

How To Rejuvenate Printer Ribbons

Increase useful life of printer ribbons

By Ralph Tenny

Computer printer ribbons can be rejuvenated to save on the cost of replacements. There are at least two ways to do this. The most reliable one is to re-ink it. For the home computerist and low-volume user, however, this may not be the most economical solution. The typical commercial re-inker costs about \$60, meaning that you would have to refresh 20 to 30 ribbons just to break even.

For the low-volume user, the cheaper alternative is to treat them with a solvent like common WD-40 spray lubricant. Though at least one manufacturer cautions against this, claiming it can damage printers, many people have used WD-40 with no ill effects. In this article, we will tell you how to rejuvenate worn computer printer ribbons using WD-40.

How Rejuvenation Works

Ribbons designed for use in Epson's MX-80 and similar printers are illustrated here in describing the rejuvenation procedure. This method can be adapted as necessary for other ribbon types.

Ribbons for computer printers are commonly used up along a "track" that measures only $\frac{3}{32}$ " wide, offset from the center of a $\frac{1}{2}$ "-wide fabric strip, as shown in Fig. 1. Normally, less than 20% of the ribbon's area is used; the other 80%-plus area is generally wasted, even though the full width of the ribbon is always inked at the factory.



As long as the ink does not dry out while a ribbon is in service, some of the ink in the areas outside the normal print track migrates to the track area. However, not all the ink on the ribbon will migrate to the track area before printed characters become too light for easy reading.

Since the print track is not centered on the ribbon, a second track area can be created by flipping over the fabric ribbon. This is accomplished with a half-twist of the ribbon as shown in Fig. 2. Put the half-twist in the ribbon just before it enters the takeup slot in the cartridge and then cycle the entire ribbon through the cartridge. Begin by slowly rotating the takeup knob until the ribbon enters the slot and is about 1" past it. Then use a variable-speed drill operated at low speed, a low-speed motor or a cassette rewinder

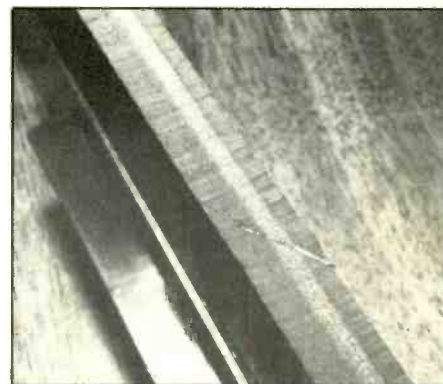


Fig. 1. Ribbons are "used up" along a narrow track (off-center lighter band). Note also diagonal splice that joins tape ends to create a continuous loop.

(Fig. 3) to finish cycling the ribbon at a higher speed.

If you use an electric drill, you need a special "bit" made by hammering flat one end of a length of $\frac{3}{32}$ "

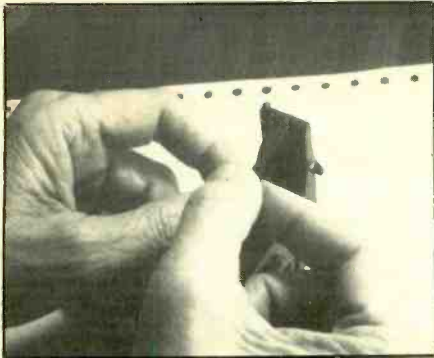


Fig. 2. A half-twist makes available a second life-stretching track.

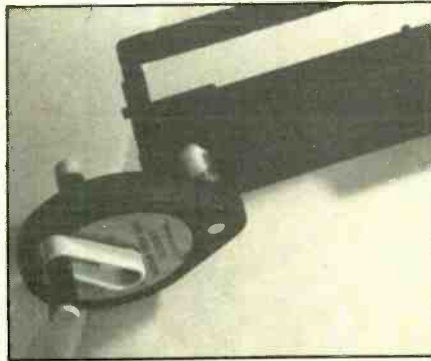


Fig. 3. Cassette rewriter can be used to cycle a ribbon from end to end.

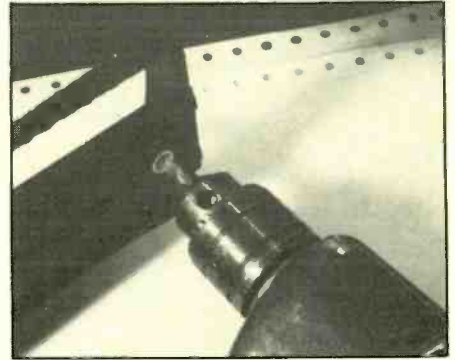


Fig. 4. Home-made "bit" and electric drill make short work of cycling.

hobby tubing. Chuck the bit into the drill and place the flattened end in the spindle slots at the bottom of the takeup assembly (Fig. 4). An electric motor or cassette rewriter requires a shaft adapter that you must fabricate yourself (Fig. 5).

To assure that the entire ribbon has been cycled through the cartridge assembly, start and end at the splice that joins the ends of the ribbon into a continuous loop (see Fig. 1).

Flipping can extend the useful life of a ribbon, but only if you do the flipping before the print quality becomes too low for legibility. However, even this will not let you take full advantage of the long-life potential inherent in a printer ribbon. Some 60% of the ribbon's surface still remains unused. If the ink in the unused areas can be made to flow into the track area, you can obtain still longer ribbon life.

Thinning of the ink to make it flow into the track area is the task of the WD-40 lubricant. To do an effective job of it, two criteria must be met. One is that the ink must be made to flow evenly into the track area so that print density is uniform. The other is that absolutely all solvents in the WD-40 must be evaporated before putting the ribbon back into service. Failure to evaporate all solvents invites printhead damage. Keep in mind, too, that a moist ribbon attracts airborne dust and dirt that can

clog a printhead and cause the driving circuitry to burn out.

Rejuvenation Procedure

It is pointless to rejuvenate a worn-through or torn ribbon or one that has frayed ends. If you try to use a damaged rejuvenated ribbon, printer damage may result. Therefore, it is important that you carefully inspect the entire lengths of all ribbons to be rejuvenated. Discard and replace any that show signs of tears, frays or pulled threads.

Ribbon inspection is most easily accomplished with an electric drill operated at low speed or the small electric motor or cassette rewriter, using the special bit or adapter described above. Always start and end at the splice to be sure that the entire length of each ribbon is inspected.

Treatment with WD-40 requires direct application to the entire length of the ribbon in one operation. To do this, you must open the cartridge.

There are several styles of ribbon cartridges on the market for Epson printers. In two popular ones, tiny slots under the lids are used as pry points to release the lids. Another type has molded latches that hold the cartridge closed. Except for releasing the latches on the cartridges that have them, opening either type of cartridge is a relatively simple but tedious operation.



Fig. 5. A slow motor is ideal for unattended continuous cycling of ribbon over the extended periods of time required for solvent evaporation.

To open a cartridge, insert the tip of a screwdriver with a thin, narrow blade into each slot in turn and gently pry until the latches release. Carefully lift off the lid, making sure you do not displace the gearing system in the takeup mechanism. Note how the gears are placed (Fig. 6) so that you can put them back if you should accidentally displace them.

When the driven gear is rotated, it takes up the ribbon in small folds that are then randomly fed into the open cavity in the cartridge. Also, if you look closely at the exit end of the cartridge, you will see a flat tensioning spring. Unless the ribbon is too slack or has excessive drag, leave this spring alone. Only if it needs it should this spring be adjusted.

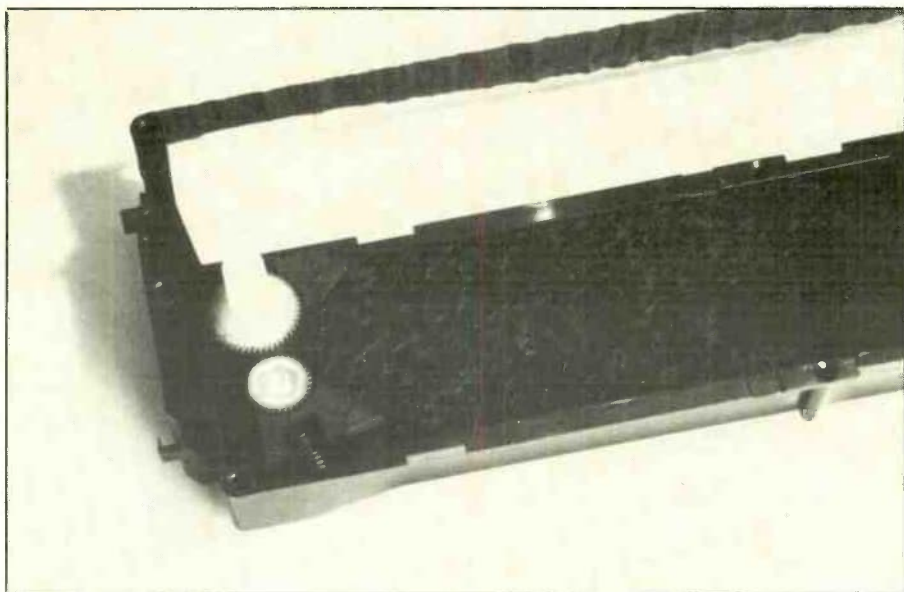


Fig. 6. The takeup drive gears at the left accordion fold the ribbon and force it to randomly bunch up inside the cartridge housing.

Rejuvenation is simple in concept but requires practice to assure consistent results. The ribbon inside the cartridge must be sprayed evenly with WD-40 as close as possible to the cartridge housing. After this, reassemble the cartridge and slowly cycle the ribbon continuously until all the solvent has evaporated.

Rejuvenation is performed as follows:

(1) Inspect the ribbon by slowly turning the takeup knob and examining the entire length of the ribbon.

(2) Carefully open the cartridge and make a note of how the ribbon drive gears are arranged.

(3) Spray WD-40 as uniformly as possible onto the ribbon for about 5 seconds. (Until you get the feel of things, it is better to spray too little than too much lubricant.)

(4) Reassemble the cartridge, making sure the drive gears are in their proper positions.

(5) Immediately cycle the ribbon at moderate speed, starting and ending at the splice. Repeat until the splice has passed through at least three times. You will see that WD-40's solvents cause the remaining ink to become more uniform across the width of the ribbon.

(6) Continuously cycle the ribbon at very low speed for at least 24 hours. Then inspect the entire length of the ribbon for shiny spots (unevaporated solvent). If you note any, continue to cycle the ribbon until all shiny spots disappear.

(7) Store the rejuvenated ribbon in an airtight plastic bag until ready to use.

Manual cycling of the ribbon in step 7 is impractical. It can also damage your printer, because ink and solvent will concentrate where the ribbon stops in contact with the cartridge at the entry and exit points. Therefore, some sort of motor-driven jig is recommended to cycle the ribbon. The best motor speed is between 1 and 10 revolutions per second, which can be obtained with an inexpensive synchronous timing motor (Fig. 5). Mount the motor on a frame that can hold the ribbon cartridge solidly in place during unattended cycling.

There is a limit to the number of times any given ribbon can be rejuvenated before results become unacceptable. At this point, you have no alternative but to replace the ribbon with a new one.

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