

# Your Model C2N Tape Cassette

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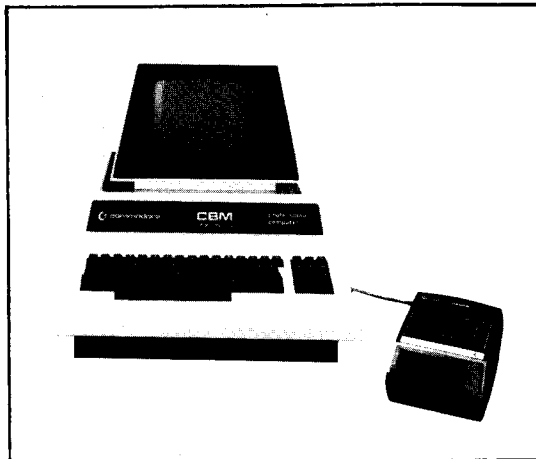
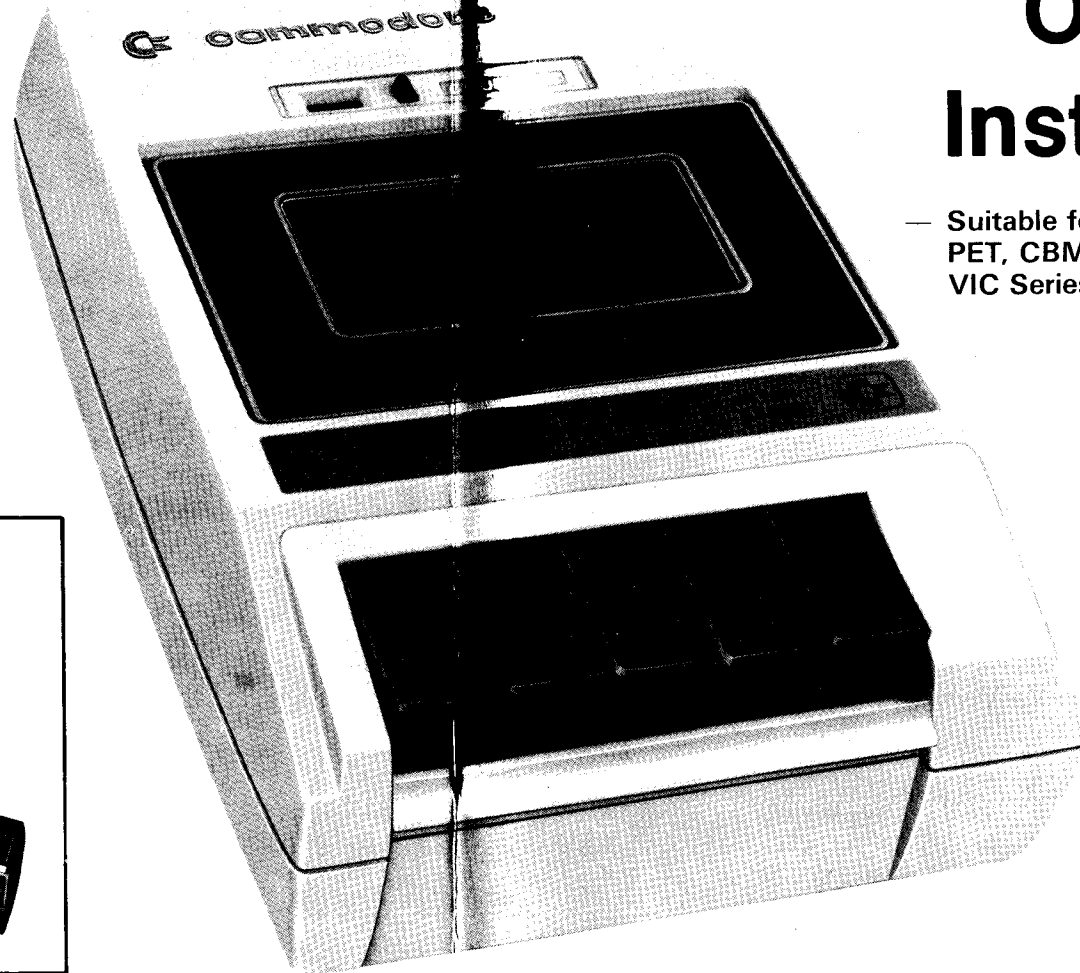
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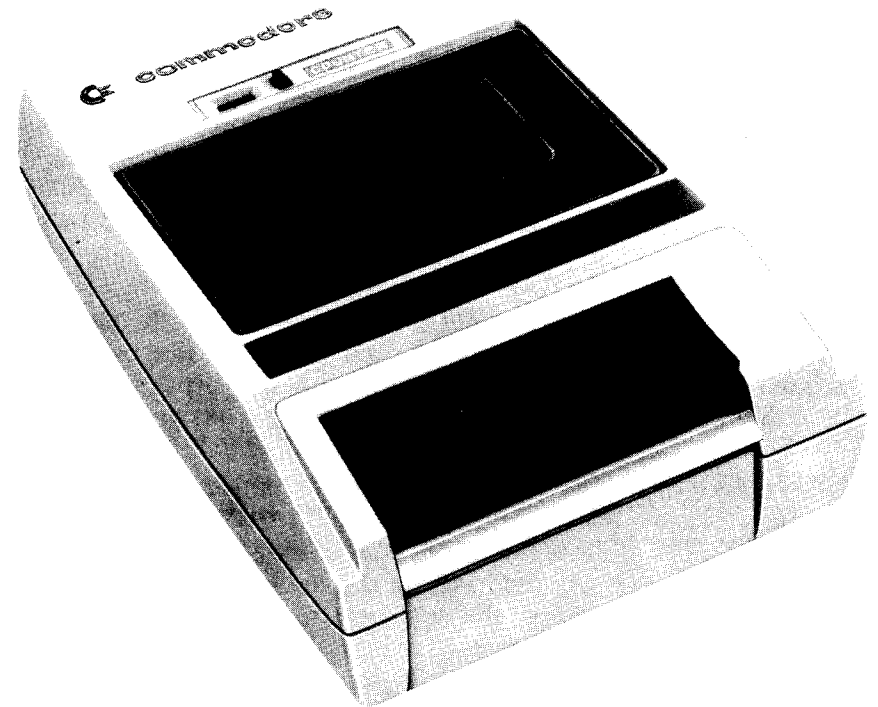
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## Operating Instructions

— Suitable for use with  
PET, CBM and  
VIC Series Computers —





Your Model C2N Tape Cassette will enable you to expand the input and output (I/O) capabilities of your PET, CBM or VIC Computer.

The software for using the cassette is already built into your computer. Please reference the appropriate Computer User Manual for detailed operating instructions.

# IMPORTANT INFORMATION ABOUT YOUR TAPE CASSETTE.

Model 2001 – PET and CBM

Please read carefully

PET Model 2001, 4K and 8K  
(Built-in Cassette)

On My Computer –  
WHERE IS CASSETTE NUMBER 1 HOOKUP?  
WHERE IS CASSETTE NUMBER 2 HOOKUP?

ANSWER: The built-in cassette is designated as cassette (device) number 1. Likewise, the cassette that plugs into the rear panel printed circuit board is designated as cassette number 2.

### CAUTION

When mating the tape cassette connector plug to the printed circuit board; DO SO WITH CARE. DO NOT FORCE THE CONNECTION. Your tape cassette plug connector is one of two types. In all cases the “blue” wire on the connector should be to your right. DO NOT install the tape cassette connector with power applied to the computer.

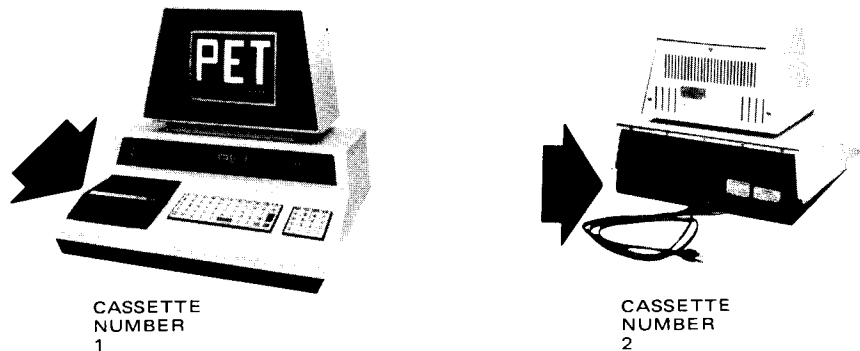


Figure 1. PET DEVICE DESIGNATIONS

On My Computer –  
WHERE IS CASSETTE NUMBER 1 HOOKUP?  
WHERE IS CASSETTE NUMBER 2 HOOKUP?

ANSWER: In the PET and CBM computers (with the graphic or business keyboard) the cassette that plugs into the rear panel circuit board is designated as cassette number 1. The cassette that plugs into the internal printed circuit board (by removing four phillips-head screws and lifting the computer housing) is designated as cassette number 2. Two each phillips-head screws are located on the underside of the top housing cover (two each side). Lift the housing cover carefully and prop it open with the built-in holding rod. Reinstall the screws when the connection is complete.

### CAUTION

When mating the tape cassette connector plug to the printed circuit board; DO SO WITH CARE. DO NOT FORCE THE CONNECTION. Your tape cassette plug connector is one of two types. In all cases the “blue” wire on the connector should be to your right. DO NOT install the tape cassette connector with power applied to the computer.

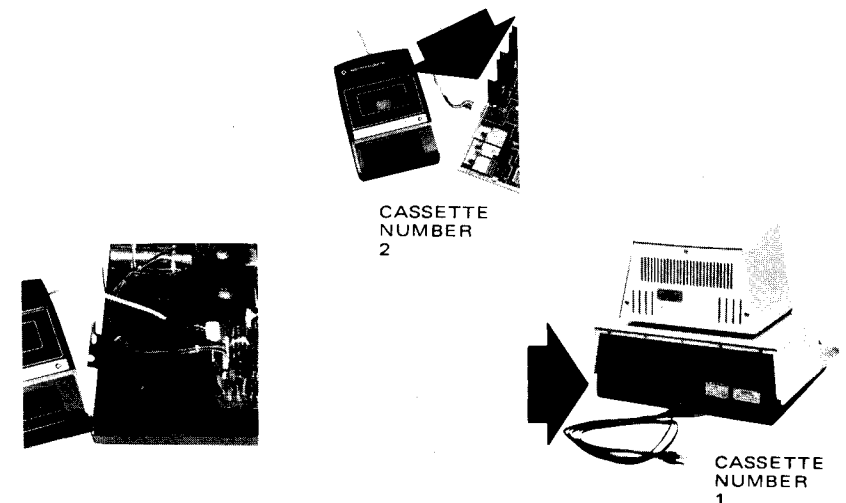


Figure 2. PET/CBM DEVICE DESIGNATIONS

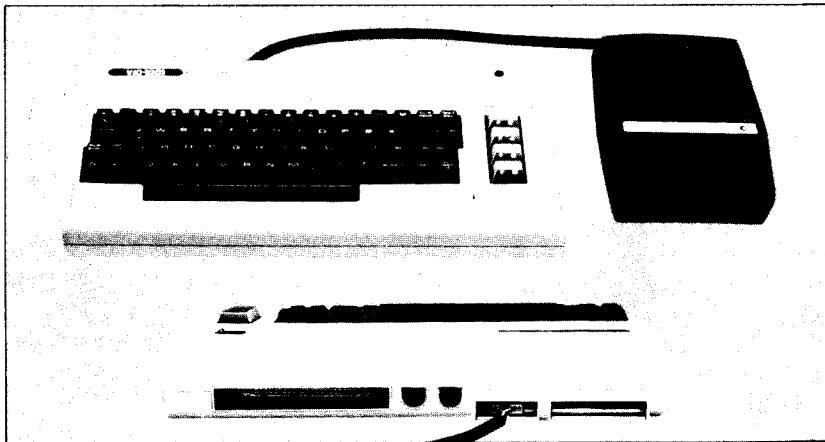
### On My Computer — WHERE IS CASSETTE HOOKUP?

ANSWER: Your VIC Computer has only one cassette interface which is located at the rear of your computer.

#### CAUTION

When mating the tape cassette connector plug to the printed circuit board; DO SO WITH CARE. DO NOT FORCE THE CONNECTION. Your tape cassette plug connector is one of two types. In all cases the "blue" wire on the connector should be to your right. DO NOT install the tape cassette connector with power applied to the computer.

FOR THE FUNCTIONAL CHECKOUT PROCEDURES, PLEASE FOLLOW THE PROCEDURES FOR CASSETTE NUMBER 1.



## PRELIMINARY CHECKOUT

- STEP 1. Turn your computer ON. Verify that, with the first cassette in the stop mode, (all keys up) the motor is not running.
- STEP 2. Press "PLAY" and check the movement of the tape heads toward the spindles and the engaging of the capstan by the pinch roller (see Figure 3). The take-up spindle should be moving smoothly in a counterclockwise direction.
- STEP 3. Press "STOP" then "REW" (Rewind.) The tape heads should remain in the back position and the supply spindle should move rapidly clockwise.
- STEP 4. Press "STOP" then "F.FWD" (Fast forward.) The tape heads should still remain in the back position and the take-up spindle should move rapidly counterclockwise.

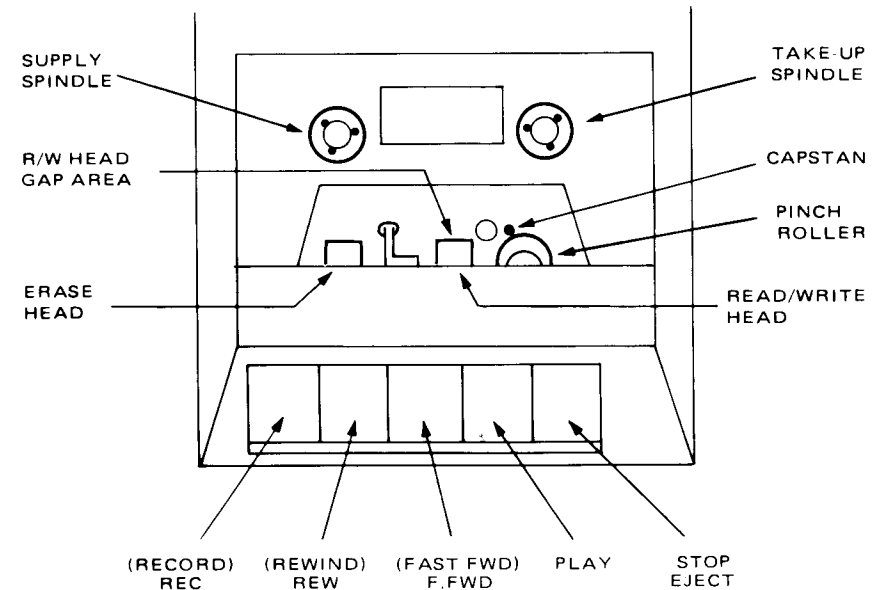


Figure 3. MECHANICAL COMPONENTS LOCATION

STEP 5. Press "STOP" and then attempt (but very gently) to press "REC" (Record.) You should feel strong mechanical resistance.

STEP 6. If all of the above steps check out, proceed to the electronic checkout.

## FUNCTIONAL CHECKOUT PROCEDURES

To test proper operation of your new CASSETTE unit, we will write a short program, SAVE it on the cassette, and load it back into the computer.

Obtain a blank cassette and place it in the CASSETTE unit. Always press REW (Rewind) to assure that you are starting at the beginning of the tape.

The remainder of this section will indicate operational information for both cassette units where entry or computer response differs even though you may be using only one.

Turn your computer OFF and make sure that your cassette is properly connected.

STEP 1. On the keyboard type: 10 PRINT "THIS IS A TEST"

STEP 2. Press RETURN

STEP 3. Type:

- if CASSETTE 1: SAVE "TEST"
- if CASSETTE 2: SAVE "TEST", 2

STEP 4. Press RETURN

The display will show:

- if CASSETTE 1: press play & record on tape #1
- if CASSETTE 2: press play & record on tape #2

Follow the instructions by depressing PLAY and REC on the cassette unit until they are latched down.

The display will show:

OK	( * VIC:	OK
WRITING TEST		SAVING TEST )

and after a few moments it will display:

READY

STEP 5. Your program has now been SAVED. To test this, erase your computer's memory by typing: NEW. Press RETURN.

The display will show:

READY

STEP 6. Type: LIST. Press RETURN.

The display will show:

LIST  
READY

indicating that your computer's memory is blank.

STEP 7. REWIND your cassette by pressing REW and then STOP.

STEP 8. Type:

- if CASSETTE 1: LOAD "TEST"
- if CASSETTE 2: LOAD "TEST", 2

After a short period the display will show:

OK  
SEARCHING FOR TEST  
FOUND TEST  
LOADING  
READY

STEP 9. Type: LIST. Press RETURN. Now the display shows that your computer's memory has received the program TEST as follows:

10 PRINT "THIS IS A TEST"  
READY

Upon the successful completion of these checkout procedures your cassette has been properly validated and is ready to go to work.

If you are unable to successfully complete these checkout procedures contact your local Commodore dealer. You may be having a problem with either your Computer or Tape Cassette Unit. But do try a few times before contacting for service.

## CASSETTE OPERATION

Each tape cassette has been assigned an INPUT/OUTPUT (I/O) device number within your computer's operating system. Device number 1 has been assigned to tape cassette 1 and correspondingly for tape cassette 2.

To simplify tape cassette usage, your computer's memory assumes, unless otherwise specified, that all I/O instructions are intended for device number 1. Tape cassette unit 2 must be specified in each I/O command.

### COMMANDS

#### SAVE "name", B

Will save a program through the tape cassette where *name* is the name given to the program by the user, and distinguishes it from other programs and data (files) on the same tape. If double quotes are used, the computer will save the program with a "blank" name. B designates the device used and is either 1 or 2 to specify the respective cassette tape drive.

Example:

SAVE "TEST"

Will save the program named TEST on the first cassette.

Note that the default cassette unit is 1 if the device number is not specified.

#### LOAD "name", B

Will load the program through the first or second cassette. . . where *name* is the same as in SAVE, except that when double quotes are used (" ") the first program found on the tape will be loaded. B functions the same as in SAVE.

Example:

LOAD "TEST", 2

Will load the program named TEST from the second cassette.

#### VERIFY "name", B

Will verify the recording made by the SAVE command for accuracy on either cassette where *name* and B function as

previously described. Always rewind the tape to the beginning or at least before the program you wish to verify.

Example:

VERIFY "TEST"

Will search for and verify the program named TEST on the first cassette.

Note: VERIFY can be used to skip through a tape in order to save a new program at the end of other programs. The technique is as follows:

With the new program already in your computer, specify *name* as the name of the last program on the tape. The computer will search for and VERIFY the last program on the tape, bypassing all other programs. Because the last program is not the same as the new program currently in memory, the display will read; VERIFY ERROR but the tape will have advanced to the end of all the programs on the tape. You can then SAVE your new program, placing it after the other programs.

#### OPEN A,B,C, "name"

Will open a logical file on the specified cassette. . . Where *name* identifies the file as in SAVE.

- A. is an integer from 1 to 255 chosen by the user to refer to that file.
- B. equals 1 for the first cassette, and 2 for the second cassette.
- C. specifies whether the file is to be *written on or read from* the tape.
  - C=0 specifies read from tape.
  - C=1 specifies write to tape with an End-of-File mark to be written when the file is closed.
  - C=2 specifies write to tape with End-of-Tape mark when the file is closed.

C and *name* may be left off at the user's option. If *name* is not used, the file will be opened with a "blank" name. If C is not included, the file will be opened for READ only.

Example:

OPEN 5, 1, 1, "TEST"

Will OPEN FILE 5 on the first cassette for writing with the name TEST.

#### INPUT #A, D

Will input data from the cassette where

A is the logical file number used in a previous OPEN statement specifying the cassette as the I/O device.

D is the BASIC variable to which the data is to be transferred. D may be any BASIC variable and should be a string variable for character data.

Note: OPEN will write a syne tone and a File Header Block to the tape when executed.

Example:

INPUT #5, A\$

Will input character string data (text) from logical file 5 which, if opened for reading on the first cassette, will read data from that cassette and place it in the variable A\$.

#### PRINT #A, D

Will write data to the cassette where

A functions the same as in INPUT #

D is the BASIC variable from which the data is to be written. D must be the same type of variable as in INPUT #

Example:

PRINT #5, A\$

Will output character string data from variable A\$ to logical file 5 which, if opened for writing on the first cassette will write the data to that cassette.

#### CLOSE A

Will close the file designated A regardless of which device (cassette or other) it was opened on. . .where A is the logical file number as in the OPEN command.

Example:

CLOSE 5 will close file 5 which, if opened on the first cassette, will complete all I/O to the cassette and write an End-of-File or End-of-Tape mark (depending upon the specifications of the OPEN statement used) on the cassette.

## CASSETTE MAINTENANCE

Be careful to rewind all tapes to the beginning after use as this protects the recording from abrasion and contamination. Do not store or place any tapes near strong magnetic fields such as may occur near loudspeakers or large motors.

The cassette uses magnetic heads to record and retrieve the information on the cassette tapes. These heads tend to accumulate residue and dirt from the tape as the tape moves across. After a period of time the accumulations tend to lift the tape away from the heads by a small amount which drastically degrades the signal from the head.

Therefore, the following procedure should be used regularly to ensure that your cassette continues to read and write reliably.

#### CLEANING AND DEMAGNETIZING YOUR CASSETTE HEADS

To be performed every 10-20 hours of tape running time or when cassette unit fails to read tapes reliably.

You'll need the following tools and materials.

1. Tape head cleaner. "NORTRONICS" brand is recommended. Do not use trichloroethane or any other plastic or rubber solvent. Alcohol may be used in an emergency, but is not recommended for long term use.
2. Cotton swabs. "Johnson & Johnson" brand is recommended; the cotton seems to stick to the end of the swab better.
3. Tape head demagnetizer: "NORTRONICS" "HAND-DE-MAG" and "ROBINS" brands are recommended. Unit must have protective plastic or rubber covering on pole piece so as not to scratch delicate head gap.

#### HOW TO PROCEED

STEP 1. Turn computer OFF.

STEP 2. Press *EJECT* to open cover, then press *PLAY* to expose heads.

**STEP 3.** Use tape head cleaner and one side of a cotton swab to clean surfaces of RECORD/PLAY (R/P) and erase head. (See Figure 1.)

Scrub gently, noting if there is any build-up of tape oxide particles on or around head gap of the R/P head. If so, this is sufficient reason for unreliable performance. Also clean pinch roller and other tape bearing surfaces if tape head cleaner is suitable for this purpose. (Check label.)

**STEP 4.** Plug in demagnetizer, and activate it while it is at least one foot away from cassette heads.

**STEP 5.** Slowly move demagnetizer up to R/P head and around on head surface. Rate of motion should be approximately one inch per second during this time.

**STEP 6.** Slowly move demagnetizer to erase head and then to all other ferrous metal surfaces which come into proximity with the tape.

**STEP 7.** Now slowly move demagnetizer away from heads and do not deactivate field until demagnetizer is at least two feet away from heads.

Tape head cleaning and demagnetizing procedure is now complete. Inspect R/P head surface for wear. If tape has worn a groove on head surface more than a couple of tape thicknesses deep and program reading performance is still poor, then replacement of tape head is indicated. (This usually occurs after a few thousand or more hours of tape running time.)