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Hard disk drives will be covered with a separate warranty provided with the unit.

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Expansion Systems does not make any claim for the compatibility or performance of the Dataflyer 1000 expansion system if it is sharing the expansion bus with any other product. This includes memory boards that are plugged into the 68000 socket. This product is sold with the understanding that only DataFlyer products will be installed and that the A1000 has conformed to the upgrades described in this manual.

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DataFlyerTM 1000

MEMORY AND HARD DRIVE EXPANSION SYSTEM
FOR THE AMIGA 1000

MANUAL SUPPLEMENT

EXPANSION
SYSTEMS

PLEASE READ THIS BEFORE DOING ANYTHING.

You were to have been informed by the seller of this product that the warranty was conditional on the upgrading of your A1000. The upgrades described in this supplement are to be made before any customer service questions or warranty work will be performed. Expansion Systems makes no claim for the compatibility or performance of the DataFlyer 1000 if it is sharing the bus with any other product including memory boards that are plugged into the 68000 socket. This does not apply to any other external product such as a modem, external floppy drive or printer.

THE A1000 "PAL PROBLEM" STORY.

Now that we have all the disclaimers out of the way we can get to more positive information. Things like how to insure that you have a trouble free hard drive and memory addition to your "good ole 1000". If you have ever wondered why third party manufacturers stopped making products for the A1000 the "PAL Problem" was the culprit. Commodore insisted that eight items could be added to the expansion bus without any problems. This was in fact wrong. Even if the machine is upgraded, a maximum of two items on the bus is typical. A lot of work by many people discovered two mistakes. One in the original design and the other a mistake that was made in manufacturing. In short-it drove manufacturers crazy trying to deal with the tremendous differences that these mistakes would have on different products and on different machines. Our experience indicates that the interface and the memory board in the DataFlyer 1000 will work on your machine if it is upgraded properly. You may have to give up some other product you purchased long ago or not use them all at the same time. In short as an A1000 owner you will have to be a little more flexible than normal. However, there isn't any reason that you should have to abandon what turned out to be a very good machine (we own and operate several ourselves).

WHAT IS THE PAL PROBLEM?

Some users have never ever had a problem with their machines and do not know what the fuss is all about. They have most likely never had more than one item on the expansion bus or perhaps none at all. It usually appears with the addition of the second item. It will suddenly go from problem free to random crashes, visits from the Guru or not being able to even load Kickstart. Removing the item usually returns the machine to its previous condition. That is the test. If your items work independently or on a friends machine and will not work together on yours...you have a PAL problem. An item "on the bus" includes any product that is connected to the expansion bus or plugged into the 68000 chip such as a memory board. The DataFlyer 1000 SCSI with RAM are considered two separate items on the bus.

They are separate auto-configuring cards which allows them to be removed and used together or independently in the Amiga 2000.

WHAT IS A PAL?

A PAL is an electronic integrated circuit (IC) that stands for "Programmed Array Logic". They are the new age building blocks of computers and electronic devices. With these little wonders electronic products have become smaller and smaller over the years.

What causes the PAL problem?

There are two problems associated with the PALs you must address. They are:

1. Poor grounding.

For a period of time in production, the Amiga A1000 did not have proper grounding. This lack of grounding was evident when peripheral devices are added to the expansion bus. The typical symptom was radical behavior and lots of crashes. The problem can be solved and it is relatively simple to do. It has been said that later A1000 machines were corrected at the factory. To date every machine we have encountered required this modification. If your machine looks like it could have been upgraded at the factory, please let us know.

2. Bad PALs.

At some point in the manufacturing process Commodore changed to a new vendor that manufactured two certain PALs on the daughter board in the machine. This caused a change in the timing that was not helped by the lack of a good ground (see problem number 1). With this change was born the now infamous PAL problem that according to Commodore does not exist. It requires you to determine what vendor manufactured your PALs and if they are the wrong ones they must be changed. This change must be made by a very qualified technician that knows how to remove ICs that are soldered into a four layer board. This is quick stuff for the qualified person.

WHO SHOULD MAKE THE CHANGES?

As we indicated the changes should be made by a qualified technician. They do not have to know anything about Amigas as the instructions that follow will provide all the information that is required. **MAKE THESE CHANGES AT YOUR OWN RISK.** Expansion Systems will not be responsible to damage done to your machine by information provided in this manual. If you do not wish to make these changes then return the undamaged DataFiyer 1000 unit to the dealer for a refund. Indicate that a full refund will be provided the dealer from the distributor. It is suggested that you remove the cover and the metal shield and take the computer into the service center. It takes as long or longer to remove the shield than the actual change.

Summary

For the DataFiyer 1000 to work properly certain changes must be made to your computer to correct defects in its manufacture. These changes must be made at your own risk.

THE PAL PROBLEM CORRECTIONS

Grounding

It was discovered that four of the PALs on the daughter card on the inside of the Amiga were suffering from noise. It seems that they were not connected to the ground plain on the card and this connection needs to be improved. The PALs in question can be found by removing the cover and shield from the computer and locating the daughter board. Looking from the REAR of the computer with the top off locate the daughter board. It will be upside down or with the solder side of the board facing up. A silk screened legend on the surface of the board will tell you where the PALs are located. See Figure 1. The four chips that need to be grounded are the DPALEN (J), DRUGEN (K), DPALCAS (L) and DRUGCAS (N). Some opinions have offered that the ground wire should be connected to a capacitor also shown in Figure 1. It is located in a white square and has a white + (plus) sign.

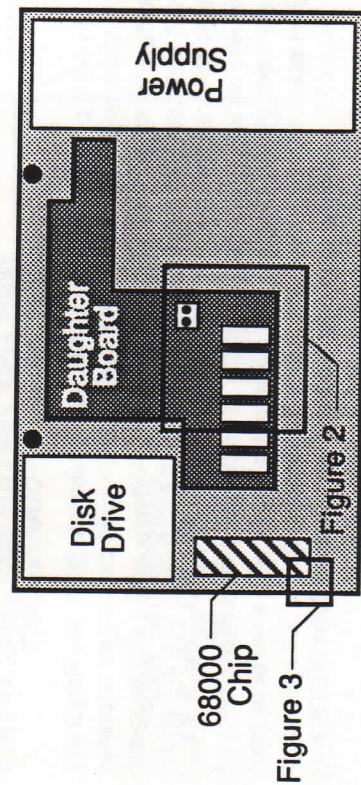


Figure 1

The pin number 10 of each PAL chip needs to be connected to ground. The number 10 pin is the very last pin of the row of pins that starts with a square soldering pad instead of a round pad. Find the pin which has a square pad and the number 10 pin is the very last pin on the other end of the same row. Refer to Figure 2. Daisy chain the wire from PAL J to K to L to N. Now, the negative side

of the capacitor needs to be grounded and that pin is the one furthest away from the + (plus) sign printed on the board. It should be the pin on the right if you are still looking from behind the machine.

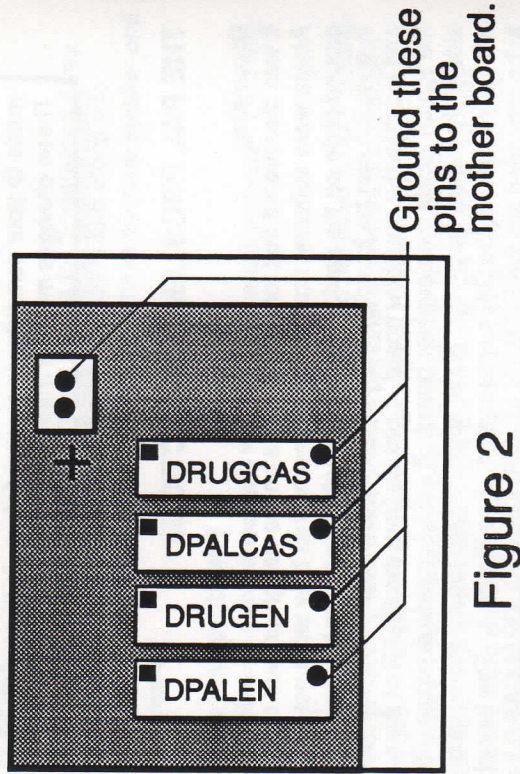


Figure 2

Once the daisy chain connection is made the wire is then taken down to a solid ground point near the 68000 on the mother board as shown in Figure 3. Use heavy wire to make the connection.

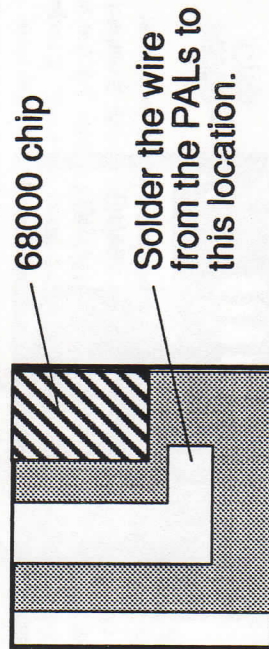


Figure 3

Swapping Your PALs

Not every A1000 needs to have the PALs changed. It seems that the older the machine the better your chance of having the correct PALs. You will need to inspect the PALs to see if a PAL Swapp is in your future.

On the daughter board (see GROUNDING section Figure 1) locate the J and K PALs. Using a mirror and a light source check the writing on the surface of the

IC. You are looking for the manufacturer. You will be looking under the board. If it says MMI then you are in luck. Those are the good ones and the Amiga Gods have smiled on you. If they were made by Texas Instruments (the logo is a small state of Texas) then you are not quite done. These will have to be replaced with a new set of faster chips that will function properly. A new set of replacement PALs can be obtained by calling our office and asking for the "A1000 PAL Upgrade Kit" The cost is \$49.00. The Kit includes the 20 pin sockets that are installed into the daughter board and the PALs are installed in the sockets. Again, this is not something that should be attempted by the casual user as damage can be done to your daughter board and it cannot be easily replaced.

A1000 AUTOBOOTING

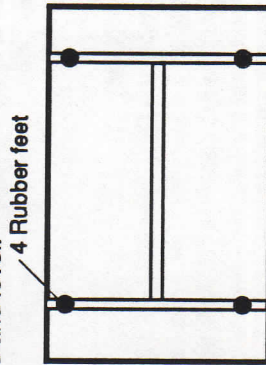
The A1000 will autoboot like any other computer except you will need to have at least Kickstart 1.3 installed. This version is the only version that will autoboot. Kickstart 1.2 will not autoboot.

YOU MUST HAVE KICKSTART 1.3 OR HIGHER TO AUTOBOOT

The computer will load Kickstart and then when it is done it will automatically start loading the hard drive. You may have something installed that eliminates the Kickstart disk and places it in ROM. This should be OK.

INSTALLING THE DATAFLYER 1000

The DataFlyer 1000 chassis plugs onto the expansion bus on the right side of the computer as you would normally face it. When the DataFlyer 1000 was being designed one of the objectives was to have both the standard height and the low profile 3.5 inch hard drives fit inside the case. It just so happened that the controller when it was connected to the bus was just one tenth of an inch too low. To avoid the increased expense to you if we provided a double chassis we decided to raise the A1000 a tenth of an inch higher. To do this we supply rubber feet that are to be installed under the A1000. Install these feet so that your A1000 will be stable and level.



Bottom view of A1000

Figure 4

Next install the hard drive into the DataFlyer Chassis. You must determine which way to orient the drive. This is determined by the type of interface that is to run the drive in the chassis. The drive is installed with the connector toward the front if it is an IDE drive and with the connector to the rear if the drive is a SCSI. This is to prevent the cable from having to be twisted. See Figure 4 and 5 for the proper orientation.

BEFORE INSTALLING HARD DRIVE CHECK FOR PROPER ORIENTATION BASED ON IDE OR SCSI

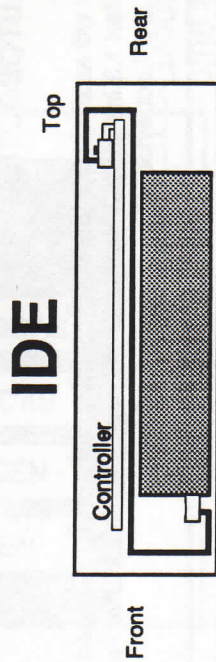


Figure 4

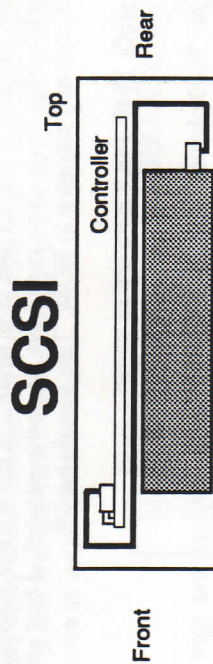


Figure 5

Installing the controller

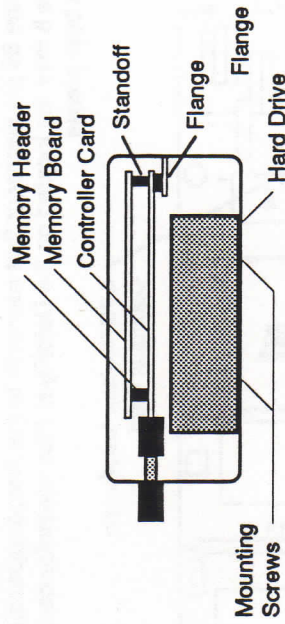
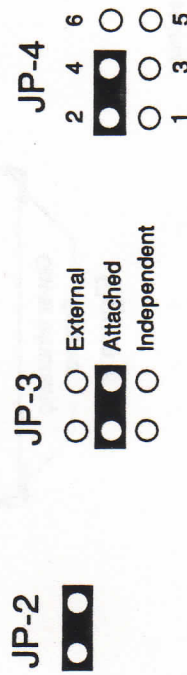
If you received your DataFlyer controller card packaged separately then remove it from its wrapping. Install it into the connector assembly in the chassis as shown in Figure 6 & 7. Press it into the connector firmly and all the way. The side of the controller that is opposite the connector should rest on a flange in the chassis. Two rubber feet under the controller card will keep it from shorting onto the chassis.

Installing the DataFlyer RAM

This is also the time to install the DataFlyer RAM card if that is going to be added to your system. It mounts on the Memory Header as shown in Figure 6. Configuring or setting the jumpers on the DataFlyer RAM is taken care of in its own instruction manual. Be sure that the different jumpers are in their proper position. The RAM manual will cover all situations except the one covered on the next page.

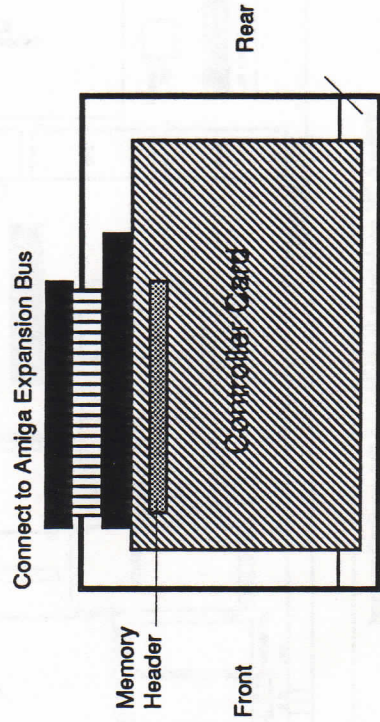
Installing the DataFlyer RAM only in chassis.

If you are installing ONLY the DataFlyer RAM card into the chassis you must have the JP-3 in the "ATTACHED" position. That's right. Again, if you are installing the DataFlyer RAM card as an independent card in the A1000 chassis without a controller card you must have it in the "ATTACHED" position. Remember when we said that as an A1000 owner you would have to be a little more flexible? It has to do with the Zorro I and Zorro II bus. Believe me it works. Also the JP-4 jumper should be in the 2&4 position. Also, JP-2 should be installed. Please see the examples below:



Front view of DataFlyer 1000

Figure 6



DataFlyer 1000 chassis top view

Figure 7

After the cards and hard drive are installed, slide the cover over the chassis base and install the four screws in the bottom.

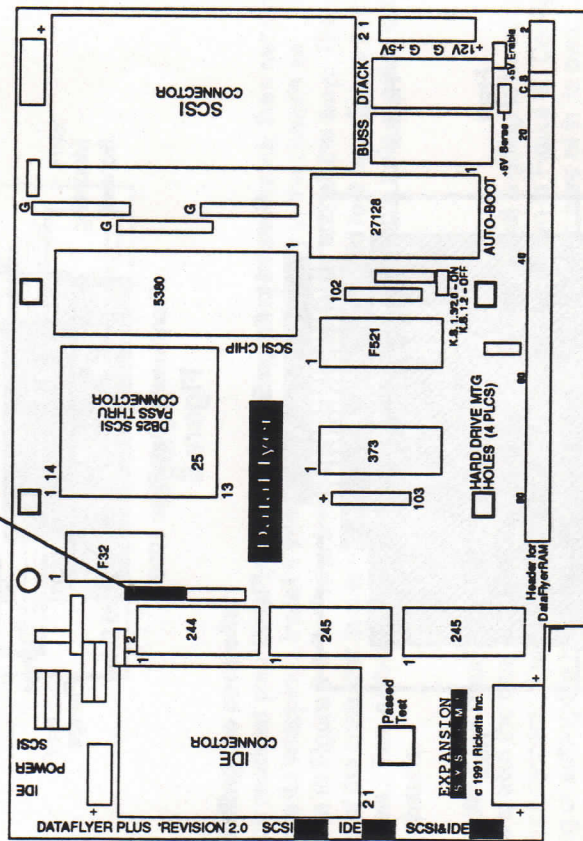
The diagram shows the DataFlyer 1000 device with a callout pointing to the cover mounting screws. The callout is a speech bubble shape containing the text "Cover Mounting Screws".

**Front view of unit
with cover installed.**

Reset Resistor

Every DataFlyer1000 must have a 4.7K "Pull Up Resistor" that connects pin 53 to +5 volts. In most DataFlyer 1000 units this resistor can be found on the bottom of the 86 pin connector that connects to the Amiga expansion bus. If it is not there it may be located on the DataFlyer Plus controller card. It should NOT be in both places.

4.7K Resistor Installed on Controller Card



If the 4.7K resistor is installed on the controller card it is not needed on the 86 pin card edge connector.