

**** ROMS -- REVISION 2.0 ****

CONTROL KEYS

- CTRL E sets the double spaced EDIT MODE. Hit CTRL E again to EXIT the edit mode.
- CTRL > moves the CURSOR to the right.
- CTRL < moves the CURSOR to the LEFT.
- CTRL U moves the CURSOR UP.
- CTRL D moves the CURSOR DOWN.
- CTRL R DELETES the character or space over which the CURSOR is located. If the R key is kept depressed it will continue to delete.
- CTRL I INSERTS a space at the character or space over which the CURSOR is located and moves that point and all others to the right. You can then enter any characters in the space.
- CTRL N DELETES ALL from under the CURSOR to the end of that line.
- CTRL B BLOCK DELETES whole lines. You hit CTRL B, then #####-#### (FROM#-TO#) then RETURN KEY, where ##### is a **FOUR DIGIT** Line Number. Those lines and ALL BETWEEN will be DELETED!
- CTRL S STOPS SCROLL of LIST as before but only at the end of a line. No more partial lines!
- CTRL Q CONTINUES SCROLL of LIST.
- CTRL V allows screen viewing of the cassette port while depressed (stops viewing on release).
- LINEFEED will ADVANCE the line #'s by 10 each time it is depressed. This enters it to BASIC and prints line # on the screen.
- ESC RESETS LINE COUNTER to 0000. USE CAUTION!!
- RUBOUT gives INSTANT SCREEN CLEAR at any time input from the keyboard can be accepted.

EDITING FUNCTIONS

The now resident EDITOR will operate at any time you are using BASIC-IN-ROM. It will not operate under the DOS(DISK OR SYSTEM) and any attempted access of the DOS will require a POKE49153,0 to allow the EDITOR to be called. You may EDIT any line LISTED in the DOUBLE SPACED FORMAT. You may EDIT the line you are inputting as long as the LINE NUMBER is PRECEDED BY A SPACE!! EDIT does not occur until you hit RETURN.

CURSOR

The operating system supports two cursors:

- 1.) If you already have our PROGRAMMABLE CHARACTER GENERATOR, it will give you a "smart" CURSOR so that whatever character is beneath the CURSOR will be centred and show through in REVERSE VIDEO!!
- 2.) If you do not yet have our PROGRAMMABLE CHARACTER GENERATOR, then you will have a FLASHING CURSOR which alternately flashes on and off showing the character beneath it.

Note that the rate of 'flash' (if no video mod) or the reverse video image (with video mod) is set by POKEing a number between 0 and 255 into location DEC 558. Try POKE558,0 for super fast, POKE558,127 for normal, or POKE558,255 for super slow. (Cold Start sets it at 5).

SCREEN WIDTH

The video routines now support only 32 or 64 character screens. If the programmable character generator is in, the EPROM will read the OSI character generator into the programmable character generator and turn it on.

CTRL E

Please note that when the EDITOR is used, BASIC's Terminal width must be in the normal 72 characters. This control flip flops from 0 to 72. (e.g.) If 72 is in the Terminal Width Register (location 15) then CTRL E flips to 0, or vice versa. To EXIT hit CTRL E.

PRINT AT

The operating system will now support PRINT AT.

An example of this would be:

0010 POKE 527,75:POKE 528,209:INPUT"TESTING";A\$

The word TESTING? should appear in the middle of your 32 Chr. Screen Format, asking for A\$ input.

The PRINT AT utility is a feature used to format the screen for GAMES or BUSINESS applications. The two LOCATIONS given contain the LO and HI ADDRESS of the CURSOR POSITION. For C1P Systems with either 32 or 64 Chrs per line, the cursor can be at any location from \$D000 to \$D7FF. For exact locations see OSI manual.

LO ADDRESS OF CURSOR LOCATION=\$020F or DEC. 527

HI ADDRESS OF CURSOR LOCATION=\$0210 or DEC. 528

SELECTABLE SCROLL WINDOW

This feature allows the user to select which portion of the screen will be affected by the scrolling function of the CRT Driver and which can only be changed by direct memory POKEs. An example would be the STARFIGHTERS GAME where a real time graphics display fills the upper half of the screen and the STAR SHIPS STATUS can scroll up from the bottom. POKE 547 (or \$0223) with a number from 208(TOP OF SCREEN) to 211(BOTTOM OF SCREEN) on Standard C1P, or 208 to 215 if you have the 64 CHR Screen. SELECTABLE SCROLL=\$0223 or DEC 547. Try:

0010 POKE547,210 and you will see the scroll disappear part way up the screen. POKE547,208 resets it.

FAST SCREEN CLEAR

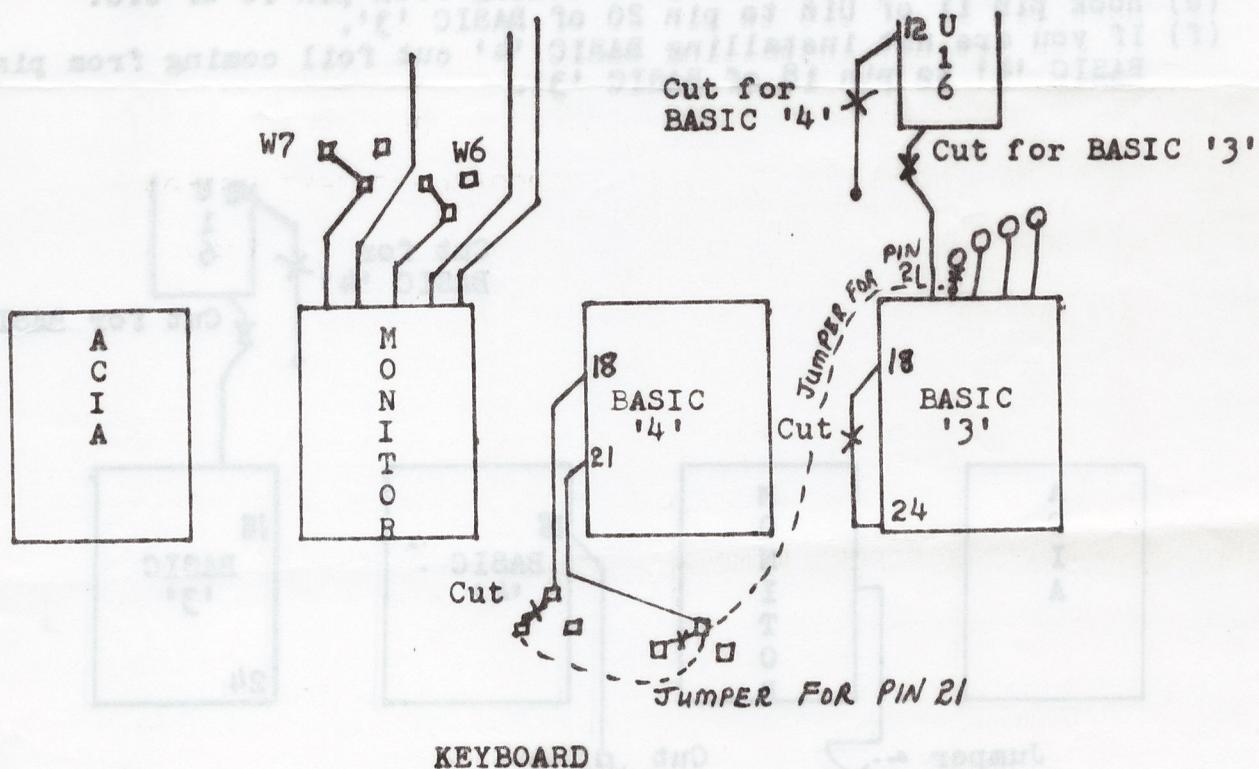
Try RUBOUT KEY or in program- 0010 POKE CHR\$(127)

For machine language it's JSR \$FCDE.

Installation Instructions for the new PC ROMS

(for Superboard II please turn over)

- 1.) Monitor ROM
 - (a) Cut foil between pins 20 & 21.
Hook a jumper from pin 21 to +5 volts.
 - (b) Now look on the diagram below.
 - (c) Make sure W7 & W6 are hooked as shown.
 - 2.) BASIC '4'
 - (a) Cut foil coming from pin 18 of BASIC 4 as shown.
 - (b) Hook pin 18 to pin 20 of BASIC '4'.
 - (c) Hook pin 13 of U16 to pin 20.
 - (d) Cut foil coming from pin 12 of U16 as shown.
 - 3.) BASIC '3'
 - (a) Cut foil at pin 18 going towards BASIC '2' on foil side.
 - (b) Hook pin 18 of BASIC '2' to +5 volts.
 - (c) Cut foil coming from pin 18 of BASIC '3' on component side.
 - (d) Hook pin 18 to pin 20 of BASIC '3'.
 - (e) Cut foil as shown in diagram coming from pin 10 of U16.
 - (f) Hook pin 11 of U16 to pin 20 of BASIC '3'.



NOTE: Whether you install one or all of the ROMS you should trace out the foil pattern of pin 21 of the BASIC chips, disconnect them from \$2 and hook them to +5V. Make sure that the foil path for \$2 stays intact! This change will greatly improve the operation of your ROMS, especially at 2 MHz operation. Look at the schematics above and make the two jumper and foil cuts for pin 21 of the BASIC chips, one on BASIC 4 and the other at the back of BASIC 3.

Installation Instructions for the new PC ROMS

MOD II

(for the model II superboard)

1.) Monitor ROM (On component side)

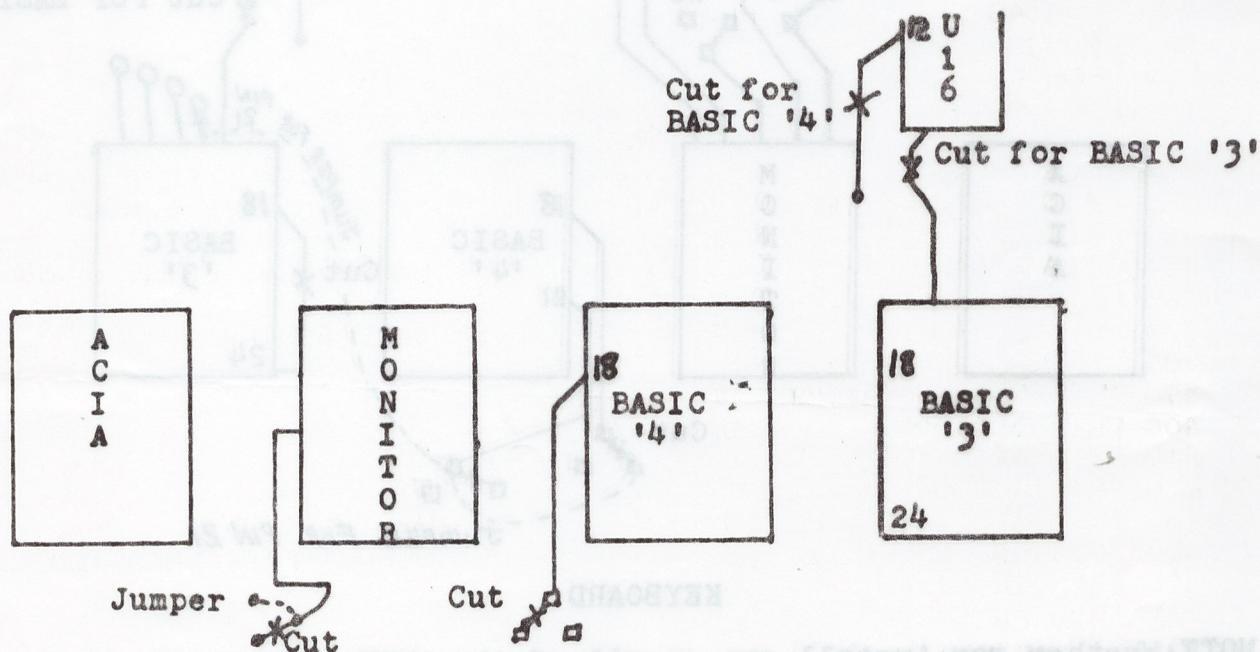
- (a) Cut Jumper coming from pin 21 to ground.
- (b) Hook a jumper from pin 21 to +5 volts.

2.) Basic '4'

- (a) Cut foil coming from pin 18 of BASIC 4 as shown.
- (b) Hook pin 18 to pin 20 of BASIC '4'.
- (c) Hook pin 13 of U16 to pin 20.
- (d) Cut foil coming from pin 12 of U16 as shown.
- (e) Cut lead on foil side between pin 18 BASIC '4' and pin 18 BASIC '3'. If not installing BASIC '3' then jumper pin 18 BASIC '3' to +5 volts.

3.) BASIC '3'

- (a) Cut foil at pin 18 going towards BASIC '2' on foil side.
- (b) Hook pin 18 of BASIC '2' to +5 volts.
- (c) Hook pin 18 to pin 20 of BASIC '3'.
- (d) Cut foil as shown in diagram coming from pin 10 of U16.
- (e) Hook pin 11 of U16 to pin 20 of BASIC '3'.
- (f) If you are not installing BASIC '4' cut foil coming from pin 18 BASIC '4' to pin 18 of BASIC '3'.



KEYBOARD

A

10 ; INVERSE VIDEO OR FLASHING CURSOR IF THERE ISN'T A
20 ; PROG. CHAR. GENERATOR BOARD INSTALLED
30 ; COPYRIGHT PROGRESSIVE COMPUTING ALL RIGHTS RESERVED
40 ; BY JOSEPH F. ENDRE
50 ;
60 ; CHANGE IN KEYBOARD ROUTINE
70 F000= OFF=\$F000
80 FD70 *=\$OFF+\$D70
90 FD70 4C00F8 JMP INVRS
100 FD73 50 .BYTE \$50,\$43
100 FD74 43
110 ;
120 C001= FLPSTA=\$C001
130 0201= SAVER=\$201
140 0200= SIZE=\$200
150 0224= EDFLG=\$224
160 0226= DEL=\$226
170 020E= PRINT=\$20E
180 020C= BUFF=\$20C
190 022E= TIME=\$22E
200 0213= TEMP=\$213
210 BFCF= UNS=\$BFCF
220 BFE8= OK=\$BFE8
230 ;
240 F800 *=OFF+\$800
250 F800 8D1402 INVRS STA \$214
260 F803 8A TXA SAVE REG.
270 F804 48 PHA
280 F805 98 TYA
290 F806 48 PHA
300 F807 ADO1C0 LDA FLPSTA SEE IF DISK WAS USED
310 F80A 3002 BMI CON
320 F80C D051 BNE LOOP YES DON'T GIVE SPECIAL CURSOR
330 F80E 2066F8 CON JSR DELY IS IT TIME TO UPDATE CURSOR
340 F811 D04C BNE LOOP
350 F813 ADO0E8 LDA \$E800 DO WE HAVE PROG. CHAR. GENERATOR
360 F816 C95A CMP #\$5A
370 F818 D031 BNE FLASH NO GO DO FLASHING CURSOR
380 ;
390 ; SMART CURSOR ***
400 F81A ADO102 LDA SAVER
410 F81D A200 LDX #0
420 F81F 8E0C02 STX BUFF
430 F822 A003 LDY #3
440 F824 0A CALC ASL A CALCULATE CHARACTER LOCATION
450 F825 2E0C02 ROL BUFF
460 F828 88 DEY
470 F829 D0F9 BNE CALC
480 F82B 8D0B02 STA BUFF-1 SET UP READ AND WRITE ROUTINE
490 F82E A9E8 LDA #\$E8
500 F830 6D0C02 ADC BUFF
510 F833 8D0C02 STA BUFF
520 F836 A007 LDY #7
530 F838 A9B9 LDA #\$B9
540 F83A 8D0A02 STA BUFF-2

550	F83D	200A02	CHR1	JSR BUFF-2 READ CHARACTER	01
560	F840	49FE		EOR #\$FE INVERT THEN CENTER	02
570	F842	4A		LSR A	03
580			;	WRITE IT IN CURSOR LOCATION	04
590	F843	9958ED		STA \$AB*8+\$E800,Y	05
600	F846	88		DEY	06
610	F847	10F4		BPL CHR1	07
620	F849	3014		BMI LOOP	08
630			;	SET UP READ ROUTINE	09
640	F84B	A9AD	FLASH	LDA #\$AD	0A
650	F84D	8D0E02		STA PRINT	0B
660	F850	200E02		JSR PRINT	0C
670	F853	C9AB	CUR	CMP #\$AB IS IT THE CURSOR	0D
680	F855	D005		BNE CURSW IF NOT THEN WRITE CURSOR	0E
690	F857	20CFBF		JSR UNS PULL CHARACTER UNDER CURSOR AND WR	0F
700	F85A	D003		BNE LOOP	10
710	F85C	20EBBF	CURSW	JSR OK+3	11
720	F85F	68	LOOP	PLA RESTORE REG.	12
730	F860	A8		TAY	13
740	F861	68		PLA	14
750	F862	AA		TAX	15
760	F863	4C04FD	RET	JMP OFF+\$D04	16
770	F866	EE2502	DELY	INC DEL-1	17
780	F869	D00D		BNE XT	18
790	F86B	CE2602		DEC DEL	19
800	F86E	D008		BNE XT	20
810	F870	AD2E02		LDA TIME	21
820	F873	8D2602		STA DEL	22
830	F876	A900		LDA #0	23
840	F878	60	XT	RTS	24

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10      ; CRT DRIVER FOR BASIC'4
20      ; SUPPORTS TRUE 32 OR 32/64
30      ; ALSO PARTIAL SCREEN SCROLL
40 FFBA= INPUT=$FFBA
50 FF6C= OUT=$FF6C
60 0207= LDR=$207
70 0200= *= $200
80 0200= SIZE=*
90 020E= PRINT=$20E
100 020F= STORE=PRINT+1
110 020F= POINT=STORE
120 0201= SAVER= *+1
130 0202= DATCHR= *+2
140 0222= LEN=$222
150 0223= STRT=$223
160 0224= EDFLG=$224
170 022B= TEMP=$22B
180 022E= TIME=$22E
190 DF00= KYBRD=$DF00
200 BF2D= *= $BF2D
210 BF2D BD0202 CROUT STA DATCHR SAVE CHAR.
220 BF30 48 PHA
230 BF31 BA TXA
240 BF32 48 PHA
250 BF33 98 TYA
260 BF34 48 PHA
270 BF35 AD0202 LDA DATCHR RELOAD CHAR.
280 BF38 F050 BEQ EXIT DO NOT PRINT NULLS
290 BF3A AC0002 LDY SIZE
300 BF3D C97F CMP #$7F IS IT RUBOUT
310 BF3F D005 BNE NORUB
320 BF41 A95F LDA #$5F LOAD A CR.
330 BF43 20DCFC JSR CLEAR ERASE SCREEN
340 BF46 C90A NORUB CMP #\$A
350 BF48 F04C BEQ LF
360 BF4A C90D CMP #$D IS IT CR.
370 BF4C D006 BNE L2
380 BF4E 20DABF JSR RT
390 BF51 4C8ABF JMP EXIT
400 BF54 BD0102 L2 STA SAVER
410 BF57 C95F CMP #$5F IS IT BACK SPACE.
420 BF59 D00D BNE NOBS
430 BF5B A920 LDA #\$20
440 BF5D BD0102 STA SAVER
450 BF60 20CFBF JSR UNS
460 BF63 CEOFO2 DEC POINT
470 BF66 DOOB BNE CNT
480 BF68 20CFBF NOBS JSR UNS NO WRITE CHARACTER
490 BF6B EEOF02 INC POINT
500 BF6E D003 BNE CNT
510 BF70 EE1002 INC PRINT+2
520 BF73 B9FEFC CNT LDA SIZ,Y
530 BF76 CD1002 CMP PRINT+2
540 BF79 F002 BEQ CRLF
550 BF7B D00A BNE EXITM
560 BF7D AD2202 CRLF LDA LEN ON HOME LINE CHECK FOR AUTO-CR.
570 BF80 6980 ADC #\$80
580 BF82 CDOFO2 CMP POINT

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590	BF85	F00C		BEQ	AUTCR		
600	BF87	20E0BF	EXITM	JSR	SAV	SAVE NEXT CHAR. ON SCREEN	01
610	BF8A	68	EXIT	PLA		RESTORE REG.	02
620	BF8B	A8		TAY			03
630	BF8C	68		PLA			04
640	BF8D	AA		TAX			05
650	BF8E	68		PLA			06
660	BF8F	206CFF		JSR	OUT	OUTPUT TO PROPER PORT	0020 03
670	BF92	60	EXT	RTS			=0020 08
680		;					=3020 09
690	BF93	20DDBF	AUTCR	JSR	RTA	RESET HOME.	=3020 061
700	BF96	20CFBF	LF	JSR	UNS	PRINT CHAR.	0100 011
710	BF99	A207	SCROL	LDX	#7	SETUP SCROLLING ROUTINE.	0200 051
720	BF9B	20F6BF	CD	JSR	CD1		0200 063
730	BF9E	A920		LDA	#\$20		=3020 083
740	BFA0	C000		CPY	#0	ADJUST FOR SCREEN SIZE	=2020 021
750	BFA2	F001		BEQ	BG+1		=4020 061
760	BFA4	0A	BG	ASL	A		=8020 051
770	BFA5	8D0802		STA	LDR+1		0200 081
780	BFA8	AC2302	RST	LDY	STRT	CHECK FOR START OF SCROLL.	0100 091
790	BFBAB	88		DEY			0200 002
800	BFBAC	C8	INCY	INY			0200 012
810	BFBAD	8C0902		STY	LDR+2		0200 022
820	BFB0	8C0C02		STY	LDR+5		0200 032
830	BFB3	200702	LD	JSR	LDR	SCROLL A LINE FROM TOP DOWN.	0200 062
840	BFB6	E8		INX			0200 023
850	BFB7	F0F3		BEQ	INCY		BA 0200 063
860	BFB9	10FB		BPL	LD		0200 023
870	BFBB	CC1002		CPY	POINT+1		0200 023
880	BFBF	D0F3		BNE	LD		0200 024
890	BFC0	A980	LINE	LDA	#\$80	SCROLL TILL END OF HOME LINE	0020 002
900	BFC2	6D2202		ADC	LEN		0200 012
910	BFC5	8D1702		STA	\$217		0200 022
920	BFC8	EC1702		CPX	\$217		0200 022
930	BFCB	DOE6		BNE	LD		0200 022
940	BFCD	FOB8		BEQ	EXITM		0200 022
950	BFCF	AD0102	UNS	LDA	SAVER	PRINT SAVED CHAR.	0020 APR 062
960	BFD2	A28D	STR	LDX	#\$80	SETUP ROUTINE.	0000 DEC 052
970	BFD4	BEOE02		STX	PRINT		0200 022
980	BFD7	4COE02		JMP	PRINT		0200 022
990	BFDA	20CFBF	RT	JSR	UNS		0200 022
1000	BFDD	20ABF8	RTA	JSR	AURST	RESET HOME POSITION OF CURSOR	0100
1010	BFE0	A9AD	SAV	LDA	#\$AD		0200 022
1020	BFE2	8DOE02		STA	PRINT		0200 022
1030	BFE5	200E02		JSR	PRINT		0200 022
1040	BFE8	8D0102	OK	STA	SAVER	SAVE CHAR. AND WRITE CURSOR.	0200
1050	BFE9	A9AB		LDA	#\$AB		0200 022
1060	BFED	DOE3		BNE	STR		0200 022
1070		;					
1080	BFEF	**=\$BFEF					
1090		; ROUTINE FOR SCROLL					
1100	BFEF	BDOODO	CODE	LDA	\$D000,X		0001 DEC 012
1110	BFF2	9DOODO		STA	\$D000,X		0001 DEC 022
1120	BFF5	60		RTS			000100 0700 022
1130	BFF6	BDEEBF	CD1	LDA	CODE-1,X		0001 0700 022
1140	BFF9	9D0602		STA	LDR-1,X		0001 0700 022
1150	BFFC	CA		DEX			0001 0700 022
1160	BFFD	DOF7		BNE	CD1		0001 0700 022
1170	BFFF	60		RTS			000100 0700 022

1180		;	END OF SCREEN DRIVER
1190		;	
1200	F879	*=\$F879	
1210	F879	SETSC STA EDFLG	
1220	F87C	LDX #7	
1230	F87E	JSR CD1	
1240	F881	SETCH LDA #\$60	
1250	F883	STA POINT+2	
1260	F886	LDY #\$E8	
1270	F888	LOP1 STY LDR+2	
1280	F88B	STY LDR+5	
1290	F88E	LOP2 JSR LDR	
1300	F891	INX	
1310	F892	BNE LOP2	
1320	F894	INY	
1330	F895	CPY #\$FO	
1340	F897	BNE LOP1	
1350	F899	STA \$F101	TURN ON CHAR. GENERATOR.
1360	F89C	LDA #\$D0	SET START OF SCROLL
1370	F89E	STA STRT	
1380	F8A1	LDA #5	
1390	F8A3	STA TIME	SET FLASH RATE.
1400	F8A6	TXA	
1410	F8A7	TAY	
1420	F8AB	JMP \$FF35	
1430	F8AB	AURST LDY SIZE	RESET HOME POSITION OF CURSOR
1440	F8AE	LDA SIZ,Y	
1450	F8B1	STA POINT+1	
1460	F8B4	LDA #\$80	
1470	F8B6	STA POINT	
1480	F8B9	JMP PATCH	
1490		;	
1500	FC05	*=*\$419	
1510	FC05	START JSR INPUT	INPUT A CHARACTER
1520	FC08	CMP #\$7F	SHOULD WE ERASE SCREEN?
1530	FC0A	BNE DONE	
1540	FC0C	CLEAR PHA	
1550	FC0D	LDA #\$20	
1560	FC0F	LDX #0	
1570	FCE1	NEX STA \$D000,X	
1580	FCE4	STA \$D100,X	
1590	FCE7	STA \$D200,X	
1600	FCEA	STA \$D300,X	
1610	FCED	STA \$D400,X	
1620	FCF0	STA \$D500,X	
1630	FCF3	STA \$D600,X	
1640	FCF6	STA \$D700,X	
1650	FCF9	INX	
1660	FCFA	BNE NEX	
1670	FCFB	PLA	
1680	FCFD	DONE RTS	
1690	FCFE	SIZ .BYTE \$D3,\$D7	
1690	FCFF	D7	

1700
 1710
 1720 FF1B *=*+\$21B
 1730 FF1B 20DCFC JSR CLEAR
 1740 FF1E A93F LDA #\$3F
 1750 FF20 2CFFD7 BIT \$D7FF DO WE HAVE 64 CHARACTERS ?
 1760 FF23 3003 BMI C1
 1770 FF25 C8 C2 INY
 1780 FF26 D001 BNE PUT
 1790 FF28 4A C1 LSR A
 1800 FF29 8D2202 PUT STA LEN
 1810 FF2C 8C0002 STY SIZE
 1820 FF2F 20ABF8 JSR AURST
 1830 FF32 4C79F8 JMP SETSC
 1840 F8BC *=+\$F8BC
 1850 F8BC 20DCF8 PATCH JSR CTRL
 1860 F8BF 7013 BVS RT1
 1870 F8C1 A9F7 SS LDA #\$F7
 1880 F8C3 20D5F8 JSR STABIT
 1890 F8C6 300C BMI RT1
 1900 F8C8 20DCF8 Q JSR CTRL
 1910 F8CB 70FB BVS Q
 1920 F8CD A9FD LDA #\$FD
 1930 F8CF 20D5F8 JSR STABIT
 1940 F8D2 30F4 BMI Q
 1950 F8D4 60 RT1 RTS
 1960 F8D5 8D0ODF STABIT STA \$DFOO
 1970 F8D8 2COODF BIT \$DFOO
 1980 F8DB 60 RTS
 1990 F8DC A9FE CTRL LDA #\$FE
 2000 F8DE 20D5F8 JSR STABIT
 2010 F8E1 60 RTS

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10 ;EDITOR ROUTINES FOR PC ROM MONITOR.
20 ;SUPPORTS NEW CRT DRIVER IN BASIC '4' ROM
30 ;COPYRIGHT PROGRESSIVE COMPUTING ALL RIGHTS RESERVED
40 0200 *=\$200
50 F000= OFF=\$F000
60 0200= SIZE=*
70 0201= SAVER=*+1
80 0202= DATCHR=*+2
90 0207= LDR=\$207
100 0235= STR=\$235
110 020E= PRINT=\$20E
120 020F= STORE=PRINT+1
130 020F= POINT=STORE
140 0213= TEMP=\$213
150 0222= LEN=\$222
160 0223= STRT=\$223
170 0224= EDFLG=\$224
180 0226= DEL=\$226
190 0228= LINUM=\$228
200 022C= WIDTH=\$22C
210 022D= CONST=\$22D
220 022E= TIME=\$22E
230 022F= COUNT=\$22F
240 0230= INDEX=\$230
250 0231= BLFLAG=\$231
260 0232= TEMPX=\$232
270 0233= TEMP1=\$233
280 DF00= KYBRD=\$DF00
290 FCD5= START=OFF+\$CD5
300 FF0B= ACIAIN=OFF+\$FCB
310 BF0F= UNS=\$BF0F
320 BF0E= SAV=\$BF0E
330 FFBA= INPUT=OFF+\$FBA
340 FF6C= OUT=OFF+\$F6C
350 BF2D= CROUT=\$BF2D
360 C001= FLPSTA=\$C001
370 FEFO *=OFF+\$EFO
380 FEFO E2 . BYTE \$E2,\$F8
380 FEF1 F8 . BYTE \$2D,\$BF,\$9B,\$FF
390 FEF2 2D .
390 FEF3 BF .
390 FEF4 9B .
390 FEF5 FF .
400 FEF6 8B . BYTE \$8B,\$FF,\$96,\$FF
400 FEF7 FF .
400 FEF8 96 .
400 FEF9 FF .
410 F8E2 *=OFF+\$8E2
420 F8E2 8A BEGIN TXA START OF INPUT ROUTINES
430 F8E3 48 PHA SAVE REG.
440 F8E4 98 TYA
450 F8E5 48 PHA
460 F8E6 20D5FC INCHR JSR START INPUT FROM CORRECT PORT.
470 F8E9 8D1302 STA TEMP
480 F8EC AC01C0 LDY FLPSTA WAS DISK USED ?

490 F8EF 3002		BMI ROMBA
500 F8F1 D01F		BNE NOTED
510 F8F3 2C0302	ROMBA	BIT \$203 IS IT A LOAD.
520 F8F6 301A		BMI NOTED
530 F8F8 C91B	KEY	CMP #\$1B ESC KEY
540 F8FA D021		BNE LF
550 F8FC A930		LDA #\$30
560 F8FE A204		LDX #4
570 F900 9D2802	LREST	STA LINUM,X
580 F903 CA		DEX
590 F904 10FA		BPL LREST
600 F906 E910		SBC #\$10
610 F908 8D2702		STA LINUM-1
620 F90B A0F9		LDY #MSG/256
630 F90D A915		LDA #MSG*256/256
640 F90F 20C3AB		JSR \$A8C3
650 F912 4CECF9	NOTED	JMP OUT2+3 EXIT
660 F915 41	MSG	.BYTE "AUTO#", \$D, \$A, 0
660 F916 55		POINT
660 F917 54		LEN=
660 F918 4F		STRT=
660 F919 23		END=
660 F91A 0D		DEL=
660 F91B 0A		LINUM=
660 F91C 00		MIDH=
670 F91D C90A	LF	CMP #\$A
680 F91F D051		BNE VW
690 F921 E000		CPX #0 IS IT START OF INPUT BUFFER ?
700 F923 DOED		BNE NOTED
710 F925 A030		LDY #\$30
720 F927 A93A		LDA #\$3A
730 F929 D00F		BNE AUTO
740 F92B EE2B02	LINC1	INC LINUM+3 AUTOLINE BY ONE'S
750 F92E A030	LINCO	LDY #\$30 AUTOLINE NO INCREMENT
760 F930 A93A		LDA #\$3A
770 F932 CD2B02		CMP LINUM+3
780 F935 D01C		BNE ENDL
790 F937 BC2B02		STY LINUM+3
800 F93A EE2A02	AUTO	INC LINUM+2 AUTOLINE BY TEN'S
810 F93D CD2A02		CMP LINUM+2
820 F940 D011		BNE ENDL
830 F942 BC2A02		STY LINUM+2
840 F945 EE2902		INC LINUM+1
850 F948 CD2902		CMP LINUM+1
860 F94B D006		BNE ENDL
870 F94D BC2902		STY LINUM+1
880 F950 EE2802		INC LINUM
890 F953 A200	ENDL	LDX #0 STORE LINE # IN BUFFER AND PRINT IT.
900 F955 BD2702	LOP	LDA LINUM-1,X
910 F958 9513		STA \$13,X
920 F95A AC3102		LDY BLFLAG
930 F95D F003		BEQ NOPRT
940 F95F 20E5A8		JSR \$A8E5
950 F962 E8	NOPRT	INX
960 F963 E005		CPX #5
970 F965 D0EE		BNE LOP
980 F967 AD3102		LDA BLFLAG AUTOLINE OR BLOCK DELETE ?
990 F96A F005		BEQ LEND
1000 F96C 68		PLA

1010	F96D	A8		TAY	
1020	F96E	68		PLA	
1030	F96F	A920		LDA #\$\$20	
1040	F971	60	LEND	RTS	
1050	F972	C916	VW	CMP #\$\$16 CNTRL 'V'	
1060	F974	D03F		BNE EDIT WAS IT A VIEW COMMAND?	
1070	F976	20CBFF	VIEW	JSR ACIAIN SERIAL PORT VIEW.	
1080	F979	202DBF		JSR CROUT	
1090	F97C	A9FE		LDA #\$\$FE	
1100	F97E	20D5FB		JSR OFF+\$8D5	
1110	F981	50F3		BVC VIEW	
1120	F983	4CE6F8		JMP INCHR	
1130	F986	20CFBF	ADDR	JSR UNS GENERAL ADD USING CONST.	
1140	F989	18		CLC	
1150	F98A	ADOF02		LDA POINT	
1160	F98D	6D2D02		ADC CONST	
1170	F990	BDOF02		STA POINT	
1180	F993	9003		BCC RET	
1190	F995	EE1002		INC POINT+1	
1200	F998	60	RET	RTS	
1210	F999	20CFBF	SUBTR	JSR UNS GENERAL SUBTRACT USING CONST	
1220	F99C	38		SEC	
1230	F99D	ADOF02		LDA POINT	
1240	F9A0	ED2D02		SBC CONST	
1250	F9A3	BDOF02		STA POINT	
1260	F9A6	B003		BCS RET1	
1270	F9AB	CE1002		DEC POINT+1	
1280	F9AB	60	RET1	RTS	
1290	F9AC	20FFF9	ONE	JSR NULL USED TO INC. OR DEC CURSOR	
1300	F9AF	A901		LDA #1	
1310	F9B1	8D2D02	STOR	STA CONST	
1320	F9B4	60		RTS	
1330	F9B5	C905	EDIT	CMP #5 CNTRL E TOGGLETERMINAL WIDTH	
1340	F9B7	D006		BNE EDT1	
1350	F9B9	A50F		LDA \$0F	
1360	F9BB	4948		EOR #\$\$48	
1370	F9BD	850F		STA \$0F	
1380	F9BF	AD1302	EDT1	LDA TEMP	
1390	F9C2	C9EC		CMP #\$\$EC CNTRL <	
1400	F9C4	D009		BNE RIGHT	
1410	F9C6	20ACF9	LEFT	JSR ONE	
1420	F9C9	2099F9		JSR SUBTR	
1430	F9CC	4CE6F9		JMP XT	
1440	F9CF	C9EE	RIGHT	CMP #\$\$EE CNTRL >	
1450	F9D1	D009		BNE UP	
1460	F9D3	20ACF9	WRT	JSR ONE	
1470	F9D6	2086F9		JSR ADDR	
1480	F9D9	4CE6F9		JMP XT	
1490	F9DC	C915	UP	CMP #\$\$15 CNTRL U	
1500	F9DE	D028		BNE DOWN	
1510	F9E0	20F4F9		JSR MACH	
1520	F9E3	2099F9		JSR SUBTR	
1530	F9E6	20FFF9	XT	JSR NULL	
1540	F9E9	20E0BF	OUT2	JSR SAV SAVE CONTENTS OF SCREEN	
1550	F9EC	68		PLA RESTORE REG.	
1560	F9ED	A8		TAY	
1570	F9EE	68		PLA	

1580	F9EF	AA	TAX	YAT	8A	0A93	0D10
1590	F9F0	AD1302	LDA TEMP	PA	8A	0A93	0D00
1600	F9F3	60	RTS	PD	8A	0A93	0D02
1610	F9F4	A920	MACH	LDA #\$20 SET PROPER INC. FOR YOUR MACH.	PD	0D00	0D00
1620	F9F6	AC0002	LDY SIZE	PD	0D00	0D00	0D00
1630	F9F9	F001	BEO LRG1+1	PD	0D00	0D00	0D00
1640	F9FB	0A	LRG1	ASL A	PD	0D00	0D00
1650	F9FC	4CB1F9	JMP STOR	PD	0D00	0D00	0D00
1660	F9FF	A900	NULL	LDA #0	PD	0D00	0D00
1670	FA01	8D2402	STA EDFLG	PD	0D00	0D00	0D00
1680	FA04	8D1302	STA TEMP	PD	0D00	0D00	0D00
1690	FA07	60	RTS	PD	0D00	0D00	0D00
1700	FA08	C904	DOWN	CMP #4 CNTRL D	PD	0D00	0D00
1710	FA0A	D009		BNE CR	PD	0D00	0D00
1720	FA0C	20F4F9		JSR MACH	PD	0D00	0D00
1730	FA0F	2086F9		JSR ADDR	PD	0D00	0D00
1740	FA12	4CE6F9		JMP XT	PD	0D00	0D00
1750	FA15	C90D	CR	CMP #\$D	PD	0D00	0D00
1760	FA17	D019		BNE INSRT	PD	0D00	0D00
1770	FA19	AC3102		LDY BLFLAG BLOCK DELETE ?	PD	0D00	0D00
1780	FA1C	D003		BNE EDT	PD	0D00	0D00
1790	FA1E	4CA2FB		JMP BLDEL	PD	0D00	0D00
1800	FA21	AC2402	EDT	LDY EDFLG EDIT MODE ?	PD	0D00	0D00
1810	FA24	D0C6		BNE OUT2+3	PD	0D00	0D00
1820	FA26	8D2402		STA EDFLG	PD	0D00	0D00
1830	FA29	8D1302		STA TEMP	PD	0D00	0D00
1840	FA2C	20F1FA		JSR SETUP	PD	0D00	0D00
1850	FA2F	4CAFFA		JMP PUT	PD	0D00	0D00
1860	FA32	C909	INSRT	CMP #9 CNTRL I INSERT MODE?	PD	0D00	0D00
1870	FA34	D058		BNE DELET	PD	0D00	0D00
1880	FA36	20F1FA		JSR SETUP FIND START AND END AND LEN	PD	0D00	0D00
1890	FA39	AA		TAX X= # BYTES TO END OF LINE.	PD	0D00	0D00
1900	FA3A	A8		TAY	PD	0D00	0D00
1910	FA3B	208AFB		JSR SET	PD	0D00	0D00
1920	FA3E	C8		INY	PD	0D00	0D00
1930	FA3F	200702	LPIN	JSR LDR	PD	0D00	0D00
1940	FA42	C9AB		CMP #\$AB IS IT THE CURSOR ?	PD	0D00	0D00
1950	FA44	D006		BNE CON	PD	0D00	0D00
1960	FA46	AD0102		LDA SAVER	PD	0D00	0D00
1970	FA49	200A02		JSR LDR+3	PD	0D00	0D00
1980	FA4C	8A	CON	TXA	PD	0D00	0D00
1990	FA4D	A8		TAY	PD	0D00	0D00
2000	FA4E	CA		DEX	PD	0D00	0D00
2010	FA4F	10EE		BPL LPIN	PD	0D00	0D00
2020	FA51	206AFA		JSR BLNK	PD	0D00	0D00
2030	FA54	4CECF9	END	JMP OUT2+3	PD	0D00	0D00
2040	FA57	C90E	BLANK	CMP #\$E CNTRL 'N'	PD	0D00	0D00
2050	FA59	D018		BNE BLOCK	PD	0D00	0D00
2060	FA5B	20F1FA		JSR SETUP	PD	0D00	0D00
2070	FA5E	A8		TAY	PD	0D00	0D00
2080	FA5F	208AFB		JSR SET	PD	0D00	0D00
2090	FA62	206AFA	LBLNK	JSR BLNK	PD	0D00	0D00
2100	FA65	88		DEY	PD	0D00	0D00
2110	FA66	10FA		BPL LBLNK	PD	0D00	0D00
2120	FA68	30EA		BMI END	PD	0D00	0D00
2130	FA6A	A920	BLNK	LDA #\$20 BLANK A CHARACTER	PD	0D00	0D00
2140	FA6C	8D0102		STA SAVER	PD	0D00	0D00

2150	FA6F	200A02		JSR LDR+3		00A02 0000 0000
2160	FA72	60		RTS		00000 0000 0000
2170	FA73	C902	BLOCK	CMP #2 CNTRL "B"		00000 0000 0000
2180	FA75	D008		BNE VALID		00000 0000 0000
2190	FA77	A900		LDA #0		00000 0000 0000
2200	FA79	8D3102		STA BLFLAG		00000 0000 0000
2210	FA7C	4CECF9		JMP OUT2+3		00000 0000 0000
2220	FA7F	AC2402	VALID	LDY EDFLG IS IT A VALID INPUT?		00000 0000 0000
2230	FA82	D000		BNE END		00000 0000 0000
2240	FA84	C95F		CMP #\$5F IS IT A BACK SPACE?		00000 0000 0000
2250	FA86	F0CC		BEQ END		00000 0000 0000
2260	FA88	8D0102		STA SAVER		00000 0000 0000
2270	FA8B	4CD3F9		JMP WRT		00000 0000 0000
2280	FA8E	C912	DELET	CMP #\$12 CNTRL R		00000 0000 0000
2290	FA90	DOC5		BNE BLANK		00000 0000 0000
2300	FA92	20F1FA		JSR SETUP FIND START END AND LEN.		00000 0000 0000
2310	FA95	8D2F02		STA COUNT # OF BYTES TO END OF LINE.		00000 0000 0000
2320	FA98	A201		LDX #1		00000 0000 0000
2330	FA9A	A000		LDY #0		00000 0000 0000
2340	FA9C	208AFB		JSR SET SETUP READ AND WRITE ROUTINE.		00000 0000 0000
2350	FA9F	200702	LPDL	JSR LDR		00000 0000 0000
2360	FAA2	8A		TXA		00000 0000 0000
2370	FAA3	A8		TAY		00000 0000 0000
2380	FAA4	E8		INX		00000 0000 0000
2390	FAA5	EC2F02		CPX COUNT		00000 0000 0000
2400	FAA8	30F5		BMI LPDL		00000 0000 0000
2410	FAAA	F0F3		BEQ LPDL		00000 0000 0000
2420	FAAC	4CE9F9		JMP OUT2		00000 0000 0000
2430	FAAF	208AFB	PUT	JSR SET SETUP READ AND WRITE TO BUFFER.		00000 0000 0000
2440	FAB2	A09D		LDY #\$9D		00000 0000 0000
2450	FAB4	B00A02		STY LDR+3		00000 0000 0000
2460	FAB7	A200		LDX #0		00000 0000 0000
2470	FAB9	8E0C02		STX LDR+5 SET ZERO PAGE		00000 0000 0000
2480	FABC	AD3602		LDA STR+1		00000 0000 0000
2490	FABF	8D0902		STA LDR+2		00000 0000 0000
2500	FAC2	AD3502		LDA STR		00000 0000 0000
2510	FAC5	8D0B02		STA LDR+1		00000 0000 0000
2520	FAC8	A912		LDA #\$12		00000 0000 0000
2530	FACA	8D0B02		STA LDR+4		00000 0000 0000
2540	FACD	200702	LOP1	JSR LDR PUT SCREEN IN BUFFER.		00000 0000 0000
2550	FAD0	C9AB		CMP #\$AB IS IT THE CURSOR?		00000 0000 0000
2560	FAD2	D006		BNE NOCUR		00000 0000 0000
2570	FAD4	AD0102		LDA SAVER		00000 0000 0000
2580	FAD7	200A02		JSR LDR+3 PUT CHAR NOT CURSOR IN BUFF.		00000 0000 0000
2590	FADA	E8	NOCUR	INX		00000 0000 0000
2600	FADB	EC3002	CONT	CPX INDEX		00000 0000 0000
2610	FADE	30ED		BMI LOP1		00000 0000 0000
2620	FAE0	A900		LDA #0		00000 0000 0000
2630	FAE2	200702		JSR LDR		00000 0000 0000
2640	FAE5	68		PLA		00000 0000 0000
2650	FAE6	A8		TAY		00000 0000 0000
2660	FAE7	68		PLA		00000 0000 0000
2670	FAE8	AE3002		LDX INDEX		00000 0000 0000
2680	FAEB	AD1302		LDA TEMP		00000 0000 0000
2690	FAEE	60		RTS		00000 0000 0000
2700	FAEF	E0	CONS	.BYTE \$EO,\$00		00000 0000 0000
2700	FAF0	CO				00000 0000 0000
2710	FAF1	AD1002	SETUP	LDA POINT+1 FIND START OF VALID LINE		00000 0000 0000

2720 FAF4 8D3602		STA STR+1	
2730 FAF7 AD0F02		LDA POINT	
2740 FAFA AD0002		LDY SIZE	ACCORDING TO YOUR SCREEN SIZE
2750 FAFD 39EFFA		AND CONS, Y	
2760 FB00 8D3502		STA STR	
2770 FB03 A9BD		LDA #\$BD	SETUP READ ROUTINE.
2780 FB05 8D3402		STA STR-1	
2790 FB08 A960		LDA #\$60	
2800 FB0A 8D3702		STA STR+2	
2810 FB0D A200	FIND	LDX #0	RESET COUNTER
2820 FB0F 203402		JSR STR-1	READ A CHARACTER
2830 FB12 C920		CMP #\$20	FIND SPACE BEFORE LINE #
2840 FB14 DOOC		BNE DE	
2850 FB16 E8		INX	
2860 FB17 203402		JSR STR-1	
2870 FB1A C930		CMP #\$30	MUST BE A NUMBER.
2880 FB1C 3004		BMI DE	
2890 FB1E C93A		CMP #\$3A	
2900 FB20 302D		BMI GO	
2910 FB22 20F4F9	DE	JSR MACH SET LINE INC BY SCREEN SIZE.	
2920 FB25 AD3502		LDA STR	
2930 FB28 38		SEC	A _X T
2940 FB29 ED2D02		SBC CONST	B _A T
2950 FB2C 8D3502		STA STR	B _B T
2960 FB2F B003		BCS BACK	C _P X C _O N _I N _H
2970 FB31 CE3602		DEC STR+1	D _I R _J I _H G
2980 FB34 AD3602	BACK	LDA STR+1	E _P R _J Q _H R
2990 FB37 C9D0		CMP #\$D0	F _P R _J A _A R _G
3000 FB39 B0D2		BCS FIND	G _R O _A S _A R _G
3010 FB3B A0FB	PRNT	LDY #MSSG/256	H _R O _A S _A R _G
3020 FB3D A948		LDA #MSSG*256/256	I _W D _O S _A R _G
3030 FB3F 8D3102		STA BLFLAG	J _O N _I S _A R _G
3040 FB42 20C3AB		JSR \$A8C3	K _U N _I S _A R _G
3050 FB45 4C74A2		JMP \$A274 DO NOT GO BEYOND TOP OF SCREEN.	L _U N _I S _A R _G
3060 FB48 0D	MSSG	, BYTE \$D, 'ERROR', 0	M _U N _I S _A R _G
3060 FB49 45			N _U N _I S _A R _G
3060 FB4A 52			O _U N _I S _A R _G
3060 FB4B 52			P _U N _I S _A R _G
3060 FB4C 4F			Q _U N _I S _A R _G
3060 FB4D 52			R _U N _I S _A R _G
3060 FB4E 00			S _U N _I S _A R _G
3070 FB4F 205FFB	GO	JSR LNRD	T _U N _I S _A R _G
3080 FB52 8E3002		STX INDEX SAVE # OF CHARACTERS.	U _U N _I S _A R _G
3090 FB55 8A	TEST	TXA	V _U N _I S _A R _G
3100 FB56 18		CLC	W _U N _I S _A R _G
3110 FB57 6D3502		ADC STR	X _U N _I S _A R _G
3120 FB5A 38		SEC	Z _U N _I S _A R _G
3130 FB5B EDOF02		SBC POINT	
3140 FB5E 60		RTS	RETURN WITH COUNT FROM CURS. TO END
3150 FB5F A200	LNRD	LDX #0	RESET COUNTER
3160 FB61 E8	LOP2	INX	
3170 FB62 E048		CPX #\$48	DO NOT ALLOW LINES LONGER THAN BUF
3180 FB64 3005		BMI SAFE	
3190 FB66 68		PLA	
3200 FB67 68		PLA	
3210 FB68 4C3BFB		JMP PRNT	
3220 FB6B 203402	SAFE	JSR STR-1	

3230	FB6E	C920		CMP #\$20	FIND SPACE THEN CHECK HOW MANY.
3240	FB70	DOEF		BNE LOP2	
3250	FB72	8A	CHECK	TXA	MUST BE ATLEAST ONE LINE OF SPCs.
3260	FB73	48		PHA	SAVE COUNTS
3270	FB74	A000		LDY #0	
3280	FB76	E8	-LP1	INX	
3290	FB77	C8		INY	
3300	FB78	C020		CPY #\$20	
3310	FB7A	FOOB		BEQ OK1	
3320	FB7C	203402	NXT	JSR STR-1	
3330	FB7F	C920		CMP #\$20	
3340	FB81	F0F3		BEQ LP1	
3350	FB83	68		PLA	
3360	FB84	AA		TAX	
3370	FB85	D0DA		BNE LOP2 NOT A VALID END OF LINE.	
3380	FB87	68	OK1	PLA	VALID END RESTORE COUNTS
3390	FB88	AA		TAX	
3400	FB89	60		RTS	
3410	FB8A	AD1002	SET	LDA POINT+1	SETUP READ AND WRITE.
3420	FB8D	BD0902		STA LDR+2	
3430	FB90	BDOC02		STA LDR+5	
3440	FB93	AD0F02		LDA POINT	
3450	FB96	BD0802		STA LDR+1	
3460	FB99	BD0B02		STA LDR+4	
3470	FB9C	A999		LDA #\$99	
3480	FB9E	BDOA02		STA LDR+3	
3490	FBA1	60		RTS	
3500	FBA2	A209	BLDEL	LDX #9	BLOCK DELETE ROUTINES
3510	FBA4	CA	MOVE	DEX	
3520	FBA5	A92F		LDA #\$2F	
3530	FBA7	B413		LDY \$13,X	
3540	FBA9	943B		STY \$3B,X	
3550	FBAB	D53B		CMP \$3B,X	
3560	FBAD	1009		BPL DONE	
3570	FBAF	A939		LDA #\$39	
3580	FBB1	D53B		CMP \$3B,X	
3590	FBB3	10EF		BPL MOVE	
3600	FBB5	4C3BFB	WRONG	JMP PRNT	
3610	FBB8	CA	DONE	DEX	
3620	FBB9	E003		CPX #3	
3630	FBBB	D0F8		BNE WRONG	
3640	FBBD	A9FB		LDA #VECTOR/256	
3650	FBBF	BD1902		STA \$219	
3660	FBC2	A9D8		LDA #VECTOR*256/256	
3670	FBC4	BD1802		STA \$218	
3680	FBC7	B513	LOAD	LDA \$13,X	
3690	FBC9	9D2802		STA LINUM,X	
3700	FBCC	CA		DEX	
3710	FBCD	10F8		BPL LOAD	
3720	FBCF	202EF9		JSR LINCO	
3730	FBD2	68		PLA	
3740	FBD3	A8		TAY	
3750	FBD4	68		PLA	
3760	FBD5	A90D	XTT	LDA #\$D	
3770	FBD7	60		RTS	

