AVP2 SERVICE MANUAL

IMPORTANT:

Unlike other Harman/Kardon models, technical inquiries and spare part orders for this unit should be addressed to a separate division we have set up in California. Please do *not* contact our New York office in this regard.

Your correspondence should be addressed as follows:

Audioaccess
26046 Eden Landing Road, Suite 5
Hayward, CA 94545

Fax: +510 293 0189
Attn: Bob Popham / JEFF DAVIS

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SECTION 1

SAFETY PRECAUTIONS

The following safety precautions must be observed when servicing electronic equipment.

1. **HIGH VOLTAGE** is present on printed circuit board. Caution should be observed while servicing. Refer to IEC symbols on schematic (shock hazard).

2. Use exact replacement parts. Especially where parts are noted as **"RISK OF FIRE OR SHOCK HAZARD."**

3. Test for leakage currents prior to the return of the unit to customer. (see following page for details on leakage test.)

4. **CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE 250 mA 250V FUSE.**

LEAKAGE TEST

All accessible parts are to be tested for leakage current and all parts accessible during user servicing are to be tested for shock current. The current from these parts measured to the grounded supply conductor individually as well as collectively where simultaneously accessible from one part, or group of parts, to another part or group of parts where simultaneously accessible. Parts are considered to be simultaneously accessible when they can be contacted by one or both hands of a person at the same time.

For the purpose of this measurement, one hand is considered to be able to simultaneously contact parts that are within a 4 - by 8- inch (101.5- by 203.2-mm) rectangle. Parts that can be

contacted simultaneously by a person having a reach of six feet (1.83m) are considered to be touchable by both hands. Leakage or shock current refers to all currents, including capacitively coupled currents.

If leakage current is more than .5 mA at maximum rated voltage the unit will need to be repaired before it can be returned to the customer. The meter that is actually used for the "A" measurement need only indicate the same numerical value for the particular measurement as the ideal instrument. The meter used need not have all the attributes of the ideal instrument.

METER REQUIREMENTS

1. The meter is to have an input impedance of 1500 Ohms resistive shunted by a capacitor of .15 uF.

2. The meter is to indicate 1.11 times the average of the full-wave rectified composite wave form of voltage across the resistor or current through the resistor.

3. Over a frequency range of 0-100Khz the measurement circuitry is to have a frequency response (ratio of indicated to actual value of current) that is equal to the ratio of the impedance of a 1500 Ohm resistor shunted by a .15 uF capacitor to 1500 Ohms. At an indication of .5mA, the measurement is to have an error of not more than 5 percent at 60hz.

4. Unless the meter is being used to measure current from one part of an appliance to another, the meter is to be connected between the accessible parts and the ground supply conductor.

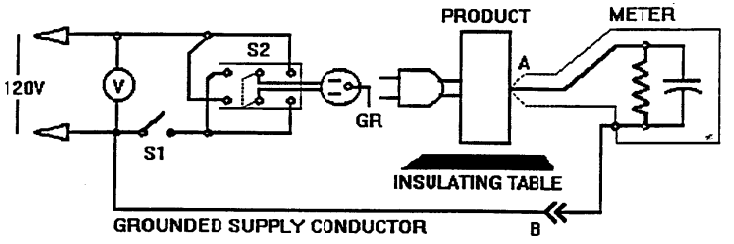
LEAKAGE TEST

1. With switch S1open, the unit being tested is to be connected to the measuring circuit. Immediately after connection, the current is to be measured using both positions of switch S2.

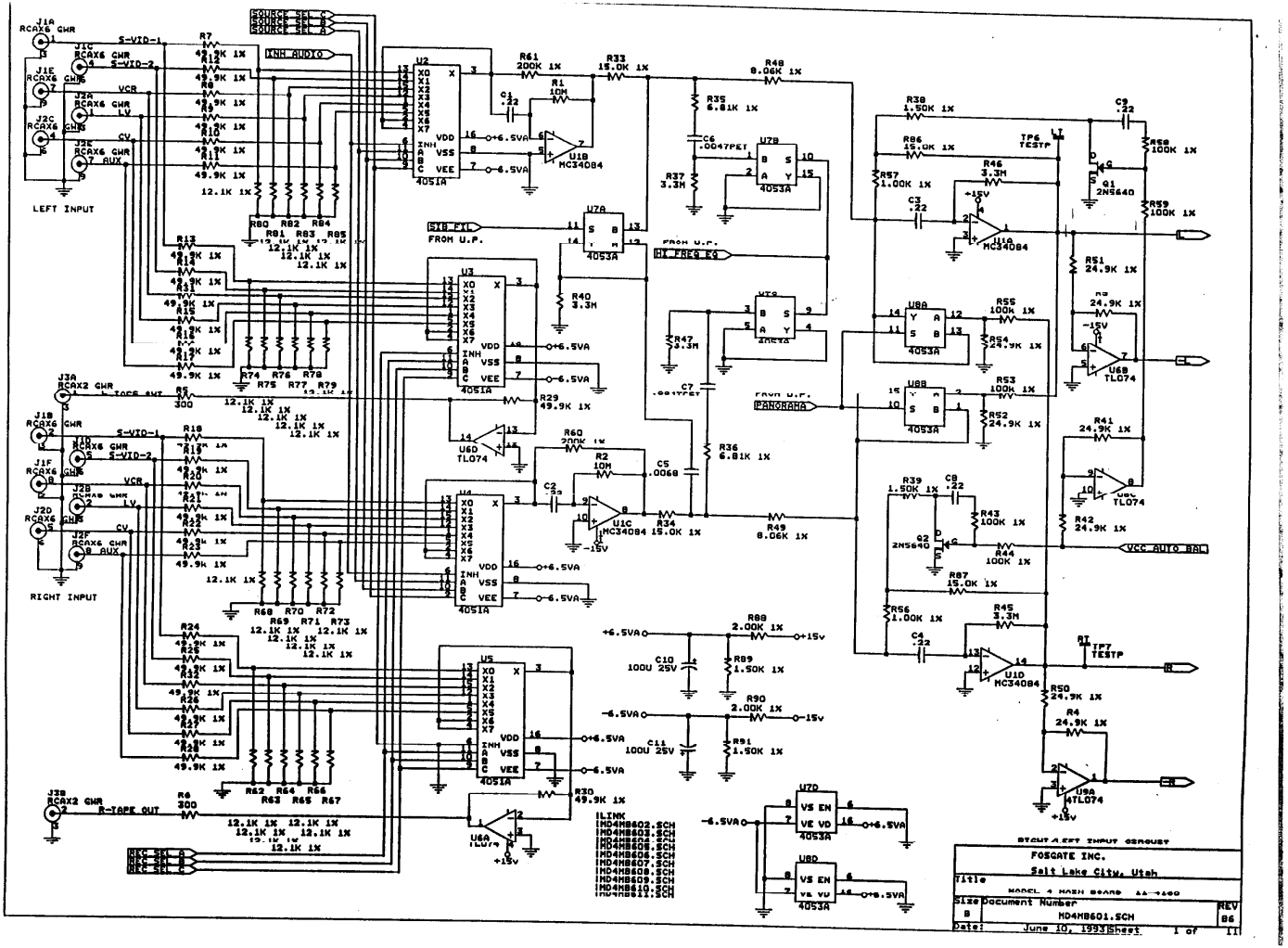
2. Switch S1 is then to be closed energizing the unit under test; Immediately after closing the switch, the current is to be measured using both positions of S2.

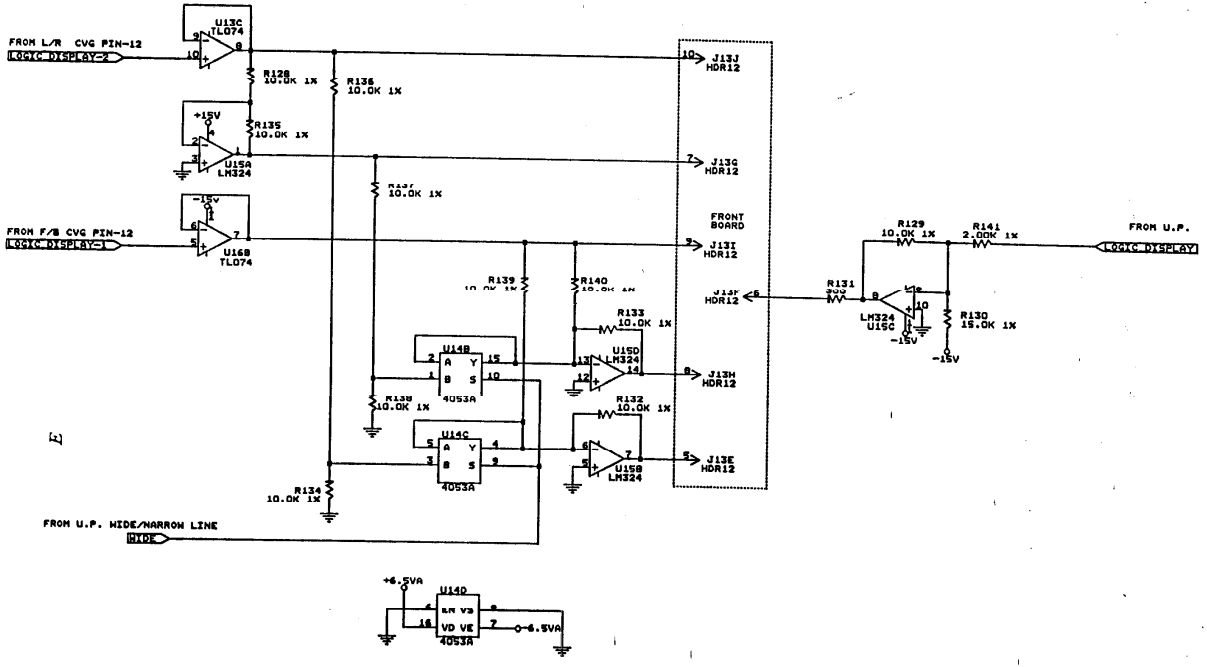
3. Current measurements of items A and B are to be repeated after thermal stabilization of unit under test has been reached.

LEAKAGE CURRENT MEASUREMENT CIRCUIT.

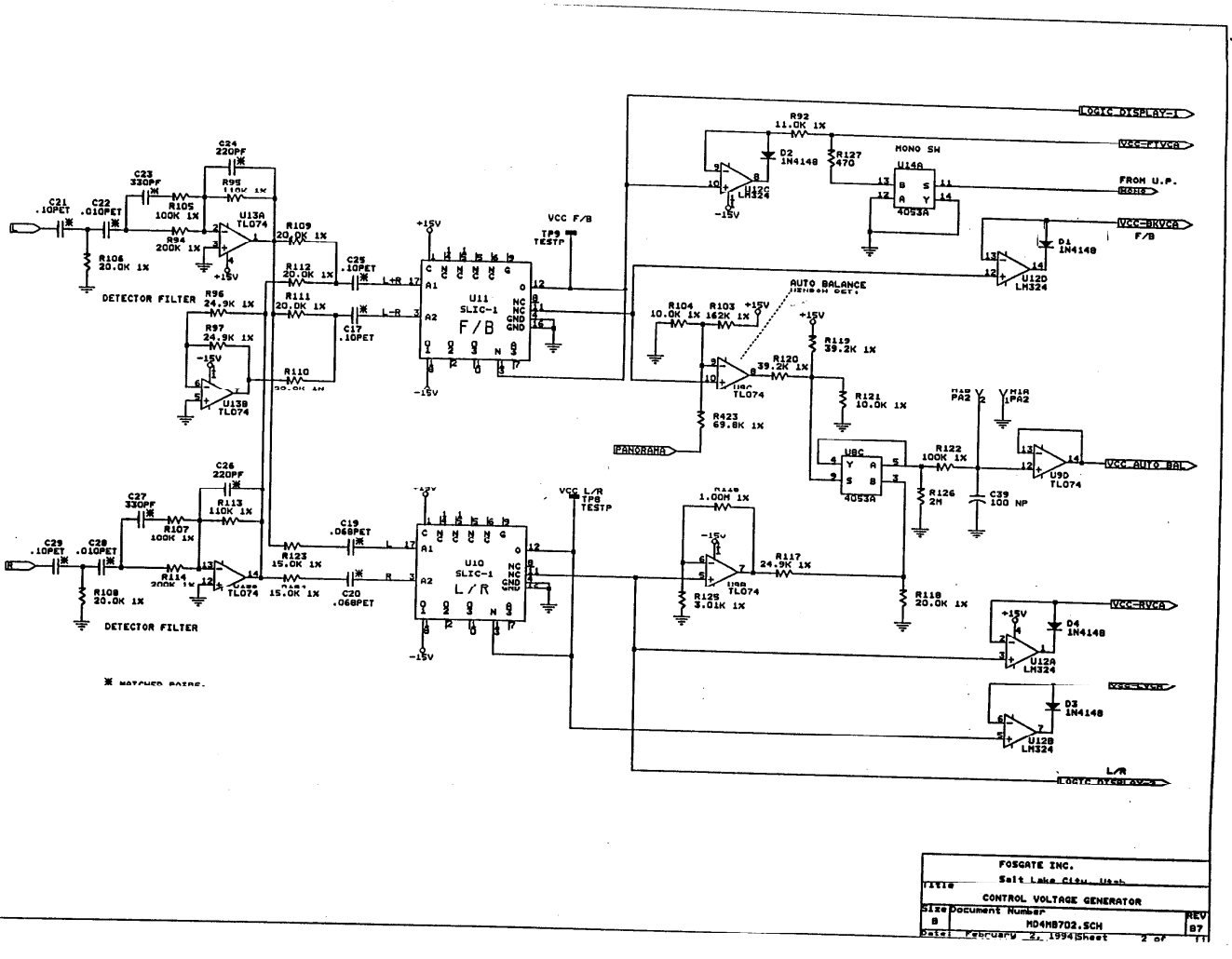


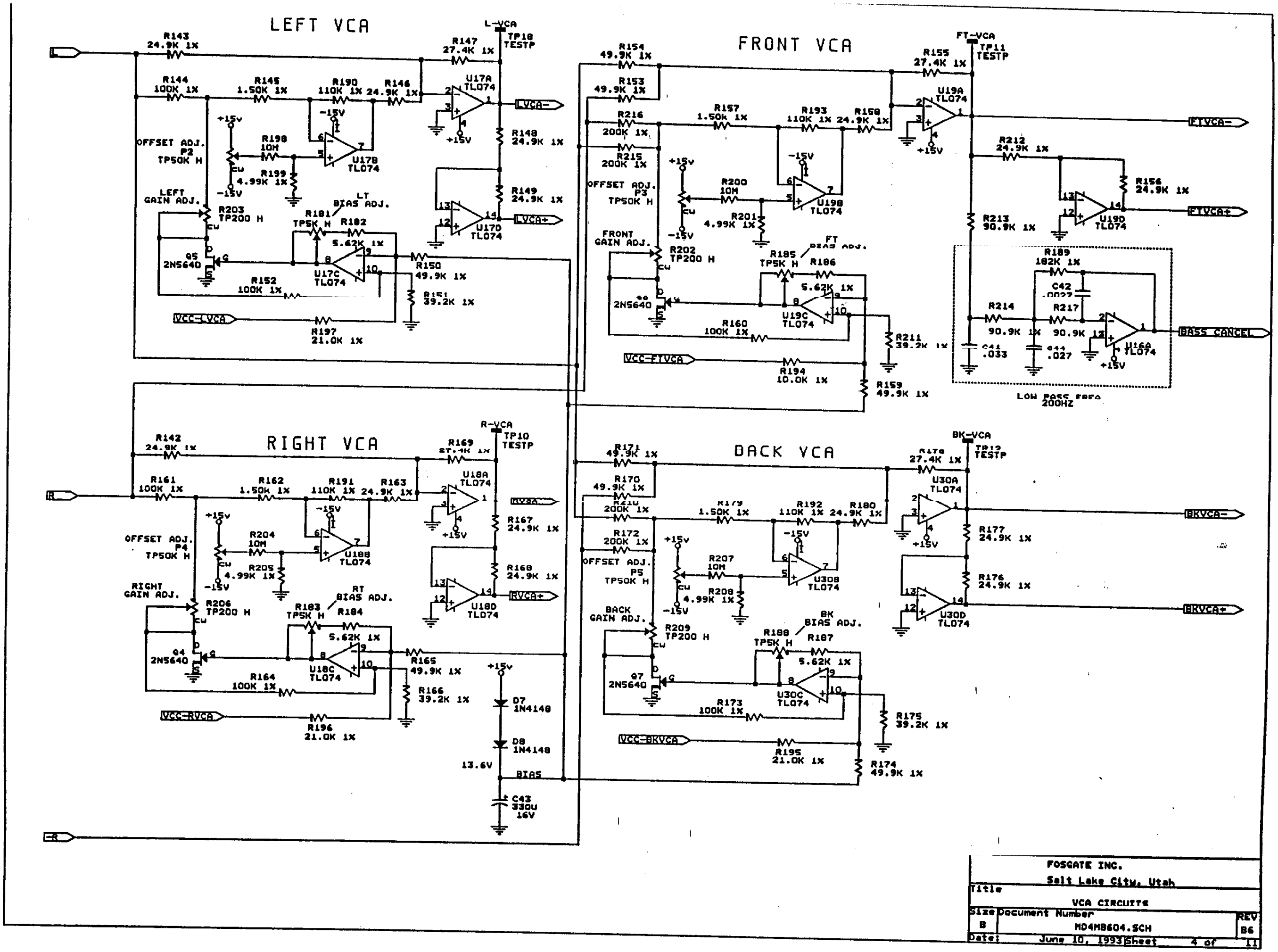
SECTION 2

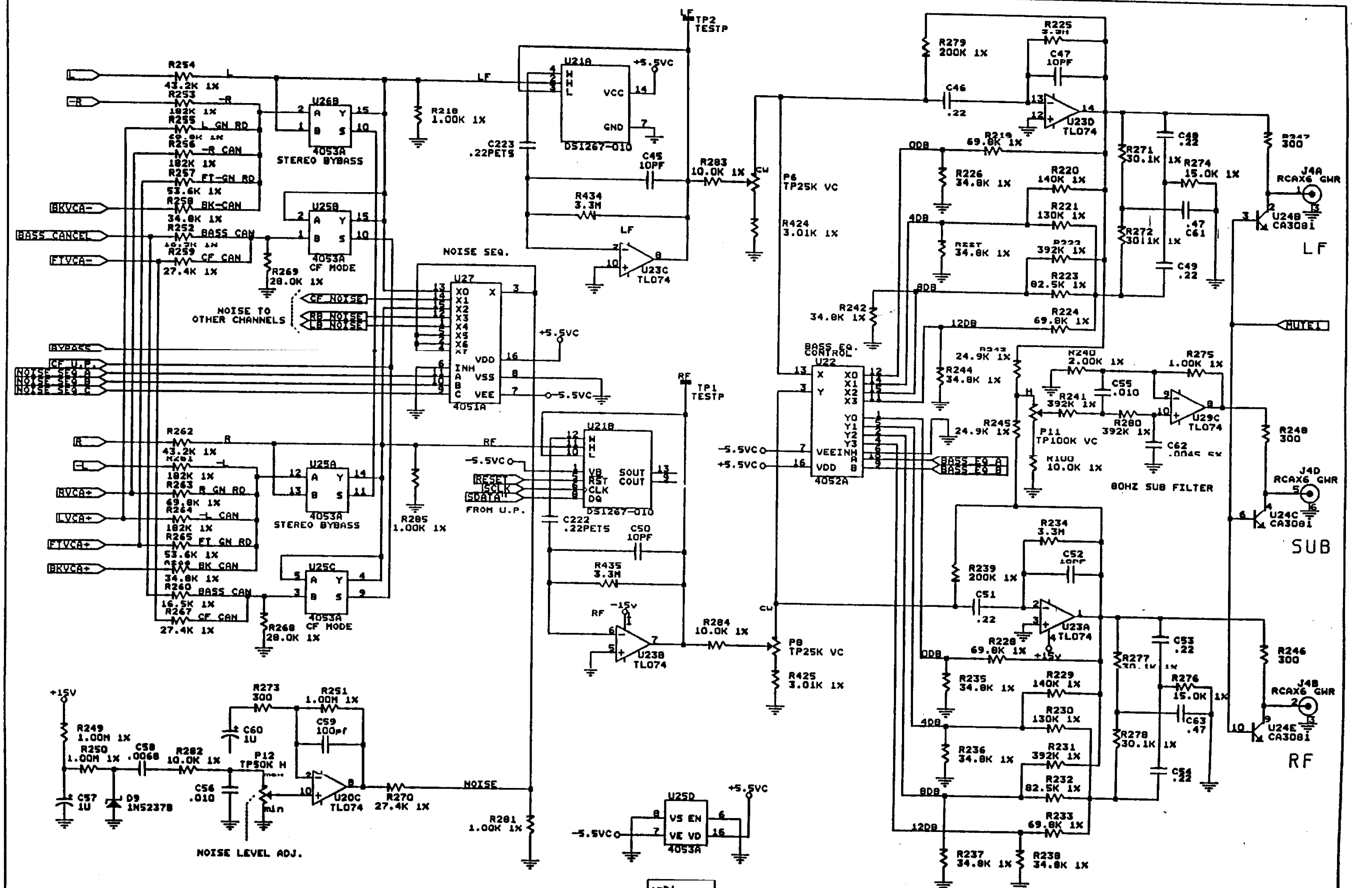

LEFT INPUT
RIGHT INPUT
S-VID-1
S-VID-2
VCR
LV
CV
AUX
L-TAPE OUT
R-TAPE OUT
VHH AUDIO
SYS FXL
FROM U.P.
HI FREQ EQ
PANORAMA
VCC AUTO BAL
TP5 TESTP
TP7 TESTP
+15V
-15V
+6.5VA
-6.5VA
FOSGATE INC.
Salt Lake City, Utah
MODEL 4 MAIN BOARD
MD4MB601.SCH
June 10, 1993
REV 86



FOSGATE INC.		
Salt Lake City,Utah		
Title: LOGIC DISPLAY CIRCUIT		
Size: B	Document Number: MD4MB603.SCH	REV: B6
Date: June 10, 1993	Sheet 3 of 11	


C21 .10PET
C22 .010PET
C23 330PF
C24 220PF
R105 100K 1%
R94 200K 1%
R95 110K 1%
U13A TL074
R106 20.0K 1%
DETECTOR FILTER
R109 20.0K 1%
R112 20.0K 1%
R111 20.0K 1%
R110 20.0K 1%
C25 .10PET
C17 .10PET
L+R
L-R
R96 24.9K 1%
R97 24.9K 1%
U13B TL074
+15V
-15V
VCC F/B
TP9 TESTP
U11 SLIC-1 F/B
R92 11.0K 1%
D2 1N4148
R127 470
MONO SW
U14A 4053A
FROM U.P.
U12C LM324
D1 1N4148
U12D LM324
LOGIC DISPLAY-1
VCC-FIVCA
VCC-BKVCA
F/B
AUTO BALANCE
R104 10.0K 1%
R103 162K 1%
R119 39.2K 1%
R120 39.2K 1%
U9C TL074
R121 10.0K 1%
R423 69.8K 1%
PANORAMA
MIR PA2
R122 100K 1%
U9D TL074
VCC-AUTO BAL
R126 2M
C39 100 NP
4053A
C29 .10PET
C28 .010PET
C27 330PF
C26 220PF
R107 100K 1%
R114 200K 1%
R113 110K 1%
U13C TL074
R108 20.0K 1%
DETECTOR FILTER
R123 15.0K 1%
R115 15.0K 1%
C19 .068PET
C20 .068PET
U10 SLIC-1 L/R
VCC L/R
TP8 TESTP
R124 1.00M 1%
R125 3.01K 1%
U10B TL074
R117 24.9K 1%
R118 20.0K 1%
D4 1N4148
U12A LM324
D3 1N4148
U12B LM324
VCC-HVCA
VCC-LVCA
L/R
LOGIC DISPLAY-2
* MATCHED PAIRS.
FOSGATE INC.
Salt Lake City, Utah
Title
CONTROL VOLTAGE GENERATOR
Size B
Document Number MD4MB702.SCH
REV B7
Date: February 2, 1994 Sheet 2 of 11


LEFT VCA
FRONT VCA
RIGHT VCA
BACK VCA
L-VCA
TP18 TESTP
FT-VCA
TP11 TESTP
R-VCA
TP10 TESTP
BK-VCA
TP12 TESTP
R143 24.9K 1%
R144 100K 1%
R145 1.50K 1%
R190 110K 1%
R146 24.9K 1%
R147 27.4K 1%
U17A TL074
LVCA-
R148 24.9K 1%
R149 24.9K 1%
U17D TL074
LVCA+
OFFSET ADJ. P2 TP50K H
R198 10M
R199 4.99K 1%
U17B TL074
LEFT GAIN ADJ.
R203 TP200 H
LT BIAS ADJ.
R181 TP5K H
R182 5.62K 1%
Q5 2N5640
U17C TL074
R150 49.9K 1%
R151 39.2K 1%
R152 100K 1%
VCC-LVCA
R197 21.0K 1%
R154 49.9K 1%
R153 49.9K 1%
R216 200K 1%
R215 200K 1%
R157 1.50K 1%
R193 110K 1%
R158 24.9K 1%
R155 27.4K 1%
U19A TL074
FTVCA-
R212 24.9K 1%
R156 24.9K 1%
U19D TL074
FTVCA+
R213 90.9K 1%
OFFSET ADJ. P3 TP50K H
R200 10M
R201 4.99K 1%
U19B TL074
FRONT GAIN ADJ.
R202 TP200 H
R185 TP5K H
R186 5.62K 1%
2N5640
U19C TL074
R211 39.2K 1%
R160 100K 1%
VCC-FTVCA
R194 10.0K 1%
R159 49.9K 1%
R189 182K 1%
C42
R214 90.9K 1%
R217 90.9K 1%
.033
.027
U16A TL074
BASS CANCEL
LOW PASS FREQ 200HZ
R142 24.9K 1%
R161 100K 1%
R162 1.50K 1%
R191 110K 1%
R163 24.9K 1%
U18A TL074
R167 24.9K 1%
R168 24.9K 1%
U18D TL074
RVCA+
OFFSET ADJ. P4 TP50K H
R204 10M
R205 4.99K 1%
U18B TL074
RIGHT GAIN ADJ.
R206 TP200 H
RT BIAS ADJ.
R183 TP5K H
R184 5.62K 1%
Q4 2N5640
U18C TL074
R165 49.9K 1%
R166 39.2K 1%
R164 100K 1%
VCC-RVCA
R196 21.0K 1%
+15v
D7 1N4148
D8 1N4148
13.6V
BIAS
C43 330u 16V
R171 49.9K 1%
R170 49.9K 1%
R172 200K 1%
R179 1.50K 1%
R192 110K 1%
R180 24.9K 1%
27.4K 1%
U30A TL074
BKVCA-
R177 24.9K 1%
R176 24.9K 1%
U30D TL074
BKVCA+
OFFSET ADJ. P5 TP50K H
R207 10M
R208 4.99K 1%
U30B TL074
BACK GAIN ADJ.
R209 TP200 H
BK BIAS ADJ.
R188 TP5K H
R187 5.62K 1%
Q7 2N5640
U30C TL074
R173 100K 1%
R175 39.2K 1%
VCC-BKVCA
R195 21.0K 1%
R174 49.9K 1%
FOSGATE INC.
Salt Lake City, Utah
Title
VCA CIRCUITS
Size B
Document Number MD4MB604.SCH
REV B6
Date: June 10, 1993
Sheet 4 of 11

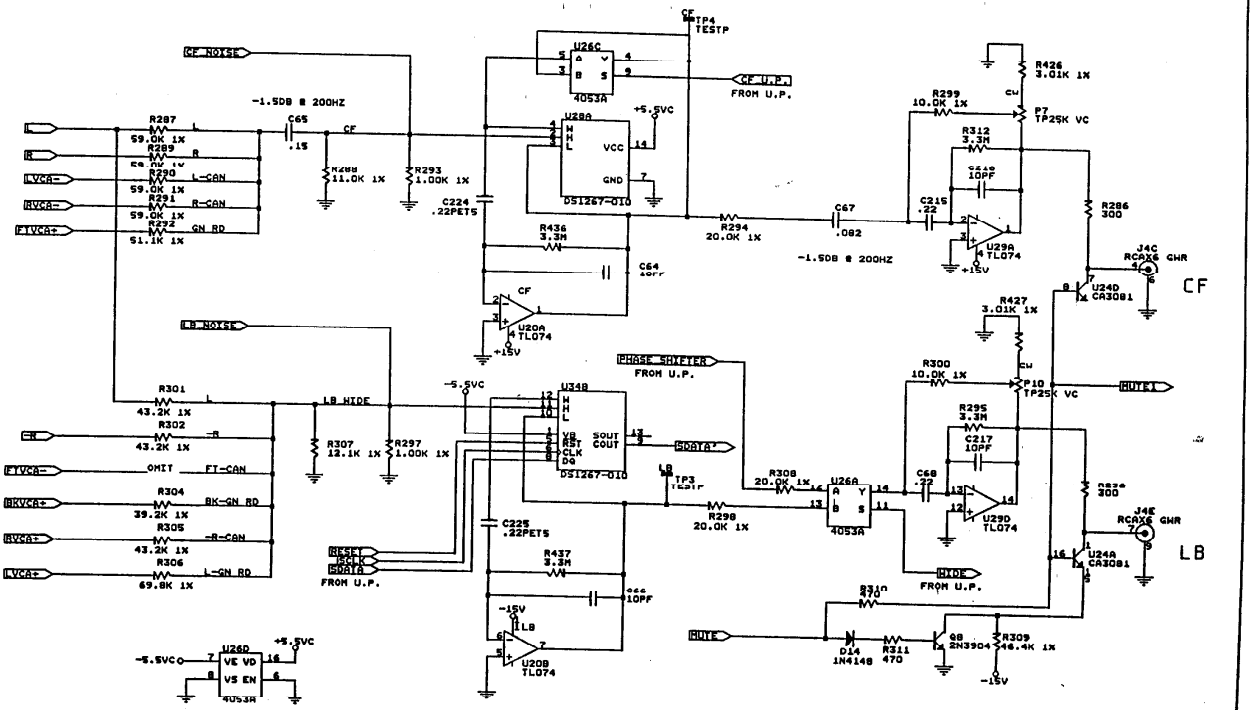


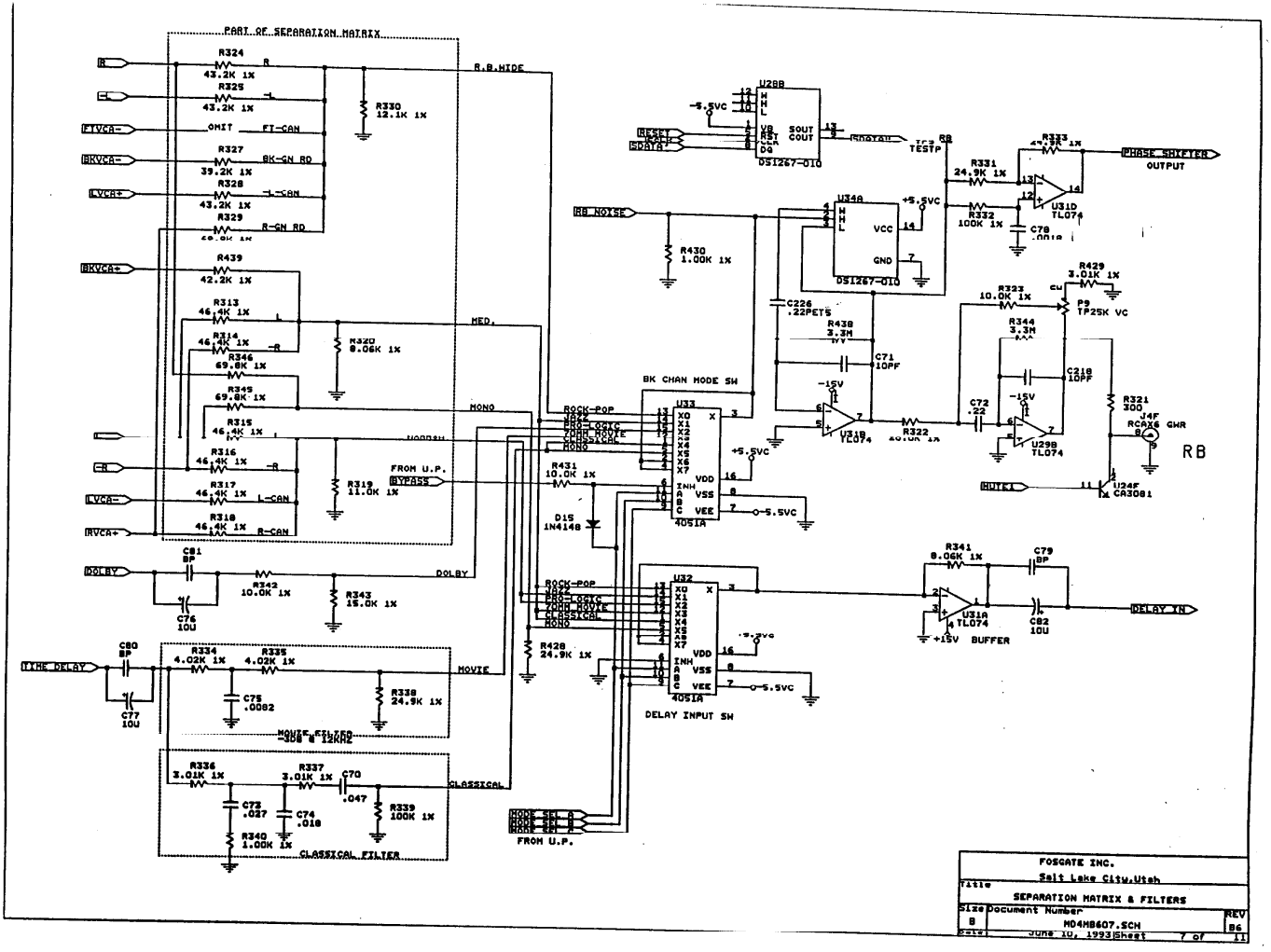
LF
TP2
TESTP
U21A
+5.5VC
VCC
GND
DS1267-010
C223
.22PETS
C45
10PF
R434
3.3M
U23C
TL074
R254
43.2K 1%
R253
182K 1%
R255
L GN RD
R256
-R CAN
R257
FT-GN RD
53.6K 1%
R258
BK-CAN
34.8K 1%
R252
BASS CAN
R259
CF CAN
27.4K 1%
R269
28.0K 1%
U26B
4053A
STEREO BYBASS
U25B
4053A
CF MODE
R218
1.00K 1%
BKVCA-
BASS CANCEL
FTVCA-
NOISE SEQ.
U27
4051A
CF NOISE
RB NOISE
LB NOISE
NOISE TO
OTHER CHANNELS
BYPASS
CF U.P.
NOISE SEQ A
NOISE SEQ B
NOISE SEQ C
VDD
VSS
VEE
-5.5VC
R262
43.2K 1%
R263
R GN RD
69.8K 1%
R264
182K 1%
R265
FT GN RD
R266
BK CAN
R260
16.5K 1%
R267
CF CAN
27.4K 1%
R268
28.0K 1%
RVCA+
LVCA+
FTVCA+
BKVCA+
U25A
4053A
STEREO BYBASS
U25C
4053A
CF MODE
R285
1.00K 1%
RF
TP1
TESTP
U21B
DS1267-010
SOUT
COUT
RESET
SCLK
SDATA
FROM U.P.
C222
.22PETS
C50
10PF
R435
3.3M
U23B
TL074
-15V
R284
10.0K 1%
R283
10.0K 1%
P6
TP25K VC
R424
3.01K 1%
P8
TP25K VC
R425
3.01K 1%
R279
200K 1%
R225
3.3M
C47
10PF
C46
.22
U23D
TL074
R219
69.8K 1%
0DB
4DB
8DB
12DB
R226
34.8K 1%
R220
140K 1%
R221
130K 1%
R222
392K 1%
R223
82.5K 1%
R224
69.8K 1%
R227
34.8K 1%
R242
34.8K 1%
BASS EQ.
CONTROL
U22
4052A
VEE
INH
BASS EQ A
BASS EQ B
R271
30.1K 1%
R272
30.1K 1%
C48
.22
C49
.22
R274
15.0K 1%
C61
.47
R247
300
J4A
RCAX6 GHR
U24B
CA3081
LF
MUTE1
R243
24.9K 1%
R244
34.8K 1%
R245
24.9K 1%
R240
2.00K 1%
R241
392K 1%
C55
.010
P11
TP100K VC
R280
392K 1%
R100
10.0K 1%
C62
.0045 5%
R275
1.00K 1%
U29C
TL074
80HZ SUB FILTER
R248
300
J4D
RCAX6 GHR
U24C
CA3081
SUB
R234
3.3M
C52
10PF
R239
200K 1%
C51
.22
U23A
TL074
R228
69.8K 1%
R235
34.8K 1%
R229
140K 1%
R230
130K 1%
R236
34.8K 1%
R231
392K 1%
R232
82.5K 1%
R233
69.8K 1%
R237
34.8K 1%
R238
34.8K 1%
R277
30.1K 1%
R278
30.1K 1%
C53
.22
C54
.22
R276
15.0K 1%
C63
.47
R246
300
J4B
RCAX6 GHR
U24E
CA3081
RF
+15V
R249
1.00M 1%
R250
1.00M 1%
C58
.0068
R282
10.0K 1%
C57
1U
D9
1N5237B
C56
.010
R273
300
C60
1U
R251
1.00M 1%
C59
100pf
P12
TP50K H
min
U20C
TL074
R270
27.4K 1%
NOISE
R281
1.00K 1%
NOISE LEVEL ADJ.
U25D
4053A
U20D
TL074

FOSGATE INC.

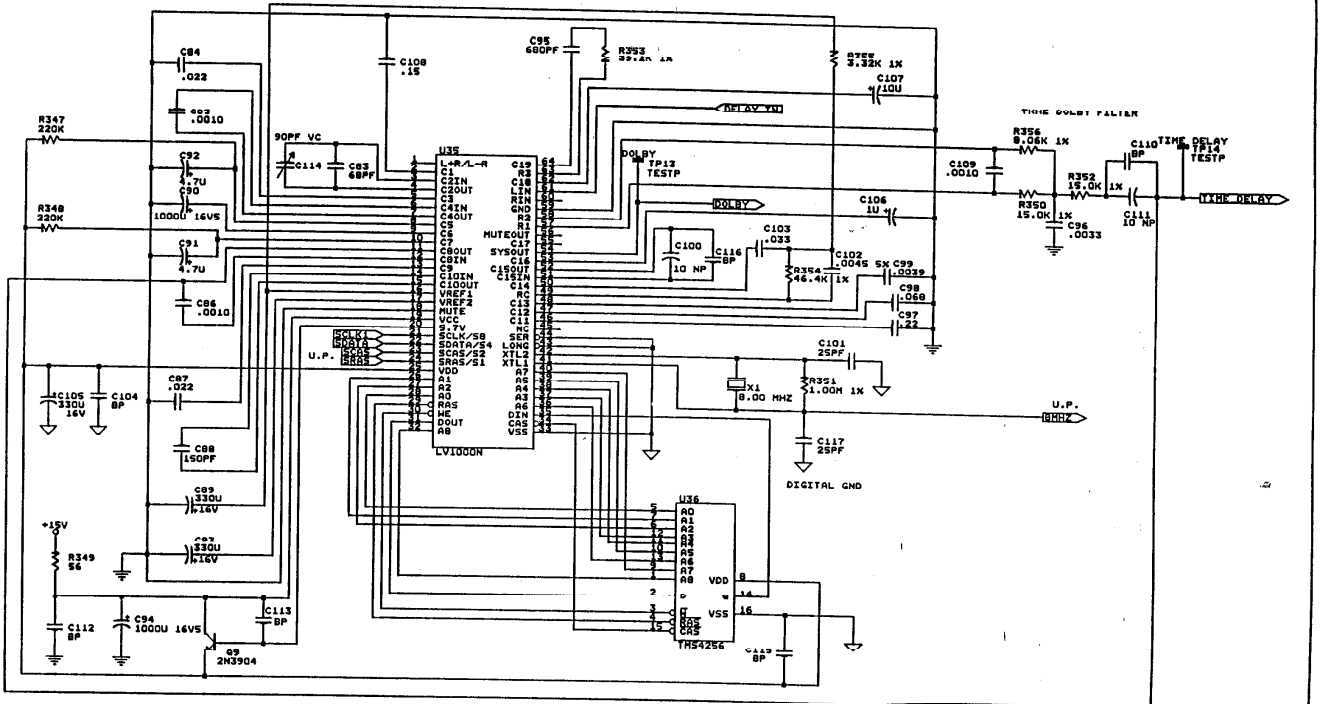
Salt Lake City, Utah

Title	SEPARATION MATRIX PART 1	
Size B	Document Number MD4MB605.SCH	REV B6
Date: June 16, 1993	Sheet 5 of 11	

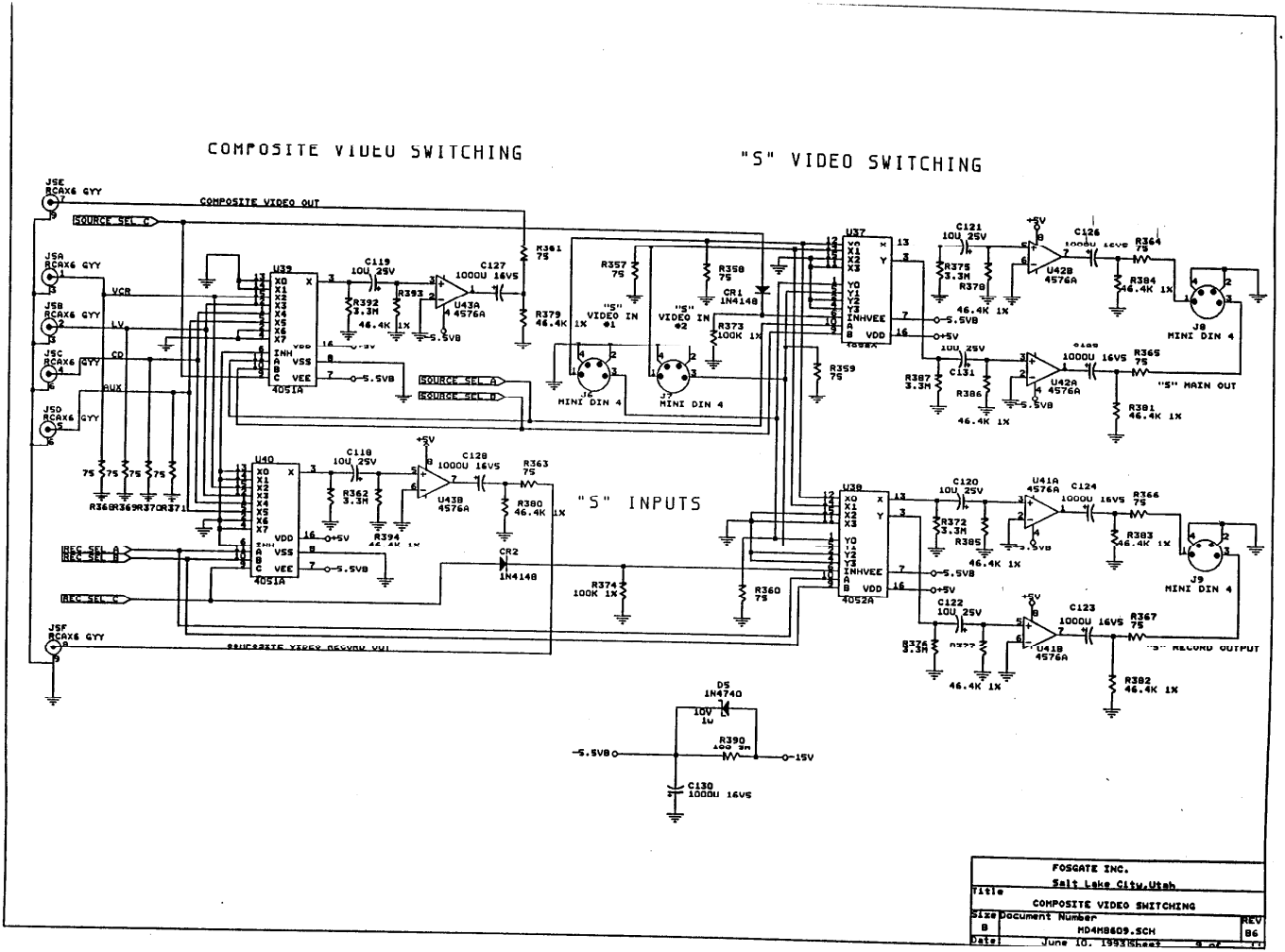

CF NOISE
-1.5DB @ 200HZ
R287 59.0K 1%
R289
R290 59.0K 1%
R291 59.0K 1%
R292 51.1K 1%
L
R
LVCA-
RVCA-
FTVCA+
L-CAN
R-CAN
GN RD
C65 .1%
CF
R293 1.00K 1%
R294 20.0K 1%
C224 .22PETS
U26C 4053A
CF TESTP
CF U.P. FROM U.P.
U28A DS1267-010
+5.5VC
VCC
GND
R436 3.3M
C64
U20A TL074
+15V
C67 .082
-1.5DB @ 200HZ
R299 10.0K 1%
P7 TP25K VC
R312 3.3K
C215 10PF
U29A TL074
R426 3.01K 1%
R286 300
J4C RCAX6 GHR
U24D CA3081
CF
R427 3.01K 1%
LB NOISE
PHASE SHIFTER FROM U.P.
R300 10.0K 1%
P10 TP25K VC
MUTE1
R301 43.2K 1%
R302 43.2K 1%
R304 39.2K 1%
R305 43.2K 1%
R306 69.8K 1%
LB HIDE
R307 12.1K 1%
R297 1.00K 1%
-5.5VC
U34B DS1267-010
SOUT
COUT
SDATA*
R295 3.3M
C217 10PF
C68 .22
R308 20.0K 1%
R298 20.0K 1%
U26A 4053A
TP3
U29D TL074
J4E RCAX6 GHR
U24A CA3081
LB
HIDE FROM U.P.
RESET
SCLK
SDATA FROM U.P.
C225 .22PETS
R437 3.3M
10PF
-15V
U20B TL074
R310 470
MUTE
D14 1N4148
R311 470
Q8 2N3904
R309 10.4K 1%
U26D 4053A
VE VD
VS EN
FOSGATE INC.
Salt Lake City, Utah
SEPARATION MATRIX PART 2
Size B
Document Number MD4MB606.SCH
REV B6
Date: June 10, 1993 Sheet 6 of 11

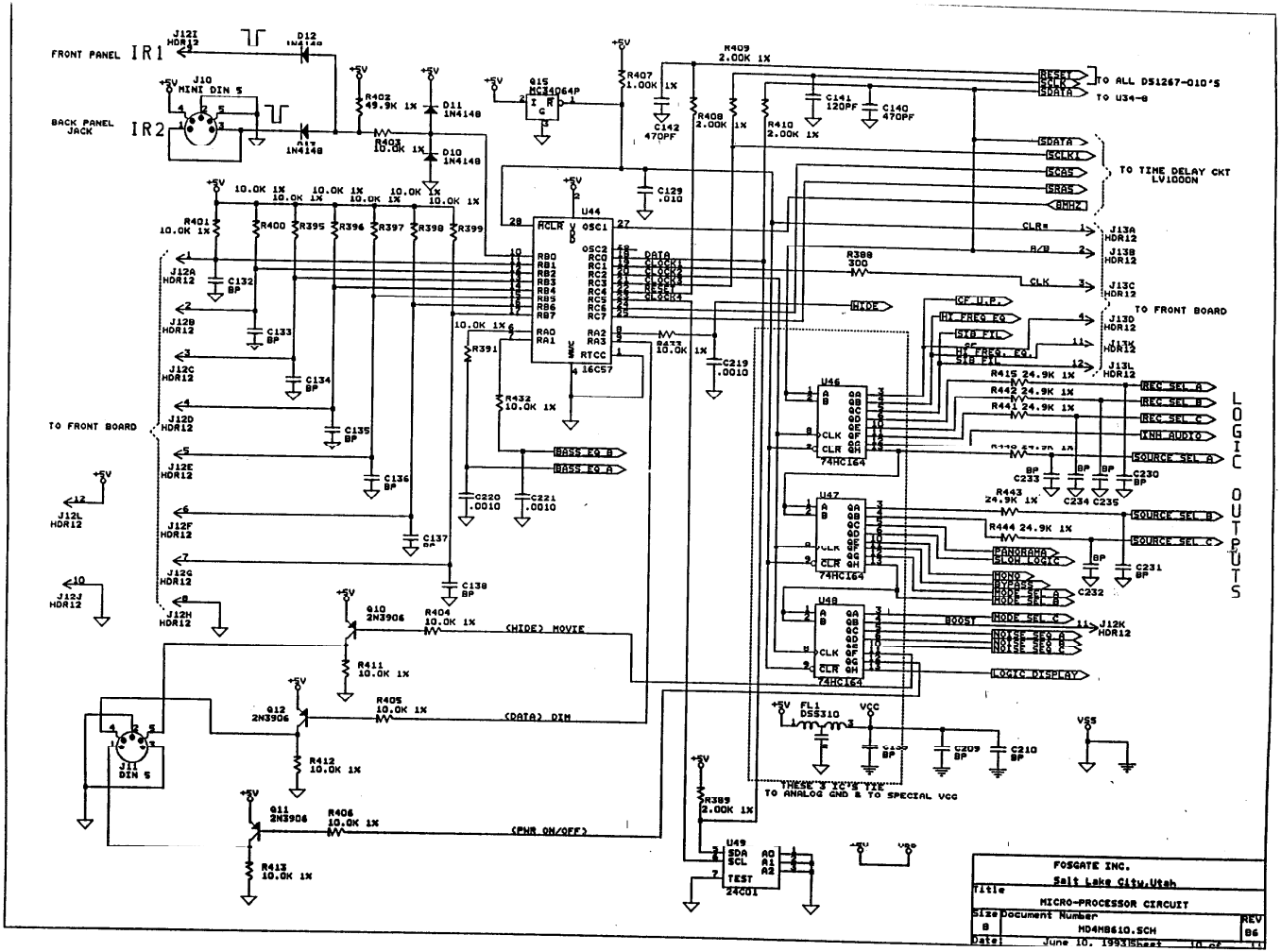


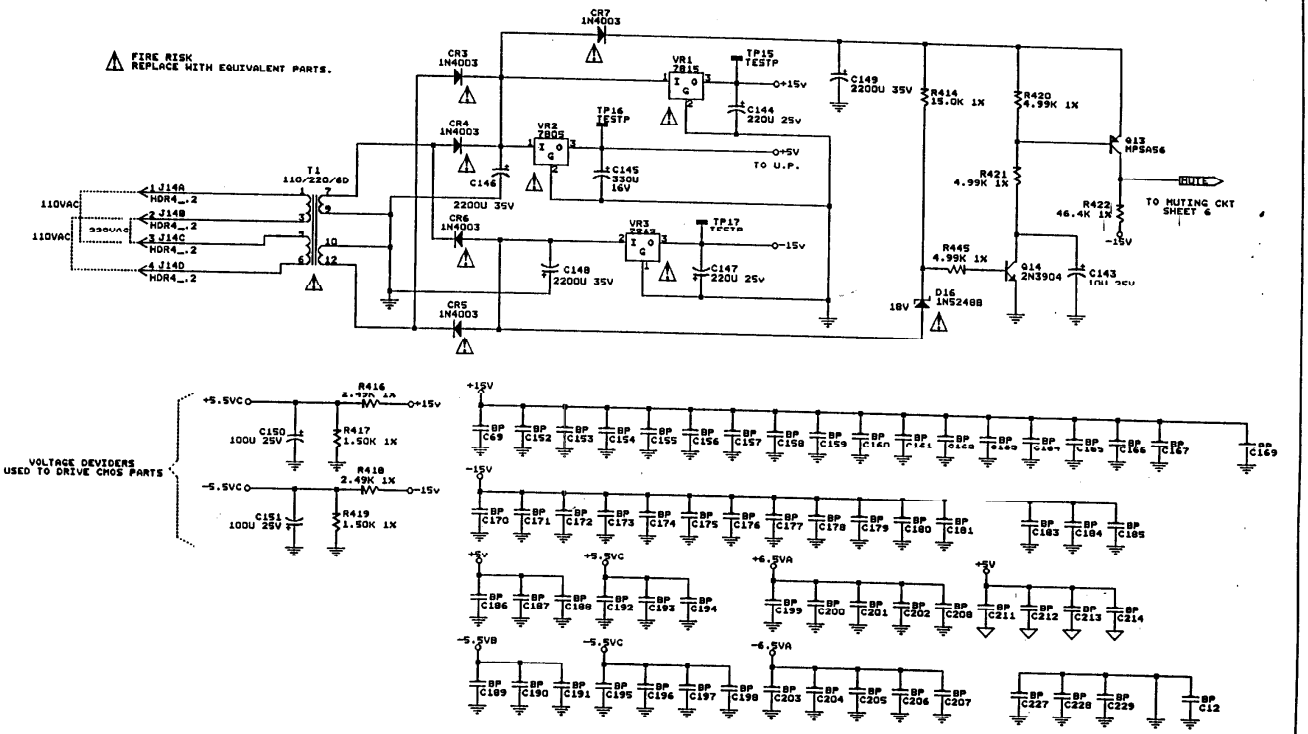
FOSGATE INC.		
Salt Lake City,Utah		
Title: SEPARATION MATRIX & FILTERS		
Size: B	Document Number: M04MB607.SCH	REV: B6
Date: June 10, 1993	Sheet 7 of 11	

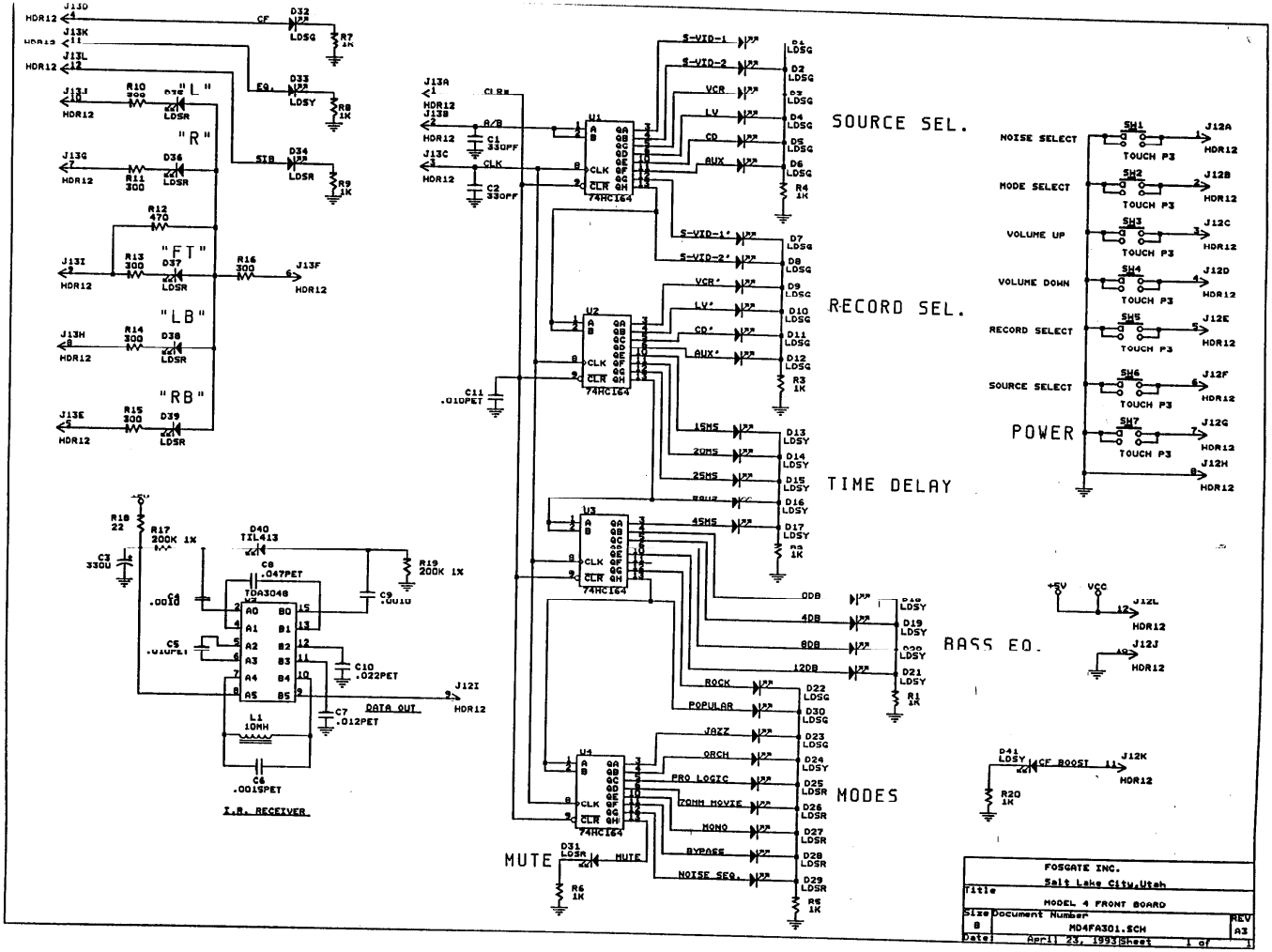


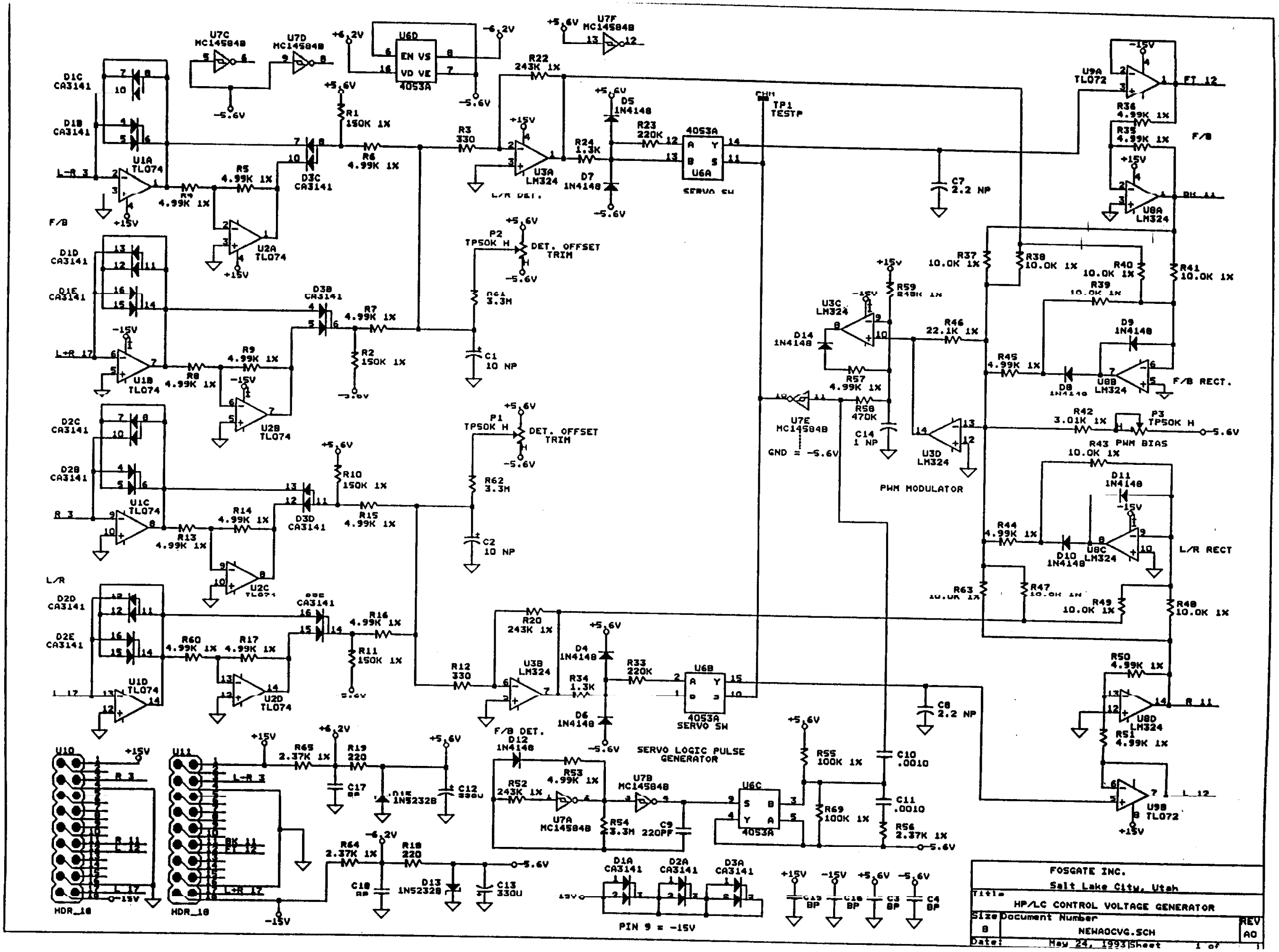
FOSGATE INC. Salt Lake City,Utah		
Title: TIME DELAY CIRCUIT		
Size: B	Document Number: MD4MB608.SCH	REV: B6
Date: June 10, 1993	Sheet 8 of 11	


COMPOSITE VIDEO SWITCHING
"S" VIDEO SWITCHING
"S" INPUTS
COMPOSITE VIDEO OUT
SOURCE SEL C
SOURCE SEL A
SOURCE SEL B
REC SEL A
REC SEL B
REC SEL C
VCR
LV
CD
AUX
"S" MAIN OUT
"S" RECORD OUTPUT
MINI DIN 4
FOSGATE INC.
Salt Lake City,Utah
Title
COMPOSITE VIDEO SWITCHING
Size
B
Document Number
MD4M8609.SCH
REV
B6
Date:
June 10, 1993
Sheet
of


FRONT PANEL IR1
BACK PANEL JACK IR2
J12I HDR12
J10 MINI DIN 5
D12 1N4148
D17 1N4148
D11 1N4148
D10 1N4148
R402 49.9K 1X
R403 10.0K 1X
Q15 MC34064P
R407 1.00K 1X
R409 2.00K 1X
R408 2.00K 1X
R410 2.00K 1X
C141 120PF
C140 470PF
C142 470PF
C129 .010
TO ALL DS1267-010'S
TO U34-8
SDATA
SCLK1
SCAS
SRAS
BMHZ
TO TIME DELAY CKT LV1000N
U44
MCLR
OSC1
OSC2
RA0
RA1
RA2
RA3
RTCC
16C57
R401 10.0K 1X
R400 10.0K 1X
R395 10.0K 1X
R396 10.0K 1X
R397 10.0K 1X
R398 10.0K 1X
R399 10.0K 1X
R391 10.0K 1X
R432 10.0K 1X
R433 10.0K 1X
C219 .0010
C220 .0010
C221 .0010
C132 BP
C133 BP
C134 BP
C135 BP
C136 BP
C137 BP
C138 BP
J12A HDR12
J12B HDR12
J12C HDR12
J12D HDR12
J12E HDR12
J12F HDR12
J12G HDR12
J12H HDR12
TO FRONT BOARD
J12L HDR12
J12J HDR12
BASS EQ B
BASS EQ A
R388 300
MODE
CF U.P.
HI FREQ EQ
STB FIL
HI FREQ. EQ.
STB FIL
CLR
A/B
CLK
J13A HDR12
J13B HDR12
J13C HDR12
J13D HDR12
J13K HDR12
J13L HDR12
TO FRONT BOARD
R415 24.9K 1X
R442 24.9K 1X
R441 24.9K 1X
R443 24.9K 1X
R444 24.9K 1X
U46
U47
U48
74HC164
REC SEL A
REC SEL B
REC SEL C
XNH AUDIO
SOURCE SEL A
SOURCE SEL B
SOURCE SEL C
PANORAMA
SLOW LOGIC
MONO
BYPASS
MODE SEL A
MODE SEL B
MODE SEL C
BOOST
NOISE SEL A
NOISE SEL B
NOISE SEL C
LOGIC DISPLAY
C233 BP
C234 BP
C235 BP
C230 BP
C232
C231 BP
J12K HDR12
LOGIC OUTPUTS
Q10 2N3906
R404 10.0K 1X
(HIDE) MOVIE
R411 10.0K 1X
Q12 2N3906
R405 10.0K 1X
(DATA) DIM
J11 DIN 5
R412 10.0K 1X
Q11 2N3906
R406 10.0K 1X
(PWR ON/OFF)
R413 10.0K 1X
FL1 DSS310
VCC
VSS
C209 BP
C210 BP
THESE 3 VCC'S TIE TO ANALOG GND & TO SPECIAL VCC
R389 2.00K 1X
U49
SDA
SCL
TEST
24C01
A0
A1
A2
FOSGATE INC.
Salt Lake City,Utah
Title
MICRO-PROCESSOR CIRCUIT
Size B
Document Number MD4MB610.SCH
REV B6
Date: June 10, 1993 Sheet 10 of 10


FIRE RISK
REPLACE WITH EQUIVALENT PARTS.
CR7
1N4003
CR3
1N4003
CR4
1N4003
CR6
1N4003
CR5
1N4003
VR1
7815
VR2
7805
VR3
7915
TP15
TESTP
TP16
TESTP
TP17
TESTP
+15v
+5V
TO U.P.
-15v
C144
220U 25v
C145
220U
16V
C146
2200U 35V
C147
220U 25v
C148
2200U 35V
C149
2200U 35V
T1
110/220/6D
110VAC
110VAC
J14A
HDR4_.2
J14B
HDR4_.2
J14C
HDR4_.2
J14D
HDR4_.2
R414
15.0K 1%
R420
4.99K 1%
R421
4.99K 1%
R422
46.4K 1%
R445
4.99K 1%
Q13
MPSA56
Q14
2N3904
MUTE
TO MUTING CKT
SHEET 6
D16
1N5248B
18V
VOLTAGE DEVIDERS
USED TO DRIVE CMOS PARTS
+5.5VC
-5.5VC
R416
R417
1.50K 1%
R418
2.49K 1%
R419
1.50K 1%
C150
100U 25V
C151
100U 25V
+15v
-15v
+5v
-5.5VB
+6.5VA
FOSGATE INC.
Salt Lake City,Utah
Title
POWER SUPPLY
Size
B
Document Number
MD4MB611.SCH
REV
B6
Date:
June 10, 1993
Sheet
11 of
11


"L"
"R"
"FT"
"LB"
"RB"
SOURCE SEL.
RECORD SEL.
TIME DELAY
BASS EQ.
MODES
MUTE
POWER
NOISE SELECT
MODE SELECT
VOLUME UP
VOLUME DOWN
RECORD SELECT
SOURCE SELECT
TOUCH P3
DATA OUT
I.R. RECEIVER
74HC164
TDA3048
FOSGATE INC.
Salt Lake City,Utah
MODEL 4 FRONT BOARD
MD4FA301.SCH
April 23, 1993
REV A3


FOSGATE INC.
Salt Lake City, Utah
Title
HP/LC CONTROL VOLTAGE GENERATOR
Size B
Document Number
NEWAOCVG.SCH
REV AO
Date: May 24, 1993
Sheet 1 of 1
SERVO LOGIC PULSE GENERATOR
PWM MODULATOR
F/B RECT.
L/R RECT
PIN 9 = -15V
GND = -5.6V
DET. OFFSET TRIM
R43 PWM BIAS

SECTION 3

Detail Setup Procedure

Version 2.0

Preliminary Setup and check

1. Using variable transformer turn up power slowly and check for excessve current draw. Normal is less than .2 amps.

2. Check power supply.+15vdc(tp15), -15vdc (tp17), +5vdc (tp16), -5vdc (on the back side of R350), 5.5vdc (r416),-5.5vdc(R418),6.5vcd (R38, -6.5rdc (R91), 18vdc (D14), -18vdc (D8).

3. Re-initialize unit. (Push noise sequencer while powering up unit.)

4. Set mode to pop. Pug in auto balance shorting cord to H1. Turn on Center front channel.

Check Front Panel

1. By turning on different LED via remote contrd and using front panel buttons check all LEDs including direction LEDs.

2. Turn up volume and check operation of other controls. Set volume to 6db below maximum using 200mv input signal.

Use 200mv input for the below procedures.

CVG setup and check. (NOTE MODE MUST BE SET IN POP (2ND LED))
Do the below steps 1 and 2 only if the CVG board hasn't been set up before or has been changed.)

1. Set PWM trim pot(scope at 1us and 5v) at TP1.No signal
   a. Adjust PWM until the HI pulse just barely stabilizes (you want the right side of the pulse to be stable with no pulsing) at 2.5 to 3 micro second pulse. (this adjustment is very critical. A change of more than .5micro seconds will change the speed of the pulse width circuit

2. Set detect balance. Switch from left to right input signal. (probe on L/R detect bal tp9)
   a. Use highest sensitivity and adjust ofset so when signal is switched from one directon to the other, the DC offset is equally divided above and below 0 volts offset.
   b. Do the same as above on tp8 switching F/B input signal.

3. Adjust the detect balance by adjusting the L/R trim pot on the CVG board to show maximum negative dc voltage using a L+R input signal. (-7vdc typ.)

4. Check L/R and F/B logic swing. Switching from a Left to right signal while scope probe is on tp8 DC voltage should swing from positive to negative 5vcd. Repeat with F/B at tp9 using font then back signal. + and - 5vdc typical.

Offset, Bias and Gains.

Note using both channels of the scope you can double up on the adjustments using the same signal direction. Example- using left and one channel front bias tp and the other channel on back bias tp adjust front bias trim pot then back bas trim pot.

Use a DVM in dc mode using millivolt range to set the DC offset trim pots

1. Adjust Left bias trim pot for minimum signal at L-VCA TP18.
   Switching from Left to Right signal input.
2. Adjust Left nul offset trim pot to show 0vdc. Switch to right signal and note vdc. Using offset trim pot try to match signal left to right in vdc ofset.
3. Adjust Right bas trim pot for minimum signal at R-VCA TP10.
   Switch from Right to Left signal input.
4. Adjust Right ofset trim pot to show equal + and - dc offset vcd offset.(tp10)
5. Recheck both bias nulls for nulled signal.

eft

6. Adjust front bias trim pot for minimum signal at F-VCA bias TP-11.

Front to back signal input.

7. Adjust front offset trim pot to show 0/dc offset.(tp11)

eft

8. Adjust back bias trim pot for minimum signal using B-VCA bias trim pot. (Probe at TP12)

Back to front signal input

9. Adjust back offset trim pot to show 0/cd offset. (tp12)

et Gan Trim pots

eft input

1. With scope probes on CF tp 4 adjust left VCA gain tim pot so both channels are at a minimum and match as closely to each other as possible in amplituce.

ight

2. With scope probes on CF tp4 null right VCA gain trim pot to show matching minimum amplitude.

ront

3. With probes on RF (b1)and LF (tp2) adjust front VCA gain trim pot to show matching minimum gain.

ack

4. With probes on RF (b1) and LF(tp2) adjust back VCA gain trim pot for matching minimum gain. (on REV B6 and newer boards. On older boards use RB (TP5) and LB (TP3).

heck Auto Balance

ont

1. Switch 4db bias to left side. Watch the display on the front panel. The left and right LEDs should balance out in about 10 seconds or less. Switch the bias switch in the right direction. Install and remove shorting plug. The left and right LEDs should balance in about 10 seconds.

djust Dolby time delay roll off.

Set input signal to 200mv 7khz -R.

1. Put Ac meter probe on U31 pin 1 and note the amplitude of signal. Use Pop mode.
2. Connect probe to time delay touch point tp14. Match anplitude to signal at U31 pin 1 by adjusting C114.

t Output Levels. (Switch back to 1Khz)

1. Set output levels to the below level
   a. Center front= 150mv
   b. Left front and Left Back = 150mv
   c. Right front and Right back= 150mv
   d. mono sub = 150mv (use left or right input 40hz signal.)

ise Sequencer Set and Check

1. Turn on sequencer while monitoring channel outputs on test fixture LED display. Make sure all channels turn on in sequence (clockwise) and none are skipped. Turr off CF and repeat. Make sure signal goes from left to right skipping cf. Make sure signal doesnt bounce (as if there is a sudden sound beside the noise generator. (example a popping sound.)
2. Adjust signal to 450mv at U20 pin 8.

ange input signal to 1125v

eck Frequency Response

NOTE: Use frequency response charts for below test.

1. Check left and then right signal for checking response on front channels Use L+R signal for CF channel.
2. Check back channels (-R input signal) Switch through the modes and refer to the frequency roll off chart for proper roll off.
3. Check sibilant and Hf filters, all channes. (note: sibilant will not work in CF mode)
4. Check bass cancel. Use L+R signal. on fixture. Check left and right front outputs. A signal belwo
5. Check bass equalizer using remote control. Switch to 40Hz input signal. Change bass equalizer using remote control. The output signal should change +3db in level for each level on front panel. Note LEDs working.

Back Level Check

Back 1. Adjust volume to 0db in rock mode on AC meter using 1v range. Check for db change. Rock should be 0db. Pop and jazz -2. 70mm -3.5, Pro-logic -8, Cassical -4. Check both channals.

Output signal and volume control check

1. While monitoring the outpus with the scope (both channels) raise and lower volume. Watch for erratic or uneven level changes or noise. Turn off center front and monitor left and right front. (use front signal.) Turn on center font and monitor center front. Swtch to back signal and monitor back signals.

Check Input Switching

1. Put input signal to first input J1 and put back output to composite output jacks J3. Make sure the front output jacks are still connected.
2. With the source select set to S-Vid-1 and record select set to record select S-Vid 1 the front channel (or Center front if CF in turned on) and back channels will show signal
3. Switch through all source select and record select. There should only be signal in the first source and record select.
4. Change source and record select to S-video-2 and change input cords to J1c/1.(second input jacks)
5. Signal should show in front and back channels.
6. Continue on down selecting source select and matching record select making sure input and output turn on in order.

Check Composite Video Switching

1. Switch source and record select to VCR.
2. Connect both scope probes to the composite source and record out. Input the 1k signal into the VCR video input.
3. It should show signal in both source and record select.
4. Switch down to LV source and record select.Signal should die
5. Switch input signal to LV. Signal should return to input and output. Switch mode down to Aux1. Signal should de.
6. Continue on down source and record select and matching input signal. Make sure there is signal when input signal is matched to source and record selec and there is no signal when not matched.

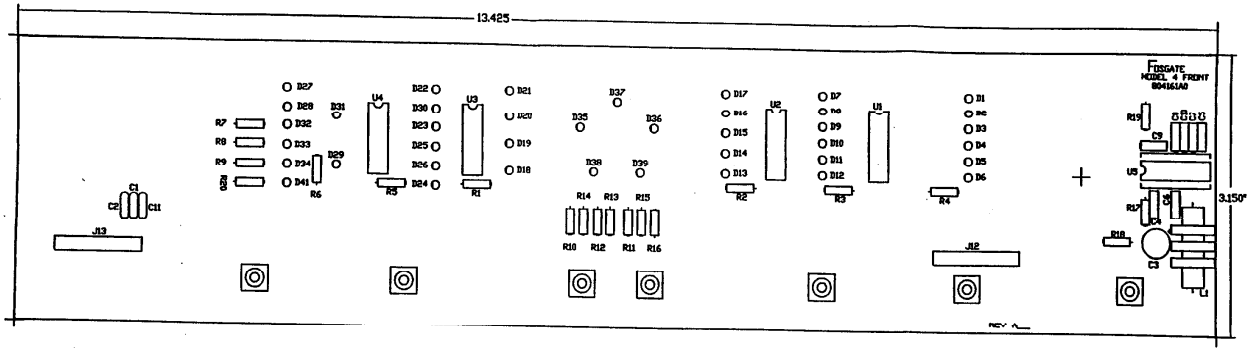
Check "S" Video Connectors

1. Connect input wire to s-videc-1 and output wire to s-output source jack. Select source and record select to s-video-1
2. Picture and sound should show on tv.
3. Move input cord to s-video-2 input and change source select to s-video-2. Picture should return
4. Move output cord to record output jack and make sure record select is on s-video-2. picture should be on.
5. move input cord to s-video-1 input and select record select to s-video-1. Picture should return.

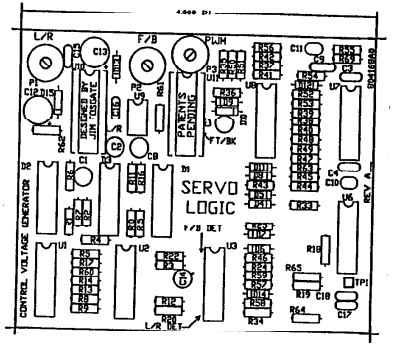
Final Check

1. Plug in the 5 pin remote control cord. Point the remote control only at the remote sensor. The unit should accept signal only from the remote control.
2. Plug in the Harmon 5 pin DIN fixture. Turn the unit on and off. The red LED should turn on and off. Go to a time delay mode. Time delay LED should turn on and off when time delay mode is accessed.
3. Check remote control for operation and distance (20 feet minimum)
4. Disconnect input wires and plug in the RCA wires going to the earphones. Plug in the jacks to each pair of audio outputs and check for excessve noise or popping as you switch through all of the different modes. Turn unit on and off and switch noise sequencer on and off (make sure earphones are listening to a channel other than left front.).
5. Paint trim pots, sign off check off sheet, remove eprom and auto balance shorting cord.

SECTION 4



MDL4A0FB Top Overlay



I-PA0CVG Top Overlay

MODEL 4 MAIN BOARD
804160CD
REV C
DESIGNED BY JIM FOSGATE AND CREW
F/B BET.BALANCE L/R BET. BALANCE
16.500"

SECTION 5

OD Software
ODEL 4 MAIN BOARD 11-4160 Revised: June 10, 1993
O4MB601.SCH Revision: 36
ill Of Materials December 15, 1993 2:11:58
ian Reference Part SIMAN Description

.6	C1,C2,C3,C4,C8,C9,C46, C48,C49,C51,C53,C54,C68, C72,C97,C215	.22	56-2038	0.22	uF Capacitor 10% 100V Polyester Film
2	C5,C58	.0068	56-2018	0.0068	uF Capacitor 10% 100V Polyester Film
2	C6,C7	.0047PET	62-1006-03	0.0047	uF Box Cap., 10% 100V, 5mm Poly. Film
4	C10,C11,C150,C151	100U 25V	60-0055	100.0	uF Capacitor -20%,+80% 25V Electrolytic-S
9	C12,C69,C79,C80,C81,C104, C110,C112,C113,C115,C116, C132,C133,C134,C135,C136, C137,C138,C139,C152,C153, C154,C155,C156,C157,C158, C159,C160,C161,C162,C163, C164,C165,C166,C167,C169, C170,C171,C172,C173,C174, C175,C176,C177,C178,C179, C180,C181,C183,C184,C185, C186,C187,C188,C189,C190, C191,C192,C193,C194,C195, C196,C197,C198,C199,C200, C201,C202,C203,C204,C205, C206,C207,C208,C209,C210, C211,C212,C213,C214,C227, C228,C229,C230,C231,C232, C233,C234,C235	.1UP	62-0067	0.047	uF Capacitor 20% 50V Axial Monolithic
4	C17,C21,C25,C29	.10PET	62-1017	0.10	uF Box Cap., 10% 100V, 10mm Poly. Film
2	C19,C20	.068PET	62-1015	0.068	uF Box Cap., 10% 100V, 10mm Poly. Film
3	C22,C28	.010PET	62-1008-01	0.010	uF Box Cap., 10% 100V, 5mm Poly. Film
2	C23,C27	330PF	62-0006	330	pF Capacitor 20% 50V Ceramic Disc
2	C24,C26	220PF	62-0022	220	pF Capacitor 20% 50V Ceramic Disc
	C39	100 NP	60-0086	100.0	uF Capacitor -20%,+80% 16V Elect., NP
	C41,C103	.033	56-2027	0.033	uF Capacitor 10% 100V Polyester Film
	C42	.0027	56-2013	0.0027	uF Capacitor 10% 100V Polyester Film
	C43,C89,C93,C105,C145	330U	60-0056	330.0	uF Capacitor -20%,+80% 16V Electrolytic-S
	C44,C73	.027	56-2026	0.027	uF Capacitor 10% 100V Polyester Film
	C45,C47,C50,C52,C64,C66, C71,C216,C217,C218	10PF	62-0013	10	pF Capacitor 5% 50V Ceramic Disc
	C55,C56,C129	.010	56-2022	0.010	uF Capacitor 10% 100V Polyester Film
	C57,C60,C106	1U	60-0044-01	1.0	uF Capacitor -20%,+80% 50V Electrolytic
	C59	100PF	62-0020	100	pF Capacitor 20% 50V Ceramic Disc
	C61,C63	.47	56-2042	0.47	uF Capacitor 10% 100V Polyester Film
	C62,C102	.0045 5%	56-2115	0.0045	uF Capacitor 5% 100V Polyester Film
	C65,C108	.15	56-2036	0.15	uF Capacitor 10% 100V Polyester Film
	C67	.082	56-2032	0.082	uF Capacitor 10% 100V Polyester Film
	C70	.047	56-2028	0.047	uF Capacitor 10% 100V Polyester Film
	C74	.018	56-2024	0.018	uF Capacitor 10% 100V Polyester Film
	C75	.0082	56-2019	0.0082	uF Capacitor 10% 100V Polyester Film
	C76,C77,C82,C107	10U	60-0049	10.0	uF Capacitor -20%,+80% 16V Electrolytic-S
	C78	.0018	56-2011	0.0018	uF Capacitor 10% 100V Polyester Film
	C83	68PF	62-0018	68	pF Capacitor 5% 50V Ceramic Disc
	C84,C87	.022	56-2025	0.022	uF Capacitor 10% 100V Polyester Film
	C85,C86,C109,C219,C220, C221	.0010	56-2008	0.0010	uF Capacitor 10% 100V Polyester Film

lan Reference Part SYMAN Description

1	C88	150PF	62-0031	150 pF Capacitor 20% 50V Ceramic Disc
9	C90,C94,C123,C124,C125, C126,C127,C128,C130	1000U 16V5	60-0064-03	1000.0 uF Capacitor -20%,+80% 16V Electrolytic, 5MM
2	C91,C92	4.7U	60-0048-01	4.7 uF Capacitor -20%,+80% 16V Electrolytic
1	C95	680PF	62-0004	680 pF Capacitor 20% 50V Ceramic Disc
1	C96	.0033	56-2014	0.0033 uF Capacitor 10% 100V Polyester Film
1	C98	.068	56-2033	0.068 uF Capacitor 10% 100V Polyester Film
1	C99	.0039	56-2015	0.0039 uF Capacitor 10% 100V Polyester Film
2	C100,C111	10 NP	60-0051-01	10.0 uF Capacitor -20%,+80% 16V Elect., NP
2	C101,C117	25PF	62-0001	25 pF Capacitor 5% 50V Ceramic Disc
1	C114	90PF VC	62-2200	50 nF Capacitor, 5mm, Variable
7	C118,C119,C120,C121,C122, C131,C143	10U 25V	60-0050-01	10.0 uF Capacitor -20%,+80% 25V Electrolytic
2	C140,C142	470PF	62-0003	470 pF Capacitor 20% 50V Ceramic Disc
1	C141	120PF	62-0002	120 pF Capacitor 20% 50V Ceramic Disc
2	C144,C147	220U 25V	60-0075	220.0 uF Capacitor -20%,+80% 25V Electrolytic
3	C146,C148,C149	2200U 35V	60-0088	2200.0 uF Capacitor -20%,+80% 35V Electrolytic-L
5	C222,C223,C224,C225,C226	.22PET5	62-1019-05	0.22 uF Box Cap., 10% 100V, 5mm Poly. Film
5	CR3,CR4,CR5,CR6,CR7	1N4003	70-0007	1N4003 Silicon Rectifier
4	D1,CR1,D2,CR2,D3,D4,D7, D8,D10,D11,D12,D13,D14, D15	1N4148	70-0002	1N4148 Silicon Switching Diode, 75 Volts PIV
	D5	1N4740	70-0024	1N4740 Zener Diode 10V, 1 Watt Glass
	D9	1N5237B	70-0013	1N5237B Zener Diode 8.2V
	D16	1N5248B	70-0030	1N5248B, Zener Diode, 1/2 Watt, 18V
	FL1	DSS310	62-2100	DSS310 EMI Filter
	H1	PA2	-------	2 Pin Pad, Not a part
	J1,J2,J4	RCAX6 GWR	32-0112-01	OLD-USE RCAX6 HPC2
	J3	RCAX2 GWR	32-0111-01	OLD-USE RCAX2 HPC3
	J5	RCAX6 GYY	32-0112-03	OLD-USE RCAX6 HPC3
	J6,J7,J8,J9	MINI DIN 4	32-0082	OLD-USE JMDIN4 H1
	J10	MINI DIN 5	32-0081	OLD-USE JMDIN5 H1
	J11	DIN 5	32-0092	5 Pin DIN Jack
	J12,J13	HDR12	32-1067	12 Pin Header, 0.1" spacing, Cut from 14 Pin Header
	J14	HDR4_.2		
	P2,P3,P4,P5,P12	TP50K H	42-0222	50 K Trim Pot, Horizontal Mount, 3/4 turn
	P6,P7,P8,P9,P10	TP25K VC	42-0274	25 K Trim Pot, Vertical Cermet
	P11	TP100K VC	42-0273	100 K Trim Pot, Vertical Cermet
	Q1,Q2,Q4,Q5,Q6,Q7	2N5640	70-1014	2N5640 N-Channel JFET
	Q8,Q9,Q14	2N3904	70-1004	2N3904 NPN Gen. Purp. Amplifier/Switching Transistor
	Q10,Q11,Q12	2N3906	70-1006	2N3906 PNP Gen. Purp. Amplifier/Switching Transistor
	Q13	MPSA56	70-1025	MPSA56 PNP Gen. Purpose Transistor
	Q15	MC34064P	70-5004	MC34064 Undervoltage Sensing Circuit
	R1,R2,R198,R200,R204, R207	10M	50-0060	10M MOhm Resistor 5% 1/4 Watt Carbon Film
	R3,R4,R41,R42,R50,R51, R52,R54,R96,R97,R117, R142,R143,R146,R148,R149, R156,R158,R163,R167,R168, R176,R177,R180,R212,R243, R245,R331,R333,R338,R415, R428,R440,R441,R442,R443,	24.9K 1%	52-0039	24.9 KOhm Resistor 1% 1/4 Watt Metal Film

	Reference	Part	SYMAN	Description
	R444			
1	R5,R6,R131,R246,R247, R248,R273,R286,R296,R321, R388	300	50-0186	300 Ohm Resistor 5% 1/4 Watt Carbon Film
5	R7,R8,R9,R10,R11,R12,R13, R14,R15,R16,R17,R18,R19, R20,R21,R22,R23,R24,R25, R26,R27,R28,R29,R30,R31, R32,R150,R153,R154,R159, R165,R170,R171,R174,R402	49.9K 1%	52-0020	49.9 KOhm Resistor 1% 1/4 Watt Metal Film
3	R33,R34,R86,R87,R123, R124,R130,R274,R276,R343, R350,R352,R414	15.0K 1%	52-0050	15.0 KOhm Resistor 1% 1/4 Watt Metal Film
2	R35,R36	6.81K 1%	52-0157	6.81 KOhm Resistor 1% 1/4 Watt Metal Film
1	R37,R40,R45,R46,R47,R225, R234,R295,R312,R344,R362, R372,R375,R376,R387,R392, R434,R435,R436,R437,R438	3.3M	50-0049	3.3 MOhm Resistor 5% 1/4 Watt Carbon Film
1	R38,R39,R89,R91,R145, R157,R162,R179,R417,R419	1.50K 1%	52-0144	1.50 KOhm Resistor 1% 1/4 Watt Metal Film
1	R43,R44,R53,R55,R58,R59, R105,R107,R122,R144,R152, R160,R161,R164,R173,R332, R339,R371,R374	100K 1%	52-0305	100 KOhm Resistor 1% 1/4 Watt Metal Film
	R48,R49,R320,R341,R356	8.06K 1%	52-0111	8.06 KOhm Resistor 1% 1/4 Watt Metal Film
	R56,R57,R218,R275,R281, R285,R293,R297,R340,R407, R430	1.00K 1%	52-0133	1.00 KOhm Resistor 1% 1/4 Watt Metal Film
	R60,R61,R94,R114,R172, R210,R215,R216,R239,R279	200K 1%	52-0276	200 KOhm Resistor 1% 1/4 Watt Metal Film
	R62,R63,R64,R65,R66,R67, R68,R69,R70,R71,R72,R73, R74,R75,R76,R77,R78,R79, R80,R81,R82,R83,R84,R85, R307,R330	12.1K 1%	52-0103	12.1 KOhm Resistor 1% 1/4 Watt Metal Film
	R88,R90,R141,R240,R389, R408,R409,R410	2.00K 1%	52-0186	2.00 KOhm Resistor 1% 1/4 Watt Metal Film
	R92,R288,R319	11.0K 1%	52-0105	11.0 KOhm Resistor 1% 1/4 Watt Metal Film
	R95,R113,R190,R191,R192, R193	110K 1%	52-0301	110 KOhm Resistor 1% 1/4 Watt Metal Film
	R100,R104,R121,R128,R129, R132,R133,R134,R135,R136, R137,R138,R139,R140,R194, R282,R283,R284,R299,R300, R323,R342,R391,R395,R396, R397,R398,R399,R400,R401, R403,R404,R405,R406,R411, R412,R413,R431,R432,R433	10.0K 1%	52-0107	10.0 KOhm Resistor 1% 1/4 Watt Metal Film
	R103	162K 1%	52-0285	162 KOhm Resistor 1% 1/4 Watt Metal Film
	R106,R108,R109,R110,R111, R112,R118,R294,R298,R308, R322	20.0K 1%	52-0091	20.0 KOhm Resistor 1% 1/4 Watt Metal Film

OD Software
ODEL 4 MAIN BOARD 11-4160 Revised: June 10, 1993
O4MB601.SCH Revision: B6
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ian Reference Part STMAN Description

5	R116,R249,R250,R251,R351	1.00M 1%	52-0705	1.00 MOhm Resistor	1% 1/4 Watt Metal Film
9	R119,R120,R151,R166,R175, R211,R304,R327,R353	39.2K 1%	52-0079	39.2 KOhm Resistor	1% 1/4 Watt Metal Film
8	R125,R336,R337,R424,R425, R426,R427,R429	3.01K 1%	52-0125	3.01 KOhm Resistor	1% 1/4 Watt Metal Film
1	R126	2M	50-0046	2 MOhm Resistor	5% 1/4 Watt Carbon Film
3	R127,R310,R311	470	50-0006	470 Ohm Resistor	5% 1/4 Watt Carbon Film
7	R147,R155,R169,R178,R259, R267,R270	27.4K 1%	52-0085	27.4 KOhm Resistor	1% 1/4 Watt Metal Film
4	R181,R183,R185,R188	TP5K H	42-0219	5 K Trim Pot, Horizontal Mount, 10mm	
4	R182,R184,R186,R187	5.62K 1%	52-0161	5.62 KOhm Resistor	1% 1/4 Watt Metal Film
5	R189,R253,R256,R261,R264	182K 1%	52-0280	182 KOhm Resistor	1% 1/4 Watt Metal Film
3	R195,R196,R197	21.0K 1%	52-0042	21.0 KOhm Resistor	1% 1/4 Watt Metal Film
7	R199,R201,R205,R208,R420, R421,R445	4.99K 1%	52-0165	4.99 KOhm Resistor	1% 1/4 Watt Metal Film
4	R202,R203,R206,R209	TP200 H	42-0203	200 Trim Pot, Horizontal Mount	
3	R213,R214,R217	90.9K 1%	52-0066	90.9 KOhm Resistor	1% 1/4 Watt Metal Film
1	R219,R224,R228,R233,R255, R263,R306,R329,R345,R346, R423	69.8K 1%	52-0012	69.8 KOhm Resistor	1% 1/4 Watt Metal Film
2	R220,R229	140K 1%	52-0291	140 KOhm Resistor	1% 1/4 Watt Metal Film
2	R221,R230	130K 1%	52-0294	130 KOhm Resistor	1% 1/4 Watt Metal Film
1	R222,R231,R241,R280	392K 1%	52-0248	392 KOhm Resistor	1% 1/4 Watt Metal Film
2	R223,R232	82.5K 1%	52-0006	82.5 KOhm Resistor	1% 1/4 Watt Metal Film
1	R226,R227,R235,R236,R237, R238,R242,R244,R258,R266	34.8K 1%	52-0031	34.8 KOhm Resistor	1% 1/4 Watt Metal Film
	R252,R260	16.5K 1%	52-0094	16.5 KOhm Resistor	1% 1/4 Watt Metal Film
	R254,R262,R301,R302,R305, R324,R325,R328	43.2K 1%	52-0025	43.2 KOhm Resistor	1% 1/4 Watt Metal Film
	R257,R265	53.6K 1%	52-0064	53.6 KOhm Resistor	1% 1/4 Watt Metal Film
	R268,R269	28.0K 1%	52-0035	28.0 KOhm Resistor	1% 1/4 Watt Metal Film
	R271,R272,R277,R278	30.1K 1%	52-0083	30.1 KOhm Resistor	1% 1/4 Watt Metal Film
	R287,R289,R290,R291	59.0K 1%	52-0017	59.0 KOhm Resistor	1% 1/4 Watt Metal Film
	R292	51.1K 1%	52-0019	51.1 KOhm Resistor	1% 1/4 Watt Metal Film
	R309,R313,R314,R315,R316, R317,R318,R354,R377,R378, R379,R380,R381,R382,R383, R384,R385,R386,R393,R394, R422	46.4K 1%	52-0022	46.4 KOhm Resistor	1% 1/4 Watt Metal Film
	R334,R335	4.02K 1%	52-0121	4.02 KOhm Resistor	1% 1/4 Watt Metal Film
	R347,R348	220K	50-0040	220 KOhm Resistor	5% 1/4 Watt Carbon Film
	R349	56	50-0168	56 Ohm Resistor	5% 1/4 Watt Carbon Film
	R355	3.32K 1%	52-0174	3.32 KOhm Resistor	1% 1/4 Watt Metal Film
	R357,R358,R359,R360,R361, R363,R364,R365,R366,R367, R368,R369,R370,R371	75	50-0171	75 Ohm Resistor	5% 1/4 Watt Carbon Film
	R390	100 5W	50-0170	100 Ohm Resistor	5% 5 Watt
	R416,R418	2.49K 1%	52-0141	2.49 KOhm Resistor	1% 1/4 Watt Metal Film
	R439	42.2K 1%	52-0026	42.2 KOhm Resistor	1% 1/4 Watt Metal Film
	T1	110/220/5D	26-0031-D	110/220/6A Transformer	
	TP1,TP2,TP3,TP4,TP5,TP6, TP7,TP8,TP9,TP10,TP11,	TESTP	-------	This is not a part.	

Quan	Reference	Part	SYMAN	Description
	TP12,TP13,TP14,TP15,TP16, TP17,TP18			
1	U1	MC34084	72-4108	Quad Low Power OP Amp
9	U2,U3,U4,U5,U27,U32,U33, U39,U40	4051A	72-0081	8 CH Analog Multiplex
12	U6,U9,U13,U15,U17,U18, U19,U20,U23,U29,U30,U31	TL074	72-4021	Quad JFet-Input Op-Amp
5	U7,U8,U14,U21,U26	4053A	72-0086	Triple 2 Pole Analog Mux
2	U10,U11	SLIC-1		
2	U12,U15	LM324	72-4028	Low Power Quad Operational Amplifier
3	U21,U28,U34	DS1267-010	72-4106	Digital Volumn Control, 1
3	U22,U37,U38	4052A	72-0080	8 CH Analog Multiplex
1	U24	CA3081	72-4124	Common Emitter
1	U35	LV1000N	72-3160	LV1000N Dolby Surround Decoder
1	U36	TMS4256	72-3072-10	256K X 1 Dynamic Ram 100nS Access Time
3	U41,U42,U43	4576A	72-4072	Video Amp
1	U44	16C57	72-3159	PIC16C57 8 Bit CPU/ROM
3	U46,U47,U48	74HC164	72-1094	Shift Register
1	U49	24C01	72-3075	256 X 8 Serial EEProm
1	VR1	7815	70-4123	7815 +15 Volt 1 A Voltage Regulator TO-220
1	VR2	7805	70-4014	7805 +5 Volt 1 Amp Voltage Regulator TO-220
1	VR3	7915	70-4124	7915 -15 Volt 1 A Voltage Regulator TO-220
1	X1	8.00 MHZ	76-0100	8.00 MHZ Crystal

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!ODEL 4 FRONT BOARD
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Revised: April 23, 1993
Revision: A3
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Quan	Reference	Part	SYMAN	Description
2	C1,C2	330PF	62-0006	330 pF Capacitor 20% 50V Ceramic Disc
1	C3	330U	60-0056	330.0 uF Capacitor -20%,+80% 16V Electrolytic-S
2	C4,C9	.0010	56-2008	0.0010 uF Capacitor 10% 100V Polyester Film
2	C5,C11	.010PIT	62-1008-03	0.010 uF Box Cap., 10% 100V, 5mm Poly. Film
1	C6	.0015PET	62-1052-03	0.0015 uF Box Cap., 10% 100V, 5mm Poly. Film
1	C7	.012PIT	62-1063-03	0.012 uF Box Cap., 10% 100V, 5mm Poly. Film
1	C8	.047PIT	62-1013-03	0.047 uF Box Cap., 10% 100V, 5mm Poly. Film
1	C10	.022PIT	62-1010-03	0.022 uF Box Cap., 10% 100V, 5mm Poly. Film
16	D1,D2,D3,D4,D5,D6,D7,D8, D9,D10,D11,D12,D22,D23, D30,D32	LDSG	70-2062	Green Light Emitting Diode, T1 Case
12	D13,D14,D15,D16,D17,D18, D19,D20,D21,D24,D33,D41	LDSY	70-2066	Yellow Light Emitting Diode, T1 Case
12	D25,D26,D27,D28,D29,D31, D34,D35,D36,D37,D38,D39	LDSR	70-2061	Red Light Emitting Diode, T1 Case
1	D40	TIL413	70-2028	Infrared diode
2	J12,J13	HDR12	32-1067	12 Pin Header, 0.1" spacing, Cut from 14 Pin Header
1	L1	10MH	26-0201	10 mH Torroid Choke
10	R1,R2,R3,R4,R5,R6,R7,R8, R9,R20	1K	50-0012	1 KOhm Resistor 5% 1/4 Watt Carbon Film
6	R10,R11,R13,R14,R15,R16	300	50-0186	300 Ohm Resistor 5% 1/4 Watt Carbon Film
1	R12	470	50-0006	470 Ohm Resistor 5% 1/4 Watt Carbon Film
2	R17,R19	200K 1%	52-0276	200 KOhm Resistor 1% 1/4 Watt Metal Film
1	R18	22	50-0158	22 Ohm Resistor 5% 1/4 Watt Carbon Film
7	SW1,SW2,SW3,SW4,SW5,SW6, SW7	TOUCH PAD	44-0101	MDL4 Touch Switch
4	U1,U2,U3,U4	74HC164	72-1094	Shift Register
1	U5	TDA3048	72-4081	Infrared Remote Control Reciever

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!P/LC CONTROL VOLTAGE GENERATOR 11-4168 Revised: May 24, 1993
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Quan	Reference	Part	SYMAN	Description
2	C1,C2	10 NP	30-0051-01	10.0 uF Capacitor -20%,+80% 16V Elect., NP
6	C3,C4,C15,C16,C17,C18	BP	32-0067	0.047 uF Capacitor 20% 50V Axial Monolithic
2	C7,C8	2.2 NP	30-0043	2.2 uF Capacitor -20%,+80% 25V Elect., NP
1	C9	220PF	32-0022	220 pF Capacitor 20% 50V Ceramic Disc
2	C10,C11	.0010	36-2008	0.0010 uF Capacitor 10% 100V Polyester Film
2	C12,C13	330U	30-0056	330.0 uF Capacitor -20%,+80% 16V Electrolytic-S
1	C14	1 NP	30-0046-01	1.0 uF Capacitor -20%,+80% 16V Elect., N.P.
3	D1,D2,D3	CA3141	72-4122	High-voltage Diode Array
10	D4,D5,D6,D7,D8,D9,D10, D11,D12,D14	1N4148	70-0002	1N4148 Silicon Switching Diode, 75 Volts PIV
2	D13,D15	1N5232B	70-0153	1N5232B, Zener Diode, 5.6V
3	P1,P2,P3	TP50K H	42-0222	50 K Trim Pot, Horizontal Mount, 3/4 turn
4	R1,R2,R10,R11	150K 1%	52-0288-01	150 KOhm Resistor 1% 1/4 Watt Metal Film
2	R3,R12	330	50-0005	330 Ohm Resistor 5% 1/4 Watt Carbon Film
20	R4,R5,R6,R7,R8,R9,R13, R14,R15,R16,R17,R35,R36, R44,R45,R50,R51,R53,R57, R60	4.99K 1%	52-0165-01	4.99 KOhm Resistor 1% 1/4 Watt Metal Film
2	R18,R19	220	50-0183	220 Ohm Resistor 5% 1/4 Watt Carbon Film
4	R20,R22,R52,R59	243K 1%	52-0268-01	243 KOhm Resistor 1% 1/4 Watt Metal Film
2	R23,R33	220K	54-0040	220 KOhm Resistor 5% 1/4 Watt Carbon Film
2	R24,R34	1.3K	54-0011-01	1.3 KOhm Resistor 5% 1/4 Watt Carbon Film
10	R37,R38,R39,R40,R41,R43, R47,R48,R49,R61	10.0K 1%	52-0107	10.0 KOhm Resistor 1% 1/4 Watt Metal Film
1	R42	3.01K 1%	52-0125-01	3.01 KOhm Resistor 1% 1/4 Watt Metal Film
1	R45	22.1K 1%	52-0089-01	22.1 KOhm Resistor 1% 1/4 Watt Metal Film
3	R51,R61,R62	3.3M	50-0049-01	3.3 MOhm Resistor 5% 1/4 Watt Carbon Film
1	R55,R69	100K 1%	52-0305-01	100 KOhm Resistor 1% 1/4 Watt Metal Film
1	R56,R64,R65	2.37K 1%	52-0180-01	2.37 KOhm Resistor 1% 1/4 Watt Metal Film
	R58	470K	50-0042	470 KOhm Resistor 5% 1/4 Watt Carbon Film
	TP1	TESTP	-------	This is not a part.
	U1,U2	TL074	72-4021	Quad JFet-Input Op-Amp
	U3,U8	LM324	72-4028	Low Power Quad Operational Amplifier
	U6	4053A	72-0086	TRI 2 CH Analog Mux
	U7	MC14584B	72-0039	HEX Schmitt Trigger
	U9	TL072	72-4020	Dual JFet-Input Op-Amp
	U10,U11	HDR_18		

SECTION 6

SYM:X 2.6R3.0 DOD Electronics 01/13/94 12:11:09
ITEM24-R INDENTED COSTED BILL OF MATERIAL REPORT Page: 1

Item: model-4 thru: model-4 Prod Code: thru: Type: MTFO P/M: B Stocked: B ABC: ABC
Effective Date: 01/13/94

Lev	Item	Description	U/M	P M	Quantity	Per	Lot Size	Type	Total Costs Per Item M.T.F.O	Labor	Overhead	Outside
0	MODEL-4	SURROUND SOUND PRO	EA	M	1.00000		1.000		173.336	31.278	81.596	0.000
1	MODEL-4-110	SURROUND SOUND PRO	EA	M	1.00000	U	1.000	Matl	171.639	3.736	23.335	0.000
2	05-4160	MDL-4/AVP2/SP3 MAI	EA	M	1.00000	U	1.000	Matl	91.736	2.304	13.116	0.000
3	12-4160	MDL-4/AVP2 MAIN AM	EA	M	1.00000	U	1.000	Matl	43.862	2.076	8.325	0.000
4	80-4160-B	MDL4/AVP2/SP3 MAIN	EA	P	1.00000	U	1.000	Matl	17.660	0.000	0.000	0.000
4	70-0030	1N5248B 18V ZENER	EA	P	1.00000	U	1.000	Matl	0.036	0.000	0.000	0.000
4	52-0085	27.4K 1/4W 1% RESI	EA	P	7.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	62-0067	.047 AXIAL MONOLIT	EA	P	89.00000	U	1.000	Matl	0.027	0.000	0.000	0.000
4	70-0002	1N4148 DIODE TAPE-	EA	P	14.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
4	50-0046	2MEG OHM 1/4W 5%	EA	P	1.00000	U	1.000	Matl	0.004	0.000	0.000	0.000
4	50-0171	75 OHM 1/4W 5%	EA	P	14.00000	U	1.000	Matl	0.003	0.000	0.000	0.000
4	50-0049	3.3MEG OHM 1/4W 5%	EA	P	21.00000	U	1.000	Matl	0.004	0.000	0.000	0.000
4	50-0040	220K OHM 1/4W 5%	EA	P	2.00000	U	1.000	Matl	0.003	0.000	0.000	0.000
4	50-0186	300 OHM 1/4W 5%	EA	P	11.00000	U	1.000	Matl	0.003	0.000	0.000	0.000
4	52-0248	392K 1/4W 1% RESI	EA	P	4.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	52-0291	140K 1/4W 1% RESI	EA	P	2.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0107	10.0K 1/4W 1% RESI	EA	P	40.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0133	1.00K 1/4W 1% RESI	EA	P	11.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0144	1.50K 1/4W 1% RESI	EA	P	10.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
4	52-0165	4.99K 1/4W 1% RESI	EA	P	7.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	52-0094	16.5K 1/4W 1% RESI	EA	P	2.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	52-0103	12.1K 1/4W 1% RESI	EA	P	26.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	52-0091	20.0K 1/4W 1% RESI	EA	P	11.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0039	24.9K 1/4W 1% RESI	EA	P	37.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
4	52-0083	30.1K 1/4W 1% RESI	EA	P	4.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0022	46.4K 1/4W 1% RESI	EA	P	21.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	52-0017	59.0K 1/4W 1% RESI	EA	P	4.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0020	49.9K 1/4W 1% RESI	EA	P	35.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0012	69.8K 1/4W 1% RESI	EA	P	11.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	52-0305	100K 1/4W 1% RESI	EA	P	19.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0276	200K 1/4W 1% RESI	EA	P	10.00000	U	1.000	Matl	0.007	0.000	0.000	0.000
4	52-0705	1 MEG 1/4W 1% RE	EA	P	5.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
4	52-0050	15.0K 1/4W 1% RESI	EA	P	13.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
4	52-0125	3.01K 1/4W 1% RESI	EA	P	8.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0157	6.81K 1/4W 1% RESI	EA	P	2.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	52-0111	8.06K 1/4W 1% RESI	EA	P	5.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0121	4.02K 1/4W 1% RESI	EA	P	2.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0105	11.0K 1/4W 1% RESI	EA	P	3.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	52-0035	28.0K 1/4W 1% RESI	EA	P	2.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0025	43.2K 1/4W 1% RESI	EA	P	8.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0031	34.8K 1/4W 1% RESI	EA	P	10.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	52-0066	90.9K 1/4W 1% RESI	EA	P	3.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
4	52-0079	39.2K 1/4W 1% RESI	EA	P	9.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
4	52-0301	110K 1/4W 1% RESI	EA	P	6.00000	U	1.000	Matl	0.006	0.000	0.000	0.000
4	UNI PARTS			M	0.00000	L	1.000	Othr	0.000	0.000	0.000	0.000
4	72-4105	DS1267-010 DIG VOL	EA	P	3.00000	U	1.000	Matl	2.800	0.000	0.000	0.000
4	72-4028	LM324 QUAD OP AMP	EA	P	2.00000	U	1.000	Matl	0.180	0.000	0.000	0.000

Lev	Item	Description	U/M	P M	Quantity	Per	Lot Size	Type	Total Costs Per Item M.T.F.O	Labor	Overhead	Outside
4	72-0081	CD4051 8 CHNL ANAL	EA	P	9.00000	U	1.000	Matl	0.280	0.000	0.000	0.000
4	72-0086	CD4053 TRI 2 CHNL	EA	P	5.00000	U	1.000	Matl	0.200	0.000	0.000	0.000
4	72-4124	CA3081 TRANS ARRAY	EA	P	1.00000	U	1.000	Matl	0.240	0.000	0.000	0.000
4	72-4021	TL074CN	EA	P	12.00000	U	1.000	Matl	0.440	0.000	0.000	0.000
4	72-0080	CD4052 DUAL 4X1 AN	EA	P	3.00000	U	1.000	Matl	0.280	0.000	0.000	0.000
4	72-4072	MC14576BP MOTOROLA	EA	P	3.00000	U	1.000	Matl	0.750	0.000	0.000	0.000
4	52-0141	2.49K 1/4W 1% RESI	EA	P	2.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	50-0168	56 OHM 1/4W 5%	EA	P	1.00000	U	1.000	Matl	0.003	0.000	0.000	0.000
4	50-0006	470 OHM 1/4W 5%	EA	P	3.00000	U	1.000	Matl	0.003	0.000	0.000	0.000
4	50-0060	10MEG OHM 1/4W 5%	EA	P	6.00000	U	1.000	Matl	0.003	0.000	0.000	0.000
4	52-0186	2.00K 1/4W 1% RESI	EA	P	8.00000	U	1.000	Matl	0.008	0.000	0.000	0.000
4	52-0042	21.0K 1/4W 1% RESI	EA	P	3.00000	U	1.000	Matl	0.007	0.000	0.000	0.000
4	52-0006	82.5K 1/4W 1% RESI	EA	P	2.00000	U	1.000	Matl	0.007	0.000	0.000	0.000
3	70-1014	2N5640 FET N CHANN	EA	P	6.00000	U	1.000	Matl	0.200	0.000	0.000	0.000
3	52-0064-01	53.6K 1/4W 1% RESI	EA	P	2.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
3	62-0002	120 PF DISC D=8MM	EA	P	1.00000	U	1.000	Matl	0.010	0.000	0.000	0.000
3	52-0161-01	5.62K 1/4W 1% RESI	EA	P	4.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
3	52-0026-01	42.2K 1/4W 1% RESI	EA	P	1.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
3	52-0019-01	51.1K 1/4W 1% RESI	EA	P	1.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
3	52-0294-01	130K 1/4W 1% RESI	EA	P	2.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
3	52-0280-01	182K 1/4W 1% RESI	EA	P	5.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
3	52-0285-01	162K 1/4W 1% RESI	EA	P	1.00000	U	1.000	Matl	0.007	0.000	0.000	0.000
3	70-0013	1N5237B 8.2V ZENER	EA	P	1.00000	U	1.000	Matl	0.040	0.000	0.000	0.000
3	70-0007-01	1N4003 DIODE CUT &	EA	P	5.00000	U	1.000	Matl	0.024	0.000	0.000	0.000
3	70-0024	1N4740 10V ZENER	EA	P	1.00000	U	1.000	Matl	0.050	0.000	0.000	0.000
3	70-3020	8 PIN DIP SOCKET	EA	P	1.00000	U	1.000	Matl	0.025	0.000	0.000	0.000
3	70-3022	16 PIN DIP SOCKET	EA	P	1.00000	U	1.000	Matl	0.038	0.000	0.000	0.000
3	70-3161	28 PIN DIP SOCKET	EA	P	1.00000	U	1.000	Matl	0.058	0.000	0.000	0.000
3	70-3166	64 PIN SHRINK DIP	EA	P	1.00000	U	1.000	Matl	0.730	0.000	0.000	0.000
3	72-4108	MC34084 OP AMP (FO	EA	P	1.00000	U	1.000	Matl	1.250	0.000	0.000	0.000
3	72-1094	74HC164 SHIFT REGI	EA	P	3.00000	U	1.000	Matl	0.325	0.000	0.000	0.000
3	62-2200	90 PF VARIABLE CAP	EA	P	1.00000	U	1.000	Matl	0.415	0.000	0.000	0.000
3	62-0013	10 PF 50V CER DISC	EA	P	10.00000	U	1.000	Matl	0.013	0.000	0.000	0.000
3	62-0001	25 PF DISC D=8MM	EA	P	2.00000	U	1.000	Matl	0.012	0.000	0.000	0.000
3	62-0018	68 PF 50V CER DISC	EA	P	1.00000	U	1.000	Matl	0.013	0.000	0.000	0.000
3	62-0020	100 PF 50V CERAMIC	EA	P	1.00000	U	1.000	Matl	0.012	0.000	0.000	0.000
3	62-0031	150 PF 50V CER DIS	EA	P	1.00000	U	1.000	Matl	0.013	0.000	0.000	0.000
3	62-0022	220 PF 50V CER DIS	EA	P	2.00000	U	1.000	Matl	0.012	0.000	0.000	0.000
3	62-0006	330 PF DISC D=8MM	EA	P	2.00000	U	1.000	Matl	0.012	0.000	0.000	0.000
3	62-0003	470 PF DISC D=8MM	EA	P	2.00000	U	1.000	Matl	0.012	0.000	0.000	0.000
3	62-0004	680 PF DISC D=8MM	EA	P	1.00000	U	1.000	Matl	0.012	0.000	0.000	0.000
3	56-2008	.0010 UF 1I2 K 10%	EA	P	6.00000	U	1.000	Matl	0.021	0.000	0.000	0.000
3	56-2011	.0018 UF 1I2 K 10%	EA	P	1.00000	U	1.000	Matl	0.022	0.000	0.000	0.000
3	56-2013	.0027 UF 2I2 K 10%	EA	P	1.00000	U	1.000	Matl	0.013	0.000	0.000	0.000
3	56-2014	.0033 UF 3I2 K 10%	EA	P	1.00000	U	1.000	Matl	0.022	0.000	0.000	0.000
3	56-2015	.0039 UF 3I2 K 10%	EA	P	1.00000	U	1.000	Matl	0.013	0.000	0.000	0.000
3	56-2018	.0068 UF 6I2 K 10%	EA	P	2.00000	U	1.000	Matl	0.013	0.000	0.000	0.000
3	56-2019	.0082 UF 8I2 K 10%	EA	P	1.00000	U	1.000	Matl	0.013	0.000	0.000	0.000
3	56-2022	.010 UF 10I K 10%	EA	P	3.00000	U	1.000	Matl	0.015	0.000	0.000	0.000
3	56-2024	.018 UF 18I K 10%	EA	P	1.00000	U	1.000	Matl	0.017	0.000	0.000	0.000

Lev	Item	Description	U/M	P M	Quantity Per	Lot Size Type	Total Costs Per Item M.T.F.O	Labor	Overhead	Outside
3	56-2025	.022 UF 223 K 10%	EA	P	2.00000 U	1.000 Matl	0.027	0.000	0.000	0.000
3	56-2026	.027 UF 273 K 10%	EA	P	2.00000 U	1.000 Matl	0.028	0.000	0.000	0.000
3	56-2027	.033 UF 333 K 10%	EA	P	2.00000 U	1.000 Matl	0.020	0.000	0.000	0.000
3	56-2028	.047 UF 473 K 10%	EA	P	1.00000 U	1.000 Matl	0.031	0.000	0.000	0.000
3	56-2032	.082 UF 823 K 10%	EA	P	1.00000 U	1.000 Matl	0.042	0.000	0.000	0.000
3	56-2033	.068 UF 683 K 10%	EA	P	1.00000 U	1.000 Matl	0.028	0.000	0.000	0.000
3	56-2036	.15 UF 154 K 10%	EA	P	2.00000 U	1.000 Matl	0.051	0.000	0.000	0.000
3	56-2038	.22 UF 224 K 10%	EA	P	16.00000 U	1.000 Matl	0.067	0.000	0.000	0.000
3	56-2042	.47 UF 474 K 10%	EA	P	2.00000 U	1.000 Matl	0.114	0.000	0.000	0.000
3	56-1115	.0045 UF 452 J 5%	EA	P	2.00000 U	1.000 Matl	0.022	0.000	0.000	0.000
3	62-1006-03	.0047 UF 10% BOX C	EA	P	2.00000 U	1.000 Matl	0.064	0.000	0.000	0.000
3	62-1008-03	.01 UF 10% BOX CA	EA	P	2.00000 U	1.000 Matl	0.069	0.000	0.000	0.000
3	62-1017	.1 UF 10% BOX CAP	EA	P	4.00000 U	1.000 Matl	0.073	0.000	0.000	0.000
3	62-1015	.068 UF 10% BOX CA	EA	P	2.00000 U	1.000 Matl	0.068	0.000	0.000	0.000
3	60-0044-01	1UF 50V 5X7 C	EA	P	3.00000 U	1.000 Matl	0.035	0.000	0.000	0.000
3	60-0048-01	4.7UF 16V 5X7 C	EA	P	2.00000 U	1.000 Matl	0.031	0.000	0.000	0.000
3	60-0049-01	10UF 16V 5X7 C	EA	P	4.00000 U	1.000 Matl	0.029	0.000	0.000	0.000
3	60-0050-01	10UF 25V 5X7 C	EA	P	7.00000 U	1.000 Matl	0.035	0.000	0.000	0.000
3	60-0051-01	10NP 16V 6X11 C	EA	P	2.00000 U	1.000 Matl	0.036	0.000	0.000	0.000
3	60-0055	100UF 25V 8X11 L	EA	P	4.00000 U	1.000 Matl	0.048	0.000	0.000	0.000
3	60-0086	100NP 16V 10X13 L	EA	P	1.00000 U	1.000 Matl	0.070	0.000	0.000	0.000
3	60-0075	220UF 25V 8X12 L	EA	P	2.00000 U	1.000 Matl	0.043	0.000	0.000	0.000
3	60-0056-01	330UF 16V 8X11 L	EA	P	5.00000 U	1.000 Matl	0.056	0.000	0.000	0.000
3	60-0064-03	1000UF 16V 10X20 L	EA	P	9.00000 U	1.000 Matl	0.107	0.000	0.000	0.000
3	60-0088	2200UF 35V 16X32 L	EA	P	3.00000 U	1.000 Matl	0.318	0.000	0.000	0.000
3	70-1006	2N3906 PNP TRANSIS	EA	P	3.00000 U	1.000 Matl	0.041	0.000	0.000	0.000
3	70-1004	2N3904 TRANSISTOR	EA	P	3.00000 U	1.000 Matl	0.035	0.000	0.000	0.000
3	70-1025	MPS-A56 TRANS (MOT	EA	P	1.00000 U	1.000 Matl	0.054	0.000	0.000	0.000
3	70-5004	MC34064P UNDERVOLT	EA	P	1.00000 U	1.000 Matl	0.410	0.000	0.000	0.000
3	62-2100	DSS310 EMI SUPPRES	EA	P	1.00000 U	1.000 Matl	0.188	0.000	0.000	0.000
3	76-0100	8.000 MHZ CRYSTAL	EA	P	1.00000 U	1.000 Matl	0.400	0.000	0.000	0.000
3	32-0111-01	2 RCA JACK GOLD WH	EA	P	1.00000 U	1.000 Matl	0.325	0.000	0.000	0.000
3	32-0112-01	6 RCA JACK GOLD WH	EA	P	3.00000 U	1.000 Matl	0.880	0.000	0.000	0.000
3	32-0112-03	6 RCA JACK GOLD YE	EA	P	1.00000 U	1.000 Matl	1.000	0.000	0.000	0.000
3	32-1060	9 PIN STRAIGHT HEA	EA	P	4.00000 U	1.000 Matl	0.106	0.000	0.000	0.000
3	32-1047	4 PIN FRICTION LOC	EA	P	1.00000 U	1.000 Matl	0.250	0.000	0.000	0.000
3	42-0203	200 OHM TRIM 10MM	EA	P	4.00000 U	1.000 Matl	0.136	0.000	0.000	0.000
3	42-0219	TRIM POT 5K OHM	EA	P	4.00000 U	1.000 Matl	0.136	0.000	0.000	0.000
3	42-0222	TRIM POT 50K OHM	EA	P	5.00000 U	1.000 Matl	0.136	0.000	0.000	0.000
3	62-1019-05	.22 UF BOX CAP 10%	EA	P	5.00000 U	1.000 Matl	0.102	0.000	0.000	0.000
3	50-3170	100 OHM 5W 5% FLM	EA	P	1.00000 U	1.000 Matl	0.119	0.000	0.000	0.000
3	42-0273	TRIMPOT 100K CERME	EA	P	1.00000 U	1.000 Matl	0.280	0.000	0.000	0.000
3	42-0274	TRIMPOT 25K CERMET	EA	P	5.00000 U	1.000 Matl	0.280	0.000	0.000	0.000
3	WAVE SOLDER			M	0.00000 L	1.000 Othr	0.000	0.000	0.000	0.000
3	72-3072-10	256K-X1-100NS DRAM	EA	P	1.00000 U	1.000 Matl	1.700	0.000	0.000	0.000
3	72-3075	24C01 1K-BIT EEPRO	EA	P	1.00000 U	1.000 Matl	1.250	0.000	0.000	0.000
3	72-3160	LV1000NA DOLBY SUR	EA	P	1.00000 U	1.000 Matl	7.800	0.000	0.000	0.000
3	32-0092	5 PIN DIN JACK PCB	EA	P	1.00000 U	1.000 Matl	0.160	0.000	0.000	0.000
3	32-0082	MINI 4 PIN DIN SHI	EA	P	4.00000 U	1.000 Matl	0.430	0.000	0.000	0.000
3	32-0081	MINI 5 PIN DIN JAC	EA	P	1.00000 U	1.000 Matl	0.420	0.000	0.000	0.000

Lev	Item	Description	U/M	P M	Quantity Per	Lot Size Type	Total Costs Per Item M,T,F,O	Labor	Overhead	Outside
3	32-1165	WIRE TRAP 12 PIN C	EA	P	2.00000 U	1.000 Matl	0.375	0.000	0.000	0.000
3	70-4014	7805 +5V REGULATO	EA	P	1.00000 U	1.000 Matl	0.300	0.000	0.000	0.000
3	70-4123	7815 +15V REGULATO	EA	P	1.00000 U	1.000 Matl	0.280	0.000	0.000	0.000
3	70-4124	7915 -15V REGULATO	EA	P	1.00000 U	1.000 Matl	0.280	0.000	0.000	0.000
3	26-0031-D	MODEL-4 TRANSFORME	EA	P	1.00000 U	1.000 Matl	7.920	0.000	0.000	0.000
3	28-0475	#4 X 1/4 SHEET MET	EA	P	3.00000 U	1.000 Matl	0.007	0.000	0.000	0.000
3	28-0090	6-32 X 1-1/2 PHIL	EA	P	4.00000 U	1.000 Matl	0.021	0.000	0.000	0.000
3	28-0065	6-32 KEPS HEX NUT	EA	P	4.00000 U	1.000 Matl	0.009	0.000	0.000	0.000
3	28-0291	4-40 X 1/4 PHIL PA	EA	P	2.00000 U	1.000 Matl	0.004	0.000	0.000	0.000
3	28-1001	4-40 X 1/2 HEX NYL	EA	P	2.00000 U	1.000 Matl	0.138	0.000	0.000	0.000
3	10-2549	MODEL-4 HEATSINK P	EA	M	1.00000 U	1.000 Matl	3.250	0.228	0.775	0.000
4	14-2549-B	MODEL-4 HEATSINK	EA	P	1.00000 U	1.000 Matl	3.250	0.000	0.000	0.000
3	28-1078	STANDOFF 1/4 AL	EA	P	4.00000 U	1.000 Matl	0.027	0.000	0.000	0.000
3	28-1076	STANDOFF 1/2 AL	EA	P	4.00000 U	1.000 Matl	0.036	0.000	0.000	0.000
3	28-0358	4-40 X 1/2 MACH PA	EA	P	3.00000 U	1.000 Matl	0.007	0.000	0.000	0.000
3	28-0350	4-40 STEEL HEX NUT	EA	P	3.00000 U	1.000 Matl	0.003	0.000	0.000	0.000
3	28-0304	SHOULDER WASHER (T	EA	P	3.00000 U	1.000 Matl	0.019	0.000	0.000	0.000
3	70-4210	TRANSISTOR INSULAT	EA	P	3.00000 U	1.000 Matl	0.043	0.000	0.000	0.000
2	05-4161	MDL-4/AVP2 FRONT P	EA	M	1.00000 U	1.000 Matl	17.207	0.131	1.825	0.000
3	12-4161	MODEL-4 FRONT ANIS	EA	M	1.00000 U	1.000 Matl	6.662	0.131	0.877	0.000
4	80-4161-A	MDL4,AVP2 FRONT PC	EA	P	1.00000 U	1.000 Matl	6.600	0.000	0.000	0.000
4	50-0006	470 OHM 1/4W 5%	EA	P	1.00000 U	1.000 Matl	0.003	0.000	0.000	0.000
4	50-0012	1K OHM 1/4W 5%	EA	P	10.00000 U	1.000 Matl	0.003	0.000	0.000	0.000
4	50-0186	300 OHM 1/4W 5%	EA	P	6.00000 U	1.000 Matl	0.003	0.000	0.000	0.000
4	52-0276	200K 1/4W 1% RESI	EA	P	2.00000 U	1.000 Matl	0.007	0.000	0.000	0.000
3	50-0158	22 OHM 1/4W 5%	EA	P	1.00000 U	1.000 Matl	0.003	0.000	0.000	0.000
3	62-0006	330 PF DISC D=8MM	EA	P	2.00000 U	1.000 Matl	0.012	0.000	0.000	0.000
3	72-1094	74HC164 SHIFT REGI	EA	P	4.00000 U	1.000 Matl	0.325	0.000	0.000	0.000
3	72-4081	TDA3048 IR RECEIVE	EA	P	1.00000 U	1.000 Matl	1.290	0.000	0.000	0.000
3	56-2018	.0068 UF 682 K 10%	EA	P	1.00000 U	1.000 Matl	0.013	0.000	0.000	0.000
3	56-0091	.10 UF 104 H 3%	EA	P	1.00000 U	1.000 Matl	0.063	0.000	0.000	0.000
3	62-1052-03	.0015 UF 10% BOX C	EA	P	1.00000 U	1.000 Matl	0.069	0.000	0.000	0.000
3	62-1008-03	.01 UF 10% BOX CA	EA	P	4.00000 U	1.000 Matl	0.069	0.000	0.000	0.000
3	62-1010-03	.022 UF 10% BOX CA	EA	P	1.00000 U	1.000 Matl	0.089	0.000	0.000	0.000
3	60-0055	100UF 25V 8X11 L	EA	P	1.00000 U	1.000 Matl	0.048	0.000	0.000	0.000
3	26-0201	10 MH 3 PIE WIRE W	EA	P	1.00000 U	1.000 Matl	1.260	0.000	0.000	0.000
3	WAVE SOLDER			M	0.00000 L	1.000 Othr	0.000	0.000	0.000	0.000
3	44-0101	MODEL-4 KEYSWITCH	EA	P	7.00000 U	1.000 Matl	0.330	0.000	0.000	0.000
3	32-1209	12 COND. SINGLE/RO	EA	P	2.00000 U	1.000 Matl	0.280	0.000	0.000	0.000
3	32-1222	12 COND RIBBON MOL	EA	P	2.00000 U	1.000 Matl	0.095	0.000	0.000	0.000
3	70-2066	LED SMALL YELLOW D	EA	P	12.00000 U	1.000 Matl	0.063	0.000	0.000	0.000
3	70-2062	LED SMALL GREEN DI	EA	P	16.00000 U	1.000 Matl	0.063	0.000	0.000	0.000
3	70-2061	LED SMALL RED DI	EA	P	12.00000 U	1.000 Matl	0.063	0.000	0.000	0.000
3	70-2028	TIL-413 INFRARED D	EA	P	1.00000 U	1.000 Matl	0.530	0.000	0.000	0.000
2	05-4168	FAST LOGIC HOME CV	EA	M	1.00000 U	1.000 Matl	9.107	0.188	1.640	0.000
3	12-4168	FAST LOGIC HOME CV	EA	M	1.00000 U	1.000 Matl	3.927	0.188	1.173	0.000
4	80-4168-A	FAST LOGIC HOME CV	EA	P	1.00000 U	1.000 Matl	2.000	0.000	0.000	0.000
4	62-0067	.047 AXIAL MONOLIT	EA	P	6.00000 U	1.000 Matl	0.027	0.000	0.000	0.000
4	70-0002	1N4148 DIODE TAPE-	EA	P	10.00000 U	1.000 Matl	0.009	0.000	0.000	0.000
4	50-0011	1.3K OHM 1/4W 5%	EA	P	2.00000 U	1.000 Matl	0.004	0.000	0.000	0.000

Lev	Item	Description	U/M	P M	Quantity	Per	Lot Size	Type	Total Costs Per Item M.T.F.O	Labor	Overhead	Outside
4	50-0040	220K OHM 1/4W 5%	EA	P	2.00000	U	1.000	Matl	0.00	0.000	0.000	(.000
4	50-0183	220 OHM 1/4W 5%	EA	P	2.00000	U	1.000	Matl	0.00	0.000	0.000	(.000
4	50-0005	330 OHM 1/4W 5%	EA	P	2.00000	U	1.000	Matl	0.00	0.000	0.000	(.000
4	52-0288	150K 1/4W 1% RESI	EA	P	4.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
4	52-0165	4.99K 1/4W 1% RESI	EA	P	20.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
4	52-0268	243K 1/4W 1% RESI	EA	P	4.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
4	52-0107	10.0K 1/4W 1% RESI	EA	P	10.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
4	52-0125	3.01K 1/4W 1% RESI	EA	P	1.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
4	52-0089	21.1K 1/4W 1% RESI	EA	P	1.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
4	50-0049	3.3MEG OHM 1/4W 5%	EA	P	3.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
4	52-0305	140K 1/4W 1% RESI	EA	P	2.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
4	52-0180	2.37K 1/4W 1% RESI	EA	P	3.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
4	50-0042	470K OHM 1/4W 5%	EA	P	1.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
4	UNI PARTS			M	0.00000	-	1.000	Othr	0.00	0.000	0.000	0.000
4	72-4021	TL074CN	EA	P	1.00000	U	1.000	Matl	0.44	0.000	0.000	0.000
4	72-4128	LM324 QUAD OP AMP	EA	P	2.00000	U	1.000	Matl	0.18	0.000	0.000	0.000
4	72-0086	CD4053 TRI 2 CHN.	EA	P	1.00000	U	1.000	Matl	0.20	0.000	0.000	0.000
4	72-4120	TL072CP CROSS REF	EA	P	1.00000	U	1.000	Matl	0.33	0.000	0.000	0.000
3	70-0153	1N5232B 5.6V ZENER	EA	P	2.00000	U	1.000	Matl	0.03	0.000	0.000	0.000
3	72-4021	TL074CN	EA	P	1.00000	U	1.000	Matl	0.44	0.000	0.000	0.000
3	72-4112	CA3141E IC	EA	P	3.00000	U	1.000	Matl	0.73	0.000	0.000	0.000
3	72-0039	MC14584B HEX SCHMI	EA	P	1.00000	U	1.000	Matl	0.30	0.000	0.000	0.000
3	62-0022	220 PF 50V CER DIS	EA	P	1.00000	U	1.000	Matl	0.01	0.000	0.000	0.000
3	56-2008	.0010 UF 102 K 10%	EA	P	2.00000	U	1.000	Matl	0.02	0.000	0.000	0.000
3	60-0046-01	1NP 16V 5X11 C	EA	P	1.00000	U	1.000	Matl	0.03	0.000	0.000	0.000
3	60-0043	2.2NP 25V 5X7 L	EA	P	2.00000	U	1.000	Matl	0.03	0.000	0.000	0.000
3	60-0051-01	10NP 16V 6X11 C	EA	P	2.00000	U	1.000	Matl	0.03	0.000	0.000	0.000
3	60-0055	33UF 16V 8X11 L	EA	P	2.00000	U	1.000	Matl	0.05	0.000	0.000	0.000
3	42-0222	TRIM POT 50K OHM	EA	P	3.00000	U	1.000	Matl	0.13	0.000	0.000	0.000
3	WAVE SOLDER			M	0.00000	L	1.000	Othr	0.00	0.000	0.000	0.000
3	32-1166	9 PIN PCB CONNECT	EA	P	4.00000	U	1.000	Matl	0.36	0.000	0.000	0.000
2	04-0014	MODEL-4 MECHANICA	EA	M	1.00000	U	1.000	Matl	53.37	0.913	6.735	0.000
3	MCH ASSY			M	0.00000	L	1.000	Othr	0.00	0.000	0.000	0.000
3	72-3159	PIC16C57 8 BIT CPU	EA	P	1.00000	U	1.000	Matl	3.75	0.000	0.000	0.000
3	10-2532	MODEL-4 CHASSIS PA	EA	M	1.00000	U	1.000	Matl	8.50	0.228	1.247	0.000
4	14-2532-B	MODEL-4 CHASSIS B	EA	P	1.00000	U	1.000	Matl	8.50	0.000	0.000	0.000
3	10-2537	MODEL-4 COVER/LID	EA	M	1.00000	U	1.000	Matl	6.69	0.228	1.084	0.000
4	14-2537-A	MODEL-4 COVER/LID	EA	P	1.00000	U	1.000	Matl	6.69	0.000	0.000	0.000
3	10-2546	MODEL-4 FRONT EXTR	EA	M	1.00000	U	1.000	Matl	8.70	0.457	1.747	0.000
4	14-2546-B	MODEL-4 FRONT EXTR	EA	P	1.00000	U	1.000	Matl	8.70	0.000	0.000	0.000
3	14-2550-A	MODEL-4 WINDOW GUA	EA	P	1.00000	U	1.000	Matl	1.90	0.000	0.000	0.000
3	30-0229-B	MODEL-4 FRONT OVER	EA	P	1.00000	U	1.000	Matl	2.25	0.000	0.000	0.000
3	24-0229-B	MODEL-3/AVP1 LEXAN	EA	P	1.00000	U	1.000	Matl	3.70	0.000	0.000	0.000
3	32-0060	AC RECEPTACLE BOLT	EA	P	1.00000	U	1.000	Matl	0.40	0.000	0.000	0.000
3	62-0030	.1 UF 50V CER DISC	EA	P	1.00000	U	1.000	Matl	0.03	0.000	0.000	0.000
3	28-1073	STANDOFF 1/4 NYLON	EA	P	4.00000	U	1.000	Matl	0.11	0.000	0.000	0.000
3	28-0477	#10 K 1/2 SHEET ME	EA	P	4.00000	U	1.000	Matl	0.01	0.000	0.000	0.000
3	28-0059	6-32 X 1/4 POZI PA	EA	P	3.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
3	28-0055	6-32 X 1/4 SMOOTH	EA	P	1.00000	U	1.000	Matl	0.00	0.000	0.000	0.000
3	28-0092	6-32 HEX NUT WITH	EA	P	2.00000	U	1.000	Matl	0.01	0.000	0.000	0.000

Lev	Item	Description	U/M	P M	Quantity Per		Lot Size	Type	Total Costs Per Item M.T.F.O	Labor	Overhead	Outside
3	28-0404	6-32 X 1/8 PHIL PA	EA	P	4.00000	U	1.000	Matl	0.016	0.000	0.000	0.000
3	28-0058	6-32 X 3/8 POZI PA	EA	P	2.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
3	28-0291	4-40 X 1/4 PHIL PA	EA	P	2.00000	U	1.000	Matl	0.004	0.000	0.000	0.000
3	28-0351	4-40 X 3/16 FLAT U	EA	P	2.00000	U	1.000	Matl	0.017	0.000	0.000	0.000
3	28-0374	4-20AB X 1/2 PHIL	EA	P	19.00000	U	1.000	Matl	0.009	0.000	0.000	0.000
3	28-0476	#4 X 1/4 SHEET MET	EA	P	12.00000	U	1.000	Matl	0.014	0.000	0.000	0.000
3	28-0062	6-32 PLAIN NUT HEX	EA	P	1.00000	U	1.000	Matl	0.010	0.000	0.000	0.000
3	28-0350	4-40 STEEL HEX NUT	EA	P	1.00000	U	1.000	Matl	0.003	0.000	0.000	0.000
3	28-1000	4-40 X 1/4 HEX STA	EA	P	1.00000	U	1.000	Matl	0.123	0.000	0.000	0.000
3	32-2086	GROUND LUG #6 HOLE	EA	P	2.00000	U	1.000	Matl	0.025	0.000	0.000	0.000
3	32-1048	SPRING BOX CRIMP T	EA	P	4.00000	U	1.000	Matl	0.054	0.000	0.000	0.000
3	32-1049	4 PIN CRIMP TERMIN	EA	P	1.00000	U	1.000	Matl	0.110	0.000	0.000	0.000
3	44-0100-B	MODEL-3 FRONT BUTT	EA	P	7.00000	U	1.000	Matl	0.065	0.000	0.000	0.000
3	36-0028	WHT 20 AWG 3	EA	P	5.00000	U	1.000	Matl	0.022	0.000	0.000	0.000
3	36-0001	GRN/YEL 18 AWG 2	EA	P	2.00000	U	1.000	Matl	0.025	0.000	0.000	0.000
3	32-0051	FUSEHOLDER PANEL M	EA	P	1.00000	U	1.000	Matl	1.060	0.000	0.000	0.000
3	PACKAGING			M	0.00000	L	1.000	Othr	0.000	0.000	0.000	0.000
3	22-0002	RUBBER FEET (FOS)	EA	P	4.00000	U	1.000	Matl	0.370	0.000	0.000	0.000
3	20-0128-A	MODEL-4 PRODUCT BO	EA	P	1.00000	U	1.000	Matl	4.200	0.000	0.000	0.000
3	18-0198-A	MODEL-4 OWNERS MAN	EA	P	1.00000	U	1.000	Matl	1.280	0.000	0.000	0.000
3	30-0080	DATE CODE STICKER	EA	P	1.00000	U	1.000	Matl	0.040	0.000	0.000	0.000
3	30-1007	MODEL-4 SERIAL NUM	EA	P	1.00000	U	1.000	Matl	0.194	0.000	0.000	0.000
3	REMOTE			M	0.00000	L	1.000	Othr	0.000	0.000	0.000	0.000
3	07-1001	FOSGATE KURON REMO	EA	P	1.00000	U	1.000	Matl	4.980	0.000	0.000	0.000
3	30-0230-B	MODEL-4 REMOTE OVE	EA	P	1.00000	U	1.000	Matl	1.310	0.000	0.000	0.000
3	24-1026	1.5V AA ZINC CHLOR	EA	P	2.00000	U	1.000	Matl	0.375	0.000	0.000	0.000
2	32-0016	FUSE 250MA 5X20MM	EA	P	1.00000	U	1.000	Matl	0.210	0.000	0.000	0.000
1	36-0061	US/JA USA POWER CO	EA	P	1.00000	U	1.000	Matl	1.430	0.000	0.000	0.000
1	30-1015	UL APPROVAL LABEL	EA	P	1.00000	U	1.000	Matl	0.267	0.000	0.000	0.000

INDENTED STANDARD BILL OF MATERIAL REPORT

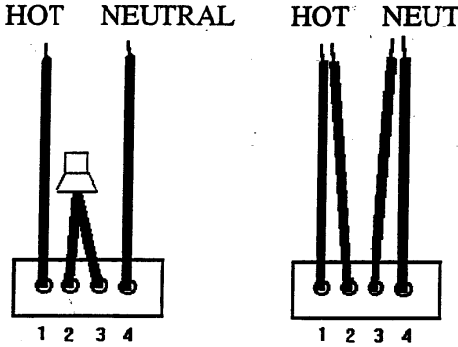
Item: 05-4168 thru: 05-4168 Prod Code: thru: Type: MTFO P/M: B Stocked: B ABC: ABC
Effective Date: 02/03/94

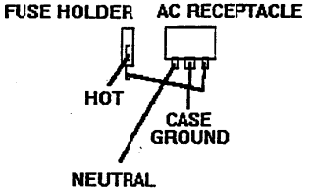
Lev	Item	Description	U/M	Qty Per	P/I/J	Type	P/M	Stock
0	05-4168	FAST LOGIC HOME CVG PCB ASSEMBLY REVB2	EA	1.00000			M	Yes
1	12-4168	FAST LOGIC HOME CVG AMISTAR ASSY REVB2	EA	1.00000	Unit	I (M)aterial	M	Yes
2	80-4168-A	FAST LOGIC HOME CVG PCB RAW	EA	1.00000	Unit	I (M)aterial	P	Yes
2	62-0067	.047 AXIAL MONOLITHIC T&R 37L	EA	6.00000	Unit	I (M)aterial	P	Yes
2	70-0002	1N4148 DIODE TAPE-REEL 30R=KL41R=KR CAB	EA	10.00000	Unit	I (M)aterial	P	Yes
2	50-0011	1.3K OHM 1/4W 5% RESISTOR TAPE & REEL	EA	2.00000	Unit	I (M)aterial	P	Yes
2	50-0040	220K OHM 1/4W 5% RESISTOR T&R 27R	EA	2.00000	Unit	I (M)aterial	P	Yes
2	50-0183	220 OHM 1/4W 5% RESISTOR TAPE & REEL	EA	2.00000	Unit	I (M)aterial	P	Yes
2	50-0005	330 OHM 1/4W 5% RESISTOR T&R 44R	EA	2.00000	Unit	I (M)aterial	P	Yes
2	52-0288	150K 1/4W 1% RESISTOR TAPE & REEL F34L	EA	4.00000	Unit	I (M)aterial	P	Yes
2	52-0165	4.99K 1/4W 1% RESISTOR TAPE & REEL F39R	EA	20.00000	Unit	I (M)aterial	P	Yes
2	52-0268	243K 1/4W 1% RESISTOR TAPE & REEL	EA	4.00000	Unit	I (M)aterial	P	Yes
2	52-0107	10.0K 1/4W 1% RESISTOR TAPE & REEL 34R	EA	10.00000	Unit	I (M)aterial	P	Yes
2	52-0125	3.01K 1/4W 1% RESISTOR TAPE & REEL F36R	EA	1.00000	Unit	I (M)aterial	P	Yes
2	52-0089	21.1K 1/4W 1% RESISTOR TAPE & REEL F37R	EA	1.00000	Unit	I (M)aterial	P	Yes
2	50-0049	3.3MEG OHM 1/4W 5% RESISTOR TAPE & REEL	EA	3.00000	Unit	I (M)aterial	P	Yes
2	52-0305	10K 1/4W 1% RESISTOR TAPE & REEL F26L	EA	2.00000	Unit	I (M)aterial	P	Yes
2	52-0180	2.37K 1/4W 1% RESISTOR TAPE & REEL	EA	3.00000	Unit	I (M)aterial	P	Yes
2	50-0042	470K OHM 1/4W 5% RESISTOR T&R 28L	EA	1.00000	Unit	I (M)aterial	P	Yes
2	UNI PARTS			0.00000	Lot	P (O)ther	M	No
2	72-4028	LM324 QUAD OP AMP CAB	EA	2.00000	Unit	I (M)aterial	P	Yes
2	72-0086	CD4053 TRI 2 CHNL MPX CAB	EA	1.00000	Unit	I (M)aterial	P	Yes
2	72-4020	TL072CP CROSS REF P/N 72-4030 OK DEMAND	EA	1.00000	Unit	I (M)aterial	P	Yes
1	70-0153	1N5232B 5.6V ZENER 500MW T&R	EA	2.00000	Unit	I (M)aterial	P	Yes
1	72-4021	TL074CN CAB	EA	2.00000	Unit	I (M)aterial	P	Yes
1	72-4122	CA3141E IC BOND	EA	3.00000	Unit	I (M)aterial	P	Yes
1	72-0039	HCL4584B HEX SCHMITT TRIGGER (FJS) HOT	EA	1.00000	Unit	I (M)aterial	P	Yes
1	62-0022	220 PF 50V CER DISC D=8MM LS=5MM LOIP	EA	1.00000	Unit	I (M)aterial	P	Yes
1	56-2008	.0010 UF 102 K 10% FILM CAPACITOR LOIP	EA	2.00000	Unit	I (M)aterial	P	Yes
1	60-0046-01	1NP 16V 5X11 C&F 5&5MM LOIE	EA	1.00000	Unit	I (M)aterial	P	Yes
1	60-0043	2.2NP 25V 5X7 LS 1.5MM NOCUT	EA	2.00000	Unit	I (M)aterial	P	Yes
1	60-0051-01	10NP 16V 6X11 C&F 5&5MM LOIE	EA	2.00000	Unit	I (M)aterial	P	Yes
1	60-0056	33NUF 16V 8X11 LS 3MM C5MM LOIP	EA	2.00000	Unit	I (M)aterial	P	Yes
1	42-0222	TRIM POT 50K OHM HORIZONTAL 10TM V CAB	EA	3.00000	Unit	I (M)aterial	P	Yes
1	WAVE SOLDER			0.00000	Lot	P (O)ther	M	No
1	32-1166	9 PIN PCB CONNECTOR	EA	4.00000	Unit	I (M)aterial	P	Yes

SECTION 7

7

MODEL-4 115V 230V CONVERSION





115V 60 Hz wiring.
Fuse size 250mA 230V
Connect pin 1 to 2 and connect both wires to **HOT.**
Connect pin 3 to 4 and connect both wires to **NEUTRAL.**

230V 50Hz wiring.
Fuse size 125mA 230V ** **NOTE THE UNIT BEING MODIFIED MUST BE RE LABELED FOR 230V 50Hz AND 125mA OPERATION.**
Connect pin 1 to **HOT.**
Connect pin 2 and 3 to each other.
Connect pin 4 to **NEUTRAL.**