COMMANDER ELECTRONIC SYSTEMS, INC.

COMMANDER II DISK DRIVE OPERATING MANUAL

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NOW HEAR THIS!

While it is recommended that all sections of this manual be read, we realize that those with prior experience may choose to read only selected portions of this manual. However, no matter what your level of expertise, test your COMMANDER II disk drive with the enclosed test disk prior to using. If your drive fails this test, immediatly return it to your dealer.

USE OF DRIVE WITH COMMODORE 64 OR VIC 20

The COMMANDER II is set up for use with the Commodore 64. It may also be used with the VIC 20. However, the VIC 20 requires a different speed for incoming data and it must be reset by the following commands:

COMMAND TO CHANGE DRIVE FROM COMMODORE 64 TO VIC 20

OPEN 15,8,15,"UI-":CLOSE 15

COMMAND TO CHANGE DRIVE FROM VIC 20 TO COMMODORE 64

OPEN 15,8,15,"UI+":CLOSE 15

0.0 SHAKE DOWN CRUISE(TEST RUN)

If you do not have previous experience with disk drives,please read Sections 1.0 through 3.2 before running this test.

PROCEDURE

1. Insert test disk into disk drive.
2. Enter the following command: LOAD "TEST",8
3. Press RETURN.
4. Type RUN.
5. Press RETURN
6. Follow instructions on screen to remove test disk and put blank disk in the drive
7. If drive fails to pass the test,return it to your dealer immediately.
8. After your drive passes the test, remove the test disk and proceed with the next section of the manual.

1.0 THE CHRISTENING (INTRODUCTION)

Congratulations! You are now the proud owner of the COMMANDER II disk drive which will launch your Commodore 64 or VIC 20 into a whole sea of possibilities.

Your COMMANDER II drive is a single, serial drive created to enhance the capabilities of your computer.

The disk drive operation is similar to that of a stereo turntable. The disk drive mechanism spins a disk much as a turntable spins a record. A stereo uses a cartridge to play (read) the spinning record. However, instead of a cartridge, the disk drive has a head like that in a tape recorder and, like a tape head, the disk head can both "read" (play) and "write" (record) information on the disk.

This manual will provide you with sufficient information to operate your Commander II drive. However, this manual should be used in conjuction with your Commodore 64 and VIC 20 User's Guide and Programmer's Reference Guide.

2.0 LAUNCHING (UNPACKING AND INSTALLATION INSTRUCTIONS)

2.1 REMOVAL OF PACKING MATERIALS

The COMMANDER II drive is carefully packaged to avoid damage during shipping. Therefore, packing materials must be removed from the unit prior to its use.

PROCEDURE

1. Carefully remove unit from box.
2. Press down on upper portion of latch on front of disk drive to raise door covering slot. See diagram 2.1A
3. Remove cardboard packing from slot and discard.

2.2 CONNECTING POWER CABLE

The power cable is included in the box with your drive. See diagram 2.2A

PROCEDURE

1. Insert disk drive connector end of power cord into power cord recepticale at back of disk drive. See diagram 2.2B
2. Check power switch to be sure it is in off position. (White dot will be in up position) See diagram 2.2C
3. Plug the three pronged end of the power cable into 110 volt outlet. If the red light comes on and the drive makes noises you forgot step 2.

2.3 CONNECTING THE DISK DRIVE TO THE COMPUTER

1. The serial cable is included in the same box as the drive and is used to connect the disk drive to the computer. You can identify the serial cable by the round 6 pin "DIN" connector at each end.

2. As with any peripheral device, make sure the power is "off" before
   connecting cables.
3. Plug either end of the serial cable to the serial port on the back of
   your computer (see Commodore instruction manual) and the other to either
   of the two serial ports on the side of the drive.

3.0 BUILDING STEAM (START-UP)

3.1 POWERING-ON

Once your computer and all its peripheral devices have been properly
connected to one another, it's time to turn on the power.

A. PROCEDURE

1. Before powering on make sure you have removed all disks from the drive.
2. Turn on all peripheral devices.
3. Turn on the computer.

B. WHAT YOU CAN EXPECT

1. Your disk drive will go through it's starting sequences.
2. Initially, red drive operation light (upper right corner), red power
   light (lower left corner), and amber error light (lower left corner)
   will light up on the drive.
3. After a few seconds, the red drive operation light and the amber
   error light will go out. Red power light will remain on. Drive is
   now ready for operation.

3.2 FULL STEAM AHEAD (INSERTION OF THE DISK)

A. Procedure

1. Press door catch lightly and door of disk drive will pop open.
2. Hold disk with title side up and notched edge on left side. Holding
   the disk parrallel to the disk housing opening, insert disk gently
   into drive. Press the disk gently into the drive until you feel
   a click. This indicates that the disk is locked into place. (When,
   released, disk will not spring out of drive.)
3. Close door of drive by pulling downward until latch clicks and locks
   in place. Now you are ready to begin.

3.3 ALL STOP (REMOVAL OF DISKETTE)

Always remove disk prior to turning off disk drive. NEVER remove disk when
amber light is on as data can be destroyed by the drive at this time.

A. Procedure

1. Press door catch lightly and door of drive will pop open.
2. Any disk inside of drive will automatically be partially ejected
   from the drive by a small spring as the door opens.
3. Grasp leading edge of disk and pull gently forward to complete removal.
4. Place disk in protective jacket and file in safe place.

3.4 CARE OF DISKETTES

1. Keep disks away from all magnetic fields as they will erase information
   stored on disks.
2. Do not touch exposed surface of disk as contents may be destroyed.
3. Always store disk properly in protective jacket when not in use.
4. Do not bend or fold disk.
5. Do not write on disk or on it's jacket while the disk is in it.
6. Do not expose disk to heat or sunlight. Do not place disk on computer
   or peripherals as heat they produce may damage disks.
7. Make sure power is "on" before inserting into or removing from disk drive.
8. Always remove disk before turning off disk drive.

4.0 S.O.P. (Operating Instructions)

See section 5.0 for instructions regarding use of specific commands.

What you can expect

Once you insert a diskette per instructions in section 3.2, and begin opera-
tion, lights will react as follows:

1. While drive is running; red drive operation light will be on and
   amber error light will flash rapidly to indicate drive is performing
   read-write operation. See diagram 4.0A
2. When drive has completed operation:
   a. Either drive will indicate it is again ready for use (See section
      3.1,B,Step 3)
   b. Or drive mechanism will cease to function but amber light will
      continue to flash to indicate an error. See diagram 4.0B

5.0 COMMANDS (Training Mission)

The simplest way to learn to use the commands is by using them. Therefore,
we are going to take you through each process from start to finish.

For each command, we will provide you a "Sample Procedure" which will afford
you "hands on" experience using the command. In addition,"Command Definition"
will show you the format options for each command.

5.1 OPEN (Command)

All commands, except the SAVE and LOAD commands, require that the device
(drive) be opened before it can be used.

"SAMPLE PROCEDURE"

To OPEN a channel to your Commander II Disk Drive:

    1. Type: OPEN 15,8,15
    2. Press "Return" key.
    3. The screen will display "Ready" indicating that the "OPEN" command
       has been accepted.

ERROR NOTE:

If you type, OPEN 15,8,15 again, you will receive the following error message:

    "Device Open Error"

This tells you that the device is already open.
Ignore the message and proceed with processing.

COMMAND DEFINITION:

Command: Open File#, Device#,"File name"

Definition: File#- Can be any number from 1 to 255. However numbers of 127
                   can cause unwanted line feeds (an extra blank line to
                   appear after each "return").

         Device#- Usually 8, unless changed through software or hardware.

         Channel#- Can be a number from 2 to 14 for data transfer. Must
                   be number 15 for commands.

         File name - Optional

5.2 PRINT #15 (Commands)

After you have opened command channel #15 to your drive, you can give it
a variety of commands by using:

        Print# 15, COMMAND

See sections 5.3,5.5,5.9-5.12 for further information regarding each of
these commands.

5.3 NEW (Command-Initiate)

After command channel 15 has been opened (See Section 5.1),this command
is used to initiate a new diskette or erase an existing diskette in preparation
for data entry.

"SAMPLE PROCEDURE"

1. Place a BLANK diskette, repeat BLANK diskette into your drive. Did we
   say BLANK diskette? If it isn't blank, it will be in a minute.
2. Type: PRINT# 15,"NEW 0: TEST, X1"
3. Press "Return"
4. Your drive will now format your diskette to receive data by:
   A. Erasing any data previously recorded on the diskette; and
   B. Initiating a directory naming the entire diskette: "TEST,X1"; and
   C. Attaching the identifying characters ,"X1", to a label.

"SAMPLE PROGRAM"

Before proceeding to additional commands, enter this short
program:

    A. Type: 10 FOR X= 1 to 10
    B. Press "RETURN"
    C. Type: 20 "Commander II Disk Drive"
    D. Press "RETURN"
    E. Type: 30 NEXT X
    F. Press "RETURN"
    G. Type: RUN
    H. Press "RETURN"

You have now created a small program which can be used to practice "sample
procedures" for other commands. Proceed to Section 5.4.

COMMAND DEFINITION

Command:

    PRINT# 15, "NEW drive# : Name,id"

Definition

    °Print# 15, "NEW -Always typed to input this command

    °Drive# - Number of single drive is usually 0; additional drives are
              numered 1, 2, 3, etc.

    °Name   - Name entered here goes to the directory as the name of the
              entire diskette.

    °ID   - Any two identifying characters which are placed on the directory
              and on every block throughout the diskette.

5.4 SAVE (Command)

Once you have entered data on your diskette, you will want to SAVE that
information or commit it to memory on the diskette. Be sure you have entered
the SAMPLE PROGRAM from Section 5.3 prior to proceeding with the following
SAMPLE PROCEDURE.

SAMPLE PROCEDURE

1. Type: SAVE "COMMANDER", 8
2. You have now saved the small program created in Section 5.3 under the
   file name "COMMANDER".

COMMAND DEFINITION

Command: SAVE "Program name", device#, command#

Definition: Save- Always type to indicate command.
             Program name- Indicate name under which you wish program to
                          be saved.
             Device#- Usually 8, unless changed through software or hardware.

             Command- Optional

APHABETIC COMMANDS REFERENCE CHART

COMMAND NAME	DATA INPUT	USE	REFERENCE
COPY	PRINT# 15,"COPY drive#: new file=drive#:old file or PRINT# 15,"C drive#: new file=drive#:old file	To copy a program on a disk drive to another program on the drive.	Section 5.9
COPY TO COMBINE FILES	PRINT# 15,"C drive#:new file=drive#:old file, drive#:old file 2,drive#:old file 3, drive#: old file 4"	To combine 1 to 4 files on the disk	Section 5.10
INITIALIZE	PRINT#15,"I"	To release drive from error condition ("lock up")	Section 5.5
LOAD	LOAD"Program Name",device#,command# (Command#,optional)	To load a prepackaged or previously recorded diskette into the disk drive	Section 5.7
NEW	PRINT#15,"NEW DRIVE#:name,id" or PRINT#15,"N drive#:name,id	To erase entire diskette and put timing & block markers on new or newly erased diskette in preperation for data entry.	Section 5.3
OPEN	OPEN file#,device#,channel#,file name" (file name,optional)	To open a file on a diskette to allow information to be input to the diskette	Section 5.1
RENAME	PRINT#15,"RENAME drive#:new name= Old name" or PRINT#15,"R drive#:new name=old name"	To change the name of a file once it is in the directory. This command will only work on files which are currently CLOSED.	Section 5.11
SAVE	SAVE "Program Name",device#,command# (command#,optional)	To save a program on the diskette	Section 5.4
SAVE & REPLACE	SAVE"@0: Program Name",device#,command#	To replace an existing program with a new or revised program & save the new or revised program under the existing program name.	Section 5.6
SCRATCH	PRINT#15,"SCRATCH drive#:name" or PRINT#15,"S drive#:name"	To erase unwanted files & programs from the diskette to make those blocks avail. for new information.	Section 5.12
VERIFY	VERIFY"Program Name",device#	To check the program currently in the computer's memory against the same program on the diskette to ensure that they are the same.	Section 5.8

5.5 INITIALIZE (Command)

The INITIALIZE command is used to regain control of your drive when you've made an error which has "locked it up".

SAMPLE PROCEDURE

1. Enter: Save "COMMANDER", 8 again to see what happens.
2. The amber light on your disk drive should be blinking to indicate an error because a file has already been saved under that name.
3. Your disk drive is now "locked up" due to the error. To release it:

   A. Type: OPEN 15, 8, 15
   B. Press "Return"
   C. Type: PRINT# 15,"I"
   D. Press "RETURN"
4. Your drive has now been returned to it's condition prior to the error.
5. Should you desire to replace information previously saved with new or revised data, use the SAVE and REPLACE command (Section 5.6) instead of the SAVE command.

COMMAND DEFINITION

Command:

   PRINT# 15,"I"

Definition:

   PRINT# 15,"I"-always type to return drive to your control.

5.6 SAVE and REPLACE (Command)

This command is used to replace information previously saved with new or revised data and then save the new or revised version on the diskette. The old version is erased during this operation. To save both versions, simply give the new version a different name when saving.

COMMAND DEFINITION

Command:

   SAVE "@0:Program Name",Device#,Command#

Definition:

   Save "@0: -Always type for this command
   Program Name -Indicate program name under which original
                  information was saved.
   Device# -Usually 8, unless changed through software or
              hardware.
   Command# -Optional

5.7 LOAD (Command)

The load command is used to cause information previously saved on a diskette to be entered into the memory and made available for use:

SAMPLE PROGRAM

1. Type: LOAD "COMMANDER",8
2. Press RETURN
3. Computer will indicate "SEARCHING FOR COMMANDER".
4. Computer will indicate "LOADING".
5. The program, "COMMANDER", has now been loaded into the computer's memory and is available for use.

Note: If you have forgotten the name of your program, you could:

   1. Type: LOAD "$", 8
   2. Press "RETURN"
   3. Type "LIST"
   4. Press "RETURN"

This will show you the diskette's directory which will indicate all the file names on the diskette. You can then select the correct name. Type: "NEW" and press return to clear the computer's memory.

If you type: LOAD "0:*",8 the computer will load first program on the diskette.

6. Type: LOAD "COMMANDER",8
7. You have now reloaded your program.

COMMAND DEFINITION

Command:

   LOAD "Program Name",device#, command#

Definition:

   Load- Always type to indicate command.
   Program Name- Indicate name under which program was saved.
   Device#- Usually 8, unless changed through software or
              hardware
   Command#- Optional

5.8 VERIFY (Command)

This command is used to verify that the program loaded into the computer's memory is exactly the same as that on the diskette.

CAUTION: Do not use this command on disks containing Random or Sequential files.

SAMPLE PROCEDURE

To ensure that the program loaded in 5.5 is correct:

1. Type: VERIFY "COMMANDER", 8
2. Press "RETURN"
3. This will cause the computer to recheck the program

COMMAND DEFINITION

Command:

    VERIFY "Program Name", device#

Definition:

    Verify- Always type to indicate command
    Program Name- Indicate name of program to be verified
    Device#- Usually 8, unless changed through hardware or
              software

5.9 COPY (Command)

This command is used to copy any program previously saved on
the diskette onto another program on the computer by another
name.

SAMPLE PROGRAM

Before proceeding further, using the program entered in Section
5.3, lets create another file for use in working with further
commands.

    Note: From now on, the term, "enter" will be used to indicate
          that you should type the information indicated and
          press return.

SAMPLE PROCEDURE

1. Enter: PRINT# 15, "COPY Ø : DISK= Ø: COMMANDER"
2. Enter: PRINT# 15, "COPY Ø : DRIVE= Ø: COMMANDER"
3. You have now created two copies of the Commander file and
   named them Disk and Drive
4. Check your file directory to see that all three files appear:
   A. Enter: LOAD "$",8
   B. Enter: LIST
   C. Enter: "NEW"
   To clear the computer's memory.

COMMAND DEFINITION

Command:

    PRINT# 15, "COPY drive#: New file name= drive#: old file
    name"

Definition:

    PRINT# 15," COPY -Always type to indicate command
    Drive#   -Indicate the number of the drive holding
                         the diskette
    New file name   -Indicate the name to which the file
                         is to be copied
    Drive#   -Repeat the number of the drive holding
                         the diskette. This command will NOT
                         copy from one drive to another.
    Old file name   -Indicate name of the file from which
                         the information is to be copied.

5.10 COPY (Command to combine files)

Using the copy command, you can merge several files together
to create a new file.

SAMPLE PROCEDURE

1. Enter: PRINT# 15,"CØ:DISK DRIVE = Ø: DISK,Ø:DRIVE"
2. You have now combined a copy of the files Disk and Drive
   to create an additional file named "Disk Drive".

COMMAND DEFINITION

Command:

    Print# 15,"C drive#: file name=drive#:file name# 1,drive#:
    file name #2"

Note:
    Additional files may be added by repeating, drive#: file
    name# 3,etc."

Definition:

    PRINT #15,"C -Always type to indicate command
    Drive#   -Indicate number of drive holding diskette
    File name   -Indicate name under which combined file
                    will be saved.
    Drive#   -Repeat drive humber shown above. Command
                    will NOT copy from one drive to another.
    File name#1   -Indicate name of first file to be copied.
    Drive#   -Again repeat drive number shown above.
    File name#2   -Indicate name of second file to be copied.

5.11 RENAME (Command)

The rename command is used to change the name of a file without altering its contents. This command will only work on files which are currently CLOSED.

SAMPLE PROCEDURE

Since the file name "DISK DRIVE" could be confused with other files, you may wish to rename it.

1. Enter: PRINT #15,"RØ: Sample=DISK DRIVE"
2. The file "DISK DRIVE" has now been renamed "SAMPLE".

COMMAND DEFINITION

Command:

PRINT# 15,"R drive#: New file name=Old file name"

Definition:

PRINT# 15,"R -Always type to indicate command
Drive#   -Indicate number of drive holding diskette
New File Name-Indicate new name to be given file
Old File Name-Indicate name of file to be renamed

5.12 SCRATCH (Command)

The SCRATCH command is used to remove (delete) an unwanted file from the diskette.

SAMPLE PROCEDURE

The file named, "SAMPLE", created in 5.8 is no longer needed. Therefore, we will delete it from the diskette:

1. Enter: PRINT# 15,"SØ: SAMPLE"
2. The file,"SAMPLE" has now been deleted from your diskette.

COMMAND DEFINITION

Command:

PRINT# 15,"S drive#: File Name"

Definition:

PRINT# 15,"S -Always type to indicate command
Drive#   -Indicate number of drive holding diskette
File Name   -Indicate name of file to be deleted

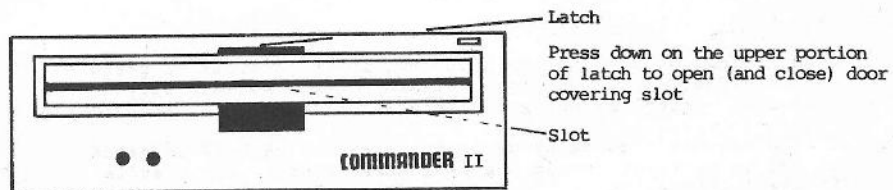## 5.13 PATTERN MATCHING AND WILD CARDS

When giving commands to the computer, it is possible to perform the same function to multiple files/program simultaneuosly by use of pattern matching and/or wild wild cards.

A wild card is created by using the question mark(?) in place of one or more letters in the program/file name. For example: PRINT# 15, "SCRATCH 8: T?N" would scratch TIN, TAN, TON, TEN, etc.

In pattern matching, the astrisk (*) following any character/string in a program name, will cause all programs beginning with that character/string to be affected. For example: LOAD "T*",8 would load TIN, TAN, TON,TEN, TEST, TOLL, TEXTILE, TROOP, etc.

Wild cards and pattern matching may be combined in one command. For example:PRINT# 15, "SCRATCH 8: T?N*" would cause all programs with names of any length, having the first letter of T and the 3rd letter of N to be erased.
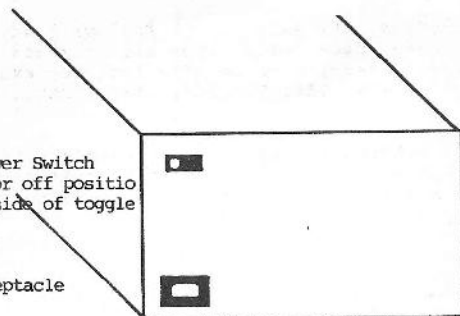
2.1A

Latch

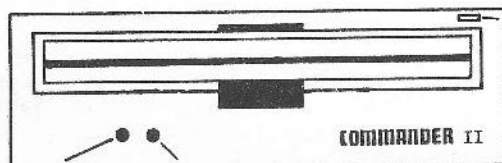Press down on the upper portion
of latch to open (and close) door
covering slot

Slot

COMMANDER II

2.2B / 2.2C

Power Switch
White dot is up for off positio
position & blank side of toggle
is depressed.

Power Cable Receptacle

4.0A

drive
mechanism
running

red drive operation
light "on"

Drive
Running

COMMANDER II

amber error
light flashing
to indicate drive
is operational

red power
light "on"

4.0B

drive
mechanism
not running

red drive
operation light
"off"

ERROR

COMMANDER II

amber error light
flashing to indicate error

redpower light "on"