

# Cleaning roller clutches on the Ampex 440B and 440C

Roller clutches were used on 440B and 440C reel motors to make tape threading easier. If the brake drum on your 440 is held to the shaft with a roll pin, you DO NOT HAVE A CLUTCH on that motor and you do not need to do the following procedure. It is not uncommon to have motors swapped in from other machines, so don't assume anything.

Roller clutches were often called *Torrington clutches* because that's the name of one company that made them. If you do a web search, you will see that at least three companies make them (INA, Torrington, and NSK). The roller clutch permits a part to rotate freely on a shaft in one direction but lock up in the other direction by clever orientation of small precision roller/needle bearings.

Unless somebody had damaged the roller clutch assembly, it is easy to free up the clutch by simply flushing with fresh oil.

- 1) Remove the brake assembly from the motor (use a screw-holding screwdriver AFTER you use a normal screwdriver to loosen the screws that secure the brake assembly).
- 2) Apply a small amount of penetrating oil into the set-screws on the brake drum and wait a few hours.
- 3) Using a small hex driver, loosen the hex setscrews on the clutch assembly (you may need to use a heat gun). To avoid damaging these screws, use a good hex driver or key. DON'T DAMAGE THESE SCREWS.
- 4) Once you back out the set screws, you can pull off the brake drum. Usually you need to heat the drum and sometimes use a gear/wheel puller if it hasn't been off for a few years. DON'T GET CRAZY here. You don't want to bend the motor shaft.
- 5) Remove the steel retaining clip. The clutch assembly should then drop out. **Save the washers and note their orientation.**
- 6) Flush the clutch with clean turbine oil. There is no need for further disassembly. Apply mild heat to help flush out the old oil. Wipe and repeat.
- 7) Assemble in reverse order.

Roller clutches can be sourced through bearing houses. However, replacement is usually not required unless someone has done something terribly wrong. I have never once had to replace one.

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