HAPPY 1050 CONTROLLER

INSTALLATION & USAGE INSTRUCTIONS

HIGH QUALITY PRINTED CIRCUIT BOARD

The installation requires some modification to the plastic case on the Atari 1050 disk drive.

ONLY FOR ATARI 1050 DISK DRIVES THAT ALREADY HAVE THE HAPPY COMPUTERS MANUFACTURED 1050 ENHANCEMENT INSTALLED

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revision: October 1985

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WARNING

This 1050 CONTROLLER should only be installed by a person familiar in working with hand tools, integrated circuits, and electronic machine disassembly and assembly. Installation should not be attempted by a beginner. Please read the warranty and instructions before beginning.

Installation of this HARDWARE in your 1050 DISK DRIVE MAY VOID YOUR WARRANTY!

Read the instructions completely before performing the work. If you do not feel comfortable in doing the installation yourself, then have a competent electronic technician do it for you. Make sure the technician reads the instructions first! Please contact HAPPY COMPUTERS for installation questions or factory installation. Although HAPPY COMPUTERS has made an effort to provide accurate information in these instructions HAPPY COMPUTERS assumes no liability concerning the accuracy of these instructions. These instructions are subject to change without notice.

LIMITED WARRANTY
HAPPY 1050 CONTROLLER GUARANTEE

HAPPY COMPUTERS guarantees the HAPPY 1050 CONTROLLER in the following ways with the listed conditions and exclusions.

1) The performance of the disk drive with the HAPPY 1050 CONTROLLER installed will change as per the information contained in HAPPY COMPUTERS' literature.

2) The HAPPY 1050 CONTROLLER board and attached cable assembly is guaranteed to be free from defects in materials and workmanship for a period of ninety days from the date of purchase. During this ninety day period HAPPY COMPUTERS will repair defects in materials and workmanship of the HAPPY 1050 CONTROLLER board and provide standard carrier return shipment with a handling charge of $10.00 USA dollars for those boards shipped back to an address within the United States, or $15.00 for those boards shipped to an address outside the United States. You must pay this handling charge with the unit, when sending the unit, in USA dollars, payable through a USA bank, and your form of payment must have the MICR magnetic letters at the bottom. If you do not send the payment, the unit will be sent back to you COD and a COD charge will be added. COD is not available outside the United States. HAPPY COMPUTERS will not reimburse you for the shipping charges needed to send the board to HAPPY COMPUTERS, nor will HAPPY COMPUTERS reimburse you for the labor required to remove or re-install the board into your disk drive. You must provide substantial proof of date of purchase in order to receive warranty repair during the warranty period.

3) If you return a HAPPY 1050 CONTROLLER board for warranty repair during the warranty period and this board does not have any defects in materials or workmanship but is defective due to items which are excluded by this warranty you will be contacted by HAPPY COMPUTERS prior to repair taking place, for your approval of the charges. We recommend that you contact our technical staff prior to returning a board for warranty repair.

CONDITIONS AND EXCLUSIONS OF THIS 90 DAY GUARANTEE

The initial ninety day warranty stated in item 2 above shall become null and void if any of the below stated conditions are true: If the 1050 CONTROLLER board is tampered with or modified in any way, or if the 1050 CONTROLLER is subject to abuse beyond normal wear, or if any circuit in the disk drive not on the CONTROLLER board becomes defective and electrically or mechanically damages the 1050 CONTROLLER, or if there has been obvious negligence during installation or removal of the CONTROLLER board on the part of the person doing this work, with respect to the instructions provided. The purchaser assumes all responsibility for proper installation when the installation is not performed by HAPPY COMPUTERS.

other conditions and exclusions - IMPORTANT!

When sending the HAPPY 1050 CONTROLLER board to HAPPY COMPUTERS for repair of any electrical malfunction it is strongly recommended that you also send the 1050 ENHANCMENT board along with it, since a malfunctioning HAPPY 1050 ENHANCMENT board can cause the 1050 CONTROLLER to not work properly. You should also send proof of date of purchase for the 1050 ENHANCEMENT if you believe the 1050 ENHANCEMENT is still under warranty. If the problem is solely with the 1050 ENHANCEMENT and it is not under warranty you will be contacted by HAPPY COMPUTERS for your approval of repair charges before the repair is performed. HAPPY COMPUTERS' warranty covers the HAPPY 1050 CONTROLLER board only, damage to any other circuit or mechanism is not HAPPY COMPUTERS' responsibility. HAPPY COMPUTERS will provide service only for the specific product(s) manufactured by HAPPY COMPUTERS. HAPPY COMPUTERS assumes no liability for loss of business or income due to malfunction of the HAPPY 1050 CONTROLLER, nor any other liability for consequential damages. This entire guarantee is not transferable and applies only to the original purchaser.

OUTLINE OF INSTALLATION

1) PREPARATION AND NOTES IF ENHANCEMENT INSTALLED NOW TOO

2) SET UP THE WORK AREA AND TOOLS

3) TOP COVER REMOVAL

4) ACCESS TO CONNECTOR ON HAPPY BOARD

5) FRONT PANEL DRILLING

6) TOP COVER INTERNAL MODIFICATION

7) ACCESS TO ORIGINAL WRITE PROTECT CONNECTOR

8) HAPPY CONTROLLER NON FACTORY JUMPER SELECTION - CAUTION

9) CONTROLLER PLUG IN TO HAPPY ENHANCEMENT CONNECTOR

10) RF SHIELD, PC BOARD, AND MECHANISM RE-INSTALLATION

11) CONTROLLER MOUNTING AND CONNECTION

12) TESTING THE CONTROLLER

13) TOP COVER INSTALLATION

14) TEST AGAIN BEFORE USING

15) USING THE CONTROLLER, AND OPERATIONAL CAUTIONS

PREPARATION AND NOTES IF HE1050D INSTALLED NOW TOO

Prepare at least 3 scratch disks so that you don't have to ruin any good disks during the try out phase. A disk drive malfunctioning due to installation problems can erase disks! Initialize the 3 disks with the DOS INITIALIZE or FORMAT command. Then write DOS files on each of these disks. Verify that each disk boots correctly, and place a write protect tab on each disk, also verify that with the write protect tab installed the disk drive does not permit you to write to the disk. Set these disks aside and prepare your work area and tools. This step also tests your disk drive to assure it is working properly prior to installation. Once the scratch disks are prepared, you may unplug all cables from the back of your 1050, and move it to your work area described below.

If you are installing the 1050 ENHANCEMENT and the 1050 CONTROLLER at the same time then follow the instructions for installing the ENHANCEMENT and verify that the disk drive works correctly with the ENHANCEMENT installed before installing the CONTROLLER. Follow the ENHANCEMENT installation instructions, but do not install the RF shield or the top cover. You will need more tools for installing the CONTROLLER so read that section below. After installing the ENHANCEMENT and verifying that it passes the diagnostic, then proceed in these instructions at the section named FRONT PANEL DRILLING.

WORK AREA, STATIC PRECAUTIONS

Your work area should have enough space to hold all parts and tools without cramping your style. There should be adequate lighting, a desk lamp is helpful, a small flashlight will aid in seeing into tight spaces. A large clean desk top is ideal. Place a protective cover over the work area so as not to scratch the surface during the job. Wear clothes and shoes (or no shoes and no socks) such that NO static electricity is present in your work area. Cotton is good for this purpose. Preferably, the work area should be situated on a bare concrete floor rather than a carpet. Static electricity can damage your disk drive and your HAPPY board's components. The amount of static electrcity needed to damage sensitive electronic components is much smaller than that which causes sparks to jump from your fingers on cool dry days. The static electricity which causes some synthetic clothes to cling together after being in a dryer is more than enough to damage integrated circuits.

If you are doing the installation on a cool dry day, when large amounts of static electricity are easily generated, following the EXTREME precautions listed here will ensure no damage to expensive components. These precautions are almost equivalent to using a certified static free work station with conductive surface and ground strap; use a certified static free work station and body ground strap if available. If this is not available then 1) cover your work area with a conductive sheet such as aluminum foil, the entire surface should be electrically connected to earth ground. A metal outside water pipe which goes underground can be used for earth ground, or ONLY if you are familiar with the electrical wiring standards in your area you may be able to determine how to obtain and verify earth ground from an electrical outlet or switch plate. DANGER, do not touch electrical wiring, outlets, or switches for this purpose unless you are qualified. 2) While you are working touch yourself and all tools to the grounded metal surface often. 3) The first time you open the disk drive touch the metal surface of the mechanism while at the same time you touch the grounded surface of the work area, before you do any internal disassembly. 4) Keep all pets, and other people away from your work area. 5) Try to do all of the installation at one sitting. Any time you or another person comes to the work area have them touch the grounded metal surface before touching any other items. 6) Run a humidifier or vaporizer somewhere in the room to increase the humidity in the work room's air, but not to the point where moisture condenses on the cool surfaces of components or tools in your work area.

TOOLS NEEDED

1) Medium size phillips screwdriver with a sharp tip. 2) A precision phillips screwdriver such as one found in Radio Shack part number 64-1819 or similar may be required on some disk drives, especially those that have a serial number starting with 83. 3) A container to hold the screws and parts removed during disassembly. An aluminum pie pan is good for this. 4) A needle nose or preferably duck bill pliers to bend the metal tabs on the RF shield, and to assist in unplugging connectors without breaking off the wires. 5) A drill or most preferably a drill press or drill stand so that you can accurately drill the holes in the front panel, a 1/16 inch and a 1/4 inch high speed drill bit are needed. A thin rat tail file or a chain saw sharpening file may be needed to correct mistakes in hole placement. 6) A water resistant fine tip (magic marker) marking pen to mark the connectors so you can put them back on in the correct location and direction. 7) A small (pair of) diagonal cutters with a sharp tip, suitable for cutting plastic wire ties, and trimming thin pieces of plastic. 8) A pair of scissors.

TOP COVER REMOVAL

The disk drive should be in your work area as described, with all external plug on cables removed. Turn the disk drive over so the bottom faces up. Use the phillips screwdriver to remove the six screws in the bottom of the case. Four of these screws are down in recessed holes. The two other screws are towards the front. DO NOT separate the top and bottom cover yet! Put the screws in your container.

While holding the top and bottom covers of the disk drive together turn the disk drive back over so it rests in its normal upright position. Lift up the top half of the cover at both sides toward the rear to lift it off the bottom cover and separate it from the front panel. The dark brown front face piece (front panel) will come loose from the larger top cover. Place the top cover and front panel out of the way for now. Most of the insides of the 1050 disk drive have very little holding them in. DO NOT MOVE OR REMOVE ANY PARTS UNTIL TOLD TO. CAUTION, do not handle any part of the disk drive mechanism except the sides, do not touch the read/write head assembly.

ACCESS TO CONNECTOR ON HAPPY BOARD

These instructions have been simplified to allow the person that originally installed the ENHANCEMENT to proceed as easily as possible. If you did not originally install the ENHANCEMENT you may need to refer to the ENHANCEMENT INSTALLATION instructions. If you need and do not have the ENHANCEMENT INSTALLATION instructions you may obtain these from your dealer, or send five dollars to HAPPY COMPUTERS for this.

The HAPPY 1050 ENHANCEMENT board which is plugged into the 1050 main circuit board which is under the mechanism has a 5 pin right angle connector which is specifically designed to plug into the connector/wire assembly which comes from the HAPPY CONTROLLER board. To install the CONTROLLER it is necessary to gain access to this connector on the ENHANCEMENT board. If the RF shield in the disk drive was not re-installed when the ENHANCEMENT was installed you can gain access to this connector just by lifting up the drive mechanism. If the RF shield is covering the HAPPY 1050 ENHANCEMENT board you will need to remove this RF shield to gain access to this connector. To remove the RF shield you will need to take the same steps of mechanism and PC board removal that was done when the ENHANCEMENT was installed. It is suggested that you unplug the read/write head cable connector from the main PC board, which is located at the front right corner of the main PC board, to avoid breakage of the delicate wire when lifting the mechanism.

FRONT PANEL DRILLING - READ AND RE-READ CAREFULLY

The HAPPY CONTROLLER's on board switches and LED are mounted through the left hand side of the front panel. The front panel is the dark brown plastic front piece through which the original disk drive on/off switch protrudes. Do not confuse this with the black mechanism front panel.

In your CONTROLLER kit there is a label which has 2 copies of the drilling template. Two copies are provided in case you damage one of them. Notice that the inside edge border on the template is thicker. This thicker edge is the only edge that will be used to align the template. Using your scissors cut out one of the templates along the border, cut off all the white around the border and cut only slightly into the black border. The template is only used during the first step of drilling, and is not part of the final installed CONTROLLER.

Refer to pictorial III for assistance in this step. Pictorial III shows the left hand portion of the front panel with the drilling template attached. Proper template placement provides accurate horizontal centering and vertical position for drilling the switch and LED holes on the front panel flat area. The three arrows show the alignment edge, that is the inside left and top and bottom edges. Notice that the front panel is flat and then goes at an angle inwards at the alignment edge. You also should notice the thick alignment border on the drilling template. The drilling template is attached such that the thicker alignment border extends past the inside left and inside top and inside bottom front panel edges evenly all the way around. Peel off the paper backing from the drilling template and stick it to the front panel aligning the thick border and inside front panel edges as described. The other outside edges of the template label are not aligned.

Do the drilling far from your other drive parts so they are not contaminated with plastic particles. Drilling is performed in two steps. It is strongly recommended that you use a drill press or a drill stand to ensure exact placement of the holes. The most critical hole is the one in the center. The center hole cannot be enlarged since the LED sleeve must fit in this hole exactly. If you mess up the placement of the outer holes you can enlarge them slightly since the large star washer will cover it.

Always use goggles or protective eye gear when drilling. You only get one pair of eyes to use for your whole life. The first hole is drilled using a 1/16" bit. A wood block will help avoid damage to the surface below the panel while drilling. Carefully drill through the center white dot inside the larger black dot in each of the three drilling positions on the drilling template, to put three drill alignment holes in the front panel. These 1/16" drill alignment holes will greatly assist in proper placement of the larger 1/4" holes. Once all three 1/16" alignment holes are drilled peel off the drilling template.

Again use protective goggles. Use a wood block when drilling the larger holes. Drill the three larger holes with a 1/4" bit through the back (from the inside side) of the front panel. This lets you have a flat surface directly against your wood block. Do this drilling carefully and exactly. Use the 1/16" holes previously drilled to align the tip of the 1/4 drill bit. With a drill press it is easiest to slowly lower the drill head and bit while it is running and hold the front panel loosely at first to allow the 1/4" bit to align to the 1/16" hole allowing side to side motion for this alignment. Once the bit gets centered then hold the front panel firmly to drill the hole. Do not mount the CONTROLLER board yet.

TOP COVER INTERNAL MODIFICATION

Atari did not leave very much room inside the 1050 for the CONTROLLER board to fit in. It is necessary to trim some of the internal top cover plastic to allow the CONTROLLER to fit. Use eye protection when trimming the plastic. The small diagonal cutters are sufficient to trim the soft plastic. When trimming the plastic cut only very small pieces with each cut to avoid stress on the plastic which may cause it to crack in an undesirable fashion. With the cover properly trimmed no external modification is visible. Pictorials I and II show the top cover turned upside down, from what is usually the left hand side, but after turning the cover over this is the right hand side. There are two places to trim. Pictorial I shows the pertinent area of the case before modification, pictorial II shows a modified top cover.

The front most area to be modified pointed to by the right hand arrow in pictorial II is an L shaped area that forms a groove into which the front panel originally fit. This entire L shaped piece is cut off down to the thinner plastic ridge. Even with this piece cut off the front panel and covers fit together properly. Trim off the L shaped piece of the top cover as indicated.

About one and 1/8 inches back from where the L shaped piece was trimmed there is a ridge of plastic all the way across the top cover. This ridge is trimmed down in the corner of the top cover as shown in pictorial II as pointed to by the left most arrow. On the inside top of the top cover the ridge should be trimmed down all the way to be flat with the inside top, from 1/8 inch to about one inch from the side. On the side of the top cover the ridge should be trimmed so that it is no thicker than the area just in front of it where the L shaped piece was trimmed off. Trim out this section as indicated.

ACCESS TO ORIGINAL WRITE PROTECT CONNECTOR

The original write protect infrared LED and sensor connect through a four pin wire assembly which has a female connector on the end and connects to a male plug on the 1050 main PC board. At the left hand rear of the 1050 main PC board (left as when looking at the drive from the front where the disk goes in) there are a number of connectors which connect the mechanism to the 1050 main PC board; these are behind and not covered by the mechanism. The 4 wires which go to a connector(s) which is closest to the mechanism on the left are for the original write protect.

As far as the controller installation is concerned there are two types of drives sold by Atari, one called TANDON type, one called WST type; both called 1050. On the TANDON type drive these 4 wires are all white in color and terminate at a single 4 pin connector housing which is reddish brown in color and may be marked J11. On the TANDON type drive the 4 white wires enter the reddish brown connector housing from the top, parallel to the male pins that the connector plugs into. On the WST type drive these 4 wires consist of a red and a white wire going to a 2 pin female connector, and a white and a blue wire going to a 2 pin female connector. Starting at the wire closest to the mechanism the color sequence formed by these 2 connectors is blue, white, white, red.

The connector(s) which these four wires terminate into are unplugged and will be plugged into the CONTROLLER board. There are wire ties which hold these four and other wires from the mechanism which must be cut to allow the furthest forward reach of these four wires and their connectors. Unplug the connectors, and locate the wire ties that are holding these wires.

You will notice that two of the wires come from the top of the mechanism and the other two come up to the top from the underside of the mechanism. The two wires that come from underneath will be the shortest when the wires are routed to the front left of the mechanism. The two wires that come from the top may have extra wire ties, it is not necessary to cut these, since the wires from the bottom are the limiting factor so far as available wire length is concerned. Using great care not to cut through the wires, use the small diagonal cutters to cut only those wire ties that are holding these four wires Be sure to remove all of the pieces of the cut wire ties from the drive insides so they do not later block proper movement in the mechanism. With the wire ties cut confirm that the wires are routed such that the connector(s) end opposite the end with the wires can reach within 1.5 inches from the mechanism's black front face plate when positioned along the left hand side of the mechanism.

NON FACTORY JUMPER SELECTION - CAUTION!

There are 3 jumper wires which have a white insulation located parallel to each other on the component side of the CONTROLLER board. There are positions parallel to this for three other possible jumpers. The jumper selection provides two different approaches to customizing the CONTROLLER board for your own needs. CAUTION: any modification to the jumpers may void your warranty, this is solely HAPPY COMPUTERS' determination. Modification of the jumper settings may cause a failure in the SWITCH OPTIONS test in the DIAGNOSTIC, even though the CONTROLLER is working properly. Note: the disk notch has control of the write protect only when no software command has been issued, and the three position switch is in the NORMAL down position.

In the factory set configuration the three position switch of the CONTROLLER will affect the write protect until a software protect/unprotect command is issued, such as from the program options menu of the WARP SPEED SOFTWARE. After the protect/unprotect command is issued the three position switch has no effect until that mode is reset. Therefore, in this mode the software has priority over the manual switch.

In the first alternate configuration all three factory jumpers are cut and jumpers are installed in the three adjacent positions. In this mode the software command has effect only when the three position switch is in the NORMAL or down position. Thus, in this alternate configuration the manual switch setting has priority over the software command.

In the last alternate configuration the center one of the three factory jumpers is cut, leaving the other two original jumpers. In this mode the manual switch and the disk notch have no effect. Disk writing is prohibited until the unprotect command is issued through software. This can prevent unauthorized writing to disks if only you know how to execute the unprotect command.

CONTROLLER PLUG IN TO HAPPY ENHANCEMENT CONNECTOR

The HAPPY COMPUTERS manufactured 1050 ENHANCEMENT has a 5 pin right angle male connector located on the top component side. The HAPPY 1050 ENHANCEMENT is plugged into the 1050 main circuit board as usual. There are nine wires which are factory connected directly to the CONTROLLER board. Five of these wires terminate at a five pin female connector. This five pin connector is plugged into the five pin male connector on the ENHANCEMENT board. The connector is plugged in such that the wires that come out of the connector face down into the top side of the ENHANCEMENT board,with the grey wire towards the left. Make sure that each pin is plugged into its mating socket and that no pin is left out.

RF SHIELD, PC BOARD, AND MECHANISM RE-INSTALLATION

The wires from the connector on the ENHANCEMENT board are routed to the left such that they will come out under the RF shield on the left side. Re-install the RF shield if desired. Re-install the PC board and mechanism if they were removed. Follow the same steps as the ENHANCEMENT installation instructions except that the connector(s) for the four wires which are for the original write protect circuitry previously discussed are not plugged back into the 1050 main circuit board. Do not apply any tension to the wire which connects to the ENHANCEMENT board, or this connector may come loose.

CONTROLLER MOUNTING AND CONNECTION

Check the fit of the CONTROLLER board's switches through the holes you have drilled. If the holes are not accurately placed they may be slightly enlarged to allow the switches to fit through. The LED may be bent just slightly toward either switch if its hole is slightly out of center between the two switches. The LED leads will not take much bending without breaking. If the switch hole is enlarged the enlarged area must be smaller than the large star washers that come with the CONTROLLER for a neat appearance. Do not mount the CONTROLLER board yet.

In your kit package for the 1050 CONTROLLER there is a small black cylindrical sleeve which is the front panel trim piece for the CONTROLLER's yellow LED (light emitting diode lamp). This sleeve is larger on one end, the other end is inserted into the middle 1/4 inch hole that was drilled in the front panel. The sleeve is inserted from the outside front of the front panel before the CONTROLLER board is mounted. It may be necessary to squeeze the sleeve as it is obviously designed to be squeezed to insert it in this hole. Avoid enlarging the hole for the LED sleeve past the 1/4 inch specified.

The switches on the CONTROLLER board should already have one hex nut screwed on, make sure this nut is screwed all the way down. The CONTROLLER board will be mounted such that the component side faces the mechanism, and the non-component side faces the left outside of the disk drive, see pictorial IV or V for orientation. The LED on the CONTROLLER is fragile and no extreme force or tension should be applied to the LED or its leads.

While aligning the switches ensure that the LED is going straight through the sleeve. Once the switches and LED are through the front panel the LED should be pushed into place from the back side of the LED where the leads are by using the tips of a needle nose pliers, while pushing the front part of the LED's sleeve in. When properly positioned the tip of the LED will extend about 1/16 to 1/8 inch past the front of the front panel. The flat washers that come with your CONTROLLER are not used. The CONTROLLER is supported by the switches and front panel. Mount a star washer and then a nut on each switch and tighten just slightly more than finger tight. Do not over tighten.

Position the front panel with CONTROLLER installed onto the front of the bottom portion of the disk drive case, do not install any screws yet. The four wires from the original write protect LED and sensors in the disk drive have their connectors plugged into the four pin right angle male connector on the controller board. For the WST type drive with the right angle female and blue, red, and white wires see pictorial IV. The blue wire of the first two pin connector will be toward the top, the red wire of the other two pin connector is toward the bottom. For the TANDON type drive the four pin female connector is positioned such that the side which should be marked J11 faces inside, toward the component side of the CONTROLLER board, while the opposite side which has the slots through which you can see the metal terminals faces towards the outside of the drive and the non-component side of the CONTROLLER board. See pictorial V for TANDON type drives.

Prepare to temporarily mount the front panel onto the bottom disk drive case. It is necessary that the 4 pin connector on the CONTROLLER be bent slightly toward the outside at the back end in order that this connector clears the standoff where the top cover screw is mounted. Bend it just enough so it clears the standoff, bending the connector too much will cause poor contact between the connectors. Observe how the wires from the four pin connector are routed for your particular drive type. For WST type drives the wires are routed around the front of the standoff post, opposite where the female connector body goes, see pictorial IV. For TANDON type drives the wires are routed on the outside of the standoff post as is the connector body, see pictorial V.

Install the two screws that hold the front panel on, DO NOT TURN THE DISK DRIVE OVER. You can install these two screws from the bottom while the front of the disk drive extends past the edge of your desk, without turning the drive over. For now just install the screws snugly, do not tighten.

There is one remaining set of four wires that come from the CONTROLLER and terminate at a four pin female connector. This four pin connector from the CONTROLLER plugs into the male pins on the 1050 main board where the original write protect connector(s) previously plugged in. The connector is oriented such that the grey wire or wire which is a different color from the rest is towards the back. The wires come out of the connector towards the inside of the drive.

TESTING THE CONTROLLER

Check all connections before applying power, make sure the head cable is plugged in with the red wire facing toward the front. Connect the I/O and power cable and turn the disk drive power on. The drive motor should come on and the read write head should move briefly as usual. If not, remove power and determine what is wrong before proceeding. Boot a scratch DOS disk to verify proper drive reading. Then boot the WARP SPEED SOFTWARE (rev 6.6 or later), select diagnostic, and run the SWITCH OPTIONS test which includes a test for the CONTROLLER. Its a good idea to also check the ENHANCEMENT diagnostic, the read/write test, and the drive RPM speed too!

TOP COVER INSTALLATION

Loosen the two screws that are holding the front panel in just slightly so the front panel can be moved slightly forward at the top. Check the position of all wires to ensure that no wires will become entangled in any moving part of the mechanism including the read/write head, door operation, and drive motor belt and pulleys underneath the mechanism. Also check that no wires will be pinched by the top cover between the standoffs. It is not needed but will be easiest if you tape or tie the internal wires; neatness is not that important since no one usually sees your drive insides.

The front portion of the top cover latches into the front panel. Hold the rear end of the top cover up, and engage the front part of the top cover with the front panel, then lower the top cover while pushing the front panel in and checking that the top cover and front panel are properly aligned, and that no wires are sticking out. Repeat this if necessary until you are sucessfull. Do not install the screws until the top cover and front panel fit correctly. Hold the top and bottom case halves together and turn the case over. Install the four remaining screws which hold the top cover on, check case fit, and then tighten all screws, do not over tighten as they will strip easily.

TEST AGAIN BEFORE USING - RERUN ALL TESTS - SELF EXPLANATORY

USING THE CONTROLLER AND OPERATIONAL CAUTIONS

Congratulations! I know the CONTROLLER installation is a bit more difficult than installing the ENHANCEMENT, but you now have the best convenience item available for your HAPPY ENHANCED 1050 disk drive. Included with your kit is a self adhesive label that shows the switch positions and meanings. This label may be installed anywhere you wish so that you can easily refer to it when needed. One suggestion is to place this label on the top surface of your disk drive, although the surface will not let it stick perfectly.

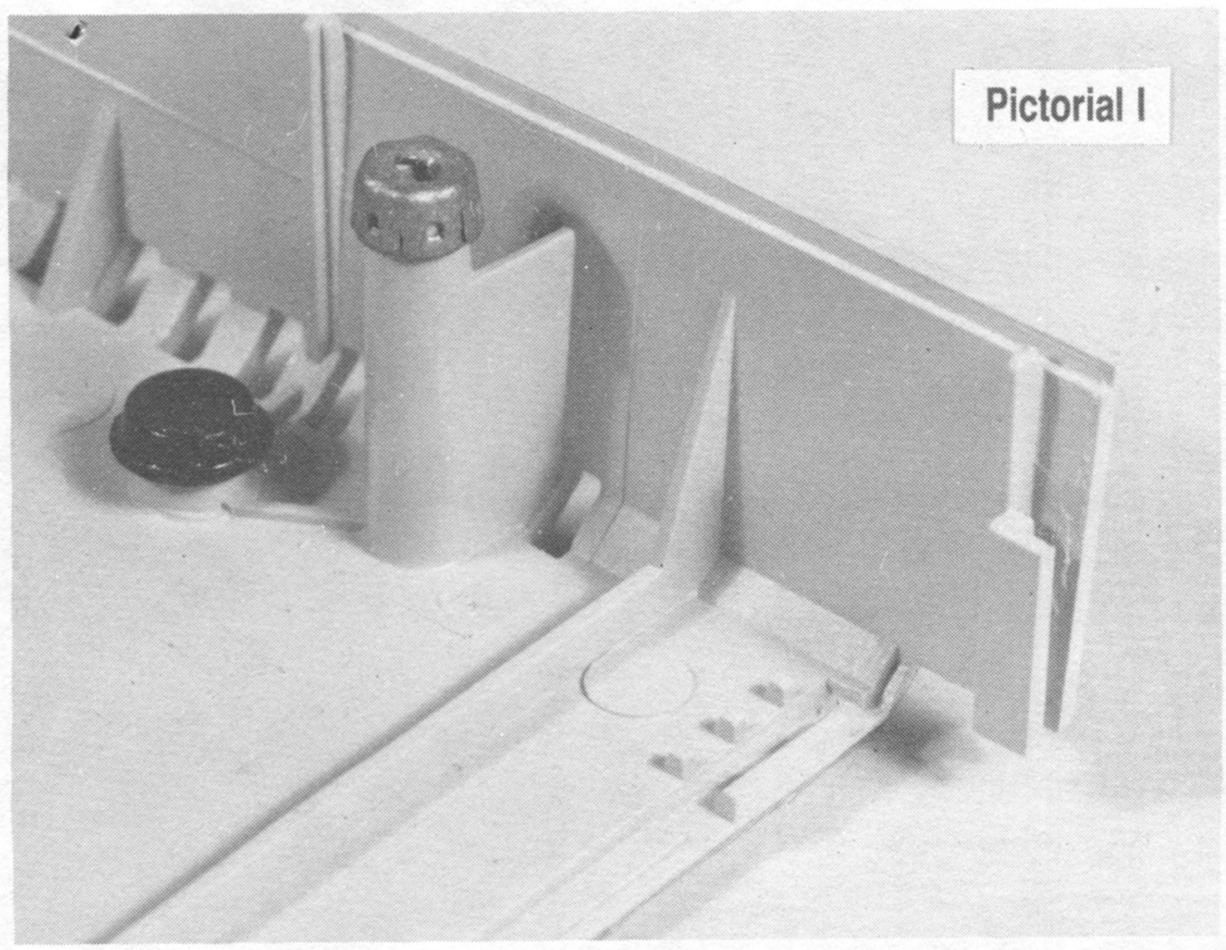
The LED on the CONTROLLER turns on and glows yellow whenever disk writing is enabled. This is a cautionary signal. It is suggested that you enable writing only when you actually intend to write.

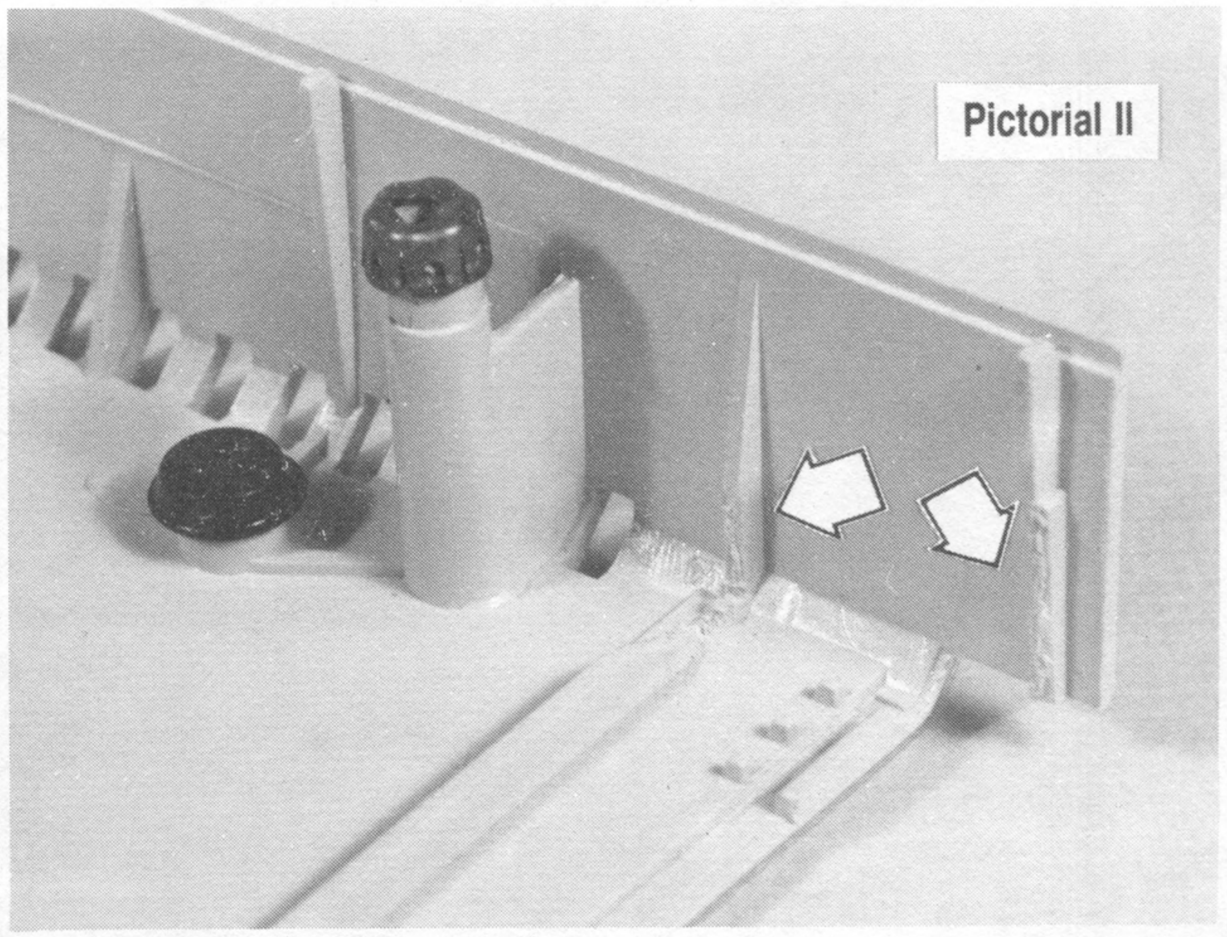
The following information is for CONTROLLERS that have the original factory jumpers installed. The lower three position switch on the CONTROLLER provides manual control of the disk drive write protect system. The normal disk drive write protect sensing system works as usual with this switch in the NORMAL lower position. Disk writing is inhibited whether or not there is a notch in the disk when this switch is in the center PROTECT position. Disk writing is enabled regardless of disk notch when the switch is in the upper WRITE position. This allows formatting and writing to the disk back side without punching holes in the disk. Please note that some lower quality disks may not work on the backside, especially in medium or true double density. It is necessary that you manually turn the disk over to use the back side. If a software command is issued to protect or unprotect, this command overrides the switch position and the diskette notch sensing system. The technical section of the software instructions rev 7 or later describes these commands. These features are also available on the DRIVE PROGRAM OPTIONS MENU when you boot the WARP SPEED SOFTWARE and select item 1.

The upper two position switch of the CONTROLLER is the SLOW/FAST switch. With the two position switch in the lower position the ENHANCEMENT is in the normal fast buffered reading mode. With the two position switch in the upper position non-buffered (slow) operation is selected. Normally except as described below to enable fast writing, the only time you need to select slow mode is to boot a copy protected disk that will not boot in the fast reading mode that the HAPPY is in when you first turn the drive on. Please note that SLOW mode is not the same as UNHAPPY mode. In slow mode selected by the switch the HAPPY is still programable by the computer; slow mode has no effect on the HAPPY backup program. The only way to completely lock out the HAPPY features is through the UNHAPPY mode selection of the WARP SPEED SOFTWARE, and this is usually not necessary.

Fast automatic buffered write with verify can be selected through the SLOW/FAST switch on the CONTROLLER. To do this start with the drive power turned off, move the SLOW/FAST switch to the upper SLOW position, then turn the disk drive on. As soon as you move the switch to the fast position both fast reading and fast writing are enabled. Note that in the fast writing mode all write commands are translated to buffered write with verify. An extremely convenient use of this feature is with purchased software that has to boot in the slow mode. For these you move the switch to the fast position after the program has loaded and then you get fast writing and reading on your data files. CAUTION: with fast writing enabled, after writing to a disk, do not open the drive door until the busy light is off!

The SECTOR COPIER, WARP SPEED DOS XL, and TOP DOS 1.5 (or later) all automatically turn on fast writing and also use the highest speed transfers your 1050 HAPPY can offer. It is required that the SLOW/FAST switch be in the FAST position for these programs to correctly write to the disk. If you try to operate these programs with the switch in the SLOW position, the data written to the disk will be incorrect! Again the rule applies to select the SLOW position only when booting purchased protected software that requires this.





WARNING: Read instructions which describe use of the pictorials. Do not use these pictorials as an installation guide by themselves.