



BIPLANE
TM

FUN GAMES INC.

**INSTRUCTION
MANUAL**

JANUARY 1976

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INSTALLATION:

Open back of cabinet and MAKE SURE ALL BOARDS ARE PROPERLY SEATED INTO CARD CAGE. Plug into AC Power.

PRICE PER GAME SWITCH:

Located at the top of the memory board is the price per game switch. Up is one coin per game and down is two coins per game.

GAME TIME POT:

Directly below the price per game switch is the game time pot.

WHITE PLANE SHOT RANGE POT:

Directly below the game time pot is the white plane shot range pot. Turning clockwise increases shot range. Range should be adjusted to be equal to black plane range.

VOLUME 2 POT (Location "2"):

Volume for white plane is controlled by the top pot on the *sync* board. Clockwise increases volume.

VOLUME 1 POT (Location "1"):

Directly below the volume 2 pot is the black plane volume. Operates same as volume 2 pot.

NOTE: FOLLOWING CONTROLS ARE FACTORY SET. QUALIFIED TECHNICAL PERSONNEL ONLY SHOULD ADJUST.

NOISE VOLUME:

Location #4 controls shot and boom plane relative volume.

PITCH 2:

Controls pitch of black plane motor.

TONE 2:

Controls tone of black plane motor.

PITCH 1:

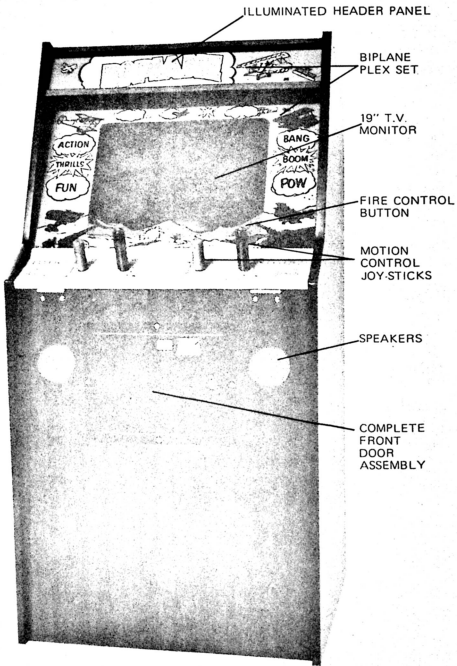
Same as pitch 2 for white plane.

TONE 1:

Same as tone 2 for white plane.

NOTE: BE SURE ALL BOARDS ARE PROPERLY SEATED, INCLUDING INTERCONNECT BOARDS IN HARNESS CONNECTOR.

GENERAL INSTRUCTIONS



ILLUMINATED HEADER PANEL

BIPLANE
PLEX SET

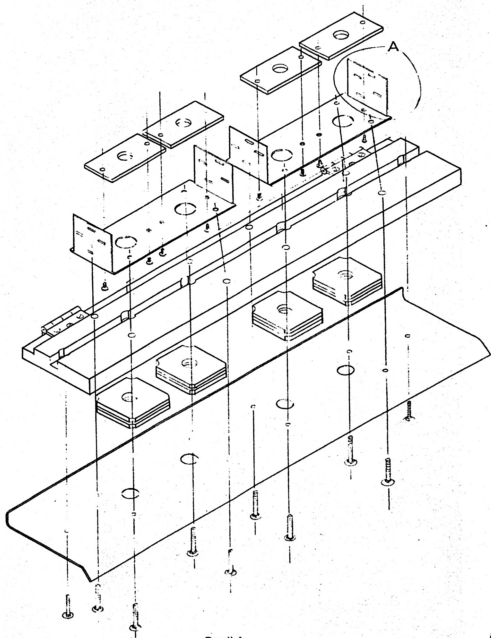
19" T.V.
MONITOR

FIRE CONTROL
BUTTON

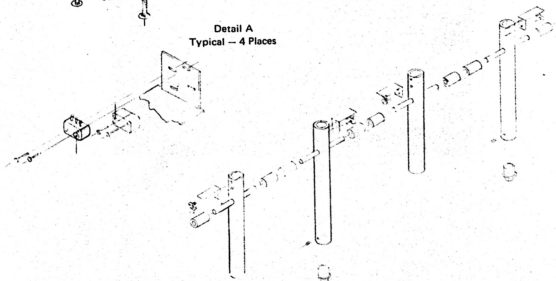
MOTION
CONTROL
JOY-STICKS

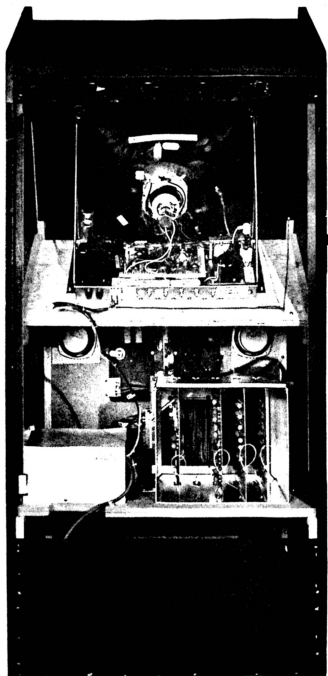
SPEAKERS

COMPLETE
FRONT
DOOR
ASSEMBLY

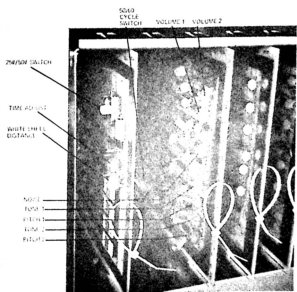
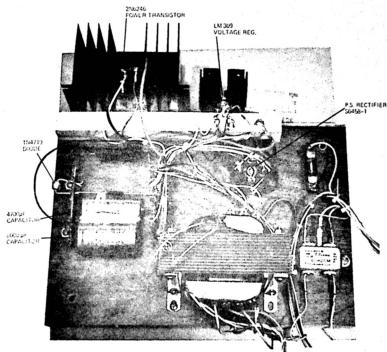


Detail A
Typical - 4 Places





COMPONENTS AND DESCRIPTION



TROUBLESHOOTING GUIDE

AUDIO

1. Check speakers and connections
2. Adjust audio controls on synch board
3. Change synch board

VIDEO (RIPPLE, DISTORTION, BLANK SCREEN)

1. Measure +5V
2. Check interlock switches
3. Shorted diode in P.S. rectifier
4. Change synch board

VIDEO (SHAKE)

1. Adjust T.V. controls
2. Change crystal/4024 I.C. on synch board

MOTION

1. Check control panel switches
2. Switch motion boards — if problem persists on same side (ie. black or white plane) change memory board

SCORING

1. Change memory board

Important: Severe damage will occur if any board but the synch board is inserted in synch board socket.

1. Check control panel switches
2. Switch motion boards — if problem persists on same side (i.e., black or white plane) change memory board

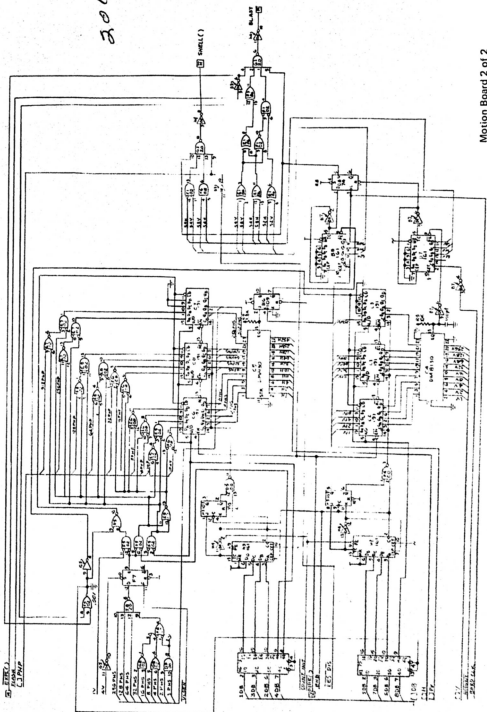
PARTS LIST

PART #	DESCRIPTION	UNIT PRICE
300-200	Power Supply	75.00
500-206	Mother Board	75.00
500-201	Motion Board	250.00
500-202	Synch Board	250.00
500-204	Memory Board -	250.00
500-200	Set of PC Boards w/Cage	750.00
600-200	Control Panel	75.00
400-100	Coin Door Assembly	55.00
34-64581	P.S. Rectifier	10.29
36-LM309	P.S. Voltage Regulator	3.54
42-0019	19" Monitor, Motorola	295.00
41-5006	Speakers	5.70
46-0051	Switch, Cherry, E51	2.82
46-0903	Fire Button, Switch	1.59
47-0001	Coin Counter	9.72
82-0001	P.S. Transformer	42.75
35-14318	Crystal 14.318 MHZ	5.04
37-4024	4024 I.C.	6.69
32-2N6246	2N6246 Power Transistor	3.69

Minimum Order - \$25.00**PRICE LIST**

Cap

201

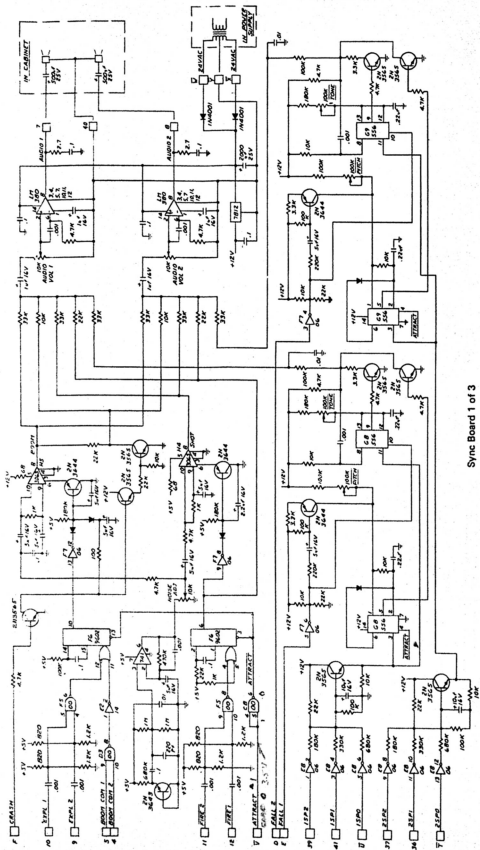


Motion Board 2 of 2

SCHEMATICS

SCHEMATICS

394.



Sync Board 1 of 3

Fun Games products are warranted by Fun Games for a period of 180 days on the monitor, 90 days on P.C. boards, and 30 days for all other components from the date of shipment against defects in material and workmanship under normal use and operation.

Fun Games' sole and exclusive obligation is to replace or repair any item with any defect warranted against it, provided Fun Games receives written notice of defect during the period of warranty, and any defective item or items of equipment are returned to Fun Games at purchaser's expense. All C.O.D. shipments will not be accepted. The expense of removal and reinstallation of any item is not included in this warranty.

Any replacement during the warranty period will be invoiced at our standard replacement price. This invoice will be due and payable within 30 days. If the defective part is returned to Fun Games within this 30 days, a credit will be allowed. If not returnable to Fun Games in the 30 days, credit will not be allowed.

In no event will Fun Games be liable for any special, incidental, or consequential damages to purchaser or any third party caused by any defective item of equipment whether defect is warranted against or not.

There are no warranties or guarantees, expressed or implied, other than those above.

Fun Games shall have no obligation to make repairs or replacements necessitated by catastrophe, fault or negligence of user.

Supercedes all other warranties expressed or implied.



WARRANTY

SIGNAL NAME	I/O CONT	MEM	SYNC	MOT 1 Δ	MOT 2 Δ
GND	A, B, 1, 2	1A	1A	1A	1A
+5V	2, 5, 8, 9	2, 8	2, 8	2, 8	2, 8
FALL 1 ✓		5 *	E	C	
FALL 2 ✓		4 *	D		C
GNE		6 *	A2		
4324		7	6 *	20	20
CRASH		8	F		
2564		9	17 *	X	X
ATTRACT		12 *	V		
3015W1A2		11			
32V		13	27 *	17	17
12BV		14	28 *	16	16
TANK 1 ✓		15 *	R	D *	
START ✓		16 *	WR	39	39
ISSC	M *	17			
FIRE 1 ✓		19 *	12	12	
IRSD	N *	18			
ISSC	P *	22			
FREEZE	12 *	21			
6VPL 2		25	9 *		14
245V	R *	29			
ERSV	R *	26			
FIRE 2 ✓		27 *	11		12
ISSC	T *	11			
ISSC	U *	24			
302 ✓		30 *			L
SHUTTLE		31	R		H *
102		32	T *		
2000		33 *	T		
102		35	T		
304		36	L *	22	22
64		38	V *	T	T
25-V		39	U *	15	15

* SIGNAL ORIGIN

Δ - ADDITIONAL M.B. CONNECTIONS TO MOTION BPS.

MOTION 1

N - R

P - 3b

32 - GND

27 - R

MOTION 2

N - 29

P - U

32 - M

27 - GND

BIPANE MOTHER BOARD
INTERCONNECTIONS
FUN GATES INC
OAKLAND CALIF

SIGNAL NAME	I/O CONN	MEM	SYNC	MOT 1	MOT 2
25	X	40 *	M	11	11
20	X	41 *	31	S	3
26	X	42 *	L	8	8
27	X	43 *	K	9	9
2H			K *	24	24
4N			L *	A	A
2V			N *	19	19
1V			T *	W	W
LES DIS			X *	30	30
VLD2			D *		T
BOOM COM 2		C	A *		
BOOM COM 1		D	S *		
HINEO		E	21 *		
TANK 2		F	35		B *
FLASH	✓	L *	43	R	R
TV-3 AND	H	L *			
CNTRK	J *	M			
CNSWIND	T *	N			
CASWINC	B *	P			
CNSWIND	9 *	R			
ISPO		T *	J		
ISPC		U *	39		
ISPI		V *	41		
VRESET		W	Y *		
202	✓	X *			T
102	✓	Y *		T	
203	✓	Z *			L
301	✓	A *		L	
103	✗	B		H	
VLD1		T	B *		
BY	X	D *	V	18	18
104	X	E *	20	21	21
EXCEL	✗	F	10 *	14	
LESU		V *	20		
EXCEL		10 *	F		
SHELL 1		K	24	I *	
-		M			G *

SIGNAL NAME	I/O CONN	MEM	SYNC	MOT 1	MOT 2
2SP1		N *	36		
2SP2		P *	37		
PLAYFIELD		R	26 *		
2 ¹	X	S *	32	K	K
2 ⁴	X	T *	A	N	N
2 ²	X	U *	33	E	E
2 ³	X	V *	34	P	P
4V	X	W *	M *	V	Y
16V		X	Z *	U	U
VINFD		Y	A *		
VLD1			E *	J	
VLDEN			F *	T	T
LDH1B			H *	M	
LDH2A			I *		
BLAST 2			O *		10
VIDEO OUT	W		P *		F
24VAC	X *		V		
24VAC	Y *		X		
24V CENTER TAP	Z		Y *		
AUDIO 1	F		7 *		
AUDIO 2	E		8 *		
60° ED LCA	L *		13		
MOTION CLK			14 *	34 35	34 35
H 3026 =			15 *	37	37
14			16 *	B	B
84			18 *	23	23
164			19 *	2	2
LDH1A =			22 *	13	13
008			23 *	38	38
BLAST 1			25 *	F	
LDH2B			29 *		M
LD-1A			30 *	10	
64H			T *	Y	Y
ANTENNA	6 *				
AUDIO GROUND	18 *		40		
512 /			4	R	R

GENERAL INSTRUCTIONS FOR BIPLANE

INSTALLATION:

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Same as pitch 2 for white planes

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NOTE: BE SURE ALL BOARDS ARE PROPERLY SEATED, INCLUDING THE SYNC BOARD IN HARNESS CONNECTOR.



1625 -
"ROBBIE"

Phone -
23/Jan/76

Joe Regen

FUN GAMES INC.

8410 AMELIA STREET • OAKLAND, CALIF. 94621
1-415-568-8825 TELEX 338-512

JANUARY 1, 1976

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NEWS
from

DALE DISTRIBUTING LTD.

June 7, 1976

Service Bulletin for Fun Games "Bi Plane"

Re: White Plane Motion Board - Series 205 only

If the white plane is too close to the runway and crashes on take-off, perform the following:

On Motion Board series 205 only, cut pin or tracer to pin 1 of IC A2. This will raise the plane 1 scan line. If this is not sufficient, cut pin 10 of IC A2 for 1 additional line.

The 2 motion boards are identical and interchangeable. The inside motion board controls the white airplane. The outside motion board is for the black plane.

Distributing
Automatic
Leisure
Equipment

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563 Minoru Boulevard
Richmond, B. C. V6X 2B1
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Telex: 04-51405
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100 Dundas Street East
Richdale, Ont. M9W 1G6
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MONTREAL BRANCH
2020 Avenue Du Parc
St. Laurent, P.Q. H4S 1K6
Phone: (514) 381-1177
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