1992-1995 WIZZTRONICS
PO Box 122 Port Jefferson Station, New York 11776
516-473-2507

COMPATIBILITY PLUS II

TOS 2.06 UPGRADE WITH DUAL TOS OPTION

INSTALLATION MANUAL

Features & Specifications:

- Expands ROM space from 192k to 256k
- Custom integrated circuit MMU
- Machine pin sockets
- Multi-Layered PC Boards
- Handles Dual TOS Operation with the addition of a switch and two wires

WIZZTRONICS
We Specialize in new Innovations in Electronics and Software
P.O. BOX 122 - PORT JEFF. STA., 11776
(516) 473-2507

MODEL # 923008B

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SECTION 4: Owner Registration and Special Notes:

Please fill out the enclosed registration card so that we can inform you of future products and updates your serial number which is located on the top side of the circuit board. Please write it down for future use.

Disclaimer: As with most upgrades, we can only warranty the product against defects in material and workmanship not the installation. It is up to the end user to assure this is performed according to our instructions. Although this and every product we manufacture has been tested in many revisions of mother boards there is always a possibility that something may go wrong. We hope that you will follow the instructions carefully to assure a trouble free installation.

WARNING: By opening your computer and installing this upgrade you are voiding your manufacture's warranty if you have any questions please call your local authorized Atari center.

The compatibility Plus II should fit nicely in every machine with little or no modifications, if you should experience any problems we would like to hear from you. The total installation should take 35 to 60 minutes.

Some Computers may require the addition of an extra 64 pin, machine pin socket. This is due to interference with the Glue Chips orientation. This is most common on 520FM and 1040FM series computers as shown in figure 1.2
If you find your computer needs this additional socket, it may be purchased through any local electronics dealer or directly from Wizztronics.

CONTENTS

SECTION 1: OVERVIEW and INSTALLATION....1
1. Foreword....1
2. CONTENTS....1
3. INSTALLATION....1
4. OVERVIEW....2
5. Tools Required....2
6. THE INSTALLATION....2
Figure 1.1 Typical 520 ST....A1
Figure 1.2 Typical 1040 ST....A1
Figure 1.3 Typical 520STFM/1040STFM....A1
Figure 1.4 Typical Mega ST Series....A1
6.1 SWITCH OPTION....4
SECTION 2: TOS 2.06 FEATURES....6
1. The Boot Process....6
1.1 The DESKTOP....6
1.1.1 The Menu Bar....6
1.1.2 DESK....6
2. File....6
2.1.0 OPEN....6
2.1.1 SHOW INFO....6
2.1.2 DELETE ITEM....7
2.1.3 CREATE FOLDER....7
2.1.4 CLOSE DIRECTORY....7
2.1.5 CLOSE TOP WINDOW....7
2.1.6 BOTTOM to TOP....8
2.1.7 SELECT ALL ITEMS....8
2.1.8 SET FILE MASK....8
2.1.9 FORMAT FLOPPY DISK....8
2.2.0 VIEW....8
3. OPTIONS....8
3.1.0 INSTALL ICON....8
3.1.1 INSTALL APPLICATION....8
3.1.2 INSTALL DEVICES....9
3.1.3 REMOVE DESKTOP ICON....9
3.1.4 SETTING PREFERENCES....9
3.1.5 READ .INF FILE....9
3.1.6 DESKTOP CONFIGURATION....9
3.1.7 PRINT SCREEN....9
3.1.8 BLITTER....9
4. OTHER CHANGES....9
SECTION 3: WARRANTY....10
SECTION 4: Owner Registration and Special Notes:....11

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SECTION 1: OVERVIEW and INSTALLATION

1. Foreword

Atari initially released the ST series computer with TOS 1.00, and TOS 1.02 these versions of TOS where very slow and filled with bugs. Atari then released TOS 1.04 in 1988 and many enthusiasts wished to get this superior Operating System into their Computers. Wizztronics then released COMPATIBILITY PLUS this allowed users the option of choosing between two TOS versions, provided they were 6 chip sets using (192k) . This insured maximum compatibility, while allowing the user to gain the speed and feature enhancements of TOS 1.04 under normal use and yet retain the ability of keeping their older TOS for programs written for the old code. Atari continued to develop new versions of TOS, one for the TT and one for the Mega STe, unfortunately these new versions require more memory than allotted on the old ST series computers. Wizztronics is continuing its dedication to the loyal ATARI enthusiast with the introduction of COMPATIBILITY PLUS II. This plug in device requires only one jumper wire and allows older ST's to use the new TOS 2.06 and maps the full 256k now present in the newer machines. COMPATIBILITY PLUS II also gives the user the option of retaining the use of the older TOS for maximum compatibility with older software !

2. CONTENTS

- **Compatibility Plus II circuit board**
- **68000 Microprocessor included on your new Compatibility Plus II**
- ***TOS 2.06 (optional)***
- **A disk containing the new Control Panel and Desktop Icons**

check the read-me file for file additions and updates

- **Users manual**

Warranty REGISTRATION card

3. INSTALLATION

This product requires some de-soldering and soldering to install. Please read the entire installation portion of the manual before attempting work. If you are not sure you can install this product please seek the help of an experienced friend or your local ATARI dealer. Installation is available through Wizztronics for a nominal fee of $ 50.00 plus shipping and insurance. All Computers will be returned via UPS.

SECTION 3: WARRANTY

Wizztronics warrants this product, which shall be free from defects in material and workmanship for a period of 90 Days from date of purchase from your local dealer. Should this product fail to be in good working order at any time during this 90 Day period, **Wizztronics** will, at it's option, repair or replace this product at no additional charge subject to **Wizztronics** determination that the product is defective. This limited warranty does not apply to product which has been subject to accident, disaster, misuse, abuse, or improper installation. Limited warranty service may be obtained by delivering the product during the 90 day warranty period to **Wizztronics** and providing proof of purchase date. If product is delivered by mail, you agree to insure product or assume the risk of loss or damage in transit and to prepay shipping charges. All express and applied warranties for this product including warranties of merchant ability and fitness for a particular purpose, are limited in duration to a period of 90 day's from date of purchase, and no warranties whether expressed or implied will apply after this period. Some states do not allow how long an implied warranty lasts, so above limitations may not apply to you. If this product is not in good working order as warranted above, your sole remedy shall be repair or replacement as provided above. In no event will **Wizztronics** be liable to you for any damages including loss of profits, lost savings, or other incidental or consequential damages arising out of the use or inability to use such product, even if **Wizztronics** has been advised of the possibilities of such damages or for any claim by any other party. Some states do not allow exclusion or limitation of incidental or consequential damages for consumer products, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state. If you suspect a failure, please read the troubleshooting guide first. If there is still a problem, please call our technical support staff at ***516-473-2507 between 9:30 AM and 4:30 PM EST.*** Please have your serial number, computer model number, and place of purchase ready. **Without this information we cannot help you.**

3.1.2 INSTALL DEVICES

This is a function new to TOS 2.06 it will place a disk drive icon for all available drive. Earlier versions of TOS each drive had to be installed individually. Any drive that you wish to be hidden, can be deleted using "remove desktop icon"

3.1.3 REMOVE DESKTOP ICON

This command removes an icon from the desktop. The item can be dragged to the trash can, or selected then choose remove desktop icon.

3.1.4 SETTING PREFERENCES

Same as in earlier TOS

3.1.5 READ .INF FILE

TOS 2.06 allows you to have many desktop configurations. It will load the configuration file of your choice. To use this option, create a desktop, save it then copy the NEWDESK.INF file to a new name. This can be done to create a library of desktops. Then just select the file you wish to use.

3.1.6 DESKTOP CONFIGURATION

Allows assigning of keyboard equivalent to most items and viewing function key assignments. You can set a default directory which affects all programs not already configured. This will also display the amount of free ram.

3.1.7 PRINT SCREEN

This does a hard copy of the screen using ALTERNATE-HELP it is for 9 pin Epson compatible printers. If you are using a 24 pin printer or a non Epson compatible printer you must get the appropriate driver.

3.1.8 BLITTER

This option will only appear if the BLITTER chip is found. This allows turning of the BLITTER on and off.

4. OTHER CHANGES

There are many changes to TOS that are not that obvious. Many routines have been re-written to increase speed and efficiency and many bugs have been fixed. Since the early days TOS had a MAJOR bug with its hard disk partition, it was designed for a 32 megabyte partition but it only worked with 16 megabyte partitions. This problem has been corrected with TOS 2.06. If you create a 32 megabyte partition and also choose to use TOS before TOS 2.06 YOU MUST NOT WRITE TO THE DRIVE. This will destroy all your data! There is a SHARE-WARE program available that can check for this and lock the drive to read only when operating under older TOS.

4. OVERVIEW

COMPATIBILITY PLUS II assumes the task of providing the address space required by TOS 2.06. The original Rom's occupied only 192k while TOS 2.06 requires 256k this is accomplished by means of our custom MMU. The new TOS Rom's occupy the two (2) sockets on the underside of the provided circuit board. The preferred method of installation is to remove the 68000. However a piggy-back installation is possible if you so desire. The dual TOS option is available with some additional wiring and a user supplied SPST (Single Pole Single Throw) toggle switch. The needed circuitry is included on the PC board. This product is made on the finest multi-layer PC boards available, to insure durability and reliability for years to come. This is currently not found in similar products.

5. Tools Required

To complete a successful installation of COMPATIBILITY PLUS II you will need the following:

- NEEDLE NOSE PLIERS
- LOW POWERED SOLDERING IRON
- ROSIN CORE SOLDER
- DIAGONAL CUTTER (WIRE CUTTER)
- IC EXTRACTION TOOL or a SMALL FLAT BLADE SCREWDRIVER
- SMALL PHILIPS HEAD SCREWDRIVER

One of the following:

- **DE-SOLDERING IRON**
- **SOLDER WICK**
- **SOLDER SUCKER**

6. THE INSTALLATION

1: Remove all cables and disks from computer, (especially the power cable).

2: Place computer face down on a flat surface. Locate and remove the screws holding the computers cover on. These screws are in square holes with rounded corners. Most machines have seven (7) screws, the Mega has nine (9). On computers with internal drives there will be three screws holding the disk drive in place, do not remove them at this time.

3: Turn computer face up and remove cover. If your machine has an internal disk drive, take care while removing the cover as not to damage the plastic case during it's removal.

4: On the Mega ST series computers disconnect the battery. All other computers have a built in keyboard that must be removed. Carefully remove connector and place keyboard aside, taking note of the connectors orientation.

5: Remove all screws holding the metal shield and bend the metal tabs straight with a pliers.

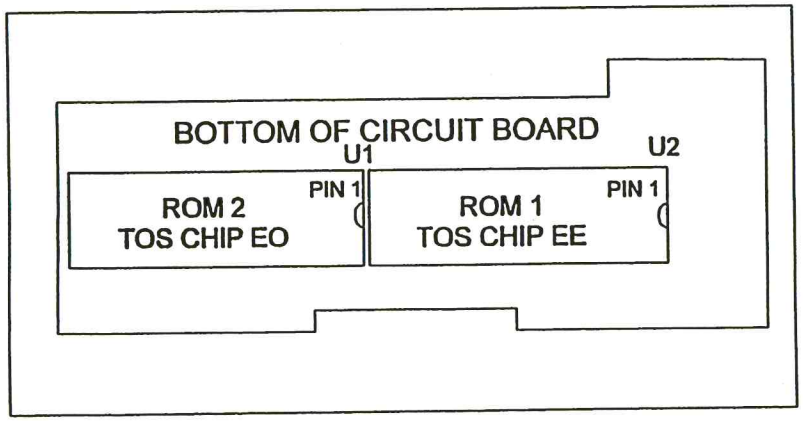
6: If present, loosen and remove your disk drive and power supply (be careful, the power supply may still have some voltage left in it) Remove the computer's mother board from its case. Remove the shield and identify your computer type from the drawings provided. Locate ROMs (either 2 or 6) and the 68000 CPU.

7: If you do not wish to use the older versions of TOS they may be removed and discarded at this time. If you wish to maintain use of the older ROMs only remove the following (keep track of where the ROMs came from, they will be re-seated later). On Mega ST, computers remove U9 (HI0) and U10 (LO0), on early 520 ST computers remove U7 (LO0) and U4 (HI0), on 1040ST design 1 U4 (HI0) and U7 (LO0), and on 1040ST design 2 and late 520STFM u63 (HI0) and U67 (LO0). Refer to figures 1.1 through 1.4

8a: REMOVAL of 68000
It is now time to remove the 68000. You can de-solder the 68000 like any other chip with a de-soldering station, or the easier method is to cut all the legs on the 68000 with a small diagonal cutter then remove each pin one at a time (don't worry we supply you with a new 68000). Make sure all holes are clean and no solder is present (do not heat the circuit board too much or damage may result).
NOTE: MODEL # WT92XXXXX.XXX XXX DENOTES REPLACEMENT CPU

8b: Piggy Back Method
If you desire, although it is not recommend, you may solder the entire assembly on top of your existing 68000. Please make sure you have enough room to close your machine when finished. Some ST computer have very limited space inside. Remove the supplied 68000 microprocessor from the socket on top of the compatibility plus II board and simply solder the 64 pins of the assembly to your existing processor, the rest of the installation remains the same.

9: Place new TOS 2.06 ROMs in COMPATIBILITY PLUS II board, making sure to insert them fully (located on the lower side). If your purchase included ROMs, they will already be installed for you. ROM EE goes in the socket labeled ROM 1 and E0 goes in the socket labeled ROM 2. Be sure that pin 1 orientation is correct. See illustration below.



2.1.6 BOTTOM to TOP

This is a new addition, it allows cycling of windows. The bottom window becomes the top even if window is totally hidden.

2.1.7 SELECT ALL ITEMS

Selects all items in current window.

2.1.8 SET FILE MASK

This option selects which files will be shown in current directory. For example *.txt will display all files with the extension TXT. Folders are unaffected and will always be displayed.

2.1.9 FORMAT FLOPPY DISK

Allows formatting of a floppy. TOS 2.06 now supports high density drives. This choice will only be visible if a high density drive with the proper driver is installed.

2.2.0 VIEW

TOS 2.06 has only 2 changes under this heading. The first option "SIZE TO FIT" arranges icons so the scrolling the window right and left is unnecessary. This also works with text but it only evident with the higher resolution screens. The second change is "SET COLOR and STYLE" this allows the background color and background pattern to be changed.

3. OPTIONS

3.1.0 INSTALL ICON

TOS 2.06 allows all files, folders, drives, printer and trash can to be assigned a different icon. Icons can be assigned to a single file, folder or even a group. For example an icon can be chosen to show only text files from a particular drive. To do so select the filename *.txt and the choose install icon and select an appropriate icon. Now when you open this icon a list of text files will be shown. The install icon function can work on groups of icons also. The desktop will step you through each highlighted item. You can also skip any you do not wish to alter. For changes to remain in effect you must save the desktop otherwise your changes will be lost when you power down.

3.1.1 INSTALL APPLICATION

TOS 2.06 allows 20 executable programs to be assigned to the function keys. Selections 11 to 20 must be chosen while holding the shift key and the appropriate function key. This is not the only change to install application. TOS 2.06 now allows gem based programs to be installed as well. Under older versions of TOS only TOS applications could be installed. There is also the option of selecting one application to boot at each startup, by selecting the auto option in the dialog box. Making an "auto" choice will cancel any other application enabled as auto.

Certain keys can modify mouse operations they are as follows:

♦ ALTERNATE key while double clicking a folder opens a window for this folder.

♦ ALTERNATE key while copying allows renaming of files during operation.

♦ CONTROL key while dragging will move items instead of copying them.

♦ CONTROL and ALTERNATE while dragging allow moving of files with renaming of files.

1.1.1 The Menu Bar

The desktop will display the familiar headings DESK, FILE, VIEW, And OPTIONS.

1.1.2 DESK

This item remains relatively unchanged. The copyright statement is located under DESKTOP INFO. There is still room for 6 desk accessories.

2. File

2.1.0 OPEN

This option now allows the entering of a filename if no selection was made prior to selecting it. The full path must be specified. If open was done on an ASCII file you can display it. RETURN advances one line, the "D" key allows half a screen advance, the spacebar advances one screen. and the "Q", control-C or right mouse will abort.

2.1.1 SHOW INFO

This function has bee modified to allow an action on more than one item. This will proceed in order with the ability to skip a selection. Any file set as read only will be preceded by a small triangle when the desktop displays files as text.

2.1.2 DELETE ITEM

This allows files to be deleted and Icons to be removed from the desktop.

2.1.3 CREATE FOLDER

This item unchanged. Used to create new folders.

2.1.4 CLOSE DIRECTORY

This has the same effect as hitting the close button on a window. If this is the top directory window will be closed otherwise operation will move up one directory.

2.1.5 CLOSE TOP WINDOW

This closes topmost window.

10: Insert the COMPATIBILITY PLUS II module into, the now vacant 68000 slot, and solder it in (don't worry, you will be able to remove the module if you desire). The part you are soldering is actually a very special two piece socket which requires that it be installed in this manner, this makes for an easier installation than if installed separately.

11: Run the supplied jumper wire attached to pad RE of the Compatibility Plus Board to pin 20 of the ROM socket of your mother board (U9 for Mega, U4 for old 520ST and design 1 1040 ST's and U63 on the latest 520 and 1040 FM series). Please refer to illustrations provided.

12: Bend up pins 20 and 22 on the two (2) removed Rom's,(see Note 1) measure 2 lengths of wire long enough to connect the following pins, when they are re-seated in their respective sockets, pin 20 of one ROM to pin 20 of the other, and for pin 22 of one ROM to pin 22 of the other. Solder in a SPST switch using 2 pieces of wire to the pads on the COMPATIBILITY PLUS II circuit board labeled GND and SW making sure you leave enough wire to adequately mount the switch. Install the original Rom's back into there original sockets making sure pin 20 (now bent up) on the Rom's do not touch the already installed jumper wire. Install a jumper wire from pin 22 of each of the Rom's (already connected) to a convenient ground location. Measure a length of wire from the Compatibility Plus II board labeled OT to the reinstalled Rom's and solder in place to pin 20 of the Rom's (already connected). When the switch is open the new TOS is active, when the switch is closed the old TOS is active.

13: FINISHING UP: Reverse Disassembly Procedure

Replace shield on mother board, bend tabs, reinstall mother board in computer and screw in place. Re-install disk drive and power supply making sure to plug in connectors. Connect keyboard. Your ready for a test. Plug in power, monitor and disk drive and check things out. Turn on the power switch, boot computer with TOS switch in the open position (if present) and computer should boot TOS 2.06. The computer will display the ATARI logo and begin a memory test. NOTE: A disk drive must be present under TOS 2.06 or 💣💣💣💣bombs will appear. A memory test will show all available ST memory, then a shrinking bar from right to left, and finally the desk top. The next step is to test the function of the old TOS (if present). Flip the TOS switch to the other (closed) position and hit reset or power down and back up again (the other TOS only becomes active upon a RESET). This is to prevent accidentally switching TOS and crashing the machine. If all looks good, close up your computer and enjoy the benefits, otherwise recheck your connections. If you have any questions you can call WIZZTRONICS at 516-473-2507, Monday through Friday 9:30 am to 6:30 PM Eastern Standard Time.

NOTE 1 If the computer you are installing the Dual TOS option in, has only a Two Rom set, omit the pin 22 to ground connection as shown in figure on following page.

INSTALLATION AID DIAGRAMS:

Figure 1.1 Typical 520 ST

Figure 1.2 Typical 1040 ST

Figure 1.3 Typical 520STFM/1040STFM

Figure 1.4 Typical Mega ST Series

DIAGRAMS INCLUDED:

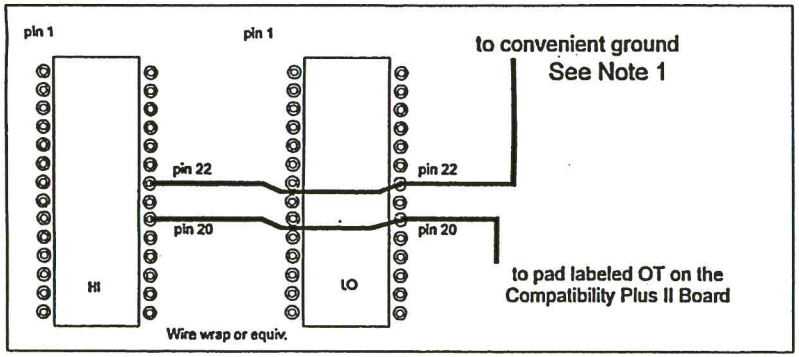
Special Note(s):

This upgrade should be performed by an experienced individual of a authorized repair center, if you feel uncomfortable opening your computer and performing this upgrade, Wizztronics can perform this upgrade for you at a cost of $50.00 plus shipping and insurance. Call us for information.

Although the Compatibility Plus II board is a low-profile design, some 520ST FM's and 1040ST's as shown in figure 1.3, may require minor RF shield modifications, due to space limitations toward the front of the computer.

6.1 SWITCH OPTION

This step only for older TOS compatibility!
see Illustration below.



SECTION 2: TOS 2.06 FEATURES

There are many changes and additions to TOS 2.06 compared to earlier versions of TOS. The new boot process and changes in the desktop will be highlighted.

1. The Boot Process.

TOS 2.06 does much more than earlier versions of TOS on a boot. The first thing you will notice a ATARI logo will be displayed and a memory test is performed. A CRC is done on the Rom's ensuring they are correct. If you see a message CRC error in ROM E or ROM O, there is a defective ROM present, contact your ROM supplier. If it was purchased from Wizztronics, call for a replacement. The computer proceeds to check all of ram, this test can be skipped by pressing any key. After the ram test, TOS 2.06 will draw another bar on the screen, it will begin to shrink from the right to left. This is the HARD DISK BOOT DELAY. This was meant to allow hard drives time to come up to speed, allowing you to now turn your system on at one time instead of hard-drive first as in previous TOS versions. If no action is taken, the delay is about 90 seconds, however by pressing any key this wait is avoided. Atari has put in two other useful features. The first being, the ability to boot the hard drive without loading programs in the AUTO folder or DESKTOP ACCESSORIES. This is accomplished by holding the CONTROL key while the computer is booting. This is extremely useful in the event of a bad desktop accessory or program that stops the computer during the boot process. The hard disk boot can be bypassed entirely by holding the LEFT SHIFT, CONTROL, and ALTERNATE keys simultaneously. TOS will still boot the AUTO folder on the floppy.

1.1 The DESKTOP

Atari has put many additions into the desktop. The new desktop is also much faster than older TOS including TOS 1.04. This will be quite evident in scrolling options. The new desktop increases the amount of open windows from 4 to 7 and gives the ST the look of the TT machines. An object can be represented as an ICON on the desktop. Files, folders, drives, and other devices, can all be assigned different icons on the desktop. The icons are located in the file DESKICON.INF, this file contains many icons. If you need a new icon the file can be modified with RESOURCE CONSTRUCTION SET and several other commercial products. The file NEWDESK.INF is the equivalent of DESKTOP.INF in older TOS. This file contains all the users default settings. If NEWDESK.INF is not found it will search for DESKTOP.INF. The new desktop also allows the assigning of keys to functions. There are several pre-defined in the new TOS. These are:

ALTERNATE-1	Switch to Low Resolution
ALTERNATE-2	Switch to MED Resolution
ALTERNATE-3	Switch to High Resolution
CONTROL-[A-P]	Directory of drive [A-P] in current window
ALTERNATE-[A-P]	Directory of drive [A-P] in new window
HELP	Overview of macros
UNDO	Abort current file operation
ARROW KEYS	Scroll window
SHIFT ARROW KEYS	Page window
>	ASCII dump of window

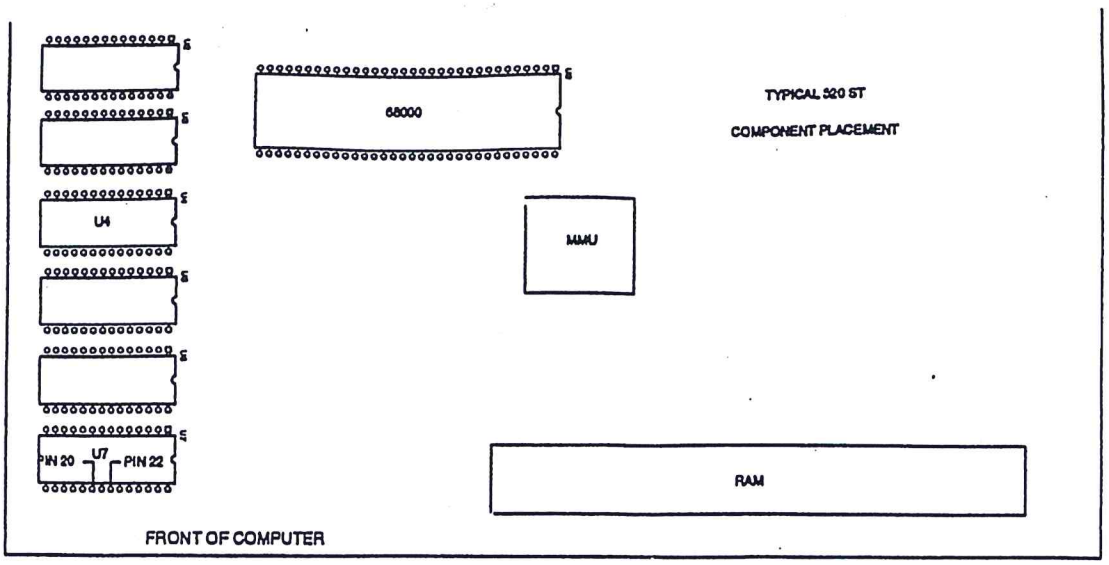


FIG 1.1

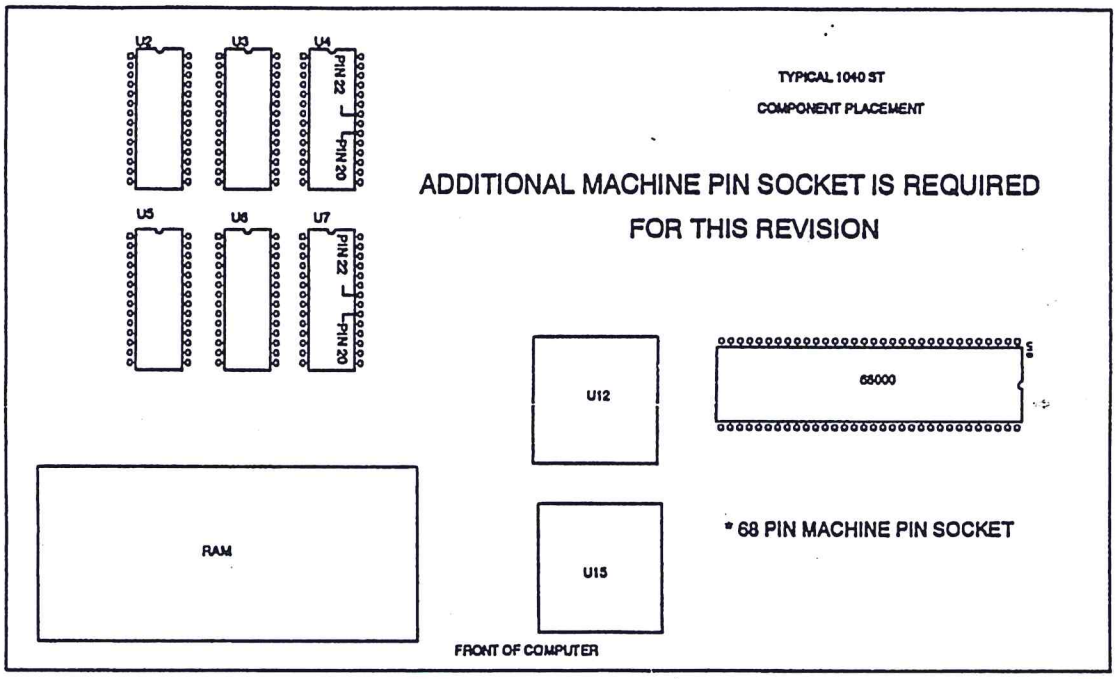


FIG 1.2

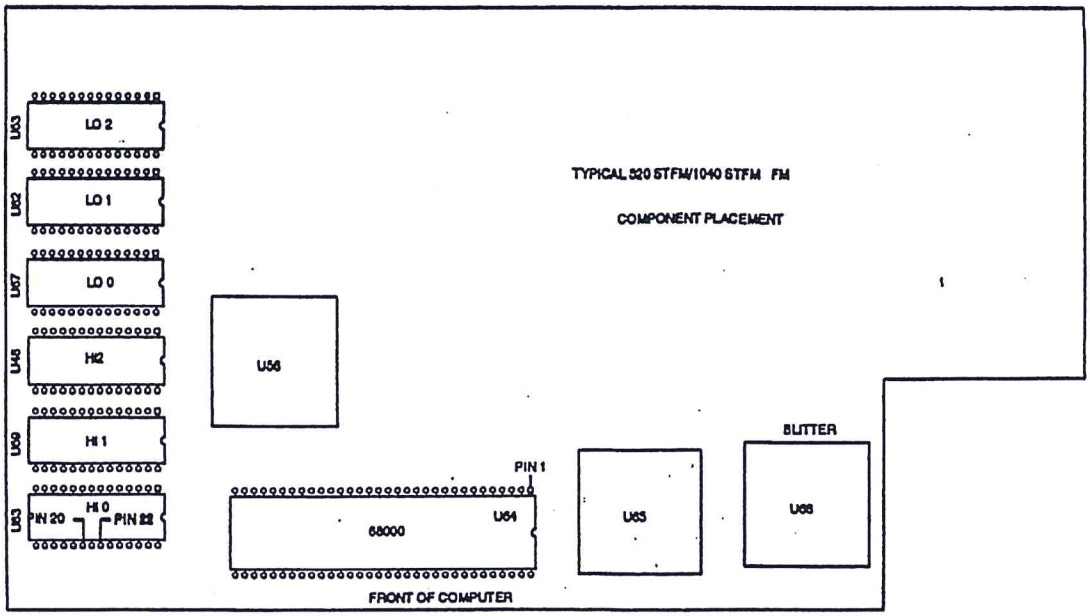


FIG 1.3

LINE DRAWING BY WIZZTRONICS

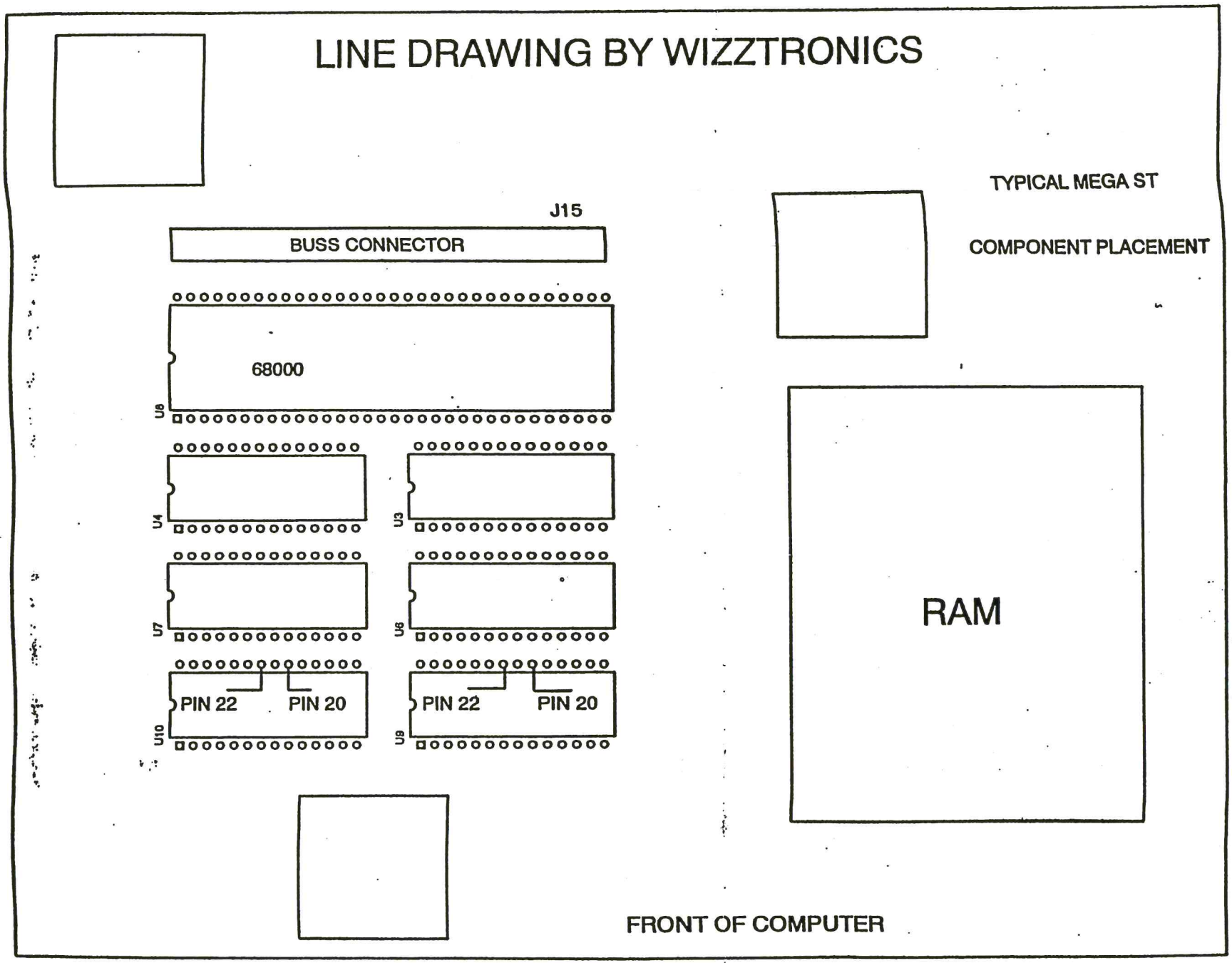

LINE DRAWING BY WIZZTRONICS
TYPICAL MEGA ST
COMPONENT PLACEMENT
J15
BUSS CONNECTOR
68000
U6
U4
U3
U7
U8
U10
U9
PIN 22
PIN 20
PIN 22
PIN 20
RAM
FRONT OF COMPUTER

FIG 1.4