When setting up the DWP-220, always be sure you pick a level, sturdy locat-
ion with plenty of room for easy paper flow.

PRINT WHEEL CARTRIDGE INSTALLATION/REMOVAL

The DWP-220 package includes a Courier 10 print wheel which you will need
to install before printing. Radio Shack carries a number of different print
wheel cartridges for printing different font styles. These include:

* US ASC Courier 10 (10 pitch) (26-1230)
* US ASC Letter Gothic 12 (12 pitch) (26-1231)
* US ASC Venezia P.S. (Proportional Space) (26-1232)

TO INSTALL THE PRINT WHEEL CARTRIDGE:

Remove the ribbon cartridge if installed.

1. Pull the front carrier lever toward you.

2. Hold the front, left portion of the print wheel cartridge with your
   thumb and forefinger and insert it into the cartridge holder on the
   front carrier.

3. Push the front carrier lever back towards the platen.

TO REMOVE THE PRINT WHEEL CARTRIDGE:

1. Pull the front carrier lever toward you.

2. Grasp the left front portion of the print wheel between your thumb and
   forefinger and lift it up.

EXTERNAL PROGRAM MODE

On some print wheels, you'll need to externally control the following:

* Spacing between Proportionally Spaced characters.
* Amount of ribbon feed.
* Printing impression level.

The print wheels that require external programming will be labeled REQUIRE
SPECIAL PROGRAMMING on the packaging material. Each print wheel cartridge
package will contain external programming code information.

To enter the External Program Mode, send a CHR$(27);CHR$(24). Then send a
two-byte code for each character or symbol.

* The first byte is the ASCII code for the character.
* The second byte contains the data specifying the printing format (i.e.,
  printing impression level, ribbon feed, and pitch).

IMPORTANT NOTE! This must be done for each character during the External
Program Mode or an error will occur.

Table 6 describes printing impression levels, Table 7 shows Ribbon Feed,

and Table 8 details spacing between Proportionally Spaced characters. Note
that these tables list binary values. You'll need to combine the binary
values and then convert the binary values (using the Base Conversion Chart
in your Tandy Computer Owner's or Reference manual) to a decimal value.
Then send that decimal value to the Printer with CHR$( ).

For example, the letter T requires 1/10" spacing, normal ribbon feed and
printing impression level 4.

Looking at Table 8, you'll see the 1/10" spacing is binary 0110. Table 7
shows you that normal ribbon feed is binary 1 and Table 6 shows that
printing impression level 4 is binary 100. Adding these values together
produces a binary value or 01101100 (0110 + 1 + 100 = 01101100). By
referring to you Base Conversion Chart in a Tandy Computer owner's or
reference manual, you'll see that binary 01101100 is equal to decimal
108. Therefore, if you send a CHR$(84);CHR$(108) from BASIC to the
DWP-220, the letter T will be printed.

To exit the External Program Mode, send CHR$(27);CHR$(25) from BASIC.

D8	D7	D6	D5	D4	D3	D2	D1
PS UNIT set (Available in PS mode only)				RF set	Hammer set		

TABLE 8.

UNIT AMOUNT (A/60")	D8	D7	D6	D5
0 (print without Carriage Movement)	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0

TABLE 6.

HAMMER IMPRESSION LEVEL	D3	D2	D1
0	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
(no hammer action)	1	1	1

TABLE 7.

RIBBON FEED AMOUNT:	D4
Normal	1

11	1	0	1	1		Long	0
12	1	1	0	0			
13	1	1	0	1			
14	1	1	1	0			
15	1	1	1	1			

(abo-07/27/93)