

AEROCOMP DISK DRIVE INSTALLATION INSTRUCTIONS  
April, 1981

1.0 HELLO

We have selected the MPI bare drive as the heart of the AEROCOMP disk drive system for several reasons:

a) BAND POSITIONER

Stepper-band positioner provides the industry's fastest access time (5ms) and most accurate positioning. Stepper-band is simpler in design compared to a cam or a lead screw. It is virtually frictionless, which provides extremely accurate and reliable positioning, yet requires the lowest power. As a result, it moves 5 times faster than other positioning systems.

b) HUMAN FACTORS ENGINEERED

Full closing, push button front door to provide greater media protection plus a patented ejector system that makes diskette removal easier.

c) DISKETTE CENTERING

True diskette centering is accomplished by a clutch mechanism. As the front door is closing, the extra-long clutch expands and gently engages the mylar media. When the clutch is seated, the diskette is locked securely in position to within 0.0008 inches. The result: the most accurate positioning, longer diskette life and trouble-free operation. Diskette ejector - an industry first - pops the diskette out within easy fingertip reach.

d) LOWER POWER CONSUMPTION

Industry's lowest power consumption (6W standby, 12W operating) due to: (1) high precision stepper motor with Samarium-Cobalt magnets. Motor is accurate to 3%, has less heat dissipation and longer life. (2) Proprietary electronics, packaged on a single PCB, incorporating low-power Schottky. (3) low-friction positioning mechanism.

e) OPTICAL SENSING

All write-protect and index sensing functions are accomplished optically. No mechanical switches.

AEROCOMP has chosen to add another very important feature - "Flippy", which allows the use of both sides of a diskette with a single headed drive by simply turning the diskette over. Cuts media cost by 50%.

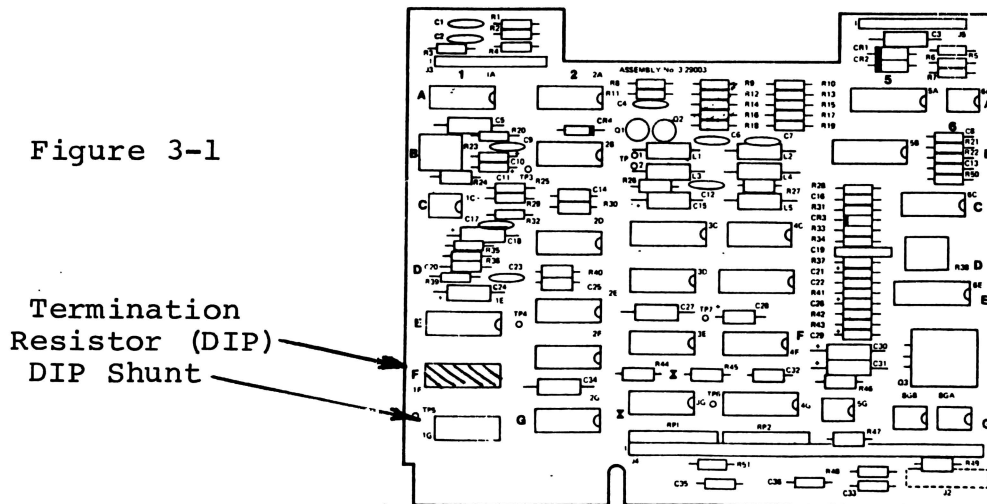
## 2.0 WHAT YOU NEED

To use AEROCOMP disk drives with the TRS-80 it is first necessary to have a TRS-80 Model I, Level II, 16K computer and a TRS-80 Expansion Interface or similar device such as an LNW Expansion Board. You will also need a disk drive interconnecting cable and one of the several Disk Operating Systems (DOS) available. It is a good idea to obtain the Radio Shack DOS (TRSDOS) diskette and manual as the documentation is very good. Be sure to obtain the 2.3 revision of TRSDOS as earlier versions have numerous bugs. TRSDOS is setup for 35 track operation only, however the TRSDOS 2.3 sold by AEROCOMP is patched for 40 track operation.

We highly recommend that you use one of the 40 or 80 track operating systems available on the market such as DOSPLUS, LDOS or NEWDOS 80.

## 3.0 HOW TO HOOK UP THE 40-1 AND THE 80-1 SINGLE-HEAD DRIVES

Remove all power from the system. All AEROCOMP disk drives are shipped with a termination resistor installed. The termination resistor **MUST BE INSTALLED** for DRIVE 0 applications. If you are using the 40-1 drive(s) as drives 1, 2 or 3 the termination resistor **MUST BE REMOVED**. See Figure 3-1 for the location of the termination resistor.



If you are using a Radio Shack disk interconnecting cable connect the disk drives as illustrated in Figure 3-2.

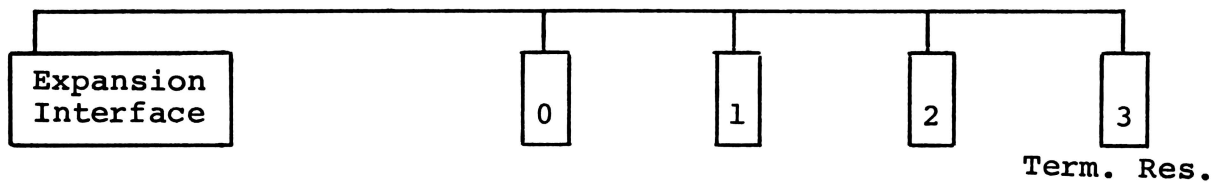


Figure 3-2

If you are using an AEROCOMP disk interconnecting cable connect the disk drives as illustrated in Figure 3-3.

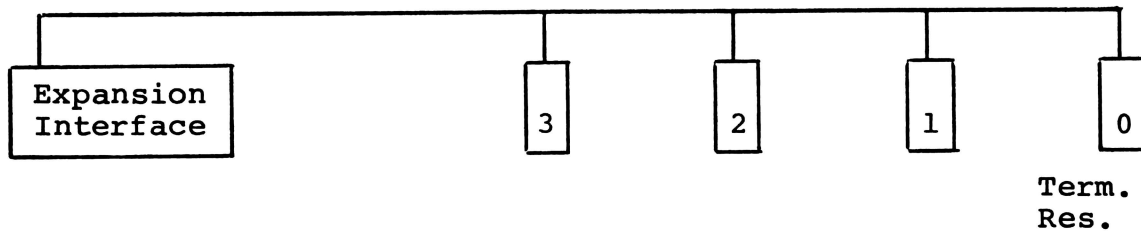


Figure 3-3

The DIP (Dual Inline Package) Shunt is used to program the drive so that it performs in a certain manner. The only user changeable function is whether the head load solenoid operates when the drive motor is turned on (pins 7 - 8 shorted) or when the drive is selected (pins 1 - 14 shorted). Either one, but not both, may be selected. The drive is shipped with pins 1-14 shorted and pins 7-8 open. The MUX line (pins 5-10 ) should always be open.

We recommend that you use the AEROCOMP disk drive interconnecting cable as it places drive 0 at the end of the cable rather than in the middle. By placing drive 0 at the end the cable is properly terminated and not subject to 'ringing'. To connect the cable to the drive(s) remove the four phillips head screws securing the cover to the base. Put the drive 0 connector on drive 0 , the drive 1 connector on drive 1, etc. The connectors are numbered and keyed for proper orientation. Remember, you must always have a drive 0 in the system as this is the drive that must contain the DOS used to boot when the system is reset.

Aerocomp single-head disk drives may be used as any drive (0,1,2,3) and may be intermixed with other manufacturers disk drives. Replace the cover and the four phillips head screws.

## HOW TO HOOK UP THE 80-2 AND THE 160-2 DUAL-HEAD DRIVES

Remove all power from the system. Each 80-2 and 160-2 is configured to operate as a particular pair of drives (0&1, 2&3, 1&3 etc.). Once the drive has been configured it can be changed by returning it to AEROCOMP and specifying the new configuration. There is a small charge for this service.

The AEROCOMP interconnecting cable for the 80-2 and the 160-2 is different than the standard drive cable and must be used. The difference is that the drive select pins in the connector are not removed for the unused drives as they are for the single-head drives. The cable is marked to eliminate confusion. Connect your cable as shown in figure 3-3. Your cable may have less than four connectors but drive 0 always goes at the end.

Leave the Terminating Resistor installed in each 80-2 and 160-2 no matter how your system is configured.

Each 80-2 and 160-2 appears as two drives to the TRS-80. For example, if your drive is configured as drives 2/3 when you read or write to drive 2 you are using the inside, or normal, head. When you read or write to drive 3 you are using the outside head. Each head is wired to look like a single drive to the TRS-80.

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**      ****      ****      ****      LOOK      ****      ****      ****      **
**      ****      ****      ****      NOTE      ****      ****      ****      **
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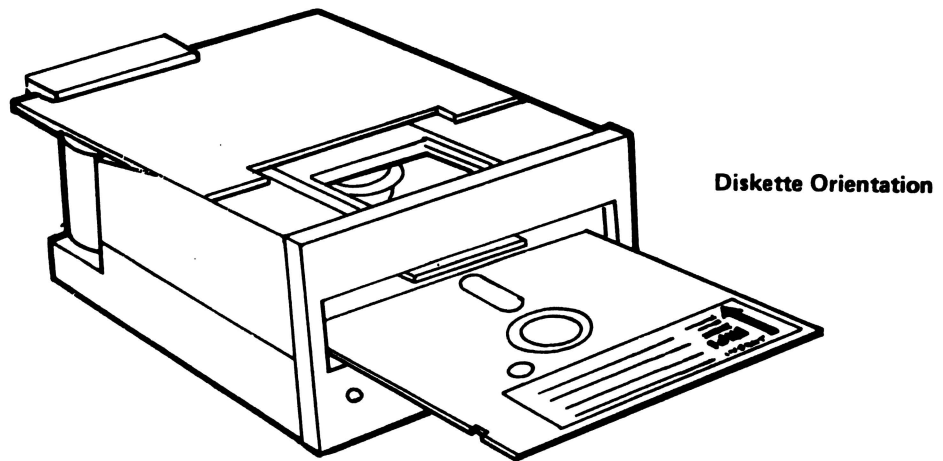
80-1 and 160-2 disk drives WILL NOT BOOT OR READ 35 or 40 track diskettes. The track spacing on 80 track drives is 96 tracks per inch (TPI). The track spacing on 35 and 40 track drives is 48 TPI. You must copy data from a 35 or 40 track diskette to an 80 track diskette. Then you may boot and/or read the data. In order to fully utilize the drives you should have an 80 track operating system.

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### 4.0 HOW TO CHECK YOUR SYSTEM OUT

The best way to check out your new AEROCOMP disk drive is to connect it as drive 0 and disconnect any other drives in the system. After all connections are made and without a diskette in place apply power to the disk drive, the expansion interface and the CPU in that order. Place a DOS diskette in the disk drive as shown in Figure 4-1 with the write protect notch down.

Figure 4-1



The index hole must be down and the label must face the door. This orientates the diskette for reading and writing on the correct side. Insert the diskette all the way until you feel and hear a 'click'. Now close the door and boot the system by using the RESET button at the left rear of the CPU. The indicator lamp on drive 0 will light and the motor will come on as the CPU reads the DOS. After a few seconds the video monitor will display 'DOS READY' and the indicator light will go out and the drive motor will stop. In the event the video monitor does not display 'DOS READY' and the drive motor continues to run check that the disk is inserted correctly and the drive cable is not reversed at the drive or at the expansion interface.

## 5.0 HOW TO OPERATE

Learn to know and understand the particular DOS you are using be it DOSPLUS, LDOS, NEWDOS, TRSDOS or whatever. The AEROCOMP 40-1 and 80-1 disk drives will read and write both sides of the diskette by following this procedure. To use the front or normal side of the diskette insert as described above. To use the back side just 'flip' the diskette over. The AEROCOMP 40-1 and 80-1 disk drives have an additional write protect sensor and an additional index sensor to allow both sides of a normal, single-sided diskette to be used. While these diskettes are only certified for use on one side the back side works just as well plus you save 50% on diskette cost.

Once you have your system connected as you desire you need only observe a few hard and fast rules.

- a) ALWAYS remove all diskettes from the disk drives before you apply or remove power to the system.
- b) NEVER turn any part of the system on or off with a diskette in the drive(s).
- c) ALWAYS use the RESET button to re-boot the DOS. Do not use the on/off switch.

## 6.0 HELPFUL HINTS AND OTHER TRIVIA

The TRS-80 is a powerful computer. It is also a high volume, mass produced consumer item. Consequently the techniques used in its design and manufacture are based on production costs and requirements rather than for utmost reliability. One of the most frequent problems is with the TRS-80 interconnecting cables due to the card edge fingers not being gold plated.

To compensate for this you must periodically clean the edge connector contacts. Use a "PINK PEARL" eraser and rub the edge connector contacts on both sides of the board on the expansion interface and the CPU. All the cable connectors are gold plated as are the edge contacts on the AEROCOMP disk drives.

In some locations with electrically noisy power lines you will find that a well designed power line filter will stop or reduce inadvertant re-booting of the system. The AEROCOMP disk drives already incorporate transient suppression in the power supply. Should you have an unusual problem please contact us and we will try and help.

DO NOT DEFEAT THE GROUND LEAD on the power cord. Always plug your disk drives into a 3-wire, grounded outlet. The ground is necessary for your protection and the proper operation of your disk drives.

The TRS-80 Video Monitor has a source of high frequency high voltage on its left side. This signal can cause disk errors if the disk drive(s) are placed on the left side of the monitor. Always place the disk drive(s) on the right side of the monitor as far away as possible.

## 7.0 MODIFYING TRSDOS FOR 40 TRACKS

TRSDOS 2.3 is a 35 track DOS. If you would like a 40 track or an 80 track version please send us your ORIGINAL TRSDOS diskette and specify whether you want the 40 track version or the 80 track version. There is no charge for this modification.

## 8.0 MAINTENANCE & SERVICE

The only user servicable part of the disk drive and power supply is the read-write head and the fuse. Periodically clean the read-write head using a quality head cleaner. Replace the fuse once if it blows. If it blows again it is likely that there is a problem with your power supply.

AEROCOMP will provide service for your disk drive and power supply at the following rates if the unit(s) are out of warranty.

|                                    |         |
|------------------------------------|---------|
| Power Supply Flat Rate Labor Only: | \$10.00 |
| Disk Drive Flat Rate Labor Only:   | \$40.00 |
| Disk Drive Clean and Align Only:   | \$20.00 |

Should a unit be returned for repair and no problem can be found a charge of \$10.00 will be made to cover the checkout procedure.

All units being returned for repairs or adjustments should be sent PREPAID and INSURED. Try to ship UPS if at all possible. Collect shipments and damaged cartons will be refused.

Shipping: AEROCOMP, INC.  
Address Redbird Airport #8  
Dallas, Texas 75232

Mailing: AEROCOMP, INC.  
Address P.O. Box 24829  
Dallas, TX 75224

TOLL FREE PHONES ARE FOR ORDERS ONLY. Nobody at the toll free location has any technical or applications information.

|                                   |                     |
|-----------------------------------|---------------------|
| USA except Calif., Alaska, Hawaii | 800-824-7888 ext 24 |
| California                        | 800-852-7777 ext 24 |
| Alaska and Hawaii                 | 800-824-7919 ext 24 |

For TECHNICAL HELP or APPLICATIONS INFORMATION call the NATIONAL TECHNICAL OPERATIONS CENTER at 214-337-4346.

The complete RADIO SHACK line of computer hardware and software is available from AEROCOMP at 15% off list price.

## 9.0 LIMITED WARRANTY

AEROCOMP Disk Drives and Power Supplies are guaranteed for a period of 120 days from the date of delivery to the original purchaser to be free from defects in materials and workmanship.

Should a Disk Drive or Power Supply fail during this period the complete Disk Drive and Power Supply must be returned to AEROCOMP, Inc. along with proof of purchase. Any return must be prepaid. Upon inspection, AEROCOMP will, at its sole election and expense, repair, adjust or replace the Disk Drive or Power Supply and return it to the original purchaser at no charge.

THIS WARRANTY SHALL BE EXPRESSLY IN LIEU OF ANY OTHER WARRANTY EXPRESSED OR IMPLIED INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND THE REMEDY SET FORTH IN SUCH WARRANTY WILL BE THE ONLY REMEDY AVAILABLE TO ANY PERSON.

MERCHANTABILITY IS DEFINED AS ANY PROMISE THAT THE GOODS ARE FIT FOR THE ORDINARY PURPOSE FOR WHICH SUCH GOODS ARE USED. AEROCOMP, INC, SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGE OF ANY KIND. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

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214-337-4346 9:00AM to 5:00PM Central Time Zone

