

140A/180A  
FIELD SERVICE ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED : Oscillator KROHN HITE 4200 or Equivalent  
 Voltmeter SIMPSON 464 or Equivalent  
 Oscilloscope PHILIPS PM 3232 or Equivalent  
 Distortion Meter SOUND TECHNOLOGY 1700B  
 Capable of measuring THD to less than 0.02%



1. POWER SUPPLY TEST *OK*

Connect unit to ac source and check for :

- +20V dc +/-1.0V at TP5
- +15V dc +/-750mV at TP6
- 20V dc +/-1.0V at TP7
- 15V dc +/-750mV at TP8

2. FRONT PANEL ALIGNMENT *OK*

Connect a dc Voltmeter to the wiper of the RECORD CH1/CH2 POT (R11) and adjust it for 0V dc +/-25mV  
 Connect a dc Voltmeter to the wiper of the PLAY CH1 POT (R50) and adjust it for 0V dc +/-25mV  
 Connect a dc Voltmeter to the wiper of the PLAY CH2 POT (R150) and adjust it for 0V dc +/-25mV  
 Engage both CH1 and CH2 NOISE REDUCTION switches

3. ALIGNMENT PROCEDURE ABBREVIATIONS

FCO : From Console Outputs  
 TCI : To Console Inputs  
 FRO : From Recorder Outputs  
 TRI : To Recorder Inputs

4. RMS SYMMETRY ALIGNMENT

Set Oscillator to 0dBV (1.0V rms) at 60Hz.  
 Connect Oscillator to both CH1 and CH2 "FCO" terminals.

Connect Oscilloscope to TP1.  
 Adjust R34 for even RMS Waveform Peaks. (SEE DIAGRAM A)

Connect Oscilloscope to TP3.  
 Adjust R134 for even RMS Waveform Peaks.

Connect Oscillator to both CH1 and CH2 "FRO" terminals.

Connect Oscilloscope to TP2.  
 Adjust R71 for even RMS Waveform Peaks.

Connect Oscilloscope to TP4.  
 Adjust R171 for even RMS Waveform Peaks.

*Best strategy is to tweak encoder & decoder back to back & adjust for minimal W Hz THD*

*low frequency distortion deteriorates from 10 Hz to 30 Hz.*



5. VCA SYMMETRY ALIGNMENT

Set Oscillator to 0dBV (1.0V rms) at 1KHz.

Connect Oscillator to both CH1 and CH2 "FCO" terminals.  
 Connect Distortion Meter to the CH1 "TRI" terminal.  
 Adjust R16 for minimum Total Harmonic Distortion. (THD) Less than 0.1%  
 Connect Distortion Meter to the CH2 "TRI" terminal.  
 Adjust R116 for minimum THD. Less than 0.1%

Connect Oscillator to both CH1 and CH2 "FRO" terminals.  
 Connect Distortion Meter to the CH1 "TCI" terminal.  
 Adjust R49 for minimum THD. Less than 0.1%  
 Connect Distortion Meter to the CH2 "TCI" terminal.  
 Adjust R149 for minimum THD. Less than 0.1%

*best strategy  
 is to hook  
 encoder & decoder  
 back to back  
 and tune for  
 minimum  
 1KHz THD.*

6. UNITY GAIN ALIGNMENT

Set Oscillator to 0dBV (1.0V rms) at 1KHz.

Connect Oscillator to both CH1 and CH2 "FCO" terminals  
 Connect a RMS Voltmeter to the CH1 "TRI" terminal.  
 Adjust the front panel RECORD CH1/CH2 POT (R11) for a 0dBV output level.  
 Connect a RMS Voltmeter to the CH2 "TRI" terminal.  
 Adjust R111 for a 0dBV output level.

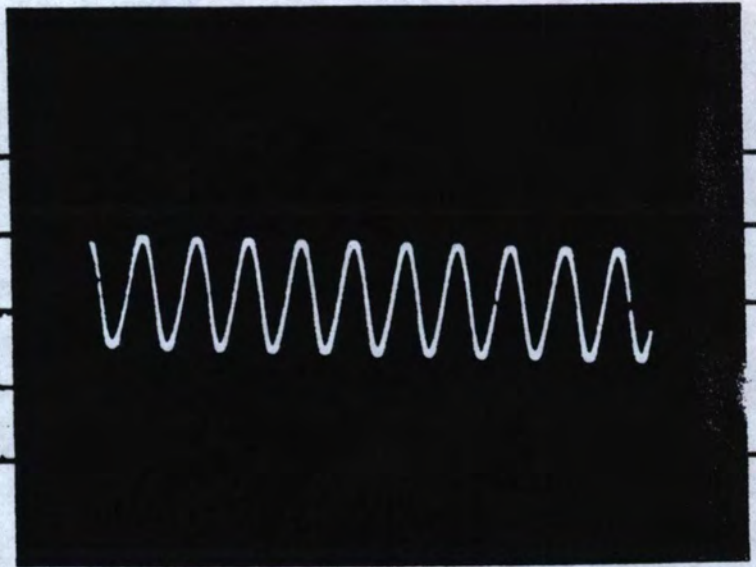
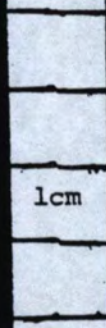
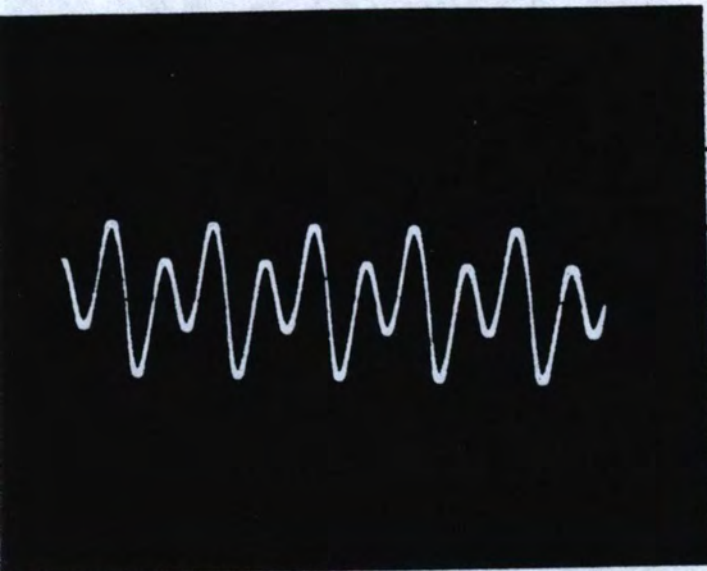
Connect Oscillator to both CH1 and CH2 "FRO" terminals.  
 Connect a RMS Voltmeter to the CH1 "TCI" terminal.  
 Adjust the front panel PLAY CH1 POT (R50) for a 0dBV output level.  
 Connect a RMS Voltmeter to the CH2 "TCI" terminal.  
 Adjust the front panel PLAY CH2 POT (R150) for 0dBV output level.



UNCALIBRATED RMS WAVEFORM

DIAGRAM A

PROPERLY CALIBRATED RMS WAVEFORM





REVISIONS

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| REV. | DESCRIPTION   | DATE     | APP'D |
|------|---------------|----------|-------|
| 01   | RELEASED      | 10/19/84 | PT    |
| 02   | PER ECO # 877 | 1/17/85  | HL    |
| 03   | PER ECO 955   | 9/25/85  | EK    |

APR 29 1987

|   |        |                          |
|---|--------|--------------------------|
| ∞ | 440020 | FINAL PHANTOM ASSY       |
| □ | 440019 | TRANSFORMER PHANTOM ASSY |
| △ | 440017 | REAR PANEL PHANTOM ASSY  |
| △ | 440016 | FRONT PANEL PHANTOM ASSY |

| REV. | 03 | 03 | 140A(DO) |   |   |   |   |   |    |    |    |    | USED ON |    |
|------|----|----|----------|---|---|---|---|---|----|----|----|----|---------|----|
| SHT. | 2  | 3  | 4        | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14      | 15 |

**dbx** inc NEWTON, MA. 02195

MAIN ASSEMBLY  
MODEL 140A

PL 400095

REV. 03

| DWG. NO. | DESCRIPTION | APPROVAL           |               |         |  |
|----------|-------------|--------------------|---------------|---------|--|
|          |             | PRELIM DATE        | FINAL DATE    | DATE    |  |
| D400095  | MAIN ASSY   | DRAWN HL 1/17/85   | PT            | 1/24/85 |  |
|          |             | CHECKED HL 1/21/85 | CHECKED PT    | 1/24/85 |  |
|          |             | PROJ ENG SPCA      | PROJ ENG SPCA | 1/24/85 |  |
|          |             | CH ENG             | CH ENG        | 1/24/85 |  |
|          |             | DFT MGR            | RELEASED PT   | 1/24/85 |  |



| ITEM | REF. DESIGNATION | DESCRIPTION                        | PART NUMBER | QTY         |
|------|------------------|------------------------------------|-------------|-------------|
| 1    |                  | P.C. ASSEMBLY                      | 460250      | 1           |
| 2    |                  |                                    |             |             |
| 3    |                  |                                    |             |             |
| 4    |                  | EXTRUSION FRONT                    | 290709      | 1 $\Delta$  |
| 5    |                  | OVERLAY FRONT                      | 210238      | 1 $\Delta$  |
| 6    |                  | EXTRUSION REAR                     | 290710      | 1 $\square$ |
| 7    |                  | OVERLAY REAR                       | 290712      | 1 $\Delta$  |
| 8    |                  | BRACKET, RACK MOUNT SIDE           | 290412      | 1 $\infty$  |
| 9    |                  | COVER, 16.937" X 5.968", RM-18-2   | 290411      | 2 $\infty$  |
| 10   |                  |                                    |             |             |
| 11   |                  | SCREW, PHMS, X-REC, 4-40 X 1/4     | 311023      | 6           |
| 12   |                  | WASHER INT TOOTH #4                | 311642      | 6           |
| 13   |                  |                                    |             |             |
| 14   |                  | SCREW # 6-32 X 5/8                 | 311046      | 4 $\square$ |
| 15   |                  | WASHER INT TOOTH #6                | 311643      | 2 $\square$ |
| 16   |                  | HEX NUT # 6-32                     | 311665      | 2 $\square$ |
| 17   |                  | SCREW, TAPPING #6 X 5/8 LG BLK OXD | 310100      | 4 $\infty$  |
| 18   |                  | BUTTON SWITCH, CHROME              | 310322      | 2           |
| 19   |                  | TRANSFORMER, POWER                 | 230027      | 1 $\square$ |
| 20   |                  | LINECORD                           | 320087      | 1           |



| ITEM | REF. DESIGNATION | DESCRIPTION                          | PART NUMBER | QTY |
|------|------------------|--------------------------------------|-------------|-----|
| 21   |                  | CONNECTOR INSULATED                  | 280089      | 2   |
| 22   |                  | TERMINAL STRIP, 12 POSITION          | 280233      | 2 □ |
| 23   |                  | DIODE, XC-4850-G, GREEN WITH TABS    | 140141      | 2   |
| 24   |                  | LED HOLDER 2 PIECE                   | 310365      | 2 Δ |
| 25   |                  | CABLE TIE                            | 310124      | A/R |
| 26   |                  | FOAM TAPE 1/8" THK X 16" LG.         | 310683      | 4   |
| 27   |                  | UL CAUTION LABEL                     | 210168      | 2 ∞ |
| 28   |                  |                                      |             |     |
| 29   |                  | SCREW, MACH. PAN HD # 6-32 X 1/2 LG. | 311045      | 2 □ |
| 30   |                  |                                      |             |     |
| 31   |                  | WASHER FLAT # 6                      | 311608      | 2 □ |
| 32   |                  |                                      |             |     |
| 33   |                  | GROMMET RUBBER 1/8 I.D., 3/16 O.D.   | 310625      | 2 □ |
| 34   |                  |                                      |             |     |
| 35   |                  |                                      |             |     |
| 36   |                  |                                      |             |     |
| 37   |                  |                                      |             |     |
| 38   |                  |                                      |             |     |
| 39   |                  |                                      |             |     |
| 40   |                  |                                      |             |     |



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REVISIONS

| REV. | DESCRIPTION   | DATE    | APP'D              |
|------|---------------|---------|--------------------|
| 05   | PER ECO # 877 | 1/21/85 | <i>[Signature]</i> |
| 06   | PER ECO # 909 | 3/19/85 | <i>[Signature]</i> |

**PRELIMINARY**

APR 28 1987

| DWG. NO. | DESCRIPTION | APPROVAL                      |                               |         |         |
|----------|-------------|-------------------------------|-------------------------------|---------|---------|
|          |             | PRELIM DATE                   | FINAL DATE                    | DATE    | DATE    |
| D340390  | SCHEMATIC   | <i>[Signature]</i><br>1/21/84 | <i>[Signature]</i><br>1/21/84 | 1/21/84 | 1/21/84 |
| C460250  | P.C. ASSY   | <i>[Signature]</i><br>1/21/85 | <i>[Signature]</i><br>1/21/85 | 1/21/85 | 1/21/85 |
|          |             |                               |                               | 1/24/85 | 1/24/85 |
|          |             |                               |                               |         | 1/24/85 |

| REV. | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 |
|------|----|----|----|----|----|----|----|----|----|----|
| SHT. | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 |

**dbx** inc NEWTON, MA. 02195

SIMULTANEOUS  
NOISE REDUCTION  
TYPE II

PL 360250

REV. 06



| ITEM | REF. DESIGNATION                        | DESCRIPTION                 | PART NUMBER | QTY |
|------|-----------------------------------------|-----------------------------|-------------|-----|
| 1    |                                         | P.C BOARD                   | 260458      | 1   |
| 2    |                                         |                             |             |     |
| 3    |                                         |                             |             |     |
| 4    |                                         |                             |             |     |
| 5    | R1, 4, 39, 42, 101, 104, }              | RESISTOR, 1K, 1/4W, 1%      | 011001      | 8   |
| 6    | R139, 142                               |                             |             |     |
| 7    | R2, 5, 40, 43, 102, 105, }              | 30K1, 1/4W, 1%              | 013012      | 8   |
| 8    | R140, 143                               |                             |             |     |
| 9    | R3, 6, 41, 44, 103, 106, }              | 23K2, 1/4W, 1%              | 012322      | 8   |
| 10   | R141, 144                               |                             |             |     |
| 11   | R7, 107                                 | 35K7, 1/4W, 1%              | 013572      | 2   |
| 12   | R8, 108                                 | 121K, 1/4W, 1%              | 011213      | 2   |
| 13   | R9, 22, 46, 59, 109, 122, }             | 10K, 1/4W, 1%               | 011002      | 8   |
| 14   | R146, 159                               |                             |             |     |
| 15   | R10, 21, 23, 26, 45, 58, 60, 63, }      | 33K2, 1/4W, 1%              | 013322      | 16  |
| 16   | R110, 121, 123, 126, 145, 158, 160, 163 |                             |             |     |
| 17   | R11, 50, 150                            | POT TRIM 5K, VERTICAL MOUNT | 070286 *    | 3   |
| 18   | R12, 51, 112, 151                       | RESISTOR, 6K98, 1/4W, 1%    | 016981      | 4   |
| 19   | R13, 52, 113, 152                       | 47R5, 1/4W, 1%              | 014759      | 4   |
| 20   | R14, 47, 114, 147                       | 51, 1/4W, 5%                | 054510      | 4   |



| TEM | REF. DESIGNATION          | DESCRIPTION                     | PART NUMBER | QTY |
|-----|---------------------------|---------------------------------|-------------|-----|
| 21  | R15, 48, 115, 148         | RESISTOR, 180K, 1/4W, 5%        | 054184      | 4   |
| 22  | R16, 34, 49, 71, 116, 134 | POT TRIM 50 K, HORIZONTAL MOUNT | 070068      | 8   |
| 23  | R149, 171                 |                                 |             |     |
| 24  | R17, 55, 117, 155         | RESISTOR, 3K9, 1/4W, 5%         | 054392      | 4   |
| 25  | R18, 54, 118, 154         | 10 K, 1/4W, 5%                  | 054103      | 4   |
| 26  | R19, 56, 119, 156         | 33 K, 1/4W, 5%                  | 054333      | 4   |
| 27  | R20, 57, 120, 157         | 39, 1/4W, 5%                    | 054390      | 4   |
| 28  |                           |                                 |             |     |
| 29  | R24, 61, 124, 161         | 90K9, 1/4W, 1%                  | 019092      | 4   |
| 30  | R25, 62, 125, 162         | 4K75, 1/4W, 1%                  | 014751      | 4   |
| 31  |                           |                                 |             |     |
| 32  | R27, 64, 127, 164         | 6K81, 1/4W, 1%                  | 016811      | 4   |
| 33  | R28, 65, 128, 165         | 165 K, 1/4W, 1%                 | 011653      | 4   |
| 34  | R29, 66, 129, 166         | 13 K7, 1/4W, 1%                 | 011372      | 4   |
| 35  | R30, 67, 130, 167         | 22 M, 1/4W, 5%                  | 054226      | 4   |
| 36  | R31, 68, 131, 168         | 20, 1/4W, 5%                    | 054200      | 4   |
| 37  | R32, 69, 132, 169         | 39 K, 1/4W, 5%                  | 054393      | 4   |
| 38  | R33, 70, 76, 133, 170     | 20K, 1/4W, 5%                   | 054203      | 5   |
| 39  | R35, 72, 135, 172         | 1 K, 1/4W, 5%                   | 054102      | 4   |
| 40  | R36, 73, 136, 173         | 604 K, 1/4W, 1%                 | 016043      | 4   |



| TEM | REF. DESIGNATION                     | DESCRIPTION                  | PART NUMBER          | QTY |
|-----|--------------------------------------|------------------------------|----------------------|-----|
| 41  | R37, 74, 137, 174                    | RESISTOR, 10, 1/4W, 5%       | 054100               | 4   |
| 42  | R38, 75, 138, 175                    | SELECT RESISTOR, 2M2, NOM.   | SELECT PER<br>168002 | 4   |
| 43  | R53, 153                             | RESISTOR, 20K, 1/4W, 1%      | 012002               | 2   |
| 44  | R78 — R100                           | NOT USED                     |                      |     |
| 45  | R176                                 | RESISTOR, 2K4, 1/4W, 5%      | 054242               | 1   |
| 46  | R77, 177                             | RESISTOR, 1K8, 1/4W, 5%      | 054182               | 2   |
| 47  | R111                                 | POT, TRIM, 5K, HORIZ. MOUNT  | 070143               | 1   |
| 48  |                                      |                              |                      |     |
| 49  |                                      |                              |                      |     |
| 50  |                                      |                              |                      |     |
| 51  | C1, 2, 15, 16, 28, 29, 41, }         | CAPACITOR, 100P, CD, S2L ±5% | 121259               | 14  |
| 52  | C101, 102, 115, 116, 128, 129, 141 } |                              |                      |     |
| 53  | C3, 6, 30, 33, 103, }                | 220P, PP ±5%MAX              | 125126               | 8   |
| 54  | C106, 130, 133 }                     |                              |                      |     |
| 55  | C4, 7, 31, 34, 104, 107, }           | 33P, CD, NPO ±5%             | 121175               | 8   |
| 56  | C131, 134 }                          |                              |                      |     |
| 57  | C5, 10, 14, 22, 27, 32, 38, 40, }    | 1/50V, RAD, EL ±20%          | 127084               | 22  |
| 58  | C48, 53, 105, 110, 114, 122, 127, }  |                              |                      |     |
| 59  | C132, 138, 140, 148, 153, 178, 179 } |                              |                      |     |
| 60  |                                      |                              |                      |     |



| ITEM | REF. DESIGNATION                          | DESCRIPTION                               | PART NUMBER | QTY |
|------|-------------------------------------------|-------------------------------------------|-------------|-----|
| 61   | C11, 42, 111, 142                         | CAPACITOR, 10N, MY ±5%                    | 123025      | 4   |
| 62   | C12, 35, 112, 135                         | 300N, MY, ±5%                             | 123196      | 4   |
| 63   | C13, 25, 37, 51, 113, 125                 | 1N, CD, Y5E, ±20%                         | 121432      | 8   |
| 64   | C137, 151                                 |                                           |             |     |
| 65   | C8, 9, 17, 18, 43, 44,                    | 100N, MY ±5%                              | 123149      | 12  |
| 66   | C108, 109, 117, 118, 143, 144             |                                           |             |     |
| 67   | C19, 20, 45, 46, 119, 120                 | 3N3, MY ±5%                               | 123350      | 8   |
| 68   | C145, 146                                 |                                           |             |     |
| 69   | C21, 47, 121, 147                         | 330P, PP ±2.5%                            | 125173      | 4   |
| 70   |                                           |                                           |             |     |
| 71   | C23, 49, 123, 149                         | 22N, MY ±5%                               | 123050      | 4   |
| 72   | C26, 52, 126, 152                         | 10, RAD, EL<br>SELECT PER<br>166005       |             | 4   |
| 73   | C36, 136                                  | 200P, PP ±2.5%                            | 125121      | 2   |
| 74   | C39, C54 — C100                           | NOT USED                                  |             |     |
| 75   | C139, C154 — C165 <sup>170</sup> ,<br>171 | NOT USED                                  |             |     |
| 76   | C166, 167, 172, 173, 176, 177             | 10N, CD, Y5E ±20%                         | 121533      | 6   |
| 77   | C168, 169                                 | 1000/35V, RAD, EL <sup>-10%</sup><br>+50% | 127523      | 2   |
| 78   | C174, 175                                 | 10/25V, RAD, EL <sup>+50%</sup><br>-10%   | 127198      | 2   |
| 79   | C24, 50, 124, 150                         | 2N2, PP, ±2.5%                            | 125802      | 4   |
| 80   |                                           |                                           |             |     |



| TEM | REF. DESIGNATION | DESCRIPTION                      | PART NUMBER | QTY |
|-----|------------------|----------------------------------|-------------|-----|
| 81  |                  |                                  |             |     |
| 82  |                  |                                  |             |     |
| 83  |                  |                                  |             |     |
| 84  | CRI, 2, 3, 4     | DIODE, IN4003GP                  | 140022      | 4   |
| 85  | CR5, 6           | DIODE, IN5818                    | 140206      | 2   |
| 86  |                  |                                  |             |     |
| 87  |                  | LEAD CONNECTOR, LED              | 310472      | 2   |
| 88  |                  |                                  |             |     |
| 89  | IC1, 3, 5, 7     | IC, LOW DISTORTION               | 146732      | 4   |
| 90  | IC2, 4, 6, 8     | IC, RMS                          | 146742      | 4   |
| 91  |                  |                                  |             |     |
| 92  |                  |                                  |             |     |
| 93  | OAI, 3, 5, 7     | OP, AMP LF353                    | 146241      | 4   |
| 94  | OA2, 4, 6, 8     | OP, AMP NE5532                   | 146282      | 4   |
| 95  |                  |                                  |             |     |
| 96  |                  |                                  |             |     |
| 97  |                  |                                  |             |     |
| 98  | T2, 3, 4, 5      | NOT USED CUSTOMER OPTION, JENSEN | JE-123-5    | 4   |
| 99  |                  |                                  |             |     |
| 100 |                  |                                  |             |     |



| TEM | REF. DESIGNATION | DESCRIPTION                        | PART NUMBER | QTY |
|-----|------------------|------------------------------------|-------------|-----|
| 101 | VR1              | VOLTAGE REG. 7815CU                | 146366      | 1   |
| 102 | VR2              | " 7805CU                           | 146356      | 1   |
| 103 | VR3              | " 7915CU                           | 146367      | 1   |
| 104 | VR4              | " 7905CU                           | 146355      | 1   |
| 105 |                  |                                    |             |     |
| 106 |                  |                                    |             |     |
| 107 | S1, S2           | SWITCH 8PDT                        | 250053      | 2   |
| 108 |                  |                                    |             |     |
| 109 | Y1 - Y13         | JUMPER, ZERO-OHM                   | 110085      | 13  |
| 110 |                  | JUMPER, TWISTED PAIR               | 320231      | 2   |
| 111 |                  | WIRE-WRAP WIRE, 24AWG, 4.75 LG     | 320232      | 24  |
| 112 |                  | HEAT SINK, TALL                    | 310450      | 2   |
| 113 |                  | SCREW PAN HD X-REC 4-40 X 5/16 LG. | 311024      | 4   |
| 114 |                  | HEX NUT 4-40                       | 311664      | 4   |
| 115 |                  | WASHER, INT TOOTH #4               | 311642      | 4   |
| 116 |                  | WASHER, NYLON, SHOULDER            | 310443      | 2   |
| 117 |                  | INSULATOR                          | 310417      | 2   |
| 118 |                  |                                    |             |     |
| 119 |                  |                                    |             |     |
| 120 |                  | SWAGE SPACER, 4-40 X 1/8 LG.       | 310022      | 5   |



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REVISIONS

| REV. | DESCRIPTION   | DATE    | APP'D |
|------|---------------|---------|-------|
| 01   | RELEASED      | 1/19/81 | PT    |
| 02   | PER ECO # 876 | 1/17/85 | HL    |
| 03   | PER ECO 955   | 9/25/85 | EK    |

|        |                          |
|--------|--------------------------|
| 440020 | FINAL PHANTOM ASSY       |
| 440019 | TRANSFORMER PHANTOM ASSY |
| 440022 | REAR PANEL PHANTOM ASSY  |
| 440021 | FRONT PANEL PHANTOM ASSY |

APR 29 1987

| REV. | 03 | 03 | 180A(DO) |   |   |   |   |   |    |    |    |    | USED ON |    |
|------|----|----|----------|---|---|---|---|---|----|----|----|----|---------|----|
| SHT. | 2  | 3  | 4        | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14      | 15 |
|      |    |    |          |   |   |   |   |   |    |    |    |    |         |    |

**dbx** inc NEWTON, MA. 02195

MAIN ASSEMBLY  
MODEL 180A

PL 40010G

REV. 03

| DWG. NO. | DESCRIPTION | APPROVAL           |                    |              |  |
|----------|-------------|--------------------|--------------------|--------------|--|
|          |             | PRELIM DATE        | FINAL DATE         | DATE         |  |
| 40010G   | MAIN ASS'Y  | DRAWN HL 1/17/85   | FINAL GA 1/24/85   | DATE 1/24/85 |  |
|          |             | CHECKED HL 1/21/85 | CHECKED GA 1/24/85 |              |  |
|          |             | PROJ ENG           | PROJ ENG           |              |  |
|          |             | CH ENG             | CH ENG             |              |  |
|          |             | DFT MGR            | RELEASED           |              |  |



| ITEM | REF. DESIGNATION | DESCRIPTION                      | PART NUMBER | QTY        |
|------|------------------|----------------------------------|-------------|------------|
| 1    |                  | P.C. ASSEMBLY                    | 460400      | 1          |
| 2    |                  |                                  |             |            |
| 3    |                  |                                  |             |            |
| 4    |                  | EXTRUSION FRONT                  | 290709      | 1 $\Delta$ |
| 5    |                  | OVERLAY FRONT                    | 210239      | 1 $\Delta$ |
| 6    |                  | EXTRUSION REAR                   | 290710      | 1 $\Delta$ |
| 7    |                  | OVERLAY REAR                     | 290714      | 1 $\Delta$ |
| 8    |                  | BRACKET, RACK MOUNT SIDE         | 290412      | 1 $\infty$ |
| 9    |                  | COVER, 16.937" X 5.968", RM-18-2 | 290411      | 2 $\infty$ |
| 10   |                  |                                  |             |            |
| 11   |                  | SCREW, PHMS, X-REC, 4-40 X 1/4   | 311023      | 6          |
| 12   |                  | WASHER INT TOOTH #4              | 311642      | 6          |
| 13   |                  |                                  |             |            |
| 14   |                  | SCREW # 6-32 X 5/8               | 311046      | 4 $\Delta$ |
| 15   |                  | WASHER INT TOOTH #6              | 311643      | 2 $\Delta$ |
| 16   |                  | HEX NUT # 6-32                   | 311665      | 2 $\Delta$ |
| 17   |                  | SCREW, TAPPING #6x5/8 LG BLK OXD | 310100      | 4 $\infty$ |
| 18   |                  | BUTTON SWITCH, CHROME            | 310322      | 2          |
| 19   |                  | TRANSFORMER, POWER               | 230027      | 1 $\Delta$ |
| 20   |                  | LINECORD                         | 320087      | 1          |



| ITEM | REF. DESIGNATION | DESCRIPTION                          | PART NUMBER | QTY |
|------|------------------|--------------------------------------|-------------|-----|
| 21   |                  | CONNECTOR INSULATED                  | 280089      | 2   |
| 22   |                  | TERMINAL STRIP, 12 POSITION          | 280233      | 2   |
| 23   |                  | DIODE, XC-4850-G, GREEN WITH TABS    | 140141      | 2   |
| 24   |                  | LED HOLDER 2 PIECE                   | 310365      | 2   |
| 25   |                  | CABLE TIE                            | 310124      | A/R |
| 26   |                  | FOAM TAPE 1/8" THK X 16" LG.         | 310683      | 4   |
| 27   |                  | UL CAUTION LABEL                     | 210168      | 2   |
| 28   |                  |                                      |             |     |
| 29   |                  | SCREW, MACH. PAN HD # 6-32 X 1/2 LG. | 311045      | 2   |
| 30   |                  |                                      |             |     |
| 31   |                  | WASHER FLAT # 6                      | 311608      | 2   |
| 32   |                  |                                      |             |     |
| 33   |                  | GROMMET RUBBER 1/8 I.D., 3/16 O.D.   | 310625      | 2   |
| 34   |                  |                                      |             |     |
| 35   |                  |                                      |             |     |
| 36   |                  |                                      |             |     |
| 37   |                  |                                      |             |     |
| 38   |                  |                                      |             |     |
| 39   |                  |                                      |             |     |
| 40   |                  |                                      |             |     |



REVOLUTIONS

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| REV. | DESCRIPTION   | DATE    | APP'D |
|------|---------------|---------|-------|
| 04   | PER ECO # 876 | 1/21/85 | JL    |
| 05   | PER ECO # 909 | 3/19/85 | JL    |

**PRELIMINARY**

APR 28 1987

|          |           |         |
|----------|-----------|---------|
| 180A(EU) | 180A (DO) | USED ON |
| REV. 04  | 05        | 04      |
| SHT. 2   | 3         | 4       |
|          | 5         | 6       |
|          | 7         | 8       |
|          | 9         | 10      |
|          | 11        | 12      |
|          | 13        | 14      |
|          | 15        | 16      |

**dbx** inc NEWTON, MA. 02195

SIMULTANEOUS  
NOISE REDUCTION  
TYPE I

PL 360400

REV. 05

SHT. 1 OF 7

| REFERENCE DRAWINGS | APPROVAL           |                    |         |
|--------------------|--------------------|--------------------|---------|
|                    | PRELIM DATE        | FINAL DATE         | DATE    |
| DWG. NO.           |                    |                    |         |
| DESCRIPTION        |                    |                    |         |
| D340500            | DRAWN JL<br>1/5/84 | PROD. JL<br>1/5/84 | 1/5/85  |
|                    | CHECKED JL         | CHECKED JL         | 1/24/85 |
| C460400            | PROJ ENG           | PROJ ENG JL        | 1/24/85 |
|                    | CH ENG             | CH ENG JL          | 1/24/85 |
|                    | DFT MOR            | RELEASED JL        | 1/24/85 |

STEAM POWERED RADIO.COM



| ITEM | REF. DESIGNATION            | DESCRIPTION                  | PART NUMBER | QTY |
|------|-----------------------------|------------------------------|-------------|-----|
| 1    |                             | P.C BOARD                    | 260458      | 1   |
| 2    |                             |                              |             |     |
| 3    |                             |                              |             |     |
| 4    |                             |                              |             |     |
| 5    | R1, 4, 39, 42, 101, 104, }  | RESISTOR, 1 K, 1/4W, 1%      | 011001      | 8   |
| 6    | R139, 142                   |                              |             |     |
| 7    | R2, 5, 40, 43, 102, 105, }  | 30K1, 1/4W, 1%               | 013012      | 8   |
| 8    | R140, 143                   |                              |             |     |
| 9    | R3, 6, 41, 44, 103, 106 }   | 23K2, 1/4W, 1%               | 012322      | 8   |
| 10   | R141, 144                   |                              |             |     |
| 11   | R7, 107                     | 133K, 1/4W, 1%               | 011333      | 2   |
| 12   | R8, 108                     | 442K, 1/4W, 1%               | 014423      | 2   |
| 13   | R9, 22, 46, 59, 109, 122, } | 10K, 1/4W, 1%                | 011002      | 8   |
| 14   | R146, 159                   |                              |             |     |
| 15   | R10, 21, 45, 58, 110, 121 } | 33K2, 1/4W, 1%               | 013322      | 8   |
| 16   | R145, 158                   |                              |             |     |
| 17   | R11, 50, 150                | POT TRIM 5 K, VERTICAL MOUNT | 070286 *    | 3   |
| 18   | R12, 51, 112, 151           | RESISTOR, 6K98, 1/4W, 1%     | 016981      | 4   |
| 19   | R13, 52, 113, 152           | 47R5, 1/4W, 1%               | 014759      | 4   |
| 20   | R14, 47, 114, 147           | 51, 1/4W, 5%                 | 054510      | 4   |

PL 360400 \* ALTERNATE PART #070029



| ITEM | REF. DESIGNATION          | DESCRIPTION                | PART NUMBER | QTY |
|------|---------------------------|----------------------------|-------------|-----|
| 21   | R15, 48, 115, 148         | RESISTOR, 180K, 1/4W, 5%   | 054184      | 4   |
| 22   | R16, 34, 49, 71, 116, 134 | POT TRIM 50K, HORIZ. MOUNT | 070068      | 8   |
| 23   | R149, 171                 |                            |             |     |
| 24   | R17, 55, 117, 155         | RESISTOR, 3K9, 1/4W, 5%    | 054392      | 4   |
| 25   | R18, 54, 118, 154         | 10K, 1/4W, 5%              | 054103      | 4   |
| 26   | R19, 56, 119, 156         | 33K, 1/4W, 5%              | 054333      | 4   |
| 27   | R20, 57, 120, 157         | 39, 1/4W, 5%               | 054390      | 4   |
| 28   | R23, 60, 123, 160         | 44K2, 1/4W, 1%             | 014422      | 4   |
| 29   | R24, 61, 124, 161         | 147K, 1/4W, 1%             | 011473      | 4   |
| 30   | R25, 62, 125, 162         | 2K21, 1/4W, 1%             | 012211      | 4   |
| 31   | R26, 63, 126, 163         | 2K67, 1/4W, 1%             | 012671      | 4   |
| 32   | R27, 64, 127, 164         | 6K81, 1/4W, 1%             | 016811      | 4   |
| 33   | R28, 65, 128, 165         | 143K, 1/4W, 1%             | 011433      | 4   |
| 34   | R29, 66, 129, 166         | 14K7, 1/4W, 1%             | 011472      | 4   |
| 35   | R30, 67, 130, 167         | 22M, 1/4W, 5%              | 054226      | 4   |
| 36   | R31, 68, 131, 168         | 20, 1/4W, 5%               | 054200      | 4   |
| 37   | R32, 69, 132, 169         | 39K, 1/4W, 5%              | 054393      | 4   |
| 38   | R33, 70, 76, 133, 170     | 20K, 1/4W, 5%              | 054203      | 5   |
| 39   | R35, 72, 135, 172         | 1K, 1/4W, 5%               | 054102      | 4   |
| 40   | R36, 73, 136, 173         | 604K, 1/4W, 1%             | 016043      | 4   |



| TEM | REF. DESIGNATION             | DESCRIPTION                  | PART NUMBER       | QTY |
|-----|------------------------------|------------------------------|-------------------|-----|
| 41  | R37,74,137,174               | RESISTOR, 10, 1/4W, 5%       | 054100            | 4   |
| 42  | R38,75,138,175               | SELECT RESISTOR, 2M2, NOM.   | SELECT PER 168002 | 4   |
| 43  | R53, 153                     | RESISTOR, 20K, 1/4W, 1%      | 012002            | 2   |
| 44  | R78 — R100                   | NOT USED                     |                   |     |
| 45  | R176                         | RESISTOR, 2K4, 1/4W, 5%      | 054242            | 1   |
| 46  | R111                         | POT, TRIM, 5K, HORIZ. MOUNT  | 070143            | 1   |
| 47  | R77, 177                     | RESISTOR, 1K8, 1/4W, 5%      | 054182            | 2   |
| 48  |                              |                              |                   |     |
| 49  |                              |                              |                   |     |
| 50  |                              |                              |                   |     |
| 51  | C1,2,15,16,28,29,41          | CAPACITOR, 100P, CD, S2L ±5% | 121259            | 14  |
| 52  | C101,102,115,116,128,129,141 |                              |                   |     |
| 53  | C3,6,30,33,103,              | 220P, PP ±5% MAX             | 125126            | 8   |
| 54  | C106,130,133                 |                              |                   |     |
| 55  | C4,7,31,34,104,107,          | 33P, CD, NPO ±5%             | 121175            | 8   |
| 56  | C131,134                     |                              |                   |     |
| 57  | C5,10,14,22,27,32,38,40,     | 1/50V, RAD, EL ±20%          | 127084            | 22  |
| 58  | C48,53,105,110,114,122,127,  |                              |                   |     |
| 59  | C132,138,140,148,153,178,179 |                              |                   |     |
| 60  | C8,9,108,109                 | 33N, MY ±5%                  | 123075            | 4   |



| TEM | REF. DESIGNATION              | DESCRIPTION            | PART NUMBER          | QTY |
|-----|-------------------------------|------------------------|----------------------|-----|
| 61  | C11, 42, 111, 142             | CAPACITOR, 10N, MY ±5% | 123025               | 4   |
| 62  | C12, 35, 112, 135             | 1, MY ±5%              | 123286               | 4   |
| 63  | C13, 25, 37, 51, 113, 125,    | IN, CD, YSE, 20%       | 121432               | 8   |
| 64  | C137, 151                     |                        |                      |     |
| 65  | C17, 18, 43, 44, 117, 118     | 100N, MY ±5%           | 123149               | 8   |
| 66  | C143, 144                     |                        |                      |     |
| 67  | C19, 20, 45, 46, 119, 120     | 3N3, MY ±5%            | 123350               | 8   |
| 68  | C145, 146                     |                        |                      |     |
| 69  | C21, 24, 47, 50, 121, 124     | 560P, PP ±2.5%         | 125222               | 8   |
| 70  | C147, 150                     |                        |                      |     |
| 71  | C23, 49, 123, 149             | 22N, MY ±5%            | 123050               | 4   |
| 72  | C26, 52, 126, 152             | 10, RAD, EL            | SELECT PER<br>166005 | 4   |
| 73  | C36, 136                      | 200P, PP ±2.5%         | 125121               | 2   |
| 74  | C39, 54, 139, 154             | 33P, CD, 52L ±5%       | 121176               | 4   |
| 75  | C55 - C100, C156 - C165,      | NOT USED               |                      |     |
| 76  | C166, 167, 172, 173, 176, 177 | 10N, CD, Y5E, ±20%     | 121533               | 6   |
| 77  | C168, 169                     | 1000/35V, RADEL, ±10%  | 127523               | 2   |
| 78  | C174, 175                     | 10/25V, RAD, EL ±50%   | 127198               | 2   |
| 79  |                               |                        |                      |     |
| 80  |                               |                        |                      |     |

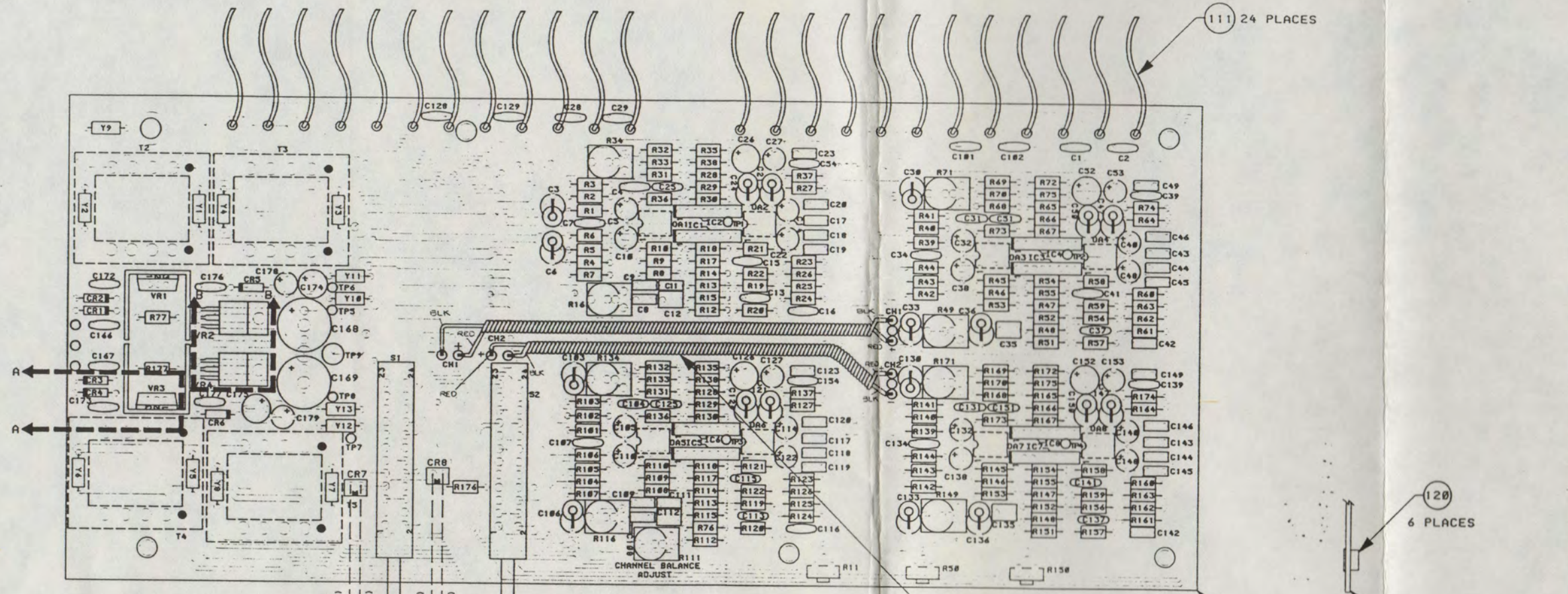


| TEM | REF. DESIGNATION | DESCRIPTION                      | PART NUMBER | QTY |
|-----|------------------|----------------------------------|-------------|-----|
| 81  |                  |                                  |             |     |
| 82  |                  |                                  |             |     |
| 83  |                  |                                  |             |     |
| 84  | CRI, 2, 3, 4     | DIODE, IN4003GP                  | 140022      | 4   |
| 85  | CR5, 6           | DIODE, IN5818                    | 140206      | 2   |
| 86  |                  |                                  |             |     |
| 87  |                  | LEAD CONNECTOR, LED              | 310472      | 2   |
| 88  |                  |                                  |             |     |
| 89  | IC1, 3, 5, 7     | IC, LOW DISTORTION               | 146732      | 4   |
| 90  | IC2, 4, 6, 8     | IC, RMS                          | 146742      | 4   |
| 91  |                  |                                  |             |     |
| 92  |                  |                                  |             |     |
| 93  | OAI, 3, 5, 7     | OP, AMP LF 353                   | 146241      | 4   |
| 94  | OA2, 4, 6, 8     | OP, AMP NE 5532                  | 146282      | 4   |
| 95  |                  |                                  |             |     |
| 96  |                  |                                  |             |     |
| 97  |                  |                                  |             |     |
| 98  | T2, 3, 4, 5      | NOT USED CUSTOMER OPTION, JENSEN | JE-123-5    | 4   |
| 99  |                  |                                  |             |     |
| 100 |                  |                                  |             |     |



| TEM | REF. DESIGNATION | DESCRIPTION                     | PART NUMBER | QTY |
|-----|------------------|---------------------------------|-------------|-----|
| 101 | VR1              | VOLTAGE REG. 7815CU             | 146366      | 1   |
| 102 | VR2              | " 7805CU                        | 146356      | 1   |
| 103 | VR3              | " 7915CU                        | 146367      | 1   |
| 104 | VR4              | " 7905CU                        | 146355      | 1   |
| 105 |                  |                                 |             |     |
| 106 |                  |                                 |             |     |
| 107 | S1, S2           | SWITCH 8PDT                     | 250053      | 2   |
| 108 |                  |                                 |             |     |
| 109 | Y1 - Y13         | JUMPER, ZERO-OHM                | 110085      | 13  |
| 110 |                  | JUMPER, TWISTED PAIR            | 320231      | 2   |
| 111 |                  | WIRE-WRAP WIRE, 24AWG, 4.75LG   | 320232      | 24  |
| 112 |                  | HEAT SINK, TALL                 | 310450      | 2   |
| 113 |                  | SCREW PAN HD X-REC 4-40x5/16 LG | 311024      | 4   |
| 114 |                  | HEX NUT 4-40                    | 311664      | 4   |
| 115 |                  | WASHER, INT TOOTH #4            | 311642      | 4   |
| 116 |                  | WASHER, NYLON, SHOULDER         | 310443      | 2   |
| 117 |                  | INSULATOR                       | 310417      | 2   |
| 118 |                  |                                 |             |     |
| 119 |                  |                                 |             |     |
| 120 |                  | SWAGE SPACER, 4-40x1/8LG        | 310022      | 5   |





NOTES:

1. REFERENCE PARTS LIST NO. PL360400.
2. SWITCH MOUNTING TABS MUST BE FLUSH TO THE PC BOARD BEFORE SOLDERING.
3. T2, T3, T4 AND T5 ARE CUSTOMER OPTION ONLY.

APR 29 1987

180A 180A(EU) USED ON

dbx INC NEWTON, MA. 02195

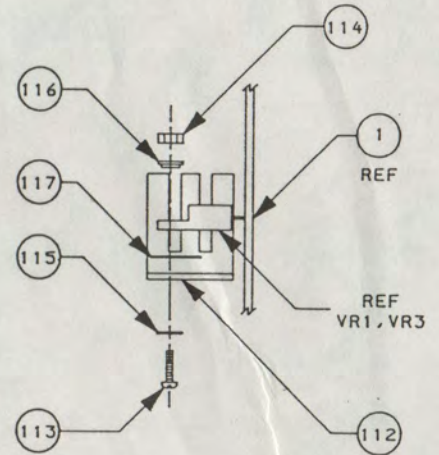
PRINTED CIRCUIT  
ASSEMBLY DRAWING  
TYPE I  
SIMULTANEOUS  
NOISE REDUCTION

|              |             |     |
|--------------|-------------|-----|
| SCALE: 1/1   | SIZE NUMBER | REV |
| SHEET 1 OF 1 | C 460400    | 03  |

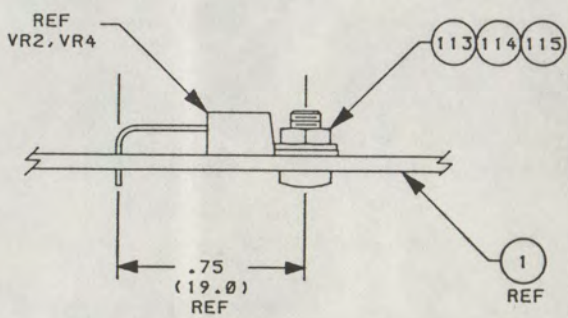
| REV | DESCRIPTION        | DR | APP | DATE    |
|-----|--------------------|----|-----|---------|
| 03  | ECO 076 REDESIGNED | SS | SS  | 1/21/85 |
| 00  | RELEASED           |    |     |         |

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|                                                                                 |           |                                      |            |
|---------------------------------------------------------------------------------|-----------|--------------------------------------|------------|
| UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES AND/OR MILLIMETERS (mm) |           |                                      |            |
| TOLERANCE ON INCHES                                                             |           | .XX +/- .015 .XXX +/- .005           |            |
| TOLERANCE ON MILLIMETERS (mm)                                                   |           | .XX +/- .38 (mm) (.XXX) +/- .13 (mm) |            |
| ANGLES                                                                          | FRACTIONS |                                      |            |
| +/- 1/2                                                                         | +/- 1/32  |                                      |            |
| APPROVED FOR PRODUCTION TOOLING                                                 |           |                                      |            |
| APR'D                                                                           | DATE      | DFT MGR                              | RELEASED   |
|                                                                                 |           |                                      | PT 1/24/85 |



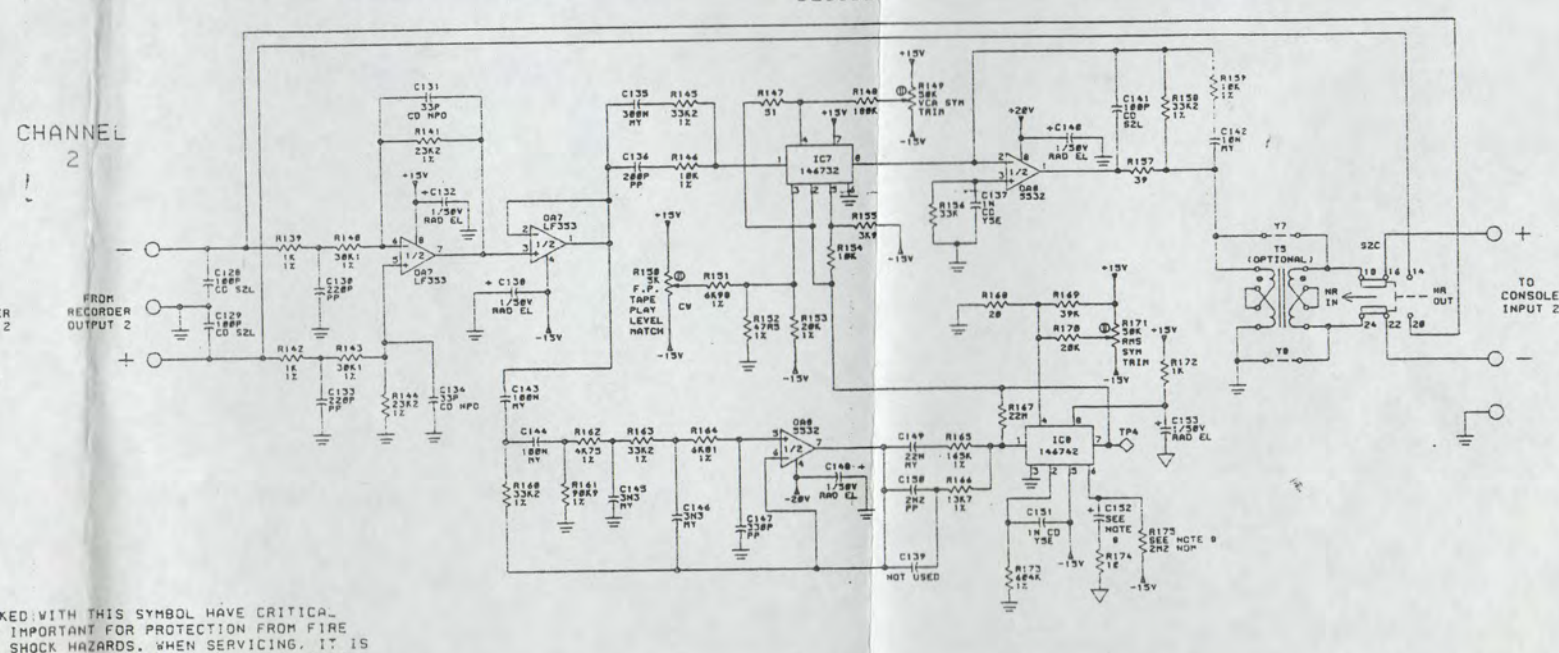
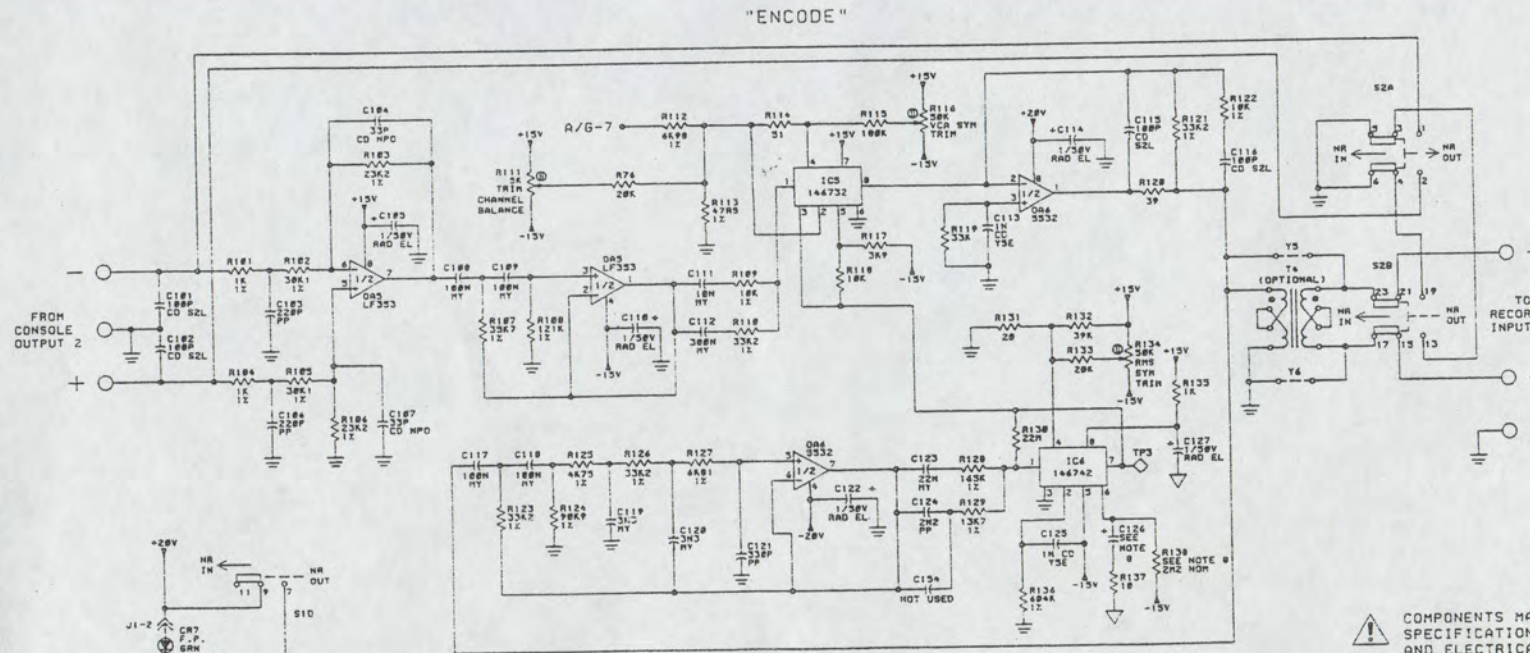
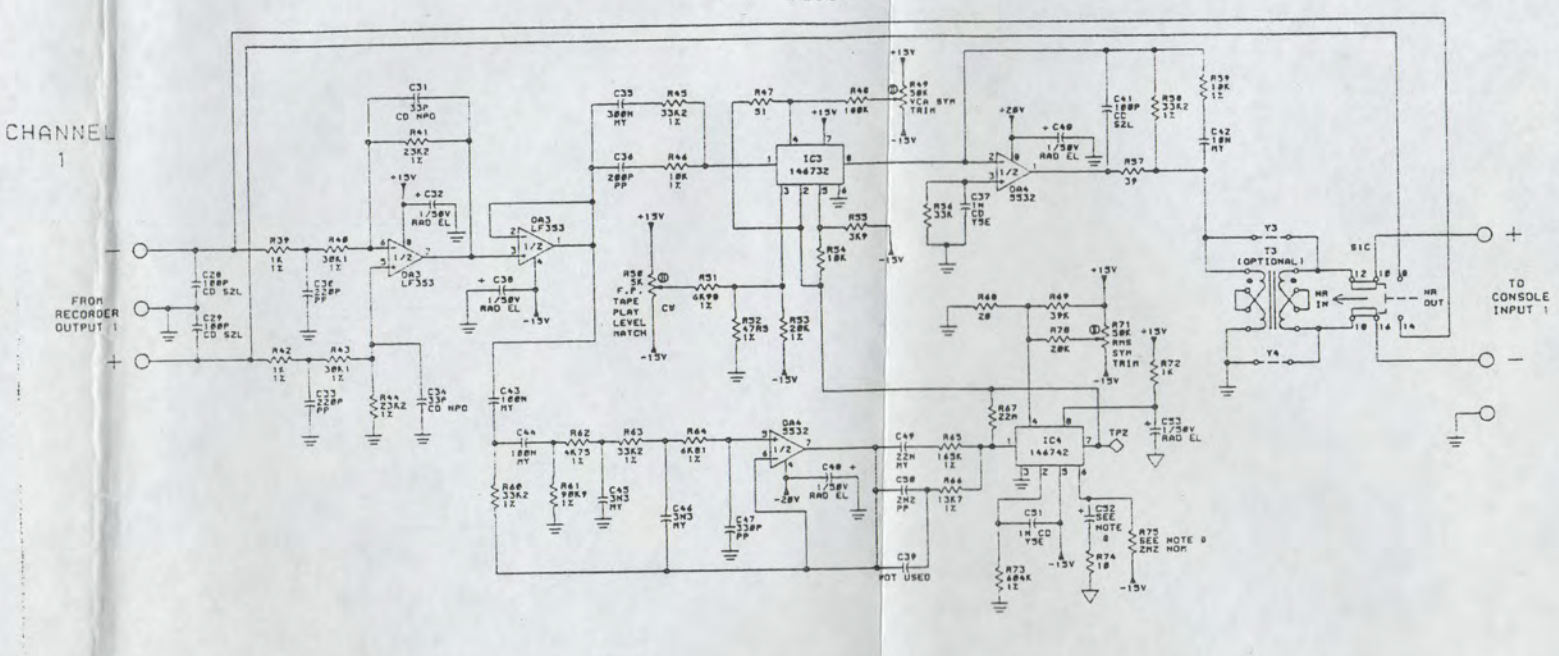
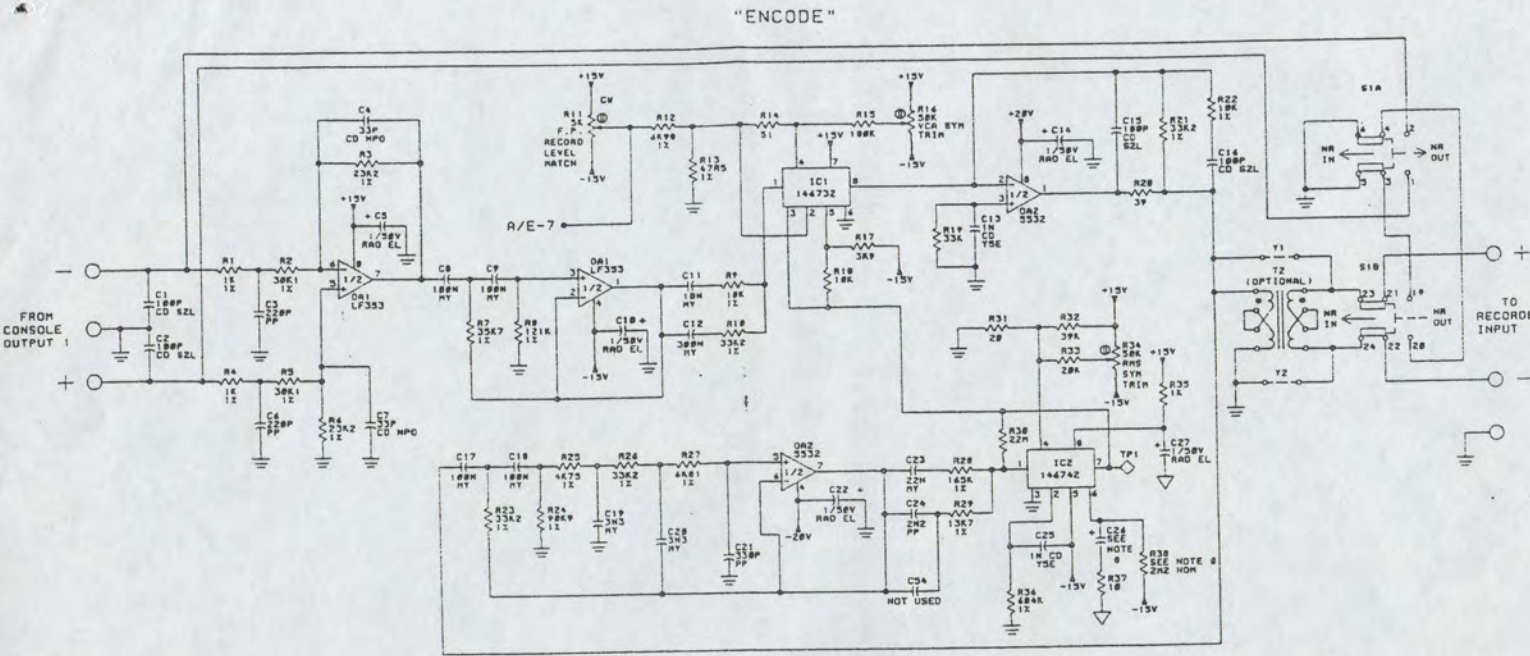
SECTION A-A  
TYP 2 PLACES  
SCALE: NONE



SECTION B-B  
TYP 2 PLACES  
SCALE: NONE

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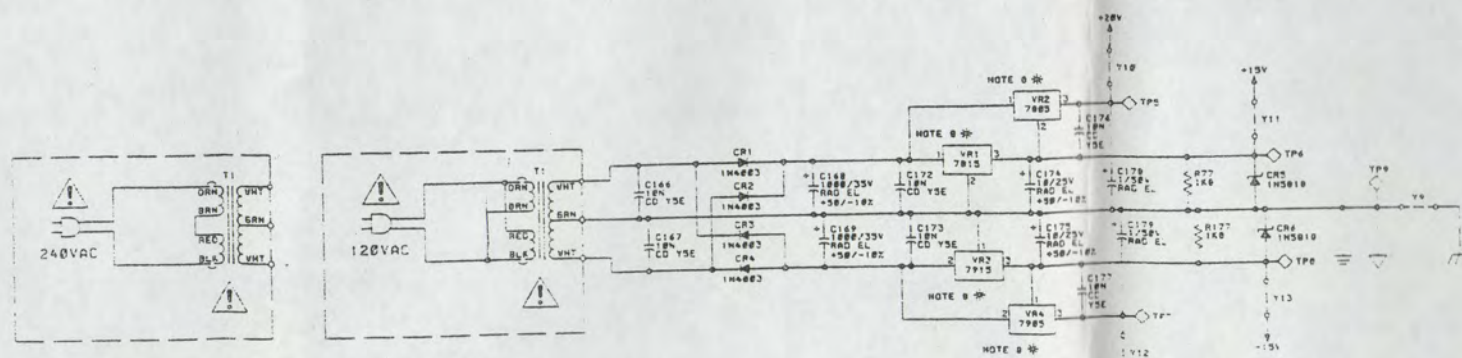


⚠ COMPONENTS MARKED WITH THIS SYMBOL HAVE CRITICAL SPECIFICATIONS IMPORTANT FOR PROTECTION FROM FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING, IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR REPLACEMENT. PRIOR TO THE RETURN OF THIS APPLIANCE TO THE CUSTOMER, AND UPON COMPLETION OF SERVICING, SERVICE PERSONNEL ARE REQUIRED TO TEST THIS UNIT FOR ADEQUATE INSULATION RESISTANCE BETWEEN THE POWER SUPPLY AND EXPOSED PARTS.

- NOTES:
1. ALL RESISTORS ARE EXPRESSED IN OHMS AND ARE 1/4W, 5%.
  2. ALL CAPACITORS ARE EXPRESSED IN MICROFARADS.
  3. ALL MYLAR CAPACITORS ARE +/- 5%.
  4. ALL YSE CERAMIC DISC CAPACITORS ARE +/- 10%.
  5. ALL POLYPROPYLENE CAPACITORS ARE +/- 2.5%.
  6. ALL RADIAL ELECTROLYTIC CAPACITORS ARE +/- 20% AND ARE LOW LEAKAGE.
  7. SELECT A 10 MFD ELECTROLYTIC CAPACITOR (C26, C52, C126, C152) WITH SELECTION PROCEDURE 166005 GROUP A OR B.
  8. SELECT RESISTOR (R38, R75, R138, R175) WITH SELECTION PROCEDURE 168002 GROUP A OR B.
  9. \* INDICATES HEATSINK IS ATTACHED TO THE DEVICE.
  10. ▽ DENOTES GROUNDS ARE TIED CLOSELY TOGETHER AND RETURN TO CENTRAL GROUND SEPARATELY.
  11. T2, T3, T4 AND T5 (SOURCE CONTROL OUTPUT TRANSFORMER) ARE JENSEN, MFR'S P/N JE-123-SPC.

|                        |                                       |
|------------------------|---------------------------------------|
| J2                     |                                       |
| Y5                     |                                       |
| TP9                    |                                       |
| S2                     |                                       |
| VR4                    |                                       |
| IC8                    |                                       |
| DAB                    |                                       |
| Y13                    |                                       |
| CR8                    |                                       |
| C179                   | C55-C100,<br>C155-C165,<br>C170, C171 |
| R177                   | R79-R100                              |
| LAST USED              | NOT USED                              |
| REFERENCE DESIGNATIONS |                                       |

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APPROVALS

dbx INC NEWTON, MA 02195

SCHEMATIC  
SIMULTANEOUS  
NOISE REDUCTION  
TYPE II

SCALE: NONE | SIZE NUMBER: 0 340390 | REV: 105

SHEET 1 OF 1

APR 29 1987