

F003	C000	JMP	C003
	C003	MVI	A, CE
	C005	OUT	03
	C007	MVI	A, 27
	C009	OUT	03
F400 H	C00B	LXI	SP, DFDD-5
F0A6	C00E	CALL	C0A6
	C011	MVI	A, 2A
F098	C013	CALL	C098
F0BD	C016	CALL	COBD
	C019	ANI	5F
	C01B	PUSH	PSW
F096	C01C	CALL	C096
	C01E	POP	PSW
F00B	C020	LXI	H, C00B
	C022	PUSH	H
	C024	CPI	41
	C026	RC	
	C027	CPI	5B
	C029	RNC	
F0A5	C02A	LXI	H, COB5
	C02D	PUSH	PSW
	C02E	ADD	A
	C02F	ADD	L
	C030	MOV	L, A
	C031	MOV	E, M
	C032	INX	H
	C033	MOV	D, M
	C034	XCHG	
	C035	POP	PSW
	C036	PCHL	
	C037	XRI	C1
	C039	NOP	
	C03A	PCHL	
	C03B	XRA	H
F12E	C03C	JNZ	C1EE
	C03F	NOP	
F0C4	C040	CNZ	C2C5
	C043	MOV	L, E
	C044	RNZ	
	C045	DCX	B
	C046	RNZ	
	C047	LXI	H, 28C3
	C04A	??=	20
	C04B	NOP	
	C04C	NOP	
	C04D	??=	28
	C04E	POP	B
	C04F	MOV	M, C
	C050	JNZ	C293
	C053	LDAX	B
	C054	JMP	C223
	C057	??=	ED
	C058	RNZ	
	C059	??=	28
	C05A	POP	B
	C05B	PUSH	B
	C05C	JNZ	C176
	C05F	MVI	M, C3
	C061	??=	28
	C062	POP	B
	C063	??=	ED
	C064	??=	28

INIT

= BURS DS  
 = IFL DS  
 DFDD = SPTR

START

Change addresses

Command Table

	C066	JNZ	C3F7
	C069	MOV	E,L
CD-F070	C06A	JNZ	70CD
	C06D	RNZ	
	C06E	XCHG	
	C06F	PCHL	
F070	C070	MVI	C,04
convert Hex	C072	LXI	H,0000
to D, F0B0	C075	CALL	COBD
(D, F0B0)	C078	CPI	30
(Mem test)	C07A	JC	CO0B
F0B0	C07D	CPI	3A
	C07F	CNC	COB0
	C082	DAD	H
	C083	DAD	H
	C084	DAD	H
	C085	DAD	H
	C086	SUI	30
	C088	CPI	0A
F08F	C08A	JC	C08F
	C08D	SUI	07
	C08F	ADD	L
	C090	MOV	L,A
	C091	DCR	C
F075	C092	JNZ	C075
	C095	XCHG	
	C096	MVI	A,20
F343	C098	JMP	C343
	C09B	XRI	00
F343	C09D	ANI	01
	C09F	JZ	C343
	COA2	POP	PSW
	COA3	OUT	02
	COA5	RET	
F098	COA6	MVI	A,0D
	COA8	CALL	C098
F098	COAB	MVI	A,0A
	COAD	JMP	C098
F003	COB0	CPI	41
	COB2	JC	CO0B
	COB5	ANI	5F
F003	COB7	CPI	47
	COB9	JNC	CO0B
	COBC	RET	
	COBD	IN	03
	COBF	XRI	00
F0AD	COC1	ANI	02
	COC3	JZ	COBD
	COC6	IN	02
F098	COC8	ANI	7F
	COCA	JMP	C098
F0DC	CODC	CALL	CODC
	COD0	CPI	20
	COD2	RNZ	
F0DC	COD3	CALL	CODC
F0D3	COD6	CPI	20
	COD8	JNZ	COD3
	CODB	RET	
	CODC	IN	03
	CODE	XRI	00
	COE0	ANI	02
	COE2	RZ	
	COE3	IN	02
	COE5	ANI	7F
	COF7	CPT	03

Get to execute EXEC

G

AAAA

JMP VIDEO PUT CHAR TO TUBE

CRLF

ALPHA

RDCKX

PL00P

SPACE BAR PAUSE (=CNTL S)

CNTL C

WQ

COEC	RET	
COED	PUSH PSW	COUTR
COEE	CALL C303	
COF1	MVI B,00	
COF3	POP PSW	
COF4	MOV C,A	
COF5	CALL C116	
COF8	MVI A,E6	
COFA	CALL C116	
COFD	MOV A,M	COLOP
COFE	CALL C116	
C101	ADD B	
C102	MOV B,A	
C103	CALL COCD	
C106	CALL C254	
C109	JNZ COFD	
C10C	MOV A,B	
C10D	CALL C116	
C110	CALL C1D4	
C113	JMP COOB	COUT
C116	PUSH PSW	
C117	MOV A,C	
C118	CPI 51	
C11A	JZ C124	
C11D	IN 6E	CLOP
C11F	ANI 20	
C121	JNZ C11D	
C124	POP PSW	CHKSM
C125	OUT 6F	
C127	RET	

Compute checks

Write Turnbull

VR L

C128	PUSH PSW	
C129	MVI A,10	
C12B	OUT 6E	
C12D	CALL C303	
C130	POP PSW	
C131	PUSH H	
C132	PUSH PSW	
C133	MVI B,00	
C135	CALL C16C	
C138	MOV C,A	
C139	POP PSW	
C13A	PUSH PSW	
C13B	CPI 56	
C13D	MOV A,C	
C13E	JZ C142	
C141	MOV M,A	
C142	ADD B	
C143	MOV B,A	
C144	CALL COCD	
C147	CALL C254	
C14A	JNZ C135	
C14D	CALL C16C	
C150	PUSH PSW	
C151	CALL C1D4	
C154	CALL C096	
C157	POP PSW	
C158	CMP B	
C159	MVI A,45	
C15B	JNZ C166	
C15E	POP PSW	
C15F	CPI 4C	
C161	JNZ C166	
C164	POP H	
C165	PCHL	
C166	CALL COOB	

Cassette  
Input Routine

Send console?

Memory test  
Runtime

Routine to  
Generate  
Random Nos

Error Printout  
Routine

C16C	IN	6E
C16E	ANI	10
C170	JNZ	C16C
C173	IN	6F
C175	RET	
C176	CALL	C303
C179	LXI	B,5A5A
C17C	CALL	C1A7
C17F	PUSH	B
C180	PUSH	H
C181	PUSH	D
C182	CALL	C1A7
C185	MOV	M,B
C186	CALL	C254
C189	JNZ	C182
C18C	POP	D
C18D	POP	H
C18E	POP	B
C18F	PUSH	H
C190	PUSH	D
C191	CALL	C1A7
C194	MOV	A,M
C195	CMP	B
C196	CNZ	C1C8
C199	CALL	C254
C19C	JNZ	C191
C19F	POP	D
C1A0	POP	H
C1A1	CALL	COCD
C1A4	JMP	C17C
C1A7	MOV	A,B
C1A8	ANI	B4
C1AA	ANA	A
C1AB	JPE	C1AF
C1AE	STC	
C1AF	MOV	A,C
C1B0	RAL	
C1B1	MOV	C,A
C1B2	MOV	A,B
C1B3	RAL	
C1B4	MOV	B,A
C1B5	RET	
C1B6	CALL	COA6
C1B9	CALL	COCD
C1BC	MOV	A,H
C1BD	CALL	C1D4
C1C0	MOV	A,L
C1C1	CALL	C1D4
C1C4	CALL	C096
C1C7	RET	
C1C8	PUSH	PSW
C1C9	CALL	C1B6
C1CC	MOV	A,B
C1CD	CALL	C1D4
C1D0	CALL	C096
C1D3	POP	PSW
C1D4	PUSH	PSW
C1D5	CALL	C1DC
C1D8	POP	PSW
C1D9	JMP	C1E0
C1DC	RAR	
C1DD	RAR	
C1DE	RAR	
C1DF	RAR	
C1E0	ANI	OF

New Test

D A -

```

C1E4 CPI 3A
C1E6 JC C098
C1E9 ADI 07
C1EB JMP C098
C1EE MOV B,A
C1EF CALL C303
C1F2 MVI C,10
-C1F4 CALL C1B6
C1F7 MOV A,B
C1F8 CPI 41
C1FA MOV A,M
C1FB JZ C20F
C1FE CALL C1D4
C201 CALL C096
C204 CALL C254
C207 RZ
C208 DCR C
C209 JZ C1F2
C20C JMP C1F7
C20F ANI 60
C211 JNZ C21A
C214 CALL C096
C217 JMP C204
C21A MOV A,M
C21B ANI 7F
C21D CALL C098
C220 JMP C204

```

CALLTAHEX  
CALLPTAD  
CPI 'A'

Display Mem Contents

P-

```

C223 CALL C070
C226 XCHG
C227 CALL C0A6
C22A MOV A,M
C22B CALL C1D4
C22E MVI A,2D
C230 CALL C098
C233 CALL C0BD
C236 CPI 20
C238 JZ C250
C23B CPI 0D
C23D JNZ C246
C240 CALL C0A6
C243 JMP C233
C246 XCHG
C247 LXI H,0000
C24A MVI C,02
C24C CALL C078
C24F MOV M,E
C250 INX H
C251 JMP C22A
C254 MOV A,E
C255 SUB L
C256 JNZ C25B
C259 MOV A,D
C25A SBB H
C25B INX H
C25C RET

```

CALLAHEX

Program Memory (Poke)

Z

```

C25D CALL C303
C260 PUSH H
C261 MVI C,02
C263 CALL C072
C266 XCHG
C267 XTHL
C268 POP B
C269 MOV M,C
C26A CALL C254
C26D R7

```

CALLTAHEX

Fill Memory with a constant

**X M** - C271 MOV B, A  
C272 CALL C303  
C275 PUSH H  
C276 CALL C070  
C279 XCHG  
C27A XTHL  
C27B MOV C, M  
C27C XTHL  
C27D MOV A, B  
C27E CPI 4D  
C280 JZ C287  
C283 MOV A, M  
C284 XTHL  
C285 MOV M, A  
C286 XTHL  
C287 MOV M, C  
C288 INX H  
C289 XTHL  
C28A CALL C254  
C28D JZ C00B

Move a block of memory

**N** - C290 JMP C27B  
C293 LXI H, 0000  
C296 MOV C, M  
C297 MVI B, FF  
C299 MOV M, B  
C29A MOV A, M  
C29B CMP B  
C29C JNZ C1C8  
C29F MVI B, 00  
C2A1 MOV M, B  
C2A2 MOV A, M  
C2A3 CMP B  
C2A4 JNZ C1C8  
C2A7 MOV M, C  
C2A8 INX H  
C2A9 JMP C296

Non dest Mem Test (size)

**C** - C2AC CALL C303  
C2AF PUSH H  
C2B0 CALL C070  
C2B3 XCHG  
C2B4 MOV A, M  
C2B5 INX H  
C2B6 XTHL  
C2B7 CMP M  
C2B8 MOV B, M  
C2B9 CNZ C1C8  
C2BC CALL C254  
C2BF XTHL  
C2C0 JNZ C2B4  
C2C3 POP PSW  
C2C4 RET

Compare 2 blocks

**SF** - C2C5 PUSH PSW  
C2C6 CALL C303  
C2C9 PUSH H  
C2CA MVI C, 02  
C2CC CALL C072  
C2CF XCHG  
C2D0 MOV B, L  
C2D1 POP H  
C2D2 POP PSW  
C2D3 CPI 53  
C2D5 PUSH PSW  
C2D6 JZ C2E2  
C2D9 PUSH H  
C2DA MVI C, 02

Search character(s)

```

C2DF XCHG
C2E0 MOV C,L
C2E1 POP H
C2E2 MOV A,M
C2E3 CMP B
C2E4 JNZ C2FB
C2E7 POP PSW
C2E8 CPI 53
C2EA PUSH PSW
C2EB JZ C2F5
C2EE INX H
C2EF MOV A,M
C2F0 DCX H
C2F1 CMP C
C2F2 JNZ C2FB
C2F5 INX H
C2F6 MOV A,M
C2F7 DCX H
C2F8 CALL C1C8
C2FB CALL C254
C2FE JNZ C2E2
C301 POP PSW
C302 RET
C303 CALL C070
C306 CALL C070
C309 RET
O-C30A MVI C,02
C30C CALL C072
C30F MVI C,02
C311 CALL C072
C314 MOV D,L
F4A0 C315 LXI H,DFA0(H,SPTR-30H)
C318 MVI M,C9
C31A DCX H
C31B MOV M,D
C31C DCX H
C31D MVI M,D3
C31F MOV A,E
C320 PCHL
I-C321 MVI C,02
C323 CALL C072
C326 LXI H,DFA0
C329 MVI M,C9
C32B DCX H
C32C MOV M,E
C32D DCX H
C32E MVI M,DB
C330 CALL DF9E
C333 JMP EX1D4
U-C336 MVI A,E6
C338 MOV C,A
C339 CALL C116
C33C CALL CODC
E336 C33F JMP C336
C342 NOP
E337 C343 PUSH PSW
C344 PUSH B
C345 PUSH D
C346 PUSH H
C347 MOV B,A
F4F2 C348 LDA F0FF2
C34B CPI 49
F362 C34D JZ E2362(DISPL)
C350 XRA A
C351 OUT C

```

TAKEN

Output to Port

PINPT

Input data from port

Output Tanbell sync  
SYNC

Video Driver START

F500  
FC00

```

C356 MVI M,49
C358 INR L
C359 MVI M,00
C35B INR L
C35C INR L
C35D MVI M,20
F3BC - C35F JMP F3BC - CLRSCR
F4FD - C362 LHLD D,FF0 Display 2 char
F4F4 - C365 LDA D,FF4
C368 MOV M,A
C369 MOV A,B
C36A ORA A
F3D2 - C36B JZ C3D2
C36E CPI 13
F3EC - C370 JZ C3EC
C373 CPI 04
F350 C375 JZ C350
C378 CPI 0A
F3DF C37A JZ C3DF
C37D CPI 0D
F3CE C37F JZ C3CE
C382 CPI 5F
F3E6 C384 JZ C3E6
C387 ANI 7F
C389 MOV M,B
C38A INX H
C38B MOV A,H
C38C CPI D4
F3AD C38E JNZ C3AD
FC00 = C391 LXI H,D000 H, Page
FC40 C394 LXI D,D040 D, Page + 64
C397 LDAX D
C398 MOV M,A
C399 INX D
C39A INX H
C39B MOV A,D
C39C CPI D4
F397 C39E JNZ C397 SCROL
C3A1 MVI M,20
C3A3 INX H
C3A4 MOV A,H
C3A5 CPI D4
F3A1 C3A7 JNZ C3A1
F3C0 C3AA LXI H,D3C0
C3AD MOV A,M
F4F4 C3AE STA D,FF4
C3B1 ORI 80
C3B3 MOV M,A
F4FC C3B4 SHLD D,FF0 RTRN
C3B7 POP H
C3B8 POP D
C3B9 POP B
C3BA POP PSW
C3BB RET
FC00 = F00M C3BC LXI H,D000 CLRSCR
C3BF MVI M,20
C3C1 INX H
C3C2 MOV A,H
C3C3 CPI D4
F3BF C3C5 JNZ C3BF
FC00 - C3C8 LXI H,D000
F3AD C3CB JMP C3AD JMP RETRN-3
C3CE MOV A,L
C3CF ANI C0
C3D1 MOV I,A

```

DFF0 = STACK PTR  
 DFF2 = CURS  
 DFF4 = CURS  
 DFF6 = IFL

DFF0 = CURS  
 DFF2 = IFL  
 DFF4 =  
 DFF6 =

D3P

ONSCR

H, Page  
D, Page + 64

SCROL

SCROL

CLRN

RTRN

Video

Clear the screen

FC00 = F00M

F3BF C3C5 JNZ C3BF  
 FC00 - C3C8 LXI H,D000  
 F3AD C3CB JMP C3AD JMP RETRN-3



	C3D5	MOV	D, A	
	C3D6	MOV	A, D	
	C3D7	ANA	A	
	C3D8	DCX	D	
F3D6	C3D9	JNZ	C3D6	
	C3DC	JMP	C3AD	
E3B4	C3DF	LXI	D, 0040	} Line Feed
	C3E2	DAD	D	
F38D	C3E3	JMP	C38B	
	C3E6	MVI	M, 20	
	C3E8	DCX	H	
F3ADC	C3E9	JMP	C3AD	} - Back space
F4F5	C3EC	LDA	DF55	
	C3EF	ADI	20	- scratch?
F4F5	C3F1	STA	DF55	
F3ADC	C3F4	JMP	C3AD	
F0D4	C3F7	CALL	C0DC	} Put keyboard to screen
F343	C3FA	CNZ	C343	
F3F7	C3FD	JMP	C3F7	
E	C400	CALL	C41A	
	C403	LDA	DC03	
	C406	ORA	A	
	C407	RET		
	C408	CALL	C41A	
	C40B	LDA	DC03	
	C40E	ORA	A	
	C40F	JZ	C408	
	C412	XRA	A	
	C413	STA	DC03	
	C416	LDA	DC04	
	C419	RET		
	C41A	IN	03	
	C41C	ANI	02	
	C41E	RZ		
	C41F	IN	02	
	C421	ANI	7F	
	C423	CPI	06	
	C425	JZ	C431	
	C428	STA	DC04	
	C42B	MVI	A, FF	
	C42D	STA	DC03	
	C430	RET		
	C431	LDA	DC00	
	C434	CPI	02	
	C436	RZ		
	C437	INR	A	
	C438	STA	DC00	
	C43B	XRA	A	
	C43C	RET		
	C43D	CALL	C41A	
	C440	LDA	DC00	
	C443	ORA	A	
	C444	JZ	C43D	
	C447	LDA	DC02	
	C44A	ORA	A	
	C44B	JZ	C456	
	C44E	DCR	A	
	C44F	JZ	C490	
	C452	DCR	A	
	C453	JZ	C4A5	
	C456	MOV	A, C	
	C457	SUI	1B	
	C459	JNZ	C460	
	C45C	INR	A	
	C45D	STA	DC02	

Fixed delay routine ???

} Line Feed

} - Back space

- scratch?

} Put keyboard to screen

?

C463	CPI	4B
C465	JC	C47E
C468	IN	03
C46A	ANI	01
C46C	JZ	C468
C46F	MVI	A,03
C471	OUT	02
C473	XRA	A
C474	STA	DC01
C477	LDA	DC00
C47A	DCR	A
C47B	STA	DC00
C47E	LDA	DC01
C481	INR	A
C482	STA	DC01
C485	IN	03
C487	ANI	01
C489	JZ	C485
C48C	MOV	A,C
C48D	OUT	02
C48F	RET	
C490	MOV	A,C
C491	CPI	09
C493	JZ	C4A9
C496	CPI	0B
C498	JZ	C4A9
C49B	CPI	1E
C49D	JZ	C4A9
C4A0	CPI	1F
C4A2	JZ	C4A9
C4A5	XRA	A
C4A6	JMP	C4AB
C4A9	MVI	A,02
C4AB	STA	DC02
C4AE	JMP	C47E
C4B1	MVI	A,02
C4B3	STA	DC00
C4B6	XRA	A
C4B7	STA	DC01
C4BA	STA	DC02
C4BD	STA	DC03
C4C0	STA	DC04
C4C3	OUT	03
C4C5	OUT	03
C4C7	OUT	03
C4C9	MVI	A,40
C4CB	OUT	03
C4CD	MVI	A,CE
C4CF	OUT	03
C4D1	MVI	A,27
C4D3	OUT	03
C4D5	RET	
C4D6	RST	07
C4D7		