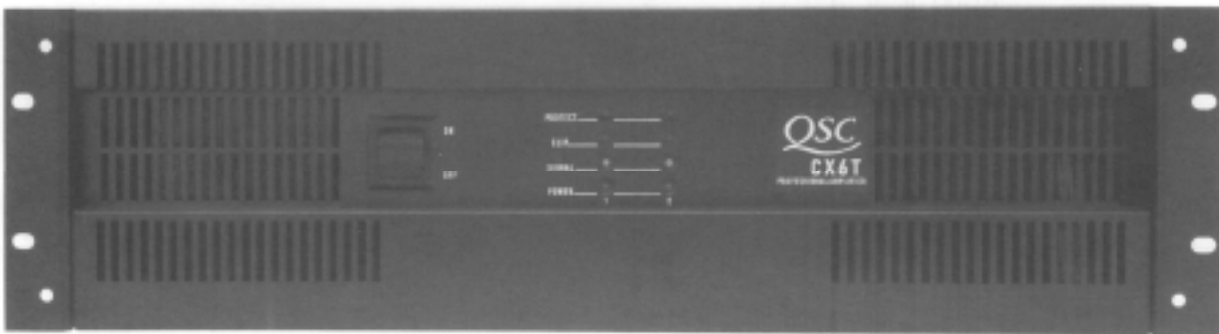
## CX12



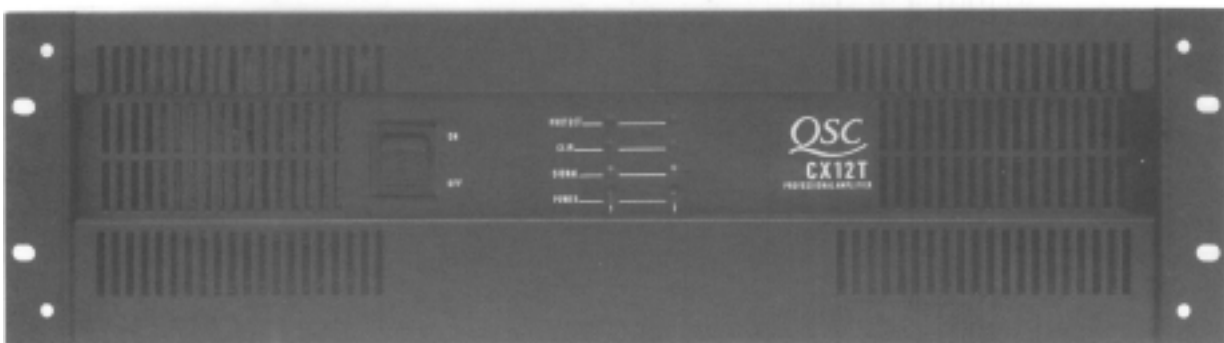
### CX4T



### CX6T



### CX12T



# CX SERIES AMPLIFIER SERVICE MANUAL

**CX4 - CX4T**  
**CX6 - CX6T**  
**CX12 - CX12T**

QSC Technical Services

Wats: 1-800-772-2834

Local: 1-714-957-7150

Fax: 1-714-754-6173

QSC Online!

Online Computer Information System

1-800-856-6003

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## Table of Contents

CX Product Specifications .....	1
Introduction .....	3
Test and Calibration .....	5
Troubleshooting .....	15
CX Series Parts List	
<i>CX Series Voltage Conversion Parts</i> .....	22
<i>CX4/4T Input Assembly</i> .....	27
<i>CX6/6T &amp; CX12/12T Input Assembly</i> .....	27
<i>CX6/6T &amp; CX12/12T AC PC Board Assembly</i> .....	27
<i>CX4/4T Display Board Assembly</i> .....	28
<i>CX6/6T Display Board Assembly</i> .....	28
<i>CX12/12T Display Board Assembly</i> .....	29
<i>CX4/4T Main Board Assembly</i> .....	30
<i>CX6/6T Main Board Assembly</i> .....	31
<i>CX12/12T Main Board Assembly</i> .....	33
<i>CX4 Finished Chassis Assembly (120V &amp; 230V)</i> .....	35
<i>CX4T Finished Chassis Assembly (120V &amp; 230V)</i> .....	36
<i>CX6 Finished Chassis Assembly (120V &amp; 230V)</i> .....	37
<i>CX6T Finished Chassis Assembly (120V &amp; 230V)</i> .....	38
<i>CX12 Finished Chassis Assembly (120V &amp; 230V)</i> .....	39
<i>CX12T Finished Chassis Assembly (120V &amp; 230V)</i> .....	25
CX Series Semiconductors .....	41





CX Series Chassis Drawings

*CX4 Chassis Assembly* ..... 42  
*CX4T Chassis Assembly* ..... 45  
*CX6 & CX12 Chassis Assembly* ..... 48  
*CX6T & CX12T Chassis Assembly* ..... 48  
*CX 4 / 4T Display Board Schematic* ..... 39  
*CX 6T & 12T Display Board Schematic* ..... 39  
*CX4 /4T Series Main Amplifier Board* ..... 40  
*CX6 /6T Series Main Amplifier Board* ..... 41  
*CX12 /12T Series Main Amplifier Board* ..... 42

CX Series Wiring Diagrams

*CX4 Wiring Diagram (120v)* ..... 56  
*CX4 Wiring Diagram (100v)* ..... 57  
*CX4 Wiring Diagram (230v)* ..... 58  
*CX4T Wiring Diagram (120v)* ..... 59  
*CX4T Wiring Diagram (100v)* ..... 60  
*CX4T Wiring Diagram (230v)* ..... 61  
*CX6 Wiring Diagram (120v)* ..... 62  
*CX6 Wiring Diagram (100v)* ..... 63  
*CX6 Wiring Diagram (230v)* ..... 64  
*CX6T Wiring Diagram (120v)* ..... 65  
*CX6T Wiring Diagram (100v)* ..... 66  
*CX6T Wiring Diagram (230v)* ..... 67  
*CX12 Wiring Diagram (120v)* ..... 68  
*CX12 Wiring Diagram (100v)* ..... 69  
*CX12 Wiring Diagram (230v)* ..... 70  
*CX12T Wiring Diagram (120v)* ..... 71  
*CX12T Wiring Diagram (100v)* ..... 72  
*CX12T Wiring Diagram (230v)* ..... 73



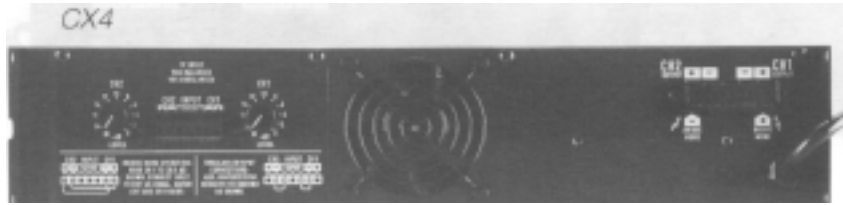
Schematics

<i>CX4/4T Input Board Schematic</i> .....	74
<i>CX4/4T Display Board Schematic</i> .....	74
<i>CX6/6T &amp; CX12/12T Input Board Schematic</i> .....	75
<i>CX6/6T &amp; CX12/12T Display Board Schematic</i> .....	76
<i>CX4/4T Main Board Schematic</i> .....	77
<i>CX6/6T Main Board Schematic</i> .....	79
<i>CX12/12T Main Board Schematic</i> .....	80

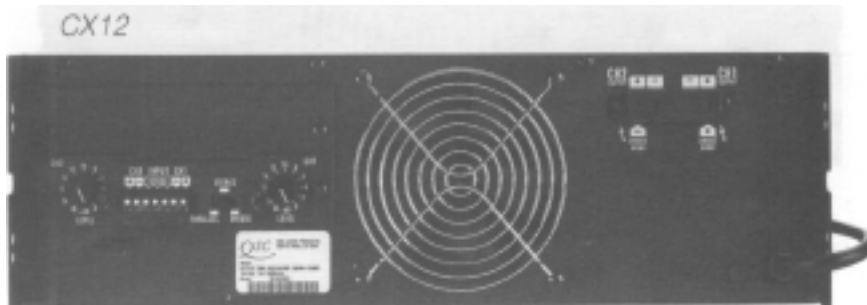
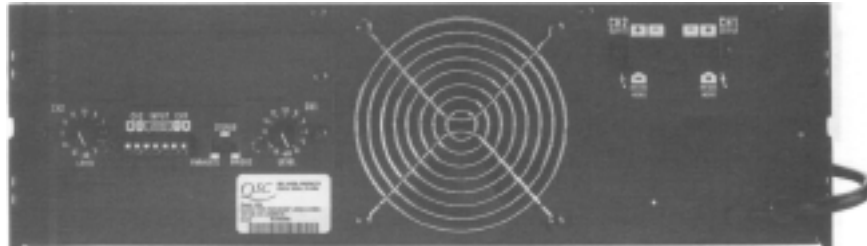
Printed Circuit Board Diagrams

<i>CX4/4T PCB Assemblies Component Side</i> .....	81
<i>CX4/4T PCB Assemblies Solder Side</i> .....	82
<i>CX6/6T &amp; CX12/12T AC PCB Assembly</i> .....	83
<i>CX6/6T &amp; CX12/12T Main/Input/Display PCB Assembly (component) ...</i>	85
<i>CX6/6T &amp; CX12/12T Main/Input/Display PCB Assembly (solder) .....</i>	86

# CX Series Product Specifications



**CX6**

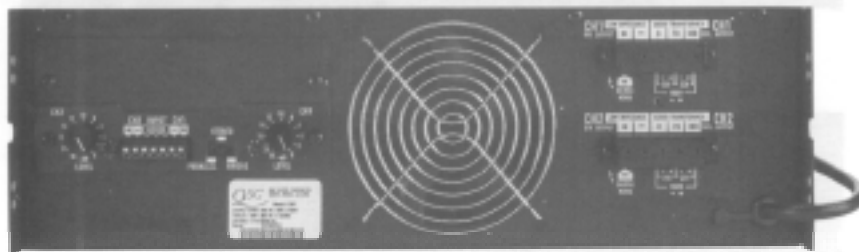


	<b>c x 4</b>	<b>CX6</b>	<b>CX12</b>
<b>Output Power (per channel):</b>			
Continuous Average Output Power both channels driven:			
8 ohms, 20Hz - 20kHz, 0.1% THD	150 watts	200 watts	400 watts
4 ohms, 20Hz - 20kHz, 0.1% THD	225 watts	300 watts	650 watts
2 ohms, 1kHz 1% THD*	350 watts	450 watts	650 watts
Continuous Average Output Power bridged mono operation:			
8 ohms, 20Hz - 20kHz, 0.1% THD	450 watts	600 watts	1200 watts
4 ohms, 1 kHz, 1% THD*	700 watts	400 watts	1800 watts
<b>Voltage Gain (@ direct outputs):</b>	35x (31 dB)	40x (32 dB)	56.5 (35 dB)
<b>Sensitivity (for rated power @ 8 ohms):</b>	0.96 V rms	1.02 Vrms	1.00 Vrms
Distortion:			
SMPTE-IM	Less than 0.05%		
Frequency Response:	20Hz to 20kHz, +/-0.2dB		
Damping Factor (@ direct outputs):	200		
Noise:	1 00dB below rated output (20 Hz to 20 kHz)		
Input Impedance	10k unbalanced, 20k balanced		
Dimensions			
Faceplate Width	Standard 19" Rack Mounting		
Faceplate Height	3.5" (13.3 cm)	5.25" (13.3 cm)	5.25" (13.3 cm)
Chassis Depth	17.9" (45.5 cm)	17.9" (45.5 cm)	17.9" (45.5 cm)
Weight			
Shipping, Lbs/kg	36/16.4	53/24	58/26.3
Net, Lbs/kg	30/13.6	44/20	50/22.7

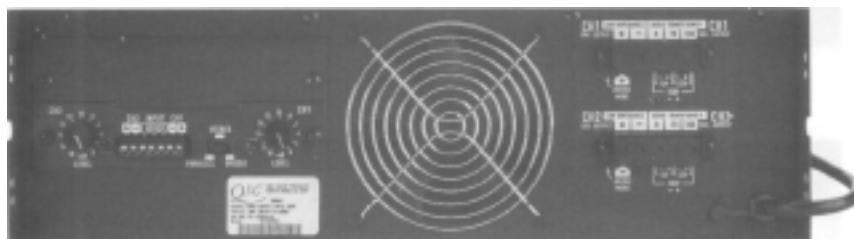
CX4 T



CX6T



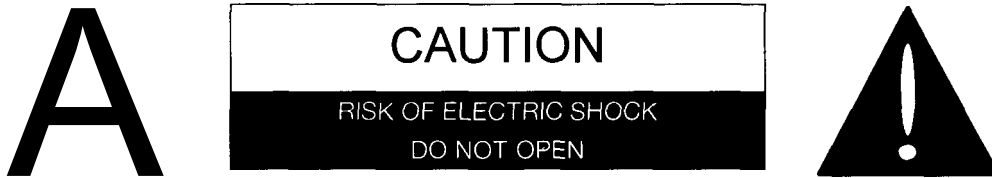
CX12T



	CX4T	CX6T	CX12T
<b>Output Power (per channel):</b>			
Direct Output, watts per channel, both channels driven:			
8 ohms, 45Hz - 20kHz, 0.1% THD	150 watts	200 watts	400 watts
4 ohms, 45Hz - 20kHz, 0.1% THD	225 watts	300 watts	600 watts
2 ohms, 1 kHz, 1% THD*	350 watts	450 watts	900 watts
Isolated outputs, watts per channel, both channels driven:			
70V or 100V, 45Hz-16kHz, 0.25% THD		250 watts	500 watts
70V or 100V, 1kHz, 0.1% THD	175 watts		
25V, 45Hz-16kHz, 0.25% THD		250 watts	500 watts
25V, 1 kHz, 0.1% THD	150 watts		
Direct Outputs, bridged mono:			
8 ohms, 45 Hz-20kHz, 0.1% THD	450 watts	600 watts	1200 watts
4 ohms, 1kHz, 1% THD	700 watts	900 watts	1800 watts
<b>Voltage Gain (dB):</b>			
	35x (31 dB)	40x (32 dB)	56.5x (35 dB)
<b>Sensitivity (for rated power @ 8 ohms)</b>			
	0.98 V rms	1.02 Vrms	1.00 Vrms
<b>Distortion:</b>			
SMPTE-IM			
<b>Frequency Response:</b>			
Less than 0.05%			
-3dB @45Hz*, -0.2dB @ 20kHz; direct outputs			
45Hz* -16kHz, +0, 3dB; isolated outputs			
*Low Frequency is limited by 18 dB/octave 45 Hz high pass filter			
<b>Damping Factor:</b>			
200 (@ direct outputs)			
<b>Noise:</b>			
1 00dB below rated output (20 Hz to 20 kHz)			
<b>Input Impedance</b>			
10k ohms unbalanced and 20k balanced			
<b>Dimensions</b>			
Standard 19" Rack Mounting			
Faceplate Width			
Faceplate Height	3.5" (13.3 cm)	5.25" (13.3 cm)	5.25" (13.3 cm)
Chassis Depth	17.9" (45.5 cm)	17.9" (45.5 cm)	17.9" (45.5 cm)
<b>Weight</b>			
Shipping, Lbs/kg	46/21	62/28	75/34
Net, Lbs/kg	40/18.2	55/25	67/30.4

# I n t r o d u c t i o n

This manual is prepared to assist service personnel with the repair and calibration of the CX Series power amplifiers. The procedures described in this manual require advanced technical experience and sophisticated audio test equipment.



**CAUTION:** To reduce the risk of electric shock, do not remove the cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.

**WARNING:** To prevent fire or electric shock, do not expose this equipment to rain or moisture.

## Documentation

This manual contains schematics, printed circuit board (PCB) drawings, parts lists, and mechanical assembly drawings. This information should be used in conjunction with the test and troubleshooting guide.

The electrical and electronic components are identified by circuit identification numbers on the schematics and the parts list. The test & troubleshooting sections refer to designations shown in the schematics.

## Equivalent Parts

Although many of the electronic components used in this product may be available from electronic suppliers, some components are specially tested and approved by QSC. A product repaired with non-QSC supplied components may not meet factory specifications. Repairs performed using non-QSC parts may void the product warranty. When in doubt, you may contact QSC Technical Services for assistance.

Parts orders to QSC should include the product model number, the part description, and the QSC part number (from the parts list in this manual). Parts will be shipped via UPS, F.O.B. Costa Mesa, California. Shipping, handling and COD charges may be added to the cost of the parts.

## Factory Repair

It may become necessary to return a product to the factory for repair. Call QSC Technical Services for return instructions. You must obtain a Return Authorization number from QSC before returning a product to the factory. QSC Technical Services may be reached at (800) 772-2834.

## Test Equipment

For testing, as outlined in this manual, the following equipment will be needed.

### REQUIRED TEST EQUIPMENT

- Distortion Analyzer capable of 0.05% THD+N
- High Power Load Bank (8, 4, & 2 ohms) for CX
- High Power Load Bank (40,20, & 10 ohms) for CX T
- Function Generator
- 20MHz Oscilloscope
- Digital Multimeter
- Variac (0-1 40 VAC, 20-30A)

### SUGGESTED TEST EQUIPMENT

- \* Audio Precision System One
- Thermocouple probe

Audio Precision test and procedures files are made available, free of charge, from QSC Technical Services by either sending a self addressed stamped envelope and a 3 1/2" disk to QSC, or by logging on to QSC Online and downloading the appropriate files.

## Test Point Schedule

The following test points are described for testing and troubleshooting references. These test points are universal among all models. Actual voltages and current readings will vary.

### AMPLIFIER SECTION

J502 Bed of Nails (J602 is for channel 2):

Pin 1 Negative 15VDC IC Supply,

Pin 2 Positive 15VDC IC Supply.

Pin 3 No Connection

Pin 4 Second Stage OpAmp.

Less than 100mVDC offset.

Pin 5 No Connection

Pin 6 Positive Switched Bus Rail.

Test signal superimposed on DC voltages.

Pin 7 No Connection.

Pin 8 Negative Switched Bus Rail.

Test signal superimposed on DC voltages.



# T e s t & C a l i b r a t i o n

*NOTE: This test procedure will refer to the amplifier's channels as Ch 1 (Channel 1) & Ch2 (Channel 2). Component designation will have the prefix "5" for Ch 1 and "6" for Ch2.*

## CX4 / CX4T Test Procedure

### SET-UP

1. Connect a test load to the output terminals of the amplifier.
2. Make sure the Stereo / Bridge switch is set to the Stereo position.
3. Connect a distortion analyzer with a resolution of 0.05%, 20-20kHz (or better) to the output terminals of the amplifier. Enable the 80kHz low pass filter.
4. Connect a dual-channel oscilloscope to the following test points:
  - Ch1- a 10X (vertical sensitivity - 2V/cm) scope probe to the channel speaker output.
  - Ch2 - a 1X scope probe (vertical sensitivity - 0.1V/cm) to the distortion analyzer output.
5. Set amp gain pots fully clockwise and turn on power switch.
6. Connect the output of the signal generator to the input terminals of the amplifier and select an output of 0.96 (0.98 for CX4T) VRMS, 1 KHz sine wave.
7. Plug the amplifier in to a variac and set up an AC line current monitor.

### POWER UP & MUTE DELAY TEST

1. Slowly raise the variac voltage and watch for excessive current draw (Line current greater than 0.5A a.c. at 60 Volts). *This is slightly less for 240V. Pause at 90VAC (200VAC European) for three seconds until the mute / protect circuit disengages. Continue to 120VAC (240V European).*
2. Turn the power switch off and on a few times to verify the 1 - 3 second power-up muting delay. Check both channels.

### CHANNEL OUTPUT

1. Look for amplified signal on the scope for channel 1. Switch the input signal and scope to channel 2 and repeat output test. Check for noisy / contaminated gain pots by observing general instability on the distortion waveform while adjusting the gain control levels.
2. Select an 8 ohm load and confirm with the gain controls that this amplifier is producing a minimum of 170 watts at 1 kHz just beyond the point of clipping (1 .0% THD+N). Check both channels.

### BIAS ADJUSTMENT

1. Let the amplifier cool down to room temperature.
2. With an input amplitude of 1Vrms increase the input frequency to 15kHz. Reduce the input signal 20dB (80%) from full output. For the first channel to be calibrated, adjust the crossover trimpot R512 for about a 400mVpk-pk crossover spike protruding from the noise trace on the oscilloscope. It will be necessary to have the oscilloscope measure unfiltered distortion

from the amplifier in order to see the crossover spike. It is necessary to disable the 80kHz lowpass filter on the analyzer for this test. Further trim R512 so that the total distortion for that channel is at about 0.1% THD+N. If bias is not adjustable, see the bias description and troubleshooting section of this manual,

3. If a distortion analyzer is not available, a less accurate crossover distortion and bias adjustment can be made by monitoring the driver transistor (Q503 & Q504) bias current. With the amplifier at room temperature, and with no input signal plugged into the amplifier, measure the DC voltage across the emitter resistors of Q502 or Q504 (R516, R517). Adjust R512 to obtain about 80mV d.c. across one of these resistors.
4. With no signal plugged into the amplifier and with an 8 ohm load, verify that the AC idle current from the AC service is no more than 1.0 amps a.c.
5. Let the amplifier cool down and check / adjust channel 2.

#### SHORT CIRCUIT CURRENT

1. Select a 4 ohm load and apply a 1Vrms sinewave (1 kHz) input signal to both channels of the amplifier. Ensure that power is on and that the gain controls are fully up.
2. While the amplifier is producing power into the loads, apply a short to the output binding posts of each channel. In other words, apply a jumper between the red and black binding posts of each channel. Once this is done, the combined AC line current draw for both channels should be no greater than 7.5A ac. This is with a 120volt AC service to the amplifier. Current may be lower as AC line voltage is lower. As the amplifier heats up, current draw may increase to about 9 amperes until thermal protect shutdown.
3. While the amplifier is driving a short, observe the main supply rail voltages. Ideally, they will be no more than 3 volts from each other.
4. Remove the short from each channel and verify that the channels recover in to 4 ohm loads. The output should not experience any hang up and a full sinewave should be present just as it was before a short was applied for this test.
5. If the amplifier does not pass any of the above steps, follow the proceeding steps. If steps 2, 3, and 4 above pass, continue to the next test FREQUENCY RESPONSE.

#### Setting Short Circuit Current Limits

- a. Select a 4 ohm load and apply a 1.2Vrms sinewave (1 kHz) input signal to both channels of the amplifier. Ensure that power is on and that the gain controls are fully up.
- b. Turn gain controls on CH2 fully down. CH1 should be producing max power in the 4 ohm load.
- c. While CH1 is delivering power into the load, apply a short across channel 1's binding posts.
- d. Observe that the A.C. current draw is between 2.5 to 3.5 amps A.C.. Adjust R514 and R515 to get this current reading if your initial reading is off. R514 is the positive current limit adjust and R515 is the negative current limit adjust Adjust both channels the same for a change in current limiting. Both wipers need to adjust evenly to achieve a balanced setting.
- e. Once the correct AC current draw is set, remove the short from the output When this is done, the output power should spring back into the 4 ohm load. If it does not, the current limits are set too low.
- f. Once the output recovers into the 4 ohm load, verify that both polarities of the output sinewave are clipping at the same time. If one polarity clips before the other, adjust the current limit for that polarity (I + or I - ) until both polarities clip at the same time.





- g. After the short circuit current is set and even clipping is achieved, re-apply the short to the output to reconfirm AC line current. If the current draw is not within the range specified, again balance the current limit trimpots until even clipping and the correct AC current draw is met.
- h. Remove the input signal from CH1 and calibrate CH2. It is important to calibrate only one channel at a time.

#### FREQUENCY RESPONSE

##### CX

- 1. Set load to 8 ohms and scale the input generator to gain 1 watt of power from the amplifier on each channel. Gain controls on the amplifier should be fully up.
- 2. Check frequency response from 20Hz to 20kHz (+/- 0.2dB) by sweeping random frequencies between these extremes. This is done by verifying the same voltage amplitude at each of the frequencies selected (within 20Hz to 20kHz). Check both channels,

##### CXT

- 1. Set load to 8 ohms and scale the input generator to gain 1 watt of power from the amplifier on each channel. Gain controls on the amplifier should be fully up.
- 2. Check frequency response from 45Hz to 16kHz (+/- 0.2dB) by sweeping random frequencies between these extremes. This is done by verifying the same voltage amplitude at each of the frequencies selected (within 45Hz to 16kHz). Check both channels.

#### POWER vs. DISTORTION TEST

##### CX

- 1. Check to ensure that both channels will produce rated power at 20Hz, 2KHz, and 20kHz. into an 8 ohm load.
- 2. While verifying rated power, check that at all frequencies the distortion measurement is less than or equal to 0.1%. To obtain this measurement, check to ensure that the 80kHz low pass filter is engaged on the analyzer.

##### CXT

- 1. Check to ensure that both channels will produce rated power at 45Hz, 2KHz and 16kHz. into an 8 ohm load.
- 2. While verifying rated power, check that at all frequencies the distortion measurement is less than or equal to 0.1%. To obtain this measurement, check to ensure that the 80kHz low pass filter is engaged on the analyzer. Check distributed lines (70V, 100V) with 40 ohm, 20 ohm, or 10 ohm loads to ensure that both channels will produce rated power at 45Hz, 2kHz, and 16kHz.

#### THERMAL TEST

- 1. Set input frequency to 1 KHz and short both channels while they are producing power into a load.
- 2. AC line current draw should be about 7.0 - 8.0 amps for both channels. As the amplifier gets hot, there will be some current drift upwards. This is not a problem as long as the case temperature on the output transistors does not exceed 105 degrees C.
- 3. Verify that the PTC circuit causes thermal shutdown after an extended period of time.
- 4. While the amplifier is progressing towards thermal shutdown, look for the fan to cut in to high speed.
- 5. When thermal shutdown occurs on both channels, verify AC idle current of less than 2.5 amperes.
- 6. Remove short to verify thermal protect recovery.

#### OUTPUT NOISE

- 1. Set the amplifier gain controls all the way up, with a 1 kHz 1.00Vrms sinewave input signal. Note the output level.

2. Remove the input signal connector from the amplifier and measure the residual noise level produced into the load by the amplifier. The noise signal should be 100 dB down from the full output power point measured. A signal to noise ratio should be better than or equal to 100dB. Check both channels.

#### FINAL CHECK

This completes the amplifier test procedure for this model. Inspect the amplifier for mechanical defects. Inspect the solder connections. Reassemble the amplifier and verify the amplifier's operation before returning the product to service.

## CX6 / CX6T Test Procedure

#### SET-UP

1. Connect a test load to the output terminals of the amplifier.
2. Make sure the Stereo / Bridge switch is set to the Stereo position.
3. Connect a distortion analyzer with a resolution of 0.05%, 20-20kHz (or better) to the output terminals of the amplifier. Enable the 80kHz low pass filter.
4. Connect a dualchannel oscilloscope to the following test points:  
Ch1- a 10X (vertical sensitivity - 2V/cm) scope probe to the channel speaker output.  
Ch2 - a 1X scope probe (vertical sensitivity - 0.1V/cm) to the distortion analyzer output.
5. Set amp gain pots fully clockwise and turn on power switch.
6. Connect the output of the signal generator to the input terminals of the amplifier and select an output of 1.15 VRMS, 1 KHz sine wave.
7. Plug the amplifier in to a variac and set up an AC line current monitor.

#### POWER UP & MUTE DELAY TEST

1. Slowly raise the variac voltage and watch for excessive current draw (Line current greater than 0.5A a.c. at 60 Volts). *This is slightly less for 240V. Pause at (200VAC European) for three seconds until the mute / protect circuit disengages, Continue to 120VAC (240V European).*
2. Turn the power switch off and on a few times to verify the 1- 3 second power-up muting delay. Check both channels.

#### CHANNEL OUTPUT

1. Look for amplified signal on the scope for channel 1. Switch the input signal and scope to channel 2 and repeat output test. Check for noisy / contaminated gain pots by looking for general instability on the distortion waveform while adjusting the gain control levels,
2. Select an 8 ohm load and confirm with the gain controls that this amplifier is producing a minimum of 220 watts at 1 kHz just beyond the point of clipping (1.0% THD+N). Check both channels.

#### BRIDGE MODE

1. Turn the power switch off and the gain controls down.
2. Move the bridge switch on the amp from the Stereo to Bridge position.
3. Set an 8 ohm load to both red output binding posts (CH1 positive and CH2 negative).
4. Apply a 1VRMS, 1kHz sinewave input to channel 1 of the amplifier. Check for 600 watts at 0.1% THD+N and verify that the output does not collapse. The position of CH2's gain control does not affect the output level.

- 5 Turn power off and place the amplifier under test back into the Stereo mode with output loads connected to each channel. Reinsert CH2 input plug and turn both gain controls fully up.

**BIAS ADJUSTMENT**

1. Let the amplifier cool down to room temperature,
2. With an input amplitude of 1V<sub>rms</sub>, increase the input frequency to 20kHz. Reduce the input signal 20dB (80%) from full output. At this point, a couple of watts of output power should be observed at the output. For the first channel to be calibrated, adjust the crossover trimpot VR501 for about a 400mV<sub>pk-pk</sub> crossover spike protruding from the noise trace on the oscilloscope. It will be necessary to have the oscilloscope measure unfiltered distortion from the amplifier in order to see the crossover spike. It is necessary to disable the 80kHz lowpass filter on the analyzer for this test. Further trim VR501 so that the total distortion for that channel is at about 0.1% THD+N. If bias is not settable, see the bias description and troubleshooting section of this manual.
3. If a distortion analyzer is not available, a less accurate crossover distortion and bias adjustment can be made by monitoring the driver transistor (Q501 & Q502) bias current. With the amplifier at room temperature, and with no input signal plugged into the amplifier, measure the DC voltage across the emitter resistors of Q501 and Q502 (R501, R502). Adjust VR501 to obtain about 80mV d.c. across one of these resistors.
4. With no signal plugged into the amplifier and with an 8 ohm load, verify that the AC idle current from the AC service is no more than 1.0 amps a.c.
5. Let the amplifier cool down and check/adjust channel 2.

**SHORT CIRCUIT CURRENT**

1. Select a 4 ohm load and apply a 1V<sub>rms</sub> sinewave (1 kHz) input signal to both channels of the amplifier. Ensure that power is on and that the gain controls are fully up.
2. While the amplifier is producing power into the loads, apply a short to the output binding posts of each channel. In other words, apply a jumper between the red and black binding posts of each channel. Once this is done, the combined AC line current draw for both channels should be no greater than 8.0A ac. This is with a 120VAC service. Current may be lower as AC line voltage is lower. As the amplifier heats up, current draw may increase to about 9A until thermal protect shutdown.
3. While the amplifier is driving a short, observe the main supply rail voltages. Ideally, they will be no more than 3 volts from each other.
4. Remove the short from each channel and verify that the channels recover in to 4 ohm loads, The output should not experience any hang up and a full sinewave should be present just as it was before a short was applied for this test.
5. If the amplifier does not pass any of the above steps, follow the proceeding steps. If steps 2, 3, and 4 above pass, continue to the next test "Frequency Response."

**Setting Short Circuit Current Limits**

- a. Select a 4 ohm load and apply a 1.2V<sub>rms</sub> sinewave (1 kHz) input signal to both channels of the amplifier. Ensure that power is on and that the gain controls are fully up.
- b. Turn gain controls on CH2 fully down. CH1 should be producing max power in the 4 ohm load.
- c. While CH1 is delivering power into the load, apply a short across channel 1's binding posts.
- d. Observe that the A.C. current draw is 3.0 - 4.0 amps A.C.. Adjust VR502 and VR503 to get this current reading if your initial reading is off. VR503 is the positive current limit adjust and VR502 is the negative current limit adjust. Adjust both channels the same for a change in current limiting. Both wipers need to adjust evenly to achieve a balanced setting.

- e. Once the correct AC current draw is set, remove the short on the output. When this is done, the output power should spring back into the 4 ohm load. If it does not, the current limits are set too low.
- f. Once the output recovers into the 4 ohm load, verify that both polarities of the output sine wave are clipping at the same time. If one polarity clips before the other, adjust the current limit for that polarity (1+ or 1- ) until both polarities clip at the same time.
- g. After the short circuit current is set and even clipping is achieved, re-apply the short to the output to reconfirm AC line current. If the current draw is not within the range specified, again balance the current limit trimpots until even clipping and the correct AC current draw is met.
- h. Remove the input signal from CH1 and calibrate CH2. It is important to calibrate only one channel at a time.

#### IFREQUENCY RESPONSE

1. Set load to 8 ohms and scale the input generator to gain 1 watt of power from the amplifier on each channel. Gain controls on the amplifier should be fully up.
2. Check frequency response from 20Hz to 20kHz (+/- 0.2dB) by sweeping random frequencies between these extremes. This is done by verifying the same voltage amplitude at each of the frequencies selected (within 20Hz to 20kHz). The frequency extremes for the CX6Tdirect outputs is between 45Hz and 16kHz (-3dB @ 45Hz, -0.2dB @ 20 kHz). Check both channels.

#### IPOWER vs. DISTORTION TEST

1. Check to ensure that both channels will produce rated power at 20Hz, 2KHz, and 20kHz. into an 8 ohm load. For the CX6T under test, check power levels between 200Hz, 2kHz, and 20kHz (-3dB @ 45Hz, -0.2dB @ 16 kHz).
2. While verifying rated power, check that at all frequencies the distortion measurement is less than or equal to 0.1%. To obtain this measurement, check to ensure that the 80kHz low pass filter is engaged on the analyzer. Check distributed lines (70V, 100V) with 40 ohm, 20 ohm, or 10 ohm loads to ensure that both channels will produce rated power at 45Hz, 2kHz, and 16kHz.

#### ITHERMAL TEST

1. Set input frequency to 1 KHz and short both channels while they are producing power into a load.
2. AC line current draw should be about 7.0 - 8.0 amps for both channels. As the amplifier gets hot, there will be some current drift upwards. This is not a problem as long as the case temperature on the output transistors does not exceed 105 degrees C.
3. Verify that the PTC circuit causes thermal shutdown after an extended period of time.
4. While the amplifier is progressing towards thermal shutdown, look for the fan to cut in to high speed.
5. When thermal shutdown occurs on both channels, verify AC idle current of less than 2.5 amperes.
6. Remove short to verify thermal protect recovery.

#### IOUTPUT NOISE

1. Set the amplifier gain controls all the way up, with a 1 kHz 1.00Vrms sine wave input signal. Note the output level.
2. Remove the input signal connector from the amplifier and measure the residual noise level produced into the load by the amplifier. The noise signal should be 100 dB down from the full output power point measured. A signal to noise ratio should be better than or equal to 100dB. Check both channels.



## CX Series

### FINAL CHECK

This completes the amplifier test procedure for this model. Inspect the amplifier for mechanical defects. Inspect the solder connections. Reassemble the amplifier and verify the amplifier's operation before returning the product to service.

## CX12 / CX12T Test Procedure

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### SET-UP

1. Connect a test load to the output terminals of the amplifier.
2. Make sure the Stereo / Bridge switch is set to the Stereo position.
3. Connect a distortion analyzer with a resolution of 0.05%, 20-20kHz (or better) to the output terminals of the amplifier. Enable the 80kHz low pass filter.
4. Connect a dualchannel oscilloscope to the following test points:
  - Ch1 - a 1 OX (vertical sensitivity - 2V/cm) scope probe to the channel speaker output.
  - Ch2 - a 1 X scope probe (vertical sensitivity - 0. 1V/cm) to the distortion analyzer output.
5. Set amp gain pots fully clockwise and turn on power switch.
6. Connect the output of the signal generator to the input terminals of the amplifier and select an output of 1 .00 VRMS, 1 KHz sine wave.
7. Plug the amplifier in to a variac and set up an AC line current monitor.

### POWER UP & MUTE DELAY TEST

1. Slowly raise the variac voltage and watch for excessive current draw (Line current greater than 0.5A a.c. at 60 Volts). *This is slightly less for 240V* Pause at 90VAC (*200VAC European*) for three seconds until the mute / protect circuit disengages, Continue to 120VAC (*240V European*).
2. Turn the power switch off and on a few times to verify the 1 - 3 second power-up muting delay. Check both channels.

### CHANNEL OUTPUT

1. Look for amplified signal on the scope for channel 1 Switch the input signal and scope to channel 2 and repeat output test. Check for noisy / contaminated gain pots by looking for general instability on the distortion waveform while adjusting the gain control levels.
2. Select an 8 ohm load and confirm with the gain controls that this amplifier is producing a minimum of 430 watts at 1 kHz just beyond the point of clipping (1 .0% THD+N). Check both channels.

### BRIDGE MODE

1. Turn the power switch off and the gain controls down.
2. Move the bridge switch on the amp from the Stereo to Bridge position.
3. Set an 8 ohm load to both red output binding posts (CH1 positive and CH2 negative). Remove the input connector from channel 2.
4. Apply a 1VRMS, 1 kHz sinewave input to channel 1 of the amplifier. Check for 1200 watts at 0.1% THD+N and verify that the output does not collapse. The position of CH2's gain control does not affect the output level.
5. Turn power off and place the amplifier under test back into the Stereo mode with output loads connected to each channel. Reinsert CH2 input plug and turn both gain controls fully up.

## BIAS ADJUSTMENT

1. Let the amplifier cool down to room temperature.
2. With an input amplitude of 1V<sub>rms</sub>, increase the input frequency to 20kHz. Reduce the input signal 20dB (80%) from full output. At this point, a couple of watts of output power should be observed at the output. For the first channel to be calibrated, adjust the crossover trimpot VR501 for about a 400mV<sub>pk-pk</sub> crossover spike protruding from the noise trace on the oscilloscope. It will be necessary to have the oscilloscope measure unfiltered distortion from the amplifier in order to see the crossover spike. It is necessary to disable the 80kHz lowpass filter on the analyzer for this test. Further trim VR501 so that the total distortion for that channel is at about 0.1% THD+N. If bias is not settable, see the bias description and troubleshooting section of this manual.
3. If a distortion analyzer is not available, a less accurate crossover distortion and bias adjustment can be made by monitoring the driver transistor (Q501 & Q502) bias current. With the amplifier at room temperature, and with no input signal plugged into the amplifier, measure the DC voltage across the emitter resistors of Q501 and Q502 (R501, R502). Adjust VR501 to obtain about 80mV d.c. across one of these resistors.
4. With no signal plugged into the amplifier and with an 8 ohm load, verify that the AC idle current from the AC service is no more than 1.0 amps a.c.
5. Let the amplifier cool down and check/adjust channel 2.

## SHORT CIRCUIT CURRENT

1. Select a 4 ohm load and apply a 1V<sub>rms</sub> sinewave (1 kHz) input signal to both channels of the amplifier. Ensure that power is on and that the gain controls are fully up.
2. While the amplifier is producing power into the loads, apply a short to the output binding posts of each channel. In other words, apply a jumper between the red and black binding posts of each channel. Once this is done, the combined AC line current draw for both channels should be no greater than 8.0A ac. This is with a 120VAC service. Current may be lower as AC line voltage is lower. As the amplifier heats up, current draw may increase to about 9A until thermal protect shutdown.
3. While the amplifier is driving a short, observe the main supply rail voltages. Ideally, they will be no more than 3 volts from each other.
4. Remove the short from each channel and verify that the channels recover in to 4 ohm loads. The output should not experience any hang up and a full sinewave should be present just as it was before a short was applied for this test.
5. If the amplifier does not pass any of the above steps, follow the proceeding steps. If steps 2, 3, and 4 above pass, continue to the next test "Frequency Response. "

## Setting Short Circuit Current Limits

- a. Select a 4 ohm load and apply a 1.2V<sub>rms</sub> sinewave (1 kHz) input signal to both channels of the amplifier. Ensure that power is on and that the gain controls are fully up.
- b. Turn gain controls on CH2 fully down. CH1 should be producing max power in the 4 ohm load.
- c. While CH1 is delivering power into the load, apply a short across channel 1's binding posts.
- d. Observe that the A.C. current draw is 5.0 - 6.0 amps A.C.. Adjust VR502 and VR503 to get this current reading if your initial reading is off. VR503 is the positive current limit adjust and VR502 is the negative current limit adjust. Adjust both

channels the same for a change in current limiting. Both wipers need to adjust evenly to achieve a balanced setting.

- e. Once the correct AC current draw is set, remove the short on the output. When this is done, the output power should spring back into the 4 ohm load. If it does not, the current limits are set too low.
- f. Once the output recovers into the 4 ohm load, verify that both polarities of the output sinewave are clipping at the same time. If one polarity clips before the other, adjust the current limit for that polarity (1+ or 1- ) until both polarities clip at the same time.
- g. After the short circuit current is set and even clipping is achieved, reapply the short to the output to reconfirm AC line current. If the current draw is not within the range specified, again balance the current limit trimpots until even clipping and the correct AC current draw is met.
- h. Remove the input signal from CH1 and calibrate CH2. It is important to calibrate only one channel at a time.

#### IFREQUENCY RESPONSE

1. Set load to 8 ohms and scale the input generator to gain 1 watt of power from the amplifier on each channel. Gain controls on the amplifier should be fully up.
2. Check frequency response from 200Hz to 20kHz (+/- 0.2dB) by sweeping random frequencies between these extremes. This is done by verifying the same voltage amplitude at each of the frequencies selected (within 200Hz to 20kHz). The frequency extremes for the CX6Tdirect outputs is between 45Hz and 16kHz (-3dB @ 45Hz, -0.2dB @ 20 kHz). Check both channels.

#### IPOWER vs. DISTORTION TEST

1. Check to ensure that both channels will produce rated power at 200Hz, 2kHz, and 20kHz. into an 8 ohm load. For the CX6T under test, check power levels between 200Hz, 2kHz, and 20kHz (-3dB @ 45Hz, -0.2dB @ 16 kHz).
2. While verifying rated power, check that at all frequencies the distortion measurement is less than or equal to 0.1%. To obtain this measurement, check to ensure that the 80kHz low pass filter is engaged on the analyzer. Check distributed lines (70V, 100V) with 40 ohm, 20 ohm, or 10 ohm loads to ensure that both channels will produce rated power at 45Hz, 2kHz, and 16kHz.

#### ITHERMAL TEST

1. Set input frequency to 1 KHz and short both channels while they are producing power into a load.
2. AC line current draw should be about 7.0 - 8.0 amps for both channels. As the amplifier gets hot, there will be some current drift upwards. This is not a problem as long as the case temperature on the output transistors does not exceed 105 degrees C.
3. Verify that the PTC circuit causes thermal shutdown after an extended period of time.
4. While the amplifier is progressing towards thermal shutdown, look for the fan to cut into high speed.
5. When thermal shutdown occurs on both channels, verify AC idle current of less than 2.5 amperes.
6. Remove short to verify thermal protect recovery.

OUTPUT NOISE

1. Set the amplifier gain controls all the way up, with a 1 kHz 1.00Vrms sinewave input signal, Note the output level.
2. Remove the input signal connector from the amplifier and measure the residual noise level produced into the load by the amplifier. The noise signal should be 100 dB down from the full output power point measured. A signal to noise ratio should be better than or equal to 100dB. Check both channels.

FINAL CHECK

This completes the amplifier test procedure for this model. Inspect the amplifier for mechanical defects. Inspect the solder connections. Reassemble the amplifier and verify the amplifier's operation before returning the product to service.



# T r o u b l e s h o o t i n g

## Current Draw

*(Circuit breakers and fuses blow. Burning smell or smoke)*

### Symptoms:

- Excessive current without signal present
- Fast current draw
- Medium current draw
- Slow current draw
- Runaway current draw

### Possible Causes:

#### EXCESSIVE CURRENT WITHOUT SIGNAL PRESENT (Above 2A and less than 4A)

1. The amplifier draws high current when the AC supply voltage is first applied. This symptom may mean that there is a short in the power stages of the circuit.
2. This could also be a misadjusted bias setting. See calibration procedures in this manual for setting bias. Check for VR511, VR611 (CX6/T, CX12/T), R512, VR612 (CX4/T) or open diodes D505, D506, D605, D606 (CX6/T, CX1 2/T), D504, D505, D604, D605 (CX4/T).

#### FAST CURRENT DRAW (increases rapidly at only a few volts AC):

1. Reversed or shorted main bridge rectifier BR501, BR601 (CX4/T, CX6/T), BR501, BR502, BR601, BR602 (CX12/T). Check the bridge rectifier by setting DMV to diode mode. To verify a good bridge rectifier, connect the negative lead to BR+ (BR = bridge rectifier) and check for 0.4 to 0.6v at both AC terminals. Connect positive lead to BR- and check for 0.4 to 0.6v at both AC terminal.
2. Both supply clamping diodes shorted or reversed D512, D513, D612, D613 (CX6/T, CX12/T), D510, D512 (CX4/T).
3. Shorted or reversed C509, C510, C511, C512, C609, C610, C611, C612 (CX12/T), C511, C512, C611, C612 (CX6/T), C511, C512, C513, C514, C611, C612, C613, C614 (CX4/T).

#### MEDIUM CURRENT DRAW (increases slowly, can go to 30 VAC before current becomes excessive.):

1. Single polarity driver or output short.
2. Open or missing bias diodes D505, D506 (CX6/T, CX12/T), D504, D505 (CX4/T).

#### SLOW CURRENT DRAW (above 60 volts AC before current begins to increase, amp may pass signal):

1. Severely misadjusted bias circuit or defective D505-506 (CX6/T, CX12/T), R512, R612, D504, D505 (CX4/T).
2. Severe oscillation causing current drain. Check all feedback components and high frequency snubber circuit

#### RUNAWAY CURRENT DRAW (30-40V AC before current begins to increase or runaway):

1. A reversed filter capacitor: caution, may vent explosively.

## Protection, Standby, and Power Up.

*(The amplifier locks up or does not startup and shut off correctly)*

### **Model CX4/4 T**

#### **Symptoms:**

- .Amplifier does not come out of protect
- Amplifier will not thermally protect
- Muting delay
- Pilot LED not working
- Fan doesn't work

### **Model CX6/6T & CX12/12T**

#### **Symptoms:**

- Amplifier does not come out of protect
- \* Relay won't turn on with normal operating amplifier
- No RED "PROTECT" LED
- No muting delay
- .No thermal shutdown
- .No DC protect
- Shut off under signal
- DC faults without current draw
- .Fan doesn't work

### **CX4/4 T Possible Causes:**

#### !AMPLIFIER DOES NOT COME OUT OF PROTECT

1. Q50 or Q51 shorted base- collector junction or collectoremitter junction.
2. Voltage on Z5 should be 14v - 1.5v. If this voltage is low, check for leaky C51, C52, defective D51, or open R51/R54.
3. Check for open LD50 and PTCs R56, R57.

#### !AMPLIFIER WILL NOT THERMALLY PROTECT (If "Muting" circuit is OK)

1. Check for shorted LD50 and PTCs R56, R57, incorrect R55, R53, or open R50.

#### !MUTING DELAY

1. Excess muting delay (rest works OK): Check timing capacitor C51 voltage. If it rises normally but circuit is slow to turn on, check D51.
2. No muting delay (rest works OK): R51/R51 low ( fast charge C51). Missing R53 or high.

#### !PILOT LED NOT WORKING

- 1, Check for shorted or open pilot LD2 (CH1) or LD4 (CH2). Check R531/R631.

#### !FAN DOESN'T WORK

1. Always operate at high speed: check open PTC R50, defective U50, shorted Q52.
2. Always operate at low speed: check shorted PTC R50, defective U50, Q52 shorted base, emitter junction.
3. Doesn't operate: missing R63 or high. Check voltage across fan terminal, should be 1 OV at cold and 24V at hot. If voltage is OK, replace defective fan



**CX6/6T & CX12/12T Possible Causes:**

**AMPLIFIER DOES NOT COME OUT OF PROTECT**

1. Check speaker bus for DC; if over 3VDC present, the protection circuit is operating normally to hold of operation. See DC FAULT WITHOUT CURRENT DRAW section to fix this DC fault.

**RELAY WON'T TURN ON WITH NORMAL OPERATING AMPLIFIER:**

1. Check Relay power voltage. With relay off, voltage at C516 should measure about 47VDC. With relay on, C516 should measure about 27V. if not check D516, R531, C516, D515.
2. If relay power voltage OK; check voltage on the timing capacitor C515. Should rise to 12-15VDC, in three seconds, which triggers Q513. If not check R528, R530, C515 polarity
3. Timing voltage OK; check relay transistor Q512. If good, RN501 B-C resistors from base to speaker bus should activate relay.
4. Relay driver Q512 OK, check driver Q513 and **LD1 01**.

**NO RED "PROTECT" LED**

1. Check LED voltage, If over -2V, LED is defective. If OV with relay off (no negative voltage to LED), there is no "protect" power (open or missing R534), which defeats shutdown circuits. Be sure to correct before proceeding.

**NO MUTING DELAY (be sure "protect" LED works)**

*ALSO WITHOUT THERMAL OR DC PROTECT: relay or circuit is "stuck on"!*

1. Relay Q512 shorted or wrongly mounted. Check by jumping base to emitter, should turn it off.
2. Relay Q513 shorted or wrongly mounted. Check by jumping base to emitter, should turn it off.

*NO MUTING DELAY ONLY (all else OK):*

1. D518 reversed ( charges timing capacitor C515 immediately)
2. R528 low (fast C515 charge)
3. R29 low (low voltage on E7 turns Q513 on too soon), missing or high R30 (no off current).

*EXCESS MUTING DELAY:*

1. Check timing capacitor E515 voltage, If it rises normally but circuit is slow to turn on, check D517 (lift temporarily), LD501 bad or intermittent, RN501 D too low.
2. Timing capacitor voltage wrong; determine cause (R528, R530, reversed C515, reversed or wrong Q511).

**NO THERMAL SHUTOFF**

Short the amplifier load with full signal to raise heatsink temperature and put voltmeter across PTC R516 & R616 (yellow or gray sensor on the output transistor), looking for voltage to rise from 0.7V cold to 5.5V at shut down.

1. No Red "Protect", may have no R531, which defeats whole thermal circuit (no voltage across PTC). Also check D517 high/missing, or relay drive circuit stuck on.

**NO DC PROTECT:**

1. R532 missing or very high.
2. BR502 defective/wrongly stuffed
3. Q511 defective/wrong
4. D518 reversed (also no muting delay)

5. Replace LD501 if voltage is less than 1.5V

#### SHUTS OFF UNDER SIGNAL

1. C517 missing, defective, or much too small

#### DC FAULT WITHOUT CURRENT DRAW

In most cases, shorts in the output circuit will cause current draw, but certain shorts will only cause DC offset in the output. In both cases, measure all the voltages, and look for abnormal values to help trace the fault, which can be a solder or component short (zero volts), reversed zener or diode (0.6V), reversed electrolytic (several volts), or wrong value parts (abnormal voltage). Look at the following points in the circuit.

1. Shorted IC rails.
2. Blown D521, D522 give zero volts on the IC rail.
3. VR502, VR503 turned all the way off or way too low in value.
4. Collector-base short on the driver (rare without further damage)
5. Sometimes IC forces the rest of the circuit into DC due to shorts in the feedback network, etc. To check this remove IC, check for +/-15V, and see if adjusting current limit trimmer VR502, VR503 will produce a zero volt output (there will be no signal, of course). If so, output stage is probably OK, look for problems in the IC, or its associated parts.
6. Defective/reversed IC (pull and check voltage)

#### FAN DOESN'T WORK:

1. Always operate at high speed: check shorted fan thermal switch. (on the heatsink under the main PCB).
2. Always operate at low speed: check defective fan thermal switch.
3. Doesn't operate: check open R902 on the AC PCB and intermittent fan cable connectors.

## Faults with Signal Present

*(The amplifier passes a signal but is not running correctly)*

### Symptoms:

- Output power "breaking up"
  - 'Ringing' sound with no input to amplifier
  - Output collapses into a 8, 4, or 2 ohm load
  - Voltage rails ok without signal
  - Amplifier gets too hot without load
  - One channel clips prematurely
  - Gain wrong
  - Poor Frequency Response
- Step Circuit Problems

### Possible Causes:

#### OUTPUT POWER "BREAKING UP" (*Output distorted*)

1. R523, R524, R526, R527 open (CX4/T) R520.
2. C513, C514 open. (CX4/T) C515.
3. Check for continuity between speaker ground, input ground and ac ground.
4. R501, R502, R543 open. (CX4/T) R516, R517.
5. Current limits out of adjustment.

## CX Series

### 6. Defective gain control

#### ! "RINGING" SOUND WITH NO INPUT TO AMPLIFIER

1. C518, C519, C523 open or wrong value. (CX4/T) C505, C516.
2. R541, R542, R538, R547 open or wrong value. (CX4/T) R523, R524, R502.
3. Defective op amp U503. (CX4/T) U501
4. Unstable driver transistors (Q501, Q502), or output transistors (Q505 - Q510). (CX4/T) drivers Q503, Q504, and outputs Q500Q502 & Q505-Q507.

#### ! OUTPUT COLLAPSES INTO A LOAD

1. D519, D520, R548 wrong value or open. (CX4/T) D509, D511, R518.
2. Misadjusted current limits (VR502, VR503). (CX4/T) R513, R514.
3. Defective op amp U503. (CX4/T) U501.
4. R501, R502 wrong value. (CX4/T) R516, R517.

#### ! VOLTAGE RAILS OK WITHOUT SIGNAL (*Collapses with signal*)

1. C525, C526 leaky or not holding a charge. (CX4/T) C506, C507.
2. Check for capacitance value of C520.

#### ! AMPLIFIER GETS TOO HOT WITHOUT LOAD

1. Bias trimpot (VR501) misadjusted, opened or burned. (CX4/T) R512.
2. Incorrect bias diodes (D505, D506 should be 1N4934). (CX4/T) D505, D506.
3. R517, R518 open or has drifted in value. (CX4/T) R504, R527.
4. Defective op amp U503. (CX4/T) U501.

#### ! ONE CHANNEL CLIPS PREMATURELY

1. R517 or R518 may be open or drifted in value. (CX4/T) R504, R528.
2. Misadjusted current limits (VR502, VR503). (CX4/T) R514, R515.
3. Defective zener D511, D514. (CX4/T) D503, D506.
4. Check for open R512, R522, R539, R546. (CX4/T) R513, R525, R503, R526.
5. 680 ohm chargeback resistor R548 may be open. (CX4/T) R518.

#### ! GAIN WRONG

1. Too high: Missing one of the two feedback resistors from output, R538 or R542, (CX4/T) R524; or input RN902, (CX4/T) RN500 is wrong value. (Faulty input resistors will cause the amplifier to fail the Common Mode test.)
2. Too low: Above feedback values wrong or shunt resistor R541/C520, (CX4/T) R523 wrong or open (open causes very low gain with instability. Check circuit trace).

#### ! POOR FREQUENCY RESPONSE (Be sure to correct any gain problem first)

1. High frequency, determined by feedback capacitor C519, (CX4/T) C516 (wrong value also causes instability)
2. Low frequency, determined by DC feedback rolloff C520, and "butterworth" feedback compensation network C518/R542. (CX4/T) C502 low frequency rolloff.

#### ! STEP CIRCUIT (CX12/T only)

Check step circuit components U501, U502, Q503, Q504 carefully, note exact output voltage where step cuts in (are both matched to 1V). Step turning on too late (too high) will hang up at 2 ohms. Check referent 15V zener voltages D509 and D510. After inspecting all parts, see below:

1. Step distortion: check step filter components R508/C505, R504/C501, and C528.

2. No step: check 0503, Q504, U501, U502 burned to open. R505, R506, R510 open.

## *Instability*

*(Gain problems, spurious noises, and oscillations)*

### *All Models*

- |General Output Distortion
- |Excessive or unbalanced crossover
- Output waveform appears "fuzzy"

### *Possible Causes:*

*First, distinguish between instability (fuzziness), "ringing" which is momentary instability after a transition, "step" distortion, crossover distortion (both often show ringing), or general distortion.*

#### |GENERAL OUTPUT DISTORTION

##### SEVERE:

All loads, often with current draw: often associated with feed back components (U503, C532, C520, C519, C518, C523). (CX4/T) U501, C516, C505. Check resistor values on R540, R541, R542, R568, R538, R547. (CX4/T) R502, R523, R524.

##### MEDIUM:

Check feedback capacitor C519. (CX4/T) C516,

##### LOW GAIN:

Suspect open circuit in feedback shunt R541 and C520. (CX4/T) R523. Check for broken circuit trace. Substitute IC and check IC socket for contamination.

#### |EXCESSIVE OR UNBALANCED CROSSOVER *(Excess notch or ringing at zero crossing)*

1. Severe: shorted bias diode D505, D506. (CX4/T) D504, D505.
2. Moderate: Out-of-spec bias diodes.
3. Defective bias trimmer components VR501, R511. (CX4/ T) R512, R532.
4. Check for open base resistors R517, 518 on output devices. (CX4/T) R504, R527.

#### |OUTPUT WAVEFORM APPEARS 'FUZZY

1. Check main heatsink ground continuity with chassis ground,
2. High frequency snubbers defective (C513, C514, R525, R526, R523, R527). (CX4/T) R520, C515.
3. Check capacitors on speaker output board.
4. Check/adjust driver emitter capacitors C519 and C523. (CX4/T) C516, C505.

## ***Power Supply and Voltage Rail Balancing***

*(Uneven rails and power supply problems)*

### **Symptoms:**

- Current limiting wrong
- Current limiting too high into a short
- IC rail too high into a short
- Current limiting too low into a short
- Uneven voltage rails

### **Possible Causes:**

#### · CURRENT LIMITING WRONG

Current limits should remain high down to 2 ohms, and collapse to a lower value for short circuits. This is caused by the IC rails going from normal 14 - 1.5 volts to about 5-6 volts. Current limit trimmers TR502 & TR503 permits adjustment of each channel to a specified range. See Test & Calibration Procedures for correct adjustment of the current limiting.

#### · CURRENT LIMITING TOO HIGH INTO SHORT (*IC rail check normal 5-6 volts*)

1. Reversed or shorted 4.7V zeners D511, D514. (CX4/T) D503, D506.
2. Shorted bias diode D505, D506 (also shows severe crossover). (CX4/T) D504, D505.

#### · IC RAIL TOO HIGH INTO SHORT

1. Check op amp (weak output current).
2. Clip LED LD103 open, clip circuit parts R544 high or missing. (CX4/T) LD1, LD3, R511.
3. D101/D102/D103/D104 open. (CX4/T) BR500.

#### · CURRENT LIMITING TOO LOW INTO SHORT AND 2 OHM LOAD

1. Bias resistor R512, R522 high.
2. Very low gain driver transistors.
3. Missing connection or open emitter resistors in some of the paralleled output transistors.

#### · CURRENT LIMITING TOO LOW INTO SHORT ONLY (*OK into normal loads*)

1. 3.9 or 4.7V zeners high (7.5V or 15V).
2. Clip LED LD103 shorted, clip circuit parts R544 low. (CX4/T) LD1, LD3, R511.
3. D101/D102/D103/D104 shorted. (CX4/T) BR500.

#### · OK INTO SHORT BUT LOW INTO 2 OHMS: (*Usually on one side only*)

1. IC RAIL LOW: Check replenishing resistor R548 and diodes D519, D520. (CX4/T) D509, D511, R518.
2. IC RAIL OK: (until clipping starts) usually indicates low output section gain caused by weak driver, open output devices, or open emitter resistors. Also check value of driver emitter resistors R501, R502. (CX4/T) R516, R517.

#### ● UNBALANCED RAIL VOLTAGES:

1. Shorted Q503, Q504.
2. Defective U501, U502.
3. Open R506, R505.
4. Open D514, D511. (CX4IT) D503, D506.

## CX Series Voltage Conversion

PARTS REQUIRED FOR 120V OPERATION FROM 230V

(Please refer to CX Series wiring diagrams in this manual for AC Voltage drawings)

### Model CX4/4T

Part Number	Description	Qty	Reference
LB-00005200	LABEL, cUL APPROVAL	1	CHASSIS
PS-000038-00	SERIAL LABEL	1	CHASSIS
WC-003070-00	AC POWER CORD, EX/MX SERIES	1	CHASSIS

NOTE:

1. Replace the CE label with a cUL label
2. Replace the serial label with appropriate VOLTAGE and CURRENT listings.

### Model CX6/6T

Part Number	Description	Qty	Reference
LB-000052-00	LABEL, cUL APPROVAL	1	CHASSIS
MS-00005-MS	20A, 250 V FUSE	1	F901
PS-000038-00	SERIAL LABEL	1	CHASSIS
RE-000170-NR	THERMISTOR NTC 30A	1	R901
WC-003070-00	AC POWER CORD, EX/MX SERIES	1	CHASSIS

NOTE:

1. Replace the CE label with a cUL label
2. Replace the serial label with appropriate VOLTAGE and CURRENT listings.
3. Remove the FUSE label on the AC PCB

### Model CX12/12T

Part Number	Description	Qty	Reference
LB000052-00	LABEL, cUL APPROVAL	1	CHASSIS
LB-16022640	LABEL, FUSE, 30A 125V	1	AC PCB
MS-000055-MS	30A, 125V FUSE	1	F901
PS-000038-00	SERIAL LABEL	1	CHASSIS
RE-000170-NR	THERMISTOR NTC 30A	1	R901
WC-003070-00	AC POWER CORD, EX/MX SERIES	1	CHASSIS

NOTE:

1. Replace the CE label with a cUL label
2. Replace the serial label with appropriate VOLTAGE and CURRENT listings.
3. Place a 30A FUSE label on the AC PCB, overlapped the 15A fuse label.



## CX Series Voltage Conversion

PARTS REQUIRED FOR 230 V OPERATION FROM 120V

(Please refer to CX Series wiring diagrams in this manual for AC Voltage drawings)

### Model CX4/4T

Part Number	Description	Qty	Reference
LB-000099-00	LABEL, CE LISTING 95	1	CHASSIS
PS-000038-00	SERIAL LABEL	1	CHASSIS
WC-00 3069-00	AC POWER CORD, EXPORT	1	CHASSIS

NOTE:

- 1, Replace the cUL label with a CE label on the rear panel.
- 2, Replace the serial label with appropriate VOLTAGE and CURRENT listing label.

### Model CX6/6T

Part Number	Description	Qty	Reference
LB-00 0099-00	LABEL, CE LISTING 95	1	CHASSIS
LB-1 60226-02	LABEL FUSE, 12A 250V	1	AC PCB
MS-1 20250-FU	12A 250V, FUSE	1	F901
PS-000038-00	SERIAL LABEL	1	CHASSIS
RE- 000160-NT	THERMISTOR NTC 15A	1	R901
WC- 00 3069- 00	AC POWER CORD, EXPORT	1	CHASSIS

NOTE:

- 1, Replace the cUL label with a CE label on the rear panel.
2. Replace the serial label with appropriate VOLTAGE and CURRENT listing label.
- 3, Place a 12A FUSE label on the AC PCB, overlapped the 20A fuse label.

### Model CX12/12T

Part Number	Description	Qty	Reference
LB-000099-00	LABEL, CE LISTING 95	1	CHASSIS
LB-160226-01	LABEL FUSE, 15A 250V	1	AC PCB
MS-1 50250-FU	15A 250V FUSE	1	F901
PS-00 0038- 00	SERIAL LABEL	1	CHASSIS
RE-000160-NT	THERMISTOR NTC 15A	1	R901
WC-00306940	AC POWER CORD, EXPORT	1	CHASSIS

NOTE:

- 1, Replace the cUL label with a CE label on the rear panel.
- 2, Replace the serial label with appropriate VOLTAGE and CURRENT listing label.
- 3, Place a 15A FUSE label on the AC PCB, overlapped the 30A fuse label.

## CX Series Voltage Conversion

PARTS REQUIRED FOR 1 OOV OPERATION FROM 120V

(Please refer to CX Series wiring diagrams in this manual for AC Voltage drawings)

### Model CX4/4T

Part Number	Description	Qty	Reference
PS-000038x10	SERIAL LABEL	1	CHASSIS

NOTE:

1. Remove the cUL label on the rear panel
2. Replace the serial label with appropriate VOLTAGE and CURRENT listing label.

### Model CX6/6T

Part Number	Description	Qty	Reference
PS-000038-00	SERIAL LABEL	1	CHASSIS

NOTE:

1. Remove the cUL label on the rear panel
2. Replace the serial label with appropriate VOLTAGE and CURRENT listing label.

### Model CX12/12T

Part Number	Description	Qty	Reference
PS-000038-00	SERIAL LABEL	1	CHASSIS

NOTE:

1. Remove the cUL label on the rear panel
2. Replace the serial label with appropriate VOLTAGE and CURRENT listing label.

## CX Series Voltage Conversion

PARTS REQUIRED FOR 120V OPERATION FROM 1 OOV

(Please refer to CX Series wiring diagrams in this manual for AC Voltage drawings)

### Model CX4/4T

Part Number	Description	Qty	Reference
LB-000052-00	LABEL, cUL APPROVAL	1	CHASSIS
	SERIAL LABEL	1	CHASSIS

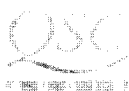
NOTE:

1. Place a cUL label on the rear panel, next to the AC cord.
2. Replace the serial label with appropriate VOLTAGE and CURRENT listings.

### Model CX6/6T

Part Number	Description	Qty	Reference
LB-000052-00	LABEL, cUL APPROVAL	1	CHASSIS
PS-000038-00	SERIAL LABEL	1	CHASSIS

NOTE:



1. Place a cUL label on the rear panel, next to the AC cord.
2. Replace the serial label with appropriate VOLTAGE and CURRENT listings.

### Model CX12/12T

Part Number	Description	Qty	Reference
LB-000052-00	LABEL, cUL APPROVAL	1	CHASSIS
PS-000038-00	SERIAL LABEL	1	CHASSIS

NOTE:

1. Place a cUL label on the rear panel, next to the AC cord.
2. Replace the serial label with appropriate VOLTAGE and CURRENT listings.

## CX Series Voltage Conversion

PARTS REQUIRED FOR 100V OPERATION FROM 230V

(Please refer to CX Series wiring diagrams in this manual for AC Voltage drawings)

### Model CX4/4T

Part Number	Description	Qty	Reference
PS-000038-00	SERIAL LABEL	1	CHASSIS
WC-003070-00	AC POWER CORD, EX/MX SERIES	1	CHASSIS

NOTE:

1. Remove the CE label on the rear panel.
2. Replace the serial label with an appropriate VOLTAGE and CURRENT listing label.

### Model CX6/6T

Part Number	Description	Qty	Reference
MS-000050-MS	20A, 250V FUSE	1	F901
PS-000038-00	SERIAL LABEL	1	CHASSIS
RE-000170-NR	THERMISTOR NTC 30A	1	R901
WC-00307040	AC POWER CORD, EX/MX SERIES	1	CHASSIS

NOTE:

1. Remove the CE label on the rear panel.
2. Replace the serial label with an appropriate VOLTAGE and CURRENT listing label.
3. Remove the FUSE label on the AC PCB

### Model CX12/12T

Pan Number	Description	Qty	Reference
MS-000055-MS	30A, 125V FUSE	1	F901
LB-1 60226-00	LABEL, FUSE, 30A 125V	1	AC PCB
PS-000038-00	SERIAL LABEL	1	N/A
RE-000170-NR	THERMISTOR NTC 30A	1	R901
WC-003070-00	AC POWER CORD, EX/MX SERIES	1	CHASSIS

NOTE:

1. Remove the CE label on the rear panel.

- 2, Replace the serial label with an appropriate VOLTAGE and CURRENT listing label.
3. Place a 30A FUSE label on the AC PCB, overlapped the 15A fuse label

## CX Series Voltage Conversion

PARTS REQUIRED FOR 230V OPERATION FROM 100V

(Please refer to CX Series wiring diagrams in this manual for AC Voltage drawings)

### Model CX4/4T

Part Number	Description	Qty	Reference
LB-000099-00	LABEL, CE LISTING 95	1	CHASSIS
PS-000038-00	SERIAL LABEL	1	CHASSIS
WC-003069-00	AC POWER CORD, EXPORT	1	CHASSIS

NOTE:

- 1, Place a CE label on the rear panel, next to the AC cord.
- 2, Replace the serial label with appropriate VOLTAGE and CURRENT listing label.

### Model CX6/6T

Part Number	Description	Qty	Reference
LB-00009940	LABEL, CE LISTING 95	1	CHASSIS
LB-16022642	LABEL FUSE, 12A 250V	1	AC PCB
MS-120250-FU	12A 250V, FUSE	1	F901
PS-000038-00	SERIAL LABEL	1	CHASSIS
RE-000160-NT	THERMISTOR NTC 15A	1	R901
WC-003069-00	AC POWER CORD, EXPORT	1	CHASSIS

NOTE:

- 1, Place a CE label on the rear panel, next to the AC cord.
2. Replace the serial label with appropriate VOLTAGE and CURRENT listing label.
- 3, Place a 12A FUSE label on the AC PCB, overlapped the 20A fuse label.

### Model CX12/12T

Part Number	Description	Qty	Reference
LB-000099-00	LABEL, CE LISTING 95	1	CHASSIS
LB-16022641	LABEL FUSE, 15A 250V	1	AC PCB
MS-150250-FU	15A 250V FUSE	1	F901
PS-000038-00	SERIAL LABEL	1	CHASSIS
RE-000160-NT	THERMISTOR NTC 15A	1	R901
WC-003069-00	AC POWER CORD, EXPORT	1	CHASSIS

NOTE:

1. Place a CE label on the rear panel, next to the AC cord.
2. Replace the serial label with appropriate VOLTAGE and CURRENT listing label.
- 3, Place a 15A FUSE label on the AC PCB, overlapped the 30A fuse label.

## CX4/4T Input Assembly

WP-000047-00 CX4/4T INPUT PCB ASSY

Part Number	Description	Reference
CA-168001-10	CAP CER 680PF 10% 1 OOV	C30-33
CO-000044-CO	HEADER PCB 2 X 7 .1 X .1 BOX	J31
CO-000101-00	CONN HEADER 7-PIN EURO RT BLK J30	
HW-040040-PS	STUD PEM 4-40 X 1/4"E	
HW-060001-00	BRACKET,#6-32, THD, RT ANGLE	
NW-040400-06	NUT KEPS 4-40	
PC-000047-00	CX4/4T INPUT PCB	REFERENCE
PT-3 10002-00	RES VAR 1 T 1 OK 20% 0.2W W/DET	R30,31
RE-.56005-BC	RES CF 5,6 5% 1/4W	R32,33
WC-000002-1 0	JUMPER 22GA BARE SOLID	W56-59,64

## CX 6/6T & CX12/12T Input Assembly

WP-000943-00 PCB ASSY, INPUT CX

Part Number	Description	Reference
CA-047001 -10	CAP CER 47PF 10% 100V NPO	C304,305, C404,405
CA-147001-10	CAP CER 470PF 10% 100V	C301,302, C401,402
CA-41 0004-10	CAP CER .1 UF 20%50V	C308,309, C34,35, C408,409
CA-722002-1 0	CAP LYTIC RL 220UF 20% 25V	C31
CO-000049-CO	HEADER 1 X 5 VERT	J33
CO-000056-CO	HDR LATCHING BOX 16-PIN	J32
CO-000 10 1-00	CONN HEADER 7-PIN EURO RT BLK J31	
HW-040040-PS	STUD PEM 4-40 X 1/4"E	
HW-060001-00	BRACKET,#6-32, THD, RT ANGLE	
IC-000032-00	IC LIN DUAL OP AMP MC33178P	U31,301, U401
LB-0001 12-00	LABEL, INPUT, CX SERIES	
NW-040400-06	NUT KEPS 4-40	
NW-06041 0-ET	#6 EXTERNAL TOOTH LOCKWASHER	
PT-3 10002-00	RES VAR 1 T 1 OK 20% 0.2W W/DET	R302,402
QD-000062-10	XISTOR NPN TO-92 40V 0.2A1.5W	Q31,33
QD-000063-10	XISTOR PNP TO-92 40V 0.2A1.5W	Q32
QD-004 148-DX	DIODE SWITCH DO35 75V75MA	D31-D35
RE-033201-BM	RES MF 332 1% 1/4W	R46
RE-1 10001-AM	RES MF 1.00K 1% 1/8W	R304,44,45
RE-1 15005-BC	RES CF 1.5K 5% 1/4W	R40,43
RE-147501-AM	RES MF 4.75K 1% 1/8	R303,403
RE-210001-BM	RES MF 1 0.0K 1% 1/4W	R34,35,41, R42
RE-215001-BM	RES MF 15.0K 1% 1/4W	R38
RE-3 10005-BC	RES CF 1 00K 5% 1/4W	R31,32,37
RE-339005-BC	RES CF 390K 5% 1/4W	R36,39,33
RN-2 10002-BM	RES NTWK 8-PIN SIP 1 OK 1% 4R	RN301,401
SC-06004 1 -PP	6-32 X 1/4" TYPE I PH PAN, BLK	
SW-000045-00	SWITCH SLIDE 4P3TRT PC MTG	SW31
WC-000002-1 0	JUMPER 22GA BARE SOLID	W301-304, W401-404

## CX 6/6T & CX12/12T AC PC Board Assm.

WP-000945-00 AC PCB ASSY, CX

Part Number	Description	Reference
CA-368250.AS	CAP SURGE .068UF 20% 250VAC	C901
CA-822035-AE	CAP LYTICRL 2200UF 20% 35V	C902
CO-000085-00	TERMINAL BLOCK, 2 POS, EURO	J913
HW-000003-FC	SNAP-IN CLIP FUSE	
PC-000945-00	PCB, AC, WITH DC FAN	
QD-000045-00	DIODE BRIDGE RECT DIP 200V 1A	BR901
RE-000015-00	POLYSWITCH 0.15 OHM 1 .1A1.5W	R902

## CX4 Display Board Assembly

WP-000048-00 CX 4 DISPLAY ASSY

Part Number	Description	Reference
CO-000044-CO	HEADER PCB 2 X 7 .1X .1BOX	J1
PC-000048-00	CX4/4T MAIN DISPLAY PCB	REFERENCE
PL-000060-00	SPACER LED T-I 0.42"L	
QD-000052-00	LED GRN T-I	LD2,4
QD-000054-00	LED RED T-I	LD1,3

## CX6 Display Board Assembly

WP-000944-00 CX 6 DISPLAY ASSY

Part Number	Description	Reference
CA-047001-10	CAP CER 47PF 10% 100V NPO	C101,201
CA-233001-10	CAP MYLAR .0033UF 10% 100V	C1 02,202
CA-41 5002-10	CAP MYLAR .15 5% 50V	C103-105, C203-205
CA-647003-1 0	CAP LYTICRL NP 47UF 10% 1 0V	C106,206
CA-733025.AE	330UF,25V,ELEC. RADIAL, 20%	C1,2
CO-000008-IC	8 PIN IC SOCKET	REF:U101
CO-000044-CO	HEADER PCB 2 X 7 .1X .1 BOX	J101,201
CO-000048-CO	HEADER 2 X 8 VERT	J10
PL-000060-00	SPACER LED T-I 0.42"L	LD102-104, LD201-204 REF:LD101,
QD-000052-00	LED GRN T-I	LD101,201
QD-000053-00	LED YEL T-I	LD102,202
QD-000054-00	LED RED T-I	LD103,104, LD203,204
QD-004148-DX	DIODE SWITCH D035 75V 75MA	D101-104, D201-204
QD-004744-ZA	DIODE ZNR 15V 5% 1 W 1N4744A	D1,2
RE-064901-BM	RES MF 649 1% 1/4W	R103,203
RE-168101-BM	RES MF 6.81K 1% 1/4W	R105,205
RE-175005-EM	RES MOFP 7.5K 5% 2W	R101,201
RE-210001-10	RES MF 10.0K 1% 1/3W	R102,202
RE-217401-BM	RES MF 17.4K 1% 1/4W	R 106,206
RE-312101-BM	RES MF 121K 1% 1/4W	R104,204
WC-000002-1 0	JUMPER 22GA BARE SOLID	W101,201

## CX6T Display Board Assembly

WP-000944-01 CX 6T DISPLAY ASSY

Part Number	Description	Reference
CA-047001-10	CAP CER 47PF 10% 1 00V NPO	C101,201
CA-233001-10	CAP MYLAR .0033UF 10% 1 00V	C1 02,202
CA-4 15002-10	CAP MYLAR .15 5% 50V	C1 03-105, C203-205
CA-647003-1 0	CAP LYTIC RL NP 47UF 10% 1 0V	C1 06,206
CA-733025.AE	330UF,25V,ELEC. RADIAL, 20%	C1,2
CO-000008-IC	8 PIN IC SOCKET	REF:U101
CO-000044-CO	HEADER PCB 2 X 7 .1 X .1 BOX	J101,201
CO-000048-CO	HEADER 2 X 8 VERT	J10
IC-000032-00	ICLIN DUAL OP AMP MC331 78P	U101
PC-000944-00	DISPLAY PCB, CX SERIES	
PL-905385-SP	SPACER RNDNYL#60.385"L BLK	LD102-104, LD201-204 REF: LD101
QD-000052-00	LED GRN T-I	LD101,201
QD-000053-00	LED YEL T-I	LD102,202
QD-000054-00	LED RED T-I	LD103,104, LD203,204
QD-004148-DX	DIODE SWITCH D035 75V 75MA	D101-104, D201-204
QD-004744-ZA	DIODE ZNR 15V 5% 1 W 1 N4744A	D1,2
RE-064901-BM	RES MF 649 1% 1/4W	R103,203
RE-175005-EM	RES MOFP 7.5K 5% 2W	R101,201
RE-210001-10	RES MF 1 0.0K 1% 1/3W	R102,202, R105,205
RE-253601-BM	RES MF 53.6K 1% 1/4W	R104,204
WC-000002-1 0	JUMPER 22GA BARE SOLID	W1 01,201

## CX12 Display Board Assembly

WP-000944-02 CX 12 DISPLAY PCB ASSY

Part Number	Description	Reference
CA-047001-1 0	CAP CER 47PF 10% 100V NPO	CI 01,201
CA-233001-10	CAP MYLAR .0033UF 10% 100V	CI 02,202
CA-415002-10	CAP MYLAR .15 5% 50V	CI 03-105, C203-205
CA-647003-1 0	CAP LYTICRL NP 47UF 10% 1 OV	CI 06,206
CA-733025.AE	330UF,25V,ELEC. RADIAL, 20%	CI ,2
CO-000008-IC	8 PIN IC SOCKET	REF:U101
CO-000044-CO	HEADER PCB 2 X 7 .1 X .1 BOX	J101,201
CO-000048-CO	HEADER 2 X 8 VERT	J10
PL-000060-00	SPACER LED T-I 0.42"L	LD102-204, LD201-204 REF:LD101,
QD-000052-00	LED GRN T-I	LD101,201
QD-000053-00	LED YEL T-I	LD102,202
QD-000054-00	LED RED T-I	LD103,104, LD203,204
CID-004148-DX	DIODE SWITCH DO35 75V 75MA	D101-104, D201-204
QD-004744-ZA	DIODE ZNR 15V 5% 1 W 1 N4744A	D1,2
RE-048701-BM	RES MF 487 1% 1/4W	R 103,203
RE-168101-BM	RES MF 6.81K 1% 1/4W	R 105,205
RE-182005-EM	RES MOFP 8.2K 5% 2W	R101,201
RE-210001-10	RES MF 10.0K 1% 1/3W	R102,202
RE-217401-BM	RES MF 17.4K 1% 1/4W	R106,206
RE-312101-BM	RES MF 121K 1% 1/4W	R104,204
WC-000002-1 0	JUMPER 22GA BARE SOLID	W101,201

## CX12T Display Board Assembly

WP-000944-03 CX 12T DISPLAY PCB ASSY

Part Number	Description	Reference
CA-047001-10	CAP CER 47PF 10% 100V NPO	C101,201
CA-233001-10	CAP MYLAR .0033UF 10% 1 OOV	C102,202
CA-4 15002-10	CAP MYLAR .15 5% 50V	C103-105, C203-205
CA-647003-1 0	CAP LYTICRL NP 47UF 10% 1 OV	CI 06,206
CA-733025.AE	330UF,25V,ELEC. RADIAL, 20%	C1,2
CO-000008-IC	8 PIN IC SOCKET	REF:U101
CO-000044-CO	HEADER PCB 2 X 7 .1 X .1 BOX	J101,201
CO-000048-CO	HEADER 2 X 8 VERT	J10
IC-000032-00	ICLIN DUAL OP AMP MC331 78P	U101
PC-000944-00	DISPLAY PCB, CX SERIES	
PL-905385-SP	SPACER RND NYL#60.385"L BLK	LD102-104, LD201-204 REF: LD101
QD-000052-00	LED GRN T-I	LD101,201
QD-000053-00	LED YEL T-I	LD102,202
QD-000054-00	LED RED T-I	LD103,104, LD203,204
CID-004148-DX	DIODE SWITCH DO35 75V 75MA	D101-104, D201-204
QD-004744-ZA	DIODE ZNR 15V 5% 1 W 1 N4744A	D1,2
RE-048701-BM	RES MF 487 1% 1/4W	R103,203
RE-182005-EM	RES MOFP 8.2K 5% 2W	R101,201
RE-210001-10	RES MF 10.0K 1% 1/3W	R102,202, R 105,205
RE-253601-BM	RES MF 53.6K 1% 1/4W	R104,204
WC-000002-1 0	JUMPER 22GA BARE SOLID	W101,201

## CX4 / 4T Main Board Assembly

WP-000046-00 MAIN PCB ASSY CX4 /CX4T

Part Number	Description	Reference
CA-047001-10	CAP CER 47PF 10% 100V NPO	C500,501 C516,600, C601,616
CA-222002-1 0	.0022UF,200V,10%,MYLAR	C505,508, C605,608
CA-322001-1 0	CAP MYLAR .022UF 10% 100V	C509,510, C609,610
CA-368001-1 0	CAP MYLAR .068UF 5% 1 OOV	C515,615
CA-368250.AS	CAP SURGE .068UF 20% 250VAC	C50
CA-422002-10	CAP MPOLY 0.22UF 10% 250V	C517,617
CA-447004.1 0	CAP MET POLY .47UF 5% 1 OOV	C503,504, C603,604
CA-547002-1 0	4.7UF,16V,20% RADIAL NON-POLAR	C502,602
CA-547 160-BE	CAP LYTIC RL 4.7UF 10% 160V	C52
CA-647002-1 0	CAP LYTIC RL 47UF 20% 50V	C51
CA-722002-1 0	CAP LYTIC RL 220UF 20% 25V	C506,507, C606,607
CA-747002-00	CAP LTICRL 470UF 20% 35V	c53
CA-822 1 00-BE	CAP LYTIC RL 2200UF 20% 100V	C511-514 C611-614
CH-000622-BX	MX-700 HEAT SINK FAB	
CH-000624-AX	CLAMP TO-3 PL 6 FINGER	
CO-000008-IC	8 PIN IC SOCKET	REF:U501, U601
CO-000033-CO	4 PIN HEADER,METER	J61
CO-000044-CO	HEADER PCB 2 X 7 .1X.1 BOX	J62,63
CO-641 119-AH	8 PIN .156"/C HEADER	J50
HW-000007-HW	5MM FUSE CLIP	F600 REF:F500,
IC-000021-00	IC LIN DUAL OP AMP 5532	U501,601
IC-000043-00	IC LIN OPTO-ISO 4N29	U50
MS-000048-HS	HEAT SINK, ISOL TO-220	Q504,603, Q604 REF:Q503, F500,600
MS-10.250-FU	FUSE 5X20MM 10A 125V	REFERENCE
PC-000046-00	CX 4/4T MAIN PCB	
PL-903125-SP	SPACER,ROUND,NYLON,0.125"L	L600,R532, R632 REF:L500, REF:LD50
PL-905156-SP	SPACER,ROUND,NYLON,#6,0.155"L	R512,612
PT-1 1 0000-AT	RES VAR IT 100 20% 0.15W CARB	R514,515
PT-220000-AT	RES VAR IT 2K 20% 0.15W CARB	R614,615
QD-000004-TX	XISTOR NPN TO-92+60V0.5A1W	Q51
QD-000018-QD	XISTOR NPN TO-220 200V 1 A	Q52,503, Q603
QD-000019-QD	XISTOR PNP TO-220 200V 1A	Q504,604
QD-000045-00	DIODE BRIDGE RECT DIP 200V1A	BR50,500, BR600
QD-000056-10	XISTOR PNP TO-92 60V 0.5A	Q50
QD-00003.9-ZT	DIODE ZNR 3.9V TESTED	D503,506, D603,606
QD-001302-PN	XISTOR PNP TO-3P 200V 15A	Q500-502, Q600-602
QD-001340-LR	LED RED T-I 3/4 VOLTAGE REF	LD50
QD-003281-NP	XISTOR NPN TO-3P 200V 15A	Q505-507, Q605-607
QD-004004-DX	DIODE RECT DO41 400V 1 A	D50,52-55, D504,604 D510,512, D610,612,
QD-004148-DX	DIODE SWITCH DO35 75V 75MA	D507-509, D51 1,607, D608,609,

## CX4 / 4T Main Board Assembly (Cont'd)

WP-000046-00 MAIN PCB ASSY CX4 /CX4T

Part Number	Description	Reference
QD-004744-ZA	DIODE ZNR 15V 5% 1 W 1N4744A	D502,601, D51,501, D602
QD-004934-DX	DIODE RECT DO41 FAST 100V1A	D505,605
QD-400400-BX	DIODE BRIDGE RECT 400V 40A	BR501,601
RE-.02205-FW	RES WW 0.22 10% 3W	R505-507, R528-530, R605-607 R628-630
RE-.56005-EM	RES MOFP 5.6 5% 2W	R519,619
RE-.68005-DM	RES MOFP 6.0 5% 1 W	R516,517, R616,617
RE-000006-PT	RES PTC 60C0.1 K MAX COLD	R59
RE-000009-PT	RES PTC 90C 0.1 K MAX COLD	R56,57
RE-000015-00	POLYSWITCH0.15 OHM 1 .1A1.5WR58	
RE-000050-NR	THERMISTOR NTC 50 OHM	R532,632
RE-001005-EM	RES MOFP 10 5% 2W	R520,620
RE-002205-DM	RES MOFP 22 5% 1W	R504,527, R604,627
RE-002321-10	RES 23.2 1/4W 1% MF	R502,602
RE-010005-BC	RES CF 100 5% 1/4W	R511,611
RE-012005-EM	RES MOFP 120 5% 2W	R63
RE-045010-HW	RES WW 450 10% 5W	R518,618
RE-053601-BM	RES MF 536 1% 1/4W	R523,623
RE-082005-BC	RES CF 620 5% 1/4W	R500,513, R525,600, R613,625
RE-118201-AM	1.82K1/8W 1% METAL FILM	R62
RE-120005-EM	RES MOFP 2K 5% 2W	R503,526, R603,626
RE-134801-BM	RES MF 3.48K 1% 1/4W	R60
RE-156201-BM	RES MF 5.62K 1% 1/4W	R509,609
RE-168005-BC	RES CF 6.8K 5% 1/4W	R53,54
RE-210001-BM	RES MF 1 0.OK 1% 1/4W	R510,524, R610,624
RE-210005-EM	RES MOFP 1 OK 5% 2W	R50
RE-213001-BM	RES MF 13.0K 1% 1/4W	R531,631, R508,608
RE-247005-BC	RES CF 47K 5% 1/4W	R55
RE-297601-BM	RES MF 97.6K 1% 1/4W	R501,601
RE-310005-BC	RES CF 1 0OK 5% 1/4W	R52
RE-315401-BM	RES MF 154K 1% 1/4W	R521,522, R62 1,622
RE-318005-BC	RES CF 180K 5% 1/4W	R51
RE-333201-10	RES MF 332K 1% 1/3W	R61
RE-390901-10	RES MF 909K 1% 1/4W	R64
RN-220001-10	RES NTWK 12 PIN SIP 20K 2% 6R	RN500,600
SC-081 101-SP	#8-18 X 5/8", TYPE 1 P/P BLACK	
WC-0.6022-JW	.6" JUMPER, WHITE, 22 GA, SLD 1	W20,31,48
WC-0.9022-JW	.9" JUMPER, WHITE, 22 GA, SLD	W24
WC-000002-10	JUMPER 22GA BARE SOLID 1	W1-19, W21-23, W25-30, W32-44, W46,47,49, W50,53, W500,501, W600 W61-63,
WC-001 026-TQ	QSC WIRE 1026, 4.25", WHITE 1	EI
WC-001102-SQ	INSUL. SLEEVE QSC 1102,.6",CLR 1	REF:R59
WC-1.5022-JW	1.5" JUMPER, WHITE, 22 GA, SLD 1	W45,60
XF-200016-CR	INDUCTOR 2UH 18AWGVERT MNT L500,600	



## CX6 / CX6T Main Board Assembly

WP-000113-00 MAIN PCB ASSY CX6/CX6T

Part Number	Description	Reference
CA-01 8001-10	CAP SM 18PF 5% 500V	C519,619
CA-027001-10	CAP SM 27PF 10% 500V	C528,628
CA-047001 -10	CAP CER 47PF 10% 1 OOV NPO	C521,621, C522,622
CA-122001-10	CAP CER 220PF 10% 1 OOV	C527,627
CA-222002-10	.0022UF,200V,10%,MYLAR	C523,623
CA-268001-1 0	CAP MYLAR .0068UF 5% 1 OOV	C529,629
CA-31 0001-10	CAP MYLAR .01 UF 10% 1 OOV	C508,608
CA-322001-10	CAP MYLAR .022UF 10% 1 OOV	C524,624
CA-347400.BP	CAP MYLAR .047UF 10% 400V	C530-533, C630-633
CA-41 0002-10	CAP MYLAR .1UF 5% 1 OOV	C513,613, C514,614 C518,618,
CA-61 0002-10	10UF,35V,20%,RADIAL ELECT	C515,615
CA-647001-10	CAP LYTIC RL 47UF 10% 10V NP	C520,620
CA-647002-10	CAP LYTIC RL 47UF 20% 50V	C516,616
CA-722001-1 0	CAP LYTIC RL 220UF 20% 1 OV NP	C517,617
CA-722002-10	CAP LYTIC RL 220UF 20% 25V	C525,625, C526,626
CA-882080.BE	CAP LYTIC RL 8200UF 20% 80V	C511,611, C512,612
CH-000624-AX	CLAMP TO-3 PL 6 FINGER	ETC, Q605 ETC. REF: Q505
CH-400003-00	CLAMP TO-220 6 FINGER	ETC, Q601 ETC. REF: Q501
CH-410008-00	EX/MX 2 SPACE HEATSINK	
CO-000008-IC	8 PIN IC SOCKET	REF: U503 U603
CO-000045-CO	HEADER PCB ,156 4-POS	J51
CO-000047~CO	HEADER PCB 2 X 3 AMP-TYPE	J501,601
		J52
CO-000055-CO	HDR LATCHING BOX 14-PIN	J503,603
CO-000074-00	HEADER POLARIZED 8-POS	J502 2 PL J602 2 PL
HW-000007-HW5MM	FUSE CLIP	F503,F601, F603 REF:F501, U503,603
IC-000021-00	ICLIN DUAL OP AMP 5532	U503,603
MS-15.125-MS	15A125V 5MM X 20MM FUSE	F501,F503, F601,F603
PL-000039-PL	TO-220 X 6 INSULATOR	ETC, Q601 ETC. REF: Q501
PL-903125-SP	SPACER,ROUND,NYLON,0.125"L	R511 2PL R611 2PL
PL-905156-SP	SPACER,ROUND,NYLON,#6,0.155"L	L501 2 PL L601 2 PL LD601 REF: LD501
PT-1 1 0000-AT	RES VAR IT 100 20% 0.15WCARB	VR501,601

## CX6 / CX6T Main Board Assembly (Cont'd)

WP-000113-00 MAIN PCB ASSY CX6/CX6T

Part Number	Description	Reference
PT-220000-AT	RES VAR IT 2K 20% 0.15W CARB	VR502,602 VR503,603
QD-000018-QD	XISTOR NPN TO-220 200VIA	Q502,602
QD-000019-QD	XISTOR PNP TO-220 200V1A	Q501,601
QD-000040-00	DIODE BRIDGE RECT 400V 40A	BR501,601
QD-000055-10	XISTOR NPN TO-92 80V 0.25A	Q511,611, Q513,613
QD-000056-10	XISTOR PNP TO-92 60V 0.5A	Q512,612
QD-0004.7-ZT	DIODE ZNR 4.7V TESTED	D511,611 D514,614
QD-0007.5-ZT	DIODE ZNR 7.5V TESTED	D517,617
QD-001302-PN	XISTOR PNP TO-3P 200V15A	Q508-Q510 Q608-Q610
QD-001340-LR	LED RED T-1 3/4 VOLTAGE REF	LD501,601
QD-003281-NP	XISTOR NPN TO-3P 200V15A	Q505-507 Q605-607
QD-004004-DX	DIODE RECT DO41 400V 1A	D515,516, D518,615, D616,618
QD-004744-ZA	DIODE ZNR 15V 5% 1 W 1 N4744A	D521,621, D522,622
QD-004753-ZT	DIODE ZNR 36V 5% 1 W 1 N4753A	D525,625
QD-004934-DX	DIODE RECT DO41 FAST 100V1A	D507,607 D508,608 D519,619 D520,620 D523,623 D524,624
QD-004934-VP	DIODE RECT DO4 1 FAST 1 OOV 1 AVFD	D505,605 D506,606
QD-005402-DX	DIODE RECT DO27 200V 3A	D512,612 D513,613
QD-1.5200-BX	DIODE BRIDGE RECT 200V1.5A	BR503,603
RE-.02205-FW	RES WW 0.22 10% 3W	R513-R515 R519-R521 R613-R615 R619-R621
RE-.33005-DM	RES MOFP 3.3 5% 1W	R501,502, R543,601, R602,643
RE-.56005-EM	RES MOFP 5.6 5% 2W	R525,625
RE-000009-VP	RES PTC 90C 0.1 K MAX COLD VP	R516,616
RE-000050-NR	THERMISTOR NTC 50 OHM	R511,611
RE-001005-EM	RES MOFP 10 5% 2W	R523,623 R524,624 R526,626 R527,627
RE-002205-DM	RES MOFP 22 5% 1 W	R517,617, R518,618
RE-004705-BC	RES CF 47 5% 1/4W	R544,644
RE-015005-BC	RES CF 150 5% 1/4W	R547,647
RE-027005-BC	RES CF 270 5% 1/4W	R533,633
RE-033005-DM	RES MOFP 330 5% 1W	R531,631
RE-043201-BM	RES MF 432 1% 1/4W	R541,641
RE-045010-HW	RES WW 450 10% 5W	R548,648

# CX6 /CX6T Main Board Assembly (Cont'd)

CX Series

WP-000113-00 MAINPCBASSY CX6 /CX6T

Part Number	Description	Reference
RE-110005-BC	RES CF 1 K 5% 1/4W	R512,612 R522,622 R545,645
RE-115005-BC	RES CF 1.5K 5% 1/4W	R540,640
RE-125005-HW	SOB-2.5K OHM 5W WIREWOUND 10'	R535,635, R536,636, R539,639, R546,646
RE-156005-EM	RES MOFP 5.6K 5% 2W	R534,634, R537,637
RE-210005-EM	RES MOFP 1 OK 5% 2W	R532,632
RE-212005-BC	RES CF 12K 5% 1/4W	R529,629
RE-221501-CM	RES MF 21.5K 1% 1/2W	R538,638
RE-275001-BM	RES MF 75.0K 1% 1/4W	R542,642
RE-282005-BC	RES CF 82K 5% 1/4W	R549,649
RE-333005-BC	RES CF 330K 5% 1/4W	R528,628, R530,630
RN-122002-BM	RES NTWK 8-PIN SIP 2.2K 2% 4R	RN503,603
RN-210002-BM	RES NTWK 8-PIN SIP 1 OK 1% 4R	RN502,602
RN-310002-BM	RES NTWK 8-PIN SIP 1 OK 2% 4R	RN501,601
SC-062050.PP	#6 X 5/16" "B" P/P ZINC	
SC-081101-SP	#8-18 X 5/8", TYPE 1 P/P BLACK	
SW-000029-SW	RELAY, SPKRPROTECT,SPDT,24VDK	501,601
SW-000550-00	55 C THERMAL CUT-IN 25 DEG.ANG	
WC-0.1020-JW	WIRE JMPR SO 0.1"	Q603,504, Q604 REF:Q503,
WC-0.2020-JW	.2",20GA, SOLID, NO SLEEVE	D601,502, D602 REF:D501,
WC-0.5018-JW	.5" JUMPER, WHT., 18 GA, SOLID	W1
WC-0.6022-JW	.6" JUMPER, WHITE, 22 GA, SLD	W7-9
WC-1.2518-JW	1.25" JUMPER, WHITE 18 GA, SLD	W6,10,11
WC-2.0018-JW	2.00",18GA, JUMPER	W2-5
XF-200014-CR	INDUCTOR 2UH 14AWGVERT MNT	L501,601

# CX12 / CX12T Main Board Assembly

WP-000123-00 MAIN PCB ASSY CX12 ICX12T

Part Number	Description	Reference	Part Number	Description	Reference
PL-905156-SP	SPACER,ROUND,NYLON,#6,0.155"L	L501 2 PL	PT-11 0000-AT	RES VAR IT 100 20% 0.15W CARB	VR501,601
		L601 2 PL	PT-220000-AT	RES VAR IT 2K 20% 0.15W CARB	VR502,602
		LD601	QD-000018-QD	XISTOR NPN TO-220 200V 1A	Q502,602
		REF: LD501	QD-000019-QD	XISTOR PNP TO-220 200V 1A	Q501,601
CA-010001-10	CAP CER10PF 10% 100V	C528,628	QD-00003 1 -QD	FET NCHAN TO220 60V 50A	Q503,603
CA-018001-10	CAP SM 18PF 5% 500V	C519,619	QD-000040-00	DIODE BRIDGE RECT 400V 40A	Q504,604
CA-047001-10	CAP CER 47PF 10% 1 OOV NPO	C521,621, C522,622	QD-000055-10	XISTOR NPN TO-92 80V 0.25A	Q511,611, Q513,613
CA-122001-10	CAP CER 220PF 10% 1 OOV	C527,627	QD-000056-10	XISTOR PNP TO-92 60V0.5A	Q512,612
CA-2 10002-10	CAP MYLAR .001UF 10% 100V	C503,603, C506,606	QD-0004.7-ZT	DIODE ZNR 4.7V TESTED	D511,611 D514,614
CA-222002-1 0	.0022UF,200V,10%,MYLAR	C523,623	QD-0007.5-ZT	DIODE ZNR 7.5V TESTED	D517,617
CA-268001 -10	CAP MYLAR .0068UF 5% 1 OOV	C529,629	QD-00081 0-DX	DIODE RECT TO220 FAST 1 OOV 8A	D501,601 D502,602
CA-310001-10	CAP MYLAR 01 UF 10% 1 OOV	C508,608	QD-001302-PN	XISTOR PNP TO-3P 200V 15A	Q508-Q510 Q608-Q610
CA-322001-10	CAP MYLAR .022UF 10% 1 OOV	C524,624	QD-001340-LR	LED RED T-I 3/4 VOLTAGE REF	LD501,601
CA-347400.BP	CAP MYLAR .047UF 10% 400V	C530-537, C630-637	QD-003281-NP	XISTOR NPN TO-3P 200V 15A	Q505-507 Q605-607
CA-41 0002-10	CAP MYLAR .1 UF 5% 1 OOV	C501,505, C513,514, C518,601, C605,613, C614,618	QD-004004-DX	DIODE RECT DO41 400V 1A	D515,516, D518,615, D616,618
CA-61 0002-10	10UF,35V,20%,RADIAL ELECT	C515,615	QD-004744-ZA	DIODE ZNR 15V 5% 1 W 1N4744A	D509,609 D510,610
CA-647001.1 0	CAP LYTIC RL 47UF 10% 1 OV NP	C520,620	QD-004934-DX	DIODE RECT DO41 FAST 100VIA	D521,621 D522,622 D507,607 D508,608
CA-647002-1 0	CAP LYTIC RL 47UF 20% 50V	C504,604, C516,616,	QD-004934-VP	DIODE RECT DO41 FAST 100V1AVFD	D505,605 D506,606
CA-722001.1 0	CAP LYTIC RL 220UF 20% 10V NP	C517,617	QD-005402-DX	DIODE RECT DO27 200V 3A	D512,612 D513,613
CA-722002-1 0	CAP LYTIC RL 220UF 20% 25V	C525,625, C526,626	QD-1.5200-BX	DIODE BRIDGE RECT 200V 1.5A	BR503,603
CA-747001-1 0	CAP LYTIC RL 470UF 20% 16V	C507,607	RE-02205-FW	RES WW 0.22 10% 3W	R513-R515 R519-R521 R613-R615 R619-R621
CA-91 2063-AE	CAP LYTIC RL12000UF 20% 63V	C509-C512, C609-C612	RE-.27005-EM	RESISTOR,METALFLM, 2.7 5% 2W	R504,604 R508,608
CH-000624-AX	CLAMP TO-3 PL 6 FINGER	ETC, Q605 ETC. REF: Q505	RE-.33005-DM	RES MOFP 3.3 5% 1 W	R501,601, R502,602, R543,643
CH-004 111-00	HEATSINK,EXTRUSIONEX/MXA 2 SP		RE-.56005-EM	RES MOFP 5.6 5% 2W	R525,625
CH-400003-00	CLAMP TO-220 6 FINGER	ETC, Q601 ETC. REF: Q501	RE-000009-VP	RES PTC 90C 0.1 K MAX COLD VP	R516,616
CO-000008-IC	8 PIN IC SOCKET	REF: U503	RE-000050-NR	THERMISTOR NTC 50 OHM	R511,611
CO-000008-IC	8 PIN IC SOCKET	U603	RE-001005-EM	RES MOFP 10 5% 2W	R523,623 R524,624 R526,626 R527.627
CO-000045-CO	HEADER PCB .156 4-POS	J51			
CO-000047-CO	HEADER PCB 2 X 3 AMP-TYPE	J501,601 J52			
CO-000055-CO	HDR LATCHING BOX 14-PIN	J503,603			
CO-000074-00	HEADER POLARIZED 8-POS	J502,602			
HW-000007-HW	5MM FUSE CLIP	F501-F504 F601-F604 REF:			
IC-000008-00	IC SMT POS STEP DRVR	U501,601			
IC-000009-00	IC SMT NEG STEP DRVR	U502,602			
IC-000021-00	ICLIN DUAL OP AMP 5532	U503,603			
MS-15.125-MS	15A125V 5MM X 20MM FUSE	F501-F504 F601-F604 REF:			
PL-000039-PL	TO-220 X 6 INSULATOR	ETC, Q601 ETC. REF: Q501			
PL-903 125-SP	SPACER,ROUND,NYLON,0.125"L	R511 2PL R611 2PL			

# CX12 /CX12T Main Board Assembly (Cont'd)

CX Series

WP-000123-00 MAINPCB ASSY CX12/CX12T

Part Number	Description	Reference
RE-002205-DM	RES MOFP 22 5% 1 W	R505,605 R506,606 R517,617 R518,618
RE-004705-BC	RES CF 47 5% 1/4W	R544,644
RE-015005-BC	RES CF 150 5% 1/4W	R547,647
RE-015005-DM	RES MOFP 150 5% 1W	R531,631
RE-027005-BC	RES CF 270 5% 1/4W	R533,633
RE-028001-BM	RES MF 280 1% 1/4W	R541,641
RE-068010-HW	RES VV 680 10% 5W	R548,648
RE-110005-BC	RES CF 1 K 5% 1/4W	R512,612 R522,622 R545,645
RE-127005-BC	RES CF 2.7K 5% 1/4W	R540,640
RE-130005-EM	RES MOFP 3K 5% 2W	R510,610 R537,637
RE-139001-00	RES MOFP 3.9K 5% 5W	R535,635, R536,636, R539,639, R546,646
RE-147005-DM	RES MOFP 4.7K 5% 1 W	R534,634
RE-210005-EM	RES MOFP 10K 5% 2W	R532,632
RE-212005-BC	RES CF 12K 5% 1/4W	R503,603 R507,607 R529,629
RE-221501-CM	RES MF 21.5K 1% 1/2W	R538,638
RE-222006-BM	RES MOFP 22K 5% 1 W	R509,609
RE-260401-BM	RES MF 60.4K 1% 1/4W	R542,642
RE-310005-BC	RES CF 100K 5% 1/4W	R549,649
RE-339005-BC	RES CF 390K 5% 1/4W	R528,628 R530,630
RN-122002-BM	RES NTKW 8-PIN SIP 2.2K 2% 4R	RN503,603
RN-21 0002-BM	RES NTKW 8-PIN SIP 1 OK 1% 4R	RN502,602
RN-31 0002-BM	RES NTKW 8-PIN SIP 1 OOK 2% 4R	RN501,601
SC-062050-PP	#6 X 5/16" "B" P/P ZINC	
SC-081 101-SP	#8-18 X 5/8", TYPE 1 P/P BLACK	
SW-000029-SW	RELAY, SPKR PROTECT,SPDT,24VDK501,601	
SW-000550-00	55 C THERMAL CUT-IN 25 DEG.ANG	
WC-0.5018-JW	.5" JUMPER, WHT., 18 GA, SOLID	W1
WC-0.6022-JW	.6" JUMPER, WHITE, 22 GA, SLD	W7-9
WC-1.2518-JW	1.25" JUMPER, WHITE 18 GA, SLD	W6,10,11
WC-2.001 8-JW	2.00",18GA, JUMPER	W2-5
XF-200014-CR	INDUCTOR 2UH 14AWG VERT MNT	L501,601

## CX4 Finished & Chassis Assembly (120V)

WP-000044-00 CX4 CHASSIS ASSY (1 20V)

Part Number	Description	Reference
CH-000016-00	RACK EAR, SLS PLATFORM	
CH-000068-00	CX-1 CHASSIS FAB	
CH-14021 0-BX	1400 KNOB FABRICATION	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
CO-0001 00-00	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
LB-000052-00	LABEL, cUL APPROVAL	
LB-000053-00	LBL, FRENCH, FUSE REPLACEMENT	
LB-0001 30-00	LABEL, FACEPLATE CX4	
LB-0001 31-00	OUTPUT LABEL	
LB-0001 45-00	LBL, INPUT, CX4 SERIES	
LB-160226-03	LABEL, FUSE, UL CAUT.10A125V	
MS-00007 1-00	MPA 2 SPACE FAN GUARD	
NW-060500-KP	#6-32 KEPS NUT	
NW-080500-KP	#8-32 KEPS NUT	
PL-000000-AF	ADHESIVE FEET	F901
PL-000003-CP	AC CORD PROTECTOR	
PL-000042-PL	BUSHING,STRAIN RELIEF,INT., RD	
PL-000043-PL	STANDOFF NYLATCH 1/4 TURN .75"	
PL-000066-00	CLIP XMAS-TREE SLG HEAD FASTEX	
PL-002754-00	VISUAL SHIELD MPA 2 SPACE	
PM-00001 6-00	SHIPPING INSERT,PL1.8(12E6RJ)	
PM-001 601-00	EX/MXA 2 SP SHIPG CRTN(22C7AA)	
PM-004000-00	SHIPPING BAG,FULL LENGTH CHAS.	
PM-004001-00	PAD,SHIPPING, EX/MXA (22C6YQ)	
SC-060042-PP	#6-32 X 1/4" P/P BLACK,SEMS,IT	
SC-06008 1-PP	#6-32 X 1/2" P/P BLACK	
SC-08005 1-PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-08205 1-PL	SCREW,TAP,PAN PH#8X5/16" "B"BK	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
WC-0000 14-01	CABLE ASSY 14 COND RIB. 10" LG	
WC-000038-00	RIBBON CABLE,14 COND 23"LG	
WC-000070-00	CABLE ASSY, SPKR CX4	
WC-00306 1-00	AC SWITCH WIRE, RED, 13.62"	
WC-003070-00	AC POWER CORD ASSY EX/MX 2 SF R901	
WP-000045-00	CX4/4T MAIN	
WP-000049-00	FAN ASSY, SINGLE 2 SP DC	
XF-00060 1 -AX	XFMR P MX700 1 00/120/220/240V	

## CX4 Finished & Chassis Assembly (230V)

WP-000044-02 CX 4 CHASSIS ASSY (230V)

Part Number	Description	Reference
CH-000016-00	RACK EAR, SLS PLATFORM	
CH-000068-00	CX-1 CHASSIS FAB	
CH-14021 0-BX	1400 KNOB FABRICATION	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
CO-0001 00-00	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
LB-000099-01	LABEL, CE LISTING	
LB-0001 30-00	LABEL, FACEPLATE CX4	
LB-000131-00	OUTPUT LABEL	
LB-0001 45-00	LBL, INPUT, CX4 SERIES	
LB- 160226-03	LABEL, FUSE, UL CAUT.10A125V	
MS-00007 1-00	MPA 2 SPACE FAN GUARD	
NW-060500-KP	#6-32 KEPS NUT	
NW-080500-KP	#8-32 KEPS NUT	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000042-PL	BUSHING,STRAIN RELIEF,INT., RD	
PL-000043-PL	STANDOFF NYLATCH 1/4 TURN .75"	
PL-000066-00	CLIP XMAS-TREE SLG HEAD FASTEX	
PL-002754-00	VISUAL SHIELD MPA 2 SPACE	
PM-0000 16-00	SHIPPING INSERT,PL1.8(12E6RJ)	
PM-001601-00	EX/MXA 2 SP SHIPG CRTN(22C7AA)	
PM-004000-00	SHIPPING BAG,FULL LENGTH CHAS.	
PM-004001 -00	PAD,SHIPPING, EX/MXA (22C6YQ)	
SC-060042-PP	#6-32 X 1/4" P/P BLACK,SEMS,IT	
SC-06008 1-PP	#6-32 X 1/2" P/P BLACK	
SC-06005 1-PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-082051.PL	SCREW,TAP,PAN PH#8X5/16" "B"BK	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
WC-00001 4-01	CABLE ASSY 14 COND RIB. 10" LG	
WC-000038-00	RIBBON CABLE,14 COND 23"LG	
WC-000070-00	CABLE ASSY, SPKR CX4	
WC-00306 1-00	AC SWITCH WIRE, RED, 13.62"	
WC-003069-00	A/C POWER CORD ASSEMBLY EXPORT	
WP-000045-00	CX4/4T MAIN	
WP-000049-00	FAN ASSY, SINGLE 2 SP DC	
XF-00060 1 -AX	XFMR P MX700 1 00/120/220/240V	

## CX4T Finished & Chassis Assembly (120V)

WP-000054-00 CX 4T CHASSIS ASSY (120V)

Part Number	Description	Reference
CH-000016-00	RACK EAR, SLS PLATFORM	
CH-000068-00	CX-1 CHASSIS FAB	
CH-140210-BX	1400 KNOB FABRICATION	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
CO-0001 00-00	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
LB-000052-00	LABEL, cUL APPROVAL	
LB-000053-00	LBL, FRENCH, FUSE REPLACEMENT	
LB-0001 32-00	LABEL, FACEPLATE, CX4T	
LB-0001 33-00	LABEL, OUTPUT, CXT SER 2 SP	
LB-0001 45-00	LBL, INPUT, CX4 SERIES	
LB-160226-03	LABEL, FUSE, UL CAUT. 1 OA 125V	
MS-000059-00	TORIOD PAD	
MS-00007 1-00	MPA 2 SPACE FAN GUARD	
NW-060500-KP	#6-32 KEPS NUT	
NW-080500-KP	#8-32 KEPS NUT	F901
NW-1 40204-04	NUT HEX JAM 1/4-20 ZINC NYLON	
NW-142421.03	312 ID, 1.50 OD X .06 THK STL	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000042-PL	BUSHING, STRAIN RELIEF, INT., RD	
PL-000043-PL	STANDOFF NYLATCH 1/4 TURN .75"	
PL-000066-00	CLIP XMAS-TREE SLG HEAD FASTEX	
PL-002754-00	VISUAL SHIELD MPA 2 SPACE	
PM-00001 6-00	SHIPPING INSERT, PL 1.8(12E6RJ)	
PM-00 160 1-00	EX/MXA 2 SP SHIPG CRTN(22C7AA)	
PM-004000-00	SHIPPING BAG, FULL LENGTH CHAS.	
PM-004001-00	PAD, SHIPPING, EX/MXA (22C6YQ)	
SC-060042.PP	#6-32 X 1/4" P/P BLACK, SEMS, IT	
SC-060081-PP	#6-32 X 1/2" P/P BLACK	
SC-08005 1-PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-08205 1-PL	SCREW, TAP, PAN PH#8X5/16" "B" BK	
SC-140441.PP	1/4-20 X 2.25L 2A P/P	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
WC-0000 14-0 1	CABLE ASSY 14 COND RIB. 10' LG	R901
WC-000038-00	RIBBON CABLE, 14 COND 23" LG	
WC-000070-00	CABLE ASSY, SPKR CX4	
WC-00306 1-00	AC SWITCH WIRE, RED, 13.62"	
WC-003070-00	AC POWER CORD ASSY EX/MX 2 SP	
WP-000045-00	CX4/4T MAIN	
WP-000049-00	FAN ASSY, SINGLE 2 SP DC	
XF-000027-00	AUDIO XFMR TOROIDAL 175W	
XF-00060 1 -AX	XFMR P MX700 100/120/220/240V	

## CX4T Finished & Chassis Assembly (230V)

WP-000054-02 CX 4T CHASSIS ASSY (230V)

Part Number	Description	Reference
CH-000016-00	RACK EAR, SLS PLATFORM	
CH-000068-00	CX-1 CHASSIS FAB	
CH-14021 0-BX	1400 KNOB FABRICATION	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
CO-0001 00-00	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
LB-000099-01	LABEL, CE LISTING	
LB-0001 32-00	LABEL, FACEPLATE, CX4T	
LB-0001 33-00	LABEL, OUTPUT, CXT SER 2 SP	
LB-0001 45-00	LBL, INPUT, CX4 SERIES	
LB-160226-03	LABEL, FUSE, UL CAUT. 1 OA 125V	
MS-000059-00	TORIOD PAD	
MS-00007 1-00	MPA 2 SPACE FAN GUARD	
NW-060500-KP	#6-32 KEPS NUT	
NW-080500-KP	#8-32 KEPS NUT	
NW-1 40204-04	NUT HEX JAM 1/4-20 ZINC NYLON	
NW-142421.03	312 ID, 1.50 OD X .06 THK STL	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000042-PL	BUSHING, STRAIN RELIEF, INT., RD	
PL-000043-PL	STANDOFF NYLATCH 1/4 TURN .75"	
PL-000066-00	CLIP XMAS-TREE SLG HEAD FASTEX	
PL-002754-00	VISUAL SHIELD MPA 2 SPACE	
PM-00001 6-00	SHIPPING INSERT, PL 1.8(12E6RJ)	
PM-001601-00	EX/MXA 2 SP SHIPG CRTN(22C7AA)	
PM-004000-00	SHIPPING BAG, FULL LENGTH CHAS.	
PM-00400 1-00	PAD, SHIPPING, EX/MXA (22C6YQ)	
SC-060042.PP	#6-32 X 1/4" P/P BLACK, SEMS, IT	
SC-060081-PP	#6-32 X 1/2" P/P BLACK	
SC-08005 1-PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-08205 1-PL	SCREW, TAP, PAN PH#8X5/16" "B" BK	
SC-1 4044 1-PP	1/4-20 X 2.25L 2A P/P	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
WC-0000 14-0 1	CABLE ASSY 14 COND RIB. 10" LG	
WC-000038-00	RIBBON CABLE, 14 COND 23" LG	
WC-000070-00	CABLE ASSY, SPKR CX4	
WC-00306 1-00	AC SWITCH WIRE, RED, 13.62"	
WC-003069-00	A/C POWER CORD ASSEMBLY EXPORT	
WP-000045-00	CX4/4T MAIN	
WP-000049-00	FAN ASSY, SINGLE 2 SP DC	
XF-000027-00	AUDIO XFMR TOROIDAL 175W	
XF-000601 -AX	XFMR P MX700 100/120/220/240V	

## CX6 Finished & Chassis Assembly (120V)

WP-000940-00 CX 6 CHASSIS ASSY (120V)

Part Number	Description	Reference
CH-000008-00	VISUAL SHIELD	
CH-000052-00	RACK EAR	
CH-000056-00	CX SERIES TOP COVER	
CH-000064-00	CHASSIS, CX SERIES	
CH-1402 10-BX	KNOB FABRICATION	
CH-400016-00	BLANK UPPER INPUT PANEL	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
co-0001 00-00	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
HW-080002-HW	#8-32x2.5", HEX STANDOFF	
LB-000052-00	LABEL, cUL APPROVAL	
LB-000053-00	LBL, FRENCH, FUSE REPLACEMENT	
LB-000054-00	LABEL, WARNING, TOP COVER	
LB-000 114-00	LABEL, REAR, OUTPUT CX SERIES	
LB-0001 23-00	LABEL, FACEPLATE CX6	
MS-000050-MS	FUSE, 20A, 250V	F901
MS-000087-00	FAN 24VDC 4.7"	
MS-100005-FG	FAN GUARD	
NW-060500-KP	#6-32 KEPS NUT	
NW-080002-00	WASHER,#8 FLAT ,049 TH,SS,BLK	
NW-080500-KP	#8-32 KEPS NUT	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000035-PL	STANDOFF NYLATCH 1/4 TURN .25"	
PL-000042-PL	BUSHING,STRAIN RELIEF,INT.,RD	
PL-000045-PL	RIVET, PLASTIC, SCREW TYPE	
PM-00001 6-00	SHIPPING INSERT	
PM-002501-00	SHIPPING CARTON	
PM-004000-00	SHIPPING BAG,FULL LENGTH CHAS.	
PM-00400 1-00	PAD, SHIPPING	
RE-000170-NR	THERMISTOR NTC 30A CUR LIM	R901
RE-007501-00	RES WW 75 5% 5W	
SC-060042-PP	#6-32 X 1/4" P/P BLACK,SEMS,IT	
SC-06008 1-PP	#6-32 X 1/2" P/P BLACK	
SC-080051 -PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-082051.PL	SCREW,TAP,PAN PH#8X5/16" "B"BK	
SC-0821 20-PP	#8-16 X 3/4" P/P B PT.	
SC-1 0006 1-PS	SCREW 1 0-32X3/8" BLK P/P SEMS	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
TD-000057-01	CX DOM OWNERS MANUAL	
WC-0000 14-0 1	CABLE ASSY 14 COND RIB. 10" LG	
WC-00001 6-00	CABLE ASSY 16 COND RIB,28" LG	
WC-000069-00	WIRE ASSY, OUTPUT, CX SERIES	
WC-001 101-SQ	QSC SLEEVE 1 101 , 5", CLEAR	
WC-003070-00	AC POWER CORD ASSY	
WC-00307 1-00	WIRE ASSY, AC SWITCH	
WC-003086-00	WIRE ASSY, THERMOSTAT SW 2 SP	
XF-000001-00	CX6 TRANSFORMER	

## CX6 Finished & Chassis Assembly (230V)

WP-000940-02 CX 6 CHASSIS ASSY (230V)

Part Number	Description	Reference
CH-000008-00	VISUAL SHIELD	
CH-000052-00	RACK EAR	
CH-000056-00	CX SERIES TOP COVER	
CH-000064-00	CHASSIS, CX SERIES	
CH-1402 10-BX	KNOB FABRICATION	
CH-400016-00	BLANK UPPER INPUT PANEL	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
co-0001 00-00	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
HW-080002-HW	#8-32x2.5", HEX STANDOFF	
LB-00005440	LABEL, WARNING, TOP COVER	
LB-000099-0 1	LABEL, CE LISTING	
LB-000 114-00	LABEL, REAR, OUTPUT CX SERIES	
LB-0001 23-00	LABEL, FACEPLATE CX6	
LB-1 60226-02	LABEL, FUSE, UL CAUT,12A 250V	
MS-000087-00	FAN 24VDC 4.7"	
MS-100005-FG	FAN GUARD	
MS-1 20250-FU	12A250V, FUSE	
NW-060500-KP	#6-32 KEPS NUT	
NW-080002-00	WASHER,#8 FLAT ,049 TH,SS,BLK	
NW-080500-KP	#8-32 KEPS NUT	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000035-PL	STANDOFF NYLATCH 1/4 TURN .25"	
PL-000042-PL	BUSHING,STRAIN RELIEF,INT.,RD	
PL-000045-PL	RIVET, PLASTIC, SCREW TYPE	
PM-00001 6-00	SHIPPING INSERT	
PM-002501-00	SHIPPING CARTON	
PM-004000-00	SHIPPING BAG,FULL LENGTH CHAS.	
PM-004001-00	PAD, SHIPPING	
RE-000160-NT	THERMISTOR NTC 15A CUR LIM	
RE-007501-00	RES W-W 75 5% 5W	
SC-060042-PP	#6-32 X 1/4" P/P BLACK,SEMS,IT	
SC-06008 1-PP	#6-32 X 1/2" P/P BLACK	
SC-080051 -PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-082051.PL	SCREW,TAP,PAN PH#8X5/16" "B"BK	
SC-0821 20-PP	#8-16 X 3/4" P/P B PT.	
SC-1 00061-PS	SCREW 10-32X3/8" BLK P/P SEMS	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
TD-000057-00	CX SERIES OWNERS MANUAL	
WC-0000 14-0 1	CABLE ASSY 14 COND RIB. 10" LG	
WC-0000 16-00	CABLE ASSY 16 COND RIB,28" LG	
WC-000069-00	WIRE ASSY, OUTPUT, CX SERIES	
WC-001 1 01-SQ	QSC SLEEVE 1101, 5", CLEAR	
WC-003069-00	A/C POWER CORD ASSEMBLY EXPORT	
WC-00307 1-00	WIRE ASSY, AC SWITCH	
WC-003086-00	WIRE ASSY, THERMOSTAT SW 2 SP	
XF-000001-00	CX6 TRANSFORMER	

## CX6T Finished & Chassis Assembly (120V)

WP-000930-00 CX 6T CHASSIS ASSY (120V)

Part Number	Description	Reference
CH-000008-00	VISUAL SHIELD	
CH-000052-00	RACK EAR	
CH-000056-00	CX SERIES TOP COVER	
CH-000064-00	CHASSIS, CX SERIES	
CH-14021 0-BX	KNOB FABRICATION	
CH-400016-00	BLANK UPPER INPUT PANEL	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
co-0001 oo-oo	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
HW-080002-HW	#8-32 X 2.5", HEX STANDOFF	
IC-000032-00	IC LIN DUAL OP AMP MC331 7ap	
LB-000052-00	LABEL, cUL APPROVAL	
LB-000053-00	LBL, FRENCH, FUSE REPLACEMENT	
LB-0001 24-00	LABLE, FACEPLATE CX6T	
LB-0001 28-00	LABEL, OUTPUT CXT	
MS-000050-MS	FUSE, 20A, 250V	
MS-000059-00	TORIOD PAD	
MS-000087-00	FAN 24VDC 4.7"	
MS-100005-FG	FAN GUARD	
NW-060500-KP	#6-32 KEPS NUT	
NW-080002-00	WASHER,#8 FLAT .049 TH,SS,BLK	
NW-080500-KP	#8-32 KEPS NUT	
NW-140204-04	NUT HEX JAM 1/4-20 ZINC NYLON	
NW-14081 1-09	1/4" HEL SPRING LOCK WSHR REG	
NW-14242 1-03	.312 ID, 1.50 OD X .06 THK STL	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000035-PL	STANDOFF NYLATCH 1/4 TURN .25"	
PL-000042-PL	BUSHING STRAIN RELIEF,INT.,RD	
PL-000045-PL	RIVET, PLASTIC, SCREW TYPE	
PM-00001 6-00	SHIPPING INSERT	
PM-00250 1-00	SHIPPING CARTON	
PM-004000-00	SHIPPING BAG,FULL LENGTH CHAS.	
PM-00400 1-00	PAD, SHIPPING	
RE-000170-NR	THERMISTOR NTC 30A CUR LIM	
RE-007501-00	RES WW 75 5% 5W	
SC-060042-PP	#6-32 X 1/4" P/P BLACK,SEMS,IT	
SC-06008 1-PP	#6-32 X 1/2" P/P BLACK	
SC-08005 1-PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-082051-PL	SCREW,TAP,PAN PH#8X5/16" "B" BK	
SC-0821 20-PP	#8-16 X 3/4" P/P B PT.	
SC-100061-PS	SCREW 10-32X3/8" BLK P/P SEMS	
SC-140441-PP	1/4-20 X 2.75L 2A PH PHILLIPS	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
TD-000057-01	CX DOM OWNERS MANUAL	
WC-00001 4-01	CABLE ASSY 14 COND RIB. 1 0" LG	
WC-00001 6-00	CABLE ASSY 16 COND RIB. 28" LG	
WC-000069-00	WIRE ASSY, OUTPUT, CX SERIES	
WC-00 110 1-SQ	QSC SLEEVE 1101, 5", CLEAR	
WC-003070-00	AC POWER CORD ASSY	
WC-00307 1-00	WIRE ASSY, AC SWITCH	
WC-003086-00	WIRE ASSY, THERMOSTAT SW 2 SP	
XF-000001-00	CX6 TRANSFORMER	
XF-000024-00	PWR XFMR TOROIDAL, 250W	

## CX6T Finished & Chassis Assembly (230V)

WP-000930-02 CX 6T CHASSIS ASSY (230V)

Part Number	Description	Reference
CH-000008-00	VISUAL SHIELD	
CH-000052-00	RACK EAR	
CH-000056-00	CX SERIES TOP COVER	
CH-000064-00	CHASSIS, CX SERIES	
CH-1402 1 0-BX	KNOB FABRICATION	
CH-400016-00	BLANK UPPER INPUT PANEL	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
co-0001 oo-oo	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
HW-080002-HW	#8-32 X 2.5",HEX STANDOFF	
IC-000032-00	IC LIN DUAL OP AMP MC331 78P	
LB-000099-01	LABEL, CE LISTING	
LB-0001 24-00	LABLE, FACEPLATE CX6T	
LB-0001 28-00	LABEL, OUTPUT CXT	
LB-160226-02	LABEL, FUSE, UL CAUT.12A 250V	
MS-000059-00	TORIOD PAD	
MS-000087-00	FAN 24VDC 4.7"	
MS-100005-FG	FAN GUARD	
MS-120250-FU	12A 250V, FUSE	
NW-060500-KP	#6-32 KEPS NUT	
NW-080002-00	WASHER,#8 FLAT .049 TH,SS,BLK	
NW-080500-KP	#8-32 KEPS NUT	
NW-140204-04	NUT HEX JAM 1/4-20 ZINC NYLON	
NW-14081 1-09	1/4" HEL SPRING LOCK WSHR REG	
NW-142421.03	.312 ID, 1.50 OD X .06 THK STL	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000035-PL	STANDOFF NYLATCH 1/4 TURN .25"	
PL-000042-PL	BUSHING STRAIN RELIEF,INT.,RD	
PL-000045-PL	RIVET, PLASTIC, SCREW TYPE	
PM-00001 6-00	SHIPPING INSERT	
PM-002501-00	SHIPPING CARTON	
PM-004000-00	SHIPPING BAG,FULL LENGTH CHAS.	
PM-00400 1-00	PAD, SHIPPING	
RE-000160-NT	THERMISTOR NTC 15A CUR LIM	
RE-007501-00	RES ww 75 5% 5W	
SC-060042-PP	#6-32 X 1/4" P/P BLACK,SEMS,IT	
SC-06008 1-PP	#6-32 X 1/2" P/P BLACK	
SC-08005 1-PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-08205 1-PL	SCREW,TAP,PAN PH#8X5/16" "B" BK	
SC-082 120-PP	#8-16 X 3/4" P/P B PT.	
SC-10006 1-PS	SCREW 10-32X3/8" BLK P/P SEMS	
SC-140441-PP	1/4-20 X 2.75L 2A PH PHILLIPS	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
TD-000057-00	CX SERIES OWNERS MANUAL	
WC-00001 4-01	CABLE ASSY 14 COND RIB. 1 0" LG	
WC-00001 6-00	CABLE ASSY 16 COND RIB. 28" LG	
WC-000069-00	WIRE ASSY, OUTPUT, CX SERIES	
WC-00 110 1-SQ	QSC SLEEVE 1101, 5", CLEAR	
WC-003069-00	A/C POWER CORD ASSEMBLY EXPORT	
WC-00307 1-00	WIRE ASSY, AC SWITCH	
WC-003086-00	WIRE ASSY, THERMOSTAT SW 2 SP	
XF-000001-00	CX6 TRANSFORMER	
XF-000024-00	PWR XFMR TOROIDAL, 250W	



## CX12 Finished & Chassis Assembly (120V)

WP-001740-00 CX 12 CHASSIS ASSY (120V)

Part Number	Description	Reference
CH-000008-00	VISUAL SHIELD	
CH-000052-00	RACK EAR	
CH-000056-00	CX SERIES TOP COVER	
CH-000064-00	CHASSIS, CX SERIES	
CH-1402 10-BX	KNOB FABRICATION	
CH-400016-00	BLANK UPPER INPUT PANEL	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
co-0001 00-00	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
HW-080002-HW	#8-32x2.5", HEX STANDOFF	
LB-000052-00	LABEL, cUL APPROVAL	
LB-000053-00	LBL, FRENCH, FUSE REPLACEMENT	
LB-0001 14-00	LABEL, REAR, OUTPUT CX SERIES	
LB-0001 25-00	LABEL, FACEPLATE CX12	
LB-1 60226-00	LABEL, FUSE, ULCAUT, 30A 125V	
MS-000055-MS	FUSE,30A125V1/4" X 1 1/4IN.	
MS-000087-00	FAN 24VDC 4.7"	
MS-100005-FG	FAN GUARD	
NW-060500-KP	#6-32 KEPS NUT	
NW-080002-00	WASHER,#8 FLAT .049TH,SS,BLK	
NW-080500-KP	#8-32 KEPS NUT	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000035-PL	STANDOFF NYLATCH 1/4 TURN .25"	
PL-000042-PL	BUSHING,STRAIN RELIEF,INT., RD	
PL-000045-PL	RIVET, PLASTIC, SCREW TYPE	
PM-00001 6-00	SHIPPING INSERT	
PM-002501-00	SHIPPING CARTON	
PM-004000-00	SHIPPING BAG,FULL LENGTH CHAS.	
PM-004001-00	PAD, SHIPPING	
RE-000170-NR	THERMISTOR NTC 30A CUR LIM	
RE-007501-00	RES WW 75 5% 5W	
SC-060042-PP	#6-32 X 1/4" P/P BLACK,SEMS,IT	
SC-060081 -PP	#6-32 X 1/2" P/P BLACK	
SC-08005 1 -PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-082051.PL	SCREW,TAP,PAN PH#8X5/16" "B"BK	
SC-100061-PS	SCREW 1 0-32X3/8" BLK P/P SEMS	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
TD-000057-00	CX SERIES OWNERS MANUAL	
WC-0000 14-01	CABLE ASSY 14 COND RIB.10" LG	
WC-0000 16-00	CABLE ASSY 16 COND RIB. 28" LG	
WC-000069-00	WIRE ASSY, OUTPUT, CX SERIES	
WC-001 101-SQ	QSC SLEEVE 1101, 5", CLEAR	
WC-003070-00	AC POWER CORD ASSY	
WC-00307 1-00	WIRE ASSY, AC SWITCH	
WC-003086-00	WIRE ASSY, THERMOSTAT SW 2 SP	
XF-000002-00	CX12 TRANSFORMER	

## CX12 Finished & Chassis Assembly (230V)

WP-001740-02 CX 12 CHASSIS ASSY (230V)

Part Number	Description	Reference
CH-000008-00	VISUAL SHIELD	
CH-000052-00	RACK EAR	
CH-000056-00	CX SERIES TOP COVER	
CH-000064-00	CHASSIS, CX SERIES	
CH-1402 10-BX	KNOB FABRICATION	
CH-400016-00	BLANK UPPER INPUT PANEL	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
CO-000100-00	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
HW-080002-HW	#8-32x2.5", HEX STANDOFF	
LB-000099-01	LABEL, CE LISTING	
LB-0001 14-00	LABEL, REAR, OUTPUT CX SERIES	
LB-0001 25-00	LABEL, FACEPLATE CX12	
LB-160226-01	LABEL, FUSE, UL CAUT.15A250V	
MS-000087-00	FAN 24VDC 4.7"	
MS-100005-FG	FAN GUARD	
MS-150250-FU	15A,250V, FUSE	
NW-060500-KP	#6-32 KEPS NUT	
NW-080002-00	WASHER,#8 FLAT .049TH,SS,BLK	
NW-080500-KF	#8-32 KEPS NUT	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000035-PL	STANDOFF NYLATCH 1/4 TURN .25"	
PL-000042-PL	BUSHING,STRAIN RELIEF,INT., RD	
PL-000045-PL	RIVET, PLASTIC, SCREW TYPE	
PM-0000 16-00	SHIPPING INSERT	
PM-002501-00	SHIPPING CARTON	
PM-004000-00	SHIPPING BAG,FULL LENGTH CHAS.	
PM-00400 1-00	PAD, SHIPPING	
RE-000160-NT	THERMISTOR NTC 15A CUR LIM	
RE-007501-00	RES WW 75 5% 5W	
SC-060042-PP	#6-32 X 1/4" P/PBLACK,SEMS,IT	
SC-960081 -PP	#6-32 X 1/2" P/P BLACK	
SC-08005 1 -PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-082051-PL	SCREW,TAP,PAN PH#8X5/16" "B"BK	
SC-1 00061 -PS	SCREW 10-32X3/8" BLK P/P SEMS	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
TD-000057-00	CX SERIES OWNERS MANUAL	
WC-00001 4-01	CABLE ASSY 14 COND RIB. 1 0" LG	
WC-00001 6-00	CABLE ASSY 16 COND RIB. 28" LG	
WC-000069-00	WIRE ASSY, OUTPUT, CX SERIES	
WC-001 101-SQ	QSC SLEEVE 1101, 5", CLEAR	
WC-003069-00	A/C POWER CORD ASSEMBLY EXPORT	
WC-00307 1-00	WIRE ASSY, AC SWITCH	
WC-003086-00	WIRE ASSY, THERMOSTAT SW 2 SF'	
XF-000002-00	CX12 TRANSFORMER	

## CX12T Finished & Chassis Assm. (120V)

WP-001730-00 CX 12 CHASSIS ASSY (120V)

Par-I Number	Description	Reference
CH-000008-00	VISUAL SHIELD	
CH-000052-00	RACK EAR	
CH-000056-00	CX SERIES TOP COVER	
CH-000064-00	CHASSIS, CX SERIES	
CH-14021 0-BX	KNOB FABRICATION	
CH-400016-00	BLANK UPPER INPUT PANEL	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
CO-000100-00	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
HW-080002-HW	#8-32x2.5", HEX STANDOFF	
IC-000032-00	ICLIN DUAL OP AMP MC331 78P	U101
LB-000052-00	LABEL, cUL APPROVAL	
LB-000053-00	LBL, FRENCH, FUSE REPLACEMENT	
LB-000126-00	LABEL, FACEPLATE CX12T	
LB-000128-00	LABEL, OUTPUT CXT	
LB-160226-00	LABEL, FUSE, UL CAUT. 30A 125V	
MS-000055-MS	FUSE,30A125V1/4" X 1 1/4 IN.	F901
MS-000059-00	TORIOD PAD	
MS-000087-00	FAN 24VDC 4.7"	
MS-100005-FG	FAN GUARD	
NW-060500-KP	#6-32 KEPS NUT	
NW-080002-00	WASHER,#8 FLAT .049 TH,SS,BLK	
NW-080500-KP	#8-32 KEPS NUT	
NW-140204-04	NUT HEX JAM 1/4-20 ZINC NYLON	
NW-140811-09	1/4" HEL SPRING LOCK WSHR REG	
NW-142421-03	.312 ID, 1.50 OD X .06 THK STL	
PM-000016-00	SHIPPING INSERT	
PM-002501-00	SHIPPING CARTON	
PM-004000-00	SHIPPING BAG,FULL LENGTH CHAS.	
PM-004001-00	PAD, SHIPPING	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000035-PL	STANDOFF NYLATCH 1/4 TURN .25"	
PL-000042-PL	BUSHING,STRAIN RELIEF,INT., RD	
PL-000045-PL	RIVET, PLASTIC, SCREW TYPE	
RE-000170-NR	THERMISTOR NTC 30A CUR LIM	R901
RE-007501-00	RES WW 75 5% 5W	
SC-060042-PP	#6-32 X 1/4" P/P BLACK,SEMS,IT	
SC-060081-PP	#6-32 X 1/2" P/P BLACK	
SC-080051-PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-082051-PL	SCREW,TAP,PAN PH#8X5/16" "B"BK	
SC-100061-PS	SCREW 1 0-32X3/8" BLK P/P SEMS	
SC-140441-PP	1/4-20 X 2.75L 2A PH PHILLIPS	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
WC-000014-01	CABLE ASSY 14 COND RIB.10" LG	
WC-000016-00	CABLE ASSY 16 COND RIB. 28" LG	
WC-000069-00	WIRE ASSY, OUTPUT, CX SERIES	
WC-001101-SQ	QSC SLEEVE 1101, 5", CLEAR	
WC-003070-00	AC POWER CORD ASSY	
WC-003071-00	WIRE ASSY, AC SWITCH	
WC-003086-00	WIRE ASSY, THERMOSTAT SW 2 SP	
XF-000002-00	CX12 TRANSFORMER	
XF-000025-00	PWR XFMR, TOROIDAL, 500W	

## CX12T Finished & Chassis Assm. (230V)

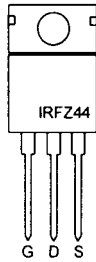
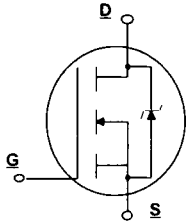
WP-001730-02 CX 12 CHASSIS ASSY (230V)

Part Number	Description	Reference
CH-000008-00	VISUAL SHIELD	
CH-000052-00	RACK EAR	
CH-000056-00	CX SERIES TOP COVER	
CH-000064-00	CHASSIS, CX SERIES	
CH-14021 0-BX	KNOB FABRICATION	
CH-400016-00	BLANK UPPER INPUT PANEL	
CO-000096-00	CONN BARRIER 5-POS W/COVER	
CO-000100-00	CONN PLUG 7-PIN EURO BLK	
HW-060090-SO	#6-32 X 9/16" HEX STANDOFF	
HW-080002-HW	#8-32 x 2.5", HEX STANDOFF	
IC-000032-00	ICLIN DUAL OP AMP MC331 78P	U101
LB-000099-01	LABEL, CE LISTING	
LB-000126-00	LABEL, FACEPLATE CX12T	
LB-000128-00	LABEL, OUTPUT CXT	
LB-160226-01	LABEL, FUSE, UL CAUT.15A 250V	
MS-000059-00	TORIOD PAD	
MS-000087-00	FAN 24VDC 4.7"	
MS-100005-FG	FAN GUARD	
MS-150250-FU	15A,250V, FUSE	
NW-060500-KP	#6-32 KEPS NUT	
NW-080002-00	WASHER,#8 FLAT .049TH,SS,BLK	
NW-080500-KP	#8-32 KEPS NUT	
NW-140204-04	NUT HEX JAM 1/4-20 ZINC NYLON	
NW-140811-09	1/4" HEL SPRING LOCK WSHR REG	
NW-142421-03	.312 ID, 1.50 OD X .06 THK STL	
PL-000000-AF	ADHESIVE FEET	
PL-000003-CP	AC CORD PROTECTOR	
PL-000035-PL	STANDOFF NYLATCH 1/4 TURN .25"	
PL-000042-PL	BUSHING,STRAIN RELIEF,INT., RD	
PL-000045-PL	RIVET, PLASTIC, SCREW TYPE	
PM-000016-00	SHIPPING INSERT	
PM-002501-00	SHIPPING CARTON	
PM-004000-00	SHIPPING BAG,FULL LENGTH CHAS.	
PM-004001-00	PAD, SHIPPING	
RE-000160-NT	THERMISTOR NTC 15A CUR LIM	R901
RE-007501-00	RES WW 75 5% 5W	
SC-060042-PP	#6-32 X 1/4" P/P BLACK,SEMS,IT	
SC-060081-PP	#6-32 X 1/2" P/P BLACK	
SC-080051-PS	#8-32 X 5/16" P/P SEMS BLACK	
SC-082051-PL	SCREW,TAP,PAN PH#8X5/16" "B"BK	
SC-100061-PS	SCREW 1 0-32X3/8" BLK P/P SEMS	
SC-140441-PP	1/4-20 X 2.75L 2A PH PHILLIPS	
SW-000037-00	SWITCH, POWER DOUBLE-POLE	
WC-000014-01	CABLE ASSY 14 COND RIB. 10" LG	
WC-000016-00	CABLE ASSY 16 COND RIB. 28" LG	
WC-000069-00	WIRE ASSY, OUTPUT, CX SERIES	
WC-001101-SQ	QSC SLEEVE 1101, 5", CLEAR	
WC-003069-00	A/C POWER CORD ASSEMBLY EXPORT	
WC-003071-00	WIRE ASSY, AC SWITCH	
WC-003086-00	WIRE ASSY, THERMOSTAT SW 2 SP	
XF-000002-00	CX12 TRANSFORMER	
XF-000025-00	PWR XFMR, TOROIDAL, 500W	

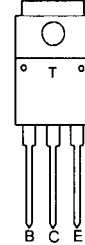
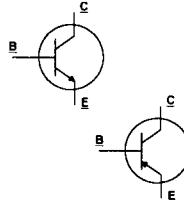
# CX Series Semiconductor Identification

## TMOS FET TMOS Power Field Effect Transistor

IRFZ44

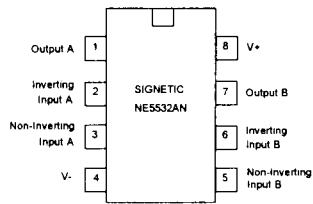
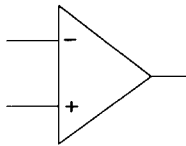


## DRIVER TRANSISTORS 2SC3298 NPN / 2SA1306 PNP

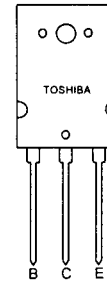
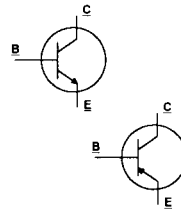


## OP-AMP Dual Operational Amplifier

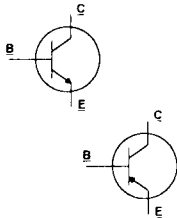
NE5532AN



## POWER TRANSISTORS 2SC3281 NPN / 2SA1302 PNP

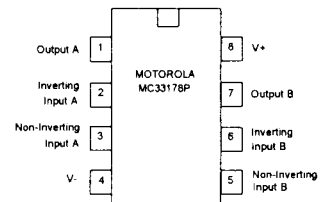
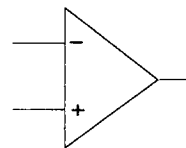


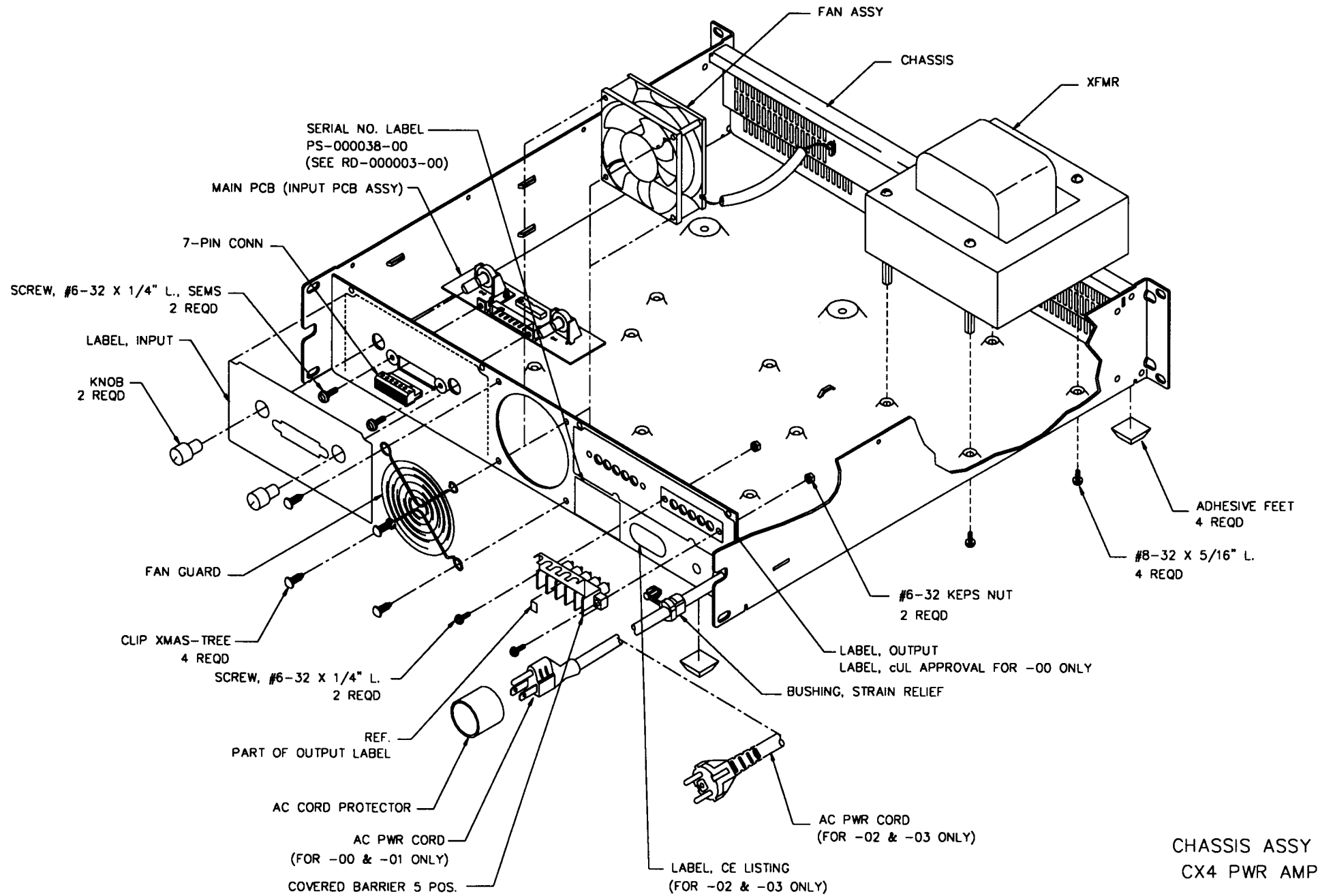
## SMALL SIGNAL TRANSISTORS 2N4410 NPN / MPS8599 PNP

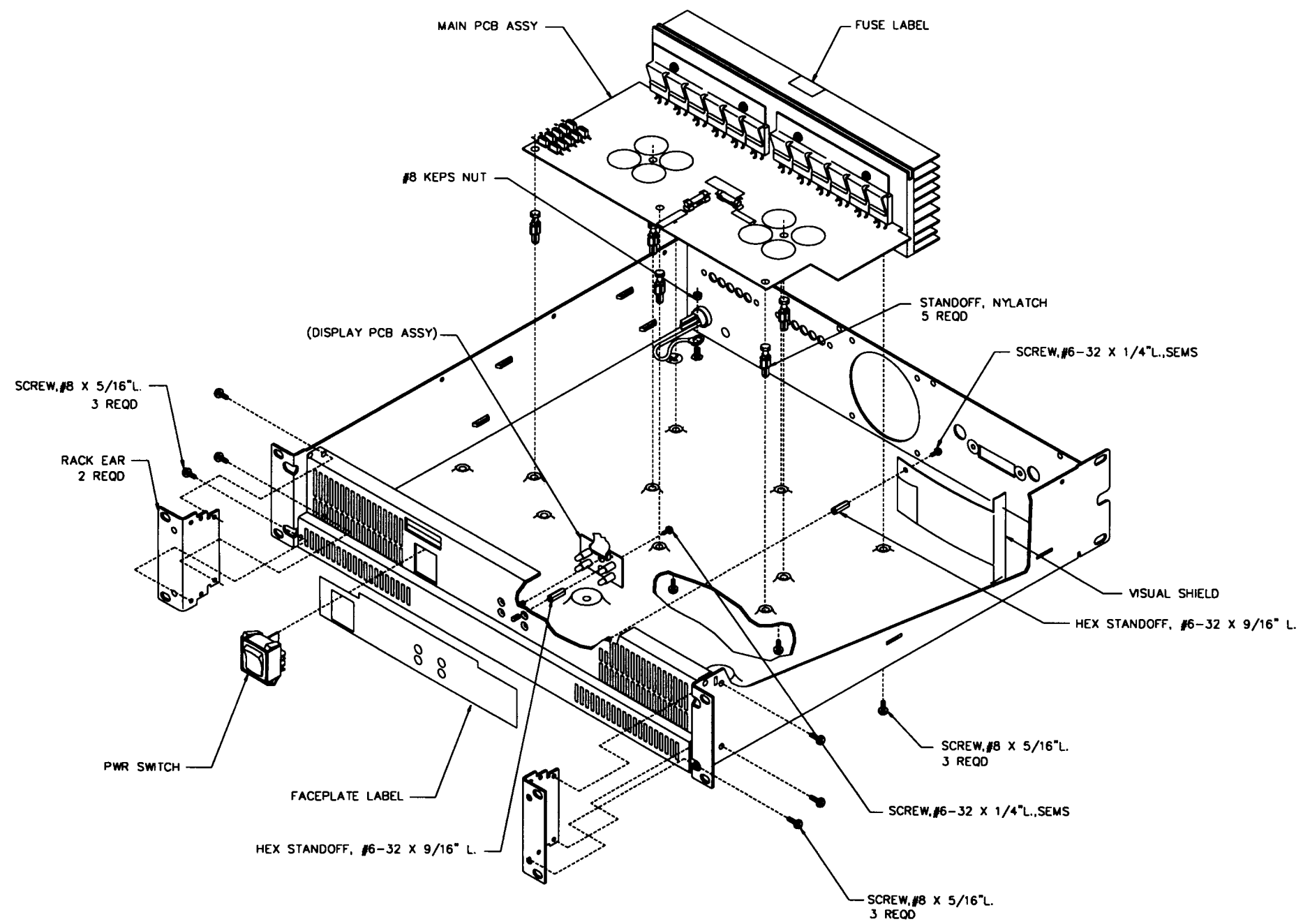


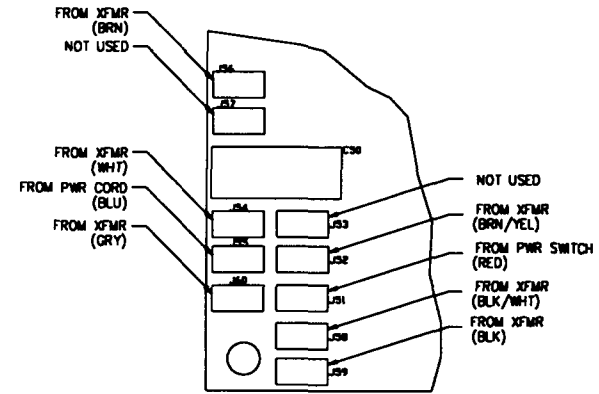
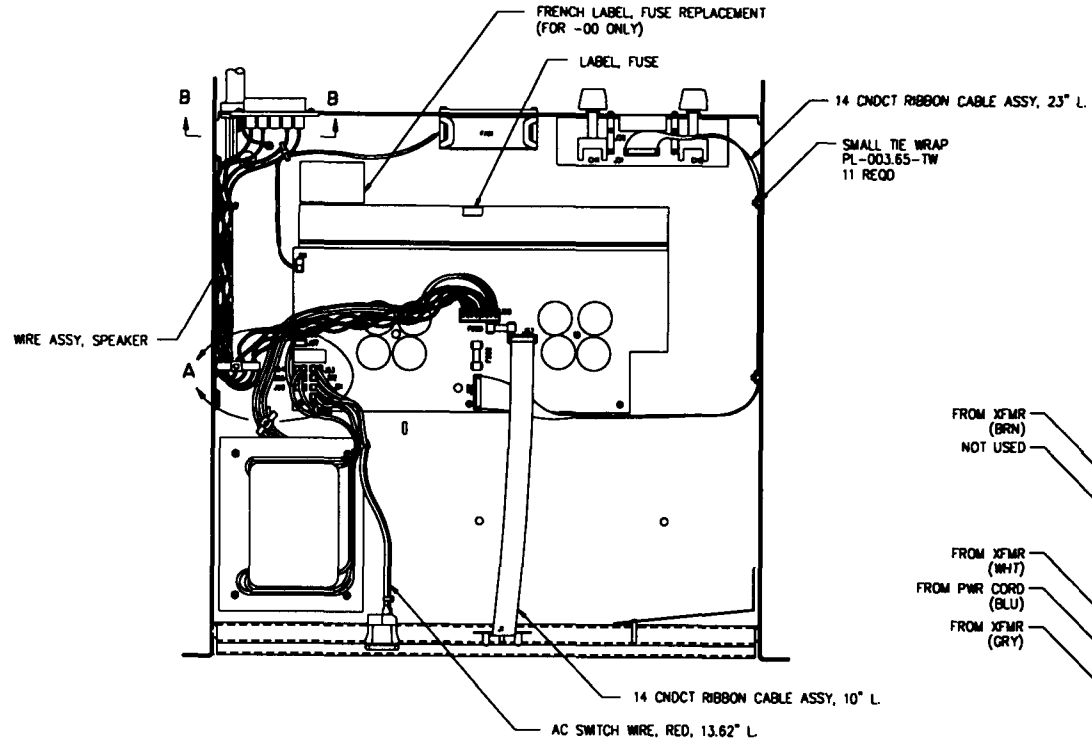
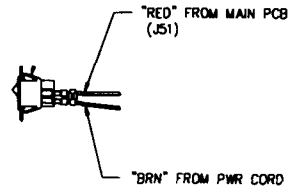
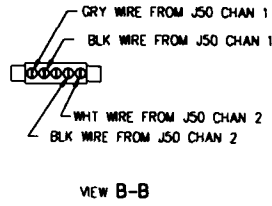
## OP-AMP Dual Operational Amplifier

MC33178P

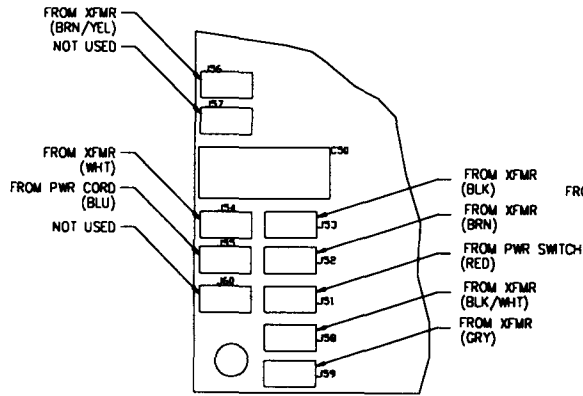




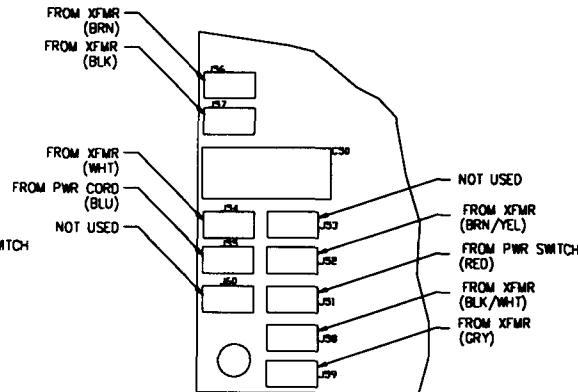




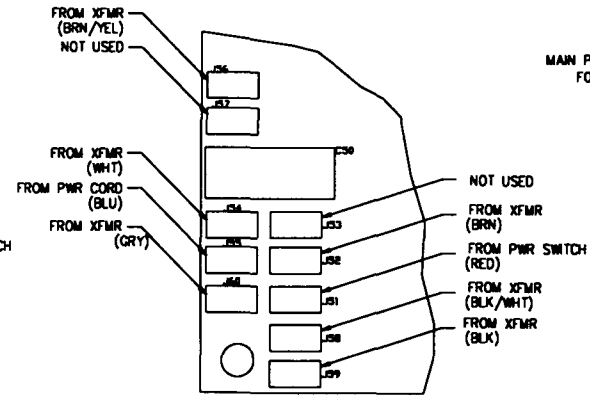
VIEW A  
MAIN PCB AC ASSY FOR 220V FOR -03 ONLY



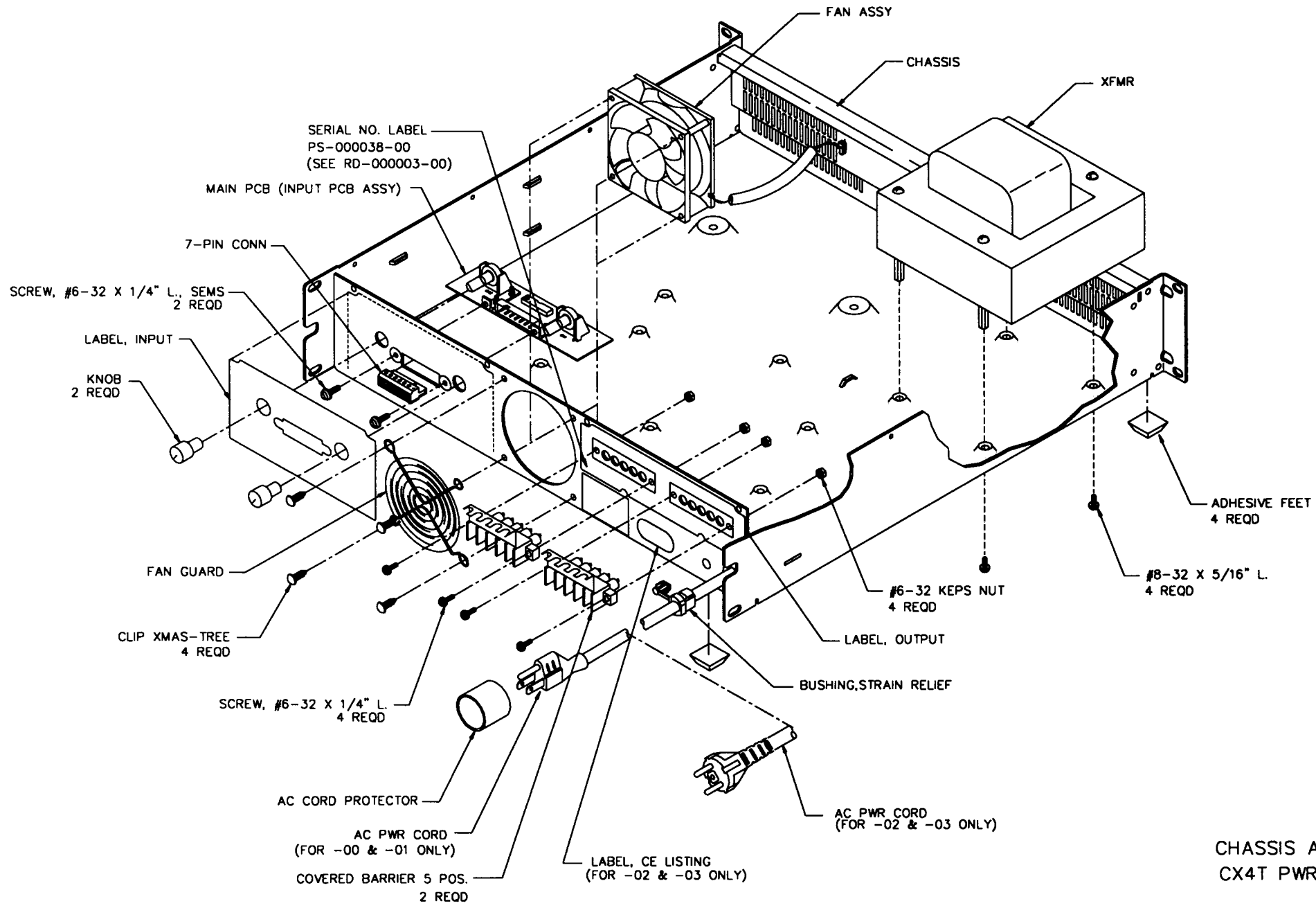
VIEW A  
MAIN PCB AC ASSY FOR 120V FOR -00 ONLY



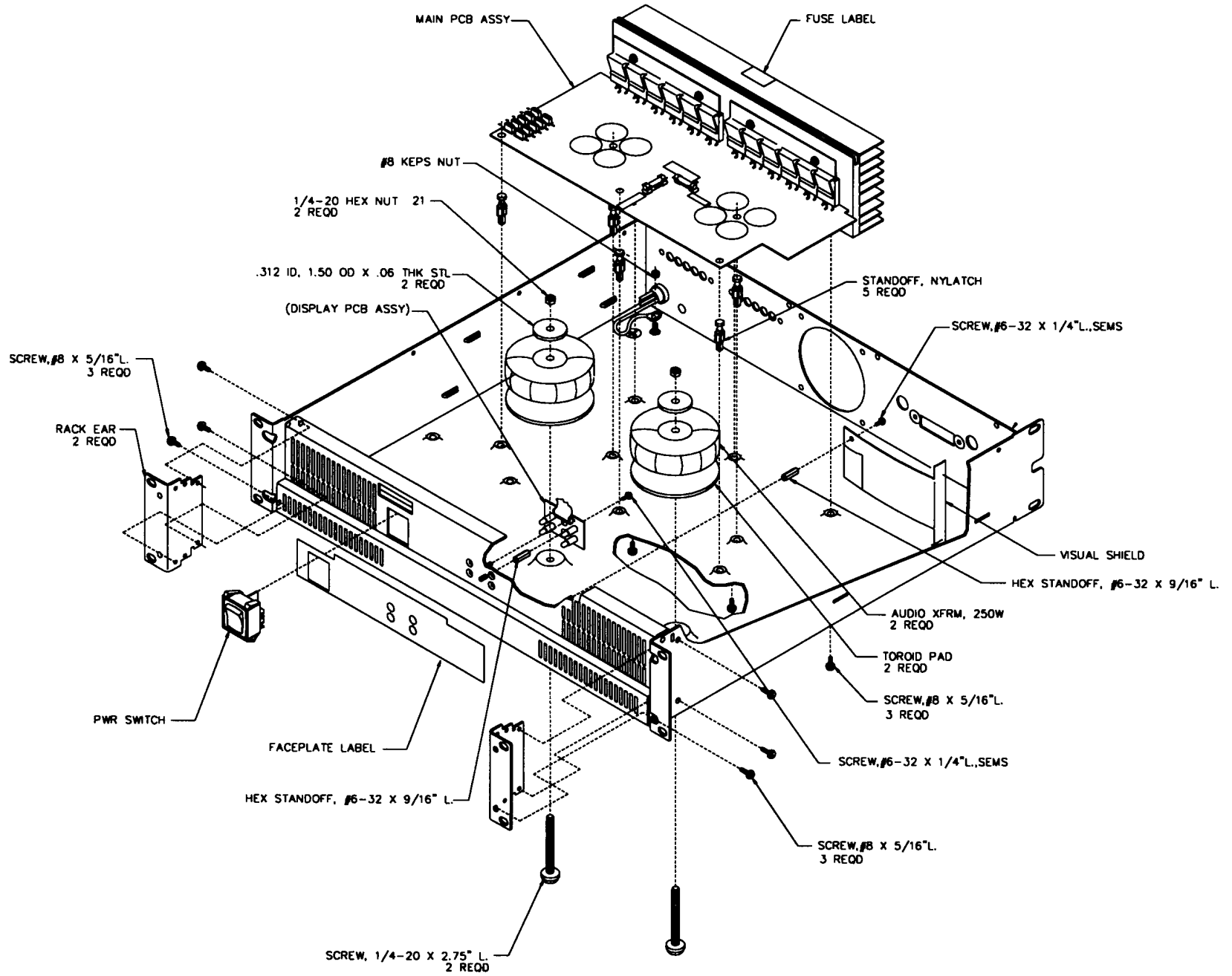
VIEW A  
MAIN PCB AC ASSY FOR 100V FOR -01 ONLY



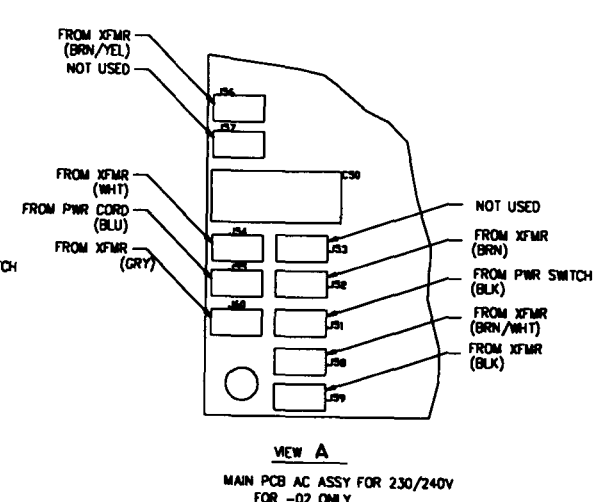
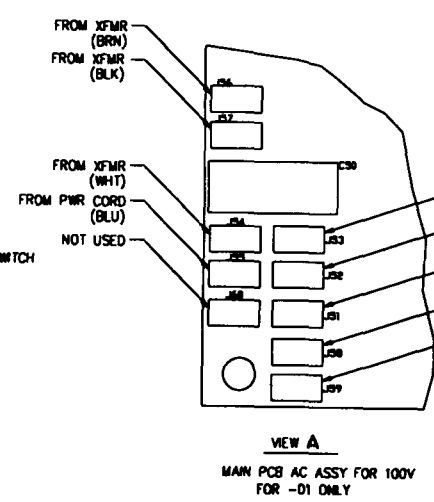
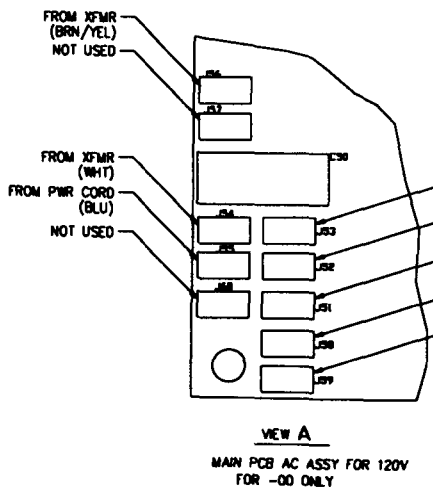
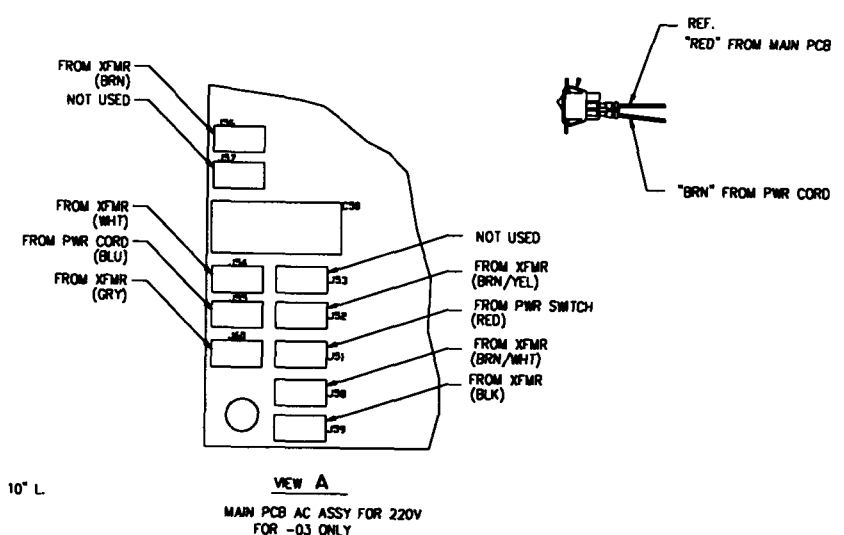
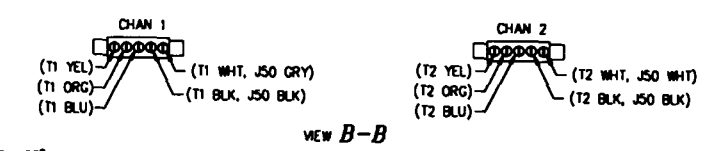
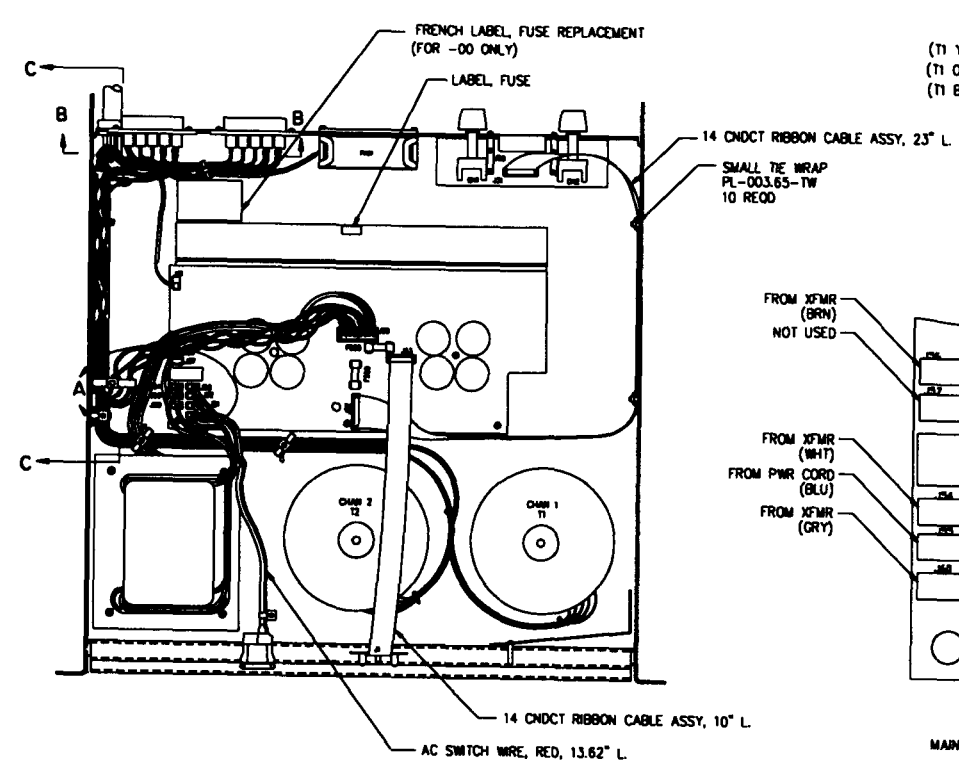
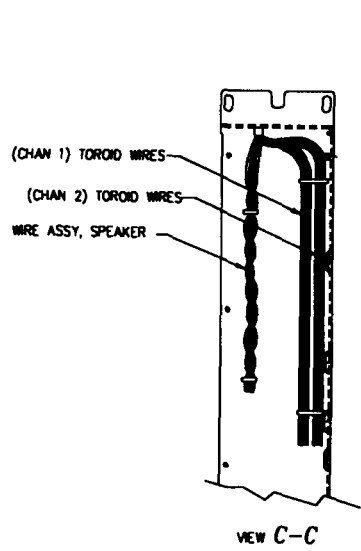
VIEW A  
MAIN PCB AC ASSY FOR 230/240V FOR -02 ONLY

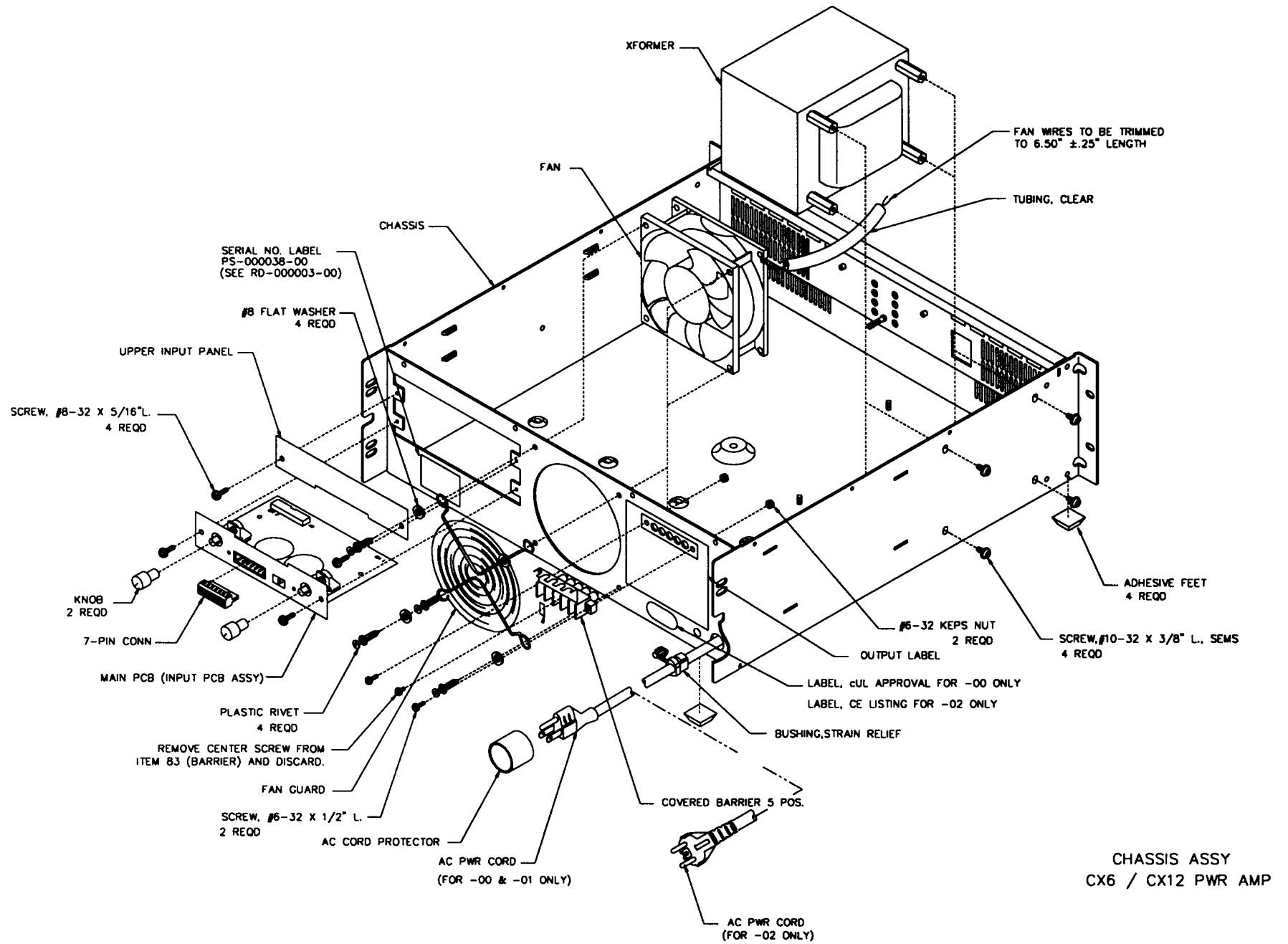


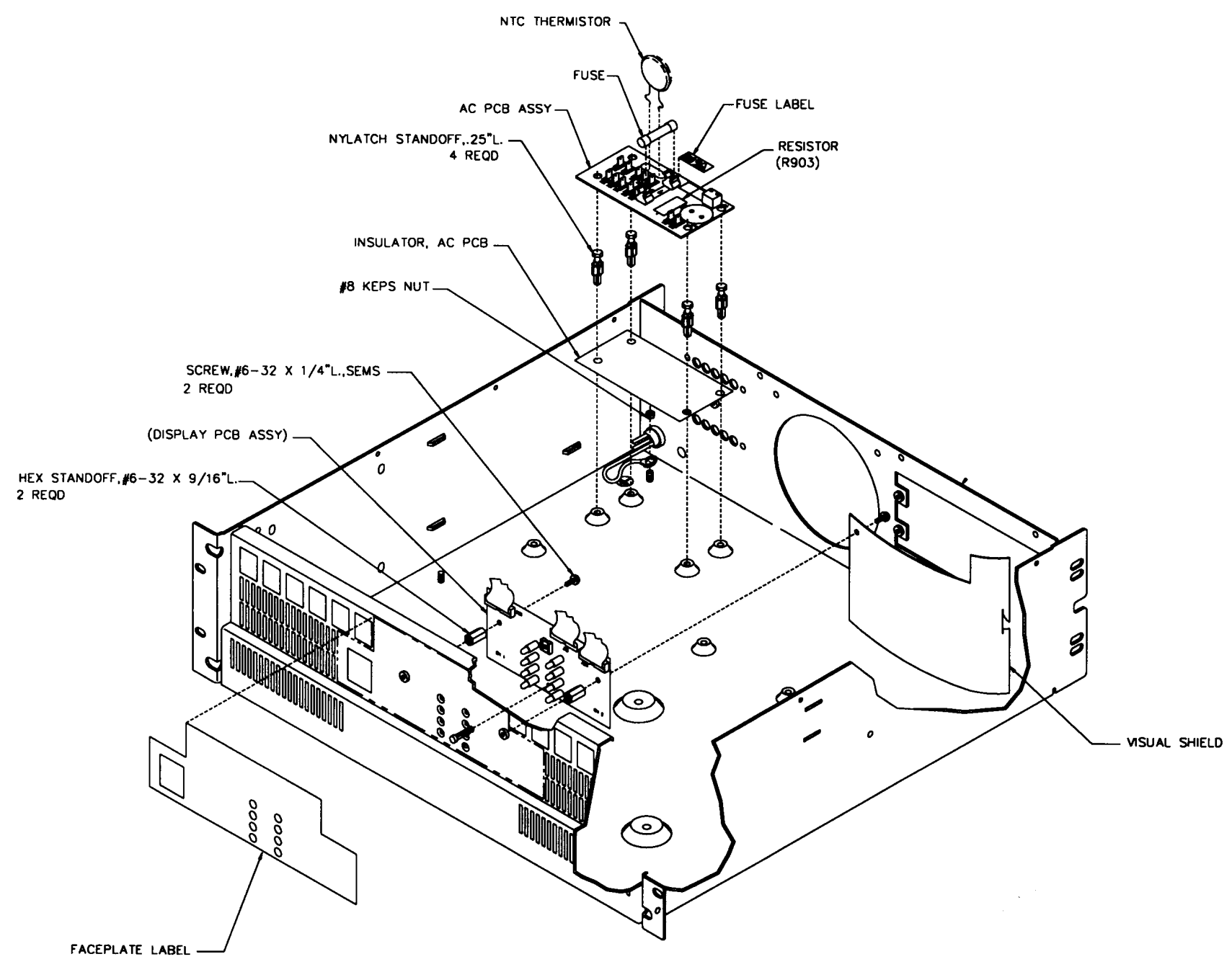
CHASSIS ASSY  
 CX4T PWR AMP

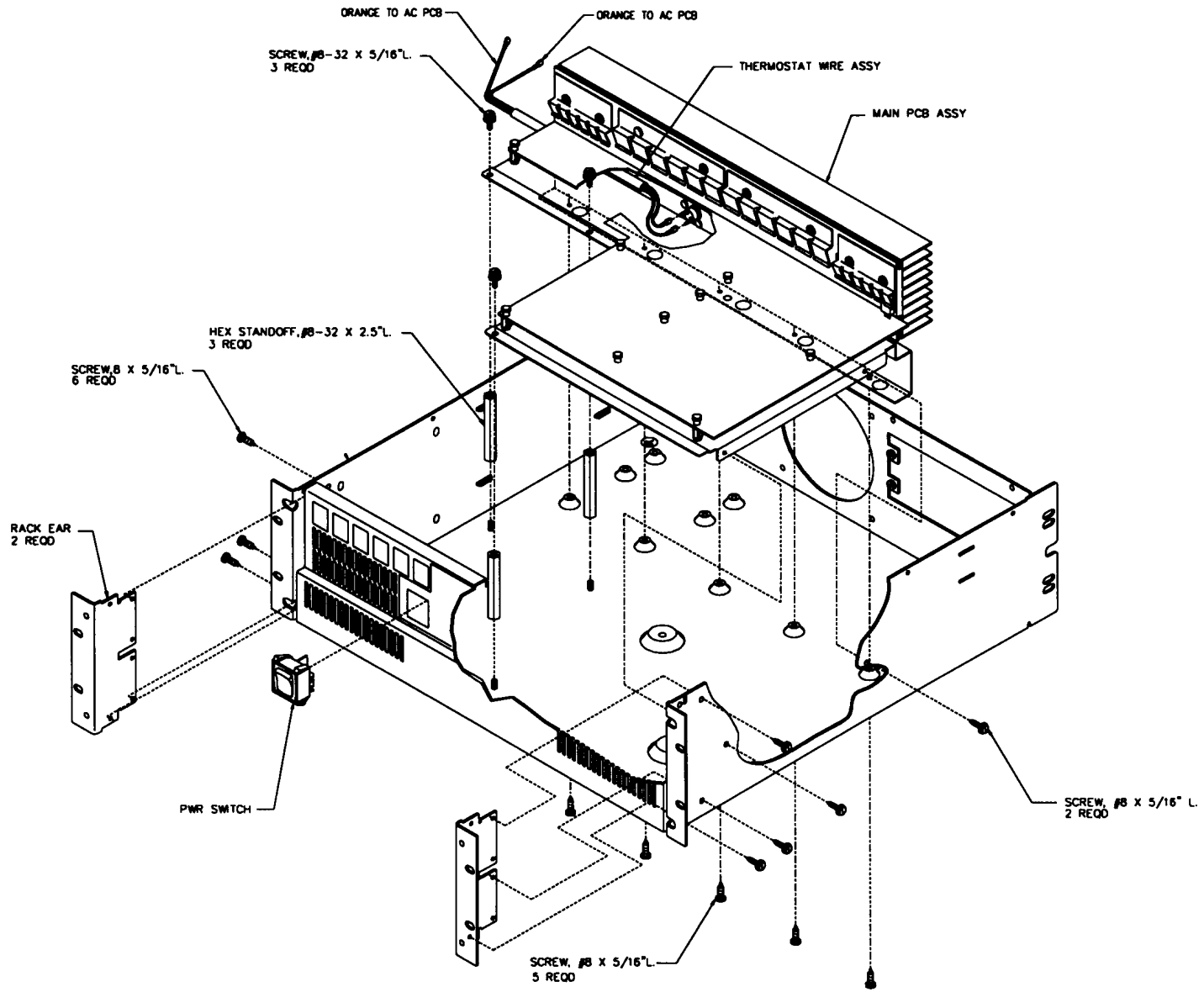


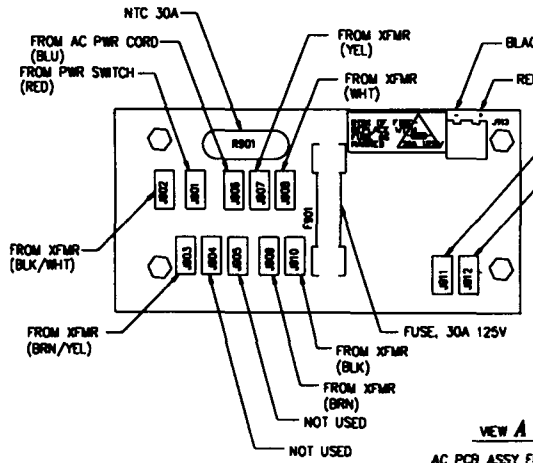
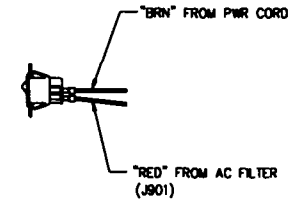
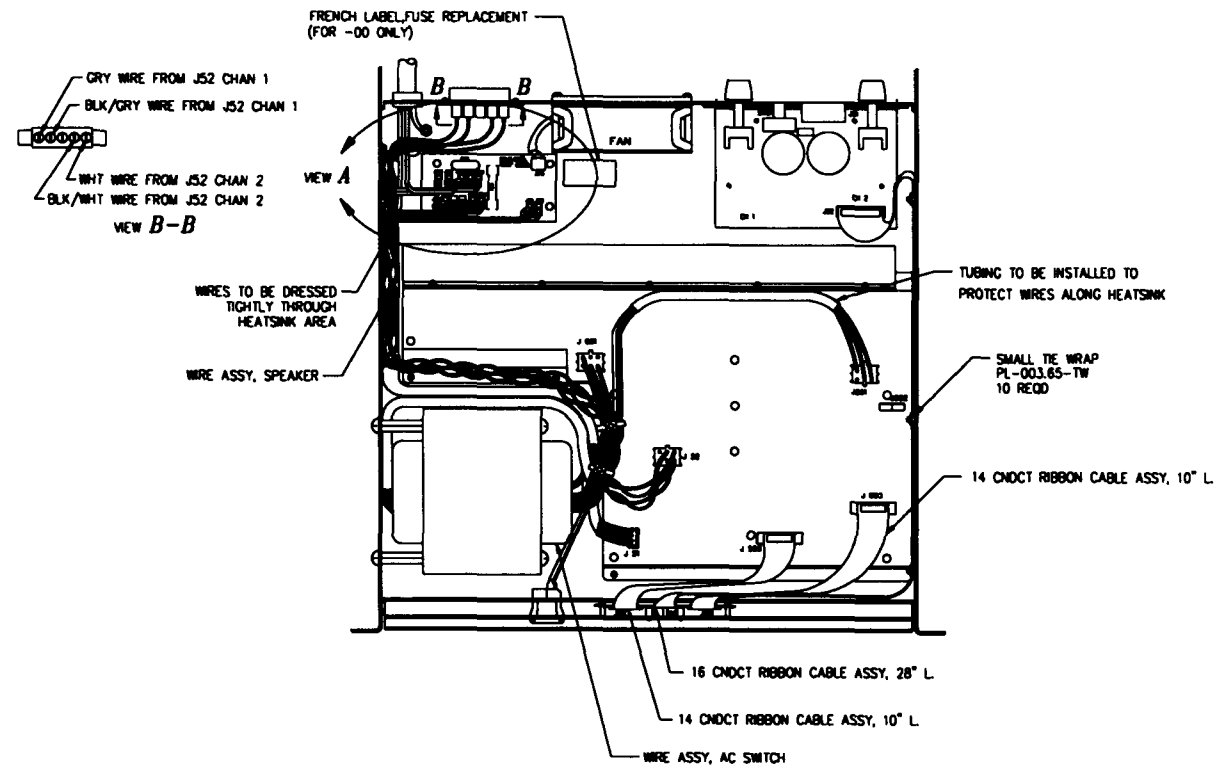




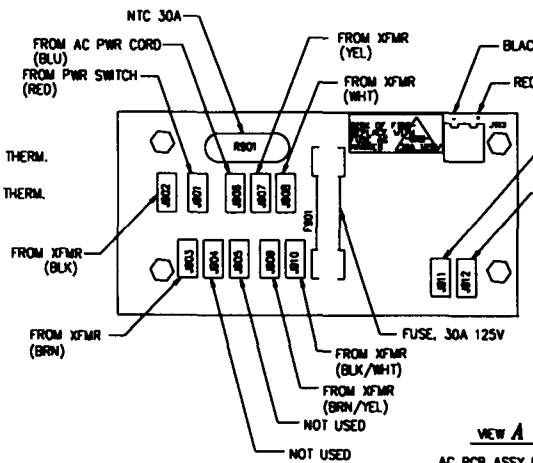




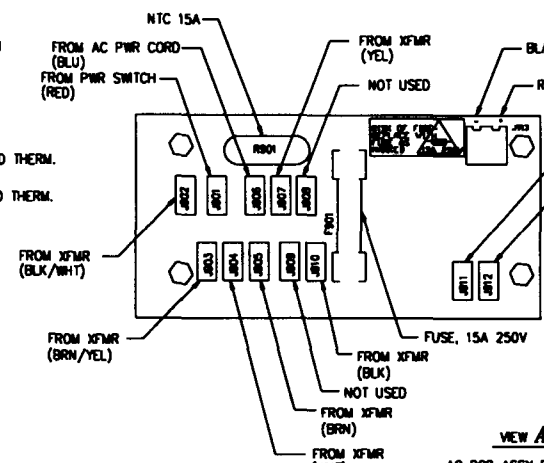




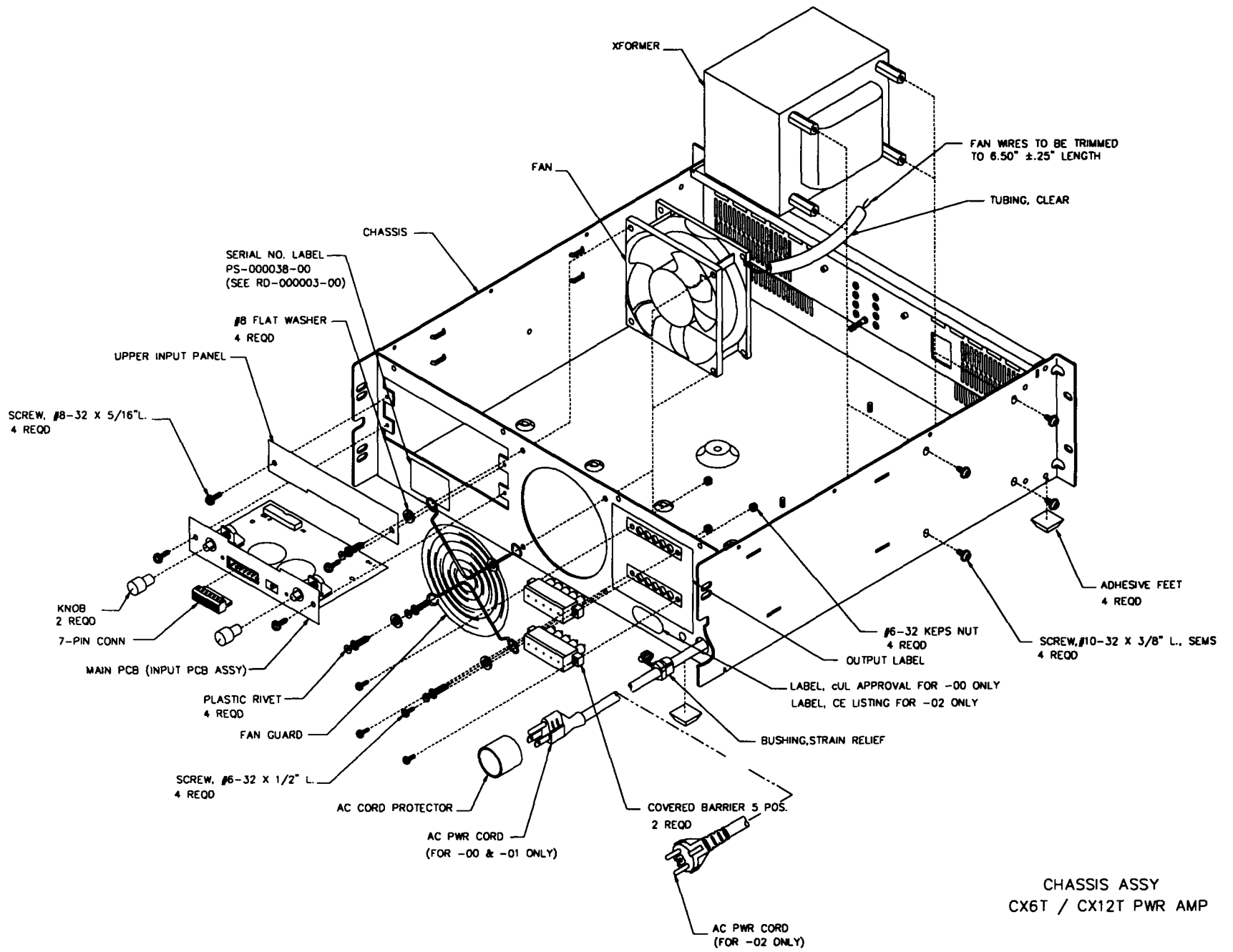
**VIEW A**  
AC PCB ASSY FOR 120V  
FOR -00 ONLY



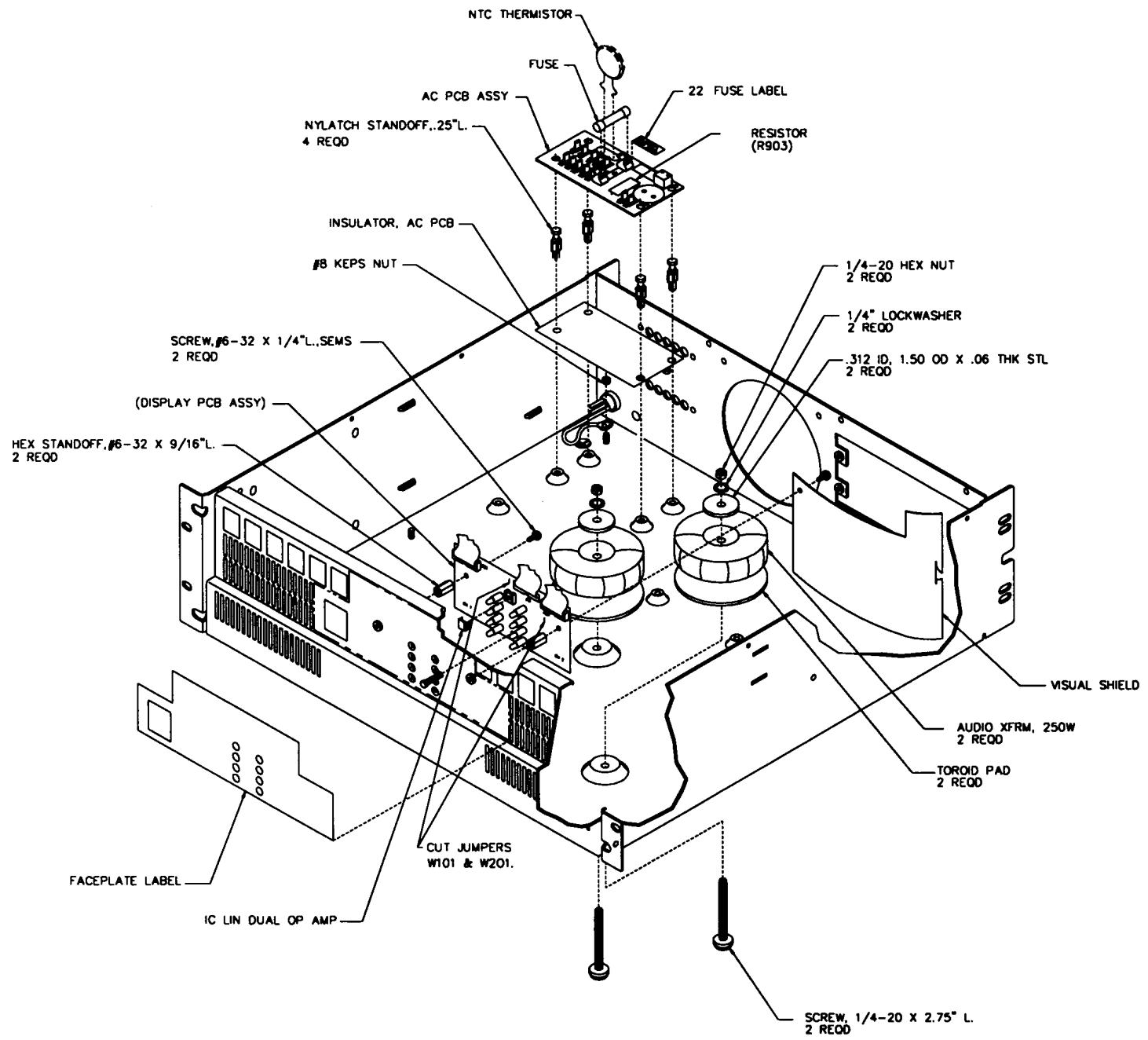
**VIEW A**  
AC PCB ASSY FOR 100V  
FOR -01 ONLY

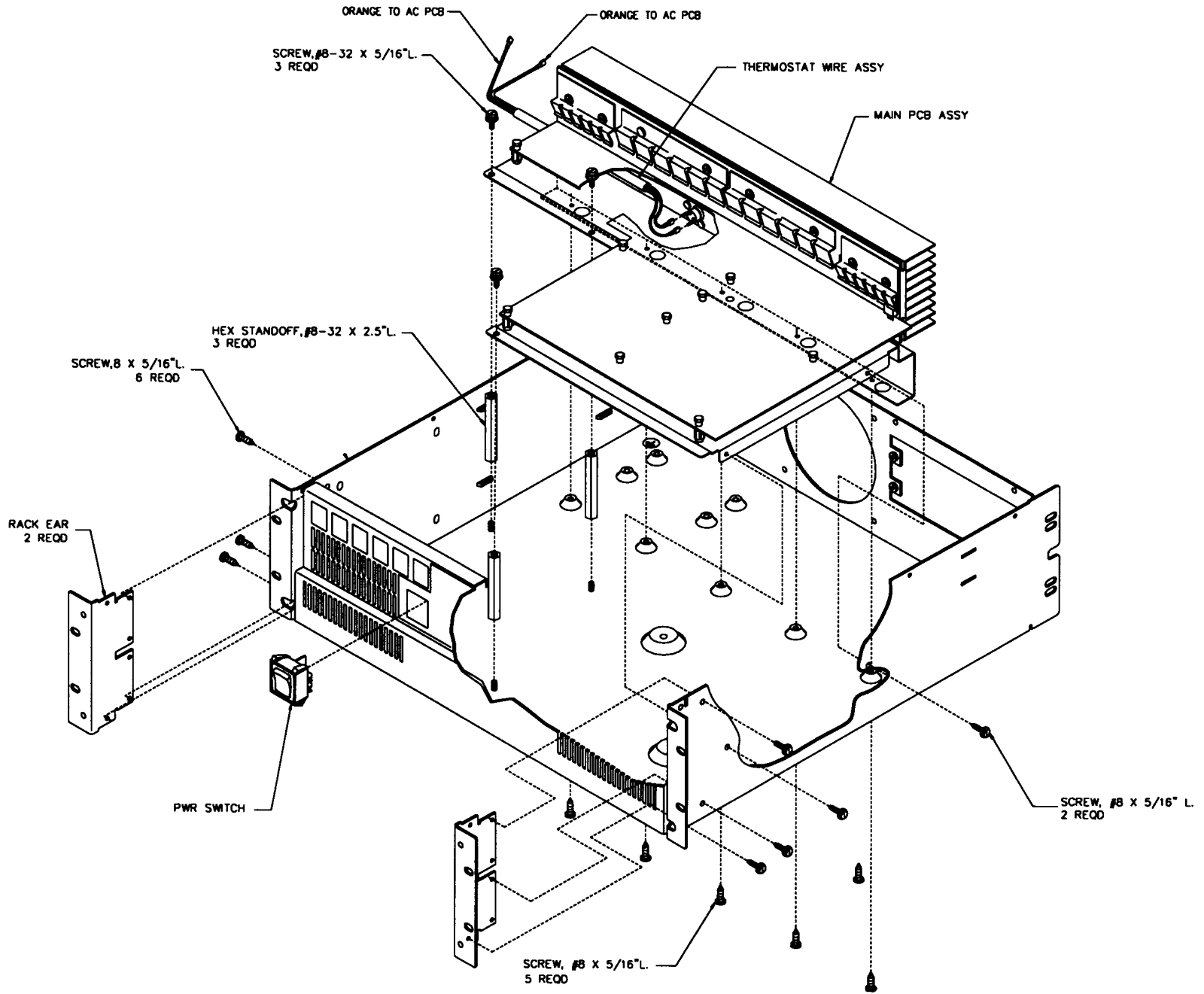


**VIEW A**  
AC PCB ASSY FOR 230V  
FOR -02 ONLY

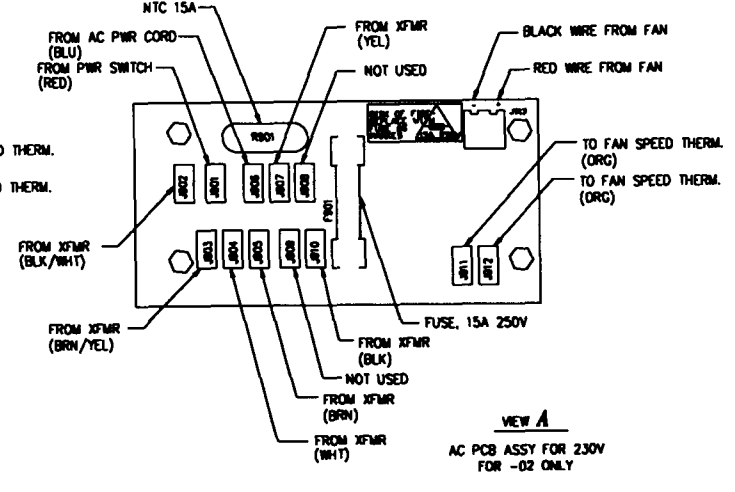
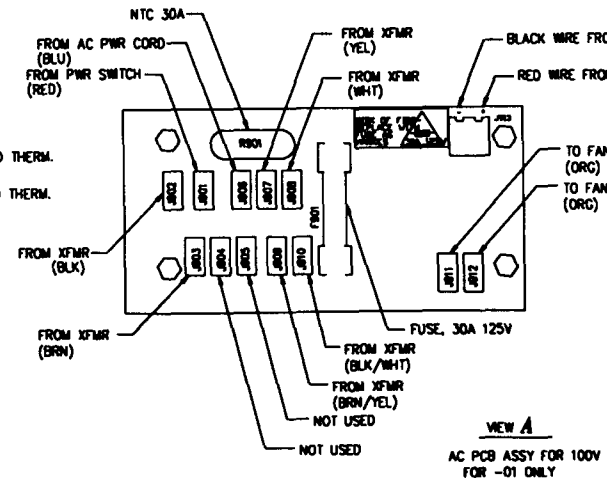
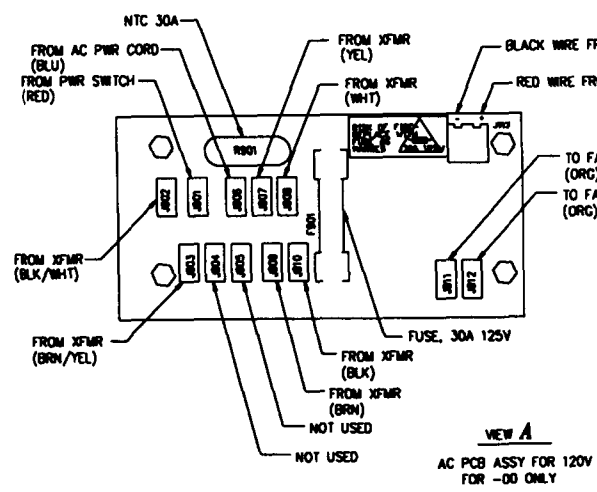
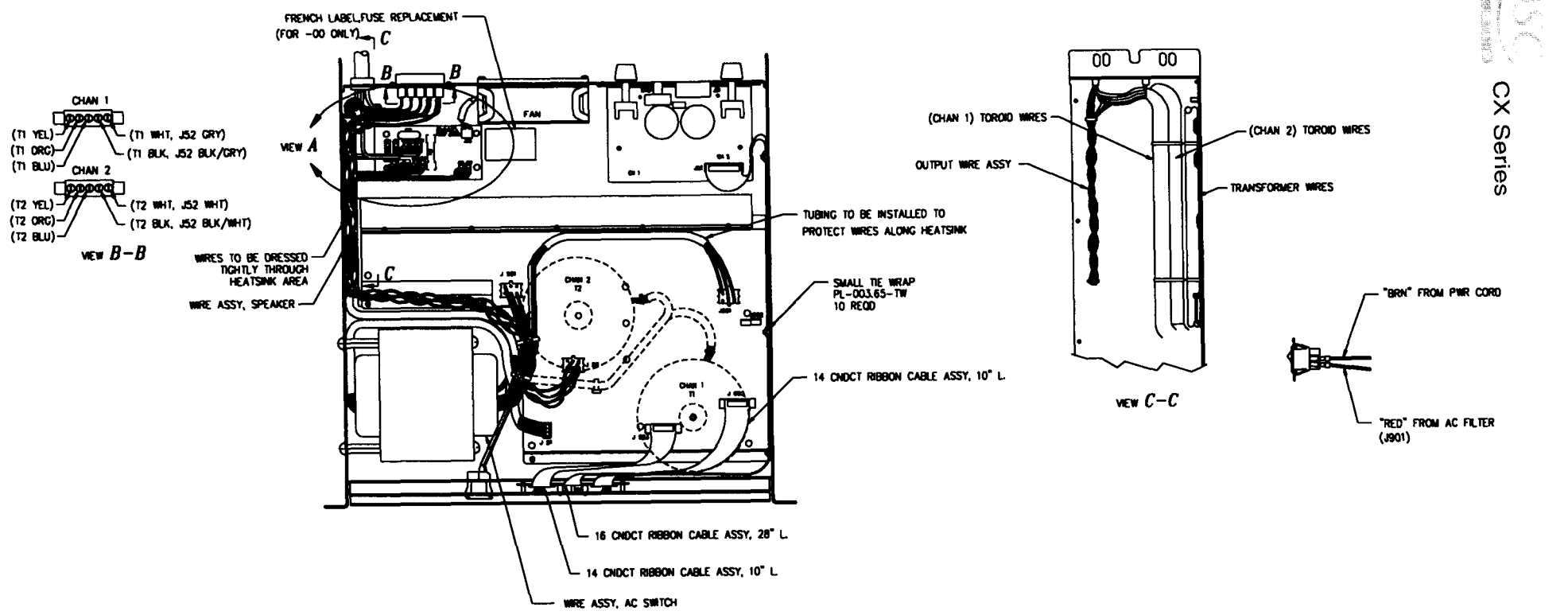


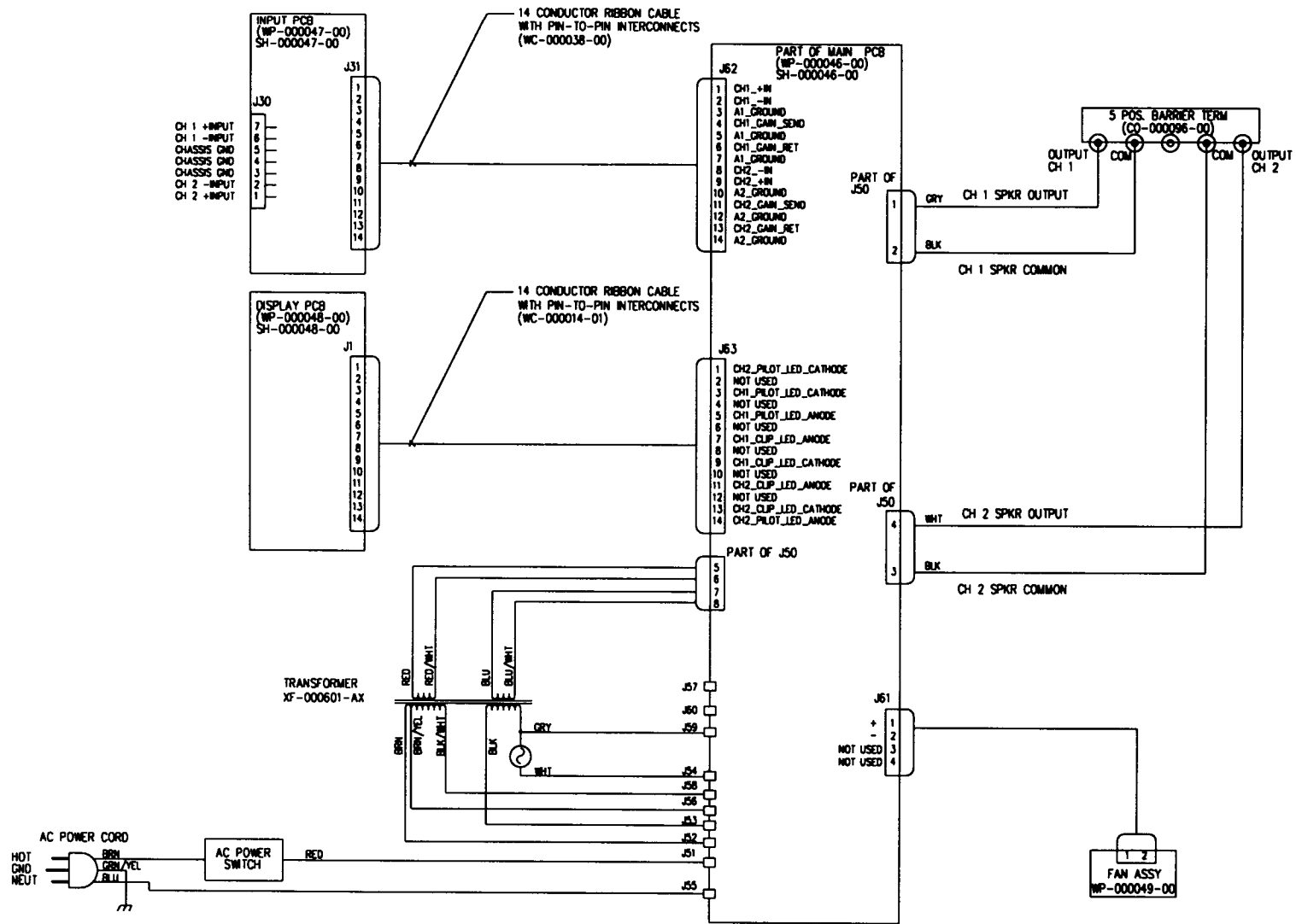
CHASSIS ASSY  
CX6T / CX12T PWR AMP





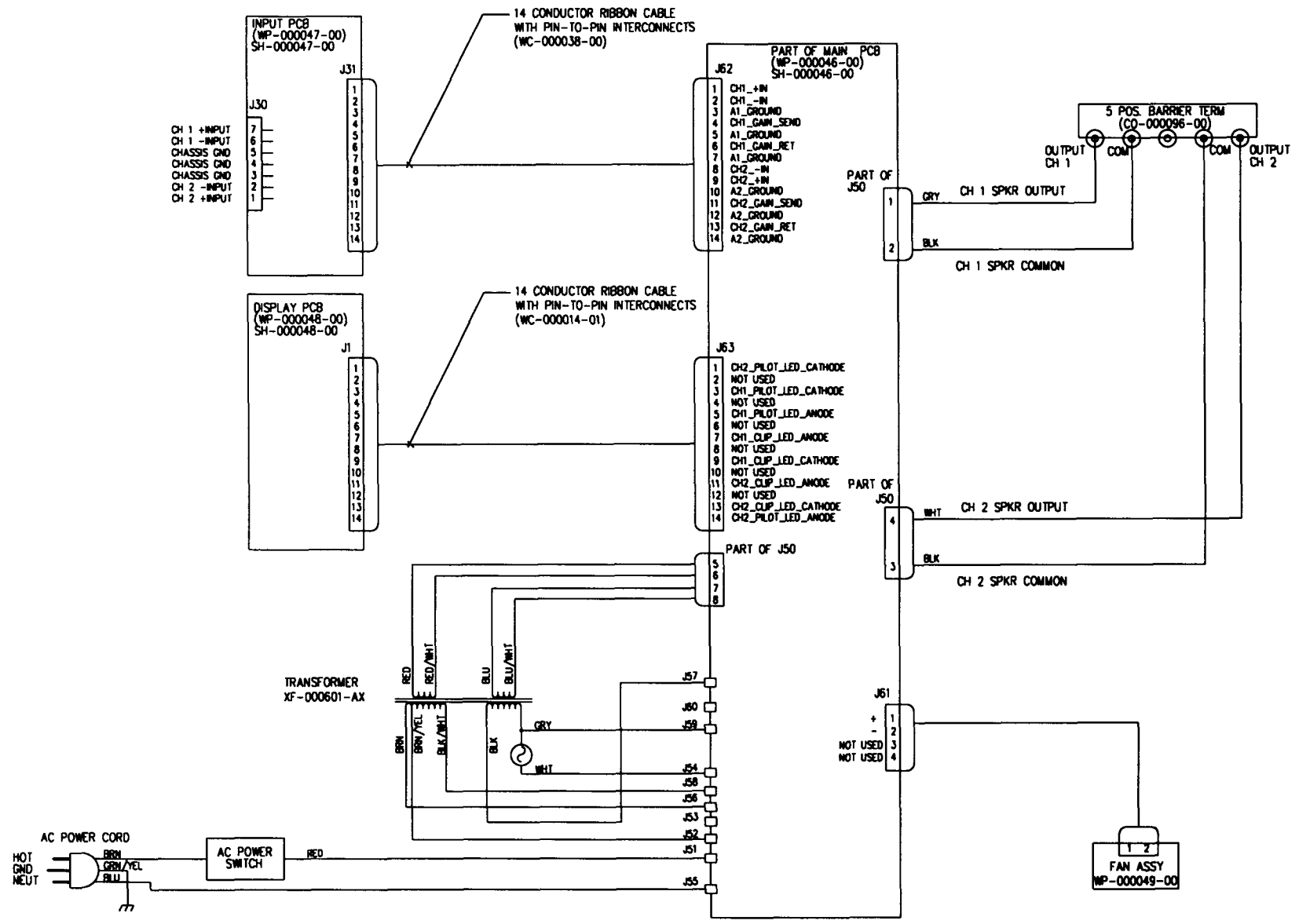




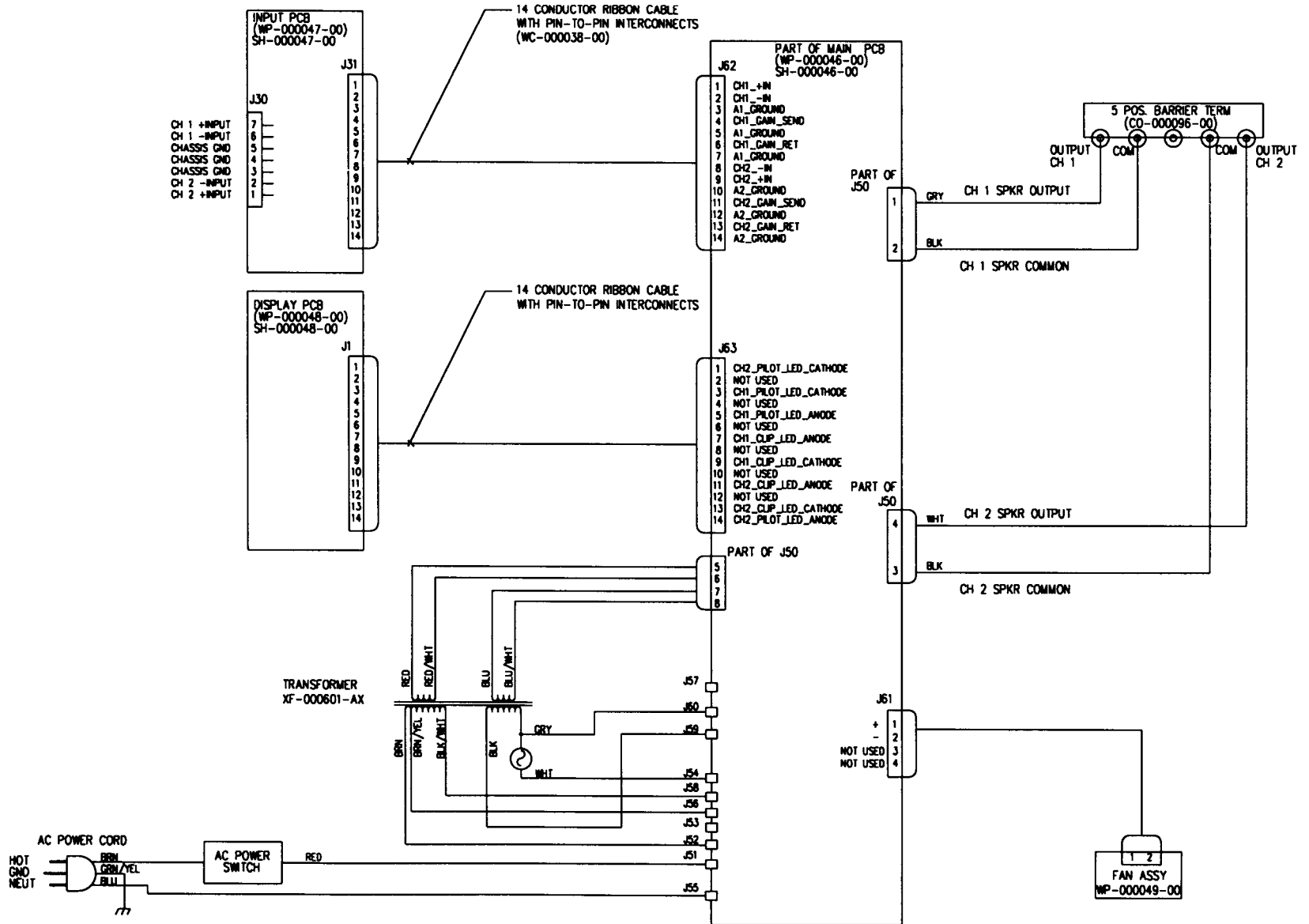


WIRING DIAGRAM - CX 4, 120V SHOWN

WIRING DIAGRAM,  
CX 4

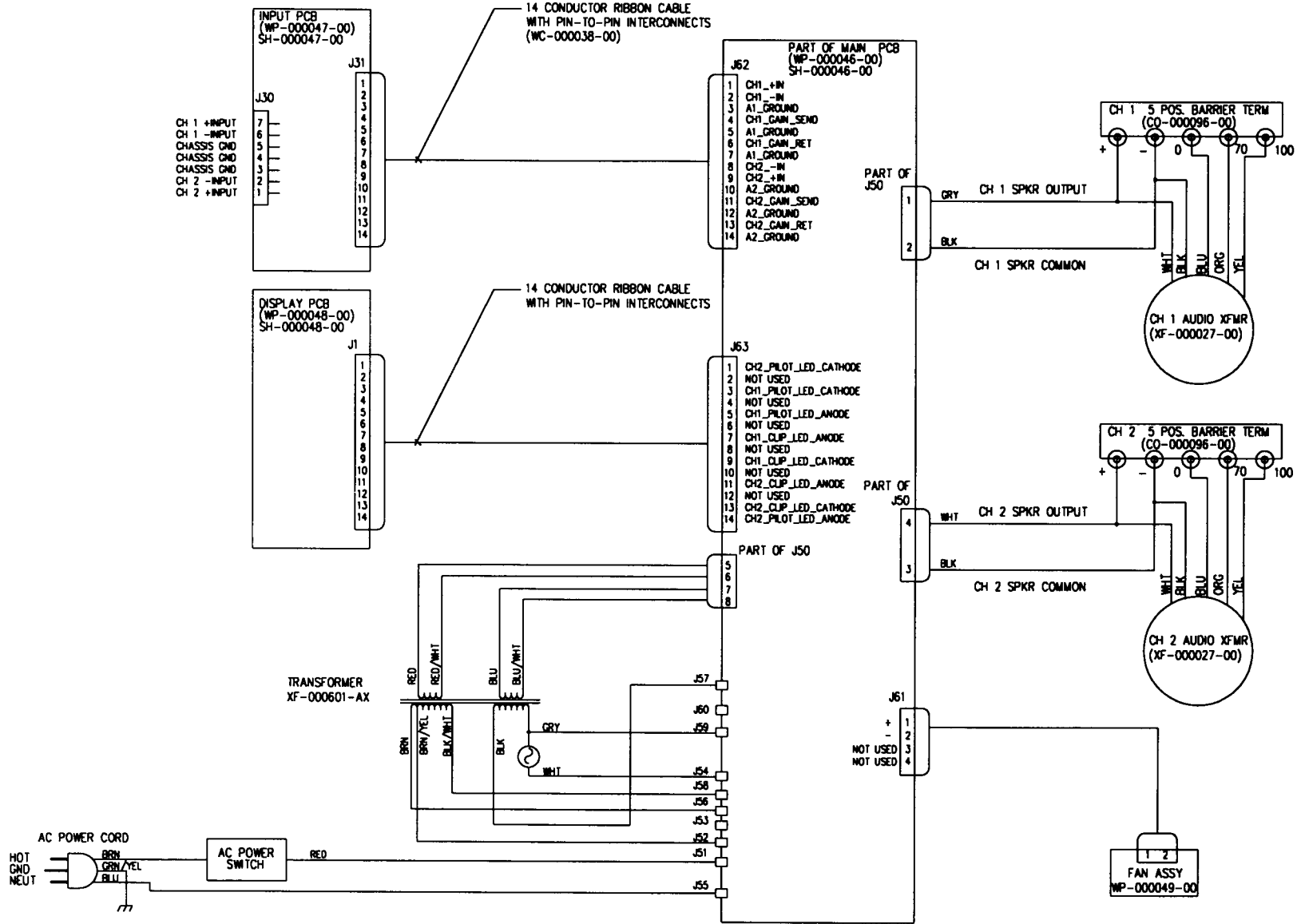


WIRING DIAGRAM - CX 4, 100V SHOWN



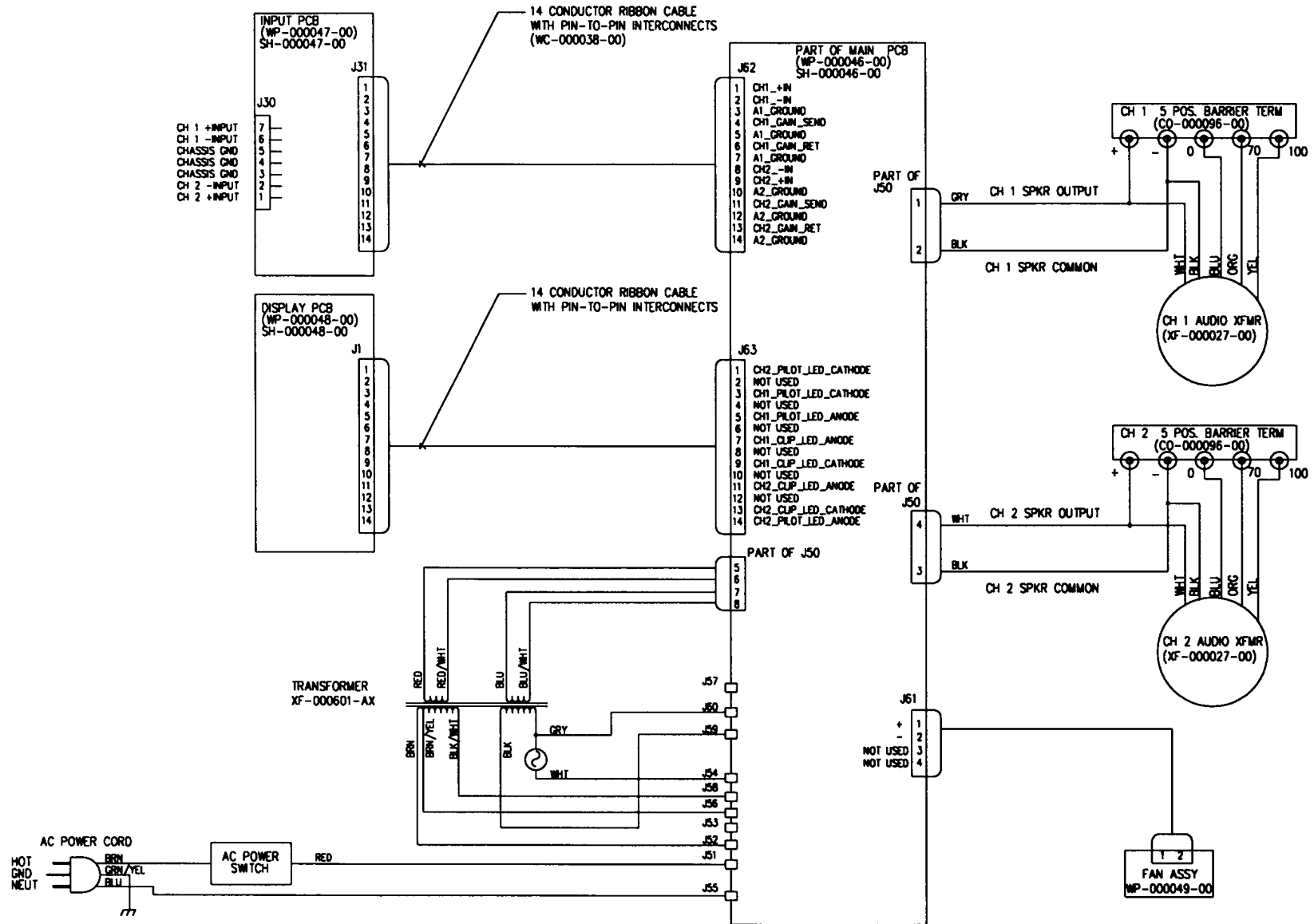
WIRING DIAGRAM - CX 4, 230V SHOWN



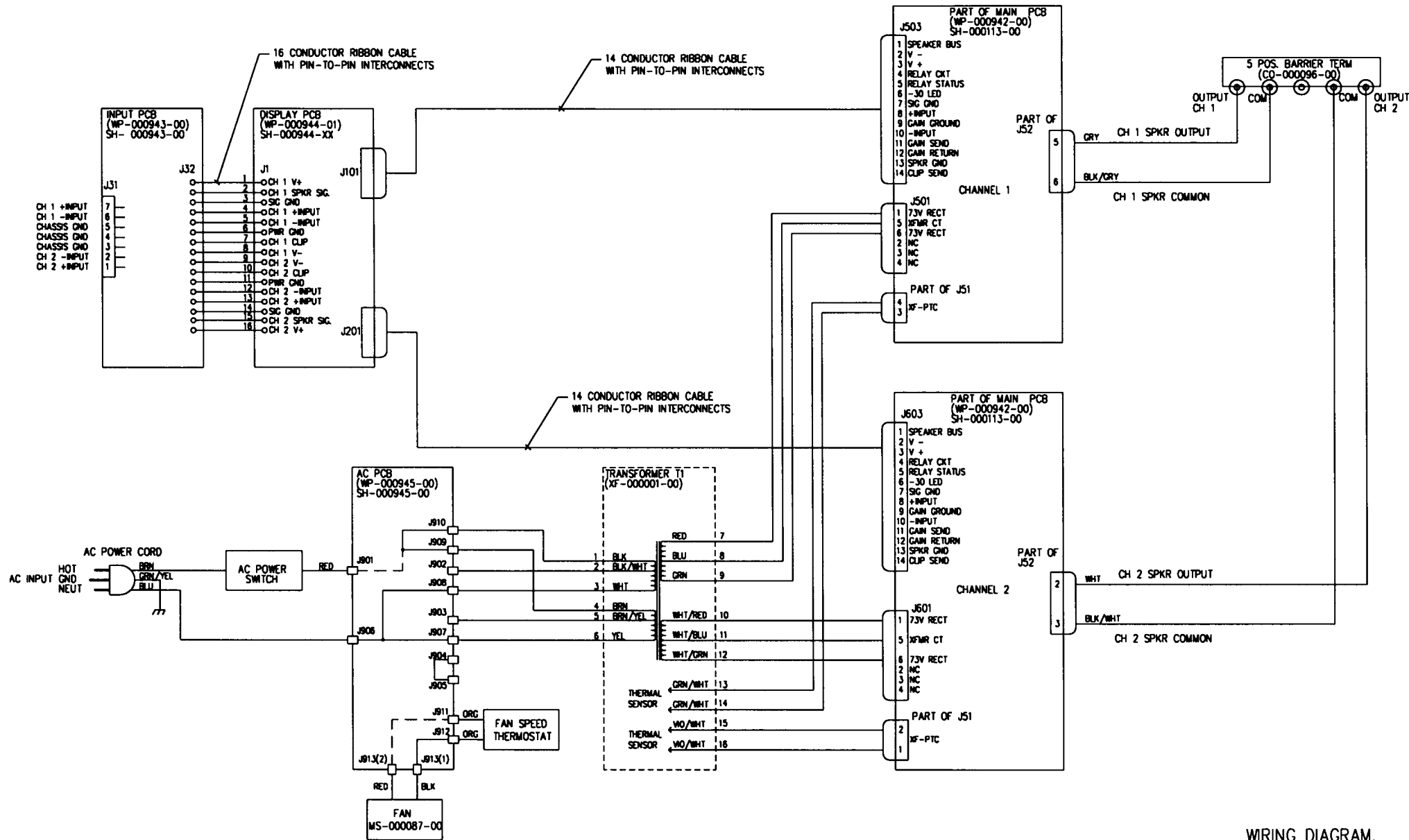


WIRING DIAGRAM - CX 4T, 100V SHOWN





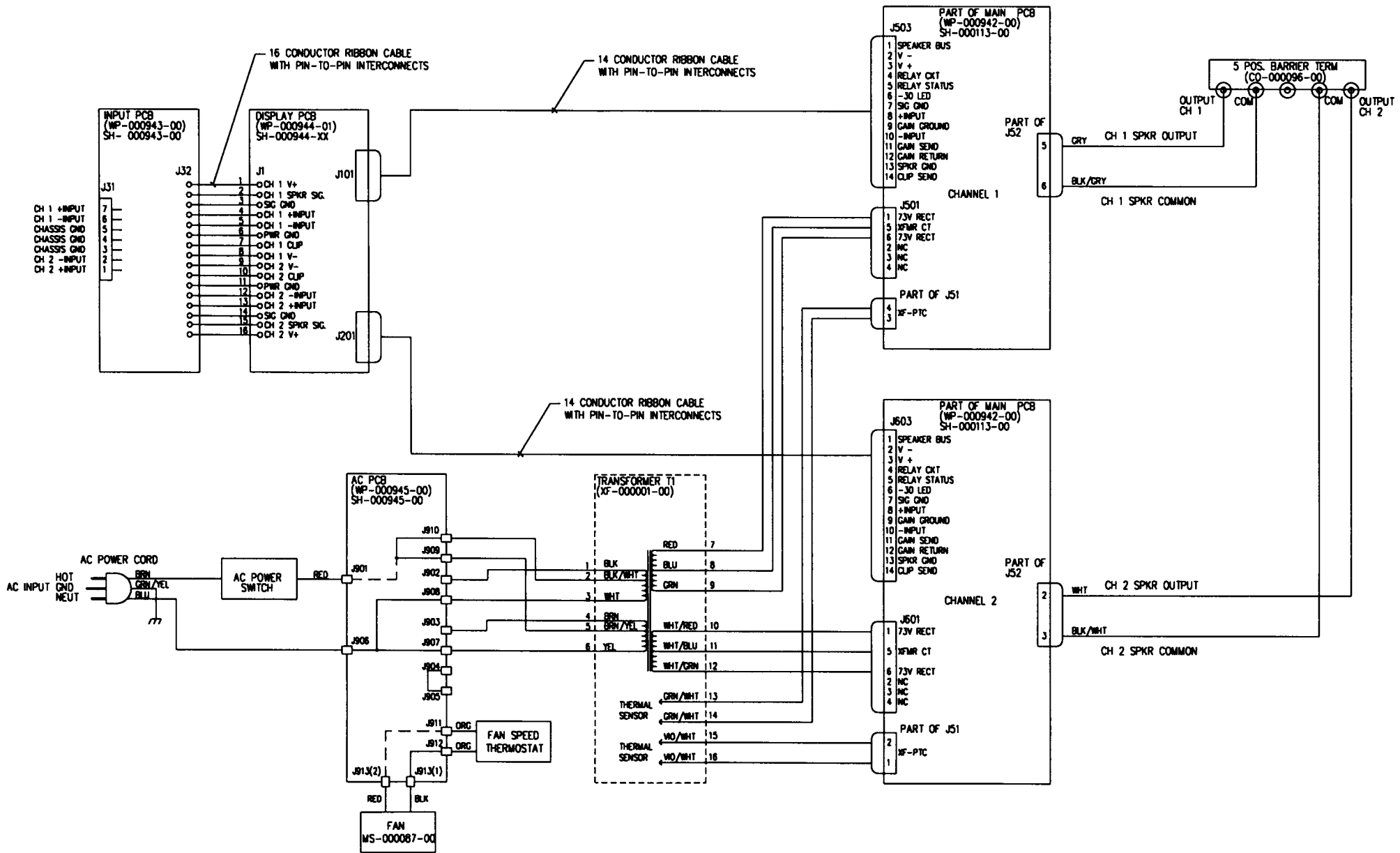
WIRING DIAGRAM - CX 4T, 230V SHOWN



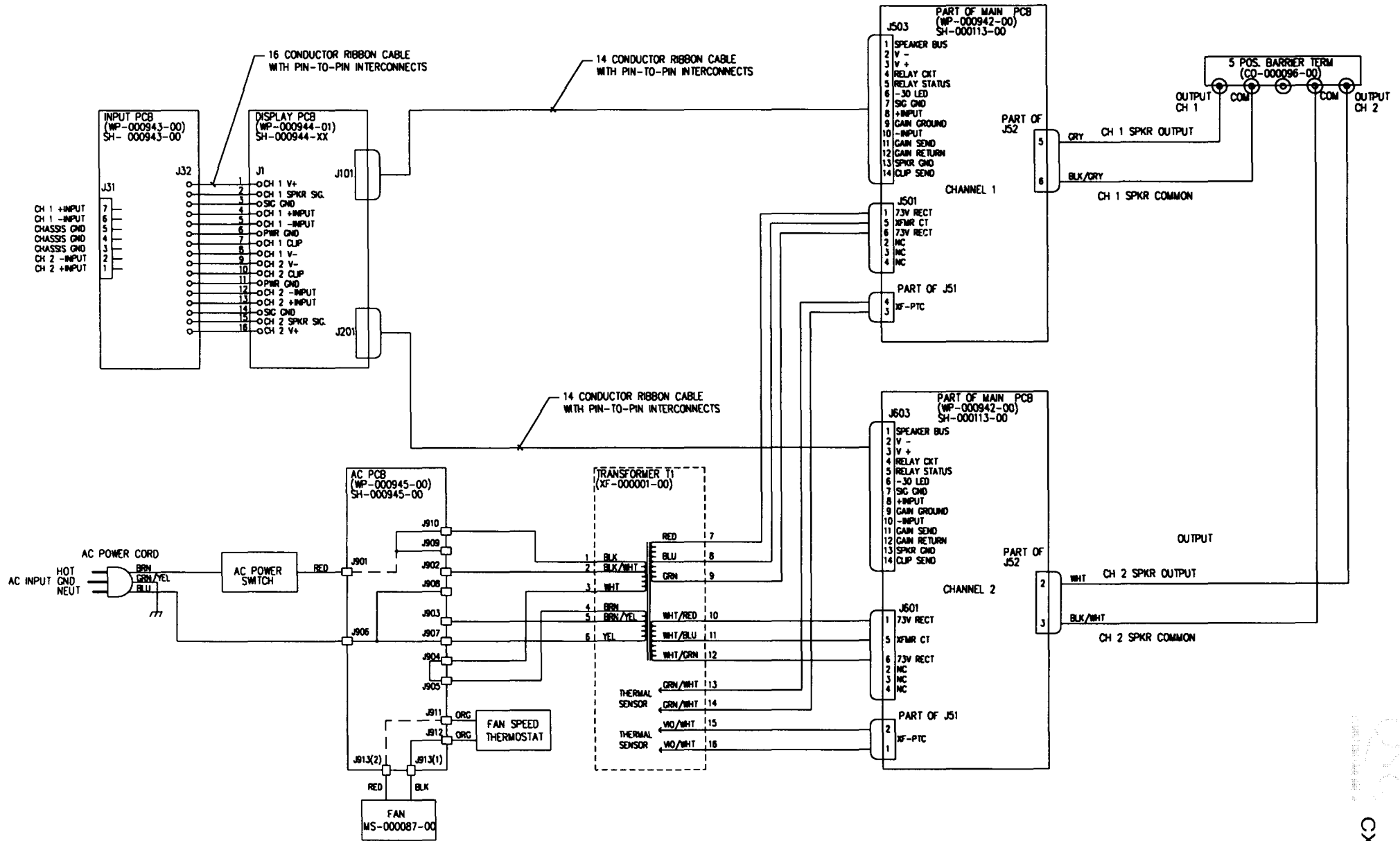
WIRING DIAGRAM - CX 6, 120V SHOWN

WIRING DIAGRAM, CX 6

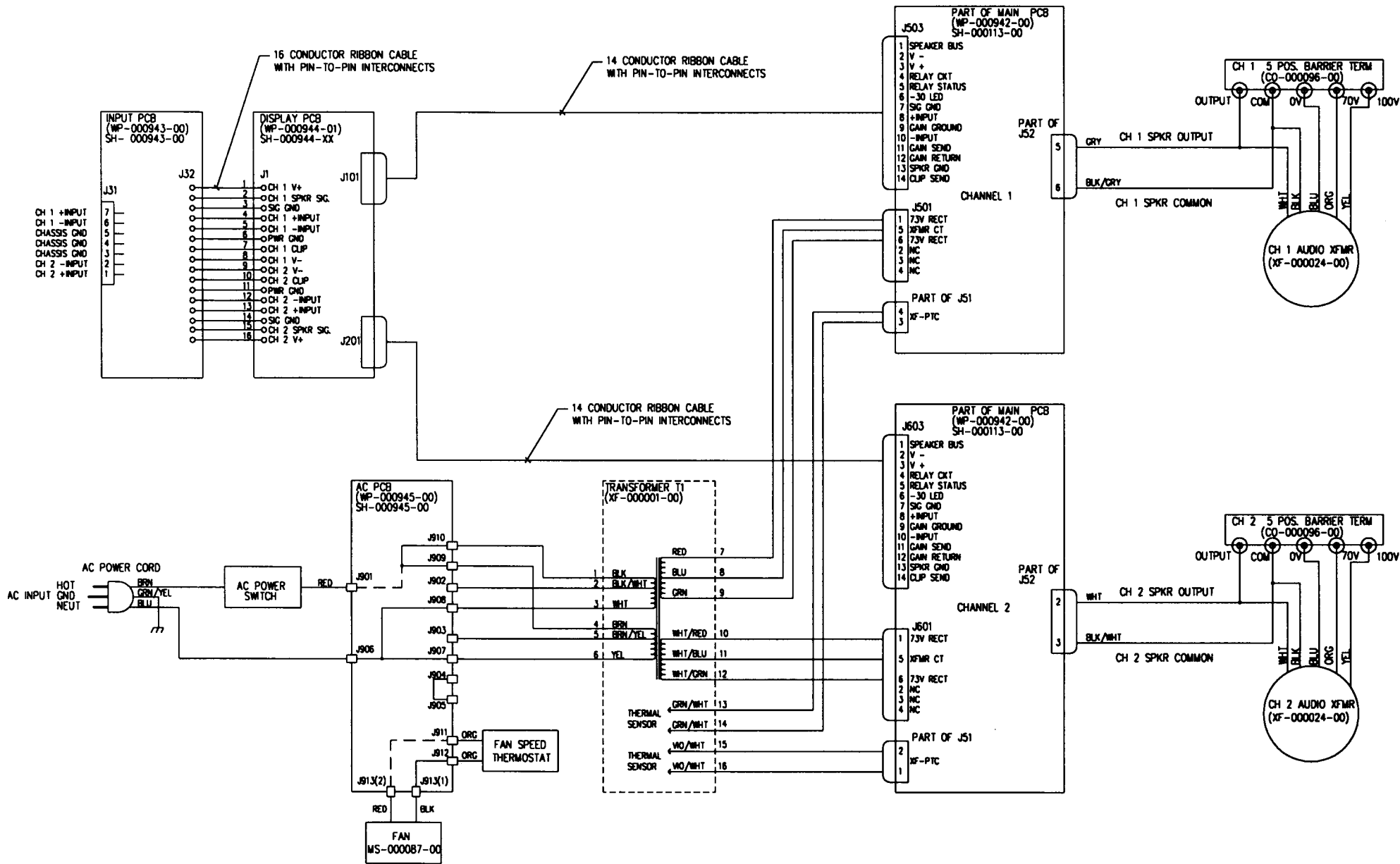




WIRING DIAGRAM - CX 6, 100V SHOWN

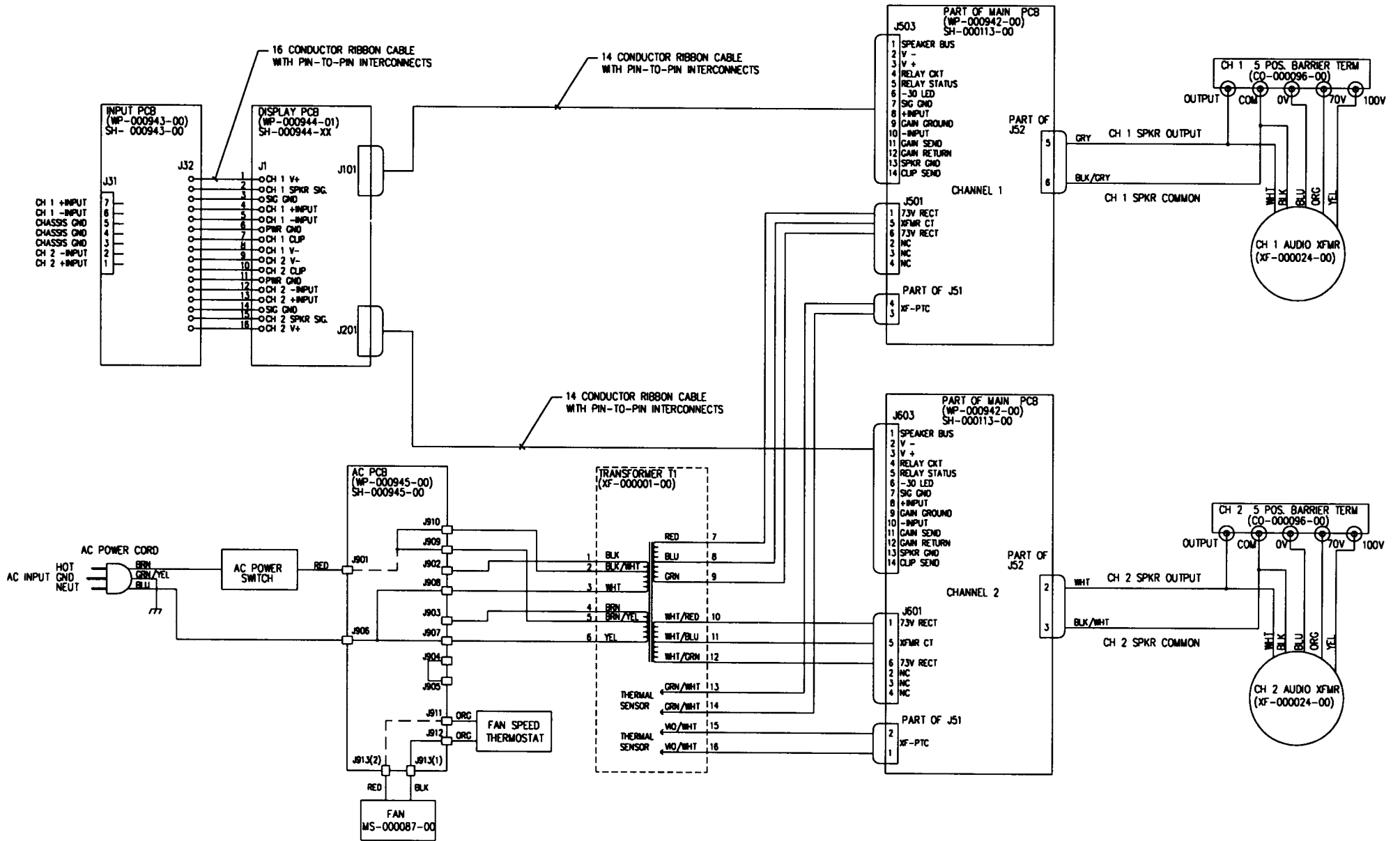


WIRING DIAGRAM - CX 6, 230V SHOWN

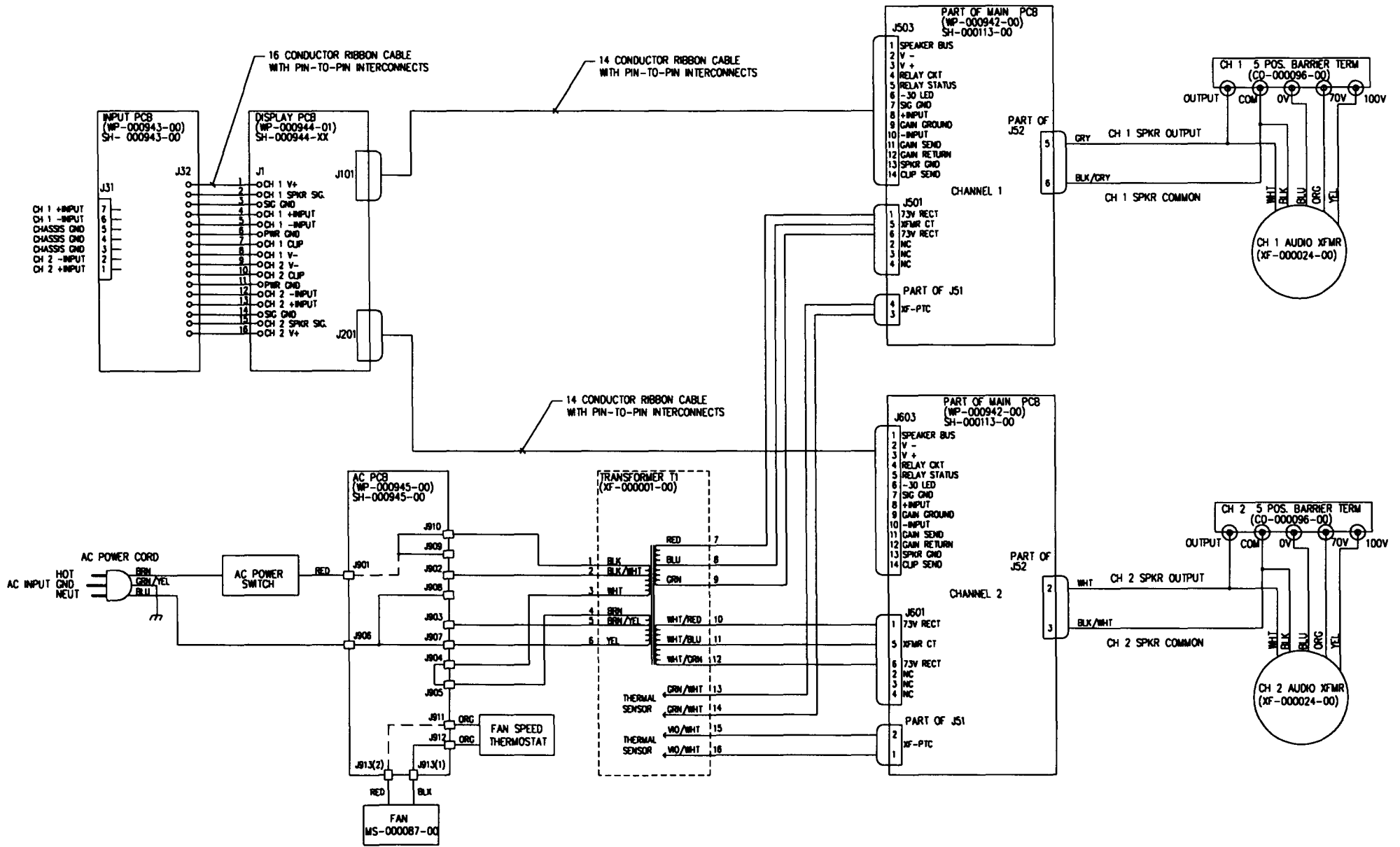


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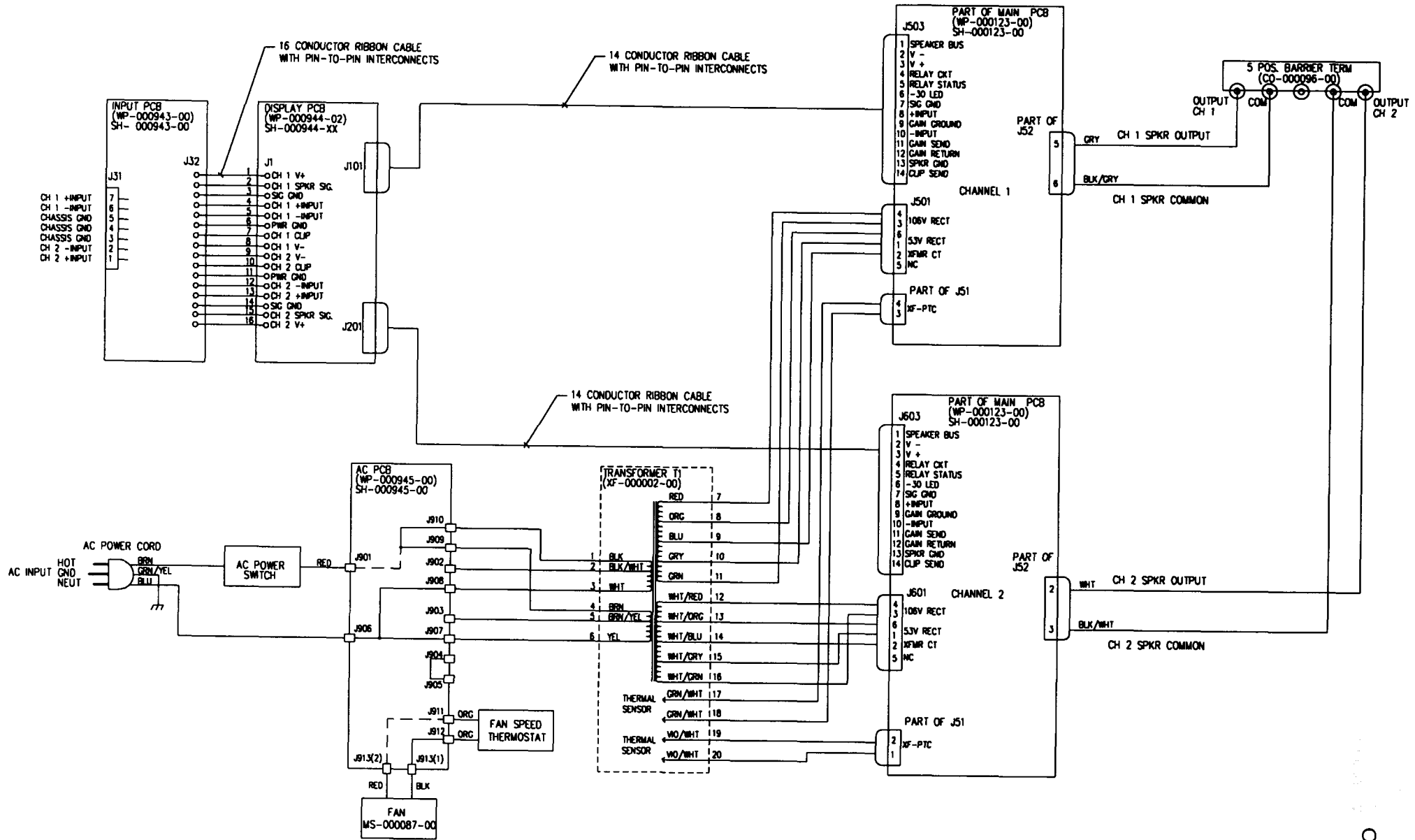
WIRING DIAGRAM, CX 6T



WIRING DIAGRAM - CX 6T, 100V SHOWN

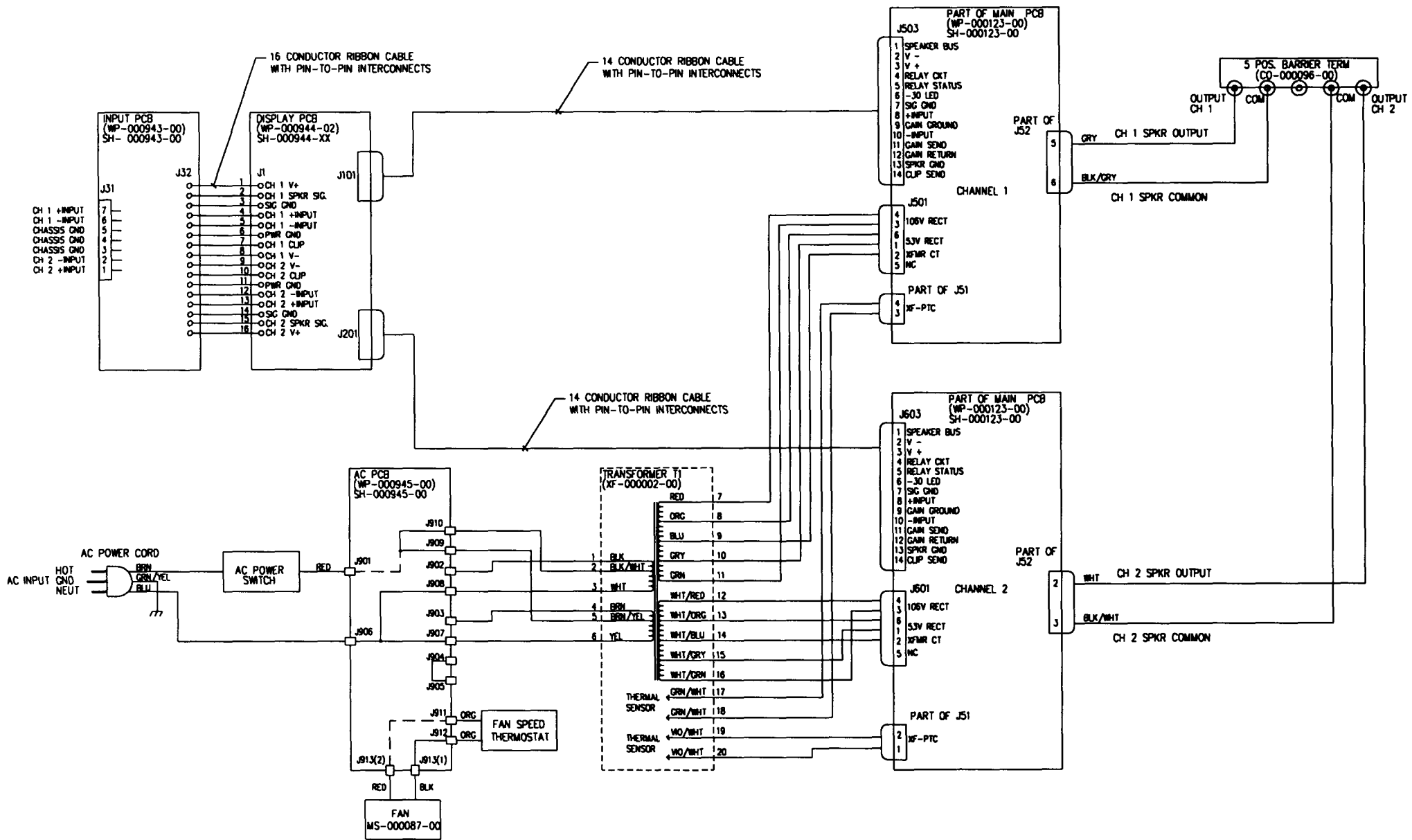


WIRING DIAGRAM - CX 6T, 230V SHOWN

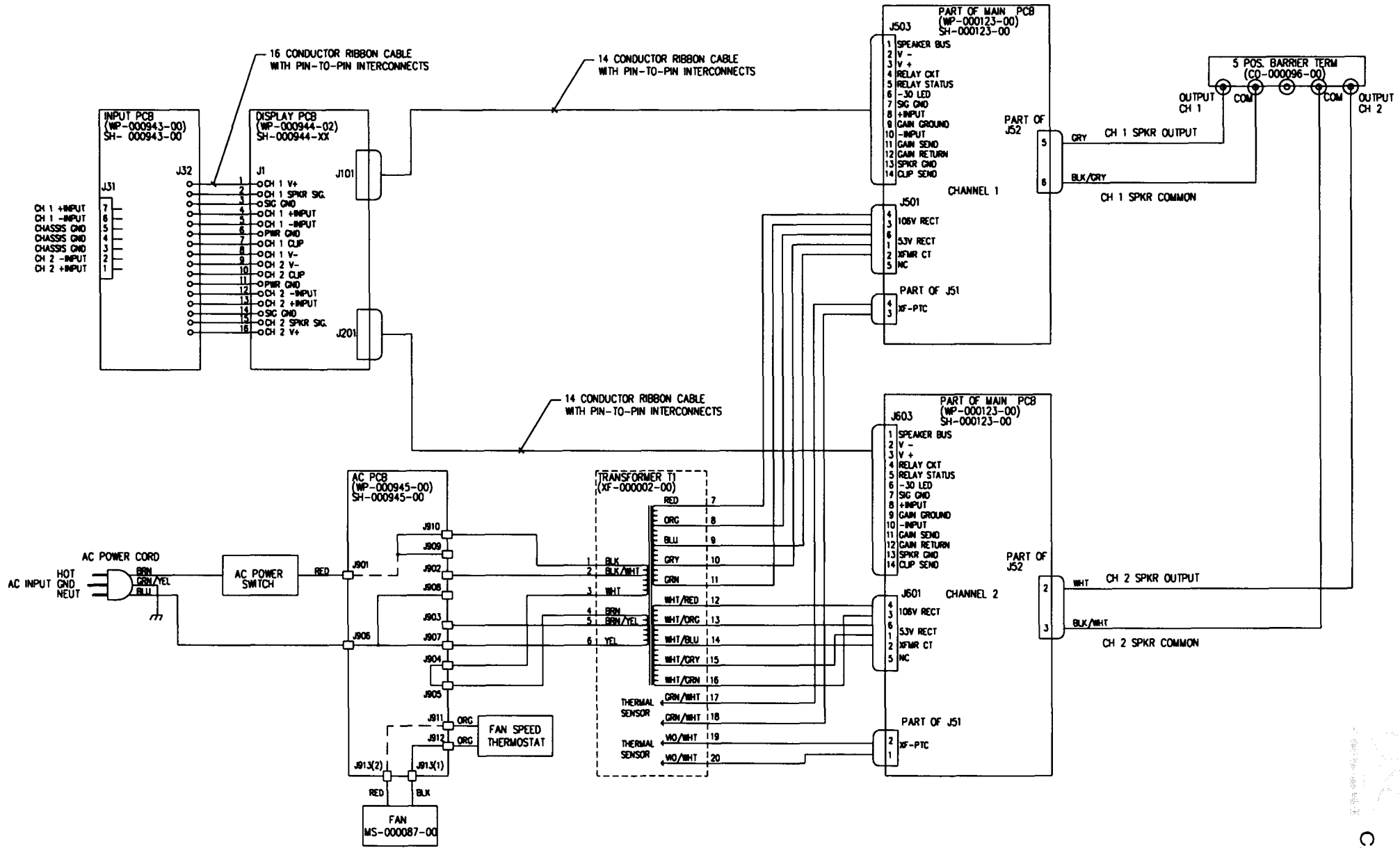


WIRING DIAGRAM - CX 12, 120V SHOWN

WIRING DIAGRAM, CX 12

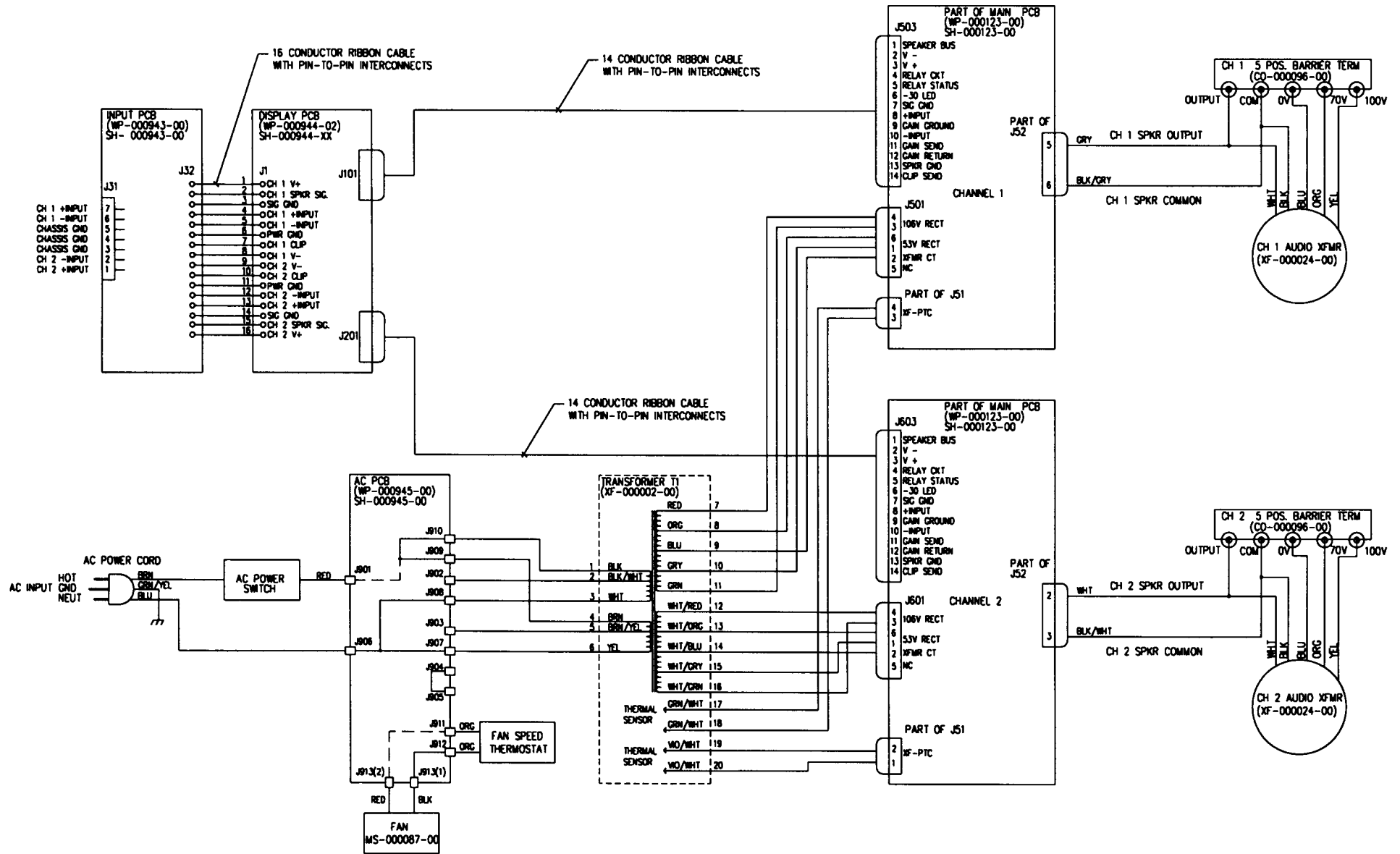


WIRING DIAGRAM - CX 12, 100V SHOWN



WIRING DIAGRAM - CX 12, 230V SHOWN

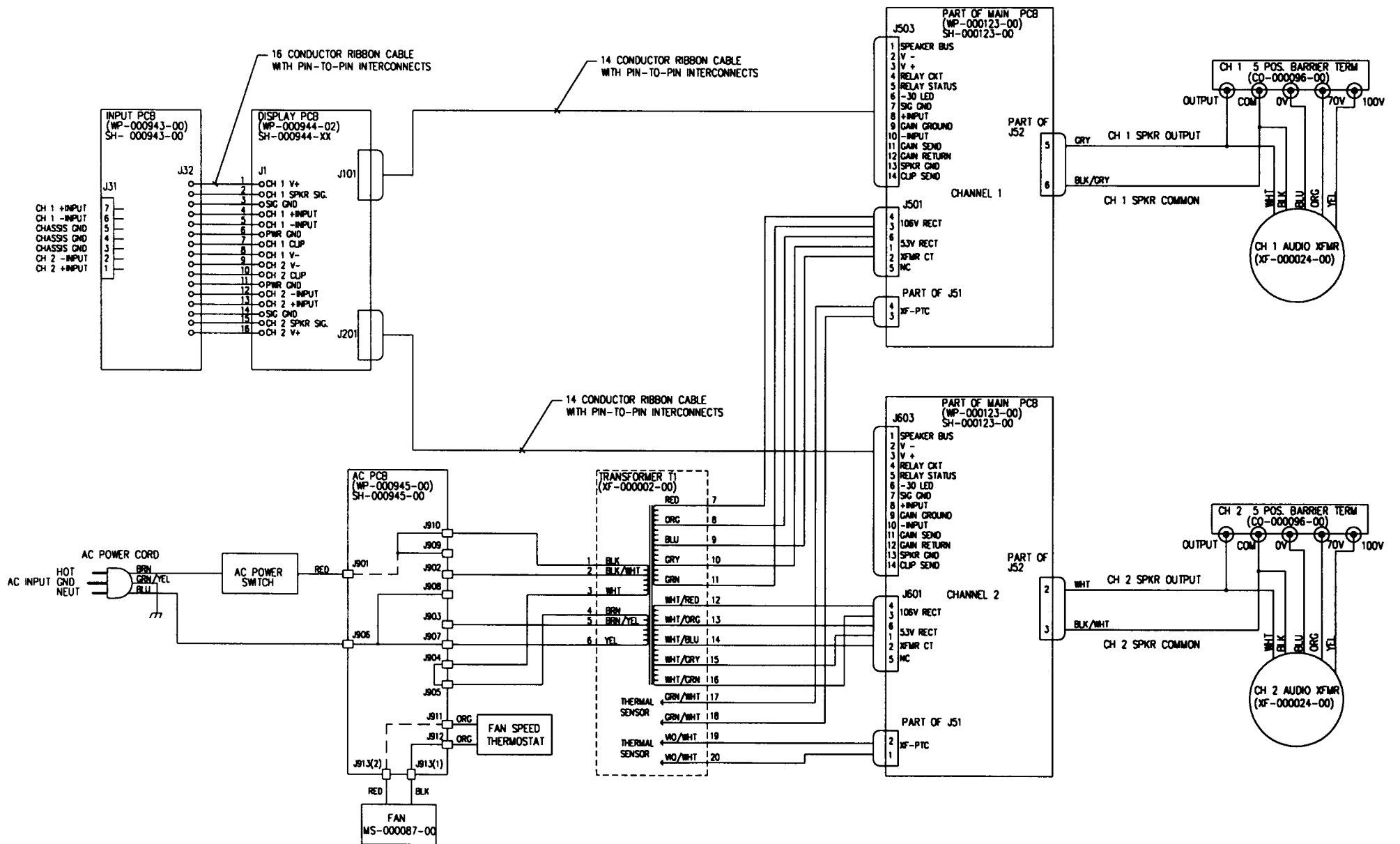




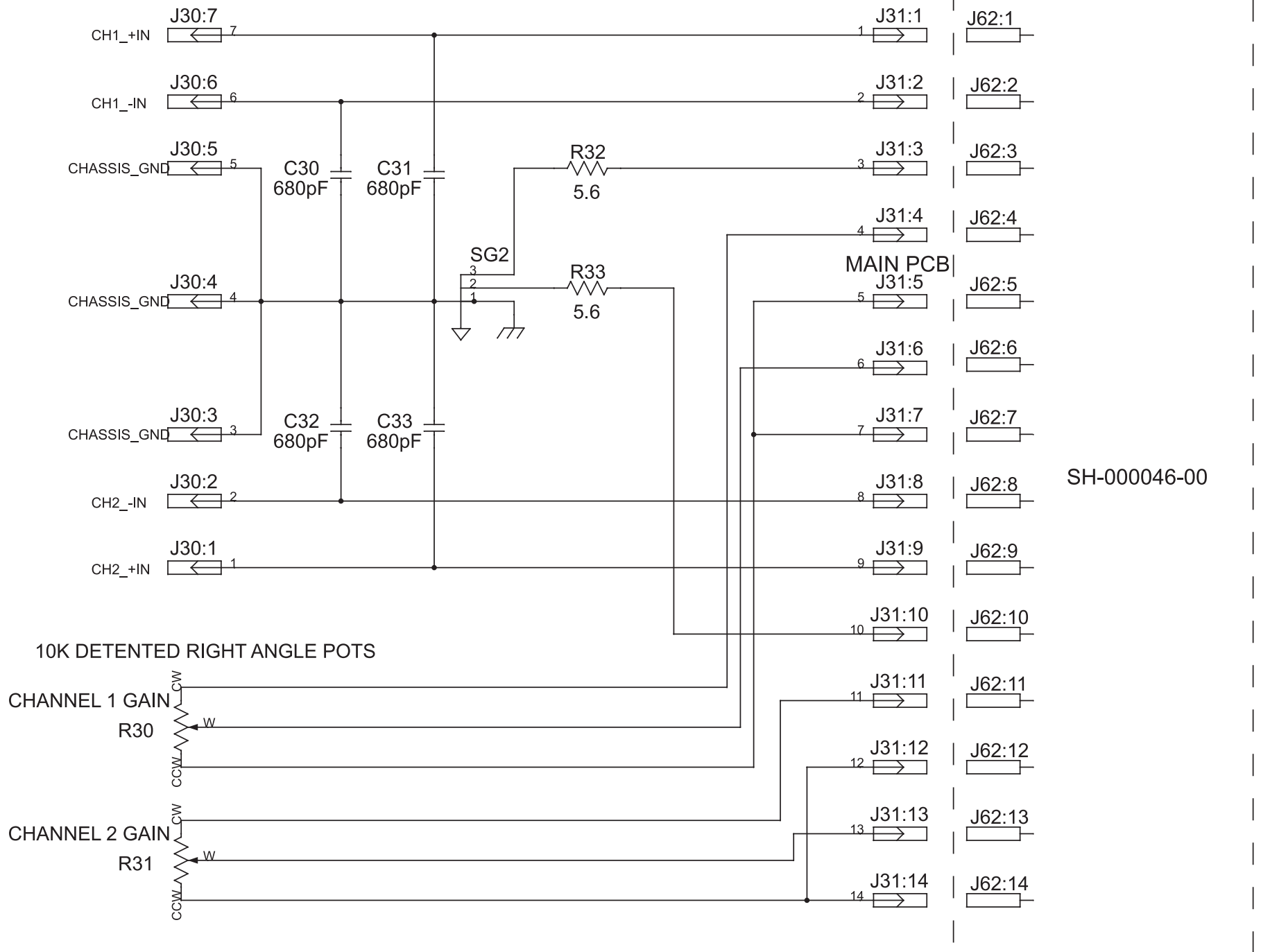
WIRING DIAGRAM - CX 12T, 120V SHOWN

WIRING DIAGRAM, CX 12T



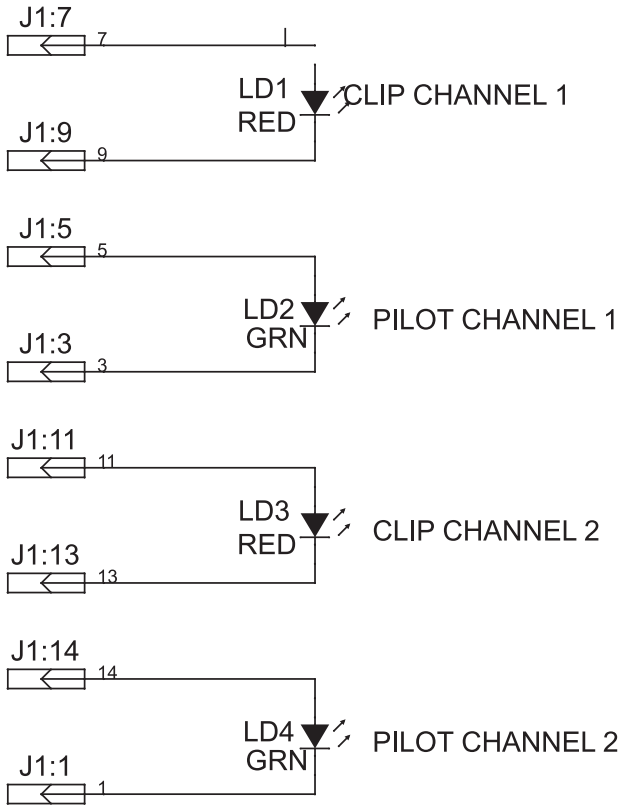


FIVE POSITION BARRIER STRIP



1. ALL RESISTOR VALUES ARE IN OHM 5%, 1/4W, **CX4/4T INPUT PCB**

SH-000047-00



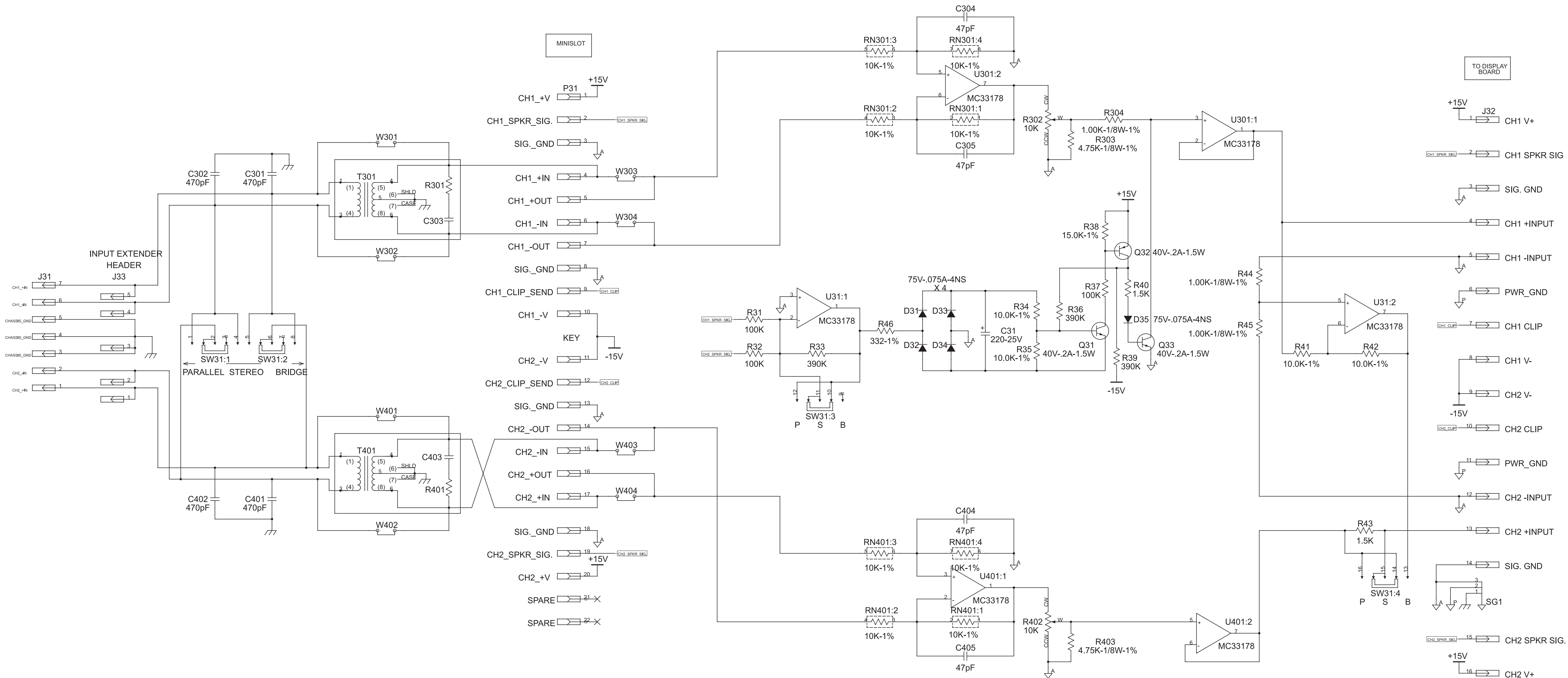
# CX4/4T DISPLAY PCB

SH-000048-00

A

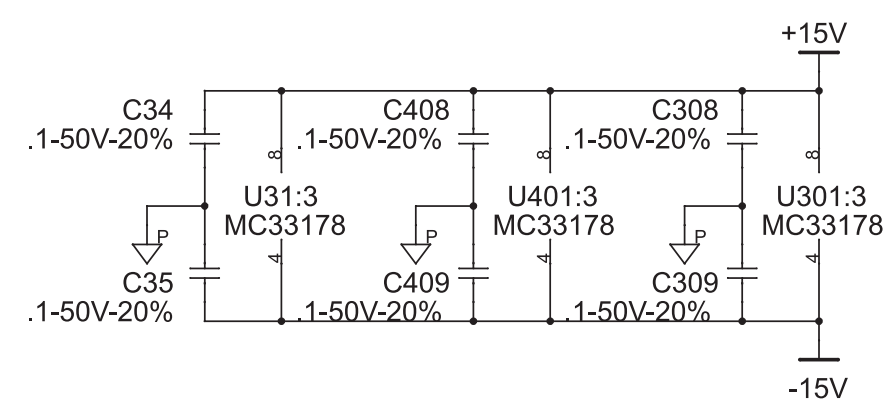
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REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	PROTOTYPE RELEASE 8-14-95 AC		
	2	PROTOTYPE RELEASE 9-7-95 AC		
	3	PROTOTYPE RELEASE 9-20-95 AC		
	A	PROD. RELEASE PER ECO 2876 AC (EFF. 12-1-95)	11-28-95	T.S.
	B	REVISED PER ECO 2923 AC (EFF. 1-19-96)		



9. PARTS IN COMMON TO BOTH CHANNELS NUMBERED 31-49.
8. CH 2 COMPONENTS NUMBERED 401-499.
7. CH 1 COMPONENTS NUMBERED 301-399.
6. ALL RESISTORS IN OHMS 1/4 WATT 5%.
5. ALL CAPACITORS IN uF.
4. TRANSFORMER PIN NUMBERS: 1-6 TRIAD TY-144P (1-8 JENSEN JT 8043).
3. PARTS WITHIN DASHED OUTLINE FOR USER MODIFICATION. SEE MANUAL.
2. BOARD SHIPPED WITH W301-304, W401-404 MOUNTED AS SHOWN.
1. THIS DRAWING USED IN CONJUNCTION WITH PCB ASSEMBLY WP-000943-00 AND FABRICATION DRAWING PC-000943-00.

NOTES: UNLESS OTHERWISE SPECIFIED



QTY	ITEM NO.	PART NO.	DESCRIPTION	VENDOR
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. DIMENSIONS PER ANSI Y14.5-1982 TOLERANCES ARE:		CONTRACT NO.		
DECIMALS	DECIMALS	ANGLES	QSC AUDIO PRODUCTS, INC. COSTA MESA, CALIFORNIA	
.XX ±	.XXX ±	°	SCHEMATIC DIAGRAM INPUT CX SERIES	
DEBURR EDGES .XXX R MAX				
MATERIAL				
FINISH				
WP-000943-00	CX SERIES	APPLICATION	DO NOT SCALE DRAWING	
NEXT ASSY USED ON		ISSUED		REV
		TIM SHOOK 11-28-95		B
CAD SEED FILE NO.		SCALE		
		Tue Oct 20, 1998		
		P:TANGOPROICMXINPUT		

B REV 1 SH SH-000943-00 DWG NO.

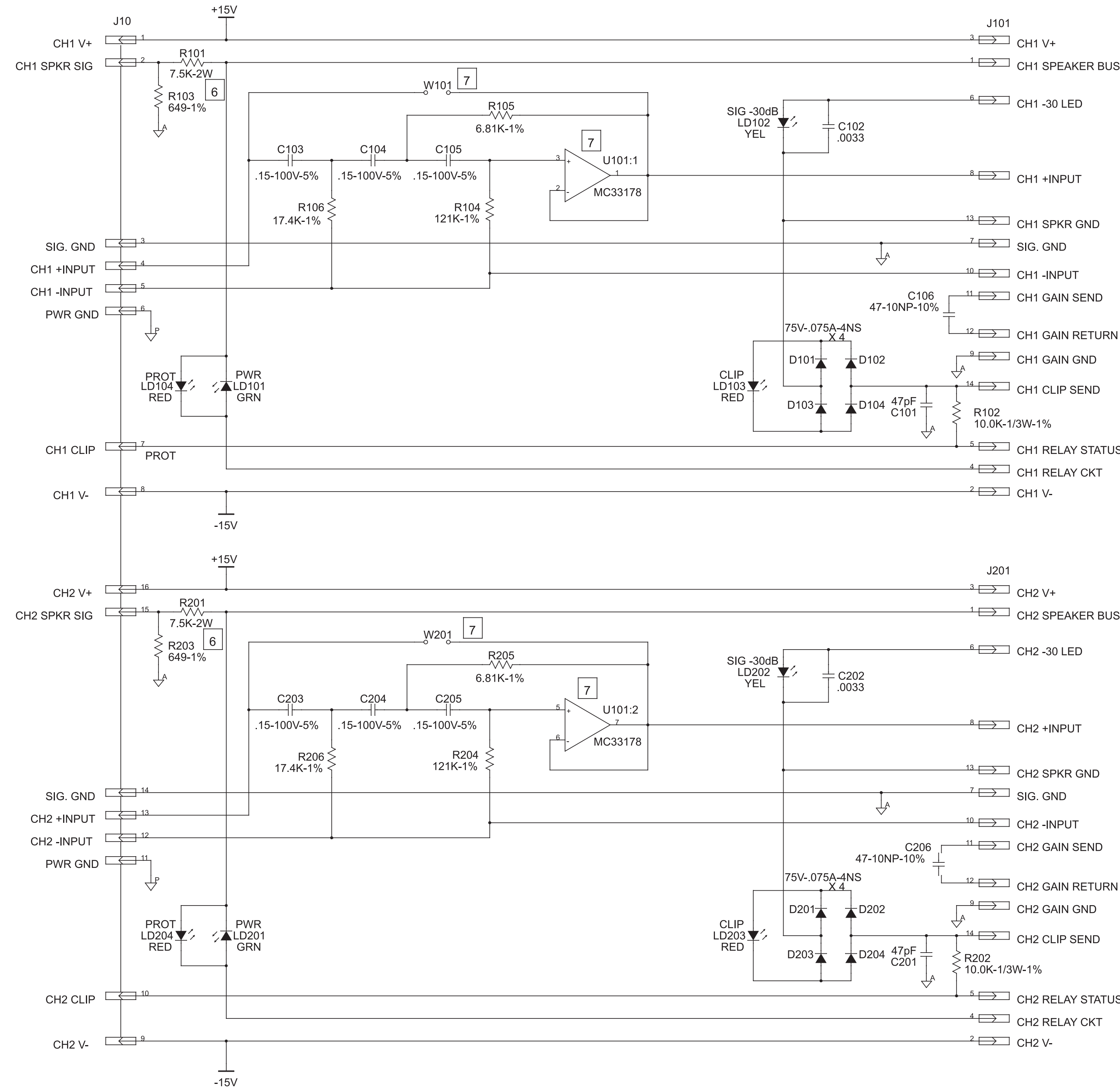
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**SCHEMATIC DIAGRAM, DISPLAY BOARD, CX6T (SHOWN)**  
**FOR FAB SEE PC-000944-00 REV B**  
**DOC NO. SH-000944-XX REV B**

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

**CH1**

**CH2**



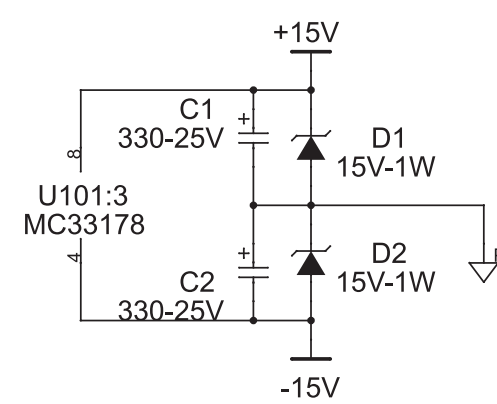
7 CONFIGURATION OF JUMPERS AND OPAMPS TO MODELS:

MODEL	ASSEMBLY NO.	W101/201	U101:1/2
CX6	WP-000944-00	IN PLACE	REMOVED
CX6T	WP-000944-01	CUT/REMOVED	INSTALLED
CX12	WP-000944-02	IN PLACE	REMOVED
CX12T	WP-000944-03	CUT/REMOVED	INSTALLED

6 FOR CX12: R103/203 VALUE IS 487-1%.  
R101/201 VALUE IS 8.2K-2W.

- PARTS IN COMMON TO BOTH CHANNELS NUMBERED 1-99.
- CH 2 COMPONENTS NUMBERED 201-299.
- CH 1 COMPONENTS NUMBERED 101-199.
- ALL RESISTORS IN OHMS 1/4 WATT 5%.
- ALL CAPACITORS IN uF, 25V.

NOTES: UNLESS OTHERWISE SPECIFIED



QTY	ITEM NO.	PART NO.	DESCRIPTION	VENDOR
<b>PARTS LIST</b>				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. DIMENSIONS PER ANSI Y14.5-1982 TOLERANCES ARE: DECIMALS DECIMALS ANGLES .XX * .XXX * °			CONTRACT NO.	
DEBURR EDGES .XXX R MAX MATERIAL			APPROVALS DATE	
FINISH			DRAWN Robert Becker 7-26-95	
NEXT ASSY USED ON APPLICATION			CHECKED W. RULAND 11-29-95	
DO NOT SCALE DRAWING			ISSUED TIM SHOOK 11-29-95	
CAD SEED FILE NO. SH0944-B.SCH			Tue Oct 20, 1998	
SCALE		CAD FILE NO. CX3UTDSP.SCH		SHEET 1 OF 1

**QSC AUDIO PRODUCTS, INC.**  
COSTA MESA, CALIFORNIA

**SCHEMATIC DIAGRAM**  
**DISPLAY BOARD CX6/CX12,**  
**CX6T/CX12T**

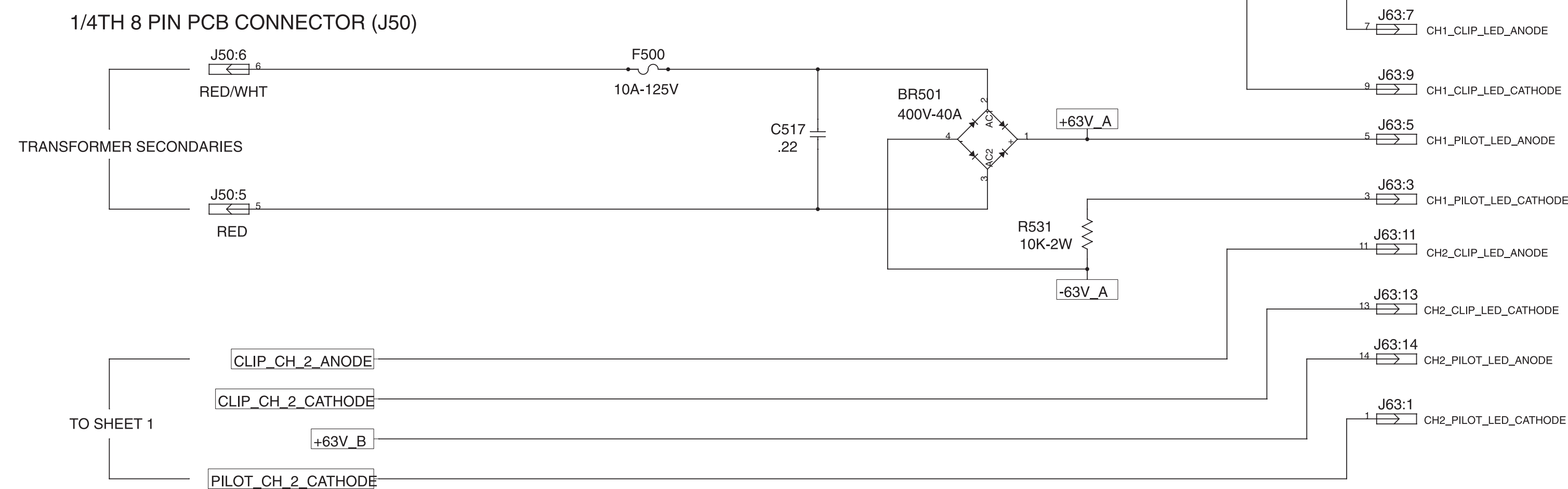
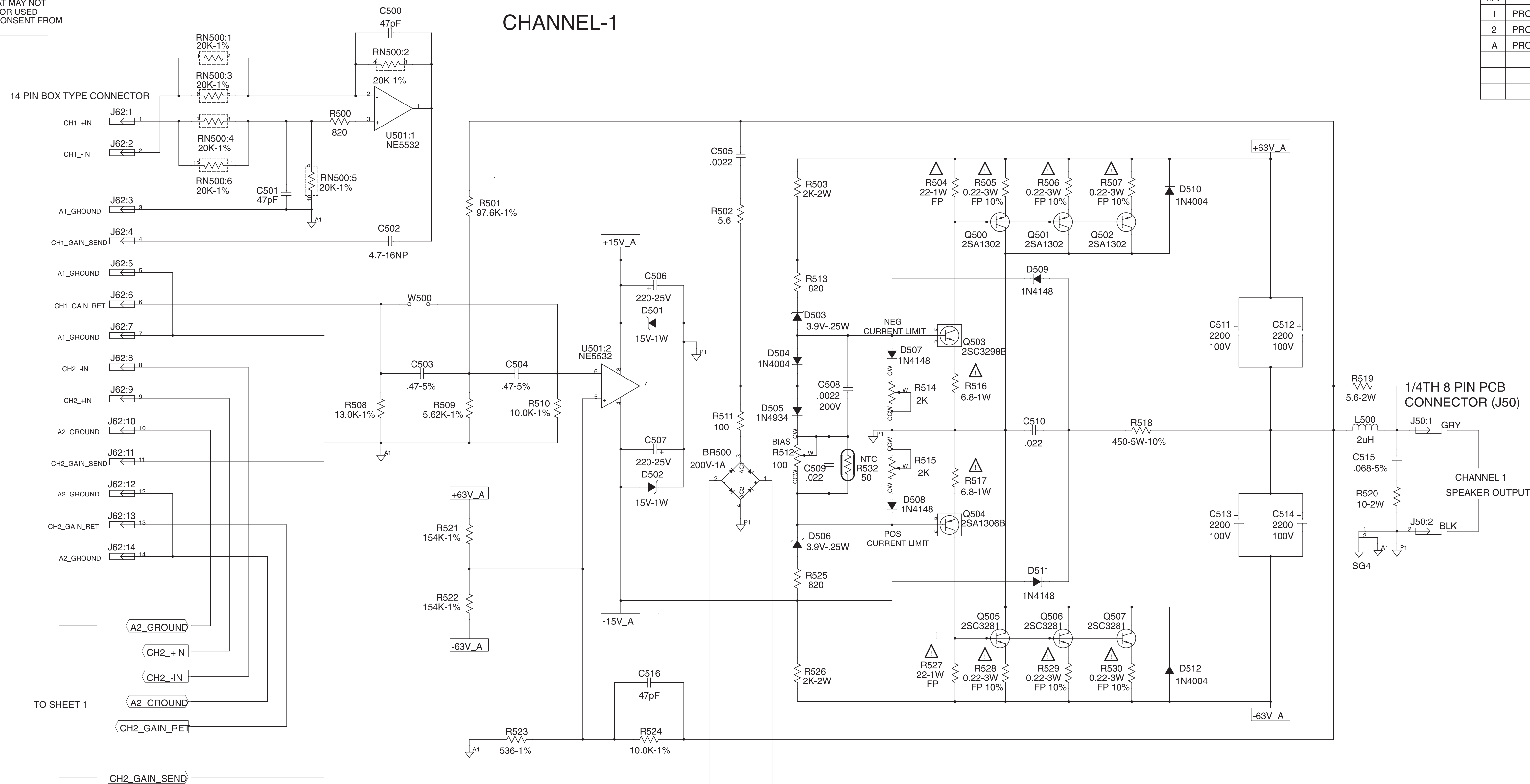
SIZE D FSCM NO. DWG NO. SH-000944-XX REV B  
P:\TANGOPRO\CMX\DISPLAY



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REVISION				
REV	DESCRIPTION	EFF. DATE	CHK	APPROVED / DATE
1	PROTOTYPE RELEASE 5-1-96 AC			
2	PROTOTYPE RELEASE 5-15-96 AC			
A	PRODUCTION RELEASE PER ECO 3102 AC	6-21-96		

### CHANNEL-1



3. USE QSC REPLACEMENT TRANSISTORS ONLY.
2. ALL CAPACITORS IN uF, 100V UNLESS SHOWN.
1. ALL RESISTOR VALUES ARE IN OHM 5%, 1/4W, NOTES: UNLESS OTHERWISE SPECIFIED
5. ALL RESISTORS MARKED "FP" ARE FLAMEPROOF CONSTRUCTION AND MINIMUM OF 1/2W.
4. REPLACE PARTS MARKED  $\Delta$  AND FP WITH SAME TYPE ONLY FOR CONTINUED SAFETY.

QTY	ITEM NO.	PART NO.	DESCRIPTION	VENDOR
<b>PARTS LIST</b>				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. DIMENSIONS PER ANSI Y14.5-1982 TOLERANCES ARE:			CONTRACT NO.	
DECIMALS DECIMALS ANGLES			APPROVALS DATE	
.XX ± .XXX ±			DRAWN ROBERT C. MUNIZ 3/25/96	
DEBURR EDGES .XXX R MAX MATERIAL			CHECKED	
FINISH			ISSUED	
NEXT ASSY USED ON			CAD SEED FILE NO. Tue Oct 20, 1998	
APPLICATION			SCALE NONE	
DO NOT SCALE DRAWING			DWG NO. SH-000046-00	
			REV A	

**QSC AUDIO PRODUCTS, INC.**  
COSTA MESA, CALIFORNIA

**SCHEMATIC DIAGRAM**  
**CX4/4T MAIN PCB**

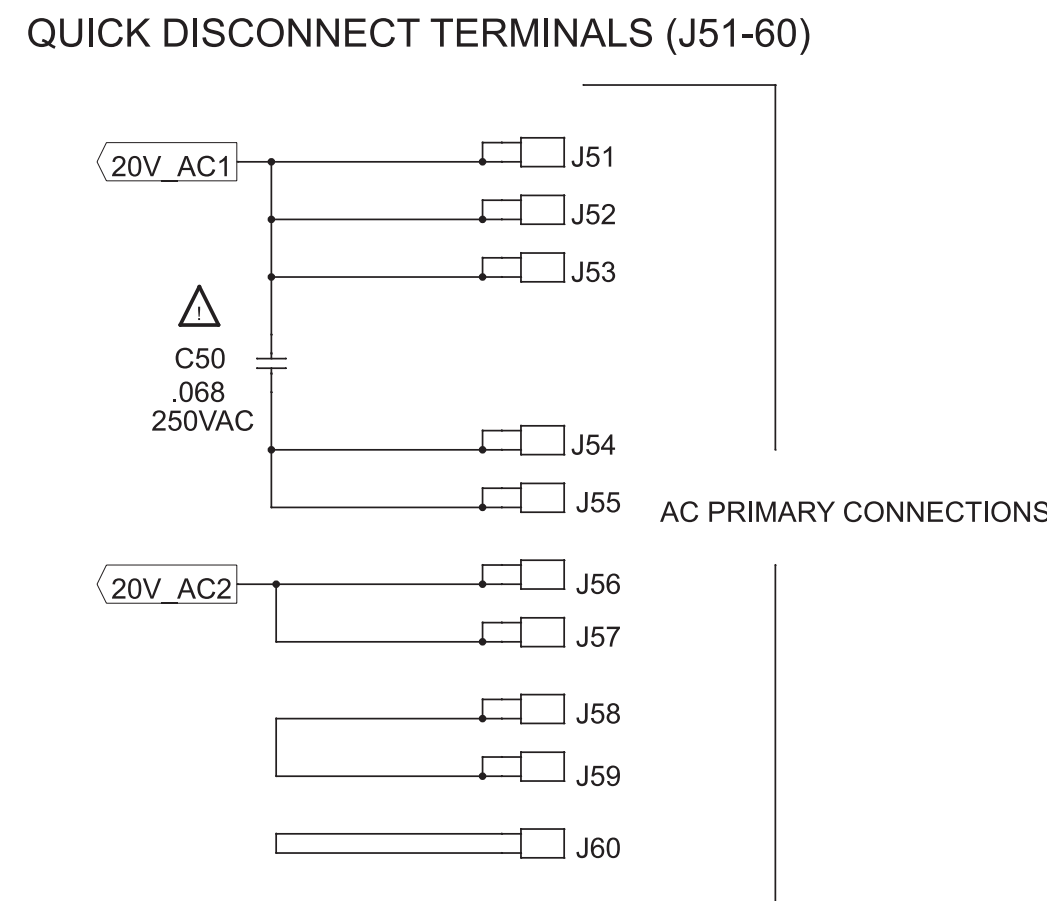
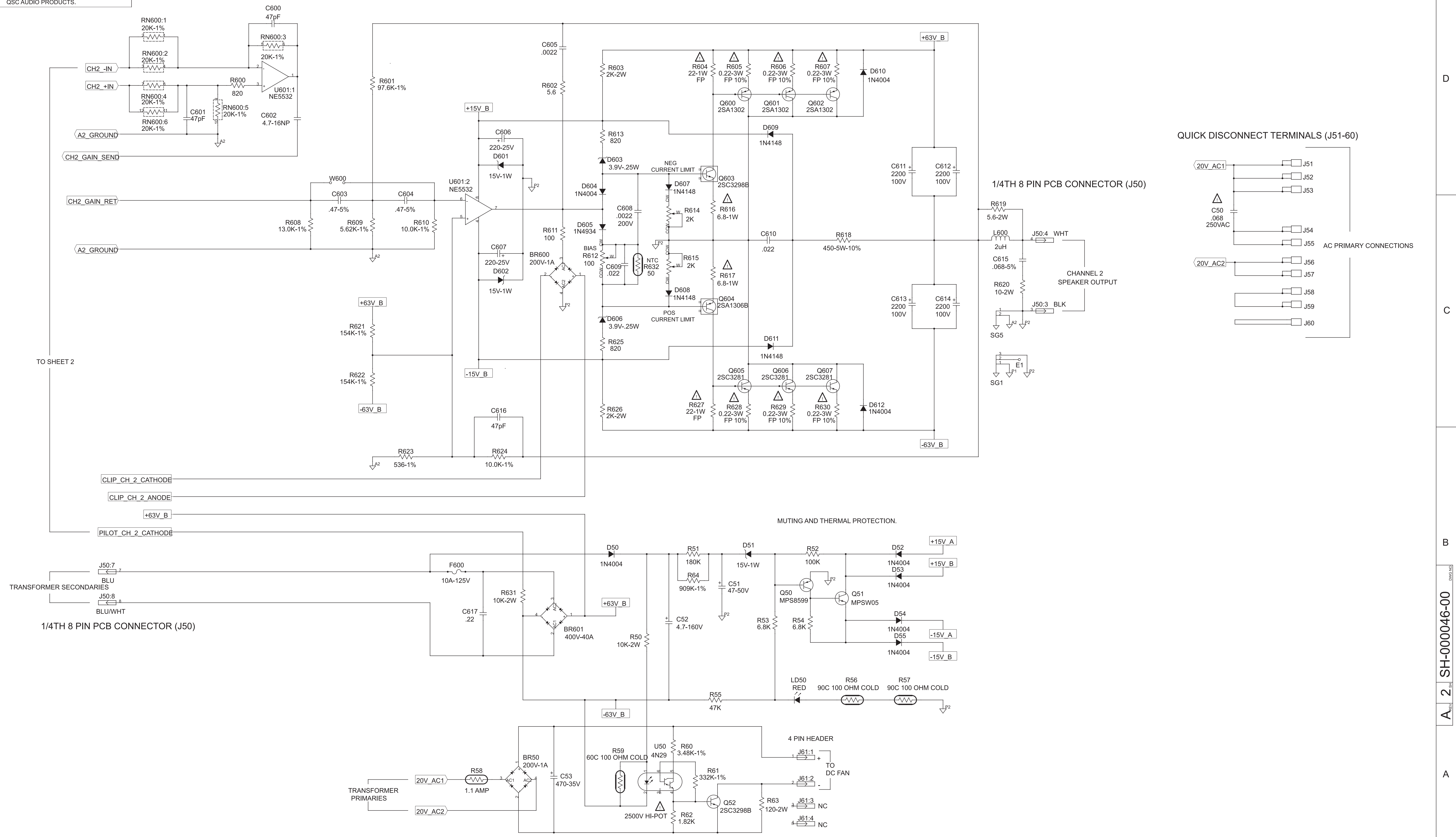
SIZE FSCM NO. DWG NO. SH-000046-00  
SCALE NONE CAD FILE NO. CX4MAIN.SCH SHEET 2 OF 2

A 1 SH-000046-00



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# CHANNEL-2



NOTES: UNLESS OTHERWISE SPECIFIED

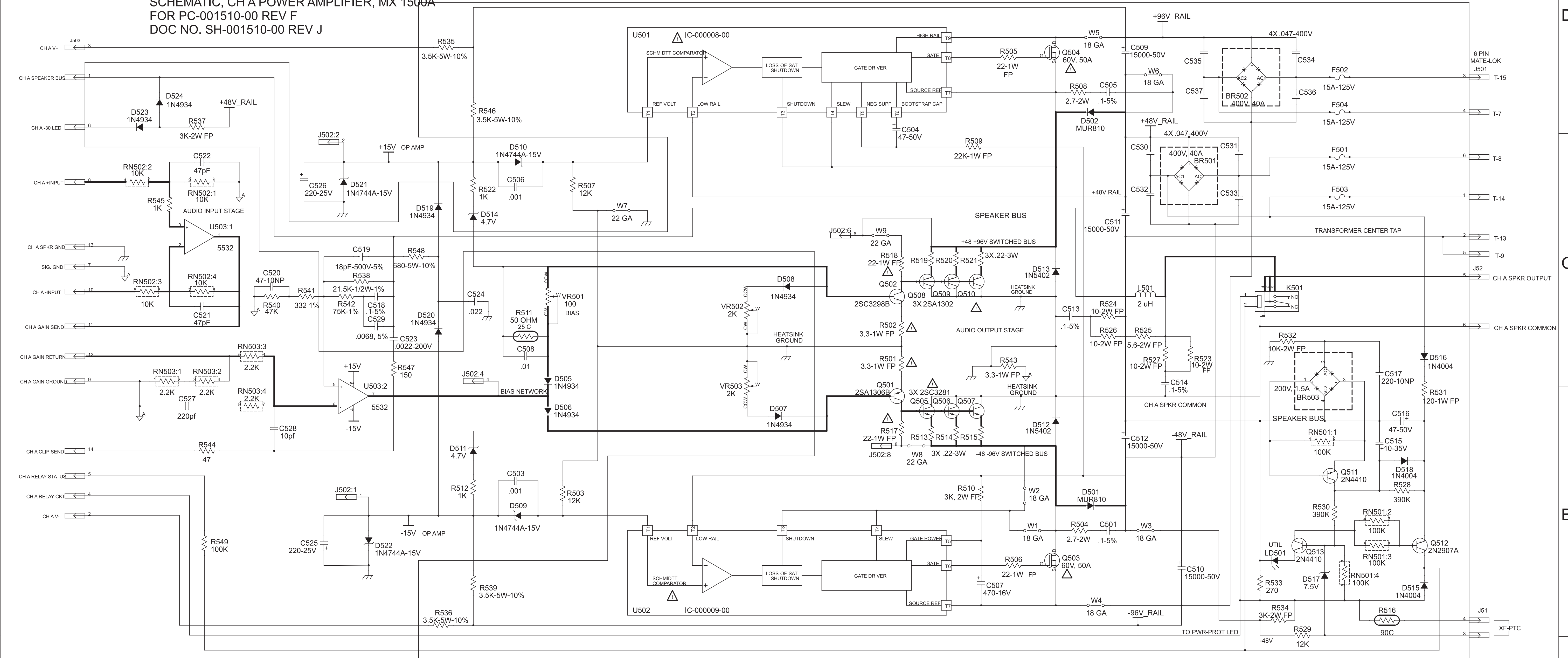
SIZE	FSCM NO.	DWG NO.	REV
D		SH-000046-00	A
SCALE NONE	CAD FILE NO. CX4MAIN.SCH	SHEET 2 OF 2	

PLOT DATE: Tue Oct 20, 1998

A 2 SH-000046-00

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SCHEMATIC, CH A POWER AMPLIFIER, MX 1500A  
FOR PC-001510-00 REV F  
DOC NO. SH-001510-00 REV J



- 10. CH B IS LAID OUT ON RIGHT SIDE OF PC-001510-00 CIRCUIT SAME AS CHANNEL A ABOVE. SEE PART NUMBERING SCHEDULE.
- 9. DIODES D525, 625 ARE USED ON MPX 300 MAIN AMP PCB ASSY, QSC P/N WP-000113-00, AND APPEAR ON PC-001510-00.
- 8. PARTS ENCLOSED WITHIN DOTTED OUTLINE ----- HAVE VOLTAGES GREATER THAN 42V.
- 7. PARTS MARKED WITH TRIANGLE MUST BE REPLACED WITH EXACT TYPE ONLY.
- 6. BRIDGE RECTIFIER BR 503, 603, 1.5A, 200V, QSC P/N QD-1.5200-BX.
- 5. ZENERS D517, 617, MARKED 7.5V, LOW LEAKAGE, QSC P/N QD-0007.5-ZT
- 4. Q 503, 504 603, 604 ARE SWITCHING FETS, QSC P/N QD-000031-QD, 125W, 60V MINIMUM, ON-RESISTANCE 0.030 OHMS MAX.
- 3. R516, 616 IS POSITIVE TEMPERATURE COEFFICIENT RESISTOR, MTD TO HEAT SINK. RESISTANCE 100 OHM COLD, RISING AT 85 C. QSC P/N RE-000009-VP
- 2. ALL CAPACITORS 100V UNLESS OTHERWISE NOTED. TOLERANCE 20% FOR ELECTROLYTIC TYPES, 10% ON OTHER TYPES.
- 1. ALL RESISTORS 1/4-WATT, 5% UNLESS NOTED.

SCHEDULE OF TEST POINTS J502-1 ETC

TEST POINT	DESCRIPTION
CH A J502-1	NEGATIVE LIMITING VOLTAGE
J502-2	POSITIVE LIMITING VOLTAGE
J502-3	NOT USED
J502-4	AMPLIFIER LOOP OPAMP OUTPUT
J502-6	SWITCHED POS AMPLIFIER RAIL-- CAUTION, HIGH VOLTAGE
J502-8	SWITCHED NEG AMPLIFIER RAIL-- CAUTION, HIGH VOLTAGE

QTY	ITEM NO.	PART NO.	DESCRIPTION	VENDOR
<b>PARTS LIST</b>				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. DIMENSIONS PER ANSI Y14.5-1982 TOLERANCES ARE:		CONTRACT NO.		
DECIMALS .XX ± .02	DECIMALS .XXX ± .010	ANGLES 1/2 °	APPROVALS DATE	
DEBURR EDGES .XXX R MAX MATERIAL			DRAWN PHQ 10-24-91	
FINISH			CHECKED SGM 3-23-92	
DO NOT SCALE DRAWING			ISSUED SG Morales 3-27-92	
CAD SEED FILE NO. SH0123C.S01			SIZE FSCM NO. DWG NO. SH-001510-00	
			SCALE CAD FILE NO. 3UMAIN1.SCH SHEET 1 OF 2	

**QSC** AUDIO PRODUCTS, INC.  
COSTA MESA, CALIFORNIA

**SCHEMATIC DIAGRAM**  
**CX 6/12 MAIN AMPLIFIER PCB**

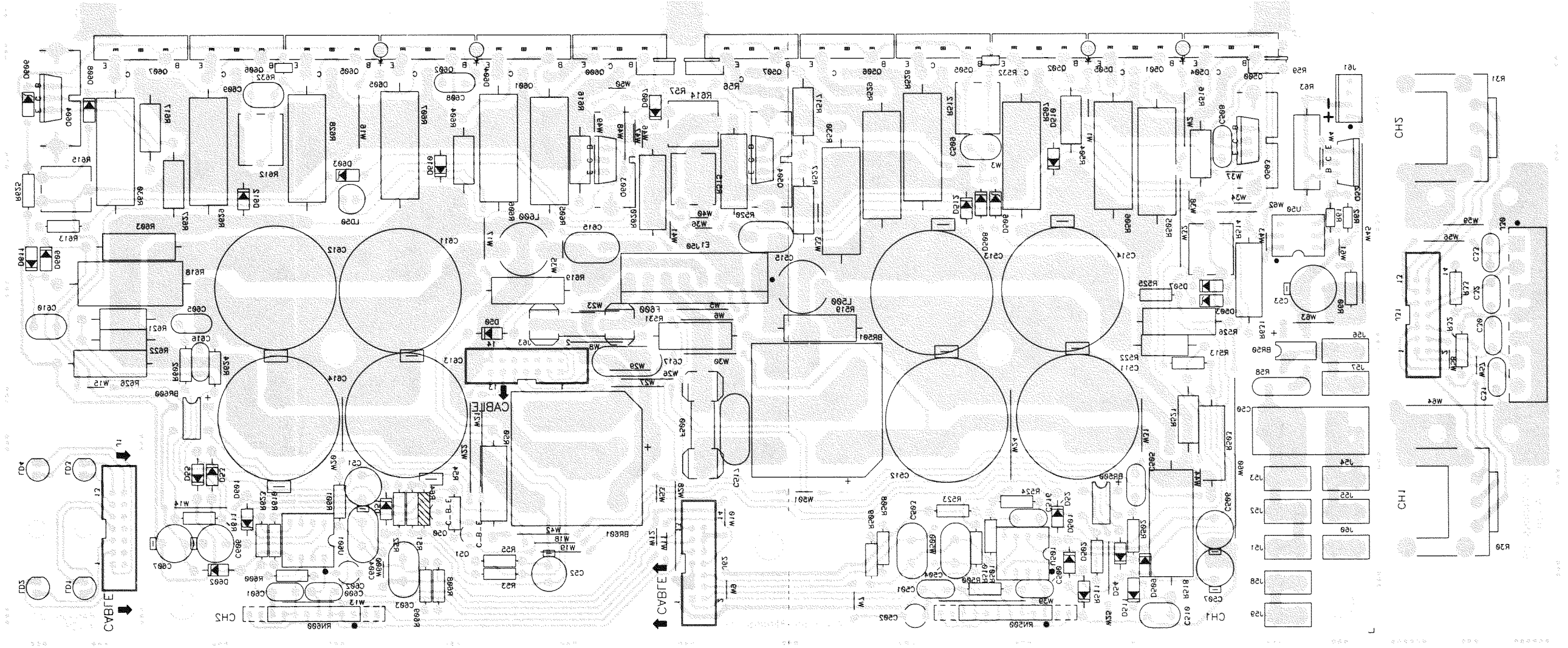
REV J

J REV 1 SH SH-001510-00 DWG NO.





CX4 / 4T  
PCB Assemblies  
Solder Side



CX6 / 6T & CX12 / 12T  
AC PCB Assy  
Component Side

