INSTRUCTIONS

You are a member of a top-secret squadron, operating under cover in the Persian Gulf!

- 1 to 4 players.
- Insert coin(s), then press Start/Shoot.

CONTROLS



8-WAY JOYSTICK



START/SHOOT



NUKE

DESERT ASSAULT™

HOW TO PLAY

Start/Shoot: Fires weapon—unlimited ammo.

Nuke: Devastating weapon—limited supply.

To sprint: Double-pump joystick.

If you catch fire: Wag joystick.

If you get grabbed: Keep hitting Start/Shoot.

If you're wounded: Another player can help you. Just bump into him — he then controls both of you, but you can still shoot. Press Nuke to separate.

DATA EAST

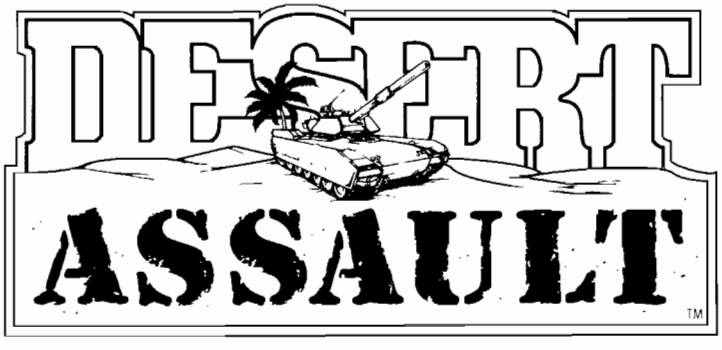


Conversion Kit Manual

1850 Little Orchard Street, San Jose, Ca. 95125 (408) 286-7080 Fax (408) 971-0722
Customer Service (800) 634-7270

P/N 780-0205-00

DATA EAST



Conversion Kit Manual

© 1991 Data East USA, Inc.

© 1991 by DATA EAST Corporation
ALL RIGHTS RESERVED

No part of this publication may be reproduced by any mechanical, photographic or electronic process, or in the form of a phonographic recording, nor may it be stored in a retrieval system, transmitted or otherwise copied for public or private use, without permission from the publisher.

The game play, all graphic designs, this technical manual, it accompanying schematic diagrams, and the display manual are protected by the U.S. Copyright Act of 1976.

This Act provides for substantial penalties for violating federal copyright laws. Courts can impound infringing articles while legal action is pending. If infringers are convicted courts can order destruction of the infringing articles.

In addition, the Act provides for payment of statutory damages of up to $50,000 per infringing transaction in certain cases. Infringers may also have to pay cost and attorneys' fees and face an imprisonment of up to five years as well as fines of up to $250,000 in the case of individuals and up to $500,000 in the case of corporations.

DATA EAST Corporation will aggressively enforce its copyrights against infringers. We will use all legal means to immediately halt any manufacture, distribution, or operation of a copy of any games made by us. Anyone who purchases such copies risks forfeiting such a game.

Published by:
DATA EAST CORPORATION
1850 Little Orchard Street
San Jose, CA 95125
(408) 286-7080 Phone
(408) 291-0722 Fax

Printed in the U.S.A. Produced by Data East Technical Publications Department.

TABLE OF CONTENTS

Installation

SPECIFIC REQUIREMENTS 1

INSTALLATION INSTRUCTIONS 1

Game Information

OPERATOR SELECTABLE OPTIONS 7

GAME DESCRIPTION 8

Appendix A – Replacement Parts

REPLACEMENT PARTS LIST 13

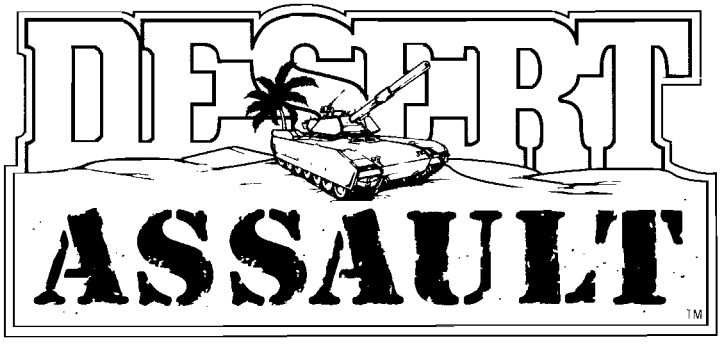
Appendix B – Schematics

AUDIO/VIDEO SCHEMATIC 17

COIN COUNTER SCHEMATICS 18

COIN SWITCH SCHEMATIC 18

DATA EAST



INSTALLATION

INSTALLATION

SPECIFIC REQUIREMENTS

Thank you for purchasing a DATA EAST game. We hope that it will give you many years of profitable enjoyment. Your DESERT ASSAULT game conversion kit is intended to be installed into an existing video game cabinet, and comes with all the necessary components to make the converted unit look and play like a new, dedicated game.

WARNING

The game to be converted must meet the following requirements:

MONITOR: Horizontal, RGB, Negative Composite Sync Input

POWER SUPPLY: +5VDC @ 10 Amp, +12VDC @ 1 Amp

INSTALLATION INSTRUCTIONS

When selecting a game to convert, make sure that the Power Supply, the Monitor and the Coin Acceptors are functional. There is nothing more frustrating than installing a conversion kit and having it not operate due to a faulty monitor or power supply. You should not expect the new logic PCB to be defective. It has been thoroughly tested and 'burned-in' at the factory.

It is mandatory that the cabinet be wired to conform with all National and Local electrical codes before the conversion is attempted. The primary power input section must have adequate noise filtering on the AC line to prevent undesirable conducted radio frequency interference (RFI). "Adequate" is defined as a filter with both common mode and differential mode filtering and a minimum current capacity of 2.5 amperes.

The Federal Communications Commission (FCC) and certain regulatory agencies require that every video game be clearly labeled with the Name and Address of the Original Manufacturer, Date of Manufacture (or Serial Number), Power Requirements, Suitability for Indoor or Outdoor Use and the Model Number of the Unit. In addition, the FCC requires that, after conversion, the unit must be labeled with a suitable warning stating that radio frequency interference may result from use in a residential area. An acceptable label is included with this kit.

WARNING
It is the responsibility of the person installing this kit to comply with all labeling requirements!

TAKING IT APART
Performing a few simple tasks when preparing a game to be converted can save you much time and effort when you are installing the conversion kit.

Find the Wiring Diagram of the game to be converted. You will need to identify the required DC power supply output wires and the monitor video and sync wires. Note the color coding of these wires, or better yet, label them as to their function. This kit contains a new Main Harness, but you will need to splice it into the existing power supply and video wiring. Remove the existing game harness parts that will not be used in this conversion.

Note: You are modifying only the secondary (DC from the power supply) and I/O (video, speaker and controls) sections of the wiring. DO NOT MODIFY OR REMOVE THE PRIMARY AC WIRING. The original manufacturer should have designed and built it to comply with Local and National Electrical Codes and FCC regulations. IT MUST NOT BE ALTERED.

Remove the original game PCB from the cabinet. Remove all exterior decals and repair any cabinet damage. Repaint the cabinet if necessary. Remove the Monitor Plex (or glass). If your plex has silkscreened artwork on it you will need to strip it off, or replace it with a new piece cut to the same size. Using the old Monitor Plex as a template, cut the Monitor Underlay card supplied with this kit to the same size as the old plex.

Note: Be certain that the opening in the Underlay Card lines up with the monitor screen.

Remove the Marquee Plex from the game and use it as a template to cut the new Marquee Plex down to the correct size. Remove the control panel from the game and remove all controls and graphics from it. Drill and/or punch any required new holes for the control panel. DESERT ASSAULT is a one or two player and requires two joysticks. The game requires two "SHOOT" and two "NUKE" buttons although it is recommended that four of each be installed (to allow the player to 'attack' either left handed or right handed). See Figure 1 (below) for the suggested control panel layout. If you are going to

cover the control panel with clear plex, you should carefully cut it to fit the control panel at this time. Thoroughly clean the control panel so that the new control panel overlay will adhere to it securely.

PUTTING IT TOGETHER

Install the Control Panel Overlay by peeling off the paper backing and carefully laying the overlay down on the panel. Smooth it out, starting in the center and working your way out to the edges, removing all of the trapped air pockets. If possible, cut the edges of the overlay oversize and fold the excess under the panel. Cut out the button and joystick holes. Install the BUTTON ID labels supplied with the kit.

You may wish to cover the control panel overlay and button ID labels with clear plex at this time. Install the new buttons and joysticks at this time. Refer to Figure 1 for the recommended control panel layout.

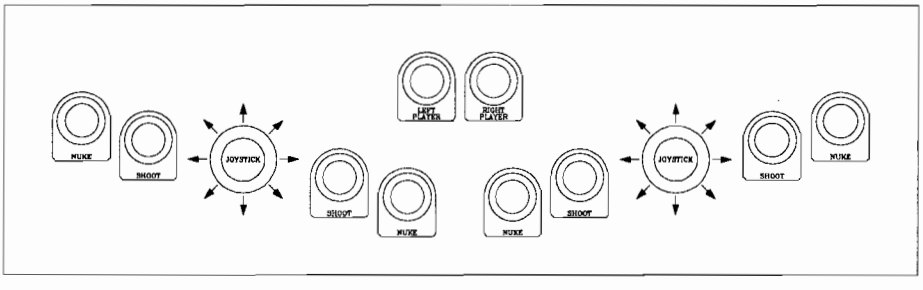


Figure 1 Suggested Control Panel Layout

GAME PRINTED CIRCUIT BOARD: Mount the Game PCB in a convenient location in the cabinet, using the mounting feet and hardware supplied with the PCB.

MAIN HARNESS: The generic main harness provided with this kit has a standard 56-pin JAMMA connector. All required RFI filtering is incorporated on the PC Board. No external filtering is required. The GAME PCB has a 56-pin JAMMA connector. Refer to Figure 2 and Table 1-1 for information pertaining to signals and functions as they are found on the Game PCB edge connector.

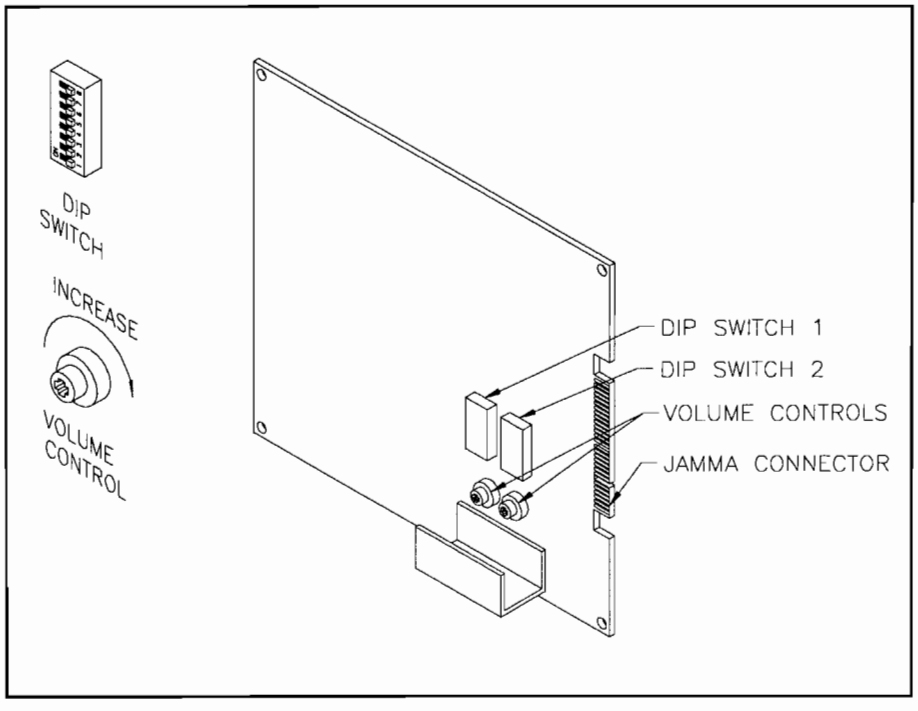


Figure 2 Printed Circuit Board Controls

SOLDER SIDE			COMPONENT SIDE		
COLOR	PIN	SIGNAL	COLOR	PIN	SIGNAL
BLK	A	GROUND	BLK	1	GROUND
BLK	B	GROUND	BLK	2	GROUND
RED	C	+5VDC	RED	3	+5VDC
RED	D	+5VDC	RED	4	+5VDC
BLU	E	−5VDC	BLU	5	−5VDC
ORN	F	+12VDC	ORN	6	+12VDC
N/A	H	BLOCKING KEY	N/A	7	BLOCKING KEY
VIO	J	COIN COUNTER 2	SIL	8	COIN COUNTER 1
N/C	K		N/C	9	
WHT/BLK	L	SPEAKER (−)	BLK/WHT	10	SPEAKER (+)
N/C	M	AUDIO (GND)	N/C	11	AUDIO (+)
GRN	N	VIDEO GREEN	RED	12	VIDEO RED
WHT	P	VIDEO SYNC	BLU	13	VIDEO BLUE
YEL	R	SERVICE SWITCH	BLK	14	VIDEO GND
N/C	S		BLK/GRN	15	TEST SWITCH
RED	T	COIN SWITCH 2	GRN	16	COIN SWITCH 1
RED/WHT	U	START SWITCH 2	BRN/WHT	17	START SWITCH 1
YEL/WHT	V	2P CONTROL 1 UP	YEL	18	1P CONTROL 1 UP
GRN/WHT	W	2P CONTROL 2 DOWN	GRN	19	1P CONTROL 2 DOWN
ORN/WHT	X	2P CONTROL 3 LEFT	ORN	20	1P CONTROL 3 LEFT
RED/WHT	Y	2P CONTROL 4 RIGHT	RED	21	1P CONTROL 4 RIGHT
BLK/WHT	Z	2P CONTROL 5 PUSH 1	BLK	22	1P CONTROL 5 PUSH 1
VIO/WHT	a	2P CONTROL 6 PUSH 2	VIO	23	1P CONTROL 6 PUSH 2
PNK/WHT	b		PNK	24	
N/C	c		N/C	25	
N/C	d		N/C	26	
BLK	e	GROUND	BLK	27	GROUND
BLK	f	GROUND	BLK	28	GROUND

Table 1-1 JAMMA Connector Signals

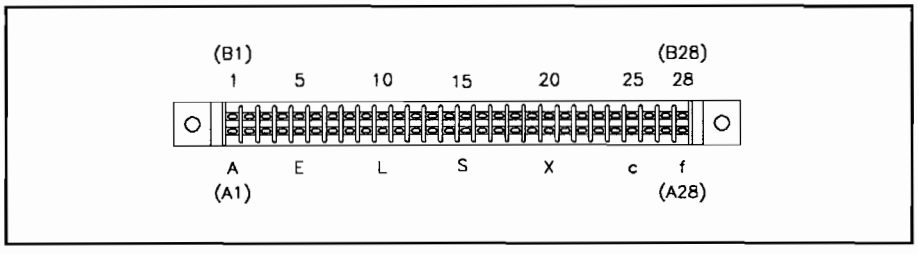


Figure 3 Connector Pin Numbering

POWER SUPPLY WIRING: Separate the DC power wires and route them through the cabinet to the Power Supply. For best results try to keep the length of these wires to a minimum.

Note: Use a minimum of two (2) wires *each* for the +5 volts and the ground lines between the power supply and the printed circuit board. Terminate these wires at the power supply as required.

Note: Improper wiring will damage the PCB set and void the warranty!

PLAYER CONTROL WIRING: Route the push button and joystick wires up to their proper destinations, cut to length and terminate as required.

MONITOR WIRING: The game outputs are Positive for the Red, Green and Blue signals and Negative for the Composite Sync. If your monitor has separate Horizontal and Vertical sync inputs, hook the Composite Sync to the Negative Horizontal inputs. (See Audio/Video Schematic). However, some *Electrohome* models require that the Composite Sync signal be hooked up to both the Negative Horizontal and Vertical inputs. Contact your distributor for more information if you are uncertain as to how to hook up the monitor wires.

COIN DOOR: The coin counter(s) may be either the 12 volt or the 6 volt type as the game PCB utilizes an open collector drive circuit. Hook one coin counter wire to the required positive voltage and the other wire to the coin counter signal wire from the main harness edge connector. (See Coin Counter and Coin Switch Schematics).

GRAPHICS: Apply the Operating Instruction Decal to the monitor underlay card. Install the underlay card under a clean, clear plex or glass. Check any marquee lamps for proper operation. Replace any burned out lamps. Install the DESERT ASSAULT marquee plex in place. Use the old plex as a guide for cutting the new marquee plex to the proper size if required. Install the two DATA EAST side decals.

Important:
Install the "FCC Warning" label to the upper rear of the cabinet.

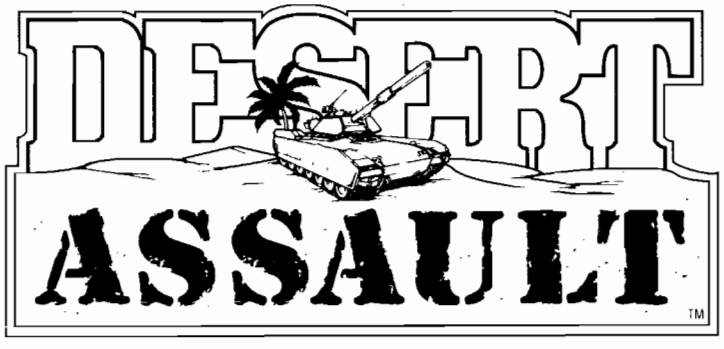
THE BIG TEST
Remove the Main Harness connector from the Game PCB. Apply power. Measure the +5 volt signal at the edge connector of the Main Harness (at the point where it would connect to the Game PCB). Adjust to +5.15 VDC using a Digital Volt Meter. Measure the +12 volt signal and the -5 volt signal (if any) to ensure that they are connected properly and are on the correct terminals.

WARNING
Turn the power off!

Now reconnect the Main Harness to the Game PCB and apply power once again. The Attract Mode Video should appear on the screen. Adjust the picture size and colors on the monitor to get the optimum appearance. Adjust the Sync and Hold controls on the monitor for a stable picture. Coin it up and give it a try! Test all the controls and check the sound for proper operation.

CONGRATULATIONS! You have successfully installed your DATA EAST conversion kit. We hope that it gives you many years of successful operation.

DATA EAST



GAME INFORMATION

GAME INFORMATION

OPERATOR SELECTABLE OPTIONS

The DESERT ASSAULT game allows for operator-adjustable pricing, numbers of lives, difficulty, etc. These parameters may be changed by the settings of the two eight position DIP switches located on the Game PCB. See Figure 2 for the location of these switches. Tables 2-1 and 2-2 outline the available option settings.

DIP SWITCH 1										
FUNCTION		SWITCH SETTING 1	2	3	4	5	6	7	8	REMARKS
GAME CHARGE	1COIN=1CREDIT	OFF	OFF	OFF	--	--	--	--	--	COIN/CREDIT COIN MECH 1
	1COIN=2CREDIT	ON	OFF	OFF	--	--	--	--	--	
	1COIN=3CREDIT	OFF	ON	OFF	--	--	--	--	--	
	1COIN=4CREDIT	ON	ON	OFF	--	--	--	--	--	
	1COIN=5CREDIT	OFF	OFF	ON	--	--	--	--	--	
	1COIN=6CREDIT	ON	OFF	ON	--	--	--	--	--	
	2COIN=1CREDIT	OFF	ON	ON	--	--	--	--	--	
	3COIN=1CREDIT	ON	ON	ON	--	--	--	--	--	
GAME CHARGE	1COIN=1CREDIT	--	--	--	OFF	OFF	OFF	--	--	COIN/CREDIT COIN MECH 2
	1COIN=2CREDIT	--	--	--	ON	OFF	OFF	--	--	
	1COIN=3CREDIT	--	--	--	OFF	ON	OFF	--	--	
	1COIN=4CREDIT	--	--	--	ON	ON	OFF	--	--	
	1COIN=5CREDIT	--	--	--	OFF	OFF	ON	--	--	
	1COIN=6CREDIT	--	--	--	ON	OFF	ON	--	--	
	2COIN=1CREDIT	--	--	--	OFF	ON	ON	--	--	
	3COIN=1CREDIT	--	--	--	ON	ON	ON	--	--	
SCREEN ROTATION	NORMAL	--	--	--	--	--	--	OFF	--	
	REVERSE	--	--	--	--	--	--	ON	--	
CONTINUE COIN	1COIN START/1CONTIN.	--	--	--	--	--	--	--	OFF	
	2COIN START/1CONTIN.	--	--	--	--	--	--	--	ON	

Table 2-1 DIP Switch 1 Settings

DIP SWITCH 2										
FUNCTION		SWITCH SETTING 1	2	3	4	5	6	7	8	REMARKS
DO NOT CHANGE!		OFF	OFF	--	--	--	--	--	--	DO NOT CHANGE!
GAME DIFFICULTY	NORMAL	--	--	OFF	OFF	--	--	--	--	
	EASY	--	--	ON	OFF	--	--	--	--	
	HARD	--	--	OFF	ON	--	--	--	--	
	HARDEST	--	--	ON	ON	--	--	--	--	
DO NOT CHANGE!		--	--	--	--	OFF	--	--	--	DO NOT CHANGE!
MODE SELECT	2-PLAYER MODE	--	--	--	--	--	OFF	--	--	
	4-PLAYER MODE	--	--	--	--	--	ON	--	--	
DO NOT CHANGE!		--	--	--	--	--	--	OFF	--	DO NOT CHANGE!
ATTRACT MODE SOUND	NO	--	--	--	--	--	--	--	OFF	
	YES	--	--	--	--	--	--	--	ON	

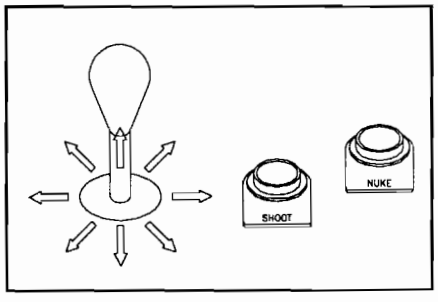
Table 2-2 DIP Switch 2 Settings

GAME DESCRIPTION

DESERT ASSAULT is a military-style combat game. It can be played with one or two players. Players operate "super soldiers" who use a variety of extremely powerful hand-held weapons, some of which they always carry and some which they can pick up as they go along.

The game consists of fights between the heroes (the players' characters) and all sorts of enemy soldiers and their machines of war. There are five different levels that the heroes must battle through.

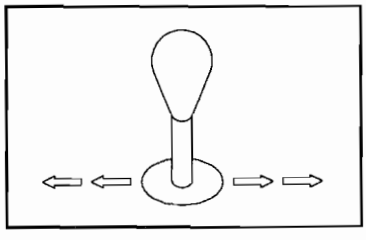
CONTROL FUNCTIONS



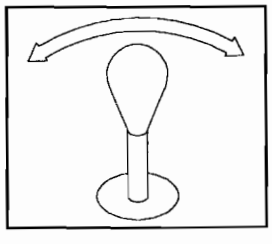
JOYSTICK:
Controls movement of soldiers.

SHOOT BUTTON:
Fires weapons — unlimited ammunition.

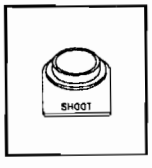
NUKE BUTTON:
Devastating weapon — limited supply.



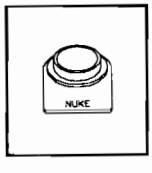
TO SPRINT (Left or Right Only):
Double pump the joystick.



IF YOU CATCH FIRE:
Wag the joystick.

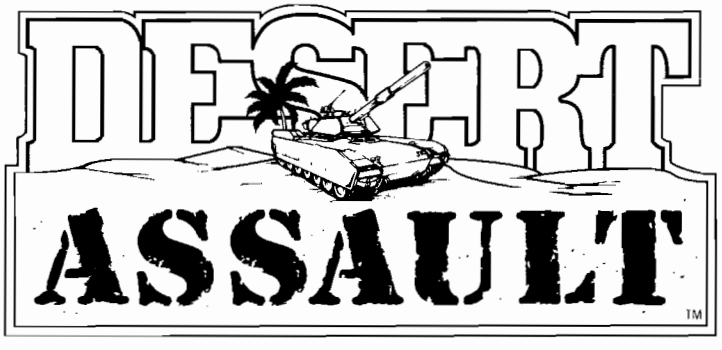


IF YOU GET GRABBED:
Push the Shoot Button repeatedly.



IF YOU'RE WOUNDED:
Another Player can help you. Just bump into him. Then he controls the movement of both of you, but you can still shoot. To separate, push the Nuke Button.

DATA EAST



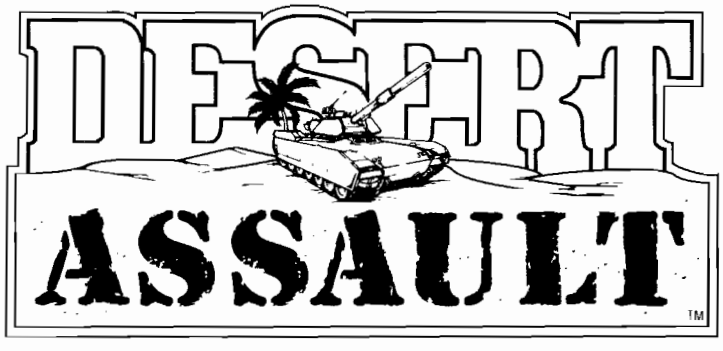
APPENDIX A — REPLACEMENT PARTS

REPLACEMENT PARTS LIST

The following items are provided with your DESERT ASSAULT generic kit. When ordering replacement parts, please be sure to provide the complete description and part number.

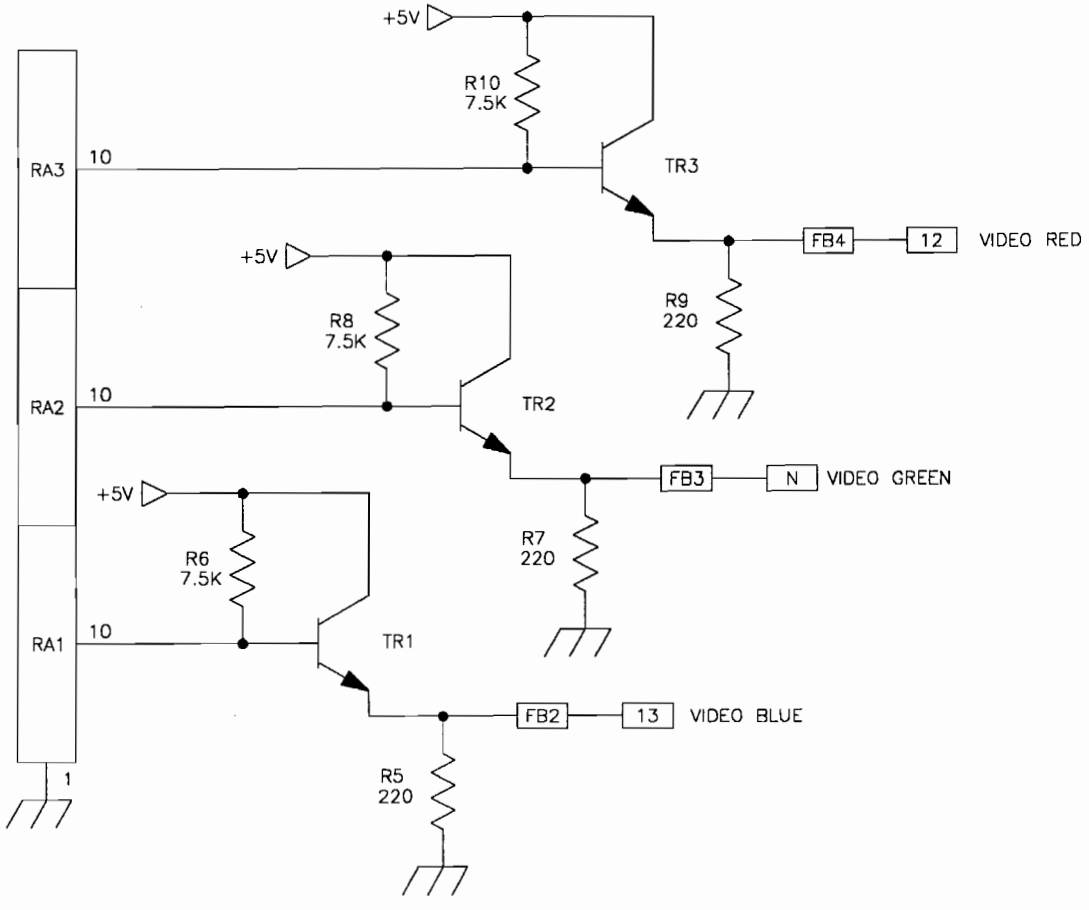
Part Number	Description	Quantity
510-0221-01	PCB Set, Desert Assault, 2 Player	1
036-0158-02	Harness, JAMMA, Generic Kit	1
450-0015-51	Joystick Assembly, 8-Way	2
180-0024-00	Pushbutton w/ Microswitch, Black	6
180-0024-02	Pushbutton w/ Microswitch, Red	4
406-0180-27	Tag, Pushbutton ID, "Left Player"	1
406-0180-28	Tag, Pushbutton ID, "Right Player"	1
406-0180-08	Tag, Pushbutton ID, "Shoot"	4
406-0180-38	Tag, Pushbutton ID, "Nuke"	4
800-0030-00	Control Panel Overlay, Generic	1
830-0055-00	Plex, Marquee, Desert Assault	1
810-0051-00	Underlay Card, Monitor, Desert Assault	1
780-0205-00	Manual, Desert Assault Conversion	1
406-0003-00	Label, FCC Warning	1
820-0040-00	Decal, Side, Generic (Blue DATA EAST)	2
406-0485-00	Decal, Operating Instructions	1

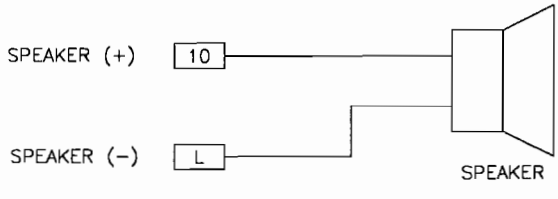
DATA EAST

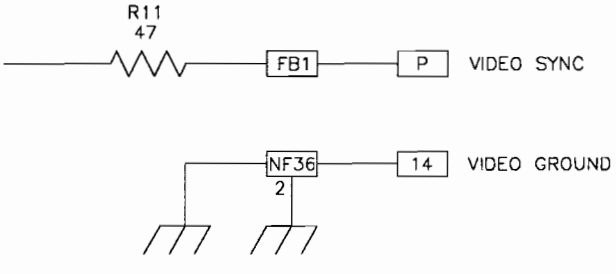


APPENDIX B — SCHEMATICS

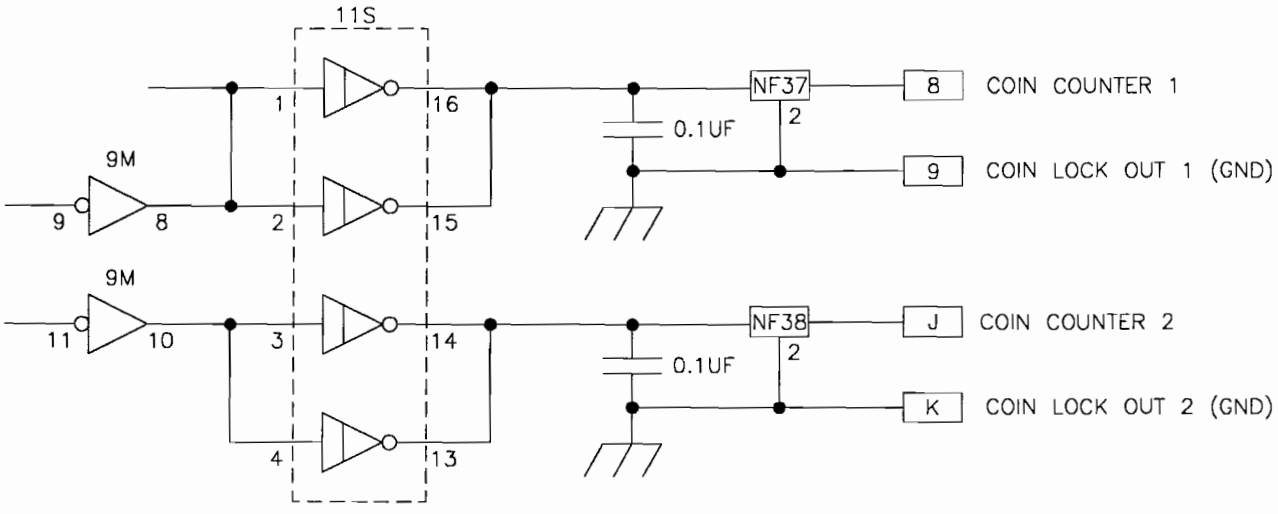
AUDIO/VIDEO SCHEMATICS



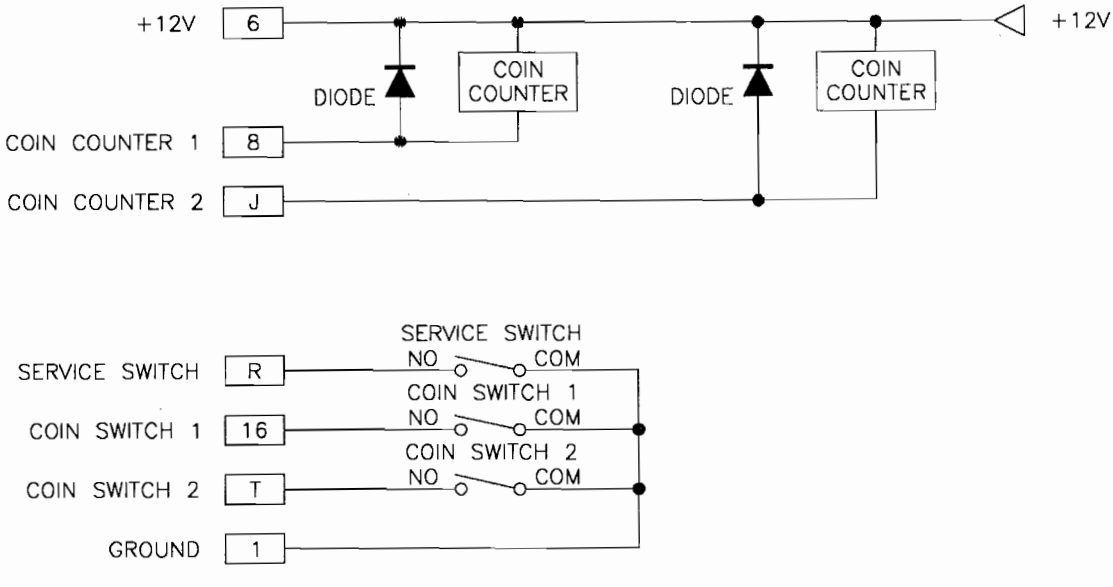




COIN COUNTER SCHEMATICS



COIN SWITCH SCHEMATIC



WARRANTY INFORMATION

DATA EAST USA, INC., ("Seller"), warrants to the original purchaser ("Buyer"), of its products that the items listed below are free from defects in material and workmanship under normal use and service for the period specified:

GAME LOGIC PRINTED CIRCUIT BOARD(S): 90 DAYS

No other parts of the Seller's products are warranted.

Warranty periods are effective from the date of original shipment from Seller to Buyer. Seller's sole liability shall be, at its option, to repair or replace products which are returned to Seller during the warranty period specified, provided:

1. Seller is notified promptly upon discovery by Buyer that the stated products are defective.

2. Buyer obtains a valid return material authorization (RMA) number from Seller.

3. Such products are properly packed and then returned freight pre-paid, to a place specified by Seller.

This warranty does not apply to products damaged during shipment and/or due to improper installation or usage, or alteration. In no event shall Seller be liable for any anticipated profits, loss of profits, loss of use, accidental or consequential damages, or any other losses incurred by the customer in connection with the purchase of a DATA EAST USA, INC. product.

Except as specifically provided in a written contract between Seller and Buyer, there are no other warranties expressed or implied, including any implied warranties of merchantability or fitness for a particular purpose.

Data East USA, Inc.
1850 Little Orchard Dr.
San Jose, CA 95125
Tele: (408) 286-7080
Fax: (408) 971-0722



We've Got It All.