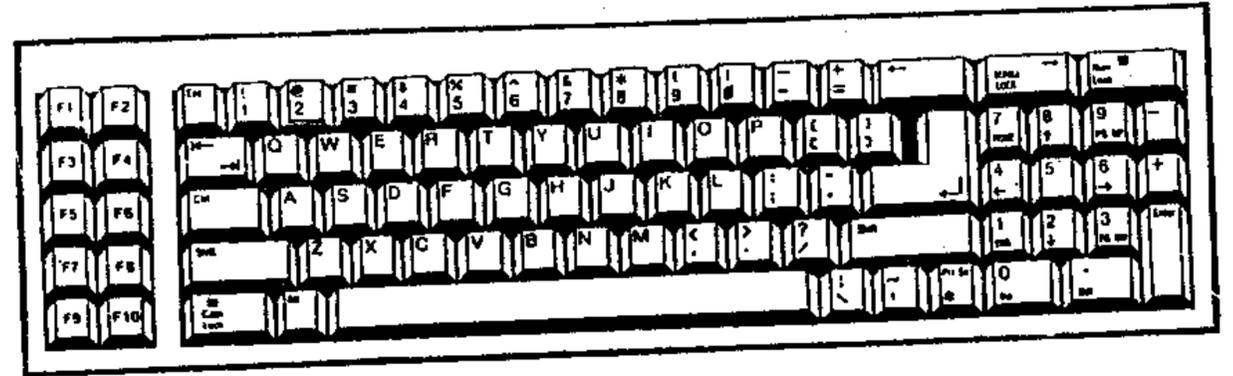


# RANIER 99



*MODEL 99/84*

*KEYBOARD*

*ENHANCEMENT*

**STOP**

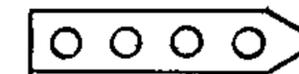
HAZARDOUS VOLTAGES ARE EXPOSED INSIDE CONSOLE WHEN ENERGIZED. TURN OFF SYSTEM AND REMOVE POWER SUPPLY CORD BEFORE BEGINNING.

**NOTE**

Optional LOAD/RESET features should not be installed until after the RAVE 99 keyboard interface has been installed using the procedure below and operationally tested.

**NOTE**

According to TEXAS INSTRUMENTS, some of the older 99/4A consoles have a "keyed connector" in the power cable between the power supply board and the main board. If your computer has this type of connectors, you will need an adapter kit to connect the interface board to your computer. RAVE 99 will supply this adapter kit FREE OF CHARGE. RAVE 99 will send the kit promptly upon notification of need.



"KEYED CONNECTOR"

- 1) On black consoles, remove the ON/OFF switch by gently prying it away from the console.
- 2) Place the console "bottom up" and remove the phillips head screws (1 thru 7) from the bottom cover. See FIG 1. Place the screws aside for reinstallation. Remove the bottom cover and set aside.

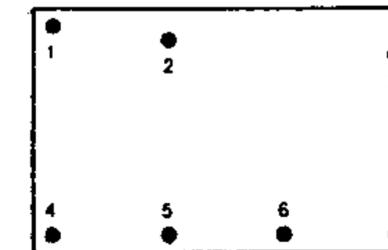


Figure 1  
BOTTOM VIEW

- 3) Remove and save screws securing power supply board. Disconnect the cable going to the main board and set power supply board aside. See FIG 2.
- 4) Remove screws (1,2, and 3 only) securing main shielded circuit board (motherboard) and screws securing keyboard and set aside. See FIG 2. The main board and keyboard should remain in place.

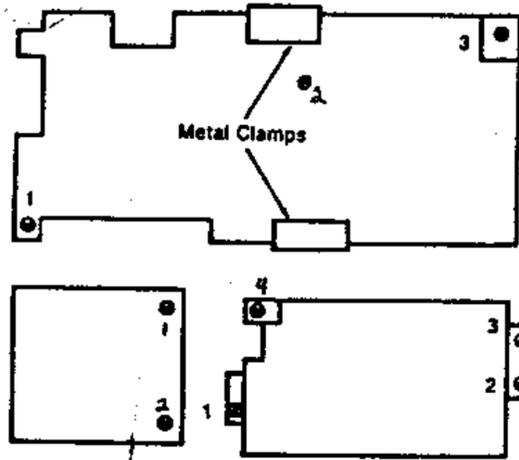


Figure 2  
BOTTOM VIEW

- 5) Place console bottom cover back to its original position. Grasp both top and bottom covers of the computer and place console such that the top cover is up. Remove the console top cover and set aside.

NOTE: If installing the optional console cover, the cover posts should be installed per kit instructions prior to this next step.

- 6) Unplug the 15 pin connector between the TI keyboard and main board, then remove the TI keyboard. Place the RAVE 99 Interface card in the same position as the original TI keyboard and plug the 15 pin connector onto the main board.
- 7) Plug the four wire power cable connector from the main board to the connector on the RAVE 99 interface card marked JC3. Route any excess cable length over the main board shield. See FIG. 3.

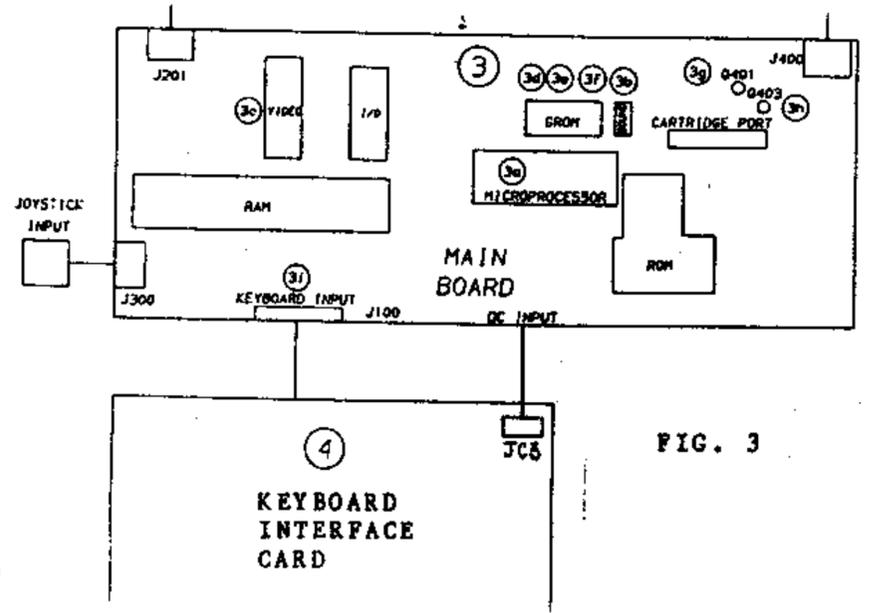


FIG. 3

CAUTION: PAY CLOSE ATTENTION TO THE ORIENTATION OF THE POWER SUPPLY CONNECTORS. SEE FIG. 4. REMOVE THE SMALL CLIP AS INDICATED.

\*\*\*\*\*  
\*  
\*  
\* WARNING ! INCORRECT ORIENTATION OF THE POWER SUPPLY CONNECTOR \*  
\* WILL DAMAGE THE RAVE 99 INTERFACE CARD AND THE TI 99/4A \*  
\* MAIN BOARD. ENSURE THAT THE ORIENTATION IS CORRECT! \*  
\*  
\*  
\*\*\*\*\*

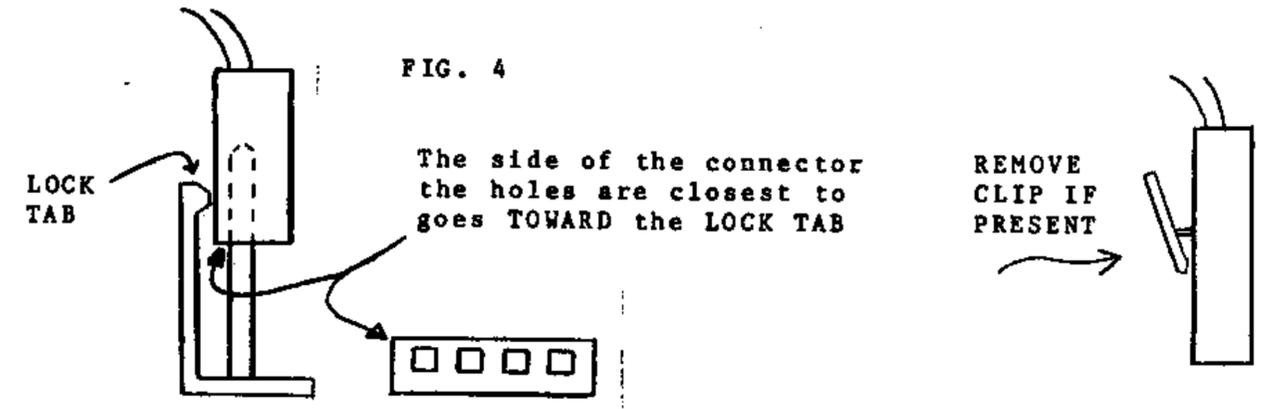


FIG. 4

WHEN CONNECTED CORRECTLY, THE RIGHT HAND WIRE ON THE CONNECTOR ATTACHED TO THE KEYBOARD INTERFACE SHOULD ALSO BE THE RIGHT MOST WIRE ON THE MAIN BOARD. SEE FIG. 5.

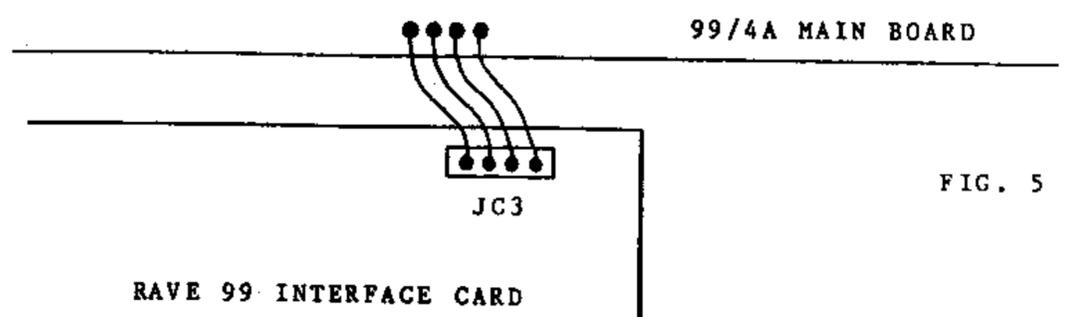


FIG. 5

- 8) Place the console top cover in place and again place the console "bottom side" up. Remove the console bottom cover and secure the motherboard and RAVE 99 Keyboard interface card using the screws removed earlier.
- 9) Plug the free end of the RAVE 99 power adapter cable to the POWER SUPPLY board and ENSURE POLARITY IS CORRECT. See FIG. 4

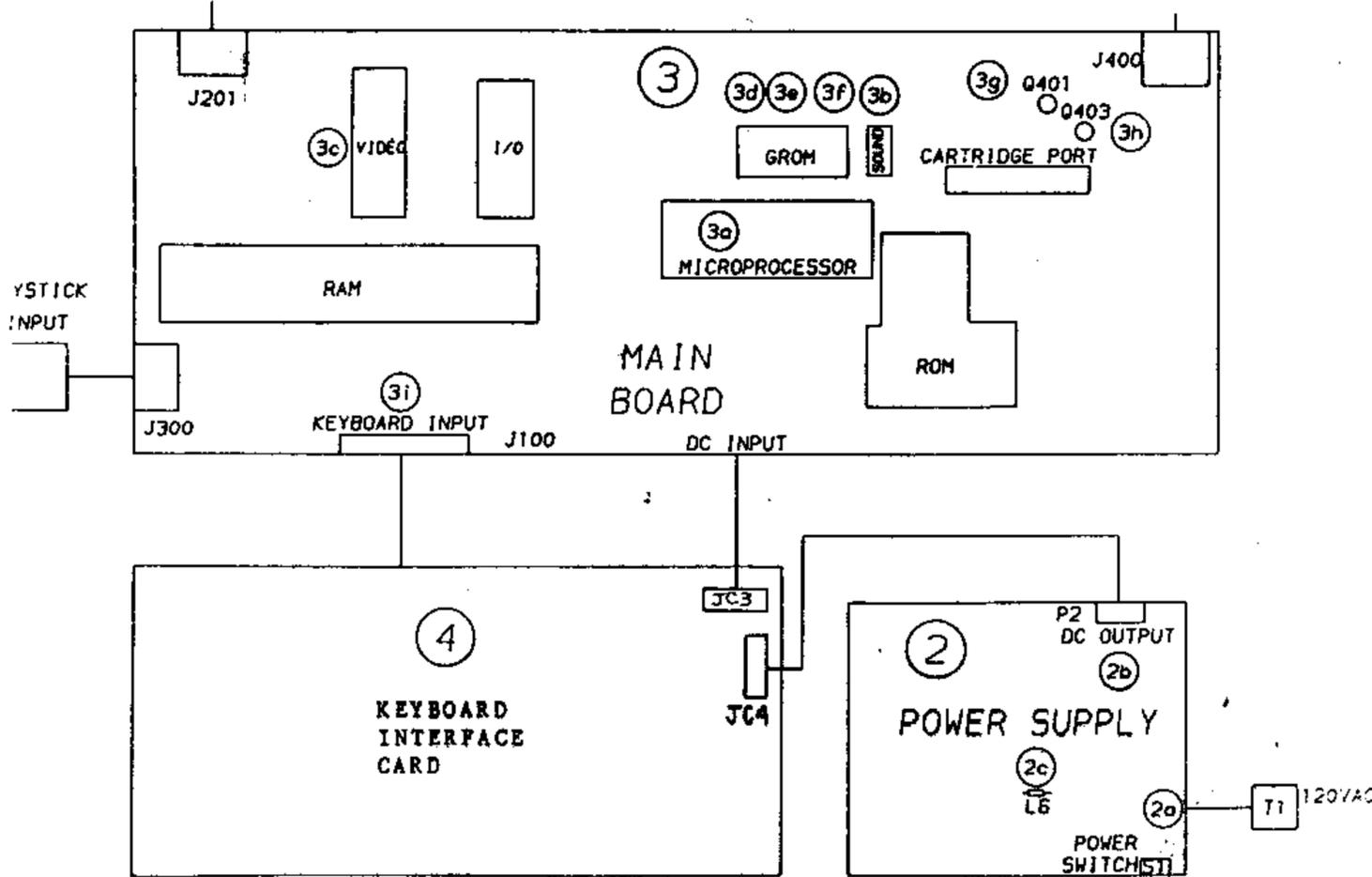
MODEL 84 OPERATION

\*\*\*\*\*  
 \*  
 \*  
 \* **WARNING ! INCORRECT ORIENTATION OF THE POWER SUPPLY CONNECTOR** \*  
 \* **WILL DAMAGE THE RAVE 99 INTERFACE CARD AND THE TI 99/4A** \*  
 \* **MAIN BOARD. ENSURE THAT THE ORIENTATION IS CORRECT!** \*  
 \*  
 \*  
 \*\*\*\*\*

- 10) Secure power supply board in console with screws removed earlier. Ensure the ON/OFF switch adapter is properly engaged with the switch.
- 11) Reassemble console bottom cover with the top cover and secure with the remaining screws. On black consoles insert the ON/OFF switch operator. AT THIS POINT, THE ONLY PART OF THE ORIGINAL CONSOLE LEFT SHOULD BE THE TI KEYBOARD.

At this point, your wiring should be the same as shown in FIG. 6.

FIG. 6 FINAL CONNECTION DIAGRAM



- 1) Select a convenient location for the computer console which will still be used for all other non-keyboard functions. Connect your system up in the normal manner.

- 2) The keyboard cable is connected to the interface card at connector JC2. If the optional console cover is being used, the keyboard cord connector can be plugged into JC2 directly through the large hole in the cover.

\*\* Care should be taken to prevent the keyboard cable from being pulled hard while connected to the interface card. Damage to the card may result.

- 3) On power up the CAPS LOCK indicator light should flash momentarily then remain off. If this does not happen, turn off console for a few seconds then turn back on. If the light remains on, refer to the IN CASE OF DIFFICULTY section.

- 4) At the prompt to press any key, press the ESCape key. Now normal keyboard procedures may be followed.

\*\*\*\*\*  
 \*  
 \* **IT IS IMPORTANT TO PRESS THE ESC KEY AFTER POWER UP TO ENSURE** \*  
 \* **PROPER OPERATION OF THE INTERFACE CARD.** \*  
 \*  
 \*\*\*\*\*

- 12) To prevent possible damage to other equipment if a wiring error has been made, it is suggested that the computer be energized without peripherals attached for the first time.

LAYOUT

Your MODEL 99/84 Keyboard is easy to use after taking a few minutes to read the descriptions of the differences between this keyboard and the standard 99/4A listed below.

ALT - This key performs the same function as the 99/4A FCTN key when used with letters, numbers, and punctuation symbols found on that keyboard. The numbers on the number pad portion of the key board may be used with the ALT key.

CLRL - This key works the same as on the 99/4A keyboard. The number pad keys may also be used with the CTRL key.

CAPS LOCK - This key works the same as the ALPHA LOCK key except that it does not interfere with joystick operation when engaged. The indicator light on the key is on when the interface card is in the CAPS LOCK mode. You can obtain lower case letters without leaving the CAPS LOCK mode by pressing the SHIFT key and the desired letter. In addition to shifting all letters to upper case, the 99/84 also places the often used double quote (") into the unshifted key position for convenience in the command mode. The single quote (') becomes the SHIFTED character in this case.

NUM LOCK - This key determines the operating mode of the keys on the 99/84 cursor control/number pad. When the indicator light is off, the keys perform their cursor control functions as follows:

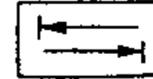
ARROW KEYS(2,4,6,8)	CURSOR DIRECTION(FCTN+S,D,E,X)
HOME(7)	TI WRITER"HOME"(CTRL+L)
PG UP(9)	TI WRITER"ROLL UP"(FCTN+6)
PG DN(3)	TI WRITER"ROLL DOWN"(FCTN+4)
INS(0)	INS:CHAR(FCTN+2)
DEL(.)	DEL CHAR(FCTN+1)

When the indicator light is on, the keys act as a number pad.

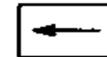
The NUM LOCK mode may be temporarily reversed without operating the NUM LOCK key by using the SHIFT key. For example, with NUM LOCK ON, the cursor may be moved left by pressing SHIFT and the number pad "4" key (left arrow).

SCROLL LOCK - Ignore the word "lock". This key scrolls the screen to the right or "windows" when using TI WRITER.

PRT SC - (PRINT SCREEN) This key returns a Print Catalog command (FCTN+P) when used with the MYARC disk controller and software. To print press SHIFT and PRT SC. To abort(FCTN+4), press PRT SC.



TAB/BACK TAB - This key returns a TAB(FCTN+7) when pressed and a BACK TAB(CTRL T) when pressed with SHIFT when using TI WRITER, EDITOR/ASSEMBLER or compatible software.



BACKSPACE - This key returns a FCTN+S to move the cursor to the left.

FUNCTION KEYS (F1 through F10) These provide the following functions:

\* One key entry of 99/4A FCTN+1 through FCTN+0 commands. For example, F5 is the same as FCTN+5 on the 99/4A

\*When SHIFTed, inputs 99/4A CTRL+i through CTRL+0 commands. Pressing SHIFT and F4 returns CTRL+4.

\*When used with the CTRL key returns the following special inputs:

CTRL + F1	RESERVED
CTRL + F2	FCTN+SHIFT+P (FAST TERM)
CTRL + F3	FCTN+SHIFT+T (FAST TERM)
CTRL + F4	FCTN+SHIFT+X (FAST TERM)
CTRL + F9	MISSING KEY #1
CTRL + F10	MISSING KEY #2

See the MISSING KEYS portion of the manual for explanation of missing key codes.

\*When used with the ALT key provides the following functions when optional user installed wiring is attached:

ALT + F1	LOAD INTERRUPT
ALT + F9	COMPUTER RESET

\*\*\*\*\*  
 \*  
 \* CAUTION - USE OF THE LOAD INTERRUPT WITHOUT PROPER SOFTWARE \*  
 \* CAN CAUSE THE COMPTER TO LOCK UP. THE COMPUTER RESET \*  
 \* WILL OCCUR AT ANY TIME THE ALT AND F10 KEYS ARE \*  
 \* PRESSED. POSSIBLE LOSS OF DATA MAY OCCUR. \*  
 \*  
 \*\*\*\*\*

### Missing Keys

The original TI keyboard had more key code capacity than they had actual keys. The RAVE 99 keyboard takes advantage of these unused MISSING keys by returning their key codes for your use. You can be confident that these keys are truly unused key codes that have never been used in a program up to now. We have called these keys appropriately MISSING Key 1 and MISSING key 2.

These keys are generated by the following:

MISSING KEY 1 - Ctrl + F9

MISSING KEY 2 - Ctrl + F10

### DETECTION OF MISSING KEYS

#### BASIC or XBASIC programs

Only MISSING key 1 is available in these programs and is detected by a -1 in the "return variable" when using the CALL KEY subprogram.

#### ASSEMBLY LANGUAGE programs

In this language both MISSING keys are available for use.

Below is a segment of ASSEMBLY code to detect each of the missing keys.

NOTE! THIS IS NOT A COMPLETE PROGRAM, ONLY AN EXAMPLE.

```
MIS1 EQU 6 DISPLACEMENT FOR MISSING KEY 1
MIS2 EQU 10 DISPLACEMENT FOR MISSING KEY 2

MSG1 TEXT 'MISSING KEY 1'
CLRLN TEXT '

CHECK1 CLR R12 POINT TO KEYBOARD
      TB MIS1 TEST FOR MISSING KEY 1.
      JEQ BLANK BRANCH IF NOT PRESSED.
      LI R0,32+2 SETUP SCREEN POSITION.
      LI R1,MSG1 GET MSG ADR.
      LI R2,9 MSG LENGTH.
      BLWP @@VMBW DISPLAY IT.
      JMP CHECK1 REPEAT.

BLANK LI R0,32+2 SETUP SCREEN POSITION
      LI R1,CLRLN GET THE "BLANK" LINE ADR.
      LI R2,9 MSG LENGTH.
      BLWP @@VMBW BLANK THE SCREEN.
      JMP CHECK1 REPEAT.
```

### USER INSTALLED OPTIONS

NOTICE: THE INFORMATION BELOW PROVIDES THE USER WITH THE TECHNICAL INFORMATION NECESSARY TO INSTALL KEYBOARD CONTROLLED LOAD INTERRUPT AND COMPUTER RESET CAPABILITIES. RAVE 99 MAKES NO CLAIM AS TO THE USERS ABILITY TO SUCCESSFULLY INSTALL THESE FEATURES OR TO THEIR SUITABILITY FOR ANY INTENDED USE.

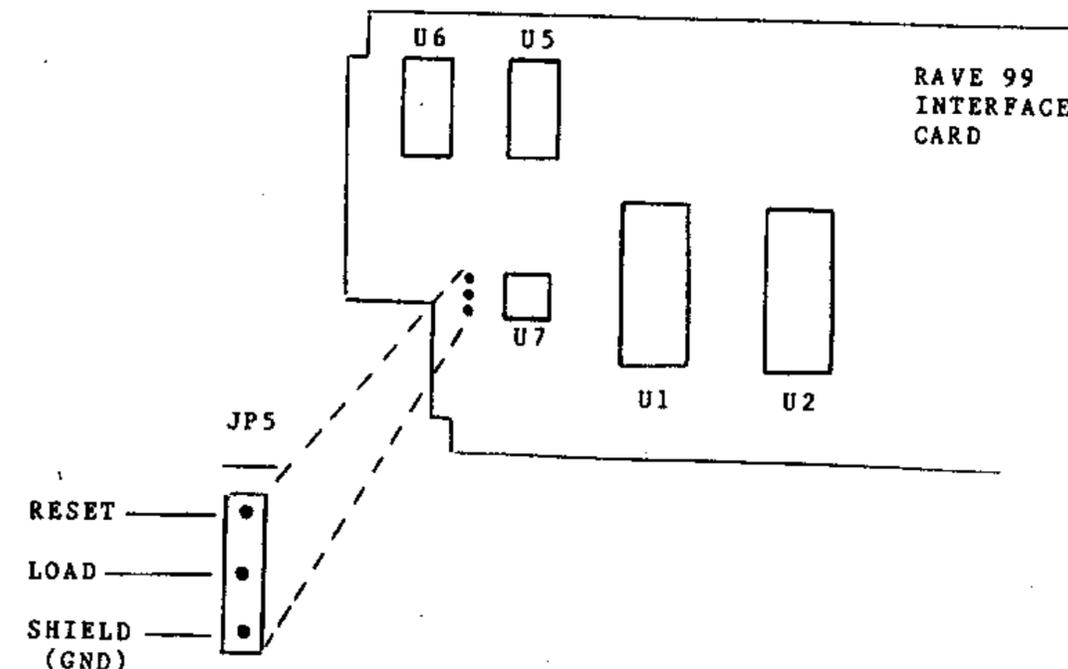
RAVE 99 WARRANTS ONLY THAT THE FEATURES OPERATE AS INTENDED BY RAVE 99 WHEN CORRECTLY INSTALLED. THE USER ASSUMES ALL RISK ASSOCIATED WITH MAKING PHYSICAL ALTERATION OF THE MAIN COMPUTER BOARD.

The diagrams below show the correct circuit points for connection of the LOAD and RESET features. Also provided are suggested physical connection points that have been tested by RAVE 99. For information on use of these features, see the ALT key description in the LAYOUT section of the manual.

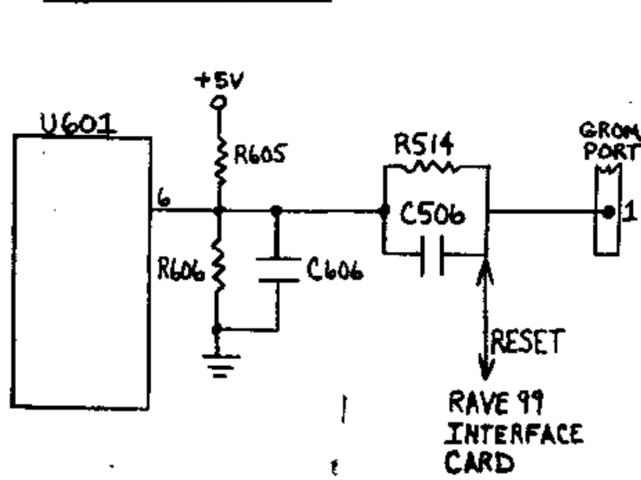
\*\* An installation kit is available from RAVE 99 which includes a connector for the interface card connected to a ready to solder harness of proper length. The LOAD/RESET KIT can be obtained directly from RAVE 99 for \$4.00.

NOTE: installation of the RESET feature disables the automatic RESET that normally occurs when inserting a module with the computer energized. It may be necessary, depending on application, to perform a RESET from the keyboard after inserting a module.

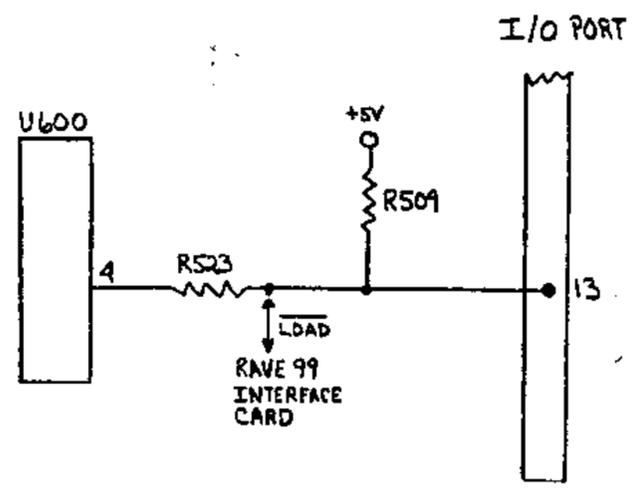
### INTERFACE CARD CONNECTION



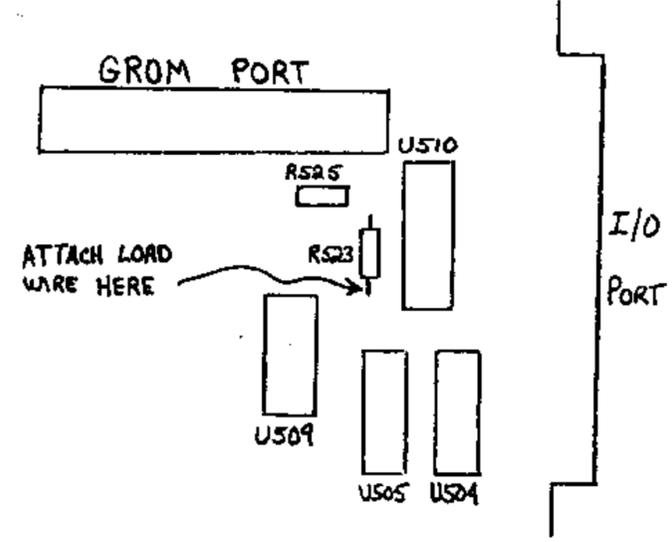
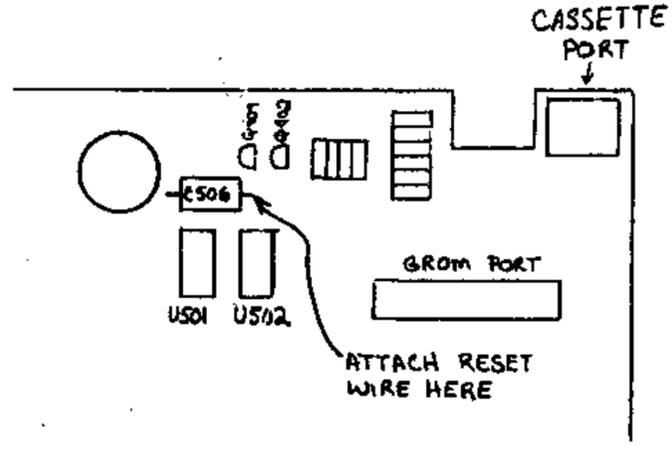
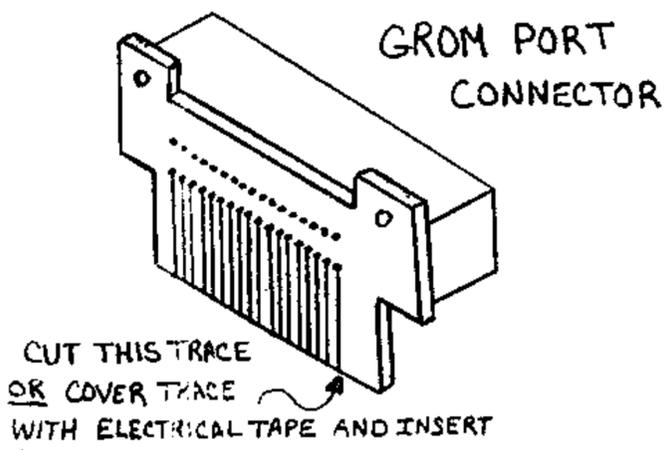
**RESET CONNECTION**



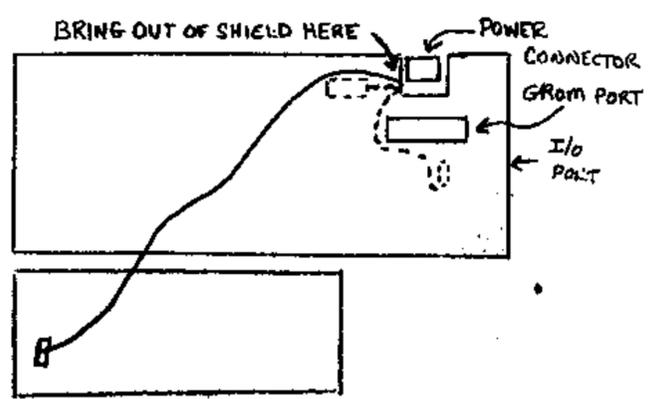
**LOAD INTERRUPT CONNECTION**



**GROM PORT CONNECTOR MODIFICATION**



**CABLE ROUTING**



**THREE-MONTH LIMITED WARRANTY**

This RAVE 99 KEYBOARD ENHANCEMENT Warranty Extends To The Original Consumer Purchaser of the Accessory.

**WARRANTY DURATION**

This KEYBOARD ENHANCEMENT is Warranted for a period of three(3) months from the date of the original purchase by the consumer.

**WARRANTY COVERAGE**

This KEYBOARD ENHANCEMENT is Warranted against defective materials or workmanship. THIS WARRANTY IS VOID IF THE ACCESSORY HAS BEEN DAMAGED BY ACCIDENT, UNREASONABLE USE, NEGLIGENCE, IMPROPER SERVICE OR OTHER CAUSES NOT ARISING OUT OF DEFECTS IN MATERIALS OR WORKMANSHIP.

**WARRANTY DISCLAIMERS**

ANY IMPLIED WARRANTIES ARISING OUT OF THIS SALE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE ABOVE THREE-MONTH PERIOD. RAVE 99 SHALL NOT BE LIABLE FOR LOSS OF USE OF THE HARDWARE OR OTHER INCIDENTAL OR CONSEQUENTIAL COSTS, EXPENSES, OR DAMAGES INCURRED BY THE CONSUMER OR ANY OTHER USER.

Some states do not allow the exclusion or limitation of implied warranties or consequential damages, so the limitations or exclusions may not apply to you in these states.

**LEGAL REMEDIES**

This warranty gives you specific legal rights, and you may have other rights that vary from state to state.

**WARRANTY PERFORMANCE**

During the above three month period, your Keyboard Enhancement will be repaired or replaced with a new or recoditioned unit of the same or equivalent model(at RAVE 99's option) when the unit is returned by prepaid shipment to RAVE 99 at the address below. The repaired or replacement unit will be warranted for three months from the date of repair or replacement. Other than the postage requirement, no charge will made for repair or replacement of in-warranty units.

RAVE 99 strongly recommends that you insure the unit for value prior to shipping.

SHIP TO :

RAVE 99 CO.  
23 FLORENCE RD.  
BLOOMFIELD, CT. 06002

7/12  
RAVE 99

NEW  
PRODUCT

KEYBOARD ENHANCEMENT

RAVE 99 Co.,  
23 Florence St.  
Bloomfield, CT 06002

July 7, 1986

Dear 99'ers:

Please find attached information on two new products for your TI-99/4A. The price list below is for purchase of one unit. User Group quantity discounts are available by contacting RAVE 99 directly. Arrangements for demonstrations and evaluation units can also be made by contacting us. Production unit availability date is October 1, 1986.

Model 99/101	\$149.95
Model 99/84	\$124.95
Extra Long Cord (25 ft) (99/101 only)	\$9.95
Custom Key Assignments (Dvorak, Multiplan, etc)	\$15.00 min-call

For further information write or call after 6:00 PM (Eastern Time):

Rick - (203) 242-4012  
John - (203) 812-9272

  
R. A. HAKEMIAN  
RAVE 99 Co.



RAVE 99 Co.  
23 Florence St.  
Bloomfield, CT 06002

8/6

Aug 1, 1986

Dear 99'ers:

AN IMPORTANT MESSAGE FROM RAVE 99

Most everyone reading this message will have already read the RAVE 99 Keyboard Enhancement Bulletin sent out in July. In that bulletin we included a price sheet which gave the price of the Model 99/101 as \$149.95 and the Model 99/84 as \$124.95. These prices represented the best estimates that we were able to obtain from our vendors at that time. Now that we are actually purchasing components for production, it has become apparent that we cannot sell our products for the above prices and still stay in business.

Regrettably, we are changing the price of our products as follows:

Model 99/101 \$164.95

Model 99/84 \$149.95

Even at the new price, we still believe that our Keyboard Enhancement Products represent the best value of its kind.

Rick and I would like to make the following offer as a gesture of good will, to all 99'ers who received our original Product mailing:

RAVE 99 shall honor the original Product Bulletin prices on all paid orders received before OCT 1, 1986. We still anticipate that production units shall be available for shipment, on or about, Oct. 1, 1986. This shall hopefully give RAVE 99 a chance to win your trust and confidence as a supplier of new and exciting products for TI-99/4A.

Due to allocation restrictions and manufacturing limitations, our Model 99/101 Keyboard shall only be available on a limited basis. We currently have 60 of these in stock, but may not receive any more for 10 to 12 weeks. This is not a problem with the Model 99/84 Keyboard.

We at RAVE 99 are not interrested in re-designing existing hardware for the 99/4A unless we can significantly increase its functionality or significantly reduce its price. We have no intensions of becoming the fourth supplier of "GRAM Kracker" type hardware. We have our own ideas as to what products we should pursue next, but would also like to hear what your ideas are.

PLEASE WRITE AND TELL US!

J. W. McDevitt  
RAVE 99 Co.

(OVER)

RAVE 99 Co.  
23 Florence St.  
Bloomfield, CT 06002

## TECHNICAL CORNER

The following represent some of the most commonly asked questions.

### Question #1

Where do the new keyboards plug into.

Both of the Keyboard models have two parts:

- a) the keyboard interface logic card.
- b) the actual keyboard.

The keyboard interface logic card is placed inside the 99/4a after the original 99/4a keyboard is removed. This logic card connects to the 99/4a CPU just like original 99/4a keyboard did using a 15 pin ribbon cable. The logic card has a connector located on it which is where the new keyboards coiled cords plug in.

The time required to install the new keyboard is about the same as replacing your old keyboard.

### Question #2

Why should I use the SYSTEM RESET and LOAD INTERRUPT capabilities of your board.

The SYSTEM RESET key sequence shall allow you to unlock your console due to programming errors or hardware problems without turning off your computer. This shall extend the life of your system due to the fact that most electronic parts fail when being powered on.

The LOAD INTERRUPT key sequence shall allow the use of software packages such as SCREEN DUMP to print the screens of cartridge programs. Also, as more of this hardware becomes available, some of our fine TI-99/4a programmers may use this to implement special loaders or programs such as SIDEKICK for our TI's.

For further information write or call after 6:00 PM  
(Eastern Time):

Rick - (203) 242-4012  
John - (203) 872-9272

ADDRESS CORRECTIONS REQUESTED

7/12

# RAVE 99



NEW  
PRODUCT

## KEYBOARD ENHANCEMENT

RAVE 99 COMPANY - 23 FLORENCE RD. - BLOOMFIELD, CT. 06002

The RAVE 99 Co. is proud to introduce the upcoming availability of the first production keyboard enhancement for the TI-99/4A computer. RAVE 99 will initially offer two models, both sharing the following features:

- \* Standard key layouts which eliminate the awkward two key inputs for 1) cursor control 2) the function strip (FUNCTION 1-10) 3) "keyfront keys" such as ",?," and [.
- \* Alpha Lock function which does not interfere with joystick operation on any version of the TI-99.
- \* COMPATIBILITY - Works with ALL systems. NO P.E. BOX REQUIRED! RAVE 99 keyboards are compatible with all software up to two simultaneous keystrokes with the FUNCTION, CONTROL, and SHIFT keys.
- \* Numeric keypad with separate ENTER key and numeric operators.
- \* High quality keyboards with coiled cords for connection to the computer console. This allows for flexibility in console placement to free up your workspace from annoying cables. This also allows the freedom to move the keyboard without fear of problems with the side cable connector.
- \* One key entry of word processing commands such as TAB, BACK TAB, DELETE, BACKSPACE, and HOME when using TI-WRITER.
- \* Unique key codes returned from software, not obtainable from the standard keyboard: These can be used by programmers without interfering with any other software key calls.
- \* Easy to install keyboard interface which installs in place of the standard keyboard in the computer console. NO SOLDERING REQUIRED. The interface also has provisions for user upgrade to include SYSTEM RESET and LOAD INTERRUPT capability from the keyboard. The manual contains complete instructions.

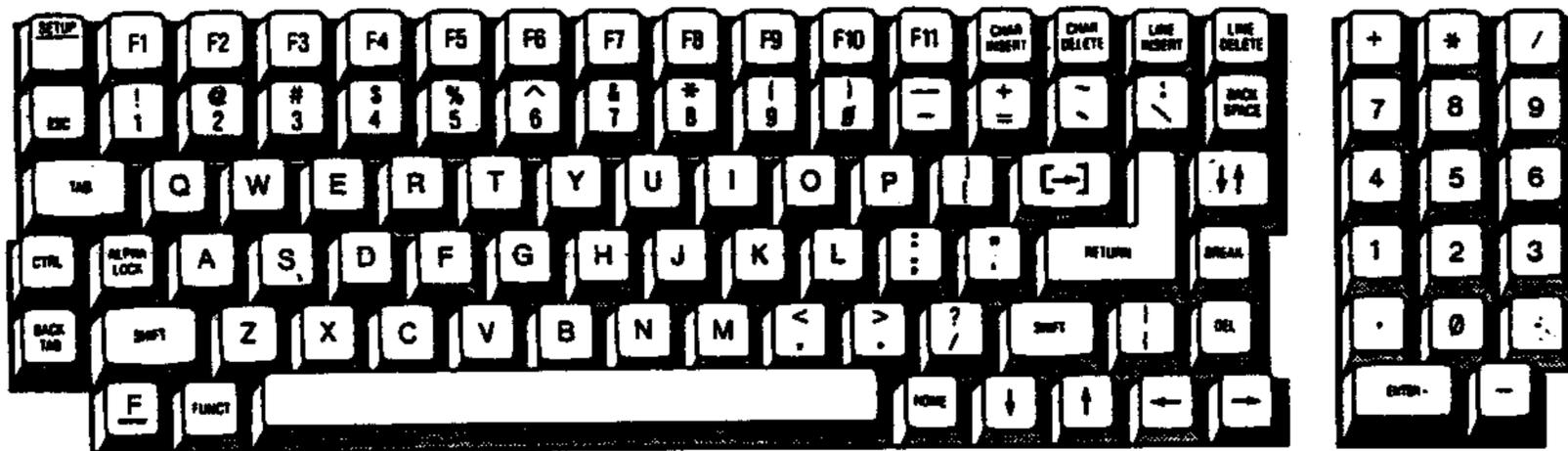
FOR MORE INFORMATION CONTACT RAVE 99 Co. AFTER 6PM EASTERN TIME  
ASK FOR RICK (203) 242-4012 OR JOHN (203) 872-9272

# RAVE 99



NEW  
PRODUCT

## KEYBOARD ENHANCEMENT



RAVE 99 CO. - 23 FLORENCE RD. - BLOOMFIELD, CT. 06002

The RAVE 99 Model 99/101 Keyboard Enhancement is a DELUXE hardware package designed to greatly improve typing efficiency on the TI-99/4A. In addition to the standard features of RAVE 99 keyboard enhancements the Model 99/101 has the following features:

- \* Heavy duty 101 key keyboard.
- \* FOUR separate key assignment modes. The setup key is used to select
  - 1) TWO separate command/programming modes. These modes for example, place the often used double quote (") in the unshifted key position for ease of use. The QUIT (F/=) may be implemented as a single keystroke (F11) or may be defeated, depending on the mode selected.
  - 2) TWO separate editor modes. One implements word processing keys for TI-WRITER, the other for use with EDITOR/ASSEMBLER.
- \* Dedicated cursor control and numeric entry pad.
- \* Function keys arranged in a row at the top of the keyboard. This allows direct use of standard overlay strips.
- \* Optional 25 foot coiled cord for maximum freedom of keyboard placement.

FOR MORE INFORMATION CONTACT RAVE 99 CO. AFTER 6PM EASTERN TIME.  
ASK FOR: RICK (203) 242-4012 OR JOHN (203) 872-9272 -

# RAVE 99



NEW  
PRODUCT

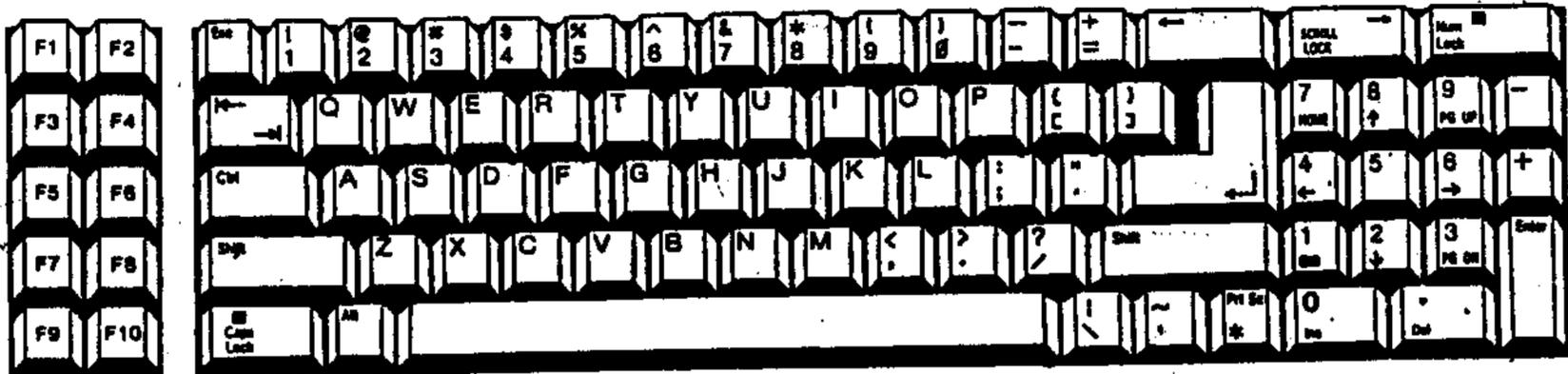
## KEYBOARD ENHANCEMENT

RAVE 99 CO. - 23 FLORENCE RD. - BLOOMFIELD, CT. 06002

The RAVE 99 Model 99/84 Keyboard Enhancement is a hardware package designed to greatly improve typing efficiency on the TI-99/4A. In addition to the standard features of RAVE 99 keyboard enhancements, the Model 99/84 has the following features :

- \* 84 key enhanced version of popular IBM PC/XT key layout.
- \* LED indicator on CAPS LOCK (ALPHA LOCK) and NUM LOCK keys.
- \* Adjustable keyboard tilt angle.
- \* Separate FUNCTION KEY pad for F1 - F10 and CTRL1 - 10 (when shifted). User may optionally use overlay strips with the number key row as on the 99/4A.

FOR MORE INFORMATION CONTACT RAVE 99 CO. AFTER 6PM EASTERN TIME  
ASK FOR: RICK (203) 242-4012 OR JOHN (203) 872-9272



MODEL 99/84 KEYBOARD LAYOUT