D A T A T R A N S F E R P A C K A G E

CUSTOM MANUFACTURED IN THE USA BY RADIO SHACK
A DIVISION OF TANDY CORPORATION

TO OUR CUSTOMERS ...

All computer equipment must be programmed before it can do anything useful. You probably already have many programs which do specific applications for you. Programs which print business reports, keep records, calculate math problems, or even play games, are all for specific applications.

Other kinds of programs are not for specific applications. They are written to make your computer more powerful and versatile.

The COMDOS and TRANSFER programs in this package fall into this second category. Their purpose is to transfer data from the TRS-80 Model I to the Model II.

The data transfer package does NOT convert Model I programs to run on the Model II. This is up to you. We've added information in Section 1 to help you with this process.

WHAT MATERIALS YOU WILL NEED ...

This package contains:

[redacted]
Model II diskette
20 ft. cable
Serial terminator plug

In addition, you will need:
Model I with at least 32K RAM
Connector included with the RS-232-C interface

If you want to transmit through the telephone line, you will also need:

Modems for each computer (we recommend the Radio Shack Interface II modem, catalog number 26-1171)
Serial connector to the Model II

Note: The symbol <> is used in this manual to represent a key on your keyboard. For instance <ENTER> represents the ENTER key.

TRANSFERRING MODEL I DATA TO MODEL II

By following the steps below, you can transfer all disk files from the Model I to the Model II computer. This includes all the BASIC programs, machine language programs and data files which you have created. Be sure to note steps 2 and 4. Model I BASIC and machine language programs usually must be converted to run properly on the Model II.

If both computers are in the same room (up to 20 feet apart), you may connect them with the cable provided in this package. For computers not in the same room, you can use the phone line by means of modems (e.g., Radio Shack Telephone Interface II, Catalog Number 26-1170).

STEPS FOR LOCAL TRANSFER (USING THE CABLE)

STEP 1. DECIDE WHICH DISK FILES YOU WANT TO TRANSFER. Before beginning the transfer, it is a good idea to list the files you want to transfer. Beside each file name, list its type:

(1) BASIC program
(2) Machine language program
(3) BASIC SEQUENTIAL access data file
    (accessed by PRINT # and INPUT # statements)
(4) BASIC RANDOM ("direct") access files
    (accessed by GET and PUT statements
(5) Other non-BASIC data files - write
    down whether it is a sequential or
    random file. If random, list its record length.
    If in doubt about its record length, use the TRSDOS
    command DIR (A). The column marked LRL gives the
    record length.

STEP 2. CONVERT YOUR BASIC PROGRAMS TO RUN ON MODEL II. There are some minor differences between the BASICs which run on Model I and Model II. To make sure the programs run correctly on Model II, certain changes need to be made. You can compare the two BASICs by reviewing the Model I and Model II BASIC manuals. This is what you should watch for:

1. PRINT statements - You might need to alter your programs, so that they will display properly on the larger Model II video screen. For instance, PRINT statements separated by commas which were displayed in four columns on the Model I screen, will display in five columns under Model II. The PRINT @ locations are, of course, different under Model II.

2. Graphics characters. The means of displaying graphics under Model II is through the CHR$ function (characters 0 through 31). SET, RESET, and POINT are not availale in Model II. The Model II Operation Manual illustrates the graphics characters, which are different from those in Model I.

3. Certain other keywords, such as PEEK, POKE and OUT do not exist in Model II BASIC. Other Model II keywords have different names. Model I's CMD "S" is SYSTEM under Model II. Compare the reserved word lists for full information.

STEP 3. MODEL I
SAVE BASIC PROGRAMS IN ASCII FORMAT. To save space, most BASIC programs are Saved in a compressed format. Although this format will transfer to the Model II, the Model II will not be able to understand it.

Therefore, before transferring BASIC programs, simply LOAD each program and SAVE it in the non-compressed ASCII format by typing:

LOAD "filespec"

After it is loaded type:

SAVE "filespec", A

"filespec" represents the name of the file.

STEP 4. MODEL I
CONVERT MACHINE LANGUAGE PROGRAMS. This step only applies to people transferring machine language programs. On the Model I, machine language programs (created by the Editor-Assembler, DUMP, EDIT-80/MAC-80, or TAPEDISK utilities) are stored as object code with program load headers. The program load headers are compatible with Model II's.

However, there are some areas of Model I machine language programs which are not compatible with Model II:

1. Calls to the operating system routines
2. All Input/Output routines and instructions

These areas should be revised before tranferring the programs to Model II. Refer to the Technical Information Sections in the Model I and Model II Operating System Manuals for details on the differences.

STEP 5. MODEL I AND MODEL II
CONNECT CABLE. Connect the cable to the top serial interface channel (Channel A) on the back of the Model II.

Be sure the serial terminator is plugged into the bottom channel. Connect the other end of the cable to the RS-232-C cable. The RS-232-C cable should be connected to the card edge in the front center opening of the Model I Expansion Interface. See Figure 1.

STEP 6. MODEL I.
START COMDOS PROGRAM. To start the COMDOS program type
COMDOS <ENTER>

The Model I will display:

```
TRANSFER PACKAGE
<C> CHANGE BAUD RATE
<F> READ & TRANSMIT DISK FILE
<E> EXIT TO DOS

?
```

Select option <C>, CHANGE BAUD RATE. The baud rate is the rate of speed in which data will flow from the Model I to the Model II. Type:
<C> <ENTER>.

The system will then display the preset baud rate. Since you are transmitting through a cable, we recommend that you use a 2400 or slower baud rate. If the number displayed IS NOT 2400, type:
2400 <ENTER>
If the number displayed IS 2400, simply type:
<ENTER>

Note: The preset baud rate, which the Model I displays, is the baud rate which has been set on its RS-232-C board. If you would like to know how to change this setting, see the RS-232-C Manual.

Next, type <F> <ENTER> to read and transmit your disk file. The system will display:

```
ENTER FILESPEC
?
```

BEFORE ENTERING THE FILESPEC, complete step 7.

STEP 7. MODEL II.
START THE TRANSFER PROGRAM. The TRANSFER program is stored in this package's Model II diskette. To load the program, simply insert and initialize the disk, as always, and type
TRANSFER <ENTER>

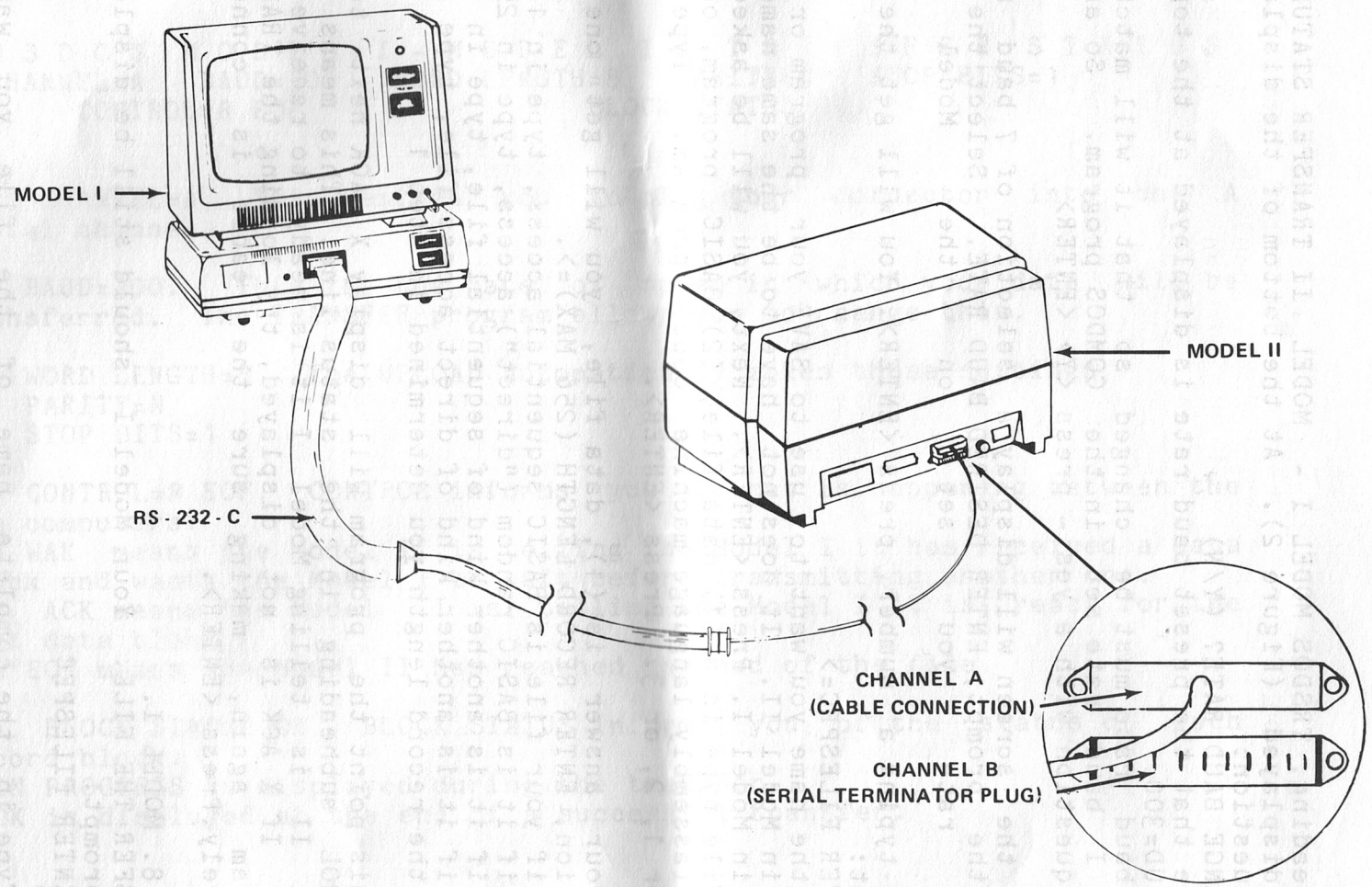

FIGURE 1. CABLE CONNECTION

The heading, TRSDOS MODEL I - MODEL II TRANSFER STATUS, is then displayed (Figure 2). At the bottom of the display is the question:

CHANGE BAUD RATE? (Y/N)

Notice that the preset baud rate is displayed at the top:

BAUD=300

This baud rate must be changed so that it will match the Model I baud rate set in the COMDOS program. So answer this question with a yes - press <Y> <ENTER>

Then the screen will display a selection of 7 baud rates with the prompt, ENTER DESIRED BAUD RATE. Select the same baud rate you set on the Model I.

After typing a number, press <ENTER>. You will get the next prompt:

ENTER FILESPEC=>

Type the name you want to use to SAVE your program or data file in Model II. It does not have to be the same name you used in Model I. Press <ENTER>. Next, you will be asked if the file type is a (1) data file, (2) BASIC program, or (3) ALC (assembly language machine code) program. Type the number 1, 2, or 3. Press <ENTER>.

If your answer is (1), data file, you will get one more question, ENTER RECORD LENGTH (256 MAX)=>.

- if your file is BASIC sequential access, type in 1
- if it is BASIC random ("direct") access, type in 256
- if it is another kind of sequential file, type in 1
- if it is another kind of direct access file, type in the record length you determined in step 1

At this point the program will display X ACK next to the CONTROL subheading in the status line. This means that Model II is telling Model I it is ready to receive the file. If X ACK is not displayed, try loading the TRANSFER program again, making sure the cable is connected securely.Press <ENTER>.

STEP 8. MODEL I.

TRANSFER THE FILE. Your Model I should still be displaying the prompt:

ENTER FILESPEC
?

Type in the complete name of the file you want to transmit. Press <ENTER> to begin the transfer.

```
T R S D O S   M O D E L   I - M O D E L   I I   T R A N S F E R   S T A T U S
  CHANNEL=A   BAUD=300   WORD LENGTH=8   PARITY=N   STOP BITS=1
       CONTROL=R EOF                  BLOCK STATUS=OK
```

(1) CHANNEL=A. This reminds you to plug your connector into the A serial channel.

(2) BAUD=300. This is the rate of speed in which your data will be transferred. The TRANSFER program allows you to change this.

(3) WORD LENGTH=8 The UPLOAD automatically makes these settings
PARITY=N
STOP BITS=1

(4) CONTROL=R EOF. CONTROL informs you of what is happening between the two computers:
X WAK means the Model II is telling the Model I it has received a data block and wants the Model I to wait before transmitting another one.
X ACK means the Model II is telling the Model I it is ready for the next data block
R EOF means the Model II has reached the end of the file

(5) BLOCK STATUS=OK. BLOCK STATUS informs you of the status of each record block.
IN PROGRESS is displayed during the transfer.
OK is displayed at the end of a successful transfer.

Figure 2. Model II display at the end of TRANSFER/COMDOS data transfer.

STEP 9. MODEL I AND MODEL II
CHECK FOR SUCCESSFUL TRANSFER. During the transfer, the Model II will display various CONTROL and BLOCK STATUS messages at the top of the screen. At the end of the transmission, the display will be replaced by:

CONTROL = R EOF BLOCK STATUS = OK

This means the Model II has reached the end of file (EOF) and the status of each data block transmitted was OK. Figure 2 illustrates the appearance of the Model II display after a successful transmission.

Meanwhile, the Model I will display:

TRANSMIT MODE - RCVNG: SENDING:BLOCK STATUS

This means it is sending a record block to Model II. When Model II receives it, the Model I will display the symbol WAK. Then it will display the symbol ACK which means the Model II is ready for the next block. At the end of a successful transmission, the Model I will display:

TRANSMIT MODE - RCVNG:ACK SENDING:EOF STATUS

This means the entire file has been transferred and yo may begin transferring your next file.

Note: To stop transmission in the middle of a transfer, type <ESC> on the Model II or <C> on the Model I.

STEP 10. MODEL I AND MODEL II.
TRANSFER NEXT FILE. At the end of a transfer, the Model I will start the COMDOS program over again and the Model II will display:

PRESS ENTER TO START OVER, BREAK TO ABORT

If you wish to transfer another program or data file, press <ENTER> and repeat the process in step 6. If you have finished, press <BREAK> and the system will return to TRSDOS.

STEPS FOR REMOTE TRANSFER
(OVER THE TELEPHONE)

STEPS 1 - 4
Same as above.

STEP 5. MODEL I AND MODEL II.
CONNECT AND SET MODEMS. A modem such as the Radio Shack Telephone Interface II modem (26-1171) will be needed at

both the Model I and Model II location. At the Model I location, connect your RS-232-C cable to the modem and the card edge opening in the front center of your Model I. Use only the flat cable from the RS-232-C, not the twisted wire cable.

The Model II connection is made with the Model II Modem connector. Connect one end of the connector to the modem and the other end to the top serial channel (channel A) on the back of your Model II. Be sure the serial terminator plug connected to in the bottom channel.

Figure 3 illustrates these connections.

Notice the two switches on the modem. The left switch has O and A positions. Set the Model I modem to O (originate) and the Model II modem to A (answer). The other switch sets the modem to F (full duplex) or H (half duplex). Set both modems to F.

Next, one of you needs to call the other. It doesn't matter who does this. Both people then place the telephone handset on the modem. The mouthpieces of the phones should **be placed on the connector ends of the modems.**

STEPS 6, 7, AND 8
Follow the directions above for starting the COMDOS and TRANSFER programs with one exception. You will want to leave the baud rate set at 300, since this is the fastest rate the Radio Shack modem can use. Be sure to input the Model II filename before the Model I filename.

STEPS 9 AND 10
Same as above.

IN CASE YOU HAVE PROBLEMS ...

Usually, transmission problems can usually be solved by making sure:

- your modem or cable is connected securely
- your modem is set properly
- your Model II connector is connected to the A channel and the serial terminator is connected to the B channel
- you are using a slow enough baud rate

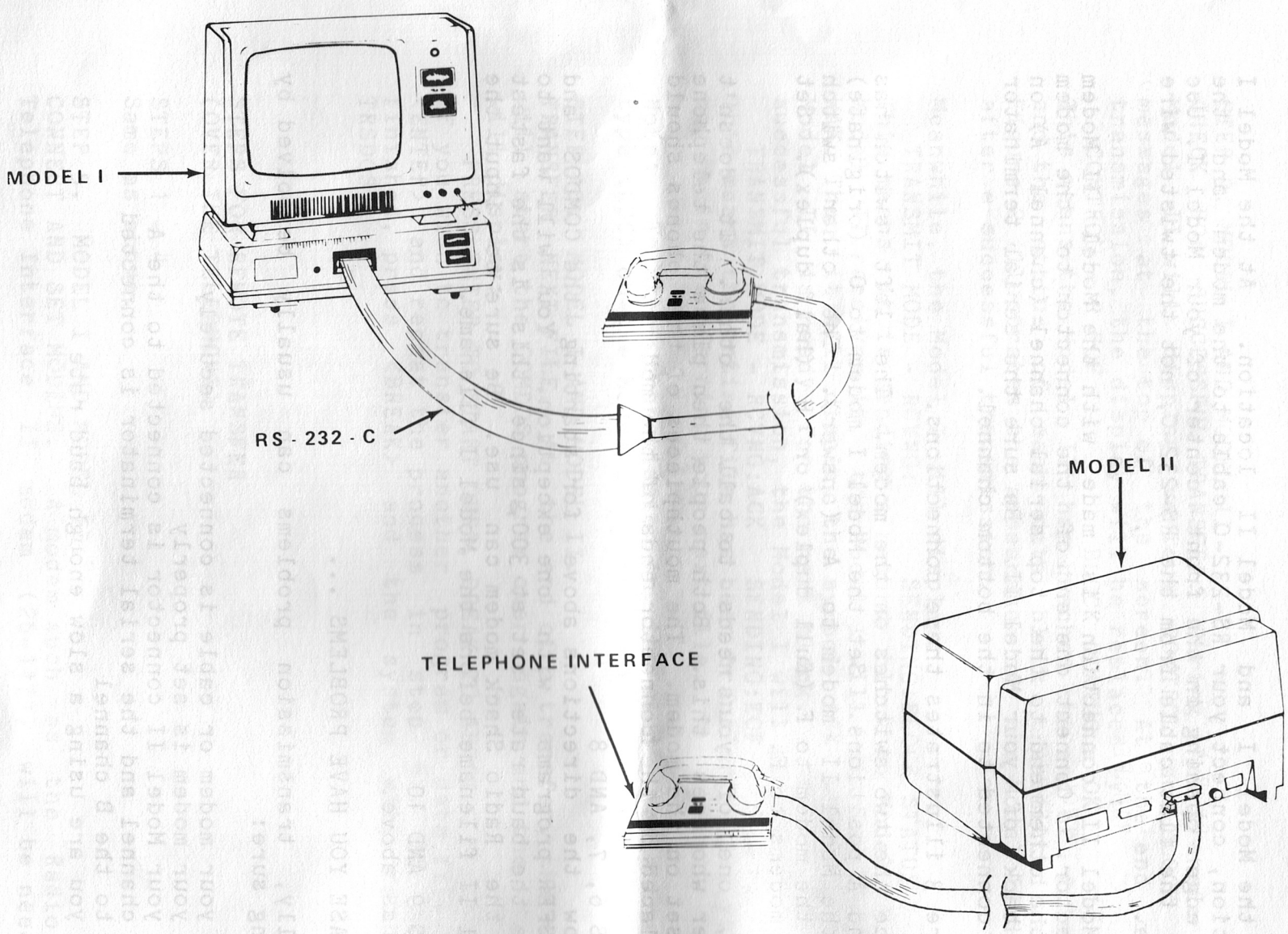

FIGURE 3. TELEPHONE INTERFACE CONNECTION

MODEL II ERROR MESSAGES

There are three places error messages will appear on your Model II TRANSFER program display:

1. CONTROL ERROR MESSAGES - these appear after the CONTROL= message on your display:

Message	Meaning
R CAN	The Model I operator used the <C> key to cancel the transfer. The transfer must be run again.
X CAN	The Model II operator used the <ESC> key to cancel the transfer.
R IOE	The Model I has a disk input/output error. Normally, this is because the program or data file name was typed incorrectly.
X NAK	The Model II did not receive the data block properly and is asking the Model I to send the block again. If you get many of these messages you probably have a bad telephone connection.
R ???	An unknown message was received from the Model I. Try the transfer again.

2. BLOCK STATUS MESSAGES - These appear next to the BLOCK STATUS= message on your display

Message	Meaning
CHK SUM ERR BC ERR RECV ERR	The Model II did not receive the data block properly and is asking the Model I to send it again. If you get many of these messages, you probably have a bad telephone connection.

3. GENERAL MESSAGES - These applear directly under the horizontal line on your display. These are usually self-explanatory, and are either TRSDOS disk related errors

or transmission errors. These are the transmission error messages:

Message	Meaning
MODEM FAULT - LOST CARRIER COMM ERROR - NO CTS	The connector is not plugged in properly or there is a fault in the connector. The modem was not set properly. The TRANSFER program was loaded before COMDOS

MODEL I ERROR MESSAGES

These are the messages that may appear on your Model I display:

Message	Meaning
CANC	Either the Model I operator has sent a cancel message by typing <C>, or the Model II operator has sent a cancel message by typing <ESC>.
MODEM FLT	The phone is off the coupler
COMM FLT	There is a bad telephone line or the phone has been disconnected. The settings on the modems are wrong The modem is powered off or the cable is disconnected. The connector is bad.
???	Unknown message has been received.

IMPORTANT NOTICE

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NOTE: Good data processing procedure dictates that the user test the program, run and test sample sets of data, and run the system in parallel with the system previously in use for a period of time adequate to insure that results of operation of the computer or program are satisfactory.

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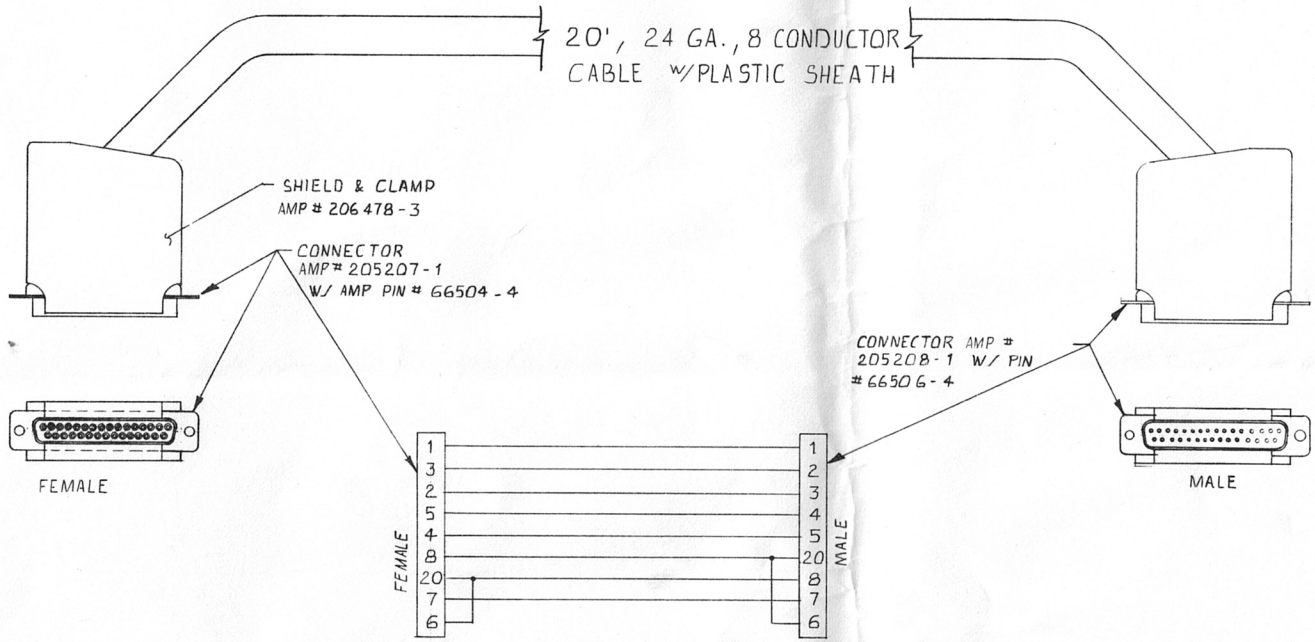

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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES: FRACTIONAL ± 1/64
ANGLES ± 1°
TWO PLACE DECIMAL ± .010
THREE PLACE DECIMAL ± .005
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DRAWN	DONALD R BOOTH	DATE 9-18-79
CHECKED	M. Crist	DATE 9-19-79
DESIGN ENGINEER		DATE
PROJECT ENGINEER	S. Leininger	DATE
CHIEF ENGINEER		DATE
MANUFACTURING		DATE
GENERAL MANAGER		DATE

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TRS-80 MODEL II

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