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**TWIN
EAGLE**

POWER SUPPLY

WARNING WARNING WARNING WARNING WARNING WARNING WARNING

THE POWER SUPPLY REQUIREMENTS FOR THIS CONVERSION FROM YOUR OLD GAME MUST BE CAPABLE OF +5 VDC REGULATED AT 6A; +12 VDC REGULATED AT 1A AND -5 VDC AT 1/2A. THESE OPERATING VOLTAGES ARE NECESSARY FOR YOUR KIT.

GAMES SUCH AS "PACMAN" AND "GALAGA" USE A POWER SUPPLY DIRECTLY ON THEIR PC BOARD ASSEMBLY:

THEREFORE THE VOLTAGE GOING DIRECTLY INTO THE PC BOARD ASSEMBLY IS 9 & 15 VOLTS AC!

!!!!!!UNDER NO CIRCUMSTANCES DIRECTLY CONNECT ANY HARNESS OF THIS TYPE INTO THE NEW BOARD SET WITHOUT MAKING NECESSARY CHANGES TO OVERCOME ANY BOARD FAILURES!!!!!!

IMPORTANT F.C.C. WARNING

WARNING

THIS EQUIPMENT GENERATES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE INTERFERENCE TO RADIO COMMUNICATIONS. AS TEMPORARILY PERMITTED BY REGULATION IT HAS NOT BEEN TESTED FOR COMPLIANCE PURSUANT TO SUBPART J OF PART 15 OF FCC RULES, WHICH ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST SUCH INTERFERENCE. 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 NECESSARY TO CORRECT THE INTERFERENCE.

GAME INSTRUCTIONS

Taito America Corporation's **"Twin Eagle"**TM is an all out high resolution combat video game. A 1 or 2 player game in which the second player can join the game at any time. The action begins as your helicopter faces obstacles in the air, on land and sea.

Use the joystick to begin the adventure. The "Bomb and Missile" buttons will destroy the enemy.

Power up items appear during the game play and if you catch these items you will receive extra fire power.

The game ends upon losing all characters or destroying the enemy base.

"Twin Eagle"TM the action/adventure/excitement that keeps players returning.

This manual will guide you in the conversion of your color monitor upright video game into a **"Twin Eagle"**TM game. We urge you to read through the instructions before beginning the conversion.

WARNINGS AND NOTICES

For safety and reliability, Taito America Corporation does not recommend or authorize any substitute parts or modifications of Taito America Corporation equipment.

Use of non-Taito America parts and modifications of game circuitry may adversely affect game performance and safety.

Substitute parts or equipment modifications may void FCC acceptance.

Since **"Twin Eagle"**TM is protected by Federal copyright, trademark and patent laws, unauthorized versions of this game are illegal under Federal Law. This also applies to unauthorized facsimiles of Taito America equipment, logos, designs, publications, assemblies and games (or features not deemed to be in the public domain) whether manufactured with Taito America components or not.

NOTICE

Parts salvaged from your old game are required to complete your kit. These salvaged parts **MUST** operate perfectly, or the converted game can not perform properly or safely. Always repair circuit board malfunctions and cabinet damage before conversion is attempted.

Check the parts supplied in this kit against the parts list included in this manual.

CAUTION

For safe operation it is recommended the game be grounded. This game should be equipped with a three conductor power cable. The third conductor is the ground conductor and when the cable is plugged into an appropriate receptacle, the game is grounded. The offset pin on the power cable's three-prong connector is the ground connection. Do not use an adapter plug to defeat the ground pin on the power cord.

NOTICE

This kit is not intended for use with X-Y monitors. Suitable monitors are the horizontal or vertical raster-scan with inputs for red, green and blue video as well as negative sync. (These should be compatible with TTL logic levels.)

Note: **"Twin Eagle"**TM uses a vertical monitor.

NOTICE

Be sure the power supply from your old game is capable of +5 vdc regulated at 6A; +12 vdc regulated at 1A and -5 vdc regulated at 1/2A. These operating voltages are necessary for your kit. **Please note the enclosed warning with the PC Board Assembly.**

TAITO AMERICA CORPORATION KIT PARTS PROVIDED

- 1-"Twin Eagle"TM PC BOARD ASSEMBLY
- 2-8 WAY JOYSTICK ASSEMBLY
- 1-"Twin Eagle"TM CONTROL PANEL OVERLAY
- 1-"Twin Eagle"TM MONITOR COVER PLEXIGLASS
- 1-"Twin Eagle"TM MARQUEE
- 1-WIRING HARNESS
- 1-INSTRUCTION CARD WITH REMOVABLE CONTROL STICKERS
- 4-BUTTONS
- 1-FCC CAGE
- 2-PCB MOUNTING BLOCKS

TOOLS AND SUPPLIES REQUIRED

SCREWDRIVER
WIRE CUTTERS
ELECTRIC DRILL WITH BITS
SOLDERING IRON AND SOLDER
PLIERS
PHILLIPS SCREWDRIVER
HEX DRIVER
180-GRIT SANDPAPER
GREASE PENCIL OR MARKER
X-ACTO KNIFE
HACKSAW, JIGSAW OR TABLESAW W/CARBIDE-TIPPED BLADE
ELECTRICAL TAPE OR HEAT-SHRINK TUBING

All games require a certain amount of maintenance to keep in good condition. A periodic check of mechanical controls would be beneficial to guarantee your game will be profitable.

GAME PREPARATION

CLEANING

The exterior of the game, all metal parts and all plastic parts can be cleaned with non-abrasive cleaner. Caution should be used when cleaning the plastic. A dry cloth can cause scratches and result in a foggy worn appearance. Plexiglass cleaner on a soft cloth is suggested to maintain and keep your monitor crt cover looking new.

CABINET

Inspect your cabinet for any gouges or items stuck on the cabinet like chewing gum. Remove all foreign objects and fill in the gouges with any type of quick hardening wood putty. Sand to ensure the surface is smooth. Wipe the outside of the old cabinet clean. Remember the reason you are converting your old game is to have the earnings of a new game. Making your game look like a new game will increase your earnings and spark player-interest.

NOTICE

Please make sure you clean and lubricate the coin mechanisms. It is important that you service them in order for this game to achieve the maximum possible earnings.

CONVERSION INSTRUCTIONS

Remove the new **"Twin Eagle"**TM marquee from the kit. This new marquee provided with your kit is specifically designed for ease of handling. Place and center the old marquee on top of the new marquee. Place masking tape on the area where you intend to cut the new marquee. Using an x-acto knife score the new marquee and simply break at this score. If your old marquee is made of glass, remove the paint of the old marquee and attach the new marquee behind this glass. If your old marquee is made of plexiglass, it is recommended that new clear plexiglass be used to best provide the brilliance of your new marquee.

Remove the new **"Twin Eagle"**TM monitor plexiglass from the kit. Place the center of the old monitor glass on top of the new monitor plexiglass. Place masking tape on the area where you intend to cut the new plexiglass. With your grease pencil draw a straight line to use as a cutting guide. Using the hacksaw or jigsaw cut the plexiglass down to size.

CONTROL PANEL

Remove the old control panel buttons or joysticks. Clean and sand smooth any imperfections on the existing lexan material.

Place the template provided in this manual on the control panel to design the best possible positioning for your buttons, joystick and control panel instructions.

Leave your 1 and 2 player start buttons where they are on the old control panel. (Use the enclosed 1 and 2 player stickers if needed.) Drill holes as needed for installation of the joystick and other buttons. Clean any burrs from around holes. Any hole that is no longer needed we suggest plugging with wood, putty or epoxy.

Remove any soil and/or grime from the front of the old control panel lexan.

Cut the new **"Twin Eagle"**TM lexan to the appropriate size needed to cover the panel. If possible, leave enough lexan to wrap a small lip around the top and bottom of the panel.

Remove the backing from the **"Twin Eagle"**TM lexan and apply it over the old control panel being careful to avoid air pockets.

After the lexan is securely on, with an x-acto knife or razor blade cut the holes on the control panel. Install the new joystick, buttons and any hardware that might have been removed on the control panel and tighten them down.

Attach the additional stickers marked "Button" and "Missile" to the control panel.

ADDITIONAL GAME PLAY INSTRUCTIONS

Your new monitor plexiglass has instructions on it. If when installing the new monitor plexiglass it becomes necessary to cut through the instructions, place the additional set of instructions on the monitor plexiglass.

WIRING PROCEDURES

INSTALLING INTERBOARD WIRING

This game comes with a color-coded 3 connector cable for easy installation. Refer to the wiring diagram included in this manual for quick connections.

Disconnect the old wiring harness from the old CPU board.

Carefully remove old circuitboards and FCC cages from the game.

Using the schematic drawings from your old game, carefully note the function of each wire.

Leaving several inches of wire from the old wiring harness at each connector, cut the wires near the game's coin door, monitor, control panel, power supply and speaker wires. Install the new wiring harness to those points following your wiring diagram. Use electrical tape or heat-shrink tubing to insulate all splices.

Install your FCC cage where the old board set was.

Mount the **"Twin Eagle"**TM PCB assembly with the mounting blocks provided in the center of the FCC cage. Plug the wiring harness onto the PCB and close the cage securely.

If your game has seriespass transistors for the power supply on a separate heatsink, remount the metal heatsink beside the power supply board.

Check and clean the input jack on the power supply board. Replace any burned or damaged pins.

GAME PLAY AND DIP SWITCH SETTINGS

"Twin Eagle"TM has been designed with dip switches for operator-adjustable features for maximum earnings in your location. Using the dip switch chart provided in this manual will allow you to customize the game for your location.

If done properly your game should look new. The conversion is complete.

WE APPRECIATE YOUR PURCHASE OF TAITO AMERICA'S "TWIN EAGLE"TM KIT AND SINCERELY HOPE THAT THE GAME PROVIDES MANY HOURS OF CONTINUED EARNINGS AND ENJOYMENT FOR YOU AND YOUR PLAYERS.

PLEASE LOOK TO TAITO AMERICA CORPORATION TO ALWAYS PROVIDE THE VERY BEST IN VIDEO ENTERTAINMENT FOR YOU!

TWIN EAGLE™ KIT DIP SWITCH SETTINGS

SWITCH BANK "1"	1	2	3	4	5	6	7	8
NOT USED	OFF ON							
MONITOR INVERSION		OFF ON						
NORMAL GAME			OFF ON					
TEST MODE			ON					
COCKTAIL MODE				OFF ON				
UPRIGHT MODE				ON				
COIN SWITCH #1								
1 COIN 1 PLAY					OFF	OFF		
1 COIN 2 PLAYS					ON	OFF		
2 COINS 1 PLAY					OFF	ON		
2 COINS 3 PLAYS					ON	ON		
COIN SWITCH #2								
1 COIN 1 PLAY							OFF	OFF
1 COIN 2 PLAYS							ON	OFF
2 COINS 1 PLAY							OFF	ON
2 COINS 3 PLAYS							ON	ON
SWITCH BANK "2"	1	2	3	4	5	6	7	8
DIFFICULTY LEVEL								
LEVEL 1 (EASY)	ON	OFF						
LEVEL 2	OFF	OFF						
LEVEL 3	OFF	ON						
LEVEL 4 (HARD)	ON	ON						
BONUS								
NO BONUS			OFF	OFF				
500,000 ONLY			ON	OFF				
1 MILLION ONLY			OFF	ON				
1ST500,000 & 1,500,000			ON	ON				
3 PLAYERS					OFF	OFF		
5 PLAYERS					ON	OFF		
1 PLAYER					OFF	ON		
2 PLAYERS					ON	ON		
NOT USED							OFF	OFF

WIRING DIAGRAM FOR "TWIN EAGLE"TM KIT HARNESS ASSY

FUNCTION	COLOR			COLOR	FUNCTION
GROUND	BLK	1	A	BLK	GROUND
GROUND	BLK	2	B	BLK	GROUND
+5 VOLTS	RED	3	C	RED	+5 VOLTS
+5 VOLTS	RED	4	L	RED	+5 VOLTS
NOT USED	BRN	5	E	BRN	NOT USED
+12 VOLTS	BLU	6	F	BLU	+12 VOLTS
KEY		7	H		KEY
COIN METER 1	BLU/BRN	8	J	WHT/VIO	COIN METER 2
		9	K		
SPEAKER (+)	WHT/BLK	10	L	BLK	SPEAKER (-)
		11	M		
VIDEO RED	RED	12	N	GRN	VIDEO GREEN
VIDEO BLUE	BLU	13	P	WHT	VIDEO SYNC
VIDEO GROUND	BLK	14	R	BRN/WHT	SERVICE
NOT USED	YEL	15	S	WHT/BRN	TILT
COIN 1	WHT/YEL	16	T	GRN/YEL	COIN 2
1P START	PNK/BLK	17	U	RED/BLK	2P START
1P UP	ORG/BLU	18	V	BRN/BLU	2P UP
1P DOWN	GRN/ORG	19	W	ORG/WHT	2P DOWN
1P LEFT	GRN/BLU	20	X	ORG/GRN	2P LEFT
1P RIGHT	RED/YEL	21	Y	WHT/ORG	2P RIGHT
1P MISSILE	RED/WHT	22	Z	BRN/BLK	2P MISSILE
1P BOMB	WHT/RED	23	a	YEL/WHT	2P BOMB
NOT USED	YEL/BLK	24	b	BRN/GRN	NOT USED
		25	c		
		26	d		
GROUND	BLK	27	e	BLK	GROUND
GROUND	BLK	28	f	BLK	GROUND
PARTS SIDE		PIN NO.		SOLDER SIDE	

BLK-BLACK WHT-WHITE BLU-BLUE BRN-BROWN ORG-ORANGE

YEL-YELLOW GRN-GREEN VIO-VIOLET GRY-GRAY RED-RED

PNK-PINK

NOTE: ALL WIRES 22 AWG.

JOYSTICK TEMPLATE

FIGURE 3

