

Bulletin	Setting turntable height for Ampex 300-, 350-, and 440-series recorders
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Overview

The turntable height on Ampex 300, 350, 351, 354, 3200, AG-350, and AG-440 machines is adjusted using precision shim washers between the reel motor and the underside of the transport plate. It is very important to set the height accurately to ensure that the turntable height will be compatible with both metal and plastic reels—failure to set turntable height accurately will cause the tape to scrape the reel flange and may damage the tape edge.

The following procedures assume standard nominal flange thickness (0.050 inch for metal reels and 0.090 inch* for plastic reels).

*plastic reels were not standardized and may have flange thickness ranging from 0.085 to 0.105 inches—to avoid tape scrape, do not use plastic reels with flange thickness greater than 0.090 inches and preferably no greater than 0.085 inches.

Required equipment

- Height gage (or inspection caliper with either vernier, dial, or digital readout)
- Gage block set (including a one-inch block) or set of feeler gages
- Precision steel rule, parallel bar, or precision level

Procedure

- 1) Using the height gage or caliper, verify that the height of the reel guard is as indicated in the drawings. If your height gage does not have enough range to measure down to the top of the reel guard, place a 1-inch gage block on top of the reel guard and measure the height, then subtract 1.000 from the measurement. If you do not have a height gage, you can use a caliper with some loss of accuracy—be sure to use the back end of the caliper as this is normally equipped with a depth gage.
- 2) For Ampex 300 transports, combine the appropriate gage blocks or feeler gages to make a stack 0.160 inches tall. For 350, 351, 354, AG-350, and 440s, use a stack no taller than 0.120 inches and no shorter than 0.115 inches (the exact size will vary with reel-guard height). Put the gage block or feeler-gage stack on the top of the reel guard (as show in the drawings).
- 3) Using a steel rule, parallel bar or precision level, verify that the turntable is set to the correct height. While extreme precision is not necessary, measurement error should be less than ten-thousandths of an inch (0.010”).

Note that for **all** transports, the overall nominal height of the turntable from the top of the transport plate should be between **0.655** and **0.660** inches. It is very important to set this height accurately to ensure that the turntable height will be compatible with both metal and plastic reels—for this reason alone, many recordists avoid using plastic reels for critical work.

Also, be sure the reel motors are approximately centered with respect to the reel guards to avoid scraping the turntable edges. This is particularly important with Ampex 300 transports to avoid scraping the outside edge of 10.5-inch reels on the raised outer part of the reel guard.

- 4) If the turntable is too high, remove the reel motor and add the appropriate number of precision shim washers between the motor and the underside of the transport. To ensure easier installation, use a piece of tape to hold each shim washer (or group of washers) to the underside the transport (or to the mounting studs) while installing the motor—remove the tape before tightening the locking nuts.
- 5) If the turntable is too low, remove any shim washers that may have been installed previously. If there are no shim washers, the turntable cork has likely shrunk and needs to be replaced (replacement corks are available from Full-Track Productions).

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Alternate procedure (for use without gage blocks or feeler gages)

If you do not have gage blocks or feeler gages, you can use United States coins to set the turntable height. This procedure is less accurate but produces acceptable results provided the coins used are undamaged.

- 1) For Ampex 300 transports, use two new United States nickels (5-cent coins) to make a stack **0.155** inches tall (a new nickel coin is 0.077 inches thick)—for greater accuracy, place a small piece of standard-weight copier/printer paper underneath the coins (this adds about 0.004 inches).
- 2) For 350, 351, 354, AG-350, and AG-440 transports, use two new United States pennies (1-cent coin) to make a stack **0.122** inches tall—or use two worn pennies to make a stack **0.115** inches tall.
- 3) Using a steel rule, parallel bar or precision level, verify that the turntable is set to the correct height. While extreme precision is not necessary, measurement error should be less than ten-thousandths of an inch (0.010”).

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