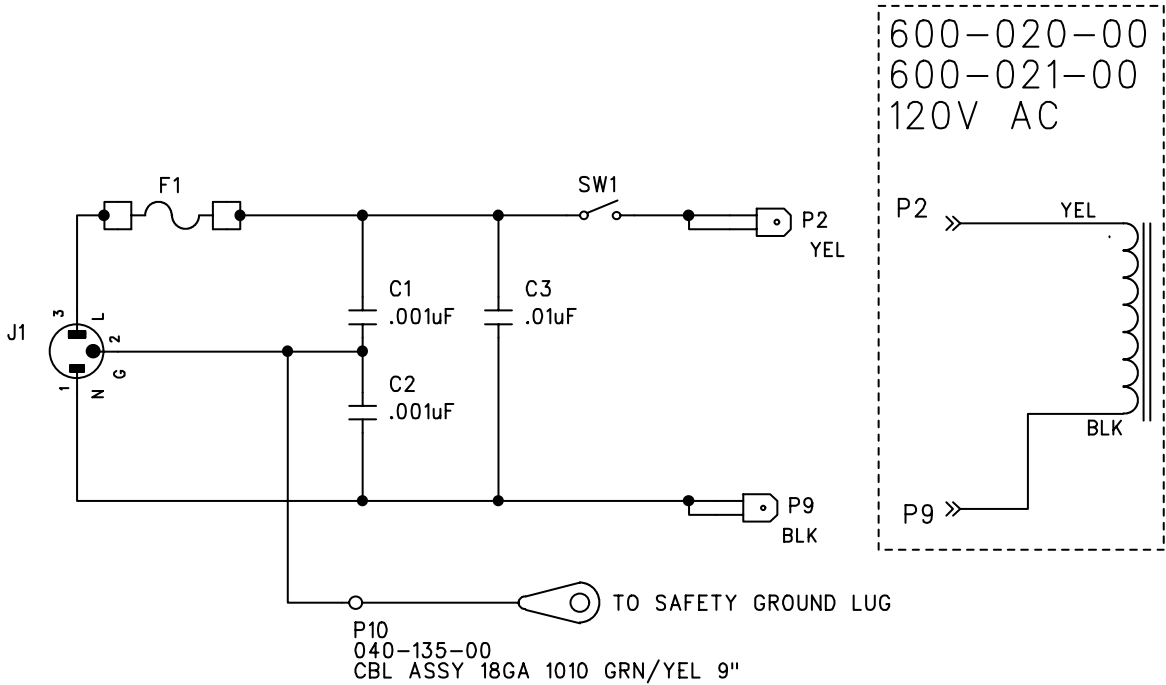
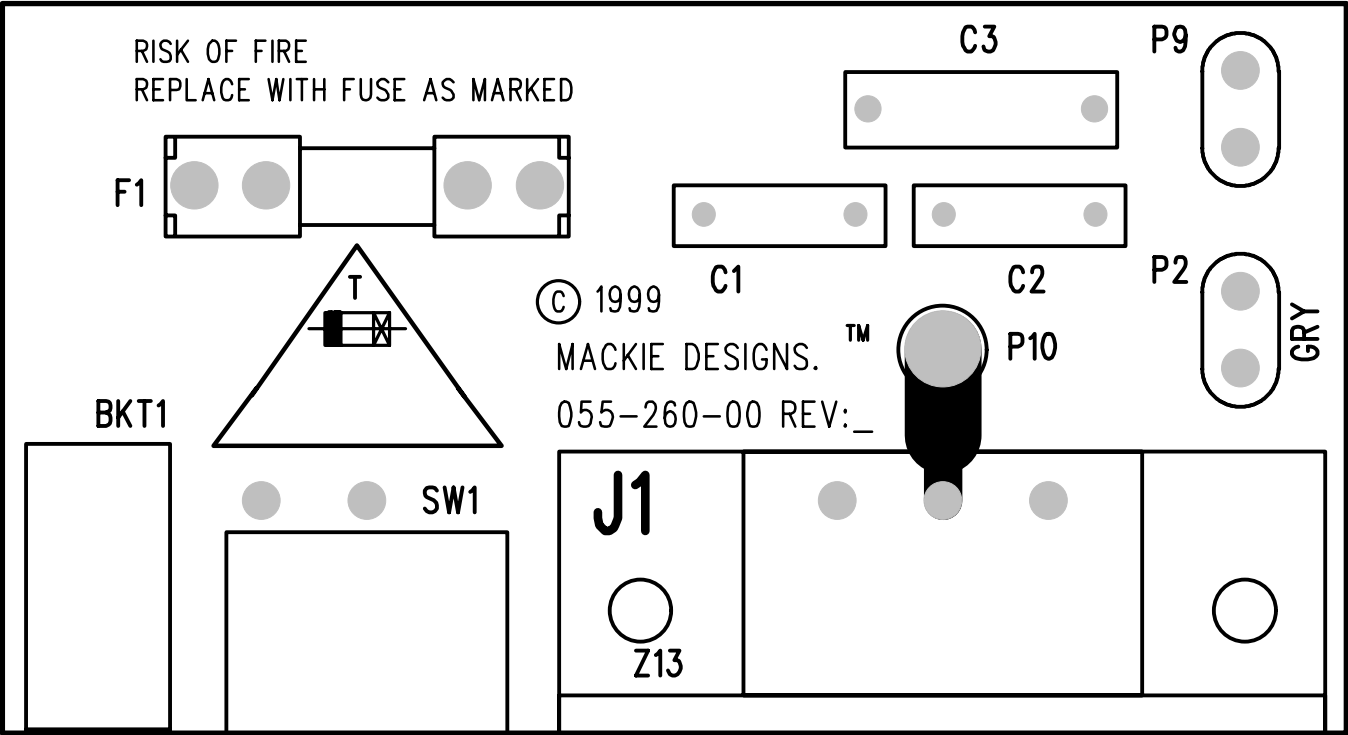
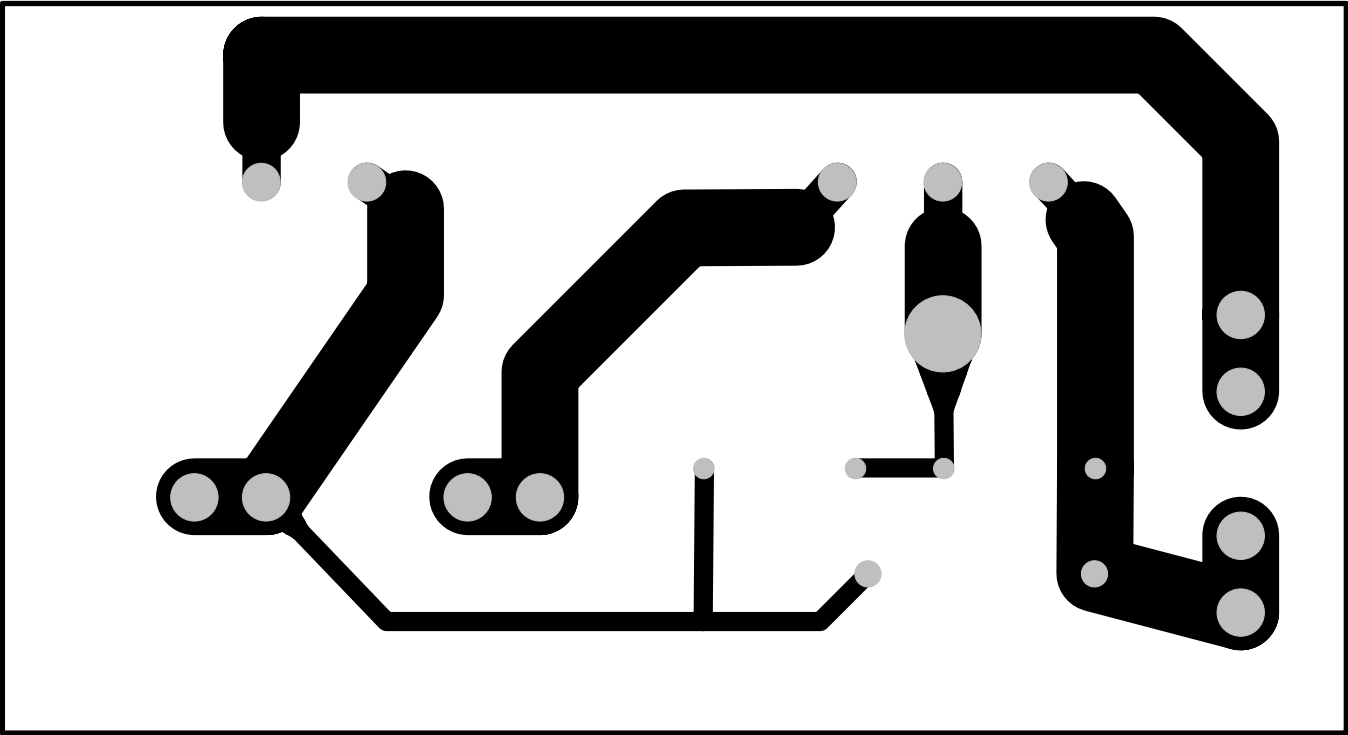


DASH #	VERSION	FUSE USED
055-260-01	CFX 100VAC	0.5A SLO-BLO 250V 510-002-00
055-260-02	CFX 120VAC	1.0A SLO-BLO 250V 510-001-00
055-260-03	CFX 230VAC	1.25A SLO-BLO 250V 510-025-00



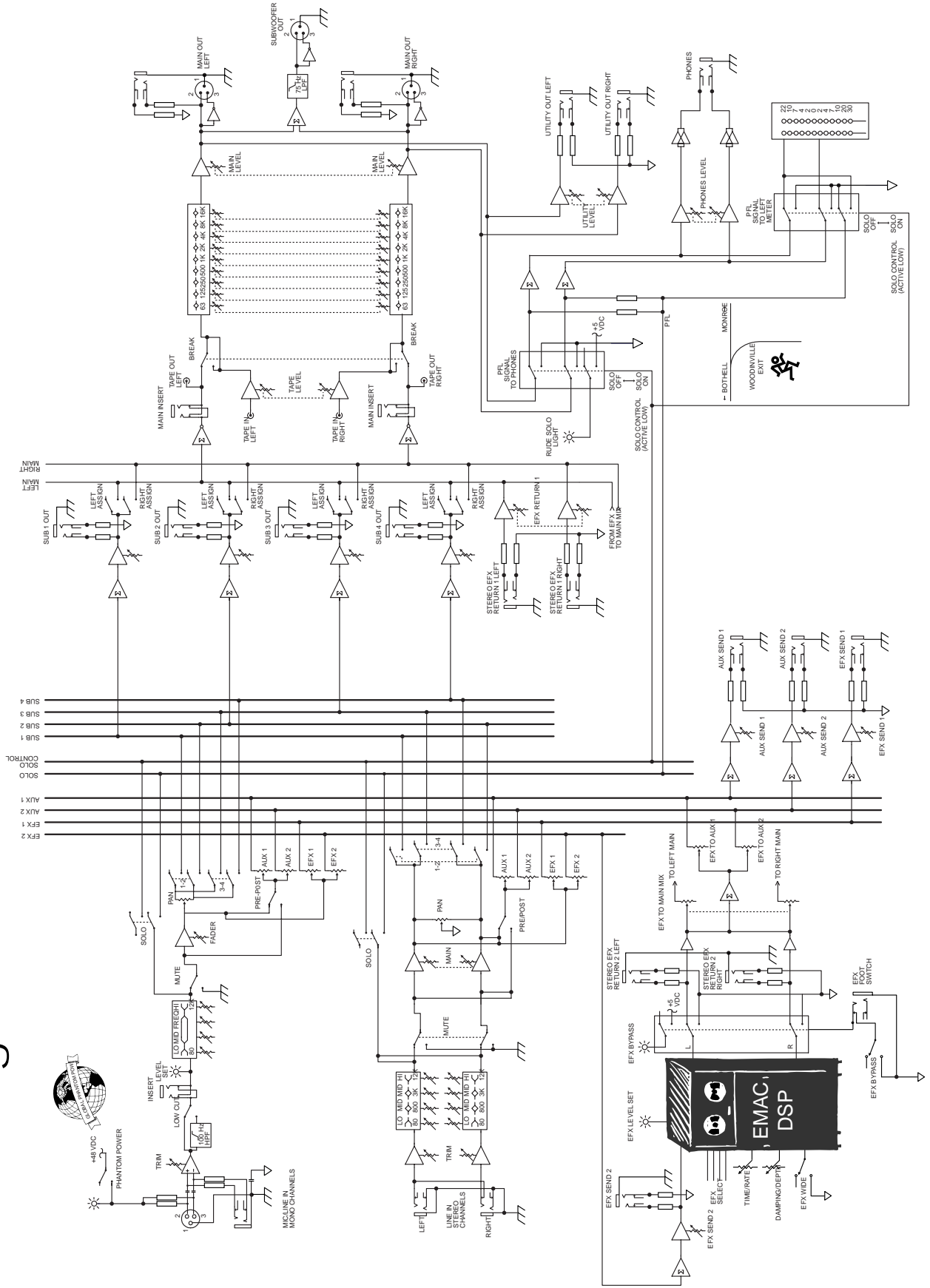
- 712-021-01  
RIVET, CL END .125
- 712-020-00  
BRKT ANG 6-32X.037THK STL
- 400-060-00  
FUSE CLIP PCMT 5MM DIA
- 450-260-00  
PCB, CFX AC POWER INPUT

Bottom of board



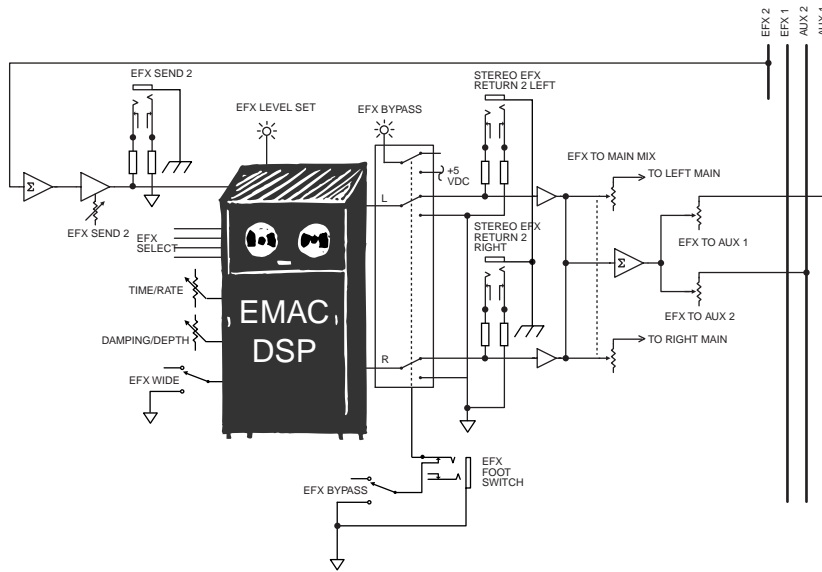
Top of board

# Block Diagram



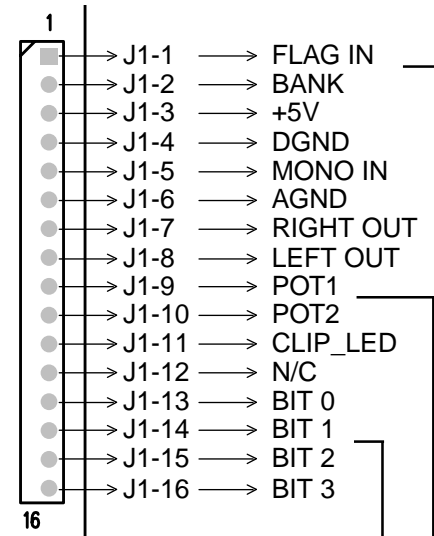
# Effects board

## BLOCK DIAGRAM

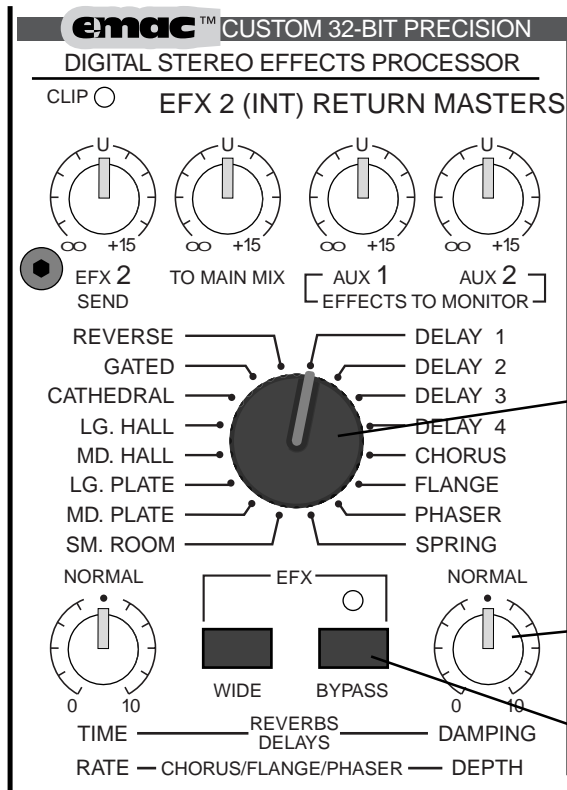


This shows the signals present on the EFX board connector J1.

**J1**



## EFX CONTROLS



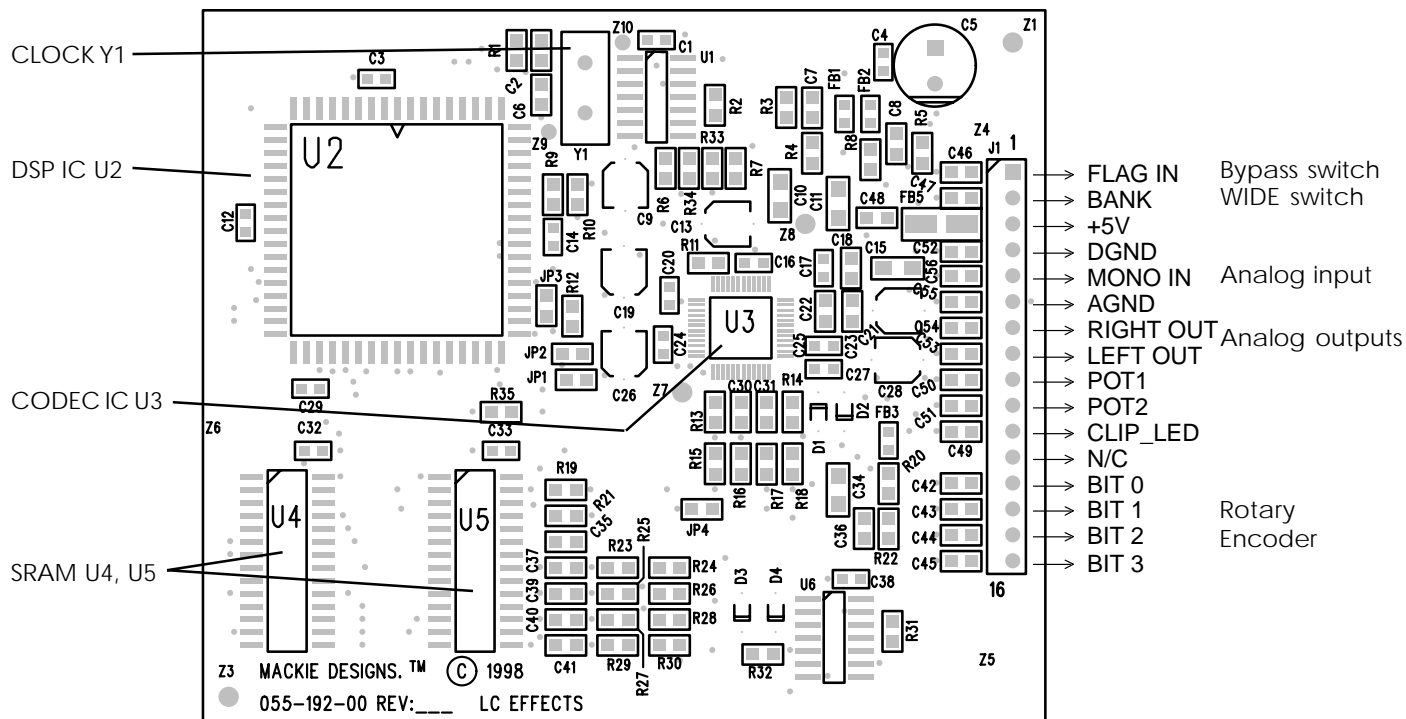
Adjustment of the rotary encoder S1 will vary the level of BIT 0 through to BIT 3. This will select which DSP algorithm is in effect on the EFX board's DSP IC U2.

The adjustment of these two pots directly affects the CODEC IC U3. The levels are named POT 1 and POT 2 at connector J1.

The state of the WIDE switch and the BYPASS switch directly affect the DSP IC. The WIDE status is named BANK. The BYPASS status is named FLAG.

## The EFX board

The EFX circuit board schematics and pcb layouts are shown in chapter 192.  
The circuit is made from the following main elements: Clock, CODEC, DSP and SRAM



### INTEGRATED CIRCUITS

PART NO.	DESCRIPTION	VALUE	REF
080-088-00	IC, ADSP-2163		U2
315-017-00	CRYSTAL, 24.576 MHZ	24.576	Y1
325-027-03	IC, SMD, DUAL D F/F	74HC74A	U6
325-071-03	IC, HEX, INV, SMD	74HCU04	U1
329-042-03	IC, AD1819 QFP	AD1819	U3
329-047-03	IC, 32KX8 SRAM 20nS	7C256-20	U4-5

### EFX OVERVIEW

The CODEC receives a mono analog input from the mixer circuit board and converts it into a digital signal. The CODEC also receives analog control signals from the two Parameter pots, converts this to digital and sends a combined digital signal to the DSP.

The DSP and the two SRAM ICs, form a powerful DSP system. The DSP receives the digital data from the CODEC as well as the direct control signals from the rotary encoder and the EFX WIDE switch. The DSP programing selects and performs the appropriate DSP function on the data, and sends it back to the CODEC.

The CODEC converts the incoming digital signals to two analog outputs which are sent to the main left and right mix, and summed to the monitor mix. For Phaser and Delay effects, the two analog outputs from the CODEC are mono. For other effects, there is a difference between the signals.

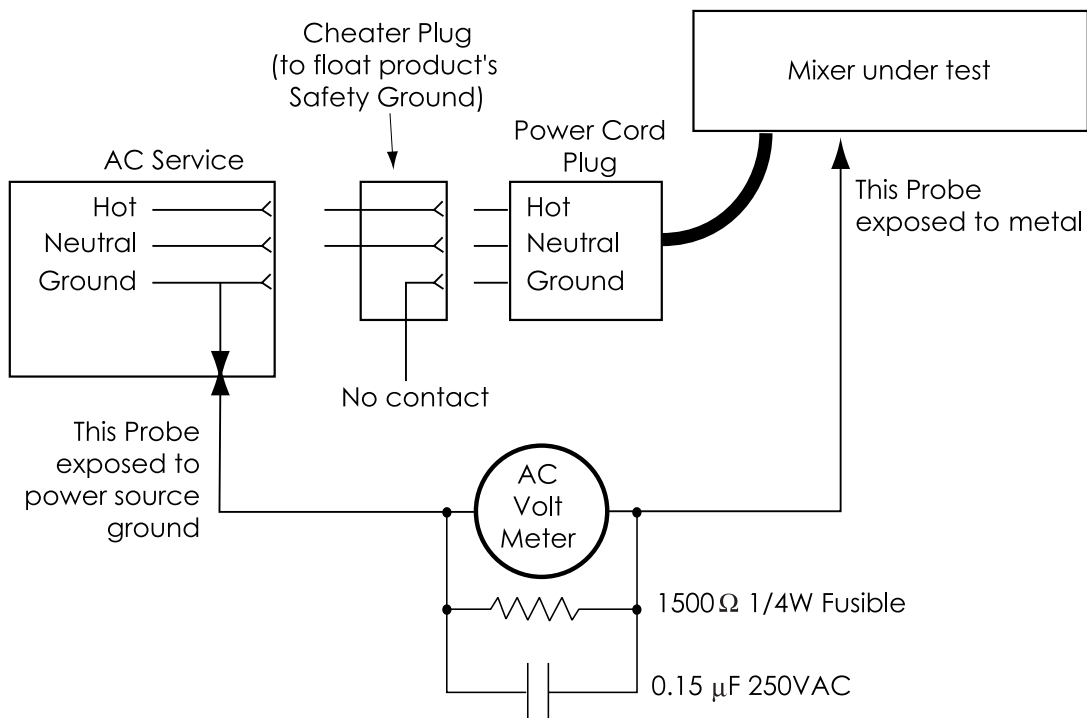
# Safety test



You must perform the following leakage test before returning the mixer to your customer. Take every safety precaution to protect yourself while doing this test.



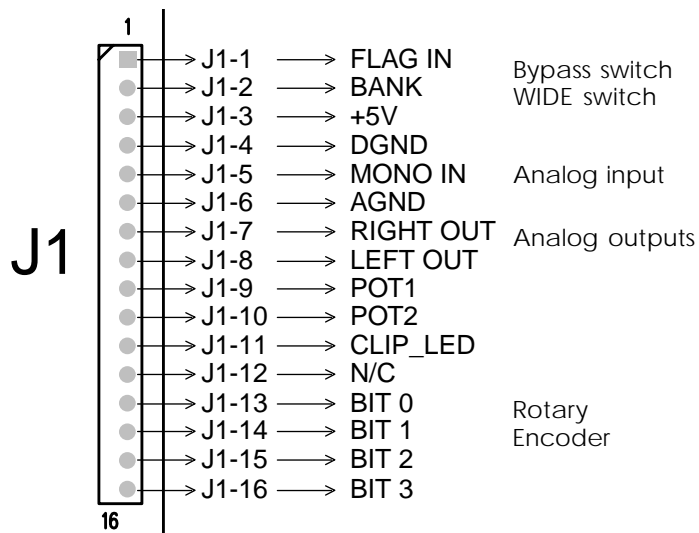
1. Make a small loading RC circuit as shown in the diagram below, and connect the AC volt meter between the AC power source ground and any exposed metal on the unit under test.
2. Connect the mixer under test to an AC power source using a ground-lift adaptor, leaving the mixer's safety ground floating. Turn the mixer on.
3. The meter reading should be less than 750mVAC (note: this is equivalent to 0.5mA of leakage current).
4. Flip the plug over in the receptical so the hot and neutral are swapped. Verify that the reading is still less then 750mVAC.
5. If either reading is greater than 750mVAC, then you must investigate and repair the mixer before returning it to your customer.



## Connectors

### MIXER TO EFX BOARD

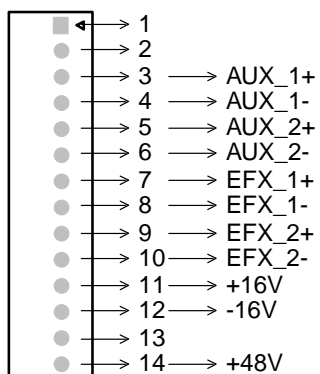
The details for the mixer to EFX board connector are shown on page 8, but here it is again.



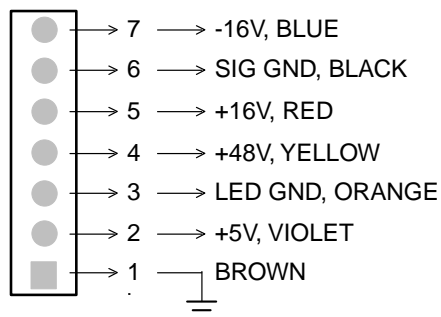
This shows the signals present on the EFX board connector J1.

### MASTER CIRCUIT BOARD

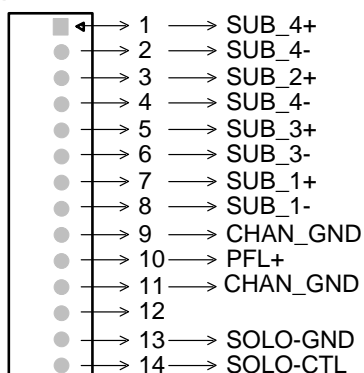
#### J4



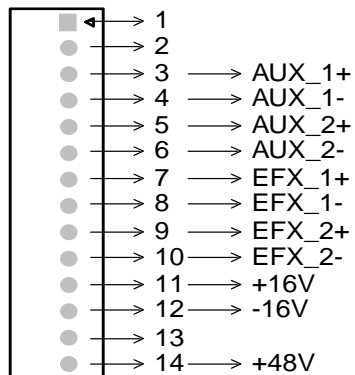
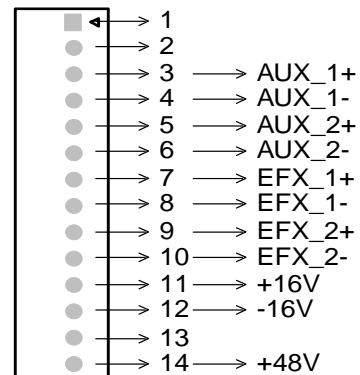
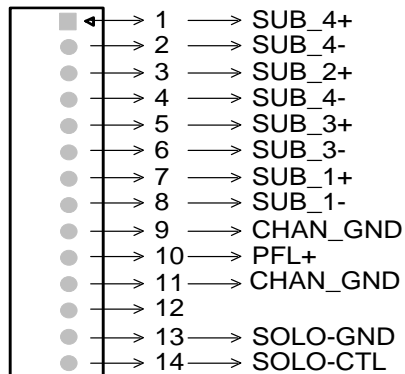
#### J44



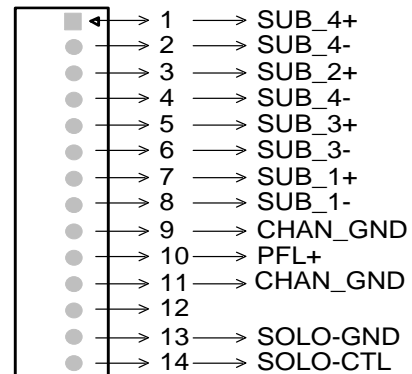
#### J5



## SLAVE CIRCUIT BOARD CONNECTIONS

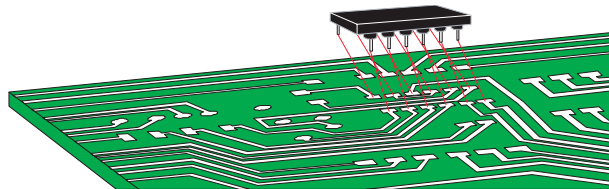
**J4****J15****J5**

This shows the signals between  
SLAVE boards.

**J16**

This shows the signals into the  
SLAVE board from the MASTER.  
Actually, this is all rather sad,  
that past generations fought in  
the American Civil War to put a  
stop to this sort of thing.  
All circuit boards are created  
equal.





## THE MACKIE FIXER • MACKIE DESIGNS SERVICE NEWS

### EFX Board Modification Instructions:

#### Models affected:

All PPM series powered mixers: 406M, 408M, 408S, 808M and 808S

All CFX series compact effects mixers: CFX•12, CFX•16 and CFX•20

Verify the following symptom on any of these units in for repair:

#### Symptom:

While program material is playing, if the EFX BYPASS switch is depressed and a delay function is selected, as soon as the EFX BYPASS is unselected, the program material that was last recorded in the delay line is played at the outputs. In other words, the EFX BYPASS switch acts like a sample and hold when a delay function is selected.

**Solution:** Cut Pin 1 of the EFX board's ribbon cable.

#### Safety Warning:



Caution! These instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing unless you are qualified to do so. Refer all service and modifying to qualified personnel.

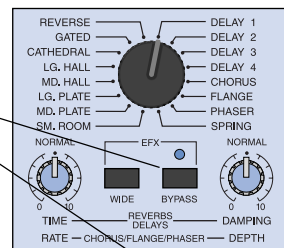
#### Tools Required:

Sharp pair of electrical cutters, Phillips screwdriver, safety glasses.

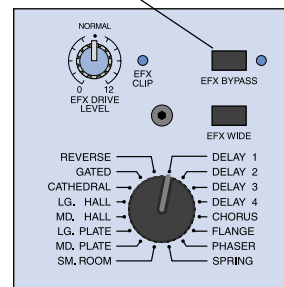
#### Powered Mixer repair

In order to perform this on the Powered Mixer series, the front panel must be removed.

- 1/ Remove all cords- including the power cable and speaker outputs- from the mixer.
- 2/ Place the mixer on a dry, non-marring surface with the heat sink facing down.
- 3/ Remove the six screws securing the front panel of the mixer to the plastic enclosure. These are located three per side on the far left and right edges of the front panel. Keep track of which screws go where.
- 4/ Carefully disconnect the white block connector located on the right side of the front panel of the mixer.
- 5/ Disconnect the green 16-gauge chassis ground wire located in the center of the bottom edge of the mixer's front panel.
- 6/ Remove the mixer front panel from the plastic chassis and place face down on a dry, non-marring surface.
- 7/ Pull the ribbon cable off the EFX board and cut pin 1 as shown in the diagram on page 2. The cut should be flush with the ribbon cable's insulation, so there is no chance of any electrical contact.
- 8/ Replace the ribbon cable onto the EFX board, making sure that all pins are inserted correctly, and there is no connection to pin 1.
- 9/ Reassemble the mixer and fully retest before returning it to your customer.



Front panel EFX controls for CFX mixers

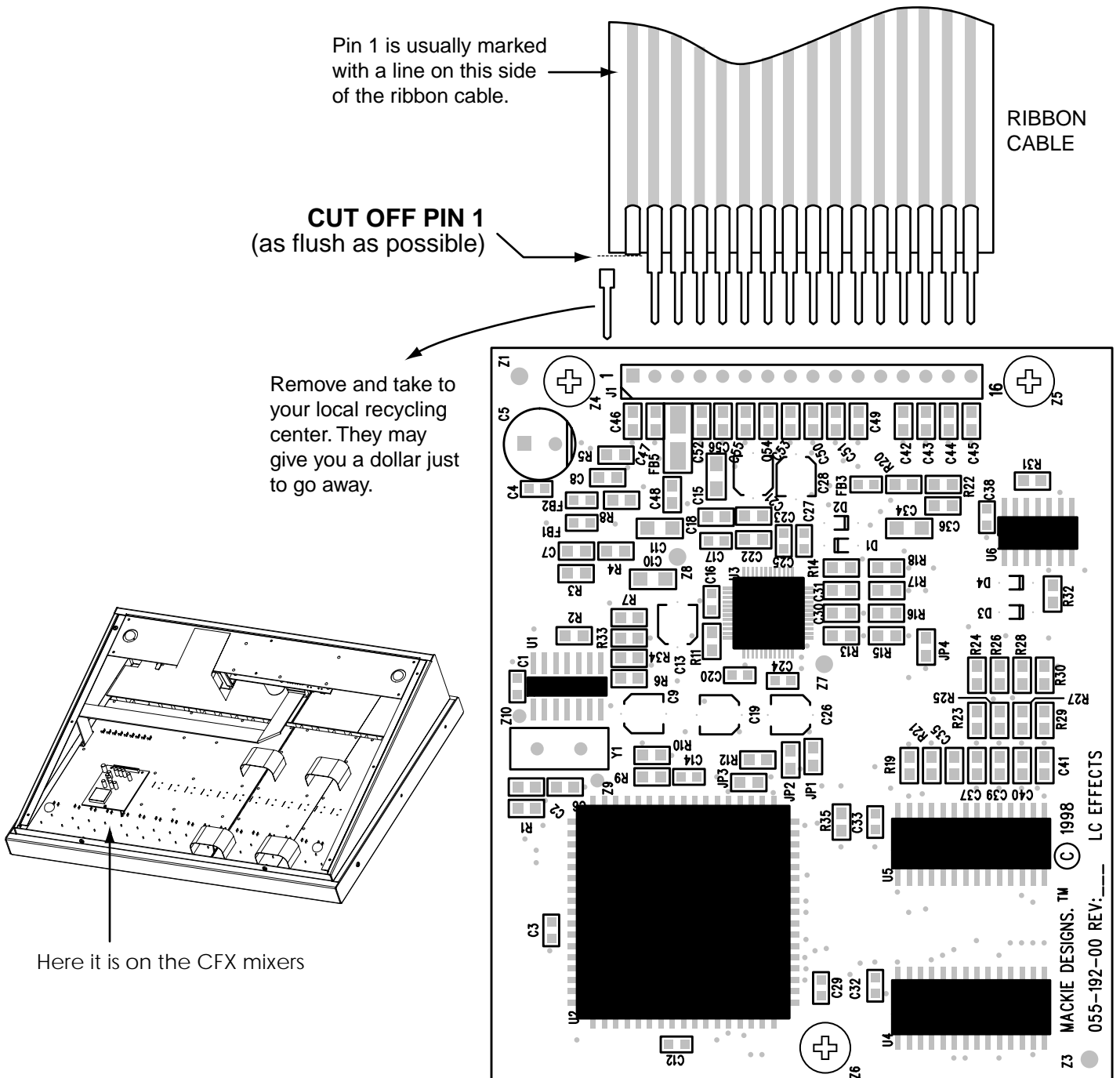


Front panel EFX controls for PPM mixers

## CFX Mixer repair

In order to perform this on the CFX Compact Mixer series, the bottom panel must be removed.

- 1/ Remove all cords- including the power cable from the mixer.
- 2/ Place the mixer upside down on a dry, non-marring and donut-free surface.
- 3/ Remove the screws securing the bottom panel of the mixer.
- 4/ Pull the ribbon cable off the EFX board and carefully cut pin 1 of the cable as shown in the diagram below. The cut should be flush with the ribbon cable's insulation, so there is no chance of any electrical contact.
- 5/ Replace the ribbon cable onto the EFX board, making sure that all pins are inserted correctly, and there is no connection to pin 1.
- 6/ Reassemble the mixer and fully retest before returning it to your customer.



EFX BOARD, BOLTED TO THE REAR FACE OF THE MIXER BOARD.