

RAMROD XL FEATURES

OSNXL OPERATING SYSTEM

GRAPHICS MODES

Same as 800XL. (0-15)

CASSETTE INTERFACE

On power up the cassette baud rate is set to \$5CC (751=5, 750=204). On ALL cassette handler calls the baud rate used is what is in these locations.

By changing locations 750 & 751 (dec.) you can set the cassette baud rate to any desired rate wanted (see note).

EXAMPLE: POKE 751,2 from basic sets the baud rate to 1250.

POKE 751,4:POKE750,0 sets the rate to that used in OSN V4.

NOTE: We recommend only changing location 751. This will be easier to remember. A 2 in this location will give you a baud rate of about 1250. Even though the OS will support baud rates far above this, your cassette will not. The maximum we could get out of a standard cassette was 1525, and this will vary from one unit to the next. SYSTEM RESET will reset the baud rate to default.

KEYBOARD

The keyboard response has been doubled in speed, allowing faster cursor control and typing.

COMPATABILITY

OSNXL meets all operating system entry requirements, and as many OS subroutines as possible were kept with the same entry points as the Atari 400/800. All handler entry points are the same as the Atari 400/800 'B' OS. This allows compatability with almost all existing software for the 400/800.

FLOATING POINT ROUTINES

The RAMROD XL has included the FASTCHIP XL floating point routines in rom. This should give you about 4 times the speed of the original.

OMNIMONXL

A resident monitor with all the debugging tools needed for any application. See OMNIMONXL manual for further information.

OTHER OPERATING SYSTEMS

The RAMROD XL allows three complete operating systems on the board at the same time. A three position toggle switch is provided to bank within this 48K rom memory in 16K banks. It can use 27128 16K eeproms, or the Atari OS rom. In addition, a 16 pin pad (wired with +-5V, TTL compatible) is provided for those special applications you may have.

OMNIVEIWXL, an 80 column operating system is available for use in the RAMROD XL. (Requires video monitor for best performance)

RAMROD XL UPDATES

SOCKETS:

With the lowering of price of the 800 XL computers, it has been brought to our attention that some of the recently manufactured computers do not have sockets for some or all of the IC's. The chips are soldered directly to the board. If this is the case with your computer, you will have to remove the operating system (OS) chip to install the Ramrod XL. This should be done using a heat sink on the IC, and a solder sucker to remove the solder. After removal of the OS IC, you may either install a socket in which to install the Ramrod XL, or solder the Ramrod XL directly to the board. You will have better reliability soldering the Ramrod XL directly to the board, but you lose the flexibility of being able to remove it easily. In either case, this should be accomplished by someone with good soldering experience.

You may want to back up your XL OS. Contact Newell Industries for a backup copy, or use the information below to make your own backup.

THE XL OPERATING SYSTEM:

The XL OS chip contains 16K of read only memory (ROM), addressed in the rom from 0000-3FFF (hex). The OS is located as follows.

ROM ADDRESS	COMPUTER ADDRESS	FUNCTION
0000-0FFF	C000-CFFF	OS
1000-17FF	5000-57FF	Diagnostic (see note)
1800-1FFF	D800-DFFF	Floating Point Routines
2000-3FFF	E000-FFFF	OS

THE OSNXL OPERATING SYSTEM:

ROM ADDRESS	COMPUTER ADDRESS	FUNCTION
0000-0FFF	C000-CFFF	Omnimon
1000-17FF	5000-57FF	Omnimon (see note)
1800-1FFF	D800-DFFF	Fastchip Floating Point Routines
2000-3FFF	E000-FFFF	OS

NOTE: This portion of the rom is only visible to the computer when bit 7 of address \$D301 is 0. When this occurs, this portion of the OS rom is mapped over the ram at location \$5000.

COMPATABILITY PATCHES FOR OSN

Although OSN meets all OS entry requirements, there is at least one product that will not run with our OS. (There are a LOT more that won't run on the new computers). Believe it or not it is the old disk version of the Atari Word Processor. The reason for this is their use of two four byte tables in the OS. They broke their own rule in this case. If you use this product, we will give you the means to patch it so it will run with OSN and probably the new computers. This involves installing the tables in their code, and then changing their calls to the new locations within the code.

There is a message in the code that says "Insufficient Ram, 48K Minimum Required". We will replace the word 'Required' with the two 4 byte tables that we need (ATAINT,INTATA), and then change the references to point to our tables.

First, using OMNIMON! we must locate this address in memory. Boot the software and then enter Omnimon. Then search memory for "Required". Make a note of the address of the first 'e'. This will be where we will put the tables. Now that we know where to put them we can continue with our patch.

Using Omnimon, read the first 128 sectors of the disk into memory (R1 700 80). Search memory in char. mode for ' Required' (note the space). Once found, go to hex mode and replace it with 9B 9B 40 00 20 60 20 40 00 60. The 9B's at the start are for the end of message. Now in hex mode, search for references to FEF6 (S700 F6 FE) and FEFA (S700 FA FE). When located, replace these addresses with the new table addresses that you have made. The first table starts where you made note of the 'e'. For the second, just add 4 (in hex). Remember that all addresses referred to are in low,high order.(ei.192A would be installed as 2A 19).

Now all that is left to do is to write the sectors back to disk (W1 700 80). If all is done properly you will have a program that will run under all operating systems to date.

Several popular programs by Synapse have also used illegal points in the operating system. Of the ones we have encountered, most problems are keyboard repeat key functions. Rumor has it that Synapse will correct this problem if they receive enough complaints. For the time being, try searching the disk for the assembly code LDA \$022B, CMP #\$19. When found, change the \$19 to \$05. This will slow down the keyboard so you can use the program with OSN. Synfile by Synapse also does a LDA \$FCD8, CMP #\$A2 to determine if you are using an XL machine. To run on OSN change the \$A2 to \$A5, or replace their code with LDA \$F11B, CMP #\$78 to run on OSN and the standard OS.

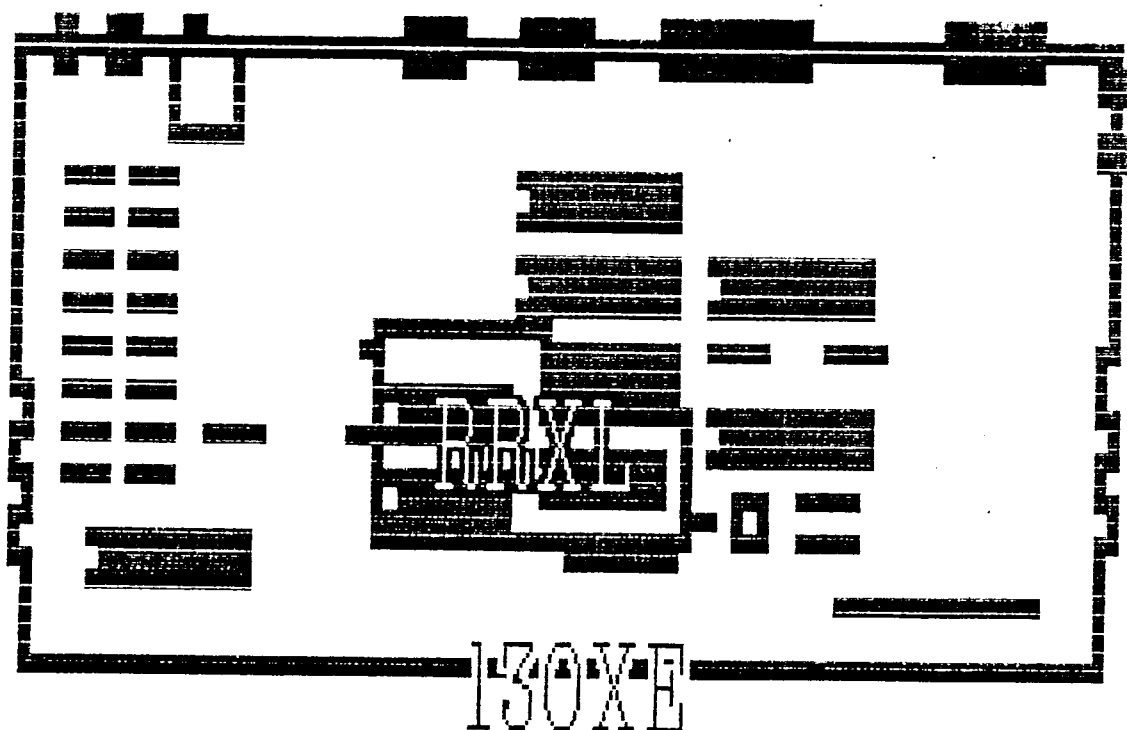
If you encounter a problem with some software that does not work with OSN, contact the software company that produced it. They have the source code, and should be able to help you. As stated earlier, OSN meets ALL operating systems rules. If you cannot get the software company to help you, we will try to locate the problem. Although without the source code, we cannot promise to find the problem.

Most illegal calls to the OS are done with a JSR or JMP instruction (JSR=\$20,JMP=\$4C), although any reference to \$E500-\$FFFF are illegal. If you have a program that doesn't run, searching for illegal calls may locate the problem. A popular autorun program uses a JSR to the OS (3 bytes) to INC \$09, RTS, also 3 bytes (makes a lot of sense doesn't it). If you have an XL and wonder why your autorun program doesn't work, guess what? Yes, replace the JSR with the proper code and it will work.

INSTALLATION INSTRUCTIONS RAMROD XL IN 130XE

Remove the four screws from the bottom of the computer. Turn the computer upright and lift the top cover off. Lift the keyboard up slowly and unplug from the motherboard. Remove the RF shield top half. This may have tabs or screws. Remove the screws securing the motherboard to the bottom case and lift the motherboard out of the case. Locate the 28 pin operating system chip (there is only one 28 pin chip) close to the center of the motherboard. Unsolder and remove this chip using caution not to damage it. (This should be done by someone that has soldering experience) Install the RAMROD XL board into the now empty 28 pin pad on the motherboard and solder. You may want to trim the excess socket pins off of the bottom of the RAMROD XL board. DO NOT trim the header leads. The RAMROD XL board should be installed so that the reverse 'L' is facing the rear of the computer. If desired, install the XE OS chip in one of the sockets of the RAMROD XL board. The notch in the chip should face the left side of the computer. The RAMROD XL board should fit as far into the motherboard as possible to allow clearance for the RF shield. If the 40 pin IC beside the OS is in a socket, then you must remove this socket and solder this IC directly to the motherboard for the Ramrod XL to have clearance to mount directly to the motherboard. You may use a socket to install The Ramrod XL, but the clearance between the top of the Ramrod XL and the RF shield will be critical and we do not recomend this method.

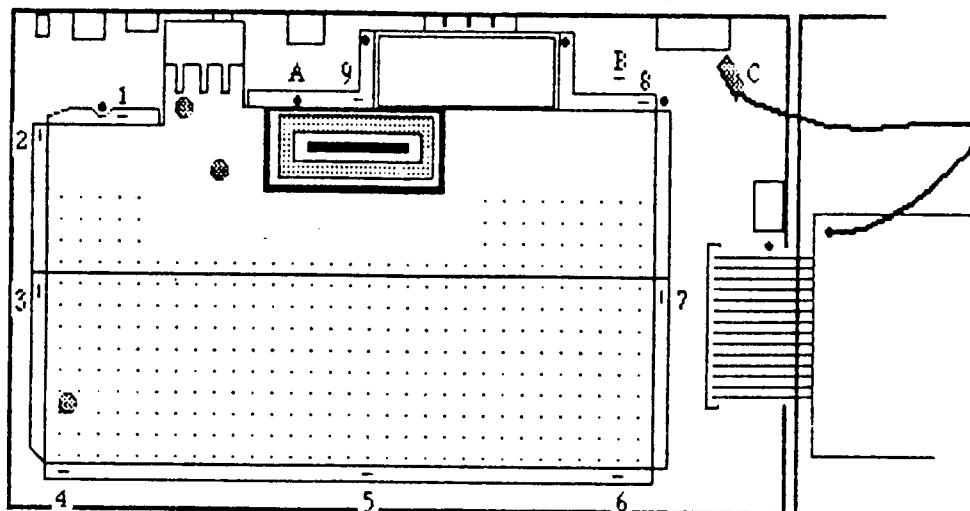
Before reinstalling the motherboard, using a suitable tool, cut or break off the plastic post that would protrude through the motherboard and hit the RAMROD XL. Although this looks to be a support for the keyboard, you will notice that it does not support anything. Determine where to mount the switch and drill a suitable hole for it. Make sure that the cable will reach the location you have choosen once the RF shield is in place. Assemble the computer and test.



RAMROD-XL Installation Instructions

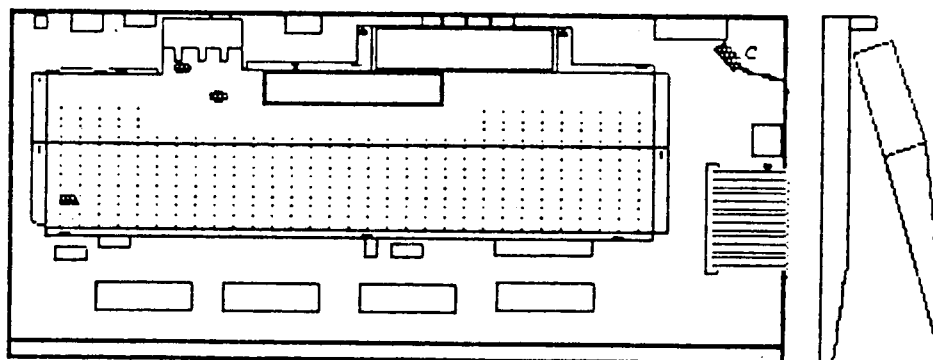
Tools Required: Crosspoint screwdriver, flat blade screwdriver, pliers, drill

- 1) Turn the computer upside down and remove the six crosspoint screws holding the case together.
- 2) Turn the computer upright and lift the top half of the case from the left, pivoting on the right edge, and lay it upside down to the right of the bottom half as shown below. You will need to pull off the spadelug connector C from B, but leave the keyboard cable connected for now.

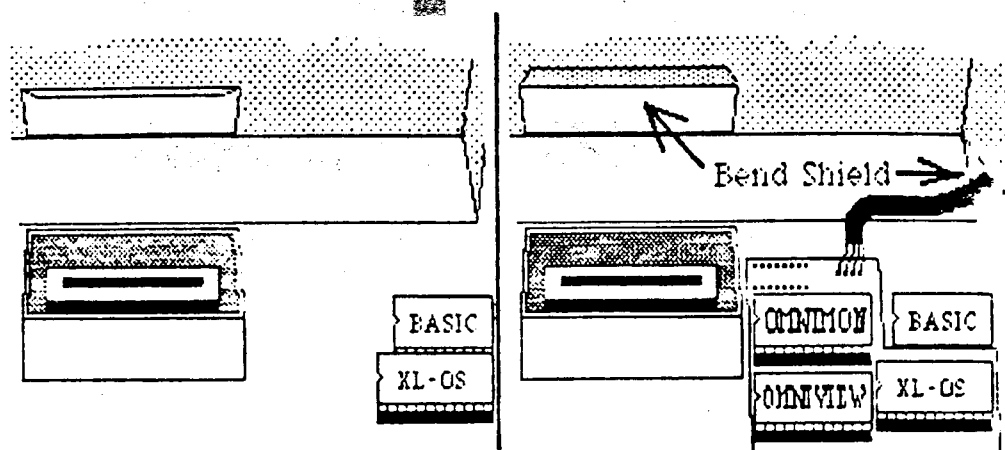


- 3) Now we wish to gain access to the area underneath the metal shield. If your computer has a single screw (A) and tabs around the edge (1-9) holding the shield down, go to 3A. If there are screws (with nuts) holding the shield down, go to 3B.

3A) Simply remove the screw and straighten the tabs so that you can lift the shield from the front, pivoting about 30 degrees on the remaining two screws at the back. This will bend the two metal tabs at the back slightly but this is of little consequence (see diagram below). Go to step 4.



- 3B) You will need to remove the motherboard from the bottom half of the case. In this case you will probably want to disconnect the keyboard cable by gently pulling it out of the connector on the motherboard. Remove the remaining screws holding the motherboard to the case (near 1, near 8 and between the joystick ports) and remove it by lifting from the left side and prying the case around the joystick ports on the right. It is a tight fit but it should pop out. Once the motherboard is free, you can remove the nuts and screws holding the shield to the motherboard. It is recommended that you leave the two at the back on either side of the expansion port. In this way you can lift the shield from the front to about a 30 degree angle, bending the back tabs slightly (see the diagram above).
- 4) Now you will need to modify the shield slightly. Refer to the diagram at the top of the next page while doing these modifications. First, use broad pliers (not needle nose) to bend the flap at the front of the cartridge slot up flat against the underside of the shield. This flap will otherwise interfere with the RAMROD-XL. Next, bend out the right side toward the back to create a 1/4 inch gap. You can do this easily with your fingers.



- 5) Now you are ready to install the RAMROD-XL. Refer to the diagram above. First locate the XL-OS chip, a 28 pin chip about 2 inches to the right of the cartridge slot. Remove it by inserting the flat screwdriver between the chip and the socket and gently prying and rotating the screwdriver.
- 6) Insert the XL-OS chip you just removed into the RAMROD-XL board in the indicated socket. **Make careful note of the orientation of the chip, otherwise you may burn it up!**
- 7) If you purchased OMNIVIEW also, plug it into the indicated socket if it is not already there.
- 8) Plug the RAMROD-XL into the empty OS socket as indicated in the diagram above. Route the cable through the gap in the corner of the shield.
- 9) If you wish, you can do a preliminary test by applying power to the motherboard. With the RAMROD-XL switch in the center position, the screen should come up with the READY prompt of BASIC. If this does not work, check to see that the RAMROD-XL board is seated well in the socket on the OS board.
- 10) Reinstall the shield by securing it to the motherboard with the metal tabs and/or screws.
- 11) If you had to remove the motherboard from the bottom of the case, pop it back into place and secure it with the screws. Likewise, carefully insert the keyboard cable back into the connector on the motherboard by using both hands to gently push it in.
- 12) You will probably want to mount the switch in the back righthand corner of the case just to the right of the peripheral connector. Drill an appropriate size hole and mount the switch.
- 13) Complete the installation by resealing the top of the case with the six screws.

Testing the RAMROD-XL

- 1) Power up the computer with the RAMROD-XL switch in the center position. If you do not get a READY prompt then go back and check the installation. Otherwise, hold down SELECT and press RESET. This should take you into OMNIMONXL indicating the OSNXL/OMNIMONXL is active.
- 2) Flip the toggle switch to another position and press RESET. If you get a READY prompt, type 'B.(RETURN)'. This should take you into the diagnostic routines of OSXL. Otherwise, this position should yield a blank screen (if that socket is blank) or the memo pad (if that socket has OSNXL/OMNIVIEW).
- 3) Once you have determined which switch position corresponds to which OS, you might want to label these positions next to the switch.

For the operation of OMNIMONXL and OMNIVIEWXL, refer to their user's manuals. It should be noted that all three sockets of RAMROD-XL are identical, so that any OS could go in any socket. Also, there are pads for a 16 pin IC for you hackers to do with what you want. If you have any questions or encounter problems during the installation, call Newell Industries at 214-442-6612 (no collect calls accepted) and we will be glad to assist you.