COBRA COMMAND

CONVERSION KIT
FOR
DRAGON'S LAIR LASER GAMES

INSTALLATION INSTRUCTIONS

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 persuant 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 COBRA COMMAND EMI shield and mounting hardware.
C.   1 COBRA COMMAND P.C. Board with harnesses.
D.   1 Clear control panel plexi-glass.
E.   1 Set of control panel decals.
F.   1 Control panel overlay.
G.   1 COBRA COMMAND monitor cardboard underlay.
H.   1 COBRA COMMAND marquee decal.
I.   2 COBRA COMMAND side decals.
J.   1 FCC WARNING STICKER.
K.   2 Blue pushbuttons.
L.   1 Video Switching PC Board.
M.   1 SWS-60 Switching Regulator.

NOTICE:

Proper game operation requires Wico No. 15-943106 or Wico No. 15-943104 or equivelant heavy duty joystick. 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.

TABLE OF CONTENTS

I CONVERSION SUMMARY

CHOOSING THE MACHINE TO BE CONVERTED

The COBRA COMMAND^{TM} Conversion Kit has been designed to easily be
installed in the Dragons Lair Laser Game manufactured by Cinematr-
onics. One of the most important considerations determing the
success of your conversion will be the condition of the machine
you are converting.

COSMETIC CONSIDERATIONS:

It is important that care is taken when installing the Conversion Kit. The graphics of this
kit must be installed carefully to insure an attractive looking game machine. It is recom-
mended that if there are any scratches in the cabinet, they be filled and painted over.
This should be done prior to the graphics kit installation.

MECHANICAL CONSIDERATIONS:

In order to comply with the FCC Rules and Regulations it will be
necessary to install an EMI Shield to protect against undesirable
radio interference. (see page || for installation instructions.)
In addition, it will be necessary to replace the joystick with a
Wico No. 15-943106 or Wico No. 15-943104 or equivalent for proper
game operation. It will also be necessary to add 2 Player Buttons.

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 Heli-
copter 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 missle release button and watch the dual Air-to-ground
missles 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

		1 coin 1 play	1 coin 2 plays	1 coin 3 plays	2 coins 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

		USA	JAPAN
SW 5	COUNTRY	ON	OFF

			YES	NO
SW 6	FRAME # DISPLAYED	7820	(ON)	OFF —

		YES	NO	
SW 7	PIONEER INTERFACE	ON —	(OFF)	7820

		NORMAL	HIT CHECK
SW 8	HIT CHECK	ON	OFF —

DIP SWITCH 2

		3	5
SW 1	NUMBER OF LIVES	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

		YES	NO
SW 6	IDLEMODE SOUND	OFF	ON

		NO	YES
SW 7	RANDOM 1ST. PATTERN	OFF	ON —

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

IV SELF TEST

SUMMARY

The Self-Test Diagnostic Program is an important function of your COBRA COM-MAND 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.

1)   **RAM TEST**

The Zero Page Ram (Address oooo-offf) 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 symptons:

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 eratic 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) **LDP LINE TEST**

The RS 232 Connector and cable for the video disc player communications is tested. This test requires a special purpose socket from the factory. The RS 232 connector is removed from the video disc player and plugged into the special purpose socket. The fire button must be pressed to activate the test.

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

FAIL: An Error Message will be displayed on the screen.

10) 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.
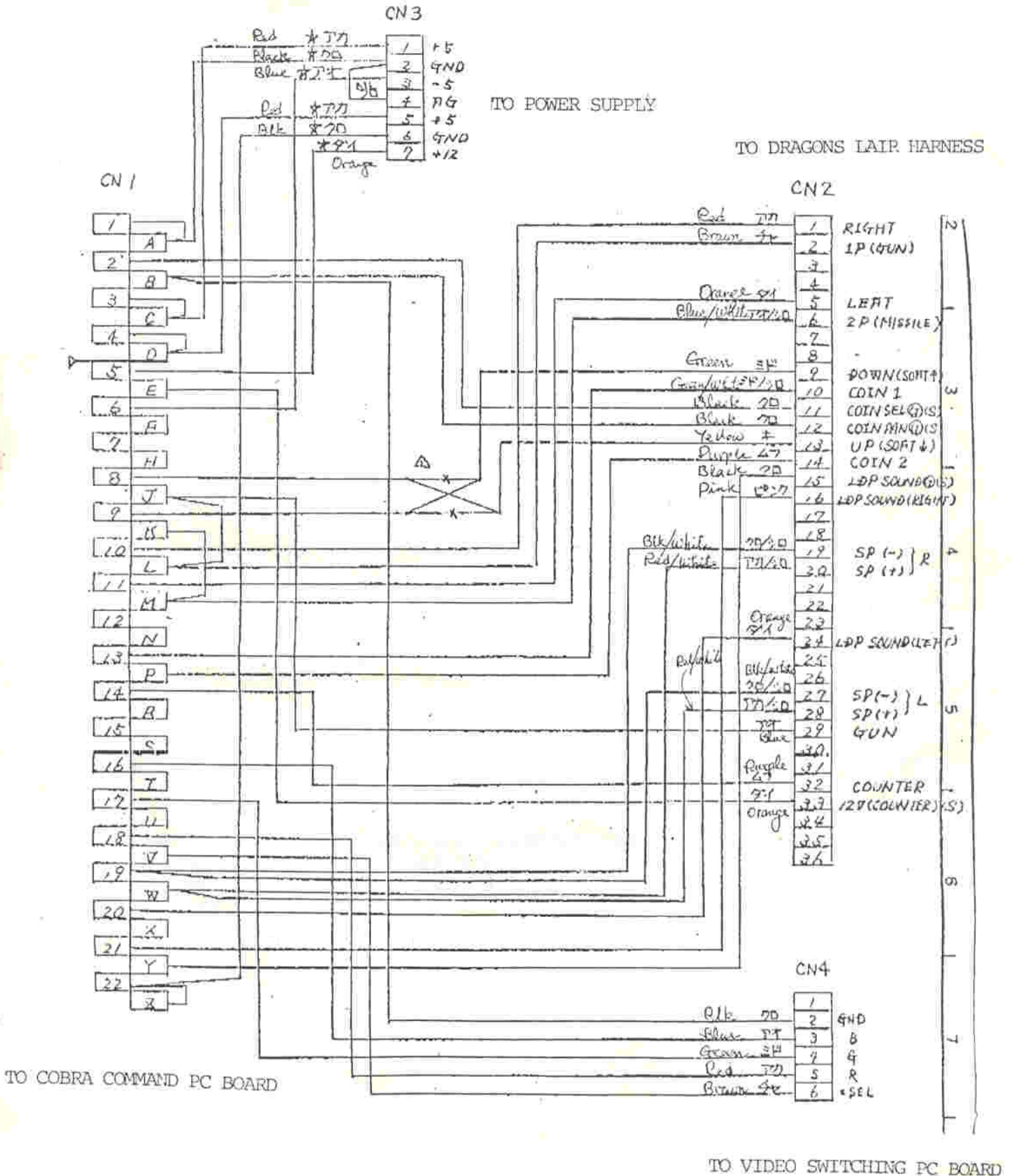
V WIRING

HARNESS ADAPTOR

INSTRUCTIONS

The HARNESS ADAPTOR has been designed to plug directly into your existing wiring of your Dragons Lair Game. It is not necessary to completely re-wire your game.

1. Unplug the harness going to your existing PC Board.

2. Remove the existing PC Board.

3. Mount the Cobra Command PC Board in the EMI Shield base. (Follow the EMI Shield installation instructions.)

4. Mount the PC Board and Shield base in a convenient location in your cabinet, with the 6 wood screws. It is recommended that the PC Board be mounted where the Dragons Lair PC Board was located, on the right side as viewed from rear.

5. Mount the SWS 60B switching power supply in a convenient location. The case of the SWS 60B must be bonded to earth ground in the cabinet.

6. Plug the Cobra Command Harness adaptor into the machines wiring harness.

7. Plug the Ribbon Interface connector from the PC Board CN 2 to the external control jack at the rear of the player.

8. Locate the power supply connector from the Cobra Command adaptor harness, plug it into the switching regulator.

9. Locate the AC power connector for the power supply and plug it into the power supply. Terminate the other end to the AC of the game machine.

10. Disconnect the BNC Video harness from the NTSC PC Board on the monitor, and remove the other end from the Video output of the player.

11. Locate the first video cable from the kits, terminate one end at CN-4 of the Cobra Command PCB. Terminate the other end at the Video output connector of the NTSC PC Board.

12. Locate the second video cable from the kit, terminate one end at CN-3 of the Cobra Command PC Board, terminate the other end at the video output connector of the Laser Player.

13. Locate the video output connector (RGB) from the Main Harness (Cobra Command). Plug the connector into P302 connector of the Switching PC Board supplied with the kit.

14. Remove the P203 connector from the monitors NTSC PC Board, and plug this cable into P301 of the switching board.

15. Plug P301 connector of the switching PC Board into P203 of the NTSC Board.

16. Install the EMI Shield cover.

ADAPTOR HARNESS DIAGRAM

CN3

	Red	*刀刀			
	Black	*刀几		1	+5
	Blue	*刀.工		2	GND
			9b	3	-5
	Red	*刀刀		4	ПG
	Blk	*刀几		5	+5
		*少刀		6	GND
	Orange			7	+12

TO POWER SUPPLY

TO DRAGONS LAIR HARNESS

CN2

	Red	刀刀		1	RIGHT		2
	Brown	手1		2	1P (GUN)		
				3			
	Orange	少1		4	LEFT		
	Blue/White	刀/刀		5			
				6	2P (MISSILE)		
				7			
	Green	与H		8			
	Gray/White	与刀/刀		9	DOWN(SOFT♠)		3
	Black	2D		10	COIN 1		
	Black	刀D		11	COIN SEL①(S)		
	Yellow	±		12	COIN AND①(S)		
	Purple	山刀		13	UP (SOFT♦)		
	Black	2D		14	COIN 2		
	Pink	ピンク		15	LDP SOUND①(S)		
				16	LDP SOUND (RIGHT)		
				17			
	Blk/white	刀/刀		18			
	Red/White	刀刀/刀		19	SP (-) } R		4
				3.0	SP (+)		
				21			
				22			
	Orange	少1		23			
				24	LDP SOUND(LEFT)		
	Blk/White			25			
		刀D/刀		26	SP(-) } L		
		刀/刀		27			
				28	SP (+)		
		刀刀 Blue		29	GUN		5
				3.0			
	Purple	山刀		31			
		少1		32	COUNTER		
	Orange			33	12V (COUNTER)(S)		
				34			
				35			
				36			

CN1

1	A
2	B
3	C
4	D
5	E
6	F
7	H
8	J
9	K
10	L
11	M
12	N
13	P
14	R
15	S
16	T
17	U
18	V
19	W
20	X
21	Y
22	Z

△

CN4

				1	
	Blk	刀D		2	GND
	Blue	户T		3	B
	Green	与H		4	G
	Red	刀刀		5	R
	Brown	与1		6	*SEL

TO COBRA COMMAND PC BOARD

TO VIDEO SWITCHING PC BOARD

— 7 —

DISC REPLACEMENT

1. Remove old disc and Install the Cobra Command disc. (follow the original Game Manufacturers Instruction)

CONTROL PANEL DECAL CONFIGURATION
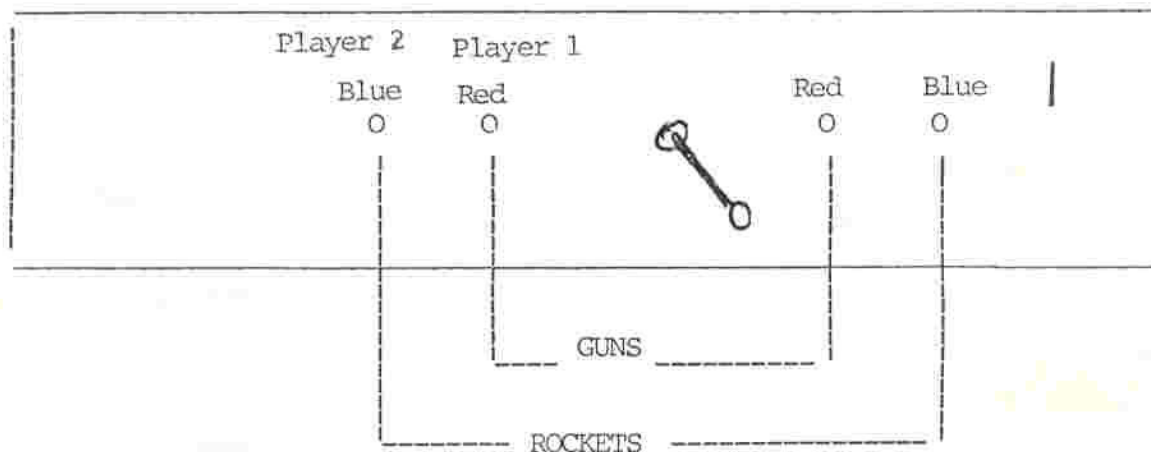
NOTES:

Remove & discard the white "1 player/2 player" buttons. Punch two new 1 1/8 inch holes in the control panel for the blue "Rockets" pushbuttons as shown abve.

The "Rocket" switches are parallel with the "player 2" switches. The "Gun" switches are parallel with the "Player 1" switches. It will be necessary to replace the joystick with Wico No. 15-943106 or Wico No. 15-943104 or equivalent for proper game operation.

VI COSMETICS

COSMETICS

GETTING STARTED

All components that contain any possible original manufacturers name (other than the serial number plate), graphics or game information must be removed or covered by some means. Do no 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 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 8.
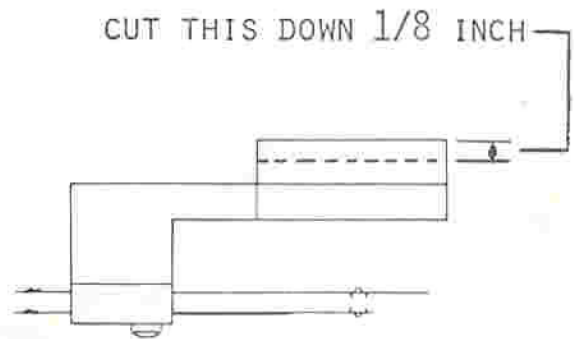
ATTENTION

PUSHBUTTON SWITCHES-AFTER REPLACING YOUR OLD PUSHBUTTONS
WITH THE NEW ONES SUPPLIED IN THE KIT, IF THE BUTTONS DO
NOT MAKE CONTACT WITH THE LEAF SWITCHES, CUT THE BUTTON
HOLDER DOWN APROX. 1/8 INCH, A HACK SAW IS RECOMMENDED.

BUTTON HOLDER

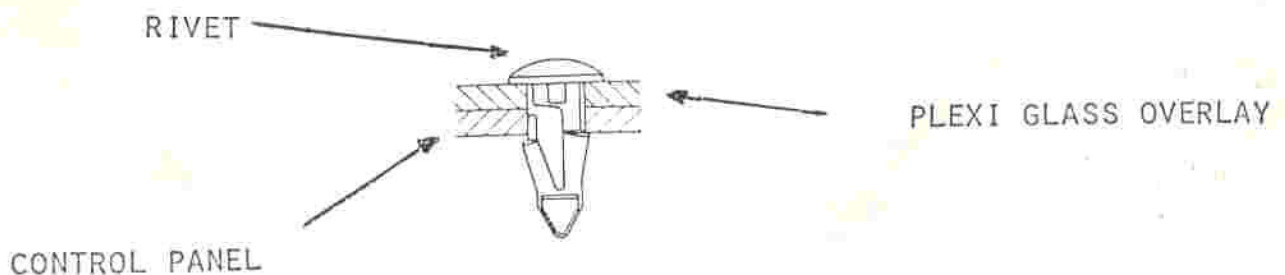CUT THIS DOWN 1/8 INCH
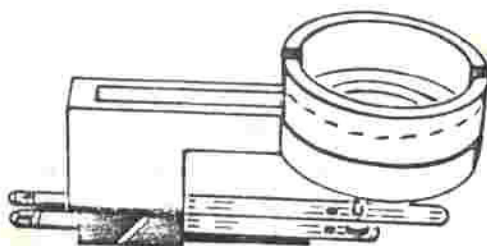
BEFORE

AFTER

CONTROL PANEL-PLASTIC RIVETS HAVE BEEN SUPPLIED TO FASTEN
THE CONTROL PANEL TO THE PLEXI GLASS OVERLAY. TO DO THIS,
DRILL A 3/16 INCH HOLE IN BOTH THE CONTROL PANEL, AND THE
PLEXI GLASS OVERLAY.

FASTINING THE PLASTIC RIVETS

RIVET

PLEXI GLASS OVERLAY

CONTROL PANEL

VIII EMI SHIELD INSTALLATION
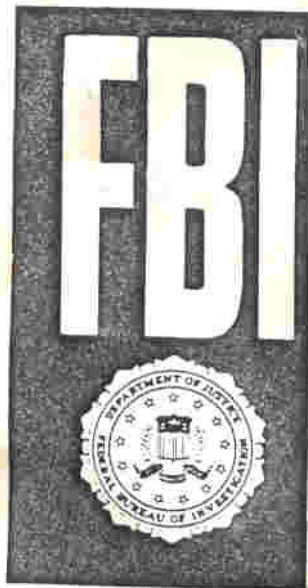
EMI SHIELD INSTALLATION

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 attatch the "FCC" sticker to the back of the cabinet.

PC BOARD

ROUTE HARNESS HERE

EMI SHIELD