107

COBRA COMMAND

CONVERSION KIT
FOR
BEGA'S BATTLE 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 Disc.

B. 1 COBRA COMMAND EMI Shield and mounting hardware.

C   1 set of COBRA COMMAND EPROMS.

D. 6 Modified pushbutton holders.

E. 1 Clear control panel plexi glass (predrilled).

F. 1 Set of control panel decals.

G. 1 Control panel overlay.

H. 1 COBRA COMMAND monitor cardboard underlay.

I. 1 COBRA COMMAND marquee decal.

J. 2 COBRA COMMAND side decals.

K. 1 FCC WARNING STICKER.

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

The COBRA COMMAND™ Conversion Kit has been designed to easily be installed in the BEGA'S BATTLE™ Laser Game manufactured by Data East. One of the most important condiserations determining 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 recommended 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 7 for installation instructions.)

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 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 missle 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 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

DIP SWITCH 2

NUMBER OF LIVES		3		5	
SW 1		OFF		ON	
BONUS LIFE		10,000 and every 20,000		20,000 and every 30,000	
SW 2		OFF		ON	
DIFFICULTY	EASY	REGULAR		DIFFICULT	VERY DIFF.
SW 3	OFF	ON		OFF	ON
SW 4	OFF	OFF		ON	ON
COUNTRY		JAPAN		USA	
SW 5		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		
SW 8		OFF	ON		

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.

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.
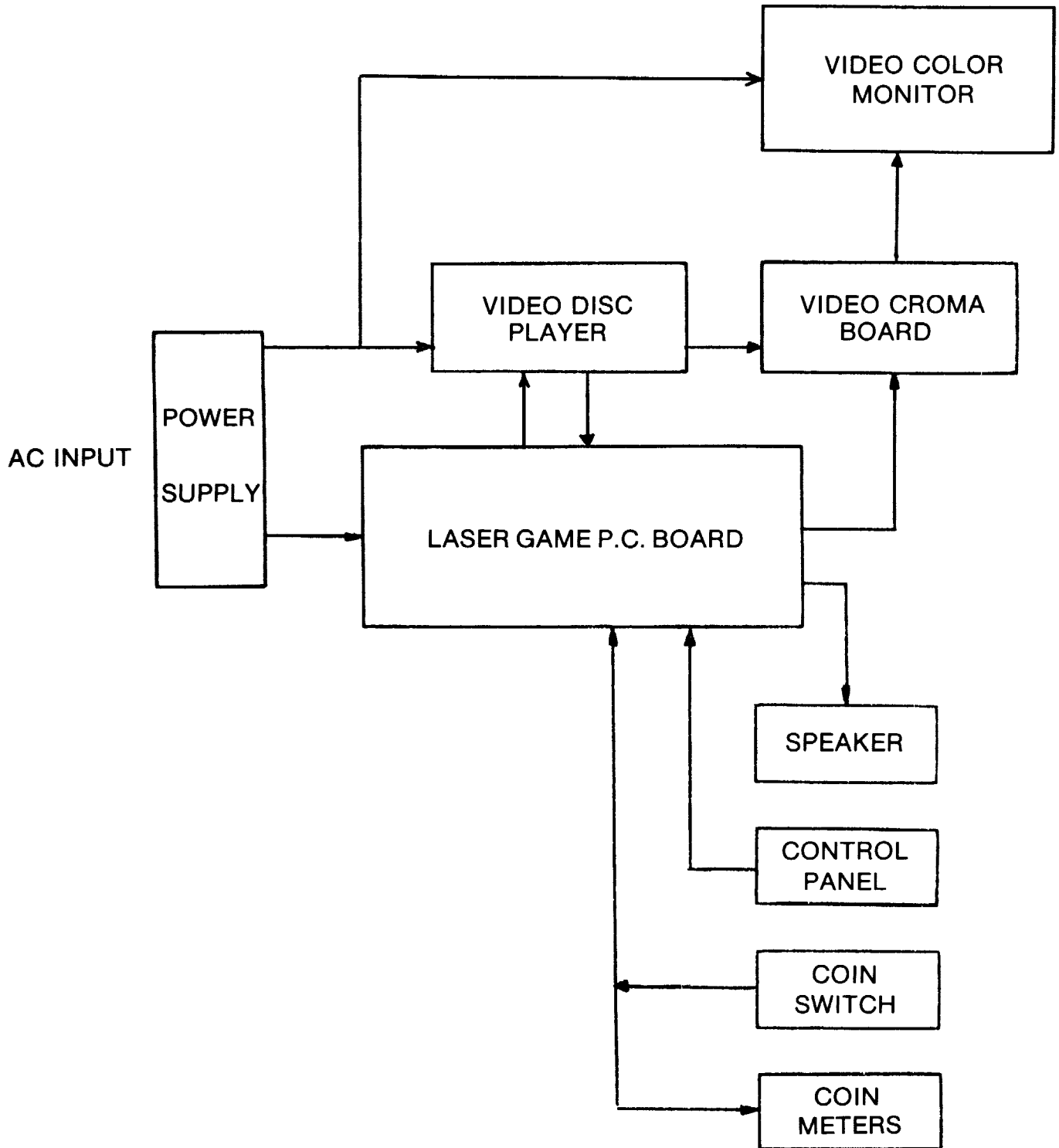
10) B **DISC TEST**

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 SYSTEM BLOCK DIAGRAM

```
                                                    ┌──────────────────┐
                                                    │  VIDEO COLOR     │
                          ┌─────────────────────────→│    MONITOR       │
                          │                         │                  │
                          │                         └──────────────────┘
                          │                                  ▲
                          │                                  │
                          │       ┌──────────────┐   ┌──────────────────┐
                          │       │ VIDEO DISC   │   │  VIDEO CROMA      │
                          │       │   PLAYER     │──→│    BOARD          │
                          │       │              │   │                  │
                          │       └──────────────┘   └──────────────────┘
         ┌──────────┐     │          ▲   │                   ▲
         │ POWER    │─────┘          │   │                   │
AC INPUT │          │                │   ▼                   │
         │ SUPPLY   │     ┌────────────────────────────────┐ │
         │          │────→│    LASER GAME P.C. BOARD        │─┘
         └──────────┘     │                                 │
                          └────────────────────────────────┘
                            ▲     ▲    │
                            │     │    │    ┌──────────────┐
                            │     │    └───→│   SPEAKER    │
                            │     │         └──────────────┘
                            │     │
                            │     │         ┌──────────────┐
                            │     └─────────│  CONTROL     │
                            │               │   PANEL      │
                            │               └──────────────┘
                            │
                            │               ┌──────────────┐
                            │←──────────────│    COIN      │
                            │               │   SWITCH     │
                            │               └──────────────┘
                            │
                            │               ┌──────────────┐
                            └──────────────→│    COIN      │
                                            │   METERS     │
                                            └──────────────┘
```

VI CONVERSION INSTRUCTION

SUMMARY

The Laser Game Conversion Kit has been designed for easy installation. There are four simple steps to the conversion; EPROM change, EMI Shield installation, disc change and cosmetic alterations. Be sure to follow the steps carefully to insure that your converted machine is electrically safe. And also that it complies with FCC Rule and is appealing aesthetically. Before proceeding, unplug the machine.

A. **EPROM CHANGE**

The game program is stored in the EPROM. In order to convert to the new game the EPROM's must be changed.

PROCEDURE

1. Disconnect the connectors going to the game P.C. Board and and remove the P.C. Board from the cabinet.

2. Refer to the EPROM Replacement Instruction sheet packaged with the new EPROM's and install the new EPROMS.

3. Before reinstalling the PC Board, follow the EMI Shield Installation instruction.

B. **EMI SHIELD INSTALLATION**

It is required that the EMI Shield be installed according to instruction in order to comply with FCC Rules and Regulations.

PROCEDURE

1. Separate the cover from the base of the EMI Shield.

2. Position the base on the under side of the monitor and mark the 4 mounting holes and drill the holes out accordingly. (be cautious when drilling to avoid damaging the electronics.)

3. Attach the base to the under side of the monitor with the nuts, washers and screws.

4. Line the holes on the P.C. Board up wth the holes on the EMI Shield and install the plastic fasteners, and the P.C. Board.

5. Reroute the wire harness to the P.C. Board, and connect.

6. Place the cover on the base with the wires routed through the opening of the side of the cover. Then install the 3 fastening screws. Be sure not to pinch any of the wire harness when attaching the cover.

7. Attach a #18 (green) groundwire from the EMI Shield to the ground stud on the power supply chassis.

8. Attach the FCC Warning sticker to the back of the cabinet.

P.C. BOARD POSITIONING

EMI SHIELD

P.C. BOARD

ROUTE HARNESS
HERE

PLASTIC FASTENER

P.C. BOARD

EMI SHIELD BASE
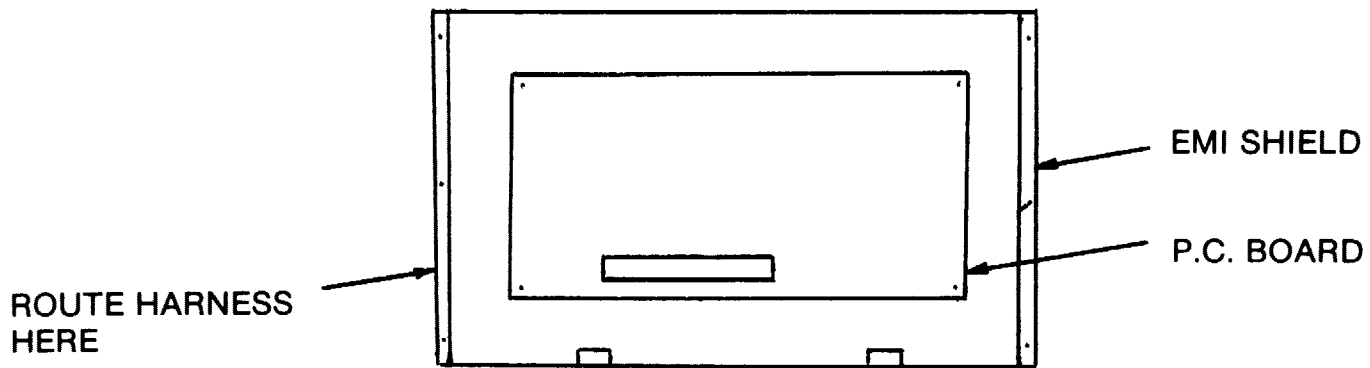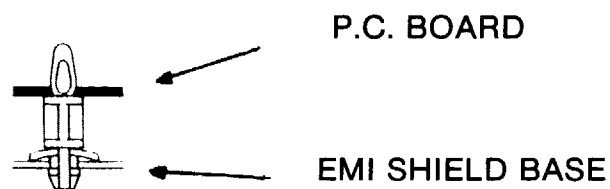
C.   **DISC REPLACEMENT**

Follow the below instructions to remove the old disc and to install
the new disc.

**TO INSERT AND REMOVE THE VIDEO DISC**

TO INSERT:

1.   Open the disc compartment lid.

2.   Place the disc with the Program label down install it to the
     center wheel firmly.

3.   Close the lid.

4.   The disc will start rotating. The STANDBY Lamp will blink for
     several seconds to show that the player is ready to play.
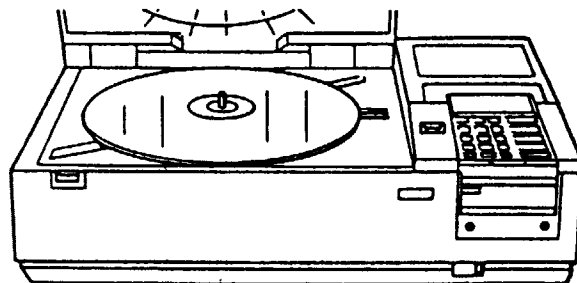
TO REMOVE:

1. Press the OPEN Button when you want to stop playing the disc no matter what mode the player is in. The disc will stop rotating and the lid will unlock and lift slightly.

2. Lift the lid all the way.

3. Remove the disc, holding it by the rim.

4. Close the lid.
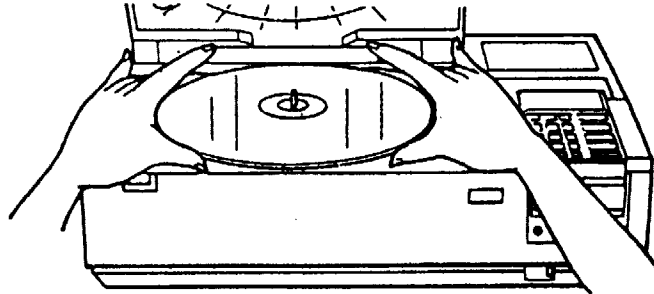
D. ## COSMETICS

MONITOR UNDERLAY

Install the new monitor graphic cardboard underlay. It is necessary to unlatch the control panel to have access to the monitor underlay.

MARQUEE DECAL

Remove the Marquee plexi from the game. Strip the old decal off of the plexi, clean with lacquer thinner. Position the new decal, peel off protective backing and apply to the clean marquee plexi. Cut off excess decal using an xacto knife. Then reinstall the marquee plexi.
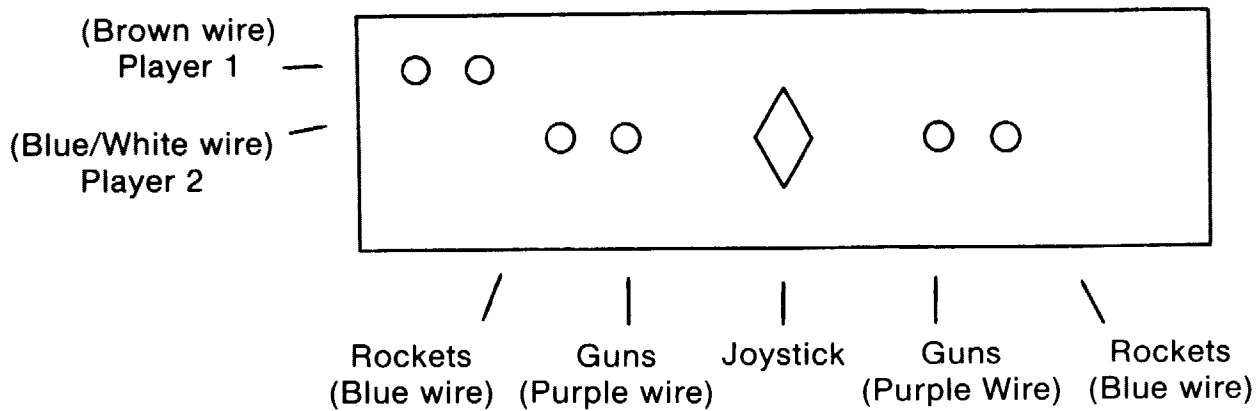
SIDE GRAPHICS

Remove the old side graphic decals by Gently heating the decal with a heat gun, and peeling off section by section and clean with Lacquer thinner. Position the new decal, peel off backing and apply. It is recommended that soapy water is sprayed on the cabinet. The decal should be positioned, and the excess water between the decal and cabinet removed by the use of a squeegee.

CONTROL PANEL

Remove the control panel from the game cabinet. Remove the player buttons and joystick from the panel. Strip the old control

panel overlay off of the metal panel, and position the plexi glass overlay on the control panel. Use it as a template and mark the 6 additional 3/16" holes and drill out accordingly. Install at least two Pushbuttons to hold the plexi in place correctly while you are drilling the rivet holes. Position the new control panel overlay. Peel off the backing and apply, by folding it over the top of the panel. Use an xacto knife to cut out holes and trim excess on the sides. Apply control panel decals according to the illustrations. Attach the control panel plastic overlay to the panel using the plastic rivets. Reinstall the buttons using the modified Button Holders provided with your Kit, and the joystick. Reinstall the panel in the game cabinet.

DECAL POSITIONING

(Brown wire)
Player 1 —

(Blue/White wire)
Player 2

| Rockets | Guns | Joystick | Guns | Rockets |
| (Blue wire) | (Purple wire) | | (Purple Wire) | (Blue wire) |

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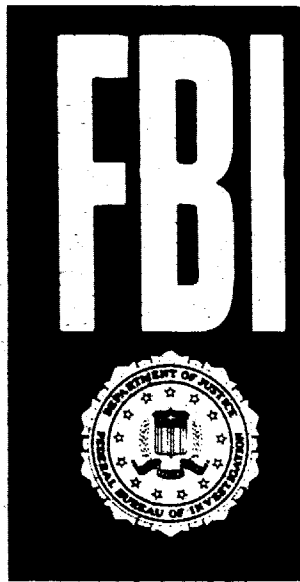
COBRA COMMAND OPTION SETTINGS

FOR MAXIMUM EARNING RESULTS, WE RECOMMEND THAT YOU USE
THE FOLLOWING SETTING.

Dip Switch 1

Coinage- 2 Coins 1 Play

SW 1	Right Hand	ON
SW 2	Selector	ON
SW 3	Left Hand	ON
SW 4	Selector	ON
SW 5,6,7,8		OFF

Dip Switch 2

SW 1	3 Lives	OFF
SW 2	20,000 and every 30,000 Bonus	ON
SW 3	Regular Difficulty	ON
SW 4	Regular Difficulty	OFF
SW 5	Operation Code	ON
SW 6	Idlemode Sound On	ON
SW 7	Random 1st Pattern	ON
SW 8	Self Test	OFF

Thomas Petit
Vice President, Sales
Data East USA, Inc.

EPROM REPLACEMENT INSTRUCTION

1. Remove the 13 Bega Battle EPROM's from the PC Board.
   Be sure to save these EPROM's to get the proper credit.

2. Install the Cobra Command EPROM set. See the figures below.

EPROM No.	Board location	EPROM No.	Board location
AUOO	14 F	AUO8	4 A
AUO1	12 F	AUO9	6 A
AUO2	11 F	AUOA	12 A
AUO3	9 F	AUOB	14 A
AUO6	15 C	AUOC	15 A
AUO7	3 A		

NOTE: I.C. SOCKET LOCATION 8F, AND 6F ARE NOT USED WITH COBRA
COMMAND AND ARE TO REMAIN EMPTY.

EPROM LOCATION ASSIGNMENT   VOLUME CONTROL