



Customer Service

A Harman International Company

3 Oak Park Bedford, MA 01730
Tel (781) 280-0300, Fax (781) 280-0499
email: csupport@lexicon.com

Sales Administration, Spares, Product & Technical Support and Repair Services

M480L/LARES REPAIR PROCEDURE

The purpose of this document is to assist authorized Lexicon Service technicians in repairing and updating returned units to current manufacturing standards. This and its associated procedures are the factory repair standard and are recommended to authorized distributor service centers. This procedure is to be used in conjunction the product service manual, technical bulletins and with standard performance verification, troubleshooting and QC procedures. Some of the information contained herein may be proprietary in nature and should be treated by Lexicon and its representatives as such.

Part 1. Mandatory repairs ALL RETURNS

1. Confirm complaint(s) and repair (see Part 3, Troubleshooting Notes).
2. Clean unit as required including all rotary pots and jacks with no-residue cleaner.
3. Seat all components firmly into sockets.
4. Inspect insulation displacement for proper connection (reseat wires if needed)
5. Reseat all cables.
6. E.C.O. 860703-00 "A" POWER SUPPLY change R13 to 202-00501 150ohm, R6 to 203-02655 6.04K, and C5 to 245-03610 .01uf. (s/n 1008-1018,1021 only)
7. Vacuum the entire unit and clean air filter.
8. Change R239 MOTHERBOARD "A" to 220 ohm 202-00518. E.C.O. 860902-00 (speed up mute) (s/n 1000-1090 only) (effective s/n 1091)
9. Remove VERTEX label on host board and place a paper label under it. If VERTEX label will not hold use adhesive.
10. Upgrade to V1.23. Parts charged to 451-11. See upgrade instructions.
11. Trim jumpers 1, 2 & 3 on Rev.1 Host boards so they don't hit HSP when installed.
12. Add new retainer strap 702-04520, Covers 700-04395, transformer bracket "C" 701-04990 when material available. "A" (effective s/n 1271)
13. E.C.O. 870604-00 Rev.1 Host Etch cut 8 Mhz clock. Rev.1 U104 pin 11. Rev.3 done. (effective s/n rev.3 s/n 1388 "B" host 1-1435) Rev.1 1351 "A"
14. E.C.O. 870713-01 Rev.1 & 2 MOTHERBOARD Change R28 to 330 ohm 202-00521. To improve opto-isolator time over temperature. (effective s/n 1382)
15. E.C.O. 870908-00 Host Add pull up resistor AS/ to correct power up. Remove Rev.3 pull down resistor on ZCLK. Rev 1 = add 10K 202-00549 from pin 11 U22 to C19 (+5vdc). Rev.3 = add 10K 202-00549 from pin 11 U20 to C18 (+5vdc). On rev.1 only remove R62 pull down from U44.7 to feedthrough. (effective s/n 1439 "C")

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16. Check Host boards to make sure 4538 installed. Works properly on power up and power fail reset. (they caused intermittent power up U45 rev.1 U36 rev.3)
17. E.C.O 871026-00 Host Rev.3 and up. Change 350-05801 peak pal to V1.10 to correct intermittent headroom indication without input. (effective s/n 1498) sent 57 pal's to GEXCO domestic will be as needed.
18. 880120-00 SME Cut 5 etch, add 5 jumpers. (all boards shipped prior to eco to be exchanged, approximately 24) (s/n 1009-1026, 1029-1032, 1034, 1038,1041, 1044-1046 were shipped without E.C.O..
19. 881215-01 HOST Rev.1 and up. Add jumper between cathode VR1 & VR2. Provide wider range of PLL. effective s/n 2160
20. 890619-00 HOST Rev.1 Delete U17 74HCT175 add 330-07710 74AC175. Rev.3 & up Delete U16 74HCT175 add 330-07710 74AC175. To correct audio drop out at 44.1kHz sample rate.
21. E.C.O. 900104-00 Add LOCTITE #609 to screw threads of jacksocket 527-00138.
22. E.C.O. 900411-01 HOST Rev. 4 Only Power up/down fail RAM protection effective s/n 2613.
23. ECO 900626-01 HOST Rev 5 remove and add etch on solder side to eliminate short.
24. ECO 901129-00 Change fuse ratings, verify proper fuse during repair.
25. ECO 910425-00 Check Rev 2 Mother board for this ECO.
26. Check for correct fuse per ECO 910503-00, 1.6AMP, Qty 2 for AC line.
27. When any HSP is repaired and the Mainframe is running version 3.00, version 3.01 firmware must be shipped to the customer with the repair or be put in the HOST Bd. This is part of ECO 910917-00 and 910917-00-A.
28. ECO 911015-00, HOST Bd, Rev 4,5,6,7; Correct marginal timing in DMAREQ reset circuitry which contributes to intermittent muting during program loads and "MIX" paramter updates. Delete Stk # 330-04567, IC 74HCT32, U25 and add Stk# 330-07599 IC 74AC32, U25.
29. ECO 920311-01 SME Bd, Rev 2 & 3; To eliminate the occasional WC Timeout error during diagnostic testing. Install a jumper from U3, pin 10 to U3, pin 16.
30. ECO 920521-00 HOST Bd, Rev 3-8;Change R21 from Stk # 203-00488 to 13.3K , Stk #203-02701; To improve power up reset circuitry.
31. ECO 921211-00 HOST Bd, Rev 3-8; Change U25 from 74AC32, (Stk 330-07599) to 74ALS32 (Stk 330-09643), Add R66, 220 ohm, (Stk 202-00518). This to reduce reflections on Ramcasel/signal to generate a more reliable "chip enable" for the Host Bd RAM cart Data and address buffers as well as the RAM/ROM cart itself.

Part 2. Optional repairs AS NEEDED

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1. Any of the E.C.O.'s listed in part 4 may be done if a unit is not meeting specification.
2. Motherboard - "C" Improve high level output performance of hybrid. E.C.O. 861015-00 Add 8 caps to hybrid 5200 C229-236 33pf 245-03868 (effective s/n 1149)
3. Improve 20kHz THD E.C.O. 870317-00 Delete C64, C69, C74, C79; remove pins 5 & 12 on U36, U38, U40, U42 main board (effective s/n 1271).
4. 871228-00 HSP Change U45 to 330-04567 74HCT32 (was F32) (effective s/n 1550 "C") Note: No "RS" part at this location.
5. 890627-00 MOTHERBOARD change R33 to 1.2k 202-00530 widen range of PF/ calibration.
6. 931012-00 V4 Software as requested by customer purchase/repair order. (software upgrade-021-09329)
7. 940413-00 V4.01 Software: Fixes PONS error; UPDATE all LEXICON OWNED Cons, New Stock; UPDATE R/E Stock only if V4 Part Number; UPDATE Customer units only if V4 Upgrade purchased or V4.00 already installed
8. DW940610-00: Can substitute 74HC245 (330-08952) @ U87 on SME (024-05830) for 74HCT245 (330-04572). Driven from HCT on HOST so HC is OK. Reason: Diagnostic failures of DMA Test (board functions). Qty covered by DW is 15 on WP 480-6150 and any service requirements.
9. 950509-00 V4.10 Software release to correct bugs in the Midi sampler trigger from a note, and program loading problem interrupt change Dual mono audio problem A to B lead some fuzz in the Cascade mode.
10. If you have an M480L that is failing intermittently, check for the Rev level of the Host board. If the Host board is Rev 10, using a DVM meter set for measuring continuity, check the + 5 volt / VCC connections on several IC's and Bypass capacitors various points around the board. Install wire jumpers for any opens found.
11. Problem: There have been complaints from a "few" customers about the fan in the M480L and LARES being noisy. The fan was changed in the product when the original fan became unavailable. This new fan is somewhat noisier than the original fan. LARES installations are somewhat more susceptible to this being a 'real' problem because the main frame may be located in an area affected by noise, where most M480L mainframe installations are in machine rooms where noise is not an issue. Solution: An ECO (970707-00) has been released to add a new FAN ASSY to the LARES production BOM. The ECO will be effective approx. 3/98 due to part lead times. The ECO also allows for the installation of the FAN ASSY for service replacements of M480L with a complaint of fan noise. It is important to confirm the cause of fan noise complaints, i.e. is the fan defective or is the fan operating properly but unacceptably noisy due to installation environment. The FAN ASSY is available as a service option. LARES units returned for repair should have the FAN ASSY updated. We will install it in M480L units returned for repair with legitimate noisy fan complaints. We can sell the FAN ASSY

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as a service option, price TBD, P/N 024-12587. A service bulletin will not be issued, the option includes installation instructions. LARES customers with noisy fan complaints should be referred to LARES ASSOCIATES.

12. ECO000808-00; new part number for location U51, HSP; certain manufacturers of IC,DIGITAL,74HCT04 have caused failures at location U51; a new P/N has been created to be used in U51 location only for replacements and new builds. New builds starting with HSP SN: 10834
 - Del: 330-04260 IC,DIGITAL,74HCT04
 - Add: 330-14635 IC,DIGITAL,74HCT04 (SELECT); note: T.I. part CD74HCT04E only; no substitutions

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Part 3. Troubleshooting notes

- Always check battery on suspect host problems.
 - Polypro capacitors are problem parts which is due to their construction. They are weak and become intermittent.
 - Refer to production testing procedures or service manual for current specifications and methods of test.
 - Refer to current software descriptions in owners manual for use of unit.
 - 1610 interface can only be tested with twisted pair RS422 cable.
 - Some early units had the foldback set at 10 amps. (now all 8.5amps)
 - First Rev.2 HSP is 2-1241 "A" in mainframe 480-1119.
 - First Rev.2 Motherboard "B" is in mainframe 480-1119.
 - The first 20 units shipped had a HOST board swap to V1.10 plus hardware changes.
 - 365-04284 Z80 4MHz CMOS Toshiba were found in test which fail diagnostics only. Work fine in all systems.
 - 860403-01 Ulveco power xformers with color changes on wires shrink tube (effected s/n 1000-1149)
 - 860826-02 Shorten wire RFI gnd. (effective s/n 1149)
 - Check sockets for broken pins (refer to Texas Instruments C89 bulletin)
 - 880516-02 HSP rev.2 (select part) U45 can not be Radiation Semiconductor, use Samsung 74HCT32 330-04567.
 - On some difficult digital problems try changing U9 on Host to LS04.
 - There was 31 Rev.2 Host boards built. 1-1802 - 1-1806, 1-1809, 1-1810, 1-1817-1-1840.
 - Host Rev. 4 27256-20C date code 8615YP can cause mainframe link fail or intermittent ram fail due to A15 floating. If A15 is jumpered to +5 it will work reliably.
 - Production found LF412 @ U67 bad for noise and were removed from spec sheet per ECO 890516-00.
 - 920120-00A Motherboard Rev 3 proto type serial # M-3602 & M-3603 has hole problems for installation of J8 & J9 XLR pins 1,2, & 3; and C15 & C26 (-) negative leads fitting in hole. Leads need to be trimmed for leads to fit in holes, per memo attached to ECO.
 - 920903-02, Z80, if you find an SGS Z80 in any product, it only needs to be changed if it has a problem. For the most part they work fine.
 - 931012-00 V4 Software - Requires >Rev 1 Host. Diagnostics require V4 Diag Cartridge (750-09358).
 - 940413-00 V4.01 Software: Fixes PONS error; UPDATE all LEXICON OWNED Cons, New Stock; UPDATE R/E Stock only if V4 Part Number; UPDATE Customer units only if V4 Upgrade purchased or V4.00 already installed;
- PRODUCTION SERIAL NUMBERS REWORKED TO V4.01: 4017, 4095, 4099, 4107, 4113-4115, 4118, 4119, 4125.**

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- DW940729-00 - Murata filter unspec'd part used qty 170 for 380-04512
- ECO980417-00 Replace discontinued Motorola part MC68008, P/N 365-04594 with 024-12910 ADPTR BD,ASSY,68008 [Note: for spare parts sales, 023-12909 ADPTR BD,PRE-TEST,68008]. Use existing stock of P/N 365-04594 for repair of older M300/M480L. Replacement has not been tested in older revs but may work.
- DW990913-00: temporary replacement of LED at CR31; replace P/N 430-04862 with 430-07325 on 60 units serial numbers 5681-5741
- DW991213-00: HSP MMU, P/N 330-03766; waive test parameter from VDD 5.4V to 5.3V for better yield on test results from Universal Semiconductor

Part 4. Engineering change orders

1. 860129-00 Use 11mm knob
2. 860204-00 Cost reduce mechanical package
3. 880218-00 Power supply add spacer.
4. 860220-00 Host errors Rev 0
5. 860220-01 HSP errors rev 1
6. 860220-02 Revise cable to ram cart
7. 860221-00 Correct cage kit
8. 860221-01 Correct finish kit
9. 860227-00 Etch cut and jumpers motherbrd Rev 1
10. 860305-00 HSP correct E.C.O. 860220-01
11. 860306-00 Chassis error overlay
12. 860306-01 Host Rev 0 move wires to component side
13. 860307-01 Power supply change CR5 to Z5.6 1%
14. 860320-00 Host error silk-screen
15. 860324-00 HSP use 15MHz version ARU and change poprivet
16. 860324-01 Host change pop rivet
17. 860326-00 Host Rev 0 add 1610 board
18. 860326-00-A Correct E.C.O. 860326-00
19. 860328-00 Host add label VRTX
20. 860402-00 Host Rev 0 etch cuts, wires and add resistor
21. 860402-01 HSP etch cuts and wires
22. 860402-00-A Host Rev 0 correct E.C.O. 860402-00
23. 860403-00 Motherbrd. resistor changes level change
24. 860403-01 Ulveco power xformers with color changes on wires shrink tube (effected s/n 1000-1149)
25. 860417-00 Motherbrd. add .01uf C221
26. 860417-01 Correct cage hardware
27. 860421-00 Host Rev 1
28. 860425-00 Power supply change Q1 to RCA, change washers brittle in stock, add thermal grease, torque 6-8 in-lbs, change C2 to .1uf, make quick disconnect wires.
29. 860508-00 Host Rev 0 & 1 Allow 20 bit 1610 change ROM 350-04867 V1.0

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30. 860508-01 Host Rev 0 & 1 Change U8 to RCA (Zytrex no good) 74HCT74
31. 860508-02 Motherbrd Rev 1 & 2 change R38 to 10k add R239 2k
32. 860513-00 Host Rev 0 & 1 add resistors R57-60 1k
33. 860528-01 Power supply Rev 1 change R3 to 4.99k, R6 to 3.01k, C8 to .022uf

-----Scrap all Host Rev 0 boards-----

34. 860603-00 Host Rev 1 change C10,11 to 5pf, add R57,58 1k, add R59 100k, add U113 74F74, cuts and jumpers.
35. 860603-00-A Host Rev 1 correct E.C.O. 860603-00 Page 3 of 4
36. 860603.00-B Amend eco 860603-00 page 4 of 7 to component side.
37. 860603-01 HSP Rev 1 & 2 change U110 to 74HCT08
38. 860612-00 HSP Rev 1 & 2 Cuts and jumpers
39. 860618-00 Host Rev 1 change R21 to 510ohm
40. 860618-01 Host Rev 1 Change PAL 350-04709 V1.00
41. 860618-02 Motherbrd Rev 1 & 2 Socket U3,4,12,58,66
42. 860618-03 Motherbrd Rev 1 & 2 correct B.O.M. errors
43. 860625-00 Host Rev 1 change U101 to 74HC08, beef up ground adding wire
44. 860703-00 Power supply change R13 to 150ohm, R6 to 6.04k and C5 to .01uf
45. 860711-00 HSP Rev 2 only two jumpers
46. 860717-00 Host rev.1 add 3 resistors 5.1K, add wire, change to V1.10.
47. 860717-00-A Correct E.C.O. 860717-00
48. 860721-02 Host Rev 1 cut and jumper for brownout
49. 860725-00 Correct finish kit add four 541-00780 bumper feet
50. 860826-00 Change handle FP
51. 860826-00-A Cancel E.C.O. 860826-00 handle change
52. 860826-01 Make interface label universal
53. 860826-02 Shorten wire RFI gnd. (effective s/n 1149)
54. 860826-02-A Wire too short 675-04686 to 4.0" "A"
55. 860902-00 Socket U30, U32 motherboard, change U30, U32 from OP-37 to 5534, change R239 from 2K to 220ohm (effective mainframe s/n 1091) "B" Rev 2 motherboard
56. 861002-00 Change gnd from poprivet to screw / nut (effective s/n 1181) "C"
57. 861015-00 Add 8 caps to hybrid 5200 C229-236 33pf 245-03868 (effective s/n 1149)
58. 861015-00-A add 720-03571 kapton tape C229-236
59. 861104-00 Version 1.20 software update (2 512K, 1 256K, & PAL change V2.00)
60. 861104-00-A Pal V2.10 and U42 512K Version 1.20 was sent out for beta test only (not released). Thirty sets

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- went out. Version 1.23 was released effective s/n 1196. 195 updates were shipped to dealers.
61. 861104-00-B Version 1.23 release
 62. 861104-00-C document change for V1.23
 63. 861126-00 Change paint spec "textured" (effective s/n 1210)
 64. 870119-00 Larc display sticks x8 change to x4 per stick new part number 430-04985 need two for replacement.
 65. 870219-02 Interface adapter hole specs.
 66. 870213-00 Front panel basket weld four corners 700-04393 (effective s/n 1271)
 67. 870218-00 Chassis change retainer strap 702-04520, covers 700-04395, transformer "C" bracket 701-04990. (to improve structural integrity) (effective s/n 1271 on and 1182 was also done Note: strap was effective s/n 1237
 68. 870218-00-A Chassis add 644-04527 washer, 644-05802 washer and increase 640-04691 to 3 1/4 in. (effective s/n 1271)
 69. 870219-01 Interface adapter add 750-04978 (update documents) "D" 70. 870317-00 Delete C64, C69, C74, C79; remove pins 5&12 on U36, U38, U40, U42 main board (effective s/n 1271). "B"
 71. 870317-01 Delete R4, R5 HSP Rev.2 (effective s/n 1329)
 72. 870318-00 Rev.2 Host never built rev.2
 73. 870318-00-A For rev. 3 rev.2 never built.
 74. 870416-00 Rev.2 Host two wires, two etch cut. (never built rev.2 this version later built 30 which
 75. 870416-00-A Cancel rework on e.c.o. 870416-00.
 76. 870615-00 Rev.3 Host etch cut and wire. (effective s/n 1388) "A" rev.1 "B" rev.2 "A"
 77. 870604-00 Rev.1 & 3 Host Etch cut 8 Mhz clock. Rev.1 U104.11 Rev.3 U21.8 near pin 7. "B" (effective s/n rev.3 s/n 1388 "B" host 1-1435) Rev.1 1351 "A"
 78. 870615-00 Host Rev.3 Correct wiring error, add PAL 16P8A 350-05824 V3.00. (effective s/n 1388 host 1-1435)
 79. 870615-00-A Host Rev.3 correct errors on 870615-00.
 80. 870709-00 Host Rev.3 change BOM. (effective s/n 1388 host 1-1435)
 81. 870713-01 Rev.1 & 2 motherboard Change R28 to 330 ohm 202-00521. To improve opto time over temperature. (effective s/n 1382)
 82. 870728-00 Host Rev.3 add wire with lifted pin U7.33 to xtal. (effective s/n 1388) (rev. 3 host 1-1435)
 83. 870728-00-A Applies to Rev. 3 only (to clarify 870728-00)
 84. 870811-00 Host delete W2 on bom
 85. 870811-01 SME Bom changes

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86. 870908-00 Host Add pull up resistor AS/ to correct power up. Remove Rev.3 pull down resistor on ZCLK. Rev 1 = add 10K 202-00549 from pin 11 U22 "C" to C19 (+5vdc). Rev.3 = add 10K 202-00549 from pin 11 U20 to C18 (+5vdc). On rev.1 only remove R62 pull down from U44.7 to feedthrough. (effective s/n 1439) "C"
87. 871009-00-A SME add socket U177.
88. 871026-00 HOST change peak pal to V1.10 (effected s/n's are 1388-1497)
89. 871123-00 SME delete 4 jumpers W10,11,16,17. (ID code)
90. 871203-00 HOST V2.00 update four Roms, four new part #'s due to the continuing of V1.23 software. (the V2.00 is for SME and V2.00 update).
91. 871228-00 HSP Change U45 to 330-04567 74HCT32 (was F32) (effective s/n 1550 "C")
92. 880120-00 SME Cut 5 etch, add 5 jumpers. (all boards shipped prior to ECO to be exchanged, approximately 24)
93. 880128-00 HSP rev.3 create rev.3 HSP effective s/n 1791 HSP "D" (HSP's rev.3= 2-2549-2552, 2-2564, 2565, and then 2-2590 on)
94. 880513-01 HOST 8 jumpers, 3 etch cuts Rev.2 boards (31 boards built labeled Rev.2. effective s/n 1753-1783 31 Rev.2 Host boards built. 1-1802 - 1-1806, 1-1809, 1-1810, 1-1817 -1-1840.
95. 880516-02 HSP rev.2 (select part) U45 can not be Radiation Semiconductor, use Samsung 74HCT32 330-04567.
96. 880524-02 System diagnostics introduce V1.00 SME diagnostic cartridge. (replace all 750-06219 with 750-06220)
97. 880922-01 Correct drawing to match new moulded cables.
98. 880923-03 Diagnostic cart rev. to V1.01.
99. 881109-00 Host rev.4 nomenclature.
100. 881215-01 HOST Rev.1 and up. Add jumper between cathode VR1 & 2. Provide wider range of PLL. effective s/n 2160
101. 890213-00 Release V3.00 software. effective s/n 2203 (02/24/89)
102. 890213-00-A Delete U43 350-04965 27512, add U43 350-04357 27256.
103. 890213-00-B add V3.00 release notice & reg card to software update.
104. 890516-00 Mainboard replace U67 LF412 with TL288. Correct noise problem. (LF412 removed from spec)
105. 890619-00 HOST Rev.1 Delete U17 74HCT175 add 330-07710 74AC175. Rev.3 & up Delete U16 74HCT175 add 330-07710 74AC175. To correct audio drop out at 44.1kHz sample rate.
106. 890619-01 SME BOM change Rev.3 board U177 no socket now.

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- 107. 890627-00 MOTHERBOARD change R33 to 1.2k 202-00530 widen range of PF/ calibration. effective s/n 2365 -->
- 108. 890712-00 Add "Lexicon Digital Audio" sticker to shipment.
- 109. 891128-00 350-04710, 43256 150ns replaced by 350-05841 43256 100ns. Can use either speed.
- 110. 900104-00 Add LOCTITE #609 to screw threads of jacksocket 527-00138.
- 111. 900116-00 Add message to owners manual "Caution: Do not remove or install the nonvolatile memory cartridge while power is applied to the 480L."
- 112. 900406-04 Ship kit Delete 680-04734 10' RS-422 cable, add 070-08378 notice which offers cable at no charge to users who would like.
- 113. 900411-00 Program Cartridge Add (2)740-03170, (1)740-08379 caution labels.
- 114. 900411-01 HOST Rev. 4 Only Power up/down fail RAM protection effective s/n 2613.
- 115. 900411-01-A Correct page 18 drawing
- 115A. 900411-01B Rev 5 & 6 HOST boards perform ECO per ECO 900411-01.
- 116. 900626-01 HOST Rev 5 remove and add etch on solder side to eliminate short.
- 117. 900507-00 Delete RAM cartridge 750-08215, 750-08216, Create ROM cartridge 750-08528, 750-08529. Recall all ram carts from field, replace with new rom cart.
- 118. 900928-00 Make BOMS more compatible with MINX System.
900928-00-A Create four (4) voltage options chassis and assembly BOMs.
- 119. 901012-01 Varactor Diode spec change MV209 M2 are obsolete, now MV209.
- 120. 901129-00 To change fuse rating to meet CLA requirements.
- 121. 901129-00-A Update ECO.
- 122. 901129-00-B Correct ECO.
- 123. 910123-01 Add CLA approved labels.

Release Program Cart V1.01

- 124. 910411-01 Release, Stk # 350-08523, Program Cart Version 1.01.
- 125. 910425-00 To prevent a short on Rev 2, Mother Bd, between board and chassis
126. 910701-00 To correct nomenclature error for R21 and R22 on Mother Board, Rev 2.

Release HOST V3.01 software

- 127. 910917-00 Install version 3.00 to reduce the amount of noise generated when a configuration, program or size (revert ALGO) change occurs. Implement ECO in

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- units serial number 3200 to 3307. Impliment ECO in all units having V3.0 software when the HSP board is changed or repaired.
- 127A. 910917-00A Install version 3.01 to revise firmware to display correct firmware version on LARC power-up for V3.01.
 - 128. 911015-00 Correct marginal timing in DMAREQ reset circuitry which contributes to intermittent muting during program loads and "MIX" paramter updates. Delete Stk # 330-04567, IC 74HCT32, U25 and add Stk# 330-07599 IC 74AC32, U25. To done during repair process on an as needed basis.
 - 129. 911024-00 To add program and preset cartridges to the 480l shipments. All future sales of 480l's will included these items.
 - 130. 920120-01 MOTHERBOARD, Rev 2, correct power fail circuit to prevent corruption of user registers. There is no product in the field.
 - 130A. 920120-00A MOTHERBOARD, Rev 3, correct artwork for Rev 3
prototype motherboard for Rev 4 production buy.
Cover component
installationproblem with Rev 3 proto type boards,
Serial **M-3602 M-3603**.
 - 131. 911223-00 LARC, this ECO is to remove the cassette option from the Larc. It is not required to do this in repair.
 - 132. 920311-01 SME Bd, Rev 2 & 3; To eliminate the occasional WC Timeout error during diagnostic testing. Install a jumper from U3, pin 10 to U3, pin 16.
 - 133. 920521-00 HOST Bd, Rev 3-8; Change R21 from Stk # 203-00488 to Stk #203-02701; To improve power up reset circuitry.
 - 134. 920619-00 FP Latch hole deminsions have changed.
-If you have to replace the latch on the FP with the new latch it will be necessary to enlarge the holes to accomodate the new latch. To do this the holes in the front panel have to be enlarged to 0.209" and no larger. The handle will cover the holes at this size and the new latch will fit. The holes in the main frame do not have to be enlarged when the latch is change to the new specified latch.
-If you have to install a new Rev 5 FP on an older main frame, no modifications are required. The new latch on the FP will line up with the old latch on the main frame.
 - 135. 920922-00 DIAG CARTRIDGE, Change diagnostic cartridge from RAM to ROM only.
 - 136. 921211-00 HOST Bd, Rev 3-8; Change U25 from 74AC32, (Stk 330-07599) to 74ALS32 (Stk 330-09643), Add R66, 220 ohm, (Stk 202-00518). This to reduce reflections on Ramcasel/signal to generate a more reliable "chip

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enable" for the Host Bd RAM cart Data and address buffers as well as the RAM/ROM cart itself.

Release Version 2.00 LARES Software

- 137. 921223-00 LARES, Release of Version 2.00 cart for Lares. Stk # 022-08971.
- 138. 920903-02 Z80, Change from 4Mhz, # 365-04284 to 6Mhz, #365-04834. The SGS, Z80 has been deleted from spec sheet.
- 139. 930118-00 LABEL, CARTRIDGE; Stk # 740-06685 label is no longer available. Change to Stk # 740-02469 for all cartridges.

Release Version 3.00 LARES Software

- 140. 930126-00 LARES, Release of Version 3.00 software for Lares. Stk# 022-08971.

Release Version 4.00 Software

- 141. 931012-00 V4.00 Software Release - V4 Production units have new part numbers
- 142. 940413-00 V4.01 Software: Fixes PONS error; UPDATE all LEXICON OWNED Cons, New Stock; UPDATE R/E Stock only if V4 Part Number; UPDATE Customer units only if V4 Upgrade purchased or V4.00 already installed
- 143. 950509-00 V4.10 Software release to correct bugs in Midi sampler trigger, and Program load problem Interrupt change Dual audio problem A toB lead somr fuzz in cascade mode.
- 144. 950615-00 Replace Hybrid Line Amp with new design. this is due to Mfg cost and component availability to build old design at current production quantities.

END E.C.O.'S HSP BOARD QUICK REFERENCE

- 1. 860603-01 HSP Rev 1 & 2 change U110 to 74HCT08
- 2. 860612-00 HSP Rev 1 & 2 Cuts and jumpers
- 3. 860711-00 HSP Rev 2 only two jumpers
- 4. 870317-01 Delete R4, R5 HSP Rev.2 (effective s/n 1329)
- 5. 871228-00 HSP Change U45 to 330-04567 74HCT32 (was F32) (effective s/n 1550 "C")
- 6. 880516-02 HSP rev.2 (select part) U45 can not be Radiation Semiconductor, use Samsung 74HCT32 330-04567.
- 7. 880128-00 HSP rev.3 create rev.3 HSP effective s/n 1791 HSP "D" (HSP's rev.3= 2-2549-2552, 2-2564, 2565, and then 2-2590 on)
- 8. 920903-02 Z80, Change from 4Mhz, # 365-04284 to 6Mhz, #365-04834. The SGS, Z80 has been deleted from spec sheet.

M480L/LARES REPAIR PROCEDURE

HOST BOARD QUICK REFERENCE

1. 860508-01 Host Rev 0 & 1 Change U8 to RCA (Zytrex no good) 74HCT74
2. 860513-00 Host Rev 0 & 1 add resistors R57-60 1k
3. 860603-00 Host Rev 1 change C10,11 to 5pf, add R57,58 1k, add R59 100k, add U113 74F74, cuts and jumpers.
4. 860603-00-A Host Rev 1 correct E.C.O. 860603-00 Page 3 of 4
5. 860603.00-B Amend eco 860603-00 page 4 of 7 to component side.
6. 860618-00 Host Rev 1 change R21 to 510ohm
7. 860618-01 Host Rev 1 Change PAL 350-04709 V1.00
8. 860625-00 Host Rev 1 change U101 to 74HC08, beef up ground adding wire
9. 860717-00 Host rev.1 add 3 resistors 5.1K, add wire, change to V1.10.
10. 860717-00-A Correct E.C.O. 860717-00
11. 860721-02 Host Rev 1 cut and jumper for brownout
12. 861104-00 Version 1.20 software update (2 512K, 1 256K, & PAL change V2.00)
13. 861104-00-A Pal V2.10 and U42 512K Version 1.20 was sent out for beta test only (not released). Thirty sets went out. Version 1.23 was released effective s/n 1196. 195 updates were shipped to dealers.
14. 861104-00-B Version 1.23 release
15. 861104-00-C document change for V1.23
16. 870318-00 Rev.2 Host never built rev.2
17. 870318-00-A For Rev. 3 rev.2 never built.
18. 870416-00 Rev.2 Host two wires, two etch cut. never built rev.2
19. 870416-00-A Cancel rework on E.C.O. 870416-00.
20. 870615-00 Rev.3 Host etch cut and wire. (effective s/n 1388) "A" rev.1 "B" rev.2 "A"
21. 870604-00 Rev.1 & 3 Host Etch cut 8 Mhz clock. Rev.1 U104.11 Rev.3 U21.8 near pin 7. "B" (effective s/n rev.3 s/n 1388 "B" host 1-1435) Rev.1 1351 "A"
22. 870615-00 Host Rev.3 Correct wiring error, add PAL 16P8A 350-05824 V3.00. (effective s/n 1388 host 1-1435)
23. 870615-00-A Host Rev.3 correct errors on 870615-00.
24. 870709-00 Host Rev.3 change BOM. (effective s/n 1388 host 1-1435)
25. 870728-00 Host Rev.3 add wire with lifted pin U7.33 to xtal. (effective s/n 1388) (rev. 3 host 1-1435)
26. 870811-00 Host delete W2 on bom
27. 920521-00 HOST Bd, Rev 3-8;Change R21 from Stk # 203-00488 to Stk #203-02701; To improve power up reset circuitry.
27. 870908-00 Host Add pull up resistor AS/ to correct power up. Remove Rev.3 pull down resistor on ZCLK. Rev 1 = add 10K 202-00549 from pin 11 U22 "C" to C19

M480L/LARES REPAIR PROCEDURE

- (+5vdc). Rev.3 = add 10K 202-00549 from pin 11 U20 to C18 (+5vdc). On rev.1 only remove R62 pull down from U44.7 to feedthrough. (effective s/n 1439) "C"
28. 871203-00 HOST V2.00 update four Roms, four new part #'s due to the continuing of V1.23 software. (the V2.00 is for SME purchase and V2.00 updates)
 29. 880513-01 HOST 8 jumpers, 3 etch cuts Rev.2 boards (31 boards built labeled Rev.2. effective s/n 1753-1783 31 Rev.2 Host boards built. 1-1802 - 1-1806, 1-1809, 1-1810, 1-1817 -1-1840

HOST BD quick reference cont.

30. 881109-00 Host rev.4 nomenclature.
31. 881215-01 HOST Rev.1 and up. Add jumper between cathode VR1 & 2. Provide wider range of PLL. effective s/n 2160
32. 890213-00 Release V3.00 software.
33. 890213-00-A Delete U43 350-04965 27512, add U43 350-04357 27256.
34. 890213-00-B add V3.00 release notice & reg card to software update.
35. 890619-00 HOST Rev.1 Delete U17 74HCT175 add 330-07710 74AC175. Rev.3 & up Delete U16 74HCT175 add 330-07710 74AC175. To correct audio drop out at 44.1kHz sample rate.
36. 890619-01 SME BOM change Rev.3 board U177 no socket now.
37. 891128-00 350-04710 43256 150ns replaced by 350-05841 43256 100ns. Can use either speed.
38. 900411-01 HOST Rev. 4 Only Power up/down fail RAM protection effective s/n 2613.
 - a. Delete R10 202-00538 3.3K, Add R10 202-00555 20K.
 - b. Remove U36
 - c. Component Side Cuts - U36.4, U36.12, U36.11 to Via near U36.5.
 - d. Solder Side Cuts - U46.8 to U46.9 to U46.10 to U46.11, U7.15, U47.14 to via near U47.11, R30 to R28.
 - e. Solder Side Jumpers - U36.11 to U36.13, U36.12 to via near U36.5, U46.12 to U46.4, U46.13 to U46.5, U46.8 to U46.10, R30 where cut to U47.14
 - f. Component Side Jumpers U36.12 to U46.11, U21.11 to U46.11
 - g. Replace U36
39. 900411-01-A Correct page 18 drawing
- 39A. 900411-01-B Rev 5 & 6 HOST boards perform ECO per ECO 900411-01.
40. 901012-01 Varactor Diode spec change MV209 M2 are obsolete, now MV209.
41. 910503-00 Incorrect AC fuse rating for 240Volt operation.
42. 900626-01 HOST Rev 5 remove and add etch on solder side to eliminate short.

M480L/LARES REPAIR PROCEDURE

Release of HOST V3.01

43. 910917-00 Install version 3.00 to reduce the amount of noise generated when a configuration, program or size (reverb ALGO) change occurs. Implement ECO in units serial number 3200 to 3307. Implement ECO in all units having V3.0 software when the HSP board is changed or repaired.
- 43A. 910917-00-A Install version 3.01 to revise firmware to display correct firmware version on LARC power-up for V3.01.
44. 911015-00 Correct marginal timing in DMAREQ reset circuitry which contributes to intermittent muting during program loads and "MIX" parameter updates. Delete Stk # 330-04567, IC 74HCT32, U25 and add Stk# 330-07599 IC 74AC32, U25. To be done during repair on an as needed basis.
45. 921211-00 HOST Bd, Rev 3-8; Change U25 from 74AC32, (Stk 330-07599) to 74ALS32 (Stk 330-09643), Add R66, 220 ohm, (Stk 202-00518). This to reduce reflections on Ramcasel/signal to generate a more reliable "chip enable" for the Host Bd RAM cart Data and address buffers as well as the RAM/ROM cart itself.

Release of V4.00 Software

46. 931012-00 Release of V4.00 Software - requires >Rev 1 Host. - V4 Production units have new part numbers.
47. 940413-00 V4.01 Software: Fixes PONS error; UPDATE all LEXICON OWNED Cons, New Stock; UPDATE R/E Stock only if V4 Part Number; UPDATE Customer units only if V4 Upgrade purchased or V4.00 already installed.
48. 950509-00 Corrects bugs found in the V 4.01 software . Midi sampler trigger from note, and Dual mono audio problem, A to B some fuzz in cascade mode.

LARES QUICK REFERENCE

1. 921223-00 LARES, Release of Version 2.00 cart for Lares. Stk # 022-08971.
2. 930126-00 LARES, Release of Version 3.00 software for Lares. Stk# 022-08971.