

The XF Dual Drive Upgrade

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by

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The XF551 Dual Drive Upgrade

Congratulations on the purchase of the *CSS XF551 Dual Drive Upgrade*! This is currently the most powerful upgrade available for the Atari XF551 disk drive.

The operating system for the drive has been completely re-written, so as to not only eliminate the problems and incompatibilities associated with the drive, but use its open design to run 3.5" disk drives as well. The new operating system runs more commercial software, changes density properly, supports true Ultra Speed data transfer (actually, slightly faster than the 1050 Ultra Speed), and has an optimized interleave in high speed formats to produce the fastest possible operation.

The *XF Dual Drive Upgrade* allows use of both 5.25" and 3.5" drives. The DIP switches in the rear of the drive set the drive number for the 5.25" drive. The 3.5" drive will always assume the next higher drive number.

The other feature of this upgrade is the **IBM/ST Disk Reader** program. This program reads 360kB 5.25" and 720kB 3.5" disks formatted on Atari ST and IBM computers. This is useful in transporting text files, GIF picture files, and any other data you might have need of reading.

Bear in mind this does NOT mean you can run ST or PC programs on your 8-bit! It does mean that you can transfer text and data files. You could, for example, download 8-bit files on your PC or ST, then use this utility to transfer them to the 8-bit to run them. You can also take a document file written on a PC or ST and saved in ASCII form, and use this program to transfer it to the 8-bit and import it into an 8-bit word processor.

Although the drive mechanism that comes with your *XF Dual Drive Upgrade* may actually be a 1.44MB drive instead of a 720kB drive, the upgrade is not capable of 1.44MB operation because of the XF551's circuitry. High density (1.2MB and 1.44MB) disks should not be used with the *XF Dual Drive Upgrade* because high density disks written in low density may not retain data over time.

MYDOS is included with the upgrade to get you up and going. This is one of the few DOSes that support double-sided drives. Documentation is provided on the disk. Brief instructions for usage are included at the end of this document.

Read through the installation section before actually doing it. Remember, we provide **free** installation of our products. The only charge is the shipping, so it may be worth your while to pursue this option. Please call before sending anything in!

Computer Software Services is committed to providing high quality hardware and software for the Atari 8-bits. If you have any questions, feel free to contact us.

Before you begin.....

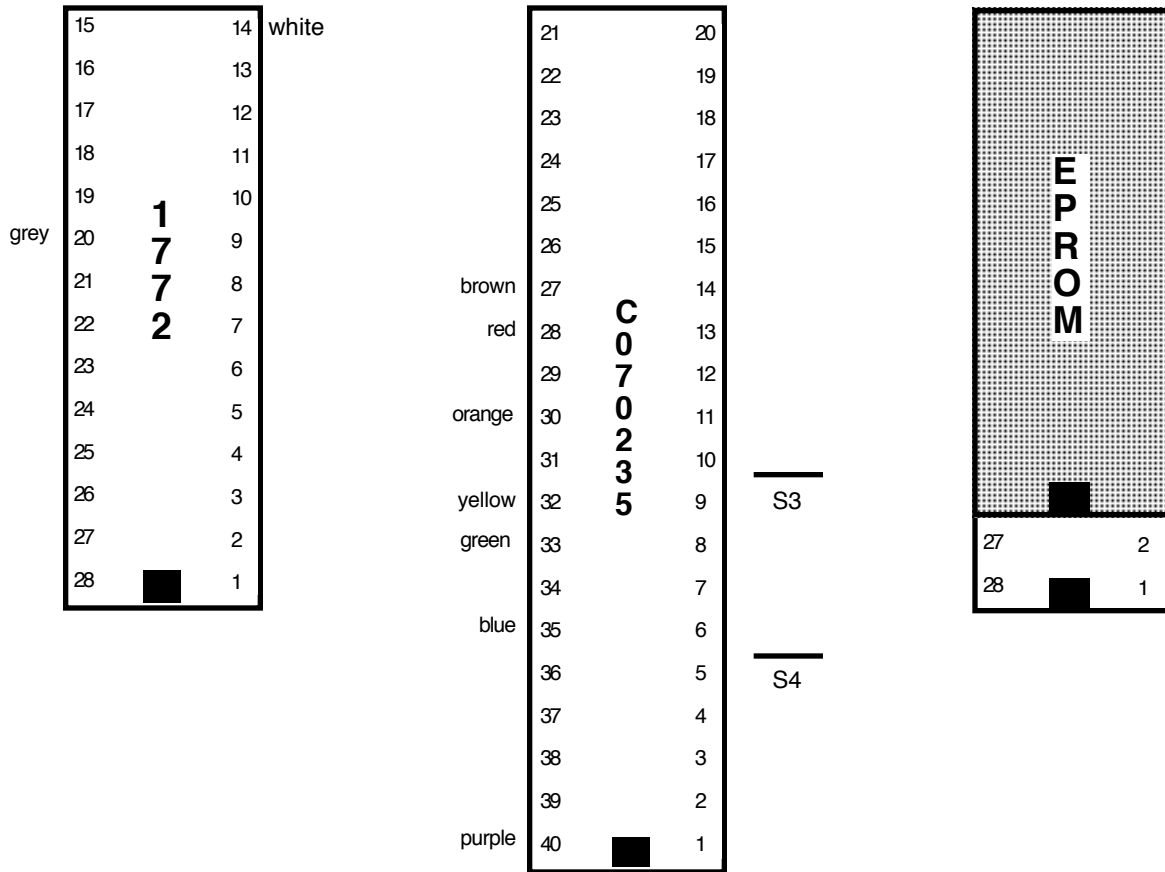
Because two drives are being driven from one power supply within the XF551 (which was designed to supply only one drive), be certain to use your drives in a well ventilated area. We have tested many XF drives, and have found no failures as a result of the added load of the 3.5" drive we use.

If you are using your own 3.5" or other type of drive mechanism with an unknown current drain, we cannot guarantee the XF will power it. An alternative is to use a regular PC-type or hard drive power supply to power your drives. You would still use the 9VAC power supply that plugs into the rear of the XF551 case, but instead of using the 4-wire power supply connector inside the XF551, use the external power supply's 4-wire connector instead. This will guarantee that proper voltage and current levels reach your drives.

Installation

While installation is simple for a person familiar with circuit board soldering, please keep in mind that CSS will install any of its products (when purchased from us) at NO CHARGE. CSS is not responsible for damage done to the drive or the conversion when installed by the customer.

1. Set your 3.5" drives' ID jumper or switch to #2 (assuming the numbering scheme is 0-3; if it is 1-4, set it for #3).
2. Remove 4 screws on the bottom of the XF551. Remove top half of case and set it aside.
3. Remove the 4 bottom (not side) securing screws that hold the 5.25" mechanism to the bottom of the case.
4. Disconnect the power connector and the 34-pin card edge connector from the rear of the 5.25" drive mechanism.
5. Lift the 5.25" drive mechanism off of its 4 plastic posts.
6. Note the two larger chips, the 28-pin 1772 (or 1770) and the 40-pin C070235 (8040 or 8050). Notice the pin numbers printed on the circuit board. These numbers (in increments of 5) show exact pin number locations. If your XF551 has a 1770 chip (and only a small percentage do), you will not be able to use the **IBM/ST Disk Reader** program. We can provide you with a 1772 chip if you need to use this feature. Call us for details.
7. On the 40-pin chip, begin by placing a small drop of solder on pins 27, 28, 30, 32, 33, 35, and 40. On the 28-pin chip, place solder on pins 14 and 20.
8. Next, attach the BROWN wire from the black brain module to pin 27 of the 40-pin chip, the RED wire to pin 28, ORANGE to pin 30, YELLOW to pin 32, GREEN to pin 33, BLUE to pin 35, and PURPLE to pin 40.
9. Attach the WHITE wire to pin 14 of the 28-pin chip and the GRAY wire to pin 20. Use the following diagrams to locate the pins.



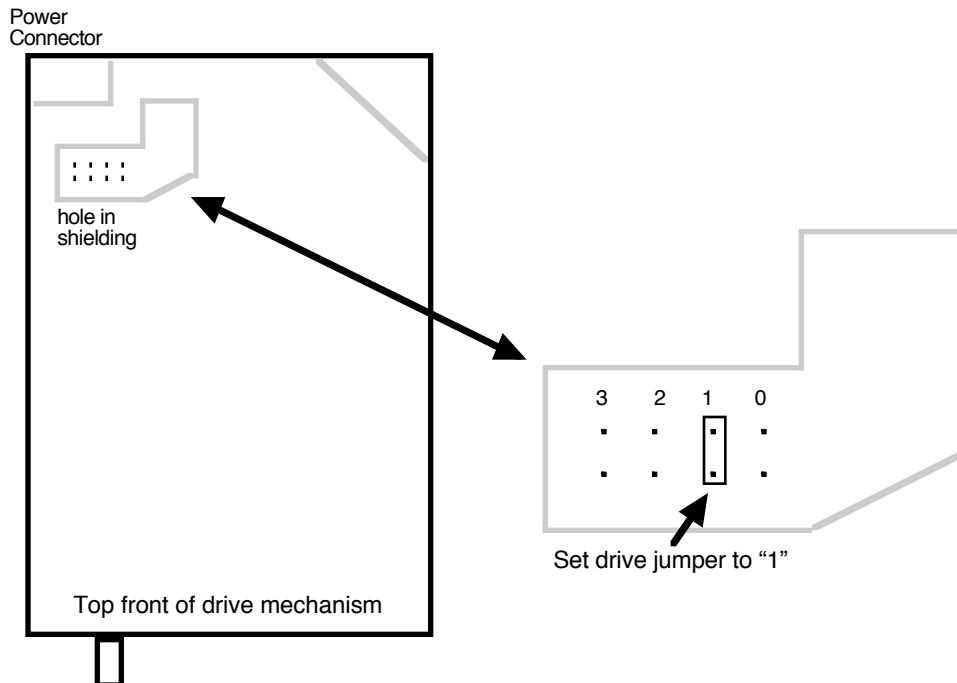
10. Look to the right of the 40-pin chip for the label "S3" printed on the circuit board. If there is a jumper just above it, proceed to Step 11 now. If there is a jumper located just above the label "S4", you will need to cut this jumper in half with a small wire cutters and run a jumper wire from pin 7 of the 40-pin chip to pin 40.

11. Remove the 28-pin OS chip from the XF551 circuit board. If this chip is not socketed (only a small percentage of drives do not have a socket), this chip will need to be desoldered and replaced with a socket. Unless you have experience in desoldering ICs, we suggest you leave this to someone who is experienced. Carefully insert our EPROM. Make certain that the end of the EPROM with the notch in it faces towards the FRONT of the drive and that all pins are in the socket properly. **Note:** If you have been supplied with a 24-pin EPROM, align the **bottom** pins to the bottom pins of the socket. This will leave pins 1, 2, 27, and 28 of the socket empty. See the diagram above.
 If you have purchased the dual 3.5" version of our upgrade, your EPROM is capable of both the standard dual drive upgrade of mixed drive sizes, and dual 3.5" mode. Plugging the chip in without modification will result in the standard fixed configuration of the first drive being 40 tracks, and the second being 80 tracks. By lifting pin #2 of the EPROM and soldering it to pin #1, the configuration will be set to both drives being 80 tracks (3.5"). Remember, this **ONLY** applies if the dual 3.5" upgrade is purchased (an additional \$20).

12. Slide the middle 34-pin card edge connector of our cable onto the 5.25" mechanism. If you look at the connector on the drive, there will be a notch cut in the connector about 1 cm in from one of the edges. This notch is closest to pin 1 of the connector. Attach the cable such that the red stripe on the edge of the ribbon cable is at pin 1 of the 5.25" drive's connector. To connect the 34-pin header connector to the 3.5" drive, look at the

small white power connector at the back of the drive. If the YELLOW wire coming from it (pin 1) is on the left, then pin 1 of the header connector will be on the left. Similarly, if the yellow wire is on the right of the connector, pin 1 will be on the right side of the connector. Plug in the cable so that the red stripe lines up with pin 1 of the header connector.

13. Insert the power cables from the "Y" splitter to the power connectors on the 5.25" and 3.5" drive mechanisms.
14. Replace the 5.25" mechanism on 4 plastic posts of the drive case.
15. Insert the XF551 power connector (or the power connector from an external power supply) into the "Y" splitter power connector.
16. Locate the 5.25" drive's ID jumper. It must be moved one place to the left. See the diagram on the next page.
17. Finally, insert our cable connector having the 30-pin jumper board (the board with the 2 black wires attached) into the 34-pin card edge connector coming from the XF551 circuit board. Notice that we only use 30 pins (not 34). The first four pins nearest the cable's red stripe will be empty. Make sure the stripes on both cables are on the same side.



Before reassembling the case, you may want to test your conversion. Set the 3.5" drive off to the side of your XF551. Insert power and SIO cables. Boot DOS (preferably MYDOS 4.5). If drives just spin and nothing boots, recheck all connections with power off. Make certain the fingers of the jumper board are directly aligned with the fingers inside of the 34-pin connectors. If the busy light of both drives come on and stay on when power is applied, try reversing the 34-pin header connector going to the 3.5" drive.

Before you replace the top cover, cut the tabs protruding on the back of the case. This will allow both the power and data cables to pass through unhindered. After replacing the top cover, remove the adhesive backing from the bottom of the 3.5" drive, and affix the drive to the top of the XF551 case.

Assuming all is well, you must configure drives for double density. The XF551 5.25" mechanism should be configured for double sided, double density, 40 tracks per side and a step rate of 0. The 3.5" drive should be double sided, double density, 80 tracks per side, and a step rate of 0. The 5.25" mechanism will be drive 1, and the 3.5" drive will be drive 2. To alter these drive numbers, use the DIP switch settings at the rear of the XF551 case.

Usage Notes

To configure the included MYDOS for double-sided double density operation, boot DOS without BASIC. You should now see the main menu. Type [O], and the drive number of your desired drive. Answer [N] to "Remove Drive?", type [Y] to "Is drive configurable?", type [N] to "High capacity drive?", and type [Y] to "Is drive double sided?". It will now prompt you for the number of tracks. Enter [40] and [RETURN] for the 5.25" drive, or [80] and [RETURN] for the 3.5" drive. Type [0] at "Step Rate?".

DOS now knows that kind of drive is out there, but one more step is needed prior to a format. Type [P] at the main menu to set drive density. Now enter the drive number, followed by ",D" and [RETURN]. Example: [P] [1,D] [RETURN]. The drive is now set for double sided double density operation. Format a disk by typing [I], then drive number followed by [RETURN], and [Y]. Write DOS files to it by using the [H] command. This will save the configuration you just did, so that you won't have to do it again.

Operation with SpartaDOS is a little more simple, as fixed configurations are built-in to the XINIT disk formatter program. No patching is needed for use with SpartaDOS, as the Ultra Speed mode will automatically kick in, and be used at all times.

ST/IBM Disk Reader

The IBM/ST disk reader program allows your upgraded XF551 drive to read the 512 byte sectors used in the disk formats of the IBM PC and compatibles, and the Atari ST computers. It will automatically adapt to either single-sided or double-sided formats, and supports the increased sector density of the "twister" ST disk formats. It will not however read past 80 tracks on a 3.5" drive. The XF551 cannot write to these disks because of insufficient internal memory.

Simply load the file IBMREAD.COM from the ST/IBM Disk Reader disk as a binary file. The menu will be displayed. After each function, the program will give you the 'Command: ' prompt, without displaying the menu. Simply press [?] for the menu.

To do a directory of an Atari-formatted disk, press the drive number, then [RETURN] for a directory of the main directory. If you wish to view a subdirectory, type in the directory name (terminated with a '>') before pressing RETURN. All files (*.*) are assumed by default, but if you want a directory of only files ending in .ARC for example, type "*.ARC" before pressing RETURN.

To view the directory of an ST or IBM disk, hold [SHIFT] while pressing the drive number. The same rules for subdirectories and masks apply here as with Atari directories. Remember that the IBM directory gives the file sizes in bytes, not sectors. To convert bytes into sectors, divide by 125 for single density, and divide by 253 for double.

Before converting any files, make sure you have a destination disk with enough free space. Its a good idea to format a disk in double density, so that you have the most space available. Use the [ESC] key to exit to DOS for formatting disks, then reload the program.

You may convert one or all files in any given directory at a time, without having to enter each filename separately. Selecting [A] will convert all files that match the filespec you enter. Selecting [B] will prompt you for a Yes/No for all files that match the filespec.

When entering the source name, use the format Dn:[path>][mask]. For example: D2:*.*, or D1:UTIL>*.ARC. Remember the source is your IBM/ST disk.

You will now be prompted for the destination drive number/path. If you wish to simply write to the main directory on a drive, type that drive number and [RETURN]. You may use the same drive for source and destination disks - the program will prompt you automatically for disk changes. If you wish to place the converted file(s) in a subdirectory, enter the pathname. Some examples: 2, or D3:JUNK>. You may also view files by using E:, or print them by using P:.

IBM and ST text files differ from Atari 8-bit files in the characters used for tabs and returns. If you are reading a text file and wish to convert it to ATASCII (Atari Ascii) format, Use the [C] command instead of the [A] command to convert. If you selected [B] for Convert with Query, type [C] instead of [Y] at the prompt for the desired filename. This conversion should be used only for text files, NOT for compressed or executable files.

The rest of the operation is fully automatic. Any illegal characters in filenames will be converted to 'Q's, so Atari DOSes will not cause an error. You may use this program with any Atari-compatible DOS.

Miscellaneous Tidbits of Info

If you have our *Ultra Speed Plus OS* or our *Black Box*, your drives will read and write 3 to 5 times faster than normal.

If you have any problems installing the conversion, please call us and we will try to help you out. Remember that installation is FREE from CSS. For free installation, phone CSS at (716) 429-5639. Arrangements can be made that time.

All units are checked and operated before shipping. Damage resulting from improper handling or connections may result in a repair/replacement cost to you.

Most importantly, enjoy your conversion!

Limited Warranty

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