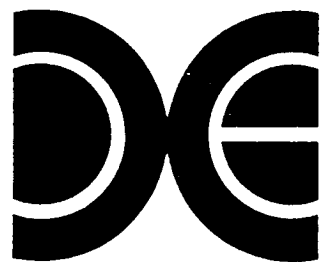


# COBRA COMMAND

CONVERSION KIT  
FOR  
CLIFF HANGER LASER GAMES  
INSTALLATION INSTRUCTIONS



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# **WARNING**

This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the instructions manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

## **CAUTION**

EMI Shield must be securely installed in order to protect against undesirable radio interference.

# DATA EAST USA, INC.

Thank you for purchasing a **Data East COBRA COMMAND™** Laser Conversion Kit.

Your Kit includes:

- A. 1 COBRA COMMAND Laser Disk
- B. 1 EMI Shield and mounting hardware
- C. 1 COBRA COMMAND PC Board
- D. 1 LDP Interface Board (piggyback to item C.)
- E. 1 COBRA COMMAND/CLIFF HANGER Adapter Harness
- F. 1 Clear Control Panel Plexiglass
- G. 1 Set of control panel decals
- H. 1 Control Panel Overlay
- I. 1 COBRA COMMAND monitor card underlay
- J. 1 COBRA COMMAND marquee decal
- K. 2 COBRA COMMAND side decals
- L. 1 FCC Warning sticker
- M. 1 Video Switching PC Board
- N. 2 Blue pushbuttons

**NOTICE:**

Proper game operation requires the use of WICO No. 15-943106 or WICO No. 15-943104 heavy duty joystick (or equivalent). The joystick is not part of this kit.

## HIGH VOLTAGE CAUTION

All video games use life threatening high voltages. Only qualified electronic personnel should perform these conversions.

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# I CONVERSION SUMMARY

## CHOOSING THE MACHINE TO BE CONVERTED

This COBRA COMMAND Conversion Kit has been designed to easily be installed in the Cliff Hanger Laser game manufactured by Stern, and uses the Pioneer LD 1100 Player. One of the most important considerations determining the success of your conversion will be the condition of the machine you are converting.

## COSMETIC CONSIDERATIONS:

Since it is extremely important that all visible graphics, original manufacturers name (other than serial number plate), logos and etc. are to be removed or covered by new graphics, a proper choice of cabinet in this phase of the conversion can save you much time.

## MECHANICAL CONSIDERATIONS:

In order to comply with FCC rules, it will be necessary to install an EMI shield (provided with kit) to protect against undesirable radio interference (see pg. 11 of instructions). In addition, for proper game play it is recommended you install WICO No. 15-943106 or WICO No. 15-943104 (or equivalent) heavy duty joystick.

# II GAME OPERATION

## THE WORLD'S FIRST VIDEO DISC HELICOPTER GAME!!!

You are in command of the most Awesome Combat Machine ever designed . . .

Armed with the world's most sophisticated weaponry, your ultra-modern Jet Helicopter will take you through 10 dangerous missions from New York City to Easter Island . . .

Squeeze the trigger on your Control Lever and unleash 6000 rounds a minute of twin gatling Cannon fire. Press the missile release button and watch the dual Air-to-ground missiles blast off to destroy and ground targets in your sights.

Your life will depend on these weapons as you fly through Canyons, Jungle Valleys, Subterranean Caverns, City Streets, and the high seas on a series of harrowing seek-and-destroy sorties.

A central reconnaissance station calls voice commands and an arrow flashes on your display panel to direct you through complex flying maneuvers, but your ability to **react** to these commands instantly with Control Lever inputs, Cannon and missile fire will ultimately determine your survival.

Take the controls of COBRA COMMAND and thrill to the excitement of the world's first Video Disc Helicopter game - only from Data East.

## HOW TO PLAY

1. Destroy Enemy Targets
2. Use Machine Guns for Flying Targets
3. Use Rockets for Non-Flying Targets

# III OPTION SETTINGS

## DIP SWITCH 1

---

	GAME CHARGE	1 coin	1 coin	1 coin	2 coins
		1 play	2 plays	3 plays	1 play
SW 1	RIGHT HAND	OFF	ON	OFF	ON
SW 2	SELECTOR	OFF	OFF	ON	ON
SW 3	LEFT HAND	OFF	ON	OFF	ON
SW 4	SELECTOR	OFF	OFF	ON	ON

---

	COUNTRY	USA	JAPAN
SW 5		ON	OFF

---

	FRAME # DISPLAYED	YES	NO
SW 6		ON	OFF

---

	PIONEER INTERFACE	YES	NO
SW 7		ON	OFF

---

	HIT CHECK	NORMAL	HIT CHECK
SW 8		ON	OFF

---

## DIP SWITCH 2

---

	NUMBER OF LIVES	3	5
SW 1		OFF	ON

---

	BONUS LIFE	20,000/ ea. 20,000	15,000/ ea. 30,000	20,000/ ea. 40,000	30,000/ ea. 50,000
SW 2		OFF	OFF	ON	ON
SW 3		OFF	ON	OFF	ON

---

	DIFFICULTY	EASY	REGULAR	DIFFICULT	VERY DIFF.
SW 4		OFF	OFF	ON	ON
SW 5		OFF	ON	OFF	ON

---

	IDLEMODE SOUND	YES	NO
SW 6		OFF	ON

---

	RANDOM 1ST. PATTERN	NO	YES
SW 7		OFF	ON

---

	SELF-TEST	GAME-MODE	SELF-TEST	NOTE: BOTH sw 6 and 8
SW 8		OFF	ON	must be ON for diag. program to run.

---

# IV SELF TEST

## SUMMARY

The Self-Test Diagnostic Program is an important function of your COBRA COMMAND Laser game. It is the best way to check for proper operation of the entire game.

## OPERATION

Turn the game off before activating the Self-Test, as a safety precaution. The option switches must be adjusted to activate the Self-Test Diagnostics. (refer to the option setting page) After the switches are set, turn the game ON. Pushing the Player 1 switch will cause the game to step through each of its 10 different Self-Tests. To repeat a test, hold the Rocket button down, while pushing the Player 1 button. The Self-Test Diagnostics will continue to repeat through the 10 tests until the option switch settings have been returned to the game mode. Dip switch II position 8 must be OFF for the game mode and ON for diagnostic mode. Switch 7 must also be OFF for the diagnostics. SWITCH 6 MUST BE ON FOR SELF TEST MODE!

### 1) RAM TEST

The Zero Page Ram (Address 0000-0fff) on the VDO-2 Logic Board. Ram locations 3F, 5F are tested. The video (Address 2000-3FFF) and (Address 1800-1837) on the VDO-1 logic board is tested. Several multi-colored screens will quickly be displayed on the screen.

PASS: "OK" will be displayed on the screen.

FAIL: The faulty RAM location will be displayed on the screen.

### 2) ROM READ TEST

The program RAM (Address 4000-Dfff) on the VDO-2 logic board is tested by the check sum process.

PASS: "OK" will be displayed on the screen.

FAIL: The faulty ROM location will be displayed on the screen.

### 3) MONITOR TEST

Use the rocket button to advance through the 18 monitor test patterns.

- |                      |                             |
|----------------------|-----------------------------|
| 1) Red Color Bars    | 10) R.G.B. Color Bars ½     |
| 2) Green Color Bars  | 11) Black Reference (Laser) |
| 3) Blue Color Bars   | 12) Color Bar (Laser)       |
| 4) White Screen      | 13) Red Scale (Laser)       |
| 5) Blue Border       | 14) Green Scale (Laser)     |
| 6) R.G.B. Blocks     | 15) Blue Scale (Laser)      |
| 7) Cross Hatch       | 16) Gray Scale (Laser)      |
| 8) Character Display | 17) White (Laser)           |
| 9) R.G.B. Color Bars | 18) Cross Hatch (Laser)     |

4) **CHARACTER DISPLAY**

The contents of the (A Group) character generator ROM is displayed. By pressing the Rocket Button, the contents of the (B Group) character ROM will be displayed.

**PASS:** The A Group, and B Group, should be displayed uniformly on the screen.

**FAIL:** Failure is indicated by one or more of the following symptoms:

- 1) White display on the screen
- 2) Vertical lines
- 3) The absence of Red, Green, or Blue.

5) **MIX CONTROL TEST**

This test has two parts. First, 32 (16 × 16 bit) character blocks are shifted diagonally on the screen, while rotating the character blocks after each pass. Second, 28 character blocks are displayed and shifted against a video disc generated background.

**PASS:** All block shifts should be smooth.

**FAIL:** Failure is indicated by erratic block shifts or the absence of the correct number of character blocks.

6) **DIP SWITCH TEST**

This test is helpful in the adjustment of the option switches.

- 1 = Switch ON
- 0 = Switch OFF
- X = Switch not in use

7) **PANEL SWITCH TEST**

The Control Panel, switch input circuitry, and switch wiring are tested.

**PASS:** When a particular control panel switch is activated, the corresponding block on the screen should be filled.

**FAIL:** A failure is indicated in two possible ways:

- 1) A block filled without a switch activated, a short circuit, possibly a shorted switch.
- 2) A block not filled when a switch is activated, open circuit, possibly a bad switch.

8) **SOUND TEST**

10 increments of sound will be outputed, fluctuating between the right and left speaker. The Sound Circuitry, Audio Amp, Speaker, and Wiring are tested.

**PASS:** If the outputed sounds are clear and if End is displayed after the 10 increments, the test is OK.

**FAIL:** Failure is indicated by "READ ERROR" displayed on the screen, the absence of sound or, distorted sound.



9) A **LDP TEST**

The Video Disc Player command are tested, forward play, fast forward, forward slow, forward step, still, reverse play, reverse fast, reverse slow, reverse step, still.

**PASS:** The Video Disc Player should step through all of the commands and automatically advance to the Disc Test 10 B.

**FAIL:** If the Video Disc Player does not respond to a command, then the Video Disc Player is bad. Be sure to run the LDP Line Test, because it must work in order for this test to work.

10 ) B **DISC TEST**

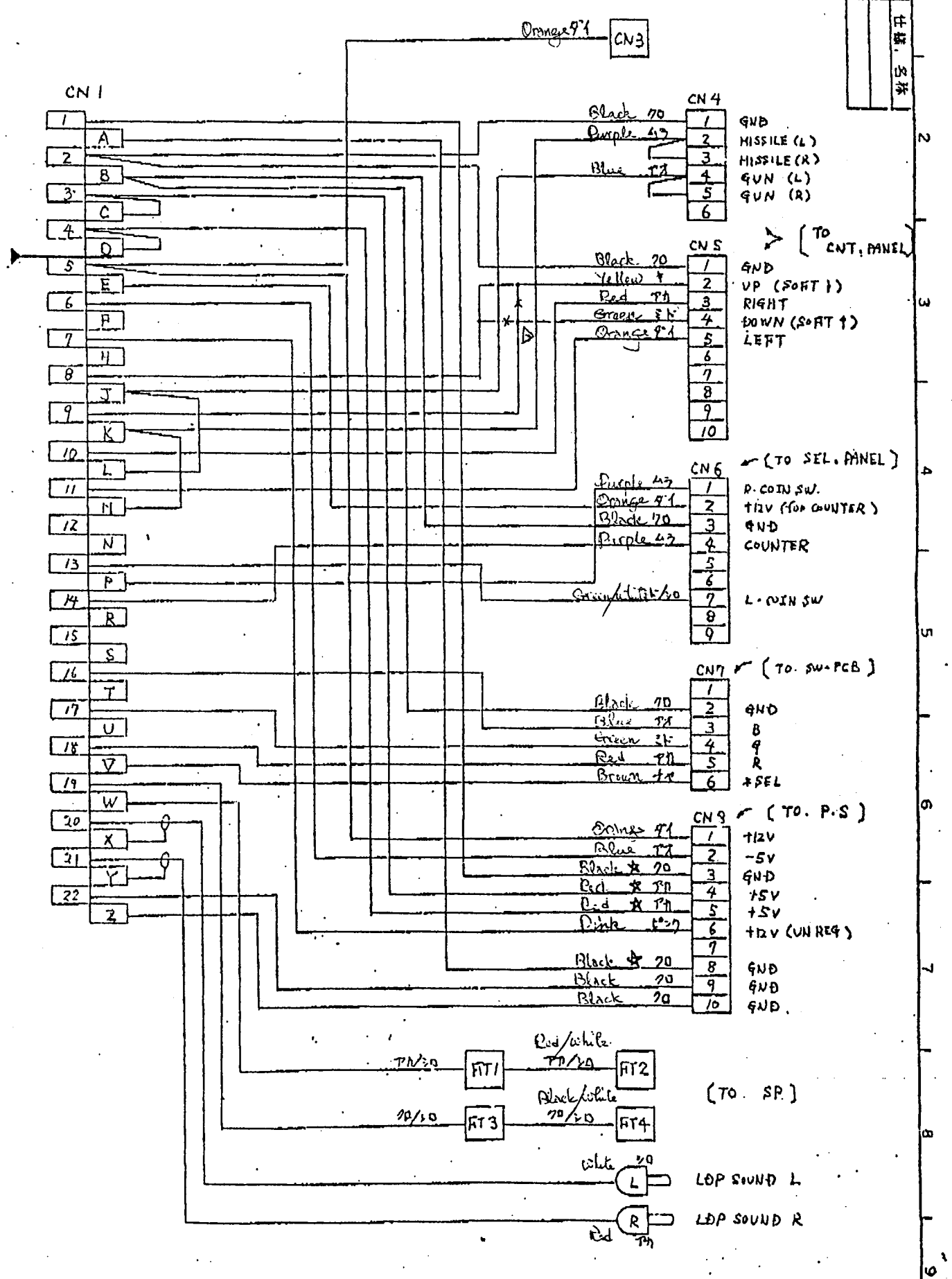
The Video Disc Players search capabilities are tested. Several video screens will rapidly be displayed on the screen.

**PASS:** "End" will be displayed on the screen and automatically advance to RAM TEST.

**FAIL:** "Error" will be displayed on the screen with the faulty Disc Address.

# COBRA COMMAND Adapter Harness Wiring

図面番号	仕様名称



## V. WIRING

### INSTRUCTIONS

The COBRA COMMAND/CLIFF HANGER harness adapter had been designed to plug directly into your existing wiring in most cases, but a number of connections must be changed. Follow all instructions very carefully! MAKE SURE ALL POWER IS OFF BEFORE YOU START!

1. Mount the COBRA COMMAND PCB on the EMI shield if it is not already mounted. Follow the instructions on pg. 11.
2. Mount the PCB and SHIELD to the right side of the cabinet as viewed from the rear.
3. Plug the adapter harness into the COBRA COMMAND PCB.
4. Locate the red/white and blk/wht wires in the adapter harness. These are for the speakers. Route conveniently and connect.
5. Locate the L/R SOUND cables in the COBRA COMMAND adapter harness and feed them through the hole in the bottom of the cabinet to the LDP. Disconnect the CLIFF HANGER plugs and connect the COBRA COMMAND L/R plugs to the rear of the LDP.
6. Locate the video "Y" connector coming from the LDP. Disconnect the branch of the "Y" that feeds the Cliff Hanger PCB. Now connect the "Y" connector to the COBRA COMMAND PCB at either CN3 or CN4. The other branch of the video "Y" connector should be connected to the Video Chroma PCB mounted on the monitor.
7. Disconnect the CLIFF HANGER power jack from J1 on the CLIFF HANGER power supply.
8. Locate the 10 pin power connector (CN8) in the COBRA COMMAND adapter harness, and plug it into J1 on the CLIFF HANGER power supply.
9. Disconnect the 9 pin MOLEX connector from the coin door. Locate the 9 pin MOLEX connector (CN6) in the COBRA COMMAND adapter harness and connect it to the coin door.
10. Locate the video switching board supplied with the COBRA COMMAND conversion kit, and mount it in a convenient location. Note: the Video Switching Board originally in CLIFF HANGER will not be used with COBRA COMMAND.
11. Locate the RGB Video connector (CN7) on the COBRA COMMAND adapter harness and connect it to P302 on the Video Switching board. The wire color in the harness should match the legend printed on the switching PCB. Please watch polarity!
12. Locate the single conductor (orange wire) connector (CN3) in the COBRA COMMAND adapter harness and connect it to the Orange wire soldered to pin 2 of connector J301 on the video switching PCB (This wire provides +12 volts from the COBRA COMMAND PCB to the video switching PCB).

13. A ribbon cable connects J3 of the CLIFF HANGER video switching PCB to the Video Chroma board mounted on the monitor chassis. Remove this ribbon cable from J3.
14. A double male adaptor is plugged into J301 of the COBRA COMMAND video switching board. Plug the ribbon cable from step 13. (above) into the double male adaptor. Note that the double male adapter should have pin 2 removed.

THE NEXT STEP WILL REQUIRE A LITTLE BIT OF CARE!

15. A cable connects the RGB from the CLIFF HANGER video switch to the monitor chassis. Temporarily remove this cable from the cabinet, being careful to note which end was connected to the monitor and which end was connected to the video switch.
  - a. ON THE END THAT WAS CONNECTED TO THE VIDEO SWITCH, carefully remove the green, blue and BK/WH wires by carefully depressing the detent on the connector pin and gently pulling backward on the wires. (Note that the red and brown wires will not change position).
  - b. Carefully re-insert the wires so that the wire colors in the cable match the legend printed near connector P301 on the COBRA COMMAND video switching PCB.
  - c. Plug the reconfigured end of the RGB cable into connector P301 on the COBRA COMMAND video switcher and re-install the other end of the cable into the proper connector on the monitor.
16. Locate the 6 pin AMP MATE-N-LOK connector in the COBRA COMMAND adapter harness and plug it into the mating connector on the control panel in place of the CLIFF HANGER connector.
17. Disconnect the 10 pin Joystick connector from the junction block under the control panel. Locate the 10 pin male connector (CN5) of the COBRA COMMAND adapter harness, and plug it into the 10 pin Joystick connector for the control panel.
18. Remove the 2 wire cable from the CLIFF HANGER "remote" box in front of the LDP. Locate the 2 wire (orange and red wires) cable in the COBRA COMMAND kit (this cable may already be connected to CN5 on the LDP interface PCB) and connect it to the "remote" box in front of the LDP and to CN5 on the COBRA COMMAND LDP interface PCB.
19. On the COBRA COMMAND PC Board, locate DIP SW #1 and make sure that position #7 is turned ON (Pioneer player).
20. Install the EMI cover, being careful to not pinch any wires.

# VI COSMETICS

## COSMETICS

### GETTING STARTED

All components that contain any possible original GAME name (other than the serial number plate), graphics or game information must be removed or covered by some means. Do not destroy or discard the Header Plex (top flashing), Control Panel and/or Monitor Plex or Glass as these items may have to be used or modified for your conversion.

The Control Panel Monitor areas are probably the most important components of your conversion since they are the main interface between the player and the game.

### MONITOR PLEXI GLASS

Many games have been manufactured with graphics screens printed to the back side of the plex. These graphics must be removed or a new clear plex installed. One method of removing the screen printed material is to soak a rag in lacquer thinner and wipe the plex clean. It may take repeated applications of the thinner to completely remove all traces of the graphics. An oversized COBRA COMMAND cardboard overlay has been supplied to be placed under the monitor plex. Using masking tape, temporarily align the viewing hole of the underlay with the monitor screen. Mark and trim the excess cardboard as required.

### CONTROL PANEL

The COBRA COMMAND control panel overlay supplied in your kit has been designed to work with player controls in a variety of positions. The first step is to remove all pushbuttons and the joystick. We have included 2 blue player buttons in your kit. Drive any necessary mounting holes before installing control panel overlay. The control panel overlay has a very strong adhesive applied to one side which is protected with an easy-release paper backing. Since the overlay is oversized, position it carefully over the control panel before removing the protective backing to determine exactly how it will be installed. Remove the backing and apply the overlay to the panel as it was judged to fit best. Smooth the overlay from the center of the panel towards the edges being sure to remove all air bubbles as you proceed. The excess overlay material at the top and bottom of the control panel should be wrapped around the edges to prevent players from peeling the material off. All holes may be cut and other excess overlay material may be trimmed using an Exacto Knife or razor blade.

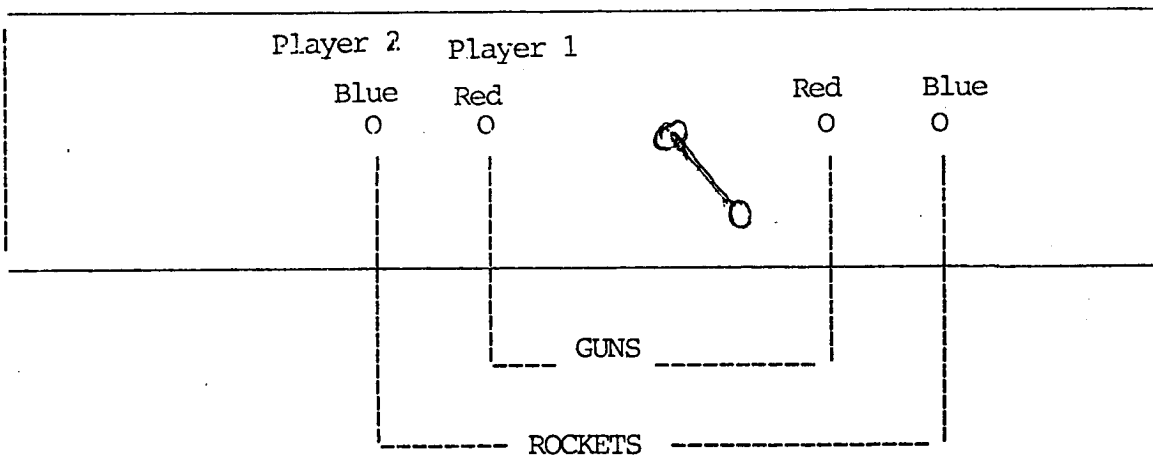
Carefully apply the appropriate push button decals.

A Control panel clear plexi has been supplied to place over the control panel overlay, to prevent decals from being peeled off. To apply the plex, first, drill all necessary Button and Joystick holes, and 6 holes for the plastic rivets. Next install the plastic rivets and the new push buttons according to the schedule on page 10.

## VII DISK REPLACEMENT

1. Remove the old disk and install the COBRA COMMAND disk. Be careful to follow the LDP manufacturer's instructions.

FIGURE:  
CONTROL PANEL DECAL CONFIGURATION



### NOTES:

Remove and discard the two white "FEET" buttons. Blue buttons have been provided with the kit.

The "ROCKETS" switches are parallel with the "Player 2" switches. The "GUNS" switches are parallel with the "Player 1" switches. For proper game play and enhanced earnings, it is highly recommended that the joystick be replaced with WICO No. 15-943106 or 15-943104 heavy duty joystick or equivalent.

# VIII EMI SHIELD INSTALLATION

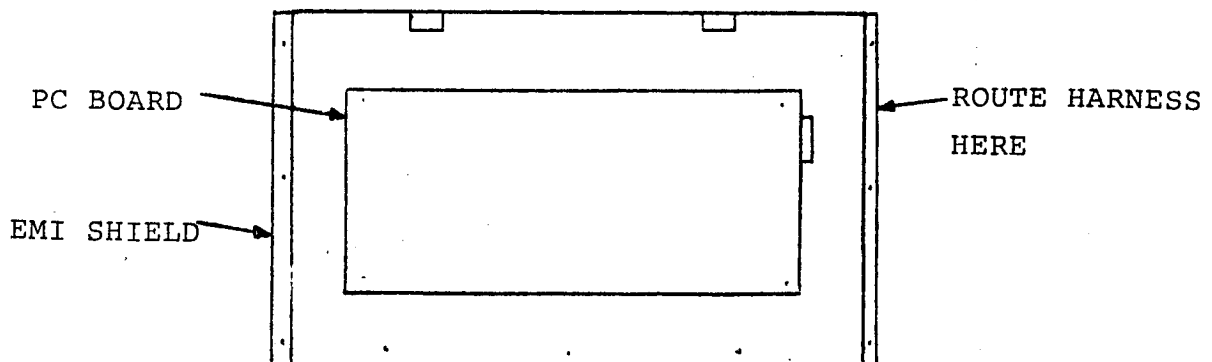
## EMI SHIELD INSTALLATION

### SUMMARY

The EMI Shield must be installed correctly in order to protect against undesirable radio interference.

### INSTRUCTIONS

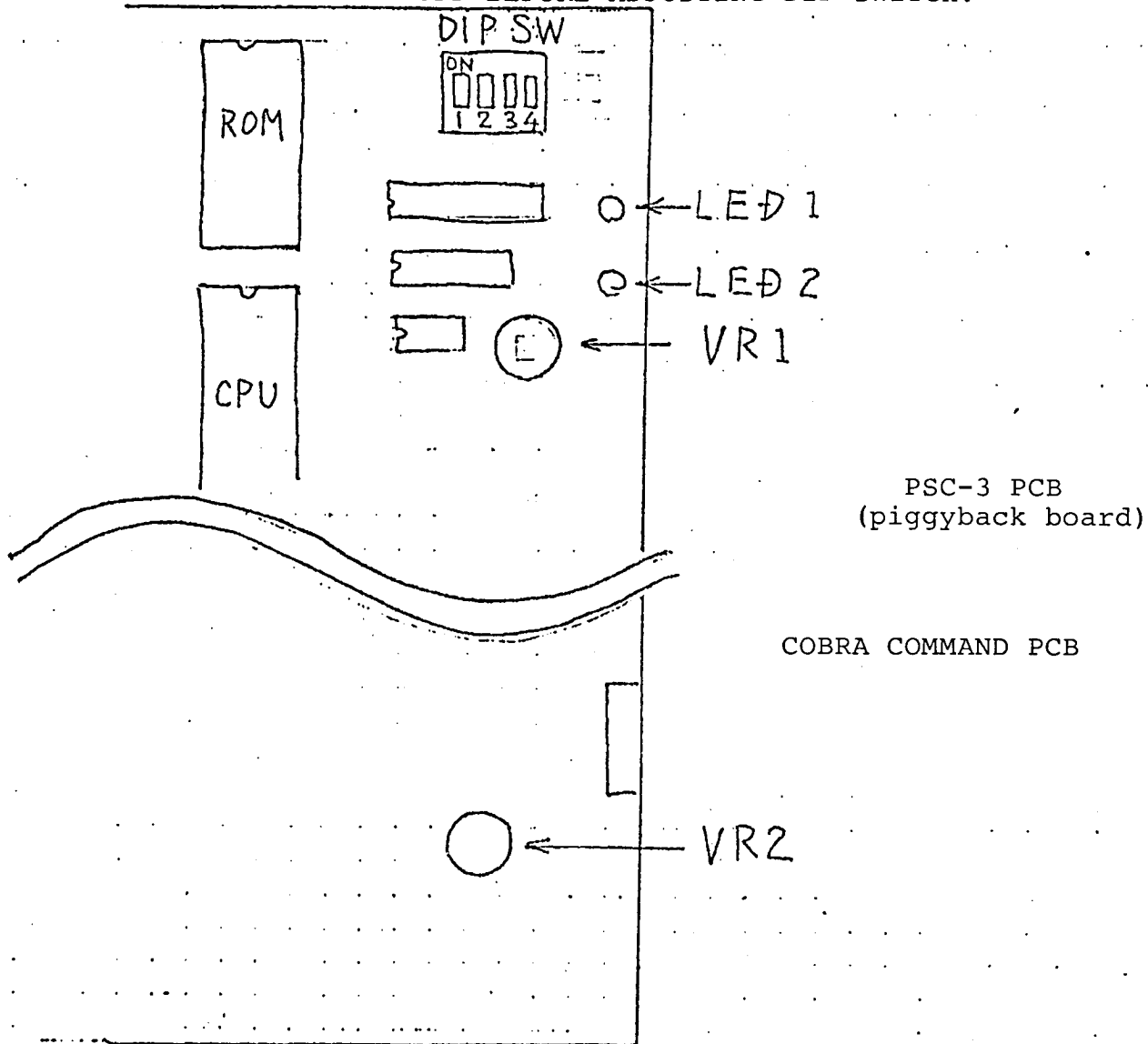
1. Separate the cover from the base of the EMI Shield.
2. Position the P.C. Board on the base until the holes of the P.C. Board line up with the holes of the EMI Shield base. Note the position of the edge connector, see illustrations.
3. Attach the P.C. Board to the base. Use spacers between the P.C. Board and base to prevent any electrical shorting.
4. Connect the harness to the P.C. Board.
5. Place the cover on the base with the wire harness routed through the opening on the side of the cover.
6. Install the 3 fastening screws. Be sure not to pinch any of the wire harness when attaching the cover.
7. Mount the P.C. Board and Shield in a convenient location in your cabinet with the use of 6 wood screws. The right side of the cabinet is recommended.
8. Attach a #18 (green) ground wire from the EMI Shield to the ground stud on the power supply chassis.
9. Permanently attach the "FCC" sticker to the back of the cabinet.



IX ADJUSTMENT PROCEDURE

PSC-3 LD-1100 PIONEER DISK PLAYER INTERFACE PCB

CAUTION! TURN POWER OFF BEFORE ADJUSTING DIP SWITCH!



PSC-3 PCB  
(piggyback board)

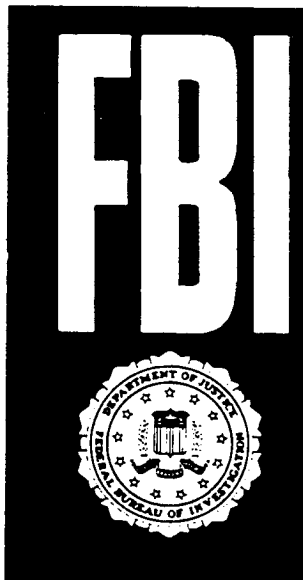
COBRA COMMAND PCB

1. VR-1: This volume is to adjust the timing of CPU NMI
  - a. Turn dipswitch key No. 2 ON
  - b. Turn power on and confirm LDP has started up.
  - c. Turn VR-1 and see if LED-1 lights. Fix VR-1 at the center of the area where LED-1 lights
  - d. Turn dipswitch key No. 2 OFF.

NOTE: When VR-1 is turned to the extreme right (CW) LDP may not start up. Turn VR-1 to the left (CCW) to let the LDP start up.

2. VR-2: This volume is to adjust the level to read frame number data.
  - a. Turn dipswitch key #3 ON
  - b. Turn power on and confirm LDP has started up.
  - c. Turn VR-2. When frame number is correctly read, LED-2 lights or flickers regularly. Fix VR-2 at the center of the area where LED-2 flickers with regular period.





## **WARNING**

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The Federal Bureau of Investigation investigates allegations of criminal copyright infringement.