# LaserCon LDP Conversion Card
## Instructions to use the
## 1991 SA disc in a 1983 Space Ace machine

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**LaserCon** is an adaptor card for the replacement of the original laser disc player installed from the factory to a newer, more reliable player.

**1983 SA disc Vs. 1991 SA disc:** The video on the two discs is the same. However, the 1983 disc was mastered at 24 frames per second, while the '91 disc was mastered at 30fps. Thus, the two discs have completely different frame numbers and are only compatible with their own native hardware. The LaserCon processor is able to convert these frame numbers "on-the-fly" to always play the proper video.

**Supported Replacement Players:**
Pioneer  -  LD-V8000  LD-V4400  LD-V4300D  LD-V4200
            LD-V2200  CLD-2600  CLD-2400

The V8000 and V4x00 series are preferred due to their improved search speed performance.

**Parts List**
LaserCon board,   Main-board interface ribbon cable,   Player interface serial cable,

**Installation Instructions**

**1. Configure your new player:**

All players must be configured for proper serial communication as follows:

**Baud Rate: 4800,   No Parity,    1 stop bit,    Data Length: 8 bits, TxD terminator: <CR>.**

LD-V8000:
        Connect the player to a TV or monitor.
        Press and hold the "DISPLAY" button while powering-on the player. Press "SCAN FORWARD" to reach Page-5 "RS-232 SWITCH P-5"
        Verify: Baud Rate: 4800, No Parity, 1 stop bit, Data Length: 8 bits
        To make changes, press "STEP FORWARD" to highlight an item, then

press "STEP REVERSE" to change the setting.
Press "SCAN FORWARD" to reach Page-6 "RS-232 SWITCH P-6"
Verify: TxD terminator: <CR>.

LD-V8000 - Optional Settings:
P-7: Memory Control
(The LD-V8000 player has the ability to hold and "freeze" the last displayed frame of video during a search operation. Thereby eliminating the blackout screen between scene searches. Some people prefer this mode, while others consider it a change from the "original" feel of the game.)
For "Original" blackout searches:
Video Memory Mode: CONTROL DISABLE
Auto Memory: OFF
For "Freeze frame" searches:
Video Memory Mode: CONTROL ENABLE
Auto Memory: ON

**\*** Press "DISPLAY" to save your settings and exit.

<u>LD-V4200:</u>

Open the small cover on the front of the player. Set all switches-OFF (up).

<u>LD-V4400:</u>

Connect the player to a TV or monitor.
Press and hold the "DISPLAY" button while powering-on the player.
Press "SCAN FORWARD" to reach Page-3 "RS-232 SWITCH P-3"
Verify: Baud Rate: 4800, TxD terminator: <CR>.
To make changes, press "STEP FORWARD" to highlight an item,
then press "STEP REVERSE" to change the setting.

**\*** Press "DISPLAY" to save your settings and exit.

<u>LD-V2200 & CLD-2400:</u>

On the back of the player, set both dip-switches – OFF (up)

<u>CLD-2600:</u>

On the back of the player, set dip-switches 1 & 2 – OFF (up)

## 2. Install the LaserCon card:

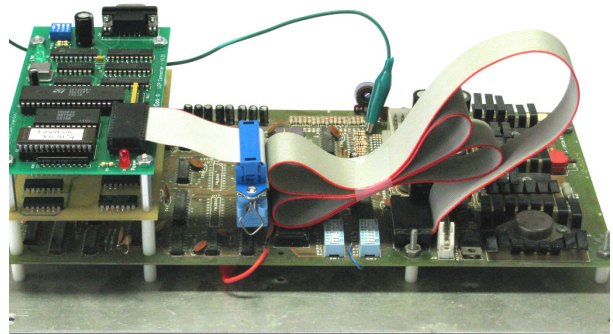Remove the four nuts and bolts holding the ROM board in place.
Install 4 new spacers and longer bolts.
Install the LaserCon card and secure with the 4 nuts previously removed.
Install the custom  DL ribbon cable (or the V1000 adaptor and the original
  player ribbon) to LaserCon's "CN1" and to the main board's player connector.
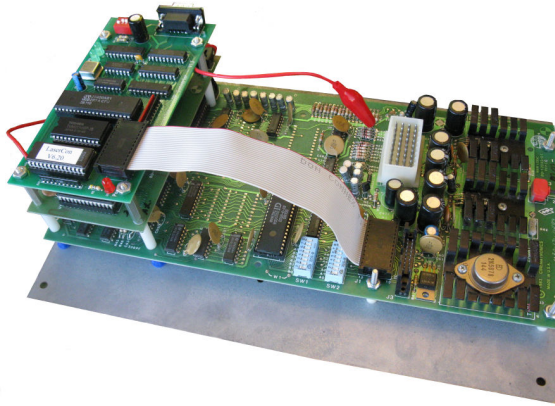


Custom DL Cable                     OR          V1000 adaptor + original cable

Attach the alligator lead wire to +5Volts.

You can attach to any point supplying +5V power that you like. Options range from the power
supply (pin-9) to the legs of the disc capacitors on the ROM board. My recommendation is to
**attach to the leg of R22 and/or R23 on the side closest to the main harness connector**. Another
option: Near the main harness connector you will find the +5 test point. Use a soldering iron to
install a small piece of solid wire (the center conductor of Coax Cable works well) to the test point,
and attach the alligator clip to that.
(Ground is supplied through the ribbon cable.)
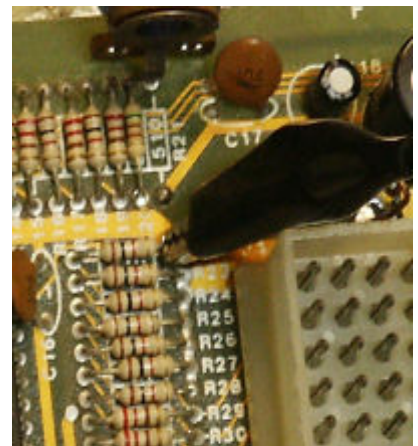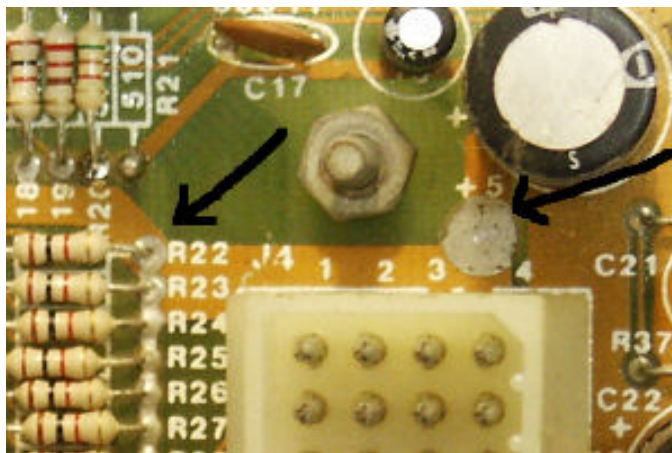


Install the player into the game cabinet.
I will leave the means of supplying AC power to your player up to you. You can adapt the
original supply wire to your new player, or run the wire separately to outside power. If you
need help with this part, feel free to email me.

Connect the supplied serial cable from LaserCon's CN2 and to the
player's 15-pin connector.
This is a custom cable. You **cannot** use any other serial cable. If you need to
replace the cable for any reason, the pin connections are as follows…

```
                 9-pin Female                    15-pin Male
    GND          pin-1 -------------------- pin-11        GND
    TxD          Pin-2 -------------------- pin-10        RxD
    RxD          Pin-3 -------------------- pin-9         TxD
```

## 3. Set Dipswitches:

Your main board must be set to control a LD-V1000 player,
Switch B3 on the game board must be OFF.
Be certain that your game board can operate a LD-V1000 player.


On LaserCon, set switch ….     1       2       3       4
                               **OFF  ON    ON    ON**




## More Info:

Early editions of Dragon's Lair came with the Pioneer PR-7820 disc
player and what we now refer to as a "Revision A" main board to
control it. (Rev-A boards can be identified as having gold colored wire tracings
on a green circuit board. Serial numbers are below 6000). This board can not
normally control a LD-V1000 player unless it has been modified.

Later editions of Dragon's Lair and all Space Ace's came with the LD-V1000
disc player and a "Revision-C" main board. (Rev-C boards can be identified as
having green colored wire tracings on a green circuit board. Serial numbers are
above 6000.) Almost all of these boards are configured to control an LD-V1000
player and switch B3 must be OFF.

## LaserCon Dip-switch settings (Ver. 7.0 firmware)

| SW 1 | SW 2 | SW 3 | SW 4 | Original Player | Games | Baud Setting for new player |
|------|------|------|------|-----------------|-------|------------------------------|
| 0 | 0 | 0 | 0 | PR-7820 | Dragon's Lair, Space Ace | 4800 |
| 0 | 0 | 1 | 1 | LD-V1000 | Dragon's Lair, Space Ace (required if using MultiROM) Thayer's Quest, Interstellar | 4800 |
| 0 | 1 | 0 | 1 | LD-V1000 | Dragon's Lair, Space Ace Thayer's Quest, Super Don Quixote Esh's Aurunmillia, Interstellar, Casino Strip, Astron Belt Cobra Command, Galaxy Ranger | 9600 |
| 0 | 1 | 1 | 1 | LD-V1000 | 1983 Space Ace using a 1991 disc | 4800 |
| 1 | 0 | 0 | 0 | PR-8210 LD-1100 | Cliff Hanger, Cobra Command, MACH3, Goal to Go, Us vs Them, Quarter Horse | 4800 |
| 1 | 0 | 1 | 0 | 22VP932 | Dragon's Lair, Space Ace (Europe) | 9600 |
| 1 | 1 | 0 | 0 | 22VP932 | Space Ace with 1983NTSC disc (Europe) | 9600 |
| 1 | 1 | 1 | 0 | 22VP932 | Space Ace with 1991NTSC disc (Europe) | 9600 |

## Operation

Power on your machine. The red LED should light, indicating that the LaserCon board is properly powered.

After a one second delay, the "LDP" LED should light, indicating that LaserCon has established serial communication with the player.

After 15 seconds or less, the player will begin to spin-up. The "LDP" LED will go dark, indicating that the player is busy.

Once the player has achieved "PLAY" mode, the "CPU" LED will light. You may see the information screens and a portion of the attract sequence. Once you hear the third "chime" sound, the game will start and the attract will officially begin.

Once the game is up and running, The red light will remain lit, the green "LDP" light will blink during searches, and the "CPU" light will be dark only during freeze frames and frame searches.      Enjoy!

Use at you own risk. By accepting this product, you also accept all responsibility for the use of this product.

If you need any help or have any questions, comments, or suggestions, please email me: shaun@wood1st.com.