

VULGUS CONVERSION KIT INSTRUCTION MANUAL







CONVERSION KIT CONTENTS:

- 1 MAIN PRINTED CIRCUIT BOARD
- 1-P.C. BOARD CAGE (FCC REQUIRED)
- 1 CONNECTING WIRING HARNESS
- 1-8-WAY JOYSTICK
- 4-FIRE BUTTONS
- 1-MARQUEE
- 1 MONITOR BEZEL OVERLAY
- 1 CONTROL PANEL OVERLAY
- 1-PLEX CONTROL COVER
- 2-SIDE STICKERS
- 1-PLAY INSTRUCTION & FUNCTION LABELS
- 1-TECHNICAL SERVICE MANUAL



TO THE TECHNICIAN

INTRODUCTION

This instruction manual has been specifically designed for your use. It will provide you with adequate information to convert your old game as simply as possible.

Contained herein are schematic diagrams for working with our printed circuit board. For better

understanding, a Main Block Diagram and a Sound Board Block Diagram are supplied. Everything that you will need to construct your new game is provided in this kit, as listed on the preceding contents page.

CAUTION

F. C. C. REGULATION COMPLIANCE

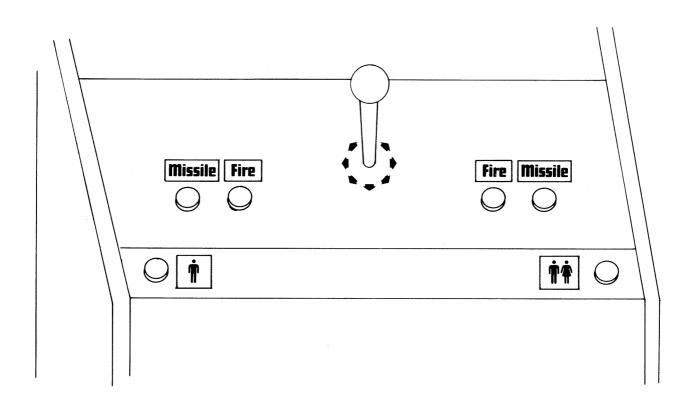
THE P.C. BOARD CAGE SUPPLIED WITH THIS CONVERSION KIT MUST BE UTILIZED AND TERMINATED TO GROUND AT THE TIME OF INSTALLATION.

THIS IS TO AVOID RADIO FREQUENCY RADIATION AND COMPLY WITH THE LIMITS FOR A CLASS "A" COMPUTING DEVICE PURSUANT TO SUB-PART "J" OF PART 15 OF F.C.C. 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.

CONTROL PANEL LAYOUT

THE EIGHT WAY JOYSTICK SHOULD BE CENTERED ON THE CONTROL PANEL AND THE FIRE AND MISSILE BUTTONS PLACED AS SHOWN BELOW:



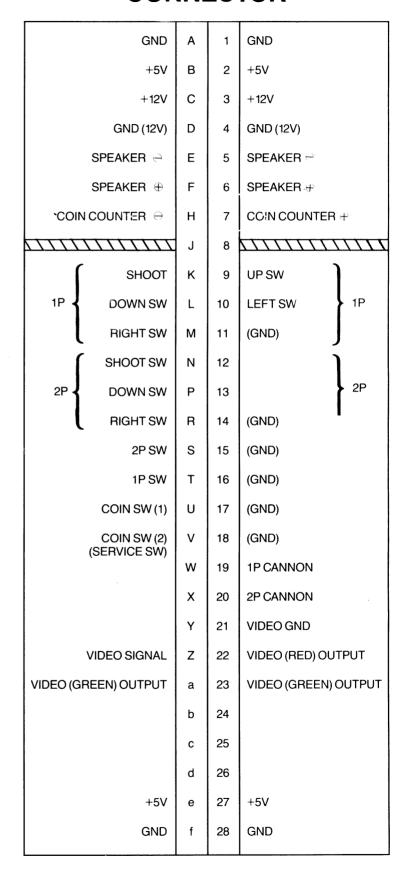
SW(A)

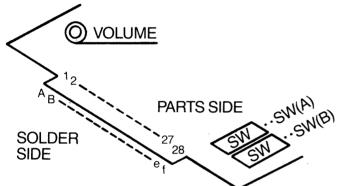
						GAME DIP SW								
	CONTENTS					1	2	3	4	5	6	7	8	
GAME CHARGE (COIN-1)	1	COIN	1	1	CREDIT	OFF	OFF	OFF						
	1	"	1	2	"	ON	OFF	OFF						
	1	"	1	3	' "	OFF	ON	OFF						
	2	"	1	1	"	ON	ON	OFF						
	3	"	1	1	"	OFF	OFF	ON						
	4	"	1	1	"	ON	OFF	ON						
	5	"	1	1	"	OFF	ON	ON						
	FREE			PL	AY	ON	ON	ON						
	1	COIN	1	1	CREDIT				OFF	OFF	OFF			
GAME CHARGE (COIN-2)	1	"	1	2	"				ON	OFF	OFF			
	1	"	1	3	"				OFF	ON	OFF			
	2	"	1	1	"				ON	ON	OFF			
	3	"	1	2	"				OFF	OFF	ON			
	4	"	1	3	"				ON	OFF	ON		-	
	5	"	1	4	"				OFF	ON	ON			
	FREE PLAY					ON	ON	ON						
NR. OF PLAYERS	3 AIR-PLANE										OFF	OFF		
		1	"									ON	OFF	
		2	"									OFF	ON	
		5	"									ON	ON	

SW (B)

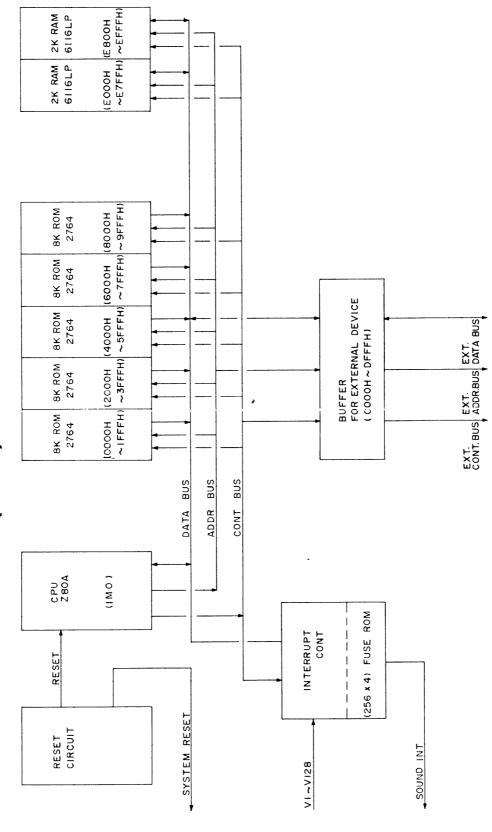
		GAME DIP SW								
	CONTENTS	1	2	3	4	5	6	7	8	
ТУРЕ	TABLE TYPE	OFF								
	UP-RIGHT TYPE	ON								
	1st 20,000 2nd 60,000		OFF	OFF	OFF					
,,	″ 10,000 ″ 50,000		ON	OFF	OFF		-M			
BONUS POINTS	″ 10,000 ″ 60,000		OFF	ON	OFF					
	″ 10,000 ″ 70,000		ON	ON	OFF					
	″ 20,000 ″ 70,000		OFF	OFF	ON			OFF	OFF	
	″ 20,000 ″ 80,000		ON	OFF	ON					
	″ 30,000 ″ 70,000		OFF	ON	ON					
			ON	ON	ON					
DEMO	DEMO WITH SOUND ON					OFF				
	DEMO WITH SOUND OFF					ON				
58	DEMO WITH MUSIC ON						OFF			
DEMO	DEMO WITH MUSIC OFF						ON			

CONNECTOR

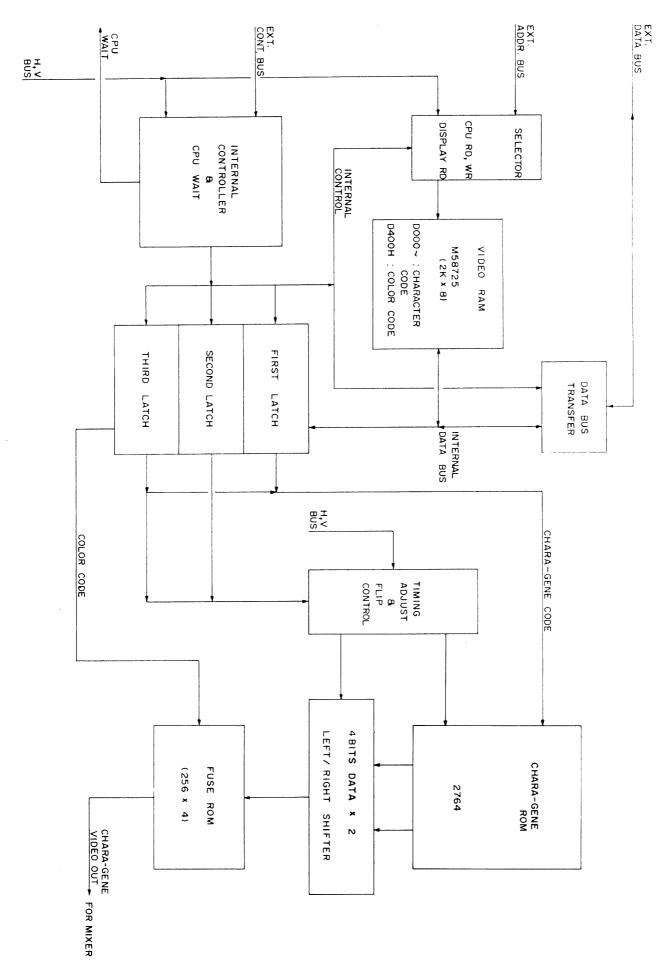




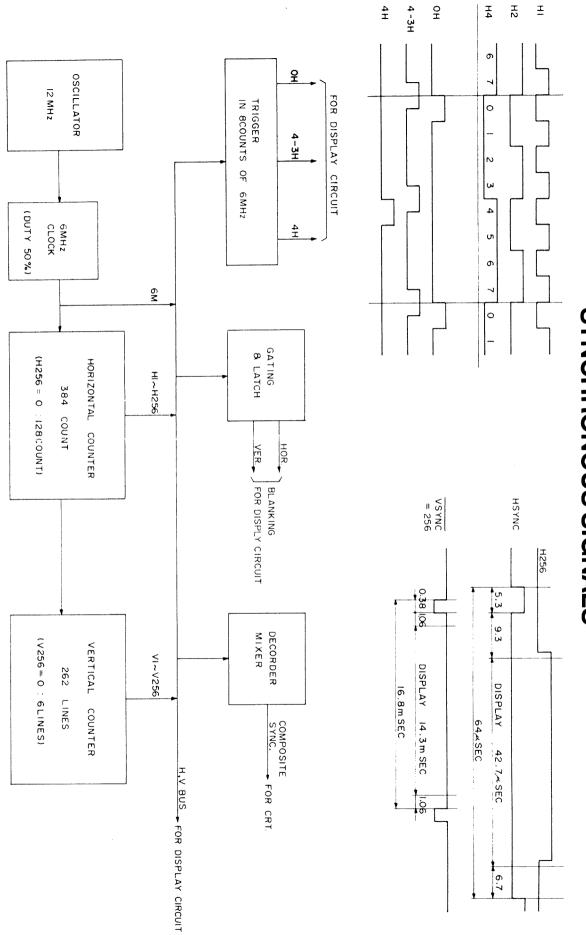
CPU (Z80A) MAIN CONTROL

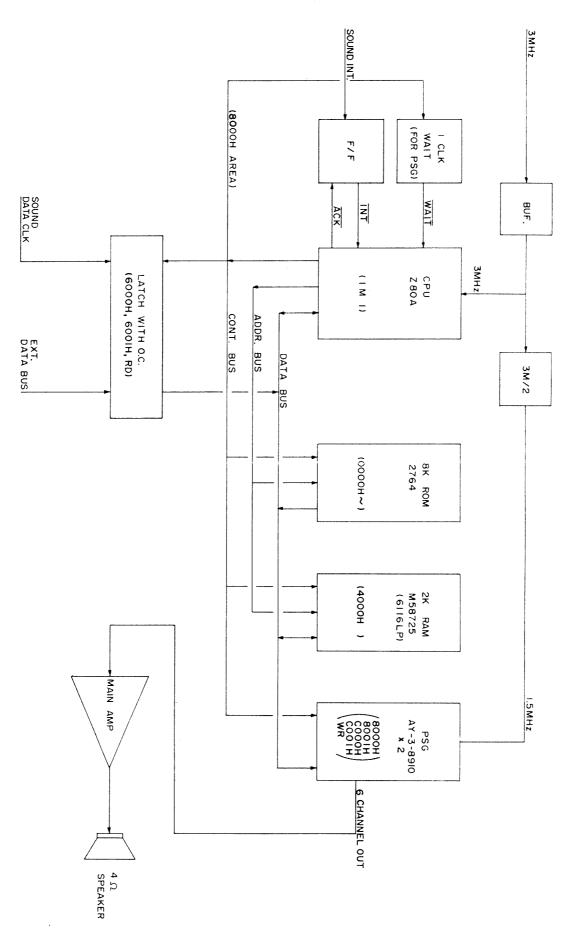


CHARA-GEN SECTION

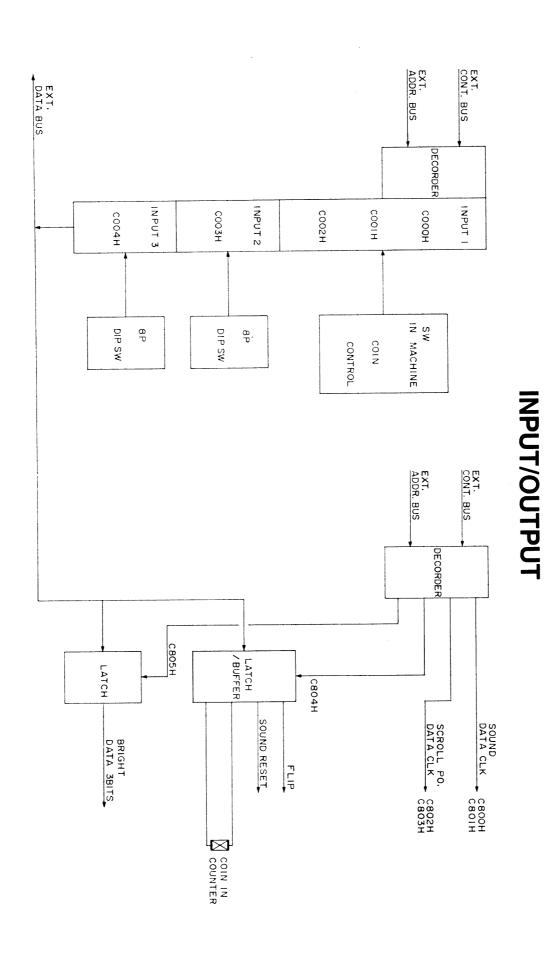


SYNCHRONOUS SIGNALS





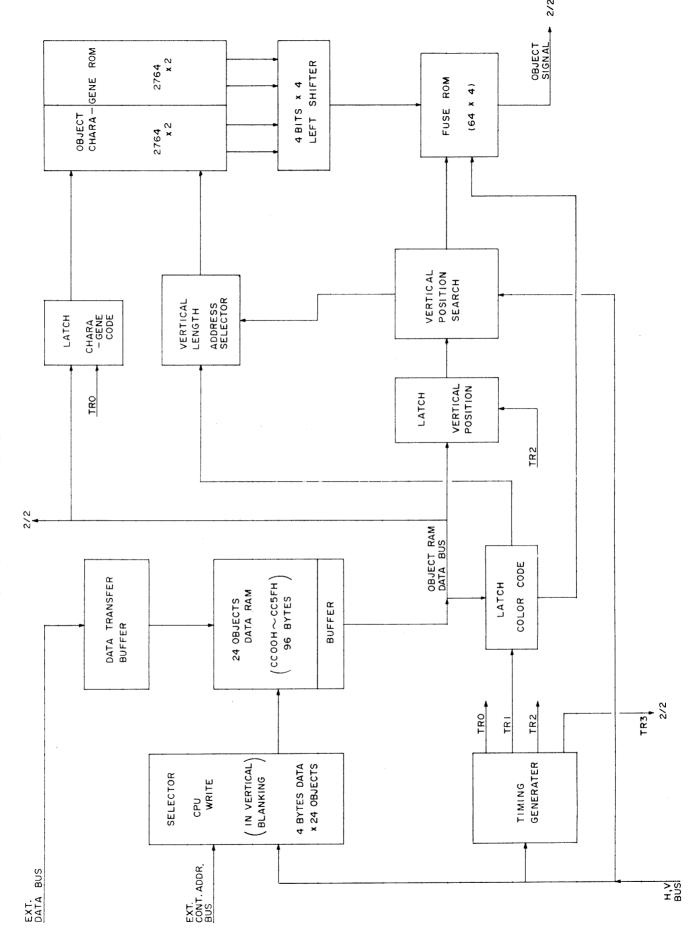
SOUND

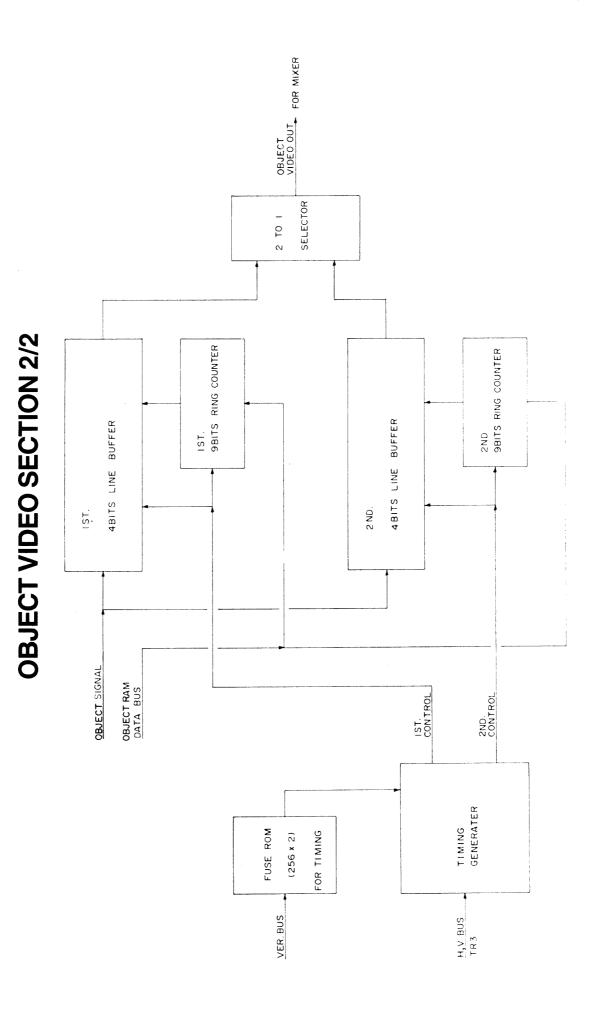


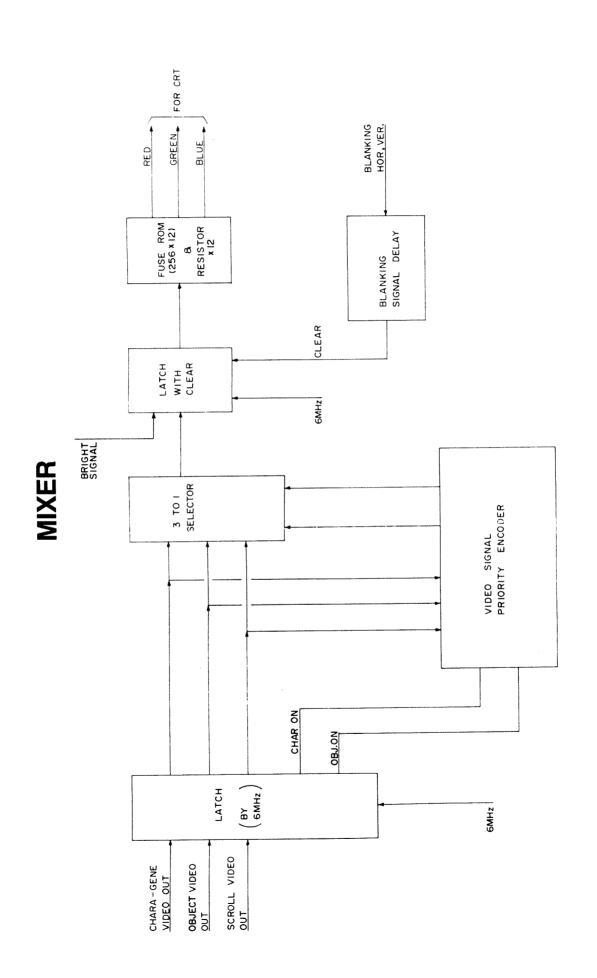
SCROLL VIDEO OUT FOR MIXER ROM 7 LEFT/RIGHT SHIFTER SCROLL CHARA - GENE 8BITS DATA x 3 (2764 x 6) 8 BITS DATA FUSE ROM (256 x 4) × COLOR CODE FLIP CONTROL CHARA-GENE CODE (D800H ~ DFFFH) SECOND LATCH I6 x I6 DOTS FIRST LATCH SCROLL VIDEO RAM 58725 DISPLAY RD SELECTOR CPU RD,WR TIMING (HORIZONTAL) DUMMY WAIT CIRCUIT EXT. ADDR. BUS EXT. CONT. BUS DUMMY WAIT VERTICAL : 9 BITS HORIZONTAL : 9 BITS **W**9 18 BITS FULL ADDER H,V BUS LATCH EXT. DATA BUS for CPU

SCROLL VIDEO SECTION

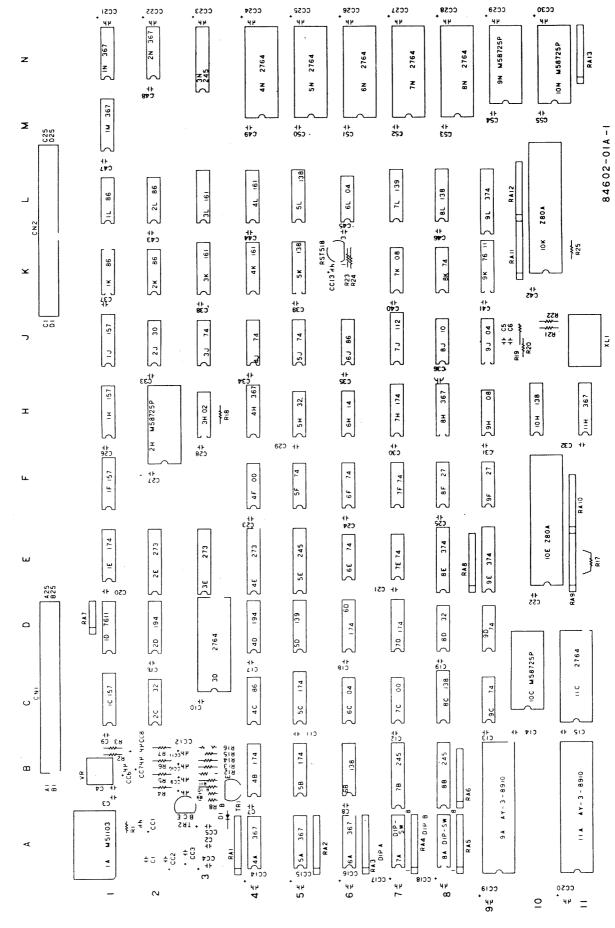
OBJECT VIDEO SECTION 1/2







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