

**VULGUS
CONVERSION KIT
INSTRUCTION
MANUAL**

SNK Electronics Corporation ***SNK***

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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**

Note: Replacement Accessories Available Through Your Distributor...OR

SNK ELECTRONICS CORP.



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

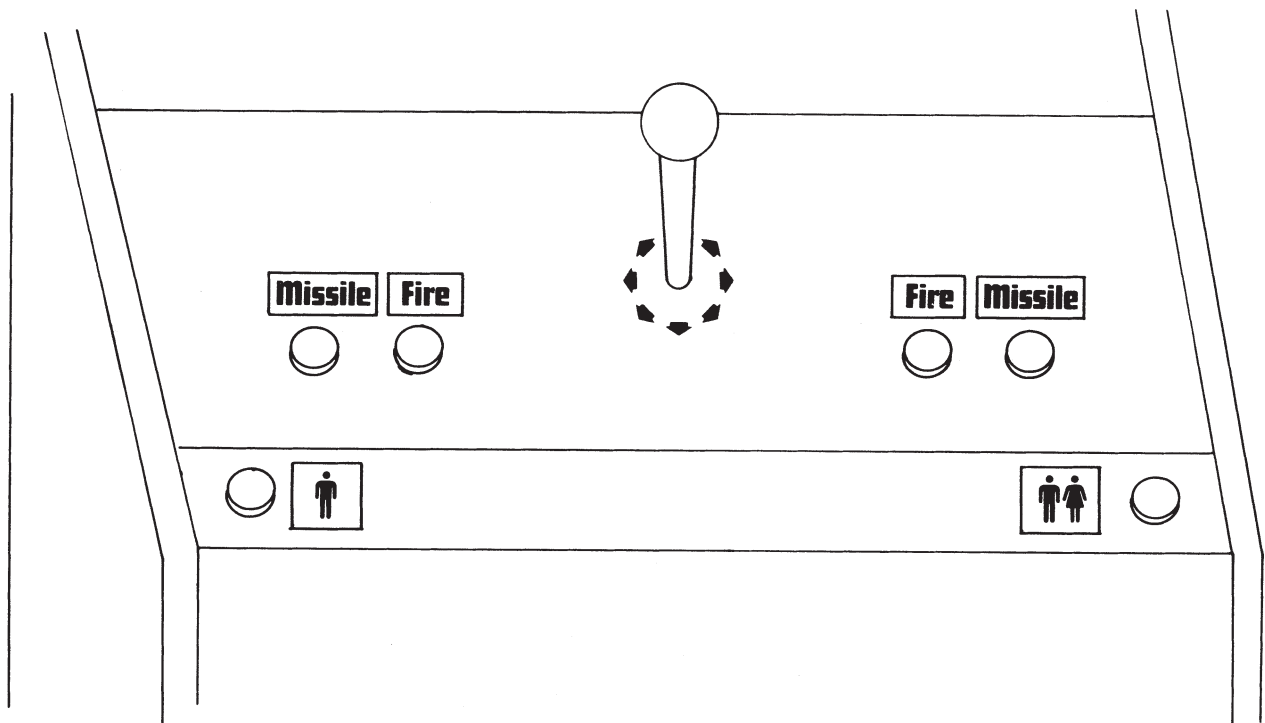
THE P.C. BOARD CAGE SUPPLIED WITH THIS CONVERSION KIT MUST BE UTILIZED AND TERMINATED TO GROUND AT THE TIME OF INSTALLATION.

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.

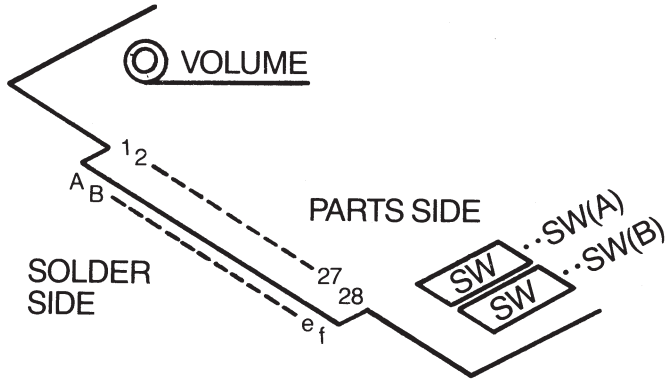
OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE - IN WHICH CASE, THE USER AT HIS OWN EXPENSE, WILL BE REQUIRED TO TAKE WHATEVER MEASURES MAY BE REQUIRED TO CORRECT THE INTERFERENCE.

CONTROL PANEL LAYOUT

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

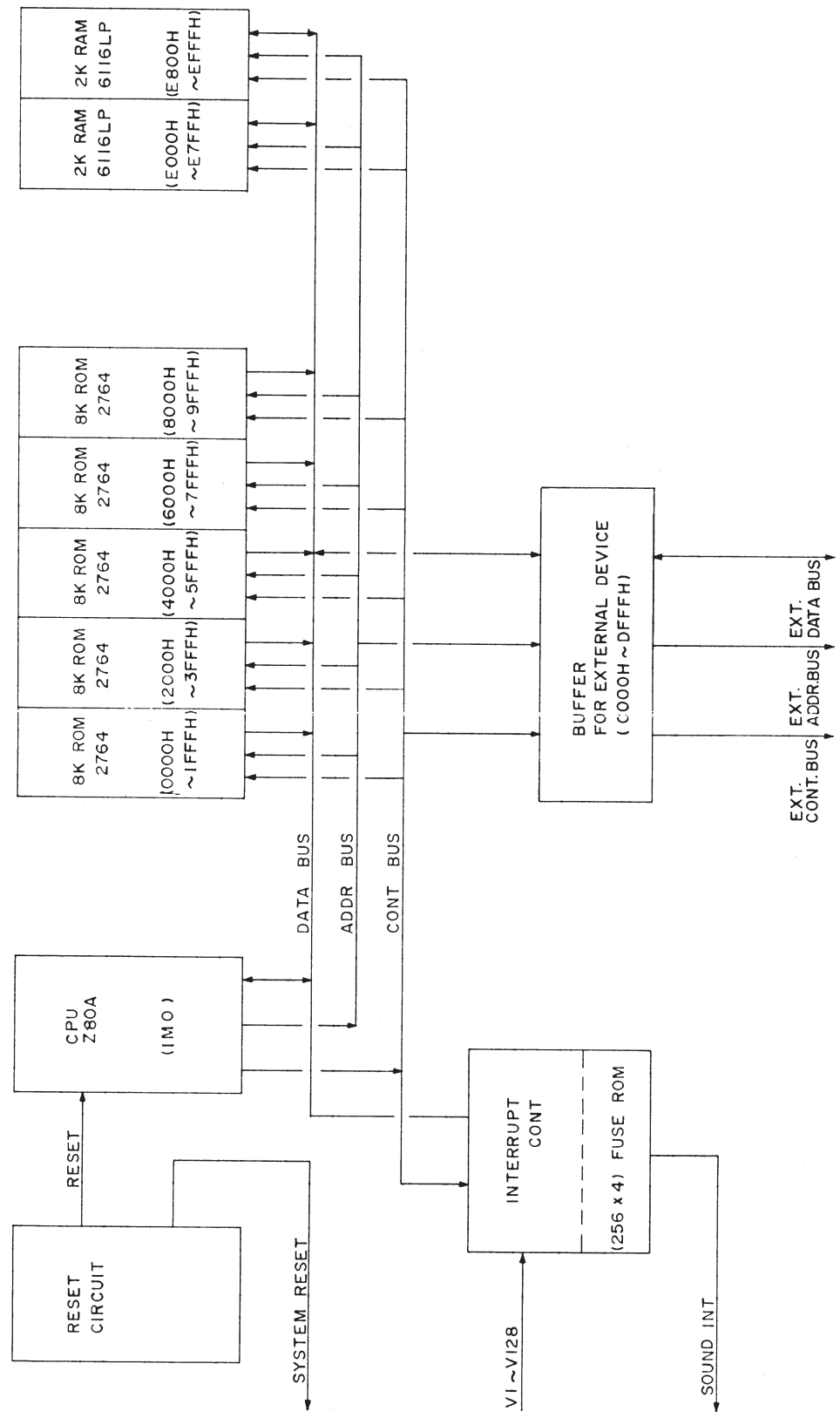


CONNECTOR

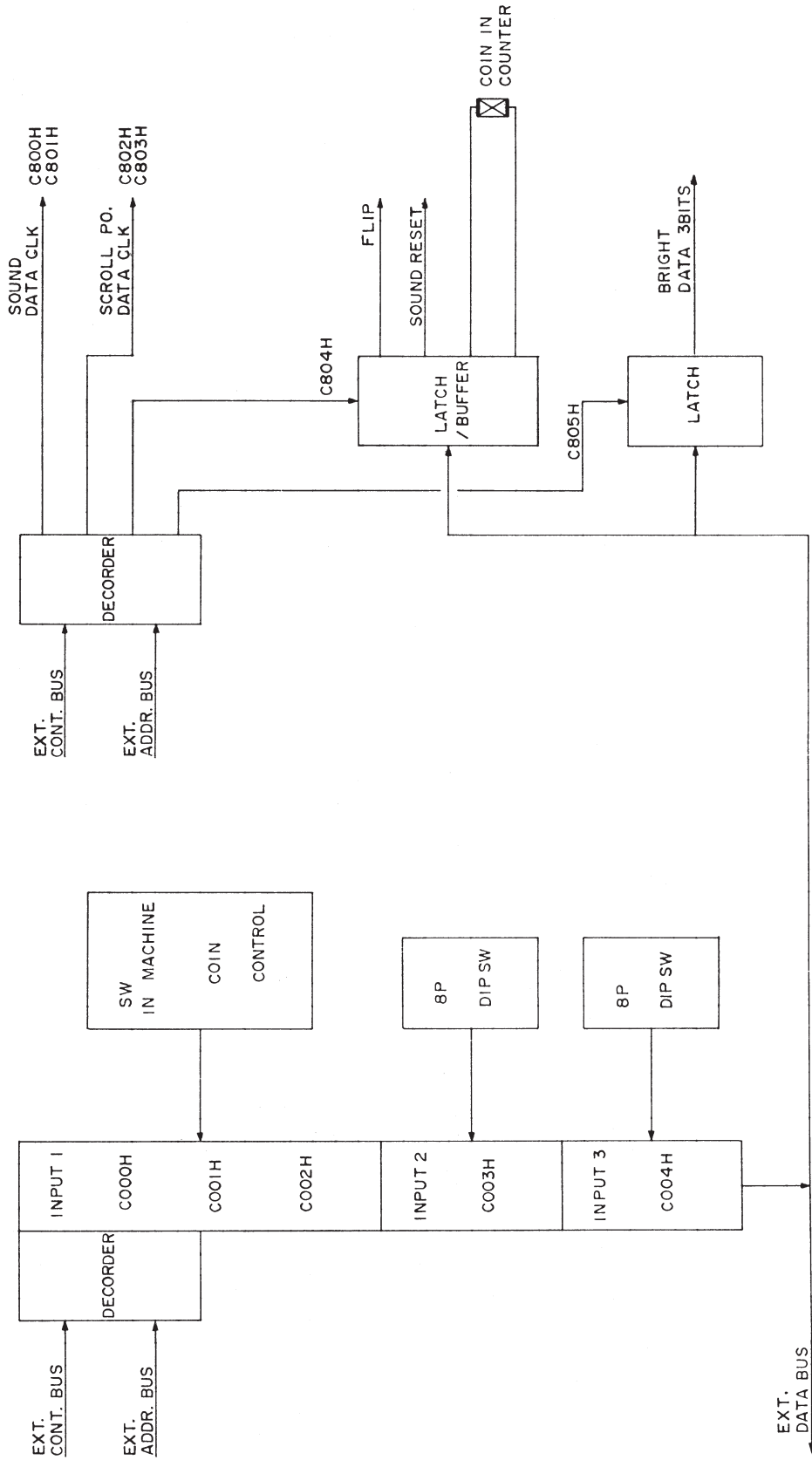


GND	A	1	GND		
+5V	B	2	+5V		
+12V	C	3	+12V		
GND (12V)	D	4	GND (12V)		
SPEAKER ⊖	E	5	SPEAKER ⊖		
SPEAKER ⊕	F	6	SPEAKER ⊕		
COIN COUNTER ⊖	H	7	COIN COUNTER ⊕		
		J	8		
1P {	SHOOT	K	9	UP SW	}
	DOWN SW	L	10	LEFT SW	
	RIGHT SW	M	11	(GND)	
2P {	SHOOT SW	N	12		}
	DOWN SW	P	13		
	RIGHT SW	R	14	(GND)	
	2P SW	S	15	(GND)	
	1P SW	T	16	(GND)	
	COIN SW (1)	U	17	(GND)	
	COIN SW (2) (SERVICE SW)	V	18	(GND)	
		W	19	1P CANNON	
		X	20	2P CANNON	
		Y	21	VIDEO GND	
VIDEO SIGNAL	Z	22	VIDEO (RED) OUTPUT		
VIDEO (GREEN) OUTPUT	a	23	VIDEO (GREEN) OUTPUT		
		b	24		
		c	25		
		d	26		
+5V	e	27	+5V		
GND	f	28	GND		

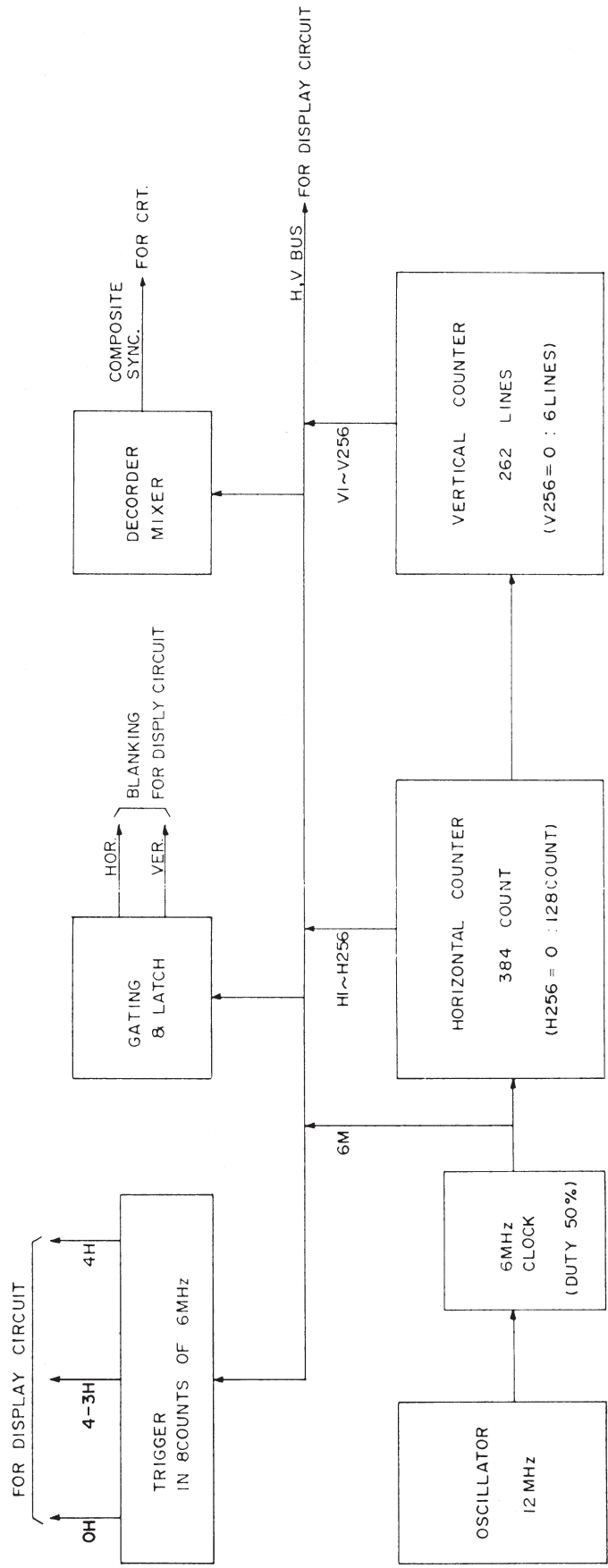
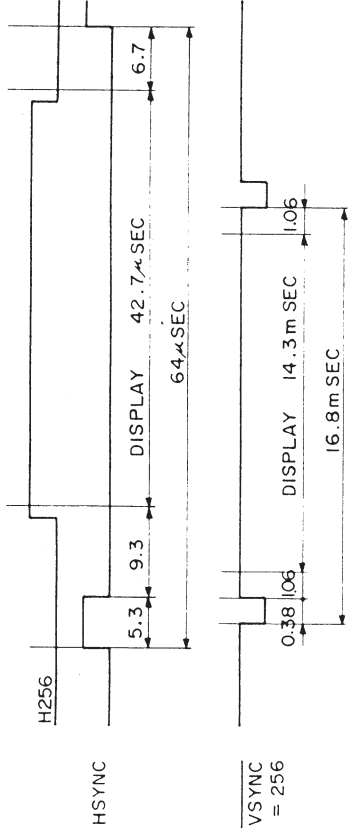
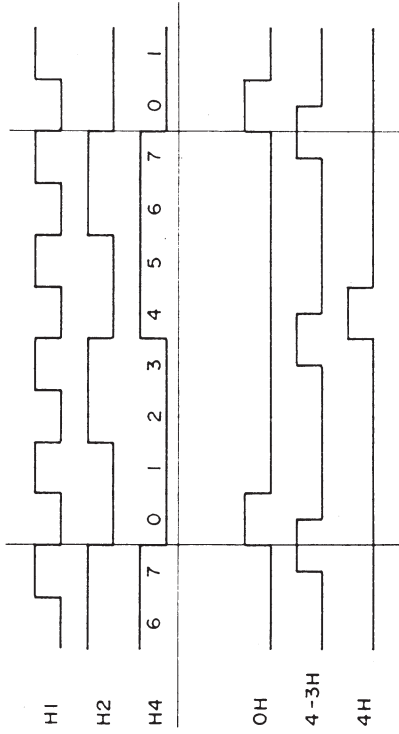
CPU (Z80A) MAIN CONTROL



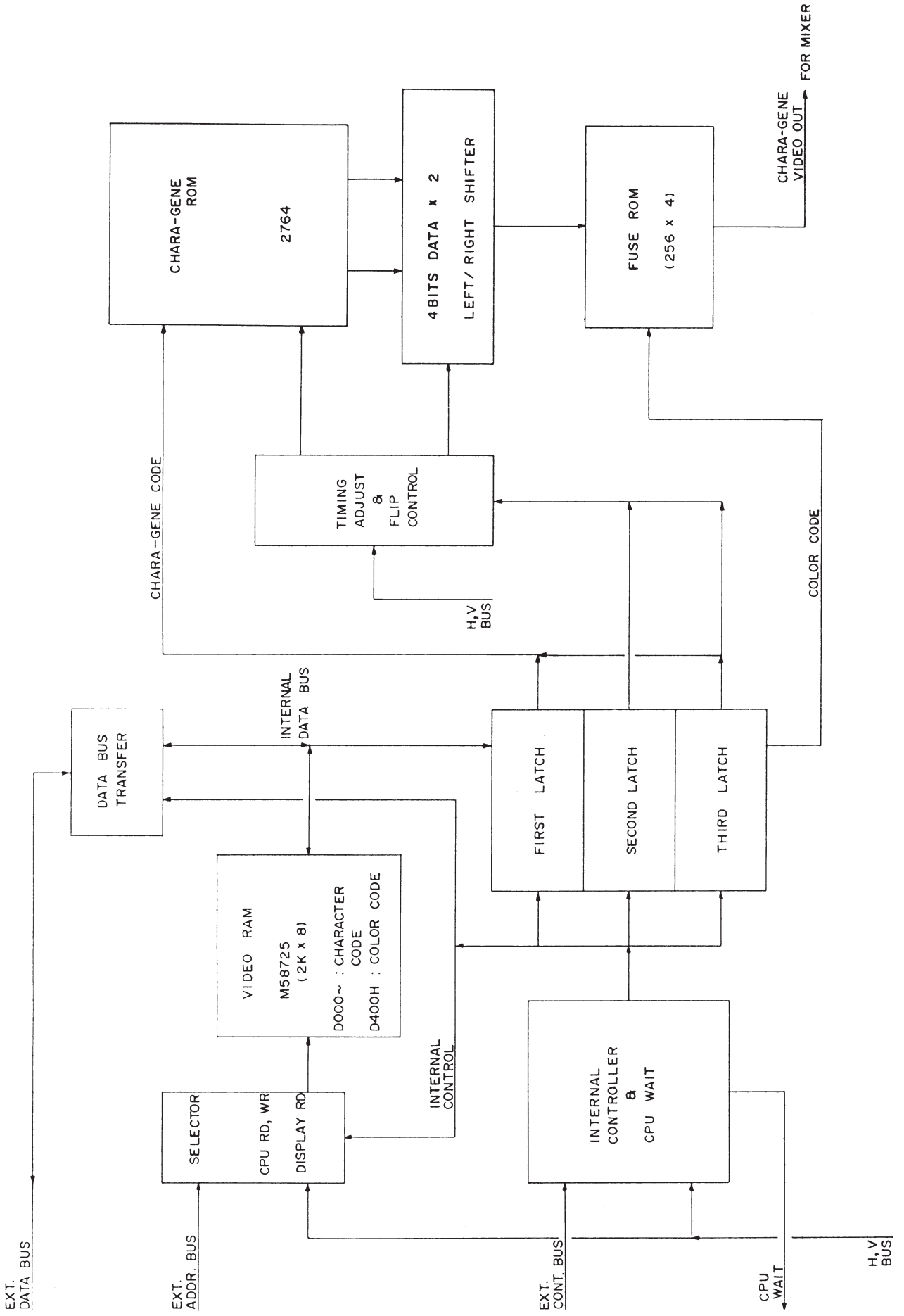
INPUT/OUTPUT



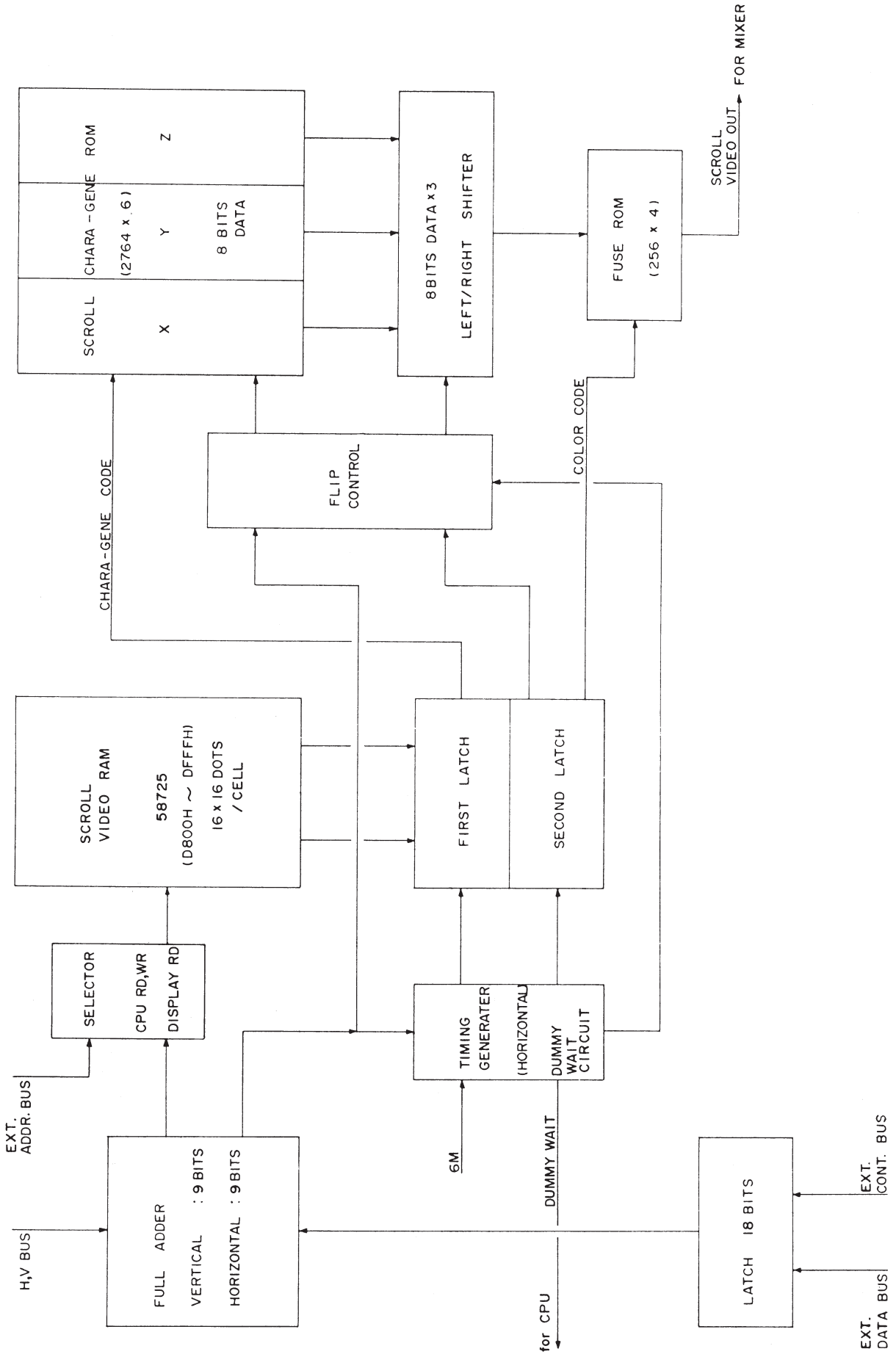
SYNCHRONOUS SIGNALS



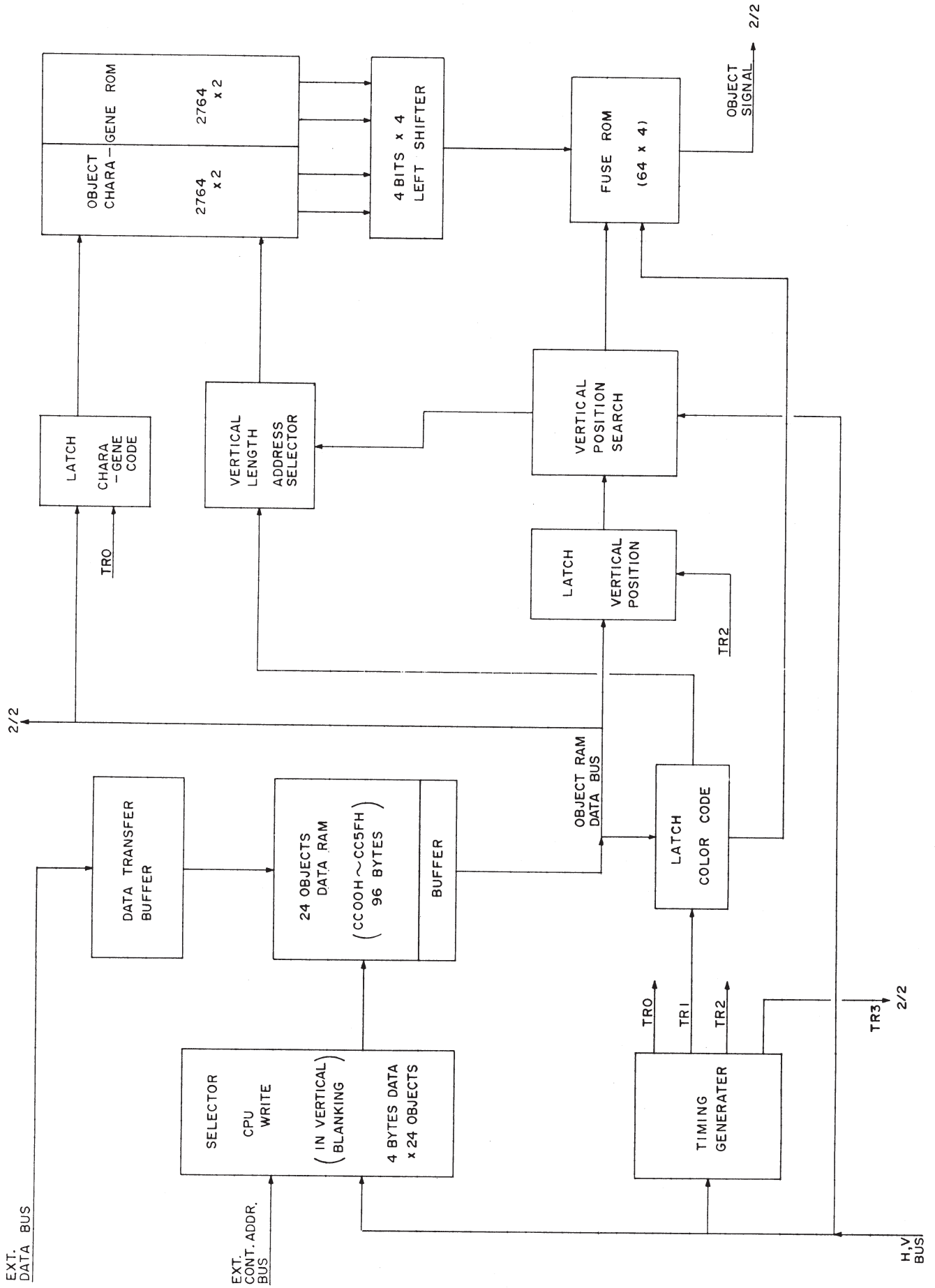
CHARA-GEN SECTION



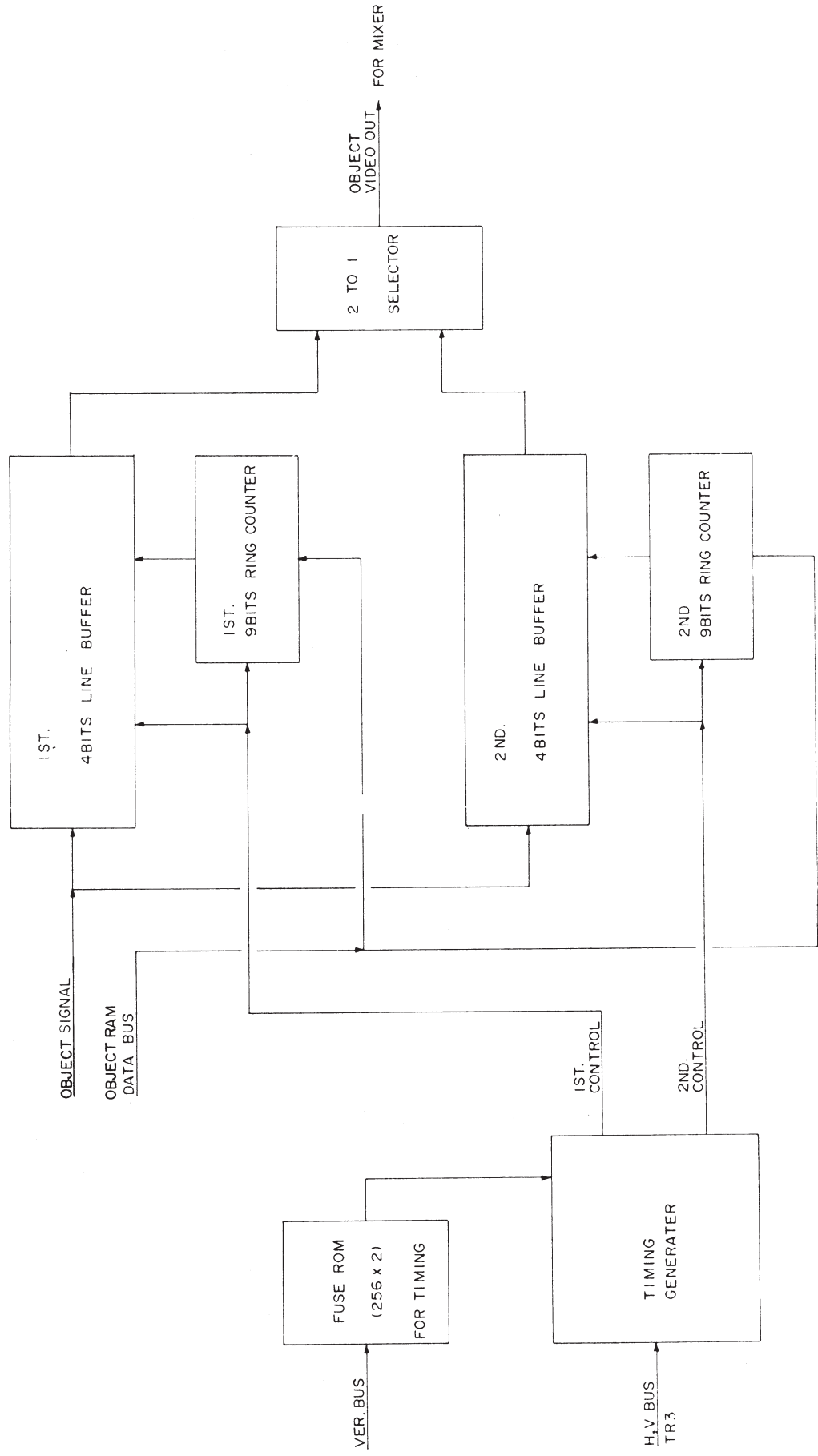
SCROLL VIDEO SECTION



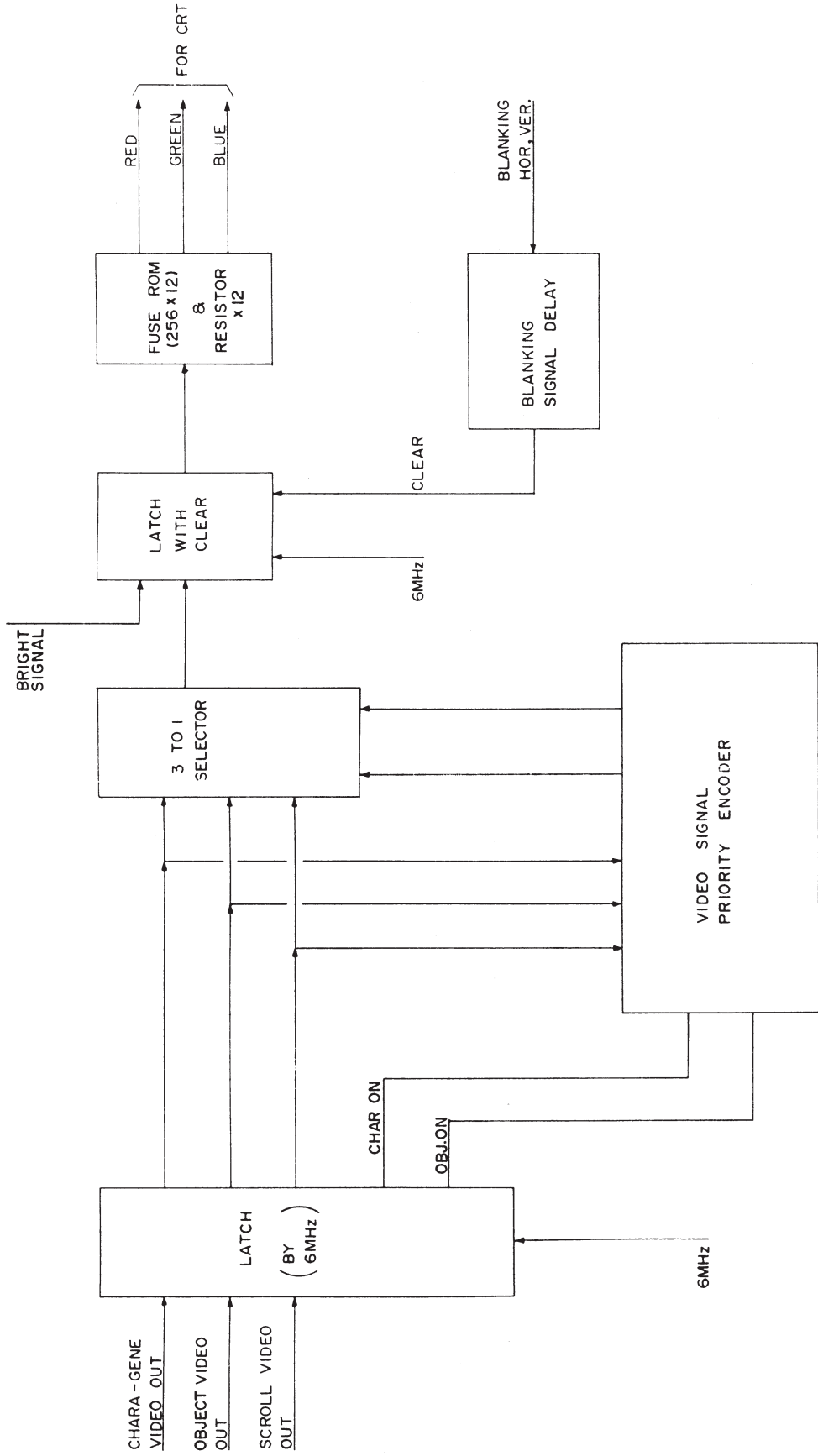
OBJECT VIDEO SECTION 1/2



OBJECT VIDEO SECTION 2/2



MIXER



84602-01A-1

A B C D E F H J K L M N
 AI BI CNI DNI A25 B25 C1 D1 CM2 CM25 D25
 1A M51103 1C 157 1E 174 1H 157 1J 157 1K 86 1L 86 1M 367 1N 367
 2C 32 2D 194 2E 273 2H M58725P 2J 30 2K 86 2L 86 2N 367
 3E 273 3H 02 3J 74 3K 161 3L 161 3N 245
 4A 367 4B 174 4C 86 4D 194 4E 273 4F 00 4H 367 4J 74 4K 161 4L 161 4N 2764
 5A 367 5B 174 5C 174 5D 139 5E 245 5F 74 5H 32 5J 74 5K 138 5L 138 5N 2764
 6A 367 6B 138 6C 04 6D 174 6E 74 6F 74 6H 14 6J 86 6K 04 6L 04 6N 2764
 7A DIP-SW 7B 245 7C 00 7D 174 7E 74 7F 74 7H 174 7J 112 7K 08 7L 139 7N 2764
 8A DIP-SW 8B 245 8C 138 8D 32 8E 374 8F 27 8H 367 8J 10 8K 74 8L 138 8N 2764
 9A AY-3-8910 9B 74 9C 74 9D 74 9E 374 9F 27 9H 08 9J 04 9K 76 11 9L 374 9N M58725P
 10C M58725P 10E Z80A 10F 108 10G Z80A 10H 138 10I M58725P 10N M58725P
 11A AY-3-8910 11C 2764 11H 367 11I M58725P 11N 367
 RA1 RA2 RA3 RA4 DIP A RA4 DIP B RA5 RA6 RA7 RA8 RA9 RA10 RA11 RA12 RA13
 R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25
 CC1 CC2 CC3 CC4 CC5 CC6 CC7 CC8 CC9 CC10 CC11 CC12 CC13 CC14 CC15 CC16 CC17 CC18 CC19 CC20 CC21 CC22 CC23 CC24 CC25 CC26 CC27 CC28 CC29 CC30
 VR C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C27 C28 C29 C30 C31 C32 C33 C34 C35 C36 C37 C38 C39 C40 C41 C42 C43 C44 C45 C46 C47 C48 C49 C50 C51 C52 C53 C54 C55 C56 C57 C58 C59 C60 C61 C62 C63 C64 C65 C66 C67 C68 C69 C70 C71 C72 C73 C74 C75 C76 C77 C78 C79 C80 C81 C82 C83 C84 C85 C86 C87 C88 C89 C90 C91 C92 C93 C94 C95 C96 C97 C98 C99 C100
 RST518
 CCI3 1/4h
 R23 R24
 R19 R20
 R21 R22
 R23 R24
 R25
 XLI

84602-02A

