IMPORTANT INFORMATION

READ THIS before you install your new RAMROD board in your computer.

First we will discuss the layout of the board. Referring to fig. 1 notice there are five 24 pin sockets numbered Z6 thru Z10 at the top of the board. There will be 1 to 5 blank sockets depending on the configuration you purchased. Also note the two dip switches towards the bottom of the board labeled S1 and S2. Now being fimiliar with these locations, we will give detailed information about each one.

SOCKETS:

Z6:

This socket is addressed as memory locations F000-FFFF by the computer. If you are using the operating system ROMs from your original board, remove the C014599 ROM from A401 of the old board and install it in this location. Refer to S1 switch settings for proper operation.

Z7:

This socket is addressed as memory locations E000-EFFF by the computer. If you are using the operating system ROMs from your original board, remove the C012499 ROM from A403 of the old board and install it in this location. Refer to S1 switch settings for proper operation.

Z8:

This socket is addressed as memory locations D000-DFFF by the computer. This is the floating point ROM. Remove the C012399 or FASTCHIP ROM from the old board and install it in this location. There are no switch setting requirements for this location.

Z9 and Z10:

These sockets are addressed as memory locations C000-CFFF by the computer. These are the memory locations that are not currently addressed by the stock machine. Refer to S2 switch settings for proper operation. If you ordered memory for these locations, your board should come with the switch settings correct.

Z9 and Z10 Options:

1. Z9-2K RAM, Z10-2K RAM
2. Z9-2K RAM, Z10-2K ROM or EPROM
3. Z9-2K ROM or EPROM, Z10 2K RAM
4. Z9-2K ROM or EPROM, Z10 2K ROM or EPROM
5. Z9-4K ROM or EPROM, Z10 BLANK
6. Z9-BLANK, Z10 BLANK

(REFER TO S2 SWITCH SETTINGS TO DESELECT THIS ADDRESS RANGE)

SWITCH SETTINGS:

S1:

Z6 and Z7	ROM	EPROM
	1 on	1 off
	2 off	2 on
	3 on	3 off
	4 off	4 on
	5 off	5 on
	6 on	6 off
	7 off	7 on
	8 on	8 off

S2: Z9 and Z10 control.

Z9 4K EPROM SUPERMON!	Z9 and Z10 RAM or 2K RAM , 2K EPROM
1 off	1 on
2 on	2 off
3 off	3 on
4 on	4 off

IF RAM IS USED IN Z9, USE 4K EPROM SETTINGS TO MASK RAM FROM OPERATING SYSTEM.

INSTALLATION

In all cases, the component side of the board FACES THE BACK OF THE COMPUTER and ALL I.C.'s HAVE THE NOTCHES FACING THE OUTWARD EDGE OF THE BOARD.

Take the ramrod board after you have configured it and push it into the socket where the original operating system board was. This method allows free air movement around the components for better heat dissipation. If the board does not stand up straight after installation, this indicates that the socket on the motherboard is misaligned, and it should be corrected to insure trouble free operation. DO NOT POWER UP THE COMPUTER if misalignment causes the board to touch the metal casing of the computer.

WARRANTY

This product is warranted for a period of one year from date of purchase against defects in material and workmanship. Fill out warranty registration and return to Newell Industries within ten days of purchase to validate this warranty.

GENERAL INFORMATION

As you can see from the previous information, you have purchased a very flexible piece of equipment. Although the additional 4K of address space for ram or rom will be of great benifit to most people, we believe that the option of being able to modify your operating system or create your own is the most powerful feature of the RAMROD OS board. Because the OS is the controling factor of the computer, it would be possible to put your software in this location that would immediately be present on power up with no loss of ram for program storage.

Some of the more simple changes would be to change some of the default parameters of the OS. These would include screen colors, margins, charactor set, messages, and what takes control of the system on power up. Someone may want DOS booted all the way, regardless of the cartridge('s) installed.

If there are any bugs in your current OS, you will at least be able to access these to try and correct them. If you come up with a patch to correct a bug, write about it, there are several magazines that would be interested in publishing this type of information.

MODIFYING YOUR OS

There are several different methods for doing this, we will discuss a couple of these.

Since your current OS is now in rom where it cannot be changed, we must get it to ram or disk where we can change it. This is really a very simple task to accomplish. DO NOT use DOS to save any ROM based memory locations. Because of the way burst IO works, all you will get is a file that will not load. If you already have an EPROM programer, more likely than not you will be able to change it's buffer locations and save the buffer to disk. Then using any of the availible disk editors you can change all or part of the code. You would then use an Eprom programer to write your new or modified OS into Eprom.

Another method would be to use the debug feature of an assembler/editor, move the code to ram, modify the part you want, and then save it to disk. At this point all you would need to do would be to use an Eprom programer to write your new OS into EPROM's. This would seem to be the easiest and most versatile method because of the speed with which you can work with ram.

EPROM REQUIREMENTS

1.4K EPROM - 2732 style pinout, 350 ns. max. access time
2.2K EPROM - 2716 style pinout, 350 ns. max. access time

RAM REQUIREMENTS

2716 compatible pinout, 2Kx8 bit static ram, 350 ns. max. access time, 70 ma. max operating current

Operating System Modifications

For you people that are going to modify your operating system, I am going to list a few changes you may want to make. These changes are for the REV. A O.S. roms only. After using the B roms, I have decided to stay with the A version. The main reason for this is that the O.S. listing is availible for these.

First we will start with a one byte change at location E88E. The original value is 6, and this controls the time interval for the repeat function of the keyboard. By changing this location to 3, the cursor will move twice as fast for repeating charactors. This also means cursor movements using the control keys. This means faster editing of programs, because it is the O.S. it means twice the speed on any program, word processors, electronic spreadsheets, etc. You will really like this change.

Next we will attack the debounce feature. They must have thought we were a bunch of old women that couldn't lift our hands off the keyboard when this feature was implemented. At this time we will also shorten the time for the repeat feature to work. This will be a little harder though, we are going to have to change two bytes (I tried to keep it simple). First at location FFE3 change the 3 to a 1. This cuts the time by 2/3 but still operates with out any problems. Next, change the byte at location FFEC from HEX 30 to 10. This will allow the repeat key to operate a lot faster. Two seconds is a long time when your trying to move the cursor to edit something or just wanting to print a row of dashes. These three changes will approximately double the speed of the keyboard response time.

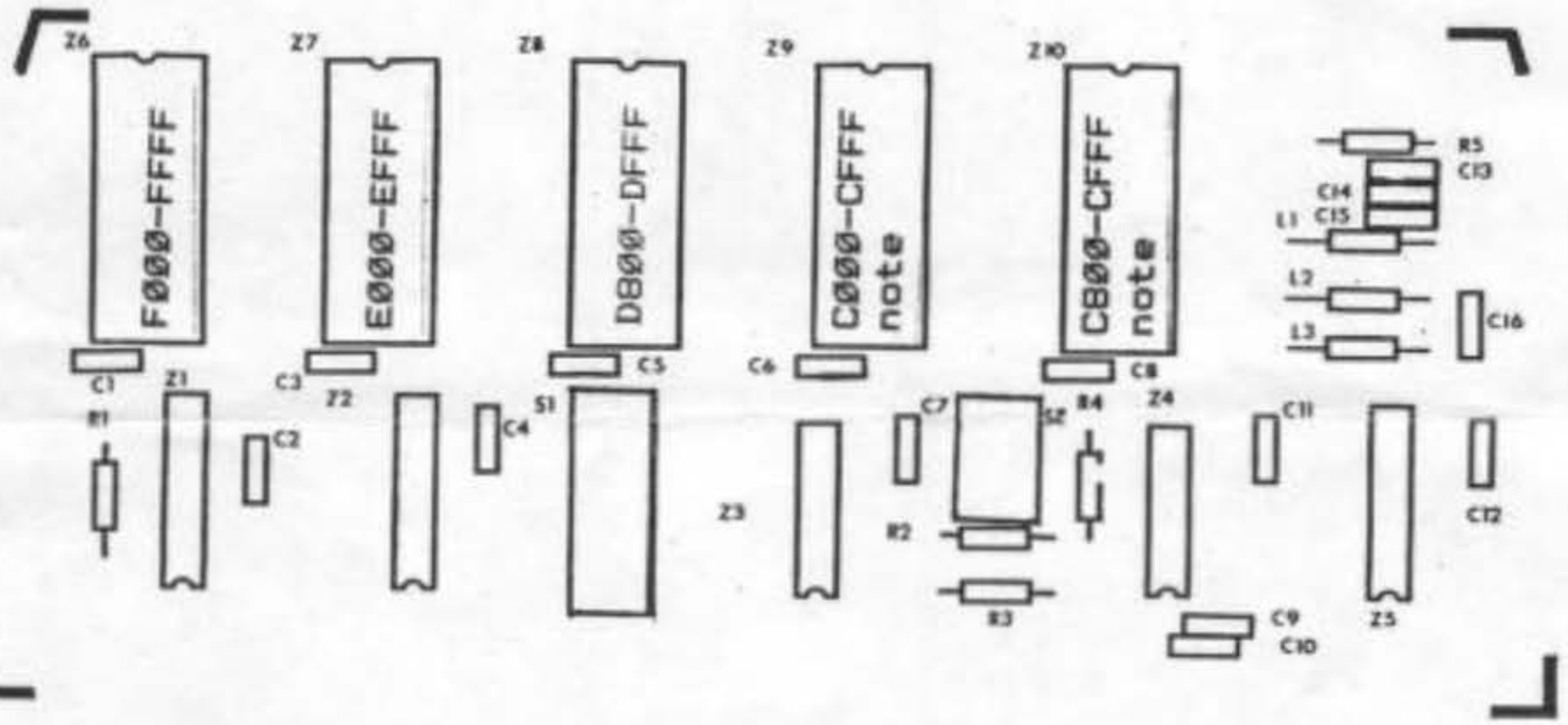
I don't know about you, but every time the warning bell sounds to let you know your nearing the end of the logical line, I just about have a heart attack. This is the reason for the next change. There are a couple of ways to shorten this. I took the one that will also shorten the click. At location FCD9, change the value from 7F to 3F. This will cut the bell (buzzer?Who knows?) time by more than 1/2. This still gives you plenty of time to quit typeing and you won't even jump out of your seat any more. This still allows for a click that you can hear when you hit a key. If you want to get rid of the click altogether, change the locations starting at F6FB from 20,D8,FC to EA,EA,EA. This NOPs the JSR to the click routine. With these changes, even the fastest typist shouldn't miss getting any keystrokes.

A few other simple changes are left margin default at location F174 (now 2), right margin at location F176 (now max at hex 27 [39]), default color tables starting at FEC1 thru FEC5, memo pad message starting at F0F3 thru F10B, boot error message starting at F10D thru F116.

These are some changes that may be helpful. If you have a patch that you would like to share with others, drop me a letter and I will pass it on.

Wes Newell

COMPONENT LAYOUT



NOTE: Socket Z9 can be addressed as C000-C7FF or C000-CFFF depending on setting of switch two.

FIGURE 1