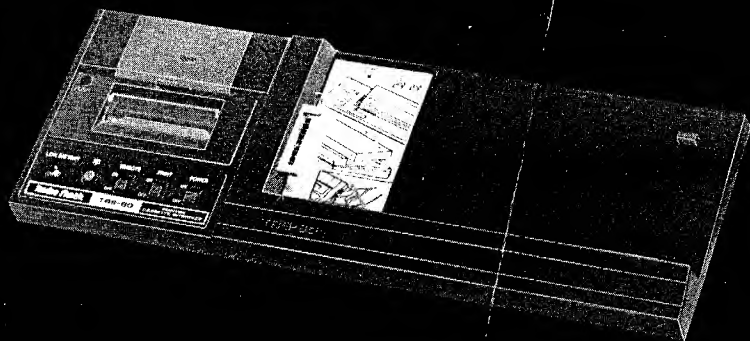


HARDWARE

Radio Shack
TRS-80
MICRO
COMPUTER
SYSTEM

Printer/Cassette Interface for TRS-80 Pocket Computer

Radio Shack Catalog Number 26-3505



CONTENTS

	Page
<u>Introduction</u>	2
<u>Setting up</u>	
Connecting the Computer to the Printer/Interface	3
Installing the Paper	4
Installing the Cartridge Ribbon	6
Connecting a Cassette Recorder	7
Printer Power Supply	8
<u>Operation</u>	
Printer/Interface Operation	9
Printing	11
<u>Maintenance</u>	15
<u>Specifications</u>	16

INTRODUCTION

Congratulations on your purchase of the TRS-80 Pocket Computer Printer and Cassette Interface (Radio Shack Catalog Number 26-3505). You'll find it a useful addition to your already powerful Pocket Computer. With the Printer, you can have "hard-copies" of programs and data. With the Cassette Interface, you can store and retrieve your programs and data on tape (separate recorder required).

Features

- Easy-to-read printouts on regular paper (16 columns per line).
- Easy to use — the PRINT statement outputs to Display or Printer.
- Paper Advance Button and paper-cutting edge.
- Battery powered for fully portable operation — use the Computer and Printer anywhere!
- Low Battery indicator that tells you when the Printer battery needs recharging.
- A special AC adapter for operation without running down the battery or for recharging the battery when it is run down.
- Remote switch allows manual or Computer control of the Cassette recorder.

CAUTION:

When the Printer and Cassette Interface is exposed to a strong external electrical noise, it may stop working or print numbers at random. Should this happen, turn off the machine and then turn it on again. Also, to avoid this, be sure to disconnect the AC adapter from the Interface when you are no longer charging the battery.

If the Pocket Computer receives strong static electricity or external noise, the display may change or keys may not operate. In such case, press the ALL RESET switch on the back of Computer. We recommend that you save all your data/programms on tape.

SETTING UP

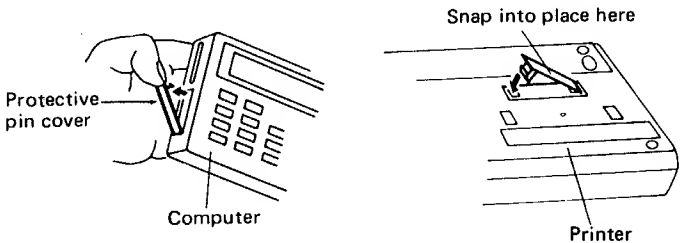
Connecting the Computer to the Printer/Interface

The Printer/Interface and Computer are designed for easy connection to each other. It is extremely important that you do not force the two together or damage may result to one or both machines.

1. Turn both the Computer and Printer POWER switches OFF.

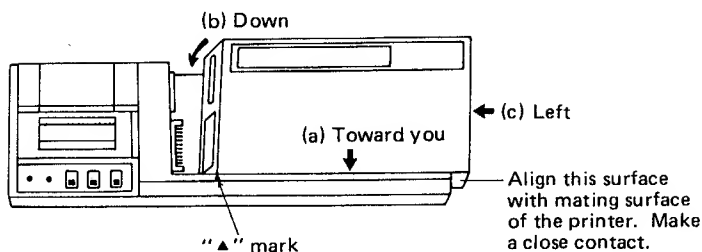
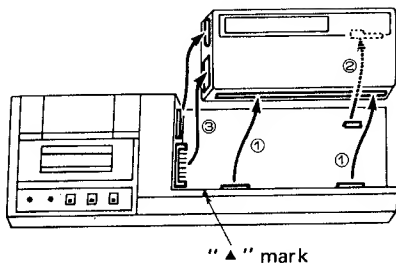
Important Note! It is essential that both Computer and Printer power be OFF. If power is ON, the Computer may "hang up" (all keys inoperative). If this occurs, press the ALL RESET switch on the bottom of the Computer.

2. Remove the protective pin cover from the left side of the Computer and snap it into place on the bottom of the Printer (see figure).



3. Place the lower edge of the Computer into the "cradle" so that the Printer guides match-up with the Computer guide-slots.
4. Lay the Computer down flat.

5. Gently slide the Computer to the left so that the Printer pins are inserted into the Computer (see figure).



Do not force the Computer and Printer together. If match-up does not easily take place, carefully shift the Computer left and right to correctly position mating surfaces.

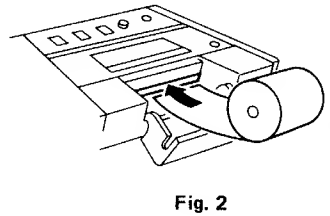
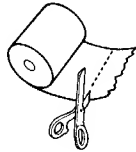
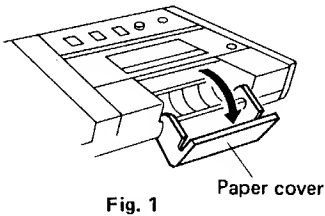
Installing the Paper

Locate the rolls of paper packed with your unit. There are 3 rolls supplied.

You will need to install/remove the paper (# 26-3506) when: (a) you run out of paper; or (b), you replace the cartridge ribbon.

To install the paper:

1. Turn the POWER switch OFF.
2. Open the paper cover (figure 1).
3. Insert the leading edge of the paper into the slot located in the paper tape compartment (figure 2).

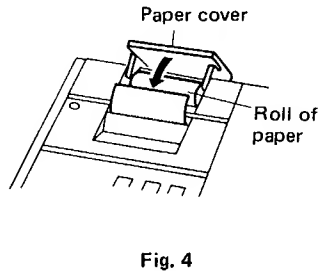
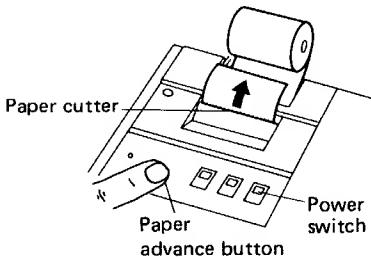


NOTE: Use of deformed paper tape may cause irregular paper feeding or paper jamming. Therefore, be sure to tighten the roll before using as shown in the figure.

Paper tape roll



4. Turn the POWER switch ON. Press the Paper Advance Button to allow the Printer to pull the paper through the print mechanism. (figure 3)
5. Place the roll of paper into the compartment.
6. Close the paper cover (figure 4).



To remove the paper from the Printer, you should cut the paper with a pair of scissors on the compartment side of the printer, then pull the paper through the print mechanism (POWER switch should be OFF).

Installing the Cartridge Ribbon

A cartridge ribbon (#26-3507) is used in this Printer. When printing becomes faint or difficult to see, you should replace the cartridge.

Note: If the printer is used infrequently, the print impression sometimes becomes weak because the ribbon dries out. If the printed material is difficult to read and you suspect this is the cause of the problem, advance to a properly inked portion of the ribbon by pressing the Paper Advance Button.

To install the cartridge:

1. Turn POWER switch OFF.
2. Remove the paper from the printer (see "Installing the Paper").
3. Push down on the left side of print mechanism cover (marked "PUSH") and remove cover (see figure 1).
4. Push down on the right side of ribbon cartridge (marked "PUSH") and remove cartridge (see figure 2).

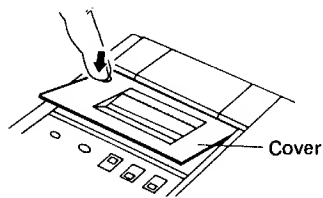


Fig. 1

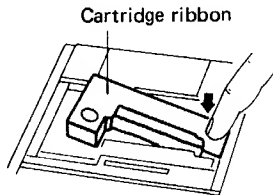


Fig. 2

5. Install cartridge (see figure 3). Be sure the cartridge is inserted firmly to prevent weak or irregular printing. The cartridge must be properly seated and aligned for best printing.
6. Turn the cartridge "knob" (marked by an arrow) clockwise to stretch the ribbon (see figure 4).

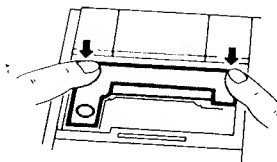


Fig. 3

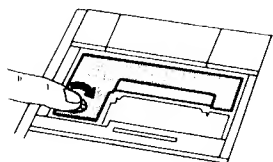


Fig. 4

7. Replace the cover.

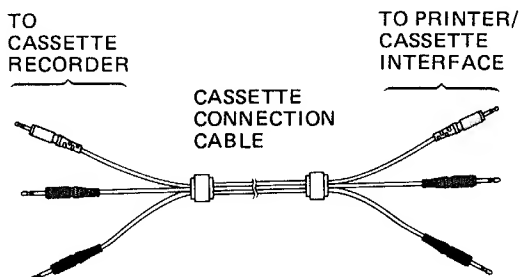
8. Replace the paper.

Connecting a Cassette Recorder

Use the supplied Cable to connect a Cassette Recorder to the Printer/Interface, as shown in figure.

Connect the plugs on one end of the Cable to the jack on the Interface. Attach the plugs on the other end of the Cable to the Cassette Recorder.

Note: For a reliable means of storing your programs and data on tape, we recommend Radio Shack's 14-812 Recorder.



For information concerning operation of the Cassette (CSAVE, CLOAD, etc.), see your Computer's Owner's Manual.

Remote Switch

Keep the REMOTE switch in the ON position when the Cassette Recorder is to be used by the Computer. If the switch is ON, the Cassette will start when you CSAVE or CLOAD and stop when the operation is complete.

If you want to manually start or stop the recorder, the switch should remain OFF. This will enable you to manipulate the tape without removing the black plug from the REMOTE jack of the Cassette Recorder.

Printer Power Supply

Your Printer is powered by a rechargeable Ni-Cad battery. It may be necessary to recharge the battery the first time you use the Printer. If the Printer has not been used for three or more months, you will probably need to recharge the battery.

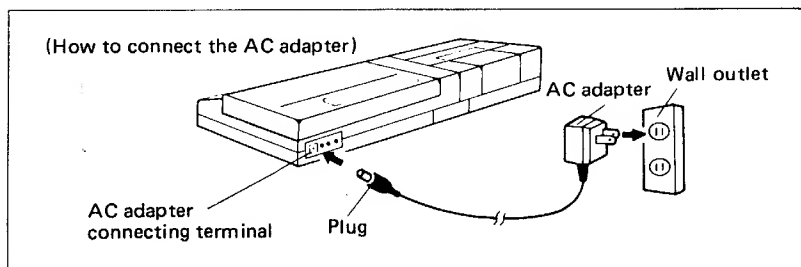
To recharge the battery, turn the Printer POWER switch OFF, connect the AC adapter to the Printer, and plug the adapter into a wall outlet. (See the diagram) It will take about 15 hours before the battery is fully charged. (You may use the Computer/Printer while the battery is recharging; however, it will take longer than usual for the battery to reach full power.)

Unless you are using the AC Adapter, do not use Interface with battery only "half-charged".

Be sure to fully charge the battery before using; otherwise printing and/or cassette operation will be unpredictable.

Normal use will exhaust the battery's power. The LOW BATTERY indicator will begin blinking when recharging is required. If the battery becomes too weak, this indicator will fail to blink.

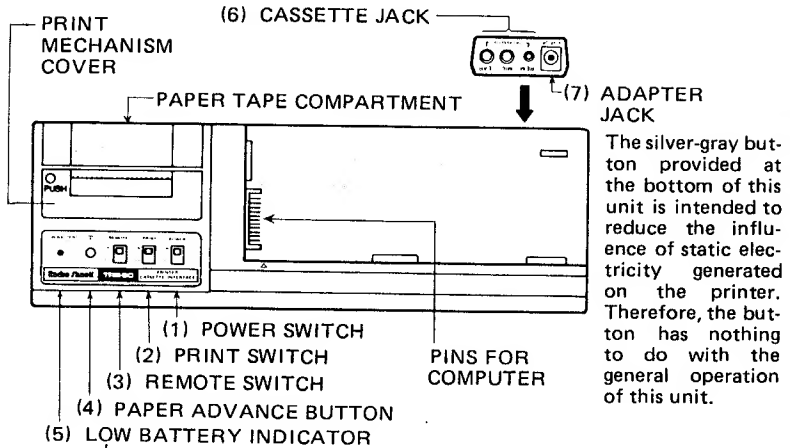
Important Note! Using an AC adapter other than the supplied one may damage the Printer/Interface.



OPERATION

Printer/Interface Operation

(For Computer commands, see "Printing" in this manual.)



1. Power Switch

The POWER switch turns the Printer/Interface ON and OFF. The paper will automatically advance on power-up to indicate that the Printer is ready. (This initial paper advance will not occur if the battery is too weak.) The POWER switch must be ON for printer and cassette operation. Note: If you turn the power OFF (or ON), wait at least one second before turning it back ON (or OFF).

2. Print Switch

The PRINT switch activates the Printer. When the PRINT and POWER switches are ON and the Computer is in Print Mode (see below), PRINT and LIST commands will go to the Printer. If the PRINT or POWER switch is OFF, the PRINT and LIST commands will go to the Display.

Print Mode. To put the Computer in the Print Mode, press the Computer's ON key twice after you turn the Printer's POWER and PRINT switches ON. The Computer's output (PRINT and LIST) will then go to the Printer instead of to the Computer's Display.

Display Mode. To return to the Display Mode from the Print Mode, turn the PRINT switch OFF and press the ON key twice.

This tells the Computer to check the PRINT switch on/off status. If it is off, subsequent LIST and PRINT commands will output to the Computer Display (not the Printer).

If you turn PRINT or POWER off while the Computer is in the Print Mode and do not press the Computer's ON key twice, the next PRINT or LIST operation will be ignored. However, commands after that will be executed.

Note: Whenever the Computer is not connected to the Printer, you are in the Display Mode.

3. Remote Switch

The REMOTE switch controls the Cassette Recorder when the Recorder is connected to the Printer/Interface.

Note: The automatic line feed (on power-up) must take place before the REMOTE switch will work.

REMOTE ON. When the REMOTE switch is ON, starting and stopping of the Cassette Recorder is controlled by the Computer. (See CSAVE and CLOAD in the Computer's Operation Manual.)

REMOTE OFF. When the REMOTE switch is OFF, you control the starting and stopping of the Cassette Recorder by pressing the Cassette Recorder keys.

(To connect the Cassette Recorder to the Interface, see "Connecting a Cassette Recorder" in this Manual.)

4. Paper Advance Button

Press the Paper Advance Button once to advance the paper one line. Hold down the button for continuous paper advance. If the paper does not advance when you press the button, the battery is either low or the POWER switch is OFF.

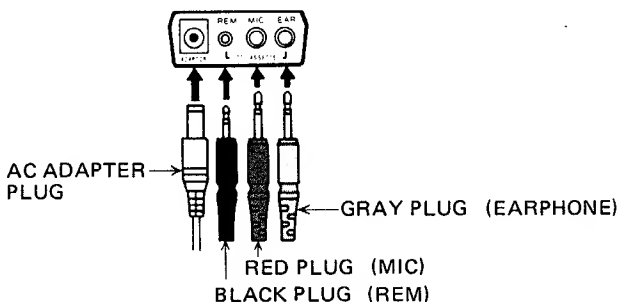
5. Low Battery Indicator

The LOW BATTERY indicator will begin blinking when the battery becomes too weak to operate the Printer. When the indicator begins blinking, input and output to/from the Cassette and Printer are disabled. Printer and Cassette commands are then ignored.

After a sufficient battery recharge, the indicator will stop blinking when the POWER switch is ON. You can then resume normal input/output.

6. Cassette Jacks

You should plug the Cassette Connection Cable into these jacks (see diagram) when connecting the Cassette Recorder to the Interface.



7. Adapter Jack

To recharge the battery, plug the AC adapter into this jack.

Printing

There are two commands which direct output to the Printer — LIST and PRINT. For specific details concerning these statements; see your TRS-80 Pocket Computer Owner's Manual.

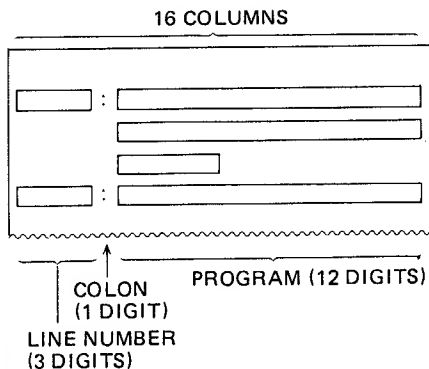
Printing with LIST

For a printed listing of a program:

1. Turn the POWER switch ON.
2. Turn the PRINT switch ON.
3. Press the Computer's ON key twice to put the Printer in the Print Mode (see "Print Mode").
4. Put the Computer in the PROgramming mode (see the Computer's owner's manual).
5. Type LIST and press < ENTER >.

The program will then be printed out according to the following format:

< EXAMPLES and ILLUSTRATIONS of PROGRAM FORMATS >



In case a program statement exceeds a single line (12 digits), it will be continued on the next line.

(1) Pythagorean theorem

```
10: INPUT A, B
20: C=√(A*A+B*B)
30: PRINT C
40: END
```

(2) Quadratic equation

```
10: "A": INPUT "A
="; A, "B="; B,
"C="; C
20: B=-B/2/A
30: D=B*B-C/A
40: IF D<0 GOTO 1
00
50: IF D>0 GOTO 1
20
60: Y=(-D)
70: PRINT "**REAL
L**", B
80: PRINT "IMAGI
NARY", Y
90: END
100: PRINT "EQUAL
", B
110: END
120: PRINT "REAL"
, B+√D
130: PRINT "REAL"
, B-√D
140: END
```

Note that the first three columns on the printout are reserved for line numbers. If the program line is greater than 12 digits, the Printer will "wrap around" and continue printing on the next line.

To interrupt the printing operation, hold down the Computer's ON key until printing stops. (If you want the printing to stop immediately, turn the POWER switch OFF.)

When a single line number is specified (such as LIST 10 < ENTER >), it will be displayed on the Computer but not printed by the Printer.

If you are in the Print Mode and want to list a program on the display instead of the Printer, use the up-arrow and down-arrow keys on the Computer instead of the LIST command.

Printing with PRINT

When the Computer is connected to the Printer (and in the Print Mode), the PRINT statement directs program data to the Printer, not to the Computer Display.

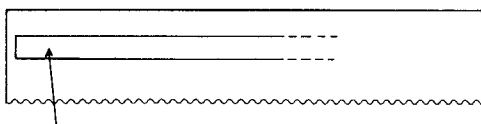
Note: The PRINT statement can only be used inside a program line and activated by the RUN statement (unlike LIST).

Print statement formats are the same for the Printer as for the Computer display. See your Computer's owner's manual for specific PRINT formats.

If the printed material exceeds 16 digits, the Printer will "wrap around" to the next line and continue printing.

The Printer will automatically print numbers on the right side of the paper and letters on the left. The exceptions to this rule are:

- a. When PRINT items are separated by semi-colons (;) (general form 5 in the Computer's owner's manual), all data will be printed from the left margin.



Both number and letter are printed from the left margin.

< Printing example >

```
PRINT "X="; A; "    Y="; B; "    Z="; C
```

```
X=-3. Y=-4. Z=5.  
X=3. Y=4. Z=-5.
```

- b. If a string contains exactly 24 numbers and has from nine to 23 leading spaces, the leading spaces will be truncated and the number right-justified (i.e., general form 1).
- c. When you use the semi-colon format (general form 5) and try to print two 12-digit negative numbers, each containing a single decimal point (the minus sign and decimal point are included in the 12 digits), the Printer will use the comma format (general form 4) instead of a semi-colon.

The PRINT statement can also be used to advance the paper a single line:

```
PRINT "  "
```

where a single space separates the quotation marks. This command must be repeated for each advance. (A program loop will give continuous line feed.)

MAINTENANCE

To insure trouble-free operation of your Printer:

- The Printer/Interface must always be OFF while connecting/disconnecting the AC adapter or the Computer.
- Keep the Printer in areas free from extreme temperature changes, moisture, and dust.
- Use a soft, dry cloth to clean the Printer/Interface. Do not use solvents or a wet cloth.
- Always return the unit to a convenient Radio Shack if it ever needs servicing.
- Keep this Manual for further reference.

SERVICE POLICY

Radio Shack's nationwide network of service facilities provides quick, convenient, and reliable repair services for all of its computer products, in most instances. Warranty service will be performed in accordance with Radio Shack's Limited Warranty. Non-warranty service will be provided at reasonable parts and labor costs.

Because of the sensitivity of computer equipment, and the problems which can result from improper servicing, the following limitations also apply to the services offered by Radio Shack:

1. If any of the warranty seals on any Radio Shack computer products are broken, Radio Shack reserves the right to refuse to service the equipment or to void any remaining warranty on the equipment.
2. If any Radio Shack computer equipment has been modified so that it is not within manufacturer's specifications, including, but not limited to, the installation of any non-Radio Shack parts, components, or replacement boards, then Radio Shack reserves the right to refuse to service the equipment, void any remaining warranty, remove and replace any non-Radio Shack part found in the equipment, and perform whatever modifications are necessary to return the equipment to original factory manufacturer's specifications.
3. The cost for the labor and parts required to return the Radio Shack computer equipment to original manufacturer's specifications will be charged to the customer in addition to the normal repair charge.

SPECIFICATIONS

Model:	Radio Shack Catalog Number 26-3505 printer with cassette interface.
Printer:	Mechanical dot-matrix printer.
Printing Capacity:	16 columns per line.
Printing Speed:	Approximately one line per second.
Paper Advance Speed:	Approximately one line per second.
Printing Paper:	Radio Shack Catalog Number 26-3506 45 mm (1-25/32 inches) wide. 25 mm (31/32 inches) diameter (maximum).
Power Source:	Built-in rechargeable Ni-Cad battery.
Battery Capacity:	Approximately 8,000 printed lines Charging time approximately 15 hours.
Power Consumption:	4.8V, 1.84W (DC)
Operating Temperature:	0 to 40 degrees Celsius (32 to 104 degrees Fahrenheit)
Dimensions:	282mm (width) x 95mm (depth) x 35mm (height) 11-3/32" (width) x 3-3/4" (depth) x 1-1/2" (height)
Weight:	410 grams (0.90 pounds)
Accessories:	Roll of paper (3) (Radio Shack Catalog Number 26-3506) Cartridge Ribbon (1) (Radio Shack Catalog Number 26-3507) Cassette Connection Cable (1)

LIMITED WARRANTY

For a period of 90 days from the date of delivery, Radio Shack warrants to the original purchaser that the computer hardware unit shall be free from manufacturing defects. This warranty is only applicable to the original purchaser who purchased the unit from Radio Shack company-owned retail outlets or duly authorized Radio Shack franchisees and dealers. This warranty is voided if the unit is sold or transferred by purchaser to a third party. This warranty shall be void if this unit's case or cabinet is opened, if the unit has been subjected to improper or abnormal use, or if the unit is altered or modified. If a defect occurs during the warranty period, the unit must be returned to a Radio Shack store, franchisee, or dealer for repair, along with the sales ticket or lease agreement. Purchaser's sole and exclusive remedy in the event of defect is limited to the correction of the defect by adjustment, repair, replacement, or complete refund at Radio Shack's election and sole expense. Radio Shack shall have no obligation to replace or repair expendable items.

Any statements made by Radio Shack and its employees, including but not limited to, statements regarding capacity, suitability for use, or performance of the unit shall *not* be deemed a warranty or representation by Radio Shack for any purpose, nor give rise to any liability or obligation of Radio Shack.

EXCEPT AS SPECIFICALLY PROVIDED IN THIS WARRANTY OR IN THE RADIO SHACK COMPUTER SALES AGREEMENT, THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL RADIO SHACK BE LIABLE FOR LOSS OF PROFITS OR BENEFITS, INDIRECT, SPECIAL, CONSEQUENTIAL OR OTHER SIMILAR DAMAGES ARISING OUT OF ANY BREACH OF THIS WARRANTY OR OTHERWISE.

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