

# VI. SERVICE INFORMATION

## DISASSEMBLY PROCEDURE

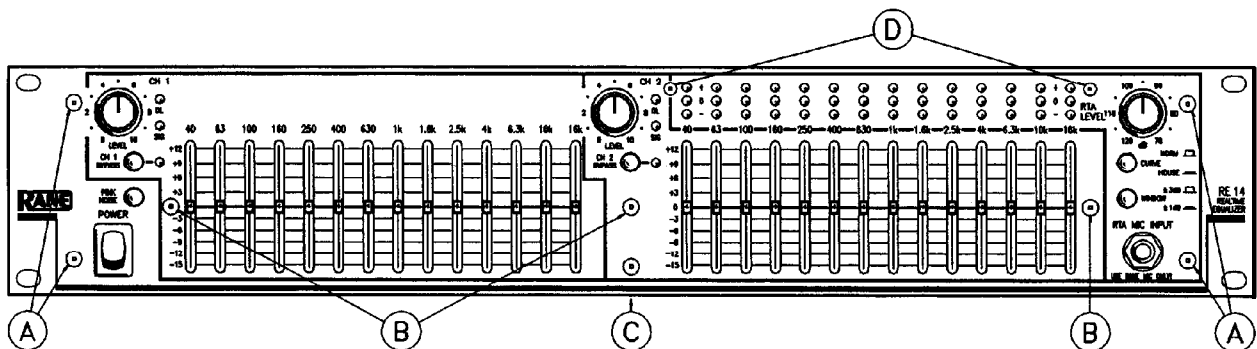
1. TOP COVER REMOVAL Remove 8 each thread-forming phillips screws (HP-5) 1/4" long from the perimeter of the top cover; then remove 3 each 6-32 x 3/16" long phillips machine screws securing PCB standoffs and front panel brackets. BE SURE NOT TO MIX UP THE MACHINE AND THREAD FORMING SCREWS WHEN REPLACING THE TOP COVER.

2. BOTTOM COVER REMOVAL Remove 8 thread-forming screws 1/4" long each from the perimeter of the bottom cover. Remove (1) 6-32 x 3/16" long phillips machine screw from the RE 14 bottom cover.

3. FRONT PANEL REMOVAL: RE 14.

- A. Remove 4 each 6-32 x 3/8" long phillips machine screws as shown in the diagram below.
- B. Remove 3 each 6-32 x 1/4" long phillips machine screws as shown below.
- C. Remove the thread-forming screw from the center forward edge of the bottom cover. DO REMOVE THE SCREW FROM THE CENTER LOWER EDGE OF THE FRONT PANEL: this secures the bottom cover bracket which should remain attached to the front panel.
- D. Remove the two 4-40 x 1/16" long screws just above either end of the LED display on the front panel.
- E. Remove the EQ and RTA Level control knobs and shaft nuts using an 11 mm or 7/16" nut driver. Remove the MIC Input nut and washer.
- F. Carefully pull the front panel forward and off the chassis.

BE SURE TO ALIGN ALL LEDs VERY CAREFULLY WHEN REPLACING THE FRONT PANEL EXCESSIVE BENDING OR PUSHING IN ON THE LEDs MAY CAUSE THEM DAMAGE OR FAILURE



## ALIGNMENT PROCEDURE

The only alignments in the RE 27 and RE 14 are the analyzer filter output level trim pots. These are calibrated at the factory to the pink noise in each unit.

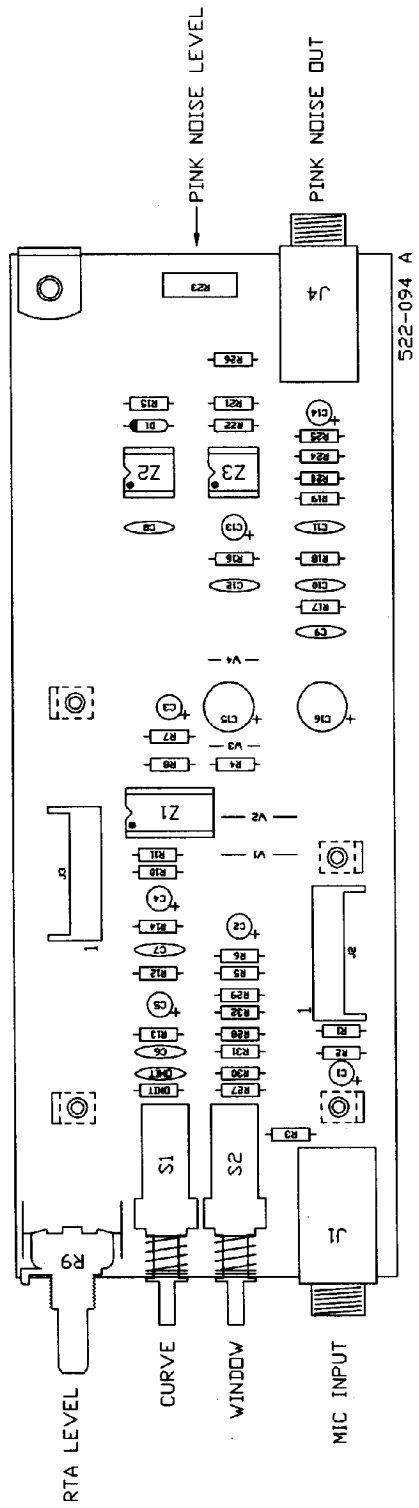
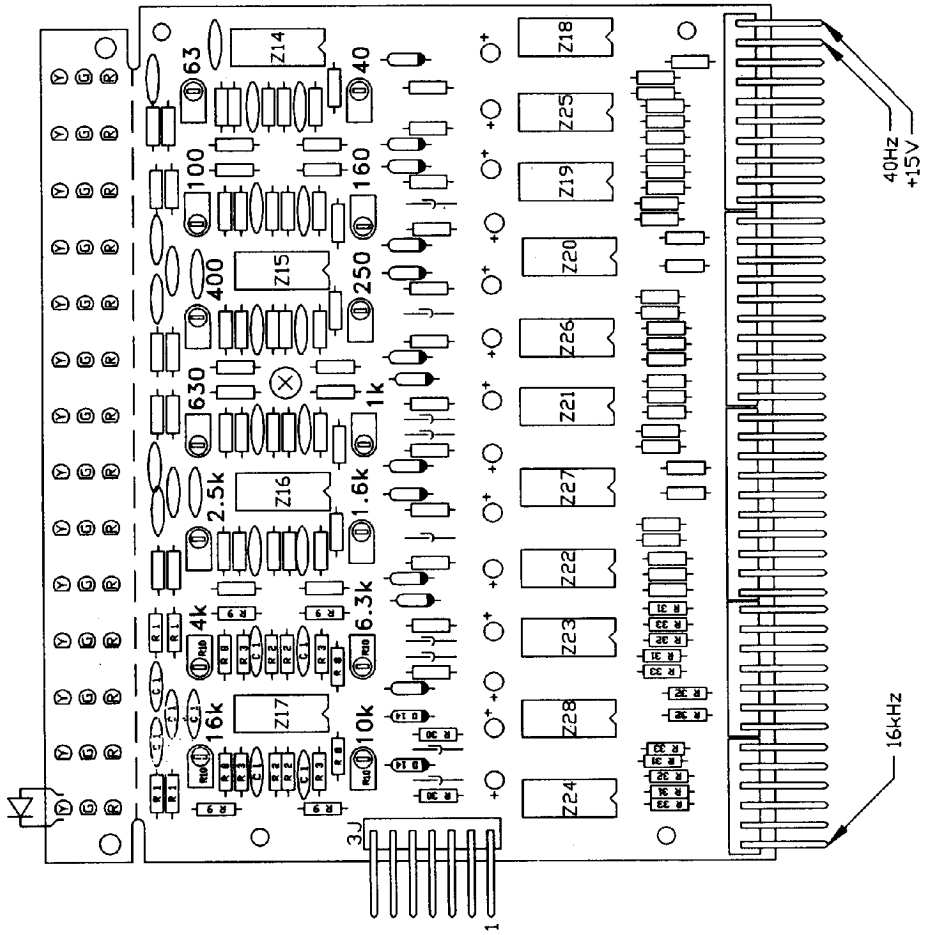
NOTE: DO NOT RECALIBRATE THE ANALYZER TRIMMERS TO ANY EXTERNAL PINK NOISE SOURCE. CALIBRATE ONLY TO THE UNIT'S OWN PINK NOISE SOURCE AS DESCRIBED BELOW, TO INSURE PROPER EQUALIZER/ANALYZER MATCHING.

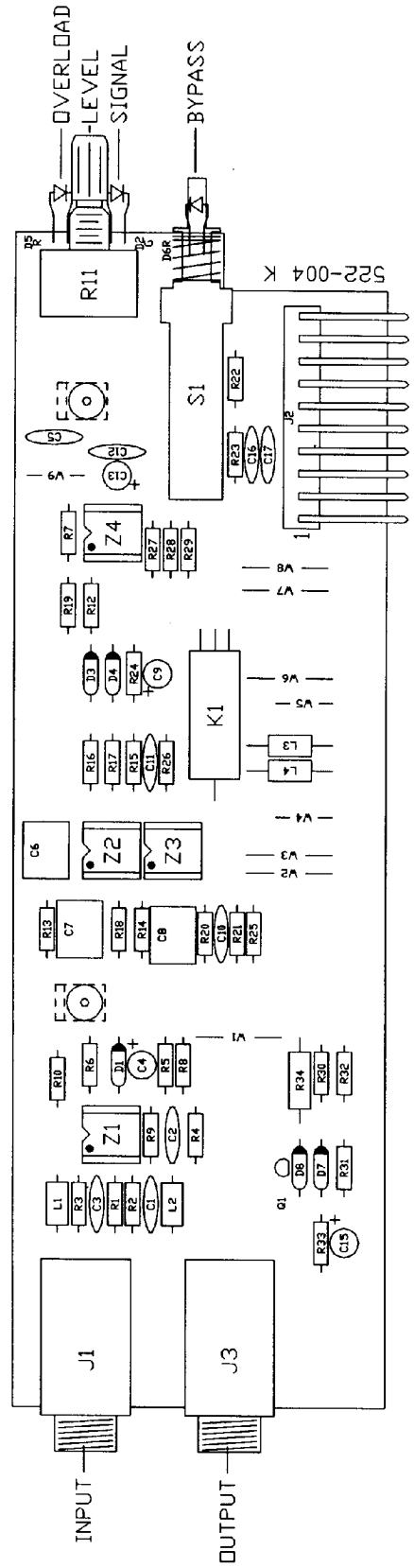
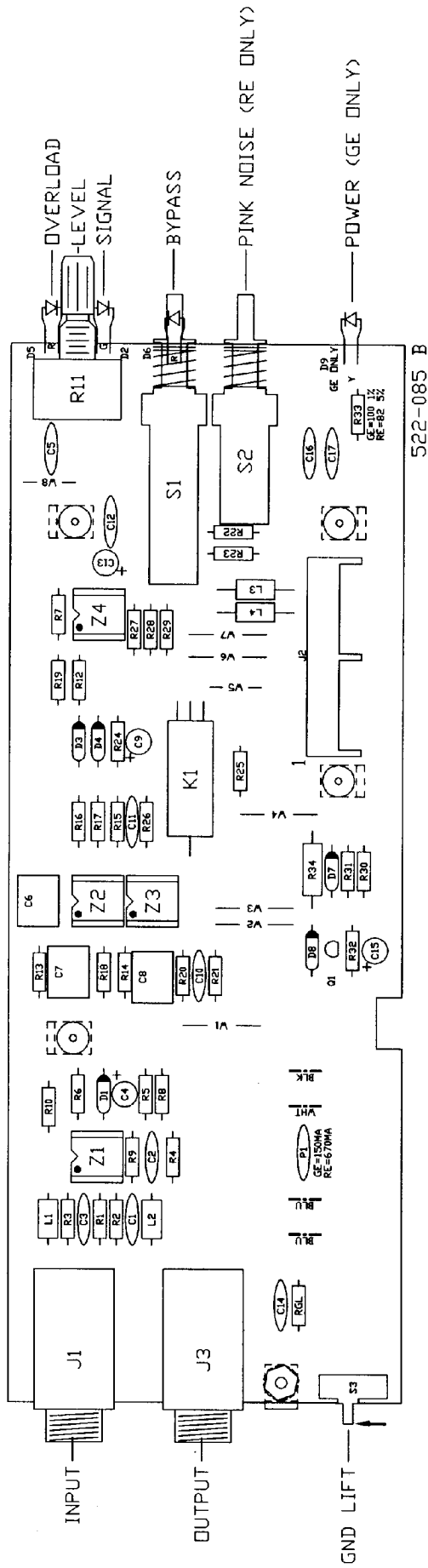
1. Using a 1/4" mono patch cord, connect the Pink Noise Out on the rear panel to the EQ Input. Push in the BYPASS switch.
2. With the bottom cover removed; turn the unit upside down with the front panel facing you.
3. Set the Curve Select switch to NORMAL and the Window Select switch to the  $\pm 1$  dB position.
4. Turn up RTA Level controls until the display responds; adjust these such that the most green LEDs are lit.
5. Using the RE 14 schematic diagram, adjust the proper trim pot so that each filter band shows the most stable green LED response. Be sure that all sliders are in the center detent position. In the lower frequencies (below 1 kHz) the inherent crest factor of true pink noise will cause considerable LED flutter. Adjust the trimmers such that green is dominantly on, and that fluctuations cause both red and yellow LED excursions. If you occasionally switch to the  $\pm 3$  dB setting, it will be easier to tell if one of the lower frequencies is set too high or too low.

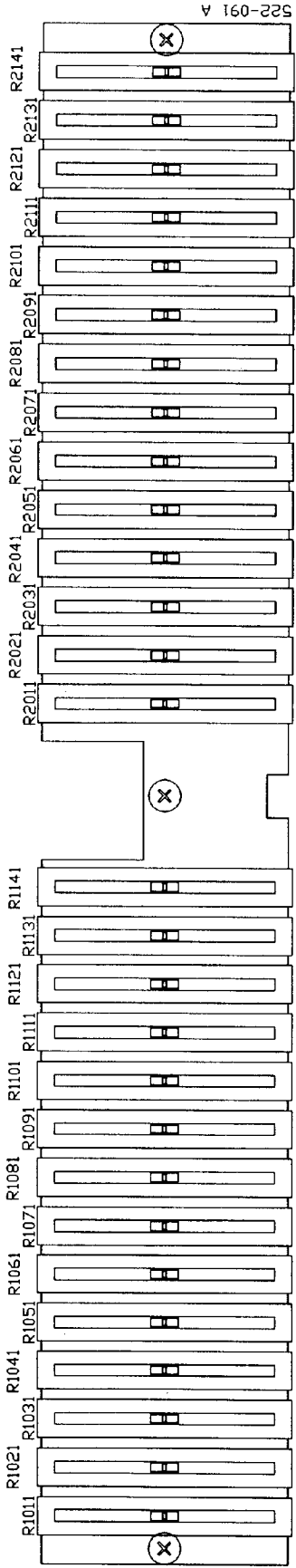
NOTE: NO ADJUSTMENTS REQUIRED FOR FILTERS ABOVE 500 Hz

## Test/Troubleshooting Hints

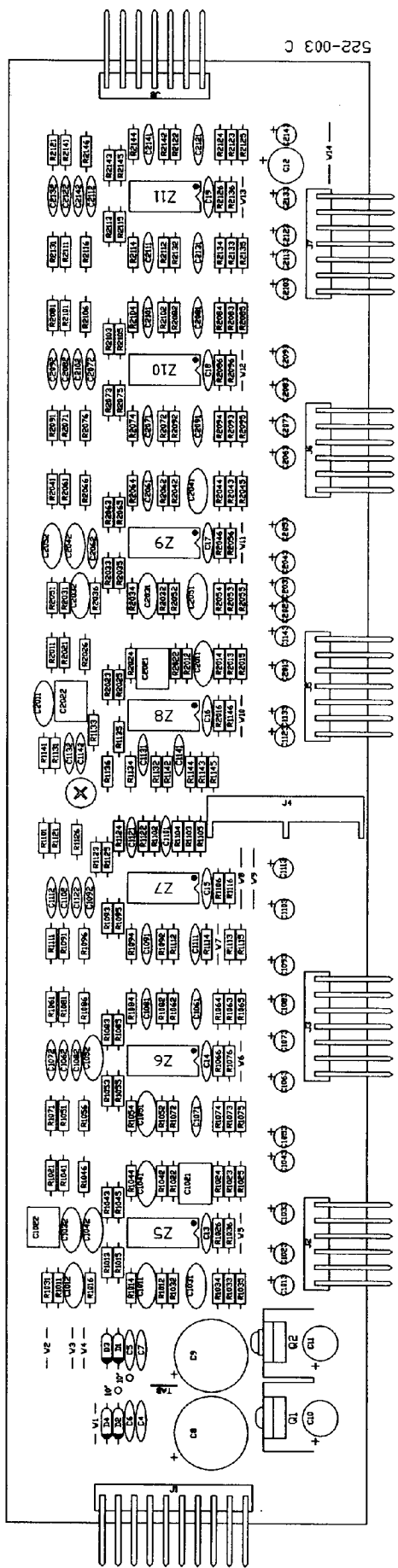
1. The RE 27 and RE 14 really contain their own test equipment. By patching the Pink Noise Output to the EQ Input with a mono 1/4" patch cord (and no mike plugged in) the entire analyzer/equalizer/pink noise system can be checked and verified. Turn up the RTA and EQ Level controls until the display LEDs respond. With all sliders centered, the display should show all green in the  $\pm 3$  dB position with proper level settings. Switching to  $\pm 1$  dB should show mostly green with some LED flutter in the lower frequency bands below 1 kHz (due to inherent crest factor of pink noise showing through the 2 dB window). Moving each slider up and down should produce red and yellow LED response in that band. Switching to HOUSE CURVE should cause red LEDs to light between approximately the 250 Hz and the 2.5 kHz bands.
2. If one or more LEDs is not working be sure to check for DC voltage right at the LED pins, with enough RTA input level to drive that band. If the real cause is defective IC on the analyzer PCB, you will go through the front panel removal and LED replacement for nothing. If more than one LED is out in the same band or two adjacent bands, suspect a defective IC on the analyzer board.



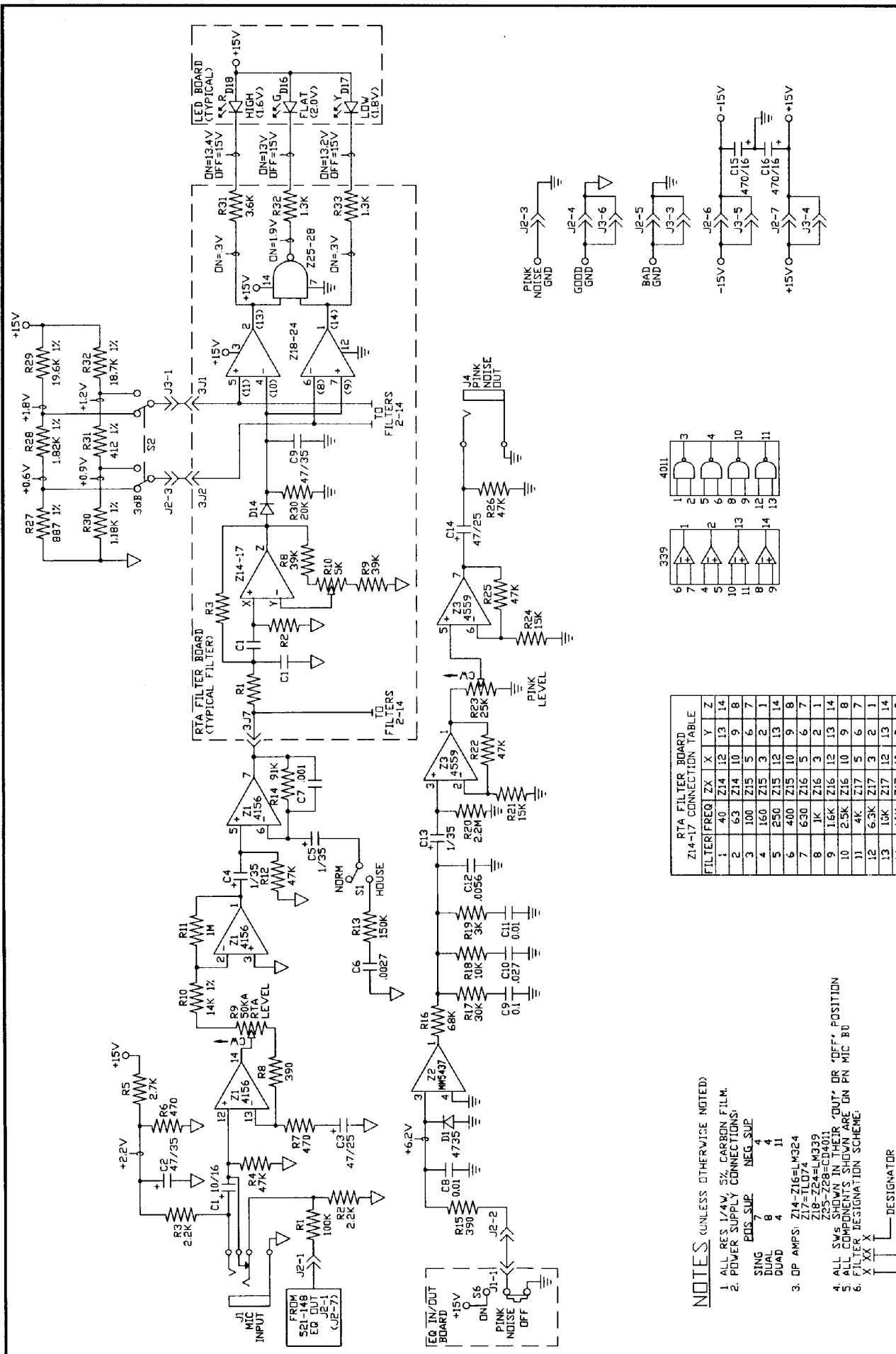




522-091 A

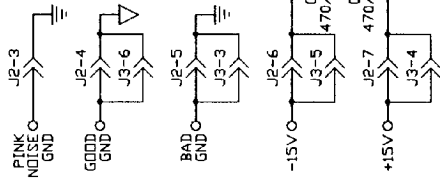
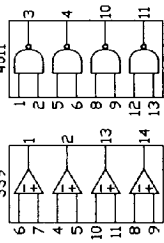


522-003 C



RTA FILTER BOARD  
Z14-17 CONNECTION TABLE

FILTER FREQ	ZX	X	Y	Z
1	40	Z14	12	13
2	63	Z14	10	9
3	100	Z15	5	6
4	160	Z15	3	2
5	250	Z15	10	9
6	400	Z15	10	9
7	630	Z16	5	6
8	1K	Z16	3	2
9	1.6K	Z16	12	13
10	2.5K	Z16	10	9
11	4K	Z17	5	6
12	6.3K	Z17	3	2
13	10K	Z17	12	13
14	16K	Z17	10	9



**NOTES** (UNLESS OTHERWISE NOTED)

- ALL RES 1/4W, 5% CARBON FILM.
- POWER SUPPLY CONNECTIONS:
  - SING POS SUP
  - DUAL 8
  - QUAD 4
- OP AMPS: Z14-Z16=LM324  
Z17=TL074  
Z18-Z24=LM301  
Z18-Z24=LM301
- ALL SVCS SHOWN IN THEIR 'OUT' OR 'OFF' POSITION
- ALL COMPONENTS SHOWN ARE ON PN MIC 80
- FILTER DESIGNATION SCHEME:
  - X XX X
  - DESIGNATOR
  - FILTER NUMBER (01-14)
  - COMPONENT TYPE
  - EXAMPLE: R012
  - RESISTOR, FILTER 1 (40Hz), NUMBER 2

RE 14  
RTA SCHEMATIC

REV. A

DO NOT SCALE DRAWING

DATE 28AUG91    APPROVED

SHEET 1 OF 1

DRAWN S HEADRICK    DATE 21AUG91    CHECKED

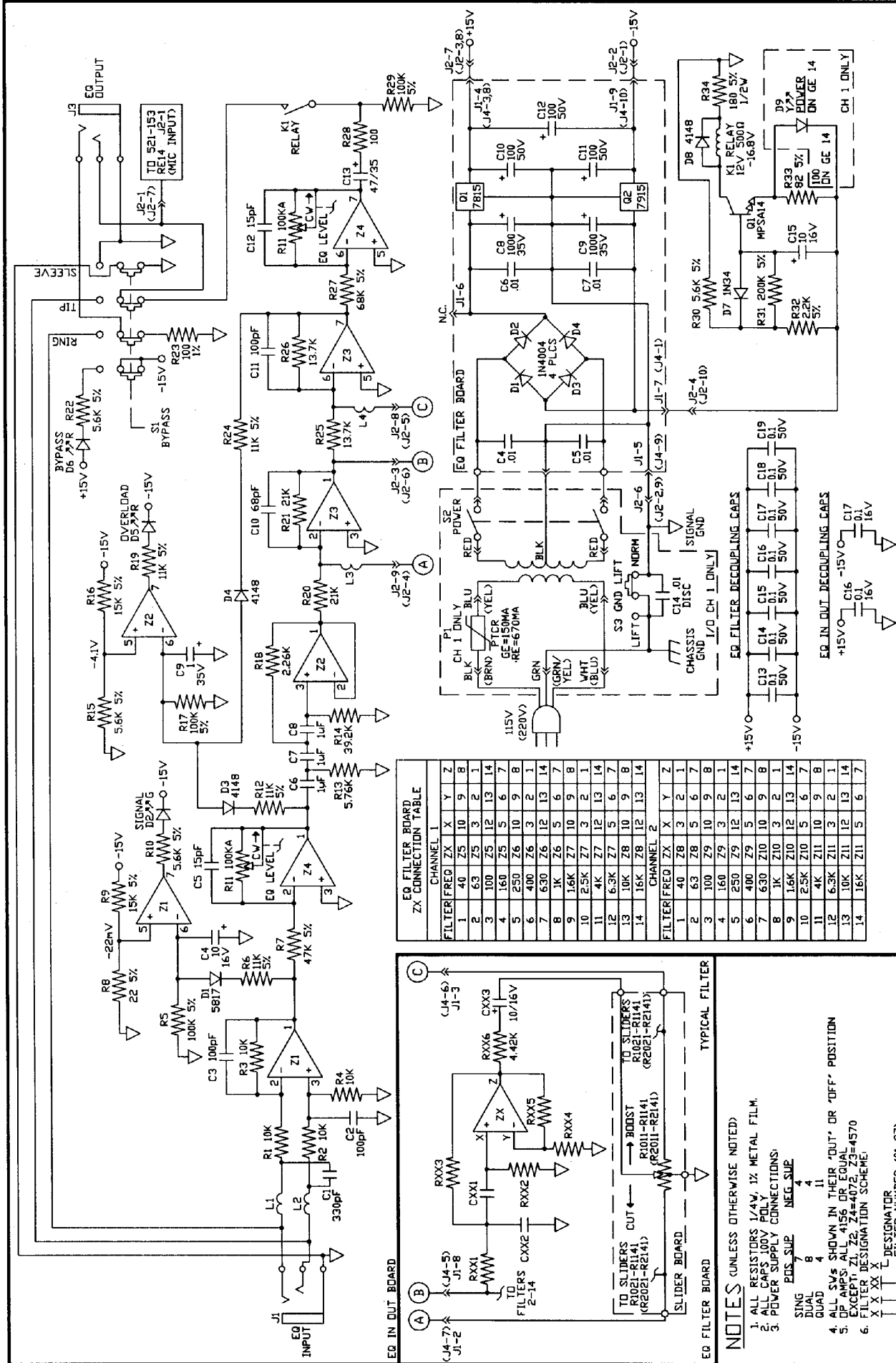
REV. A    ACTION PUT ONTO CAD

DRAWING NO. 521-153

TITLE RE 14 RTA SCHEMATIC

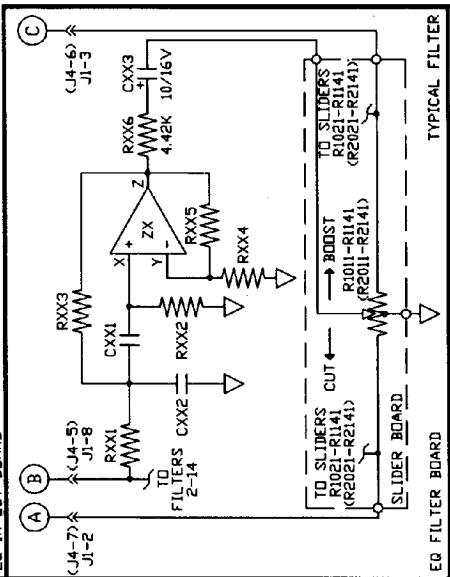
REV. A

Corp. 10802 47th Avenue West, Mukilteo  
VA 98275-5098 (206) 355-6000



**EQ FILTER BOARD ZX CONNECTION TABLE**

FILTER FREQ	CHANNEL 1						CHANNEL 2					
	ZX	X	Y	Z	Y	Z	ZX	X	Y	Z	Y	Z
1	40	Z5	10	9	2	1	1	40	Z8	3	2	1
2	63	Z5	10	9	2	1	2	63	Z8	5	6	7
3	100	Z5	12	13	14		3	100	Z9	10	9	8
4	160	Z5	5	6	7		4	160	Z9	3	2	1
5	250	Z6	10	9	8		5	250	Z9	12	13	14
6	400	Z6	3	2	1		6	400	Z9	5	6	7
7	630	Z6	12	13	14		7	630	Z10	10	9	8
8	1K	Z6	5	6	7		8	1K	Z10	3	2	1
9	1.6K	Z7	10	9	8		9	1.6K	Z7	10	9	8
10	2.5K	Z7	3	2	1		10	2.5K	Z7	5	6	7
11	4K	Z7	12	13	14		11	4K	Z7	12	13	14
12	6.3K	Z7	5	6	7		12	6.3K	Z7	10	9	8
13	10K	Z8	10	9	8		13	10K	Z8	12	13	14
14	16K	Z8	12	13	14		14	16K	Z8	11	12	13



**NOTES (UNLESS OTHERWISE NOTED)**

- ALL RESISTORS 1/4W, 1% METAL FILM.
- ALL CAPS 50V CONNECTIONS.
- POWER SUPPLY CONNECTIONS:

SING	POS SUP	NEG SUP
6	4	11
QUAD	4	11

- ALL SVCS SHOWN IN THEIR 'OUT' OR 'OFF' POSITION
- ALL SVCS AL-1156 OR EQUAL
- EXCEPT Z1, Z2, Z6=4072 Z3=4570
- FILTER DESIGNATION SCHEME:

X	X	XX	X
L	L	DESIGNATOR	
F	F	FILTER NUMBER (01-27)	
C	C	CHANNEL NUMBER	
COMP	COMP	COMPONENT TYPE	

EXAMPLE: R1012  
RESISTOR, CHANNEL 1, FILTER 1 (40Hz), NUMBER 2

- RESISTOR, CHANNEL 2 SAME EXCEPT WHERE NOTED, CONN. # S SHOWN IN ( ) PARENTHESIS ARE CH2

**RANE**

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REV. NO. 521-148

TITLE RE/GE 14 SCHEMATIC

REV. B

REVISIONS REV. B ACTION REDESIGNATED IN OUT BOARD, ADDED GND LIFT SWITCH

DRAWN S. HEADRICK DATE 20MAY91 CHECKED BRH DATE 05JUN91 SHEET 1 OF 1

APPROVED SRM DATE 26AUG91

DO NOT SCALE DRAWING