

Bulletin	Replacing capstan idler core for Ampex 300-, 35x-, and 440-series recorders
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Overview

New-manufacture capstan idler cores are now available from Full-Track Productions. This bulletin explains how to install the new core using parts transferred from your old capstan idler assembly.

The capstan idler core is made from aluminum with a nitrile (buna-N) synthetic rubber surface of approximately 65 durometer. This part (or its assembly) is often called a pressure roller, a pinch wheel, or a pinch roller. The terms are interchangeable. The function of this part is to press the magnetic tape to the capstan-motor shaft to pull the tape past the heads.

Required equipment

- Old idler assembly
- Replacement idler core (with supplied 0.005” shim washers)
- Retaining-ring pliers (also called “snap ring” pliers); see photo below
- Metal pick (such as a dental tool); see photo below
- Sharp strong knife
- Light petroleum distillate (such as naphtha, kerosene, or *Ronsonol* lighter fluid)
- Medium-weight turbine oil (ISO 32)



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Removing parts from old idler assembly

- 1) Using a knife, carefully pry dust cap from old assembly.
- 2) Using retaining-ring pliers, remove the retaining ring from the groove in the bearing shaft.
- 3) Remove, clean, and carefully set aside any shims and the bearing shaft.
- 4) Using the pick tool, carefully remove the felt oil washer.
- 5) Using the pick tool, carefully remove the dust-cap spring from the internal groove inside the core. This can be difficult—use a magnifier, strong light, and **wear eye protection**.
Usually the best way is to use the pick to pry between one of the two areas of the spring where it doesn't sit so far into the groove.
- 6) Wearing solvent-resistant gloves and working in a well-ventilated area on a non-porous surface, soak the oil washer with light petroleum distillate. Blot with clean, lint-free cloth or paper while repeatedly exposing clean areas of the blotting material. Repeat until most of the old oil is removed. Continue blotting until the felt is dry.

Installing parts to new old idler assembly

- 1) Carefully install the dust-cap spring into the new core. Use lots of light and magnification and **wear eye protection**. It may take several tries to seat the spring as it is very stiff and short.
- 2) Insert the cleaned felt oil washer. Make sure the washer is fully seated around the bronze bearing and that there are no stray bits of fluff.
- 3) Before oiling anything, dry-fit the shim washers onto the shaft/core assembly (some washers go below and some go on the top of the bronze bearing) and install the retaining ring. Typically, two 0.005" washers are used on the bottom and at least one washer on the top. When installing two washers next to each other, place them so that the slightly-bowed sides are facing each other—this adds a bit of spring to the end-play.
- 4) Check for acceptable end-play.
- 5) If all looks good, remove the retaining ring and oil the shaft sparingly. Use high-quality ISO 32 turbine oil (sometimes called *electric motor oil* or *machine oil*). Do not use detergent automotive oil or multi-purpose "household" oil.

Remember, a slight amount of end play is normal and is required to permit easy rotation of the capstan idler. The exact number of shim washers and their orientation isn't critical as long as the idler isn't too loose or binding on the shaft. A small amount of end play (0.001" to 0.003" is typical).

- 6) Reinstall the retaining ring. Then saturate the oil felt with enough oil so that it flows lightly throughout the felt but not so much that it beads up on the surface of the felt. Blot excess oil from the felt if necessary.
- 7) Reinstall the dust-cap by snapping it into place.
- 8) Carefully clean the idler assembly to remove any trace of oil.
- 9) Reinstall the idler assembly. Adjust the transport for 4.5 to 5 pounds of pinch pressure as shown in the appropriate manual for your machine. Note that more than 5 pounds of pinch pressure on a transport pulling quarter-inch tape may cause excessive wear on the upper capstan-motor bearing.

