NEC

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Application Engineering Dept.
Color LCD Div.
Display Device Operations Unit
NEC Corporation

TFT COLOR LIQUID CRYSTAL
NL3224AC35-01
BACK-LIGHT REPLACEMENT MANUAL

This manual applies a back-light unit for replacement.
(Model: 55LHS-1)

Contents

Precautions to be observed by the customers

NEC recommends that users of NEC's TFT Color LCD modules return the modules to NEC, through the original purchase path, when replacement of the back-light is required. Customers should consider the followings before replacing the back-light unit.

(1) This work can cause a lowering of the quality (performance). Even if the replacement work is performed in accordance with this manual, we are unable to guarantee the resulting quality.

(2) Replacement of the back-light unit involves the handling of high voltage circuits. If replacement is done incorrectly, the module could present a shock, fire or other hazard, both during and after the replacement procedure.

Customers replacing the back-light unit do so at their own risk. NEC will not assume any liability for modules, and will not warrant any modules which have been modified by the customer, including replacement of the back-light unit even when the attached procedure is used. If it is necessary to return the module to NEC after an attempted repair, NEC will charge the cost of the repairs to the user.

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Precautions When Replacing the Back-light unit

Warnings: High Voltage Shock Hazard, or Fire Hazard, Danger of broken Glass

1. Safety precautions

(1) Because high voltage is present when the inverter is powered on, there is a danger of electrical shock. So that, be sure to check again before starting work that the power is turned OFF.

(2) Because the fluorescent lamp and high voltage section are hot after use of the module, there is a danger of injury by burning. So that, be sure to wait some time after switching power OFF before starting work.

(3) There is a danger that the inverter is charged at a high voltage after use of the module, be sure to wait some time after switching power OFF before starting work.

(4) The fluorescent lamp of the back-light unit may in some cases be damaged. Take adequate care not to injure yourself while doing this procedure. Moreover, if the lamp is damaged inside, apart from safety considerations, quality problems may occur, such as un-even brightness from pieces of broken glass left inside. We recommend that you return it to NEC for repair

2. Quality precautions

(1) Since the panel surface can be easily damaged, take due care not to scratch, etc., the LCD module surface.

(2) Static electricity can damage the product (LCD module). When handling the product, take adequate care to eliminate static electricity (grounding hand, ion shower, etc.). Periodically inspect your ion shower, etc., to check performance.

(3) If you touch the connectors, etc., on the back side of the module, this may cause a bad connection. When handling, take adequate caution.

(4) There is a danger of wire breakage in the flat cable (FPC) and lamp cable.

(5) The fluorescent lamp in the back-light unit is made of glass. There is a danger of damaging it if subject to shock or unusual stress.

(6) When installing the back-light unit, put it slowly and gently, avoiding applying excess shock to the back-light unit.

(7) To avoid that the optical sheets (lens sheet and defusion sheet) catch dirt / dust or scratches, we recommend to treat the back-light unit in a clean room or a clean bench (at the class C level) and gently care.

NL3224AC35-01 Back-light Unit Replacement Procedure

1. Preparation

The following facilities and tools are required.

(1) Finger stalls (glove)

(2) Grounding band (Conductive wrist band)

(3) Work bench covered with conductive mat (a work bench equipped to be prevent static charges can be used)

(4) Philips screwdriver, radio pliers, tweezers

(5) Replacement back-light unit (Parts number: 55LHS-1)

Recommendation: If dirt or dust gets on the optical sheets in the back-light unit during replacement, brightness variations might occur. Therefore, we recommend to use of a clean room or clean bench (at the class C level).
In addition, the product (LCD module) can be destroyed by static electricity, therefore, we recommend to use of an ionizer (ion shower).

2. Replacement

(1) Put on the finger stalls and attach the grounding band.

(2) Turn on the ionizer switch.

(3) The module should be kept turned off, and wait for a while until the lamp get cool down enough. Then remove from the equipment in which it was installed.

(4) Place the LCD module display side down on the flat work bench equipped for static charge prevention. Be careful not to scratch the polarizer.

(5) Remove two Philip screws A in Figure 1 with a Philips screwdriver of the correct size, release the rear cover.

(6) Remove two Philip screws B and two Philip screws C in Figure 2 not to injure electrical parts on the inverter board and the signal processing board.

(7) Remove two metal pieces D in Figure 2 by tweezers.

(8) Pull out the flexible printed circuit (FPC) from connector E in Figure 3 on the signal control board after releasing the cable holder and release the connector F in Figure 3 on the inverter board. Do not fold the FPC as sharp folds can cause permanent damage.

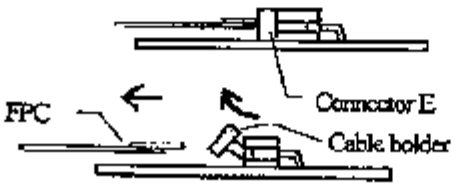

Figure 3

(9) Remove two Philip screws G in Figure 2.

(10) Lift up the bracket with inverter board and signal control board slowly, and remove it.

(11) Remove the back-light unit pulling the cable of itself slowly and gently not to give unusual stress to around it as shown in Figure 4.

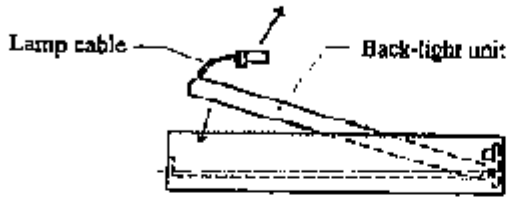

Figure 4

(12) Replace the back-light slipping into the frame slowly from the right side of back-light unit as shown in Figure 4.

(13) Re-attach the bracket with inverter board and signal control board slowly. Then be careful not to injure the FPC, put through it to the slit of the bracket.

(14) Fix the bracket with two retaining screw G.

(15) Push the lamp cable plug into connector F of inverter board not to injure the lamp cable.

(16) Slip the FPC into the connector E of signal control board not to injure the FPC.

(17) Re-attach two metal piece D with two retaining screw B and C.

(18) Re-attach the rear cover with two retaining screw A.

3. Disposal of the lamp holder

Because the back-light unit uses a cold cathode fluorescent lamp, dispose of it in accordance with the regulations in effect in your area.

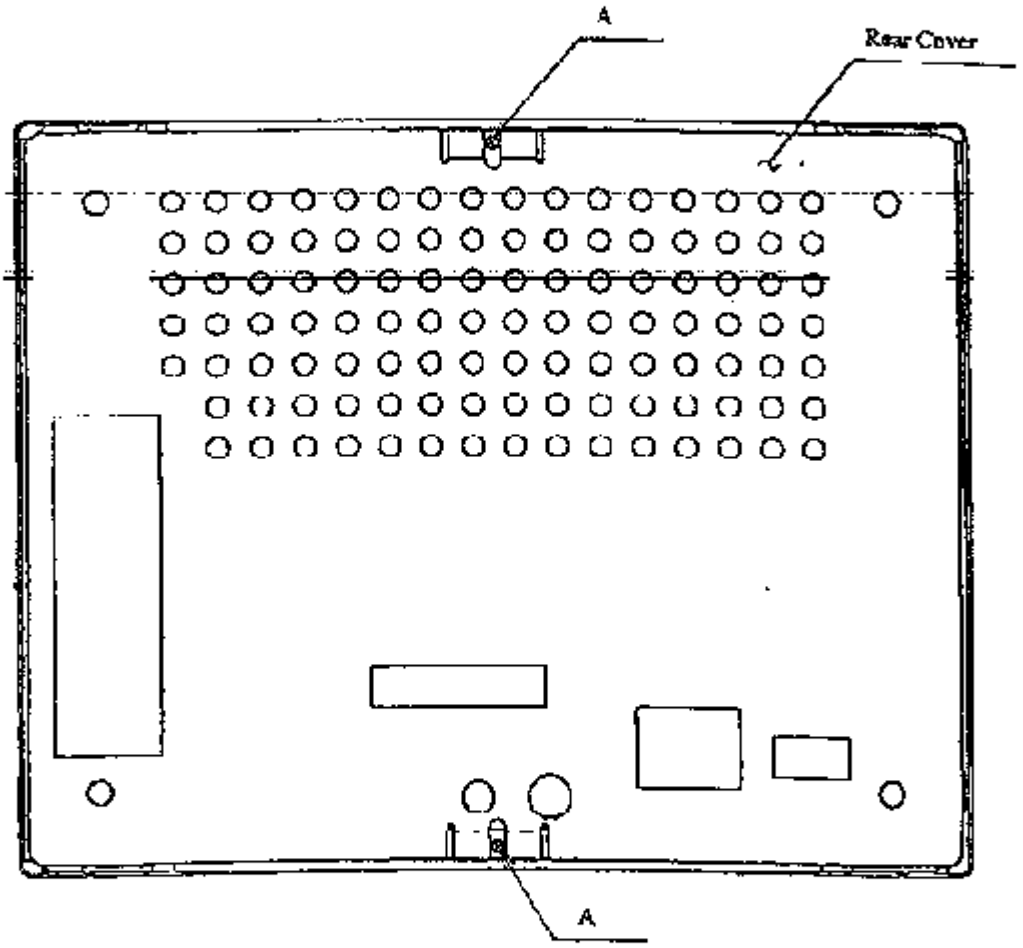

Figure 1.

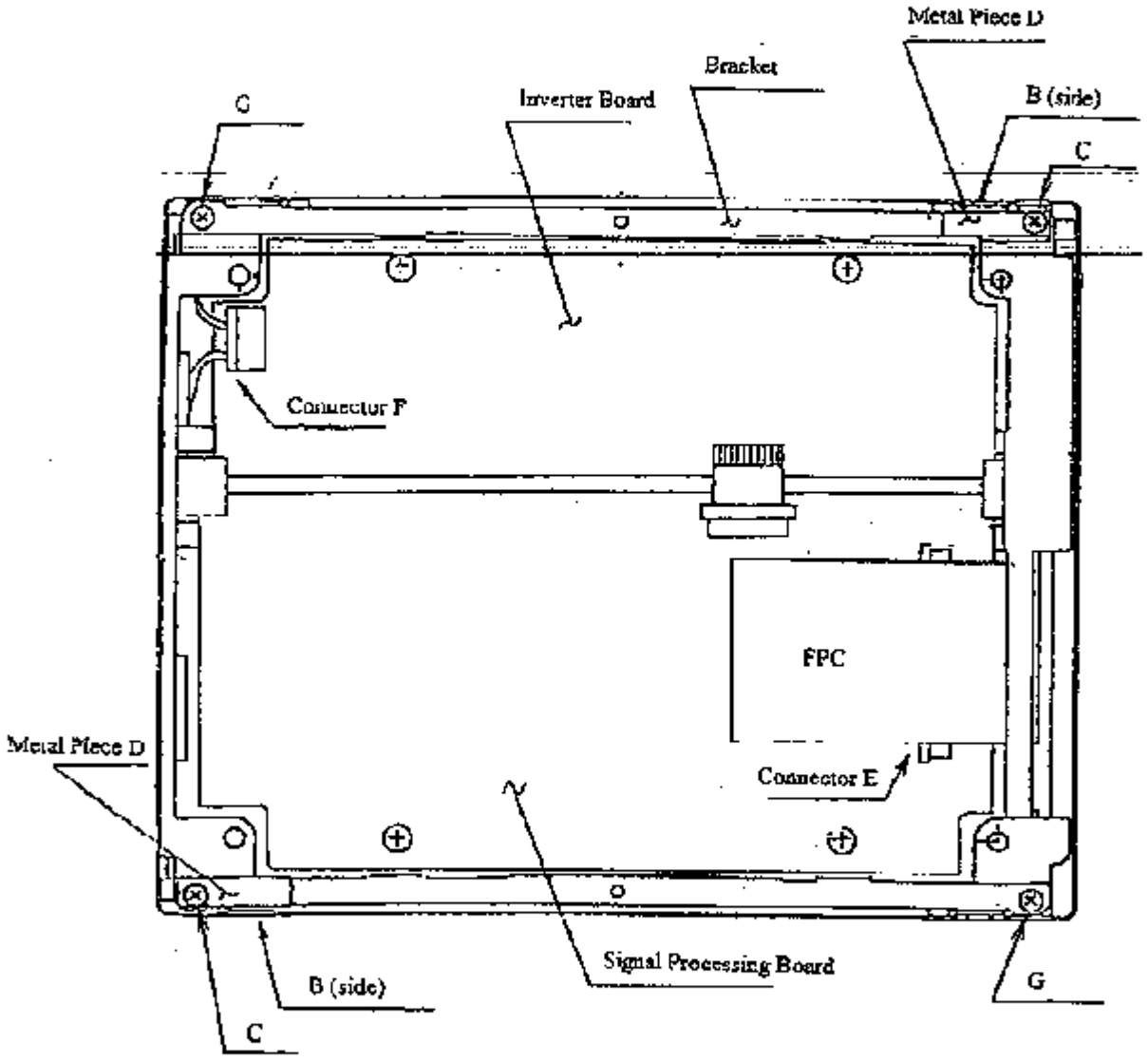
Metal Piece D
Bracket
Inverter Board
C
B (side)
C
Connector F
FPC
Connector E
Metal Piece D
Signal Processing Board
B (side)
C
G

Figure 2.