99 HOCUS

Home Computer Users Spotlight
a monthly publication of the
Milwaukee Area 99/4 Users Group

OCTOBER - 1987

BIG TI FAIRE WEEKEND
CHICAGO — NOV 7
MILWAUKEE — NOV 8

MILWAUKEE AREA USER GROUP
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S.I.G.....Schroeder/Walden/Hitz

T.I. Computer Faire
    November 8,1987 (Sunday)
    Airport Quality Inn
    5311 South Howell Avenue
    9:00 AM til 4:00 PM

Next Group Meeting
    November 14,1987 (Saturday)
    Wauwatosa Savings & Loan
    7700 West State Street
    12:00 Noon - 4:00 PM

Next S.I.G. Meeting
    November 3, 1987 (Tuesday)
    Security Savings & Loan
   5555 North Port Washington
    7:00PM - 10:00PM

Annual Membership Dues
    Individual - $10
    Family   - $15

Well this is it, folks. The big TI Faire Weekend is only a couple weeks away. It'll start Saturday morning at Triton College in Chicago and finish Sunday afternoon at Airport Quality Inn here in Milwaukee. The booths are starting to fill up with lots of eager vendors with loads of goodies for sale. With the present shrunken market for TI products, it isn't often that such an opportunity to purchase wanted items for your computer will present itself, so take advantage of it. Admission will be $2 at the door, but you can purchase an advance ticket now, for only a buck. The price of two tickets will admit a whole family, so bring the whole gang. there'll be lots to see and do and bargains will be jumping out at you from all over. Door prizes will be given out every hour and someone's got to win them. It could just as easy be you. Products will be explained and interesting demonstrations are planned. All the TI community big-wigs will be there to meet. Bring your interested neighbors too. Maybe we can sign them up in our group.

Let's Support Freeware Authors

There are a lot of high quality Freeware Programs in our library. Everybody has some of them and most have a few favorites that they use all the time. How many of you though, have sent any money to the authors for the programs they use. These are not free public domain programs but programs that fellow TI users have written and distrbuted freely for others to try out. By all rights, if you find a use for them, you should pay something to the author. This will encourage him to write more programs and improve those that he's already written. To make it easier for our members to pay for the freeware programs that they are now using our User Group will accept contributions for the freeware authors of any amount, and then to send the totals to the intended authors. So count up the freeware programs you're using, decide how much you wish to contribute for each and see one of our officers at the meeting.

                                    Thanx
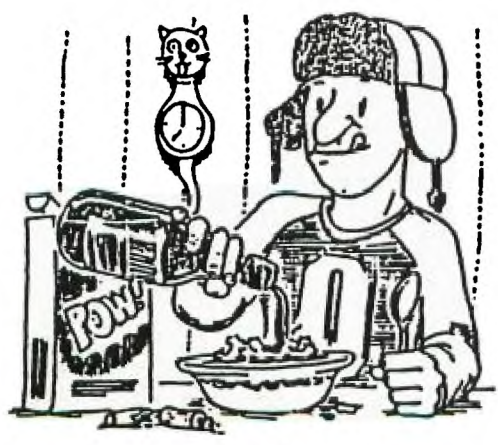
SERIAL PORT

```
K   KIDS  ############
I
D                              TRAFFIC COP
S
K                         from the TIT-BITS of Australia
O
R
N
E
R
#
#  1020 SUBEND            ! 380 CALL KEY(3,K,S):: IF S=0  ! 640 DISPLAY AT(13,2):"DO YOU  ! 980 FOR I=1 TO 22 STEP 3
#  70 CALL CLEAR          !  THEN 380                      !  WANT INSTRUCTIONS?"         ! 990 CALL VCHAR(I,16,137,2)
#  80 REM    !!!!!!!!!!!!!!  ! 390 IF K=78 THEN END        ! 650 DISPLAY AT(15,11)BEEP:"(  ! 1000 NEXT I
#  90 REM    !          !   ! 400 IF K<>89 THEN 370        !  Y/N)"                       ! 1010 SUBEND
   100 REM   ! TRAFFIC COP ! ! 410 CALL CLEAR :: GOTO 170  ! 660 CALL KEY(3,K,S):: IF S=0  ! 1020 SUB CARS(SP)
   110 REM.  !          !   ! 420 SUB GRAPHICS              !  THEN 660                    ! 1030 IF SP>20 THEN SP=SP-4
   120 REM   !!!!!!!!!!!!!!  ! 430 CALL SCREEN(2)           ! 670 IF K=78 THEN CALL CLEAR   ! 1040 DISPLAY AT(6,20):SP;"MP
   130 PRINT "! TRAFFIC COP !" ! 440 CALL CHAR(128,"FF1010101 !  :: GOTO 750                 ! H"
   140 REM                  !  01010FF")                    ! 680 IF K<>89 THEN 650         ! 1050 CALL SPRITE(#1,96,14,75
   150 CALL MAGNIFY(3)       ! 450 CALL CHAR(129,"818181FF8 ! 690 CALL CLEAR                ! ,1,0,SP)
   160 CALL GRAPHICS         !  1818181")                   ! 700 DISPLAY AT(4,2):"USE THE  ! 1060 CALL SPRITE(#2,100,16,9
   170 CALL INSTRUCTIONS     ! 460 CALL CHAR(130,"010101010 !  ARROW KEYS (ESD,X)"         ! 8,250,0,-SP)
   180 CALL CLEAR            !  10204F8")                    ! 710 DISPLAY AT(6,3):"TO STOP  ! 1070 CALL SPRITE(#3,108,6,1,
   190 SP=8 :: CR=0          ! 470 CALL CHAR(131,"808080808 !  THE TRAFFIC AND"            ! 128,SP,0)
   200 CALL SETUP(SP)        !  040201F")                    ! 720 DISPLAY AT(8,1):"PREVENT  ! 1080 CALL SPRITE(#4,104,3,19
   210 CALL CARS(SP)         ! 480 CALL CHAR(132,"1F2040808 !  COLLISIONS. WHEN TEN"       ! 0,105,-SP,0)
   220 CALL COINC(ALL,H):: IF H !  0808080")                 ! 730 DISPLAY AT(10,3):"CRASHE  ! 1090 SUBEND
    THEN CALL CRASH(CR)ELSE 250 ! 490 CALL CHAR(133,"F80402010 ! S HAVE OCCURED YOU"         ! 1100 SUB CRASH(CR)
   230 CALL SOUND(-100,1000,5) !  1010101")                 ! 740 DISPLAY AT(12,2):"WILL B  ! 1110 CALL MOTION(#1,0,0,#2,0
   240 IF CR>9 THEN 320 ELSE 21 ! 500 CALL CHAR(136,"000000FFF ! E REMOVED FROM DUTY."       ! ,0,#3,0,0,#4,0,0)
   0                         !  F")                          ! 750 DISPLAY AT(18,4):"PRESS   ! 1120 CALL SPRITE(#9,112,9,88
   250 CALL KEY(3,K,S)       ! 510 CALL CHAR(137,"181818181 !  ANY KEY TO PLAY."           ! ,120)
   260 CT=CT+1 :: IF CT>75 THEN !  8181818")                 ! 760 CALL KEY(3,K,S):: IF S=0  ! 1130 CALL SPRITE(#10,112,12,
    CALL FASTER(CT,SP,BST)   ! 520 CALL CHAR(96,"000000007F !  THEN 760                    ! 88,120,5,5,#11,112,12,88,120
   270 IF K=83 THEN CALL MOTION !  FFF3F3F3F3FF7F0000000000000000 ! 770 SUBEND                 ! ,-5,-5,#12,112,12,88,120,5,-
    (#1,0,0)ELSE CALL MOTION(#1, !  00FFFE1F1F1F1FFEFF")      ! 780 SUB SETUP(SP)            ! 5,#13,112,12,88,120,-5,5)
    0,SP)                    ! 530 CALL CHAR(100,"00000000F ! 790 DISPLAY AT(4,1):"TRAFFIC  ! 1140 FOR I=0 TO 20
   280 IF K=68 THEN CALL MOTION !  F7FFBF8F8F87FFF0000000000000000 !  "                      ! 1160 CALL SOUND(-200,-7,I,11
    (#2,0,0)ELSE CALL MOTION(#2, !  000FEFFCFCFCFCFCFFFFE")   ! 800 DISPLAY AT(6,3):"COP"     ! 0,I+5)
    0,-SP)                   ! 540 CALL CHAR(104,"0B0F0F0F0 ! 810 DISPLAY AT(4,21):"SPEED"  ! 1170 CALL COLOR(#3,12)
   290 IF K=69 THEN CALL MOTION !  F0C0C0C0F0F0C0C0C0F0F0F0700F0F ! 820 DISPLAY AT(6,20):SP;"MPH  ! 1180 NEXT I
    (#3,0,0)ELSE CALL MOTION(#3, !  0F0F0303030F0F03030F0F0F0E0"    !  "                      ! 1190 CALL DELSPRITE(ALL)
    SP,0)                    !  )                           ! 830 DISPLAY AT(20,1):"TI-99/  ! 1200 CR=CR+1
   300 IF K=88 THEN CALL MOTION ! 550 CALL CHAR(108,"070F0F0F0 ! 4A"                         ! 1210 DISPLAY AT(22,23):CR
    (#4,0,0)ELSE CALL MOTION(#4, !  C0C0F0F0C0C0C0F0F0F0F0BE0F0F ! 840 DISPLAY AT(20,21):"CRASH  ! 1220 SUBEND
    -SP,0)                   !  0F03030F0F03030F0F0F0F0D0"    ! ES"                          ! 1230 SUB FASTER(CT,SP,BST)
   310 GOTO 220              !  )                            ! 850 CALL HCHAR(9,1,128,32)    ! 1240 CALL SOUND(200,-2,0,500
   320 CALL CLEAR            ! 560 CALL CHAR(112,"014163333 ! 860 CALL HCHAR(15,1,128,32)   ! ,5)
   330 DISPLAY AT(6,1):"YOU CAU !  F3F1F1F1F1F3F7B6383030100818 ! 870 CALL VCHAR(1,13,129,24)   ! 1250 SP=SP+2
   SED 10 CRASHES, WITH"     !  3C6EEFCFCF8F8F8F8FCFC9E0701")  ! 880 CALL VCHAR(1,19,129,24)   ! 1260 IF SP>BST THEN BST=SP
   340 DISPLAY AT(8,1):"THE TRA ! 570 CALL COLOR(13,16,2,14,16 ! 890 CALL VCHAR(1,14,32,120)   ! 1270 CT=0
   FFIC RUNNING AT"          !  ,1)                          ! 900 CALL HCHAR(10,1,32,160)   ! 1280 DISPLAY AT(6,20):SP;"MP
   350 DISPLAY AT(10,1):SP;"MPH ! 580 FOR I=2 TO 8            ! 910 CALL HCHAR(9,13,130)      ! H"
   "                         ! 590 CALL COLOR(I,16,1)       ! 920 CALL HCHAR(9,19,131)      ! 1290 SUBEND
   360 DISPAY AT(12,2):"DEST SP ! 600 NEXT I                 ! 930 CALL HCHAR(15,13,133)     !
   EED SO FAR IS";BST;"MPH"  ! 610 SUBEND                   ! 940 CALL HCHAR(15,19,132)     !
   370 DISPLAY AT(16,6)BEEP:"PL ! 620 SUB INSTRUCTIONS       ! 950 FOR I=2 TO 30 STEP 3      !
   AY AGAIN? (Y/N)"          ! 630 DISPLAY AT(10,8):"TRAFFI ! 960 CALL HCHAR(12,I,136,2)    !
                             !  C COP."                      ! 970 NEXT I                    !
```

Someone want to try this ?
(Manners Newsletter - Feb '87)

Pictures taken from a video camera can be fed into the
system (99/4A). Place your video signal on pin 35 of the
TMS 9918A video chip, then turn off the internal sync of
the chip with the following short program:

```
100 CALL INIT
110 CALL LOAD("DSK1.SYNC")
120 CALL KEY(0,R,S)
130 IF S=1 THEN 120
140 IF R=73 THEN CALL LINK("ISYNC")::GOTO 120
150 IF R=69 THEN CALL LINK("ESYNC")
160 GOTO 120
```

Assemble the following.

```
        DEF  ISYNC,ESYNC
ERRNBR  EQU  >837C
GPLWS   EQU  >83E0
VWTR    EQU  >2030
* Set Sync to Internal
ISYNC   LWPI WS
        LI   0,>0000
        BLWP @VWTR
        JMP  RETURN
* Set Sync to External
ESYNC   LWPI WS
        LI   0,>0001
        BLWP @VWTR
*Return to Basic
RETURN  LWPI GPLWS
        SB   @ERRNBR,@ERRNBR
        RT
WS      BBS  32
        END
```

32K ON THE 16 BIT BUS
By - John Clulow
Based upon ideas from Mike Ballmann

   The following is a step-by-step description of how to add 64K of RAM memory
on the 16 bit bus. The present modification uses only 32K. This corresponds
to the memory space of the 32K Memory Expansion. The modification yields a
speed increase of about 50%.
   Mike Ballmann is currently working on a circuit to allow CRU decoding of the
remaining 32K. This will open up a whole new area of software, including such
possibilities as a real DOS which could be loaded into RAM from disk on power-up.
The 32K modification described below can easily be modified for full decoding upon
completion of Mike's work.
   You will need two Hitachi HM62256LP-12 RAMs. One source of these is Microprocesors
Unlimited. They cost around $12. You'll also need a 74LS21 and a 74LS153.
These can be obtained from various electronics supply houses. All wiring should
be done with wire-wrap wire. You should use a low wattage soldering pencil with
a fine, pencil type tip.
   The modification is done on the main board of the Black Silver console, and
you'll need to refer to the Logic Board Component Location Diagram in the TI-99/4A
Console Technical Data book.
   1) Remove the board from the console, and identify the two ROMs. They are
located between the GROM connector and the 9900 IC. One is parallel to the 9900
and the other is perpendicular to it. They are U610 and U611 on the Component
Location Diagram.
   2) Bend the pins on the HM62256 IC's closer so they will firmly contact the
ROM pins when piggy-backed. One way of doing this is to place the RAM on it's
side on a table and then move the body of the IC toward the table to bend the pins
uniformly.
   3) Bend out the following pins on both HM62256 RAMs: 1 2 20 22 23 26 27 28.
These pins will NOT be soldered to anything on the ROMs. Holding the IC with
the notch up and looking at the top, pin numbers start with pin 1 on the upper
left, go down the left side, then across and up the right side. Pin 28 is
opposite pin 1 on the end with the notch.
   4) Place one HM62256 over the ROM that is parallel to the 9900. Make sure the
notch points toward the 9900 and that the writing on the 9900 and the 62256 can
be read from the same direction. Place the RAM such that pins 1 2 27 and 28
extend beyond the end of the ROM. The un-notched end of the RAM should line up
with the un-notched end of the ROM. There should be a sort of "spring tension"
that clamps the RAM pins onto corresponding ROM pins below it. This will help
to insure good solder joints. If the RAM doesn't fit tightly, remove it and
bend the pins closer.
   5) Solder all RAM pins not bent out to the ROM pins below. Use a low wattage
pencil with a fine, pencil type tip. Inspect each solder joint carefully in good
light, under magnification.
   6) Place the second 62256 on the ROM that is perpendicular to the 9900. The
notch on the RAM points away from the 9900 and toward the edge of the board. As
above, solder and inspect all pins that were not bent out.
   7) Bend out the 74LS21 pins 1 2 4 5 6 8 10 12 14. Note that pins 1 and 14
are across from each other on this 14 pin IC.
   8) The 74LS21 will be piggy-backed on the 74LS138 U504. This IC is located
adjacent to the end of the board where the edge connector is. There are two 138's
next to each other. U504 is the one nearest the end of the board. You will place
the 74LS21 so that the UN-NOTCHED end lines up with the un-notched end of the 138
(pointing toward the cassette connector). Pins 1 and 16 of the 138 will extend
beyond the notched end of the 74LS21.

9) Before positioning the 74LS21, solder 1/2" lengths of wire-wrap wire to the 138 pins 7 and 9. Then position the 74LS21 on top of the 138 and solder all pins not bent out to the 138 pins below and inspect the connections.

10) Bend out all of the 74LS153 pins EXCEPT 8 and 16.

11) Place the 153 over U613, a 74LS194. The notch will line up with the 194 notch and point toward the edge of the board away from the 9900. Solder pins 8 and 16 of the 153 to pins 8 and 16 of the 194 below.

12) At the end of the 9900 opposite to where the RAM's have been piggy-backed, you will see a line of three ICs. They are a 74LS00, 74LS32, and 74LS04. The 74LS00 is U606 and the 74LS32 is U605. Turn the board upside down so you can see the traces. Find the trace that runs from pin 11 of the 74LS00 (U606) to pin 13 of the 74LS32 (U605). Double check to make sure you're doing the pin numbering correctly. When you've found the trace, cut it with a knife so there is no continuity between the LS00 pin 11 and the LS32 pin 13.

13) Identify the piggy-backed RAM that is perpendicular to the 9900. Solder wire wrap wires connecting every bent out pin on this RAM to the corresponding bent out pin on the RAM that is parallel to the 9900. Pin 1 to pin 1, pin 2 to pin 2, etc. There will be eight wires in all to solder.
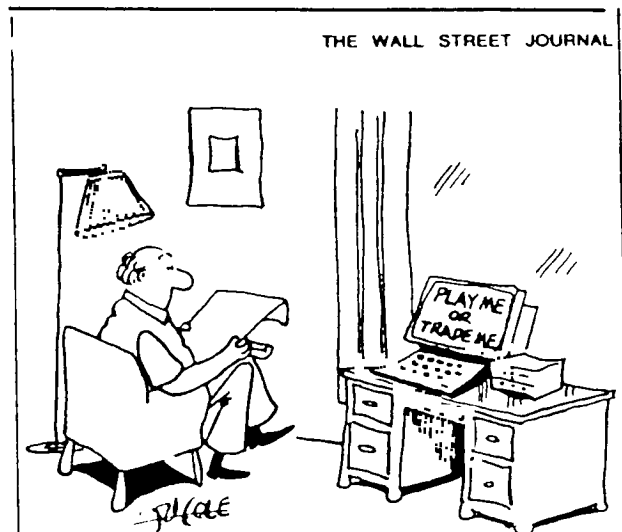
14) Solder wire-wrap wires to make the following connections on the RAM that is parallel to the 9900. Pin 1 goes to pin 24 of the 9900 (solder the wire to the 9900 pin on top of the board). Pin 2 goes to the 9900 pin 22. Pin 20 goes to two places. Connect pin 20 of the RAM to pin 22 of the RAM and also to pin 8 (bent out) of the 74LS21. There should be three wires coming off pin 20 of the RAM. Pin 23 of the RAM goes to pin 21 of the 9900. Pin 26 of the RAM goes to 23 of the 9900. Pin 27 of the RAM goes to pin 61 of the 9900 (fourth from the top on the right side). Finally, connect pin 28 of the RAM to pin 20 of the 74LS244 adjacent to the piggy-backed 74LS21.

15) Connect the following 74LS21 pins with a bare wire: 1 2 4 and 14. Connect the short wire from the 138 pin 7 to the LS21 pin 5 (bent out). Connect LS21 pin 6 to LS21 pin 12. Connect LS21 pin 8 (bent out) to the piggy-backed 153 pin 2. Connect the short wire coming from the 138 pin 9 to LS21 pin 10. Finally, connect the 74LS21 pin 14 to the 74LS244 pin 20 that you connected the RAM pin 28 to.

16) OK, we're almost done, so take a break and have a beer.

17) On the 153, connect pin 9 to pin 13 on the 74LS32 (U605). Pin 10 of the 153 goes to pin 14 of the 74LS74 next to it (U607). Also connect pin 10 of the 153 to pins 11 and 13 of the 153. Connect pin 12 of the 153 to pin 15 of the 153, and then connect pin 15 of the 153 to pin 7 of the 74LS00 U612 (next to the 74LS74). Connect pin 14 of the 153 to pin 11 of the 74LS00 U606; that's the one you cut the trace on.

18) That's it! Now have another beer before putting your computer back together. When you try it out, remember that this version isn't compatible with other 32K in the system.

* LET ME BEGIN BY SAYING THE COMPUTER WAS OLD AND PROBABLY DUE TO BE REPLACED ANYWAY.

THE WALL STREET JOURNAL

PLAY ME OR TRADE ME

INSTALLING EXTENDED BASIC INSIDE YOUR CONSOLE............. John F. Willforth of West Penn 99

For many of us there has been much frustration over the last several years about the "HANG-UPS" that occur to the TI-99/4A using extended basic, just as the most critical part of a program or game is reached. There are those who would lead you to believe that the power supply has been the culprit in the majority of the console locking in their club. This may have been the problem experienced in the microcosm they are in. I have experienced the problems with inconsistent and noisy D.C. voltages issued from the TI supplies also. A few months ago I ran through 5 straight VDP memory problems in a row, and could have made the statement that most if not all TI console problems will be found to have defective 4116 dynamic ram chips. This would have been absurd! I'm making this statement only to try to reassure you that of all the possible causes for console hangs, the grom connector/cartridge connection is far and away the most common, and in particular the mating (or lack of) between the Extended Basic and Grom Connector, is the greatest culprit. The purpose of this article is to assist those of you who would like to move the Extended Basic on-board.

...... DO THE FOLLOWING AT YOUR OWN RISK!

PARTS; * 1' ribbon cable (36 lead) or 2 lengths of 25 lead cable
   * 1 Extended Basic Cartridge (shell removed)
   * 1 Double-pole, single throw slide switch (for enabling/disabling ext.-basic)
   * Solder, iron, wire cutters, etc

I'm not going to get into the details for I feel if by now that you can't remove your CPU from your console, you shouldn't be attempting this. Get someone who can. Remove the Grom Connector from the unit, and attach the ribbon cable to the pins of the rear of the circuit card that the Grom Connector is attached. Attach all but pins 4 and 6 to ribbon cable. 4 and 6 are unused here. Now, keeping the length of the wire to less than 8" attach the other ends of the corresponding wire to the Extended Basic card edge connector lands, remembering the relationship between the two. i.e.; pin 1 must go to pin 1, 2 to pin 2, and so on. (not 4 or 6) Before you attempt any further modification to the machine, reassemble and see if Extended Basic comes up on the menu, and still functions, SIZE, ACCEPT AT, etc. If you are still functional continue.
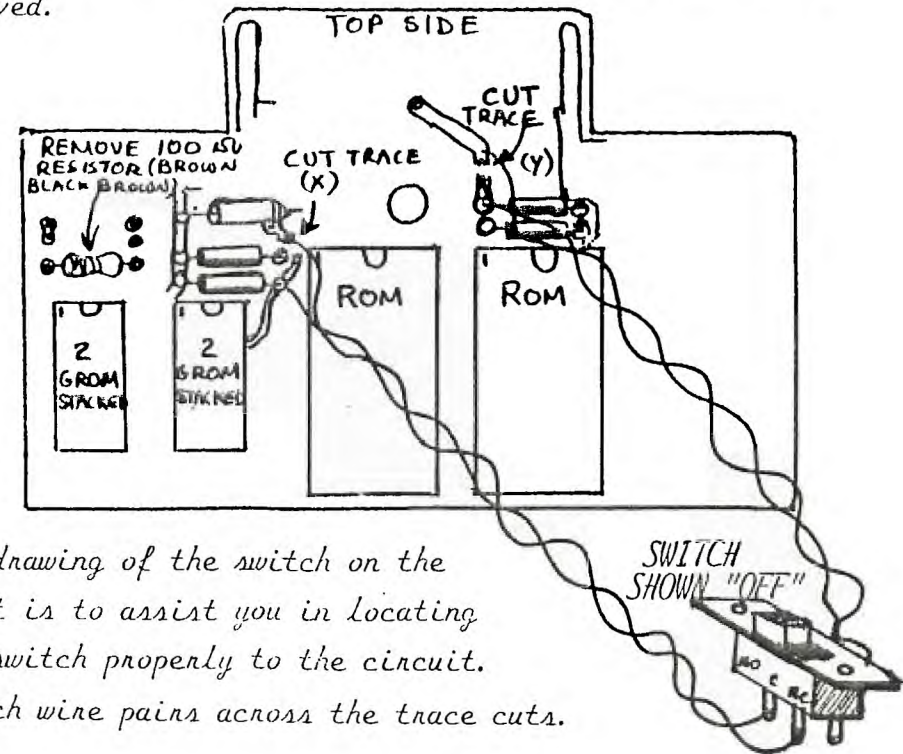
Remove the 100 ohm resistor indicated, and cut the two traces where shown. Now you may solder 4 equal lengths of wire to the switch (not longer than 10" in length). Attach two of the wires across the cut in the trace (x) and the other two across (y), making sure that the pairs are on the same switch pole set. Now, test the results again.

If the extended basic works when the switch is closed, and the cartridge slot will accept cartridges (meaning that a variety of GROM/ROM cartridges will function), when the switch is open, then your almost home. Mount the switch in a convenient location, and insulate the bottom of the Extended Basic Cartridge and locate on TOP RF SHIELD to left of grom conn. Reassemble. It would also be of benifit to you at this time to install a reset button across pin 6 of the CPU chip and ground. Trust me.

The reset switch will be particularly useful, in that you will now not be able to reset the machine by inserting the Extended Basic cartridge. You may find that without the RESET switch, you will have to turn the console power switch off and then on to begin operation after switching from basic to xbasic or other cartridges. This is an easy option to install with a momentary contact switch across pin 6 on the CPU chip (TMS9900) and ground. Reference drawing here.

RESET

TMS9900

PINS 1 2 3 4 5 6 7 etc →   64   32   3?

(PAUSE SWITCH ACROSS PINS 1 AND 64)
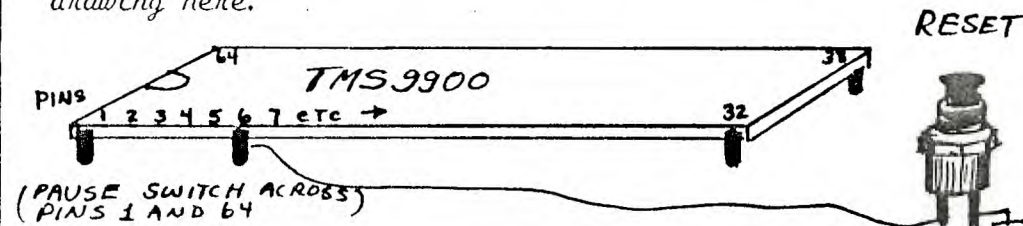
The view below is here to help you find the two traces that must be cut, and the 100 ohm resistor that must be removed.

TOP SIDE

REMOVE 100 Ω RESISTOR (BROWN BLACK BROWN)

CUT TRACE (X)

CUT TRACE (Y)

ROM   ROM

2 GROM STACKED   2 GROM STACKED

SWITCH SHOWN "OFF"

The drawing of the switch on the right is to assist you in locating the switch properly to the circuit. Attach wire pairs across the trace cuts.