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Simplified Tape Recorder Alignment

Demagnetize and Clean Tape Path

SETTING A PLAYBACK LEVEL:

1. **Thread the Alignment Tape:**
   Thread **the ANKO LAB** alignment tape, tails out. The first tone is 1 kHz for level setting. Set the REPRO gain pot on all tracks to read 0 VU in REPRO mode.

2. **Set Repro Head Azimuth with 10 kHz Tone:**
   Play the 10 kHz tone and adjust the REPRO HEAD AZIMUTH to achieve maximum needle deflection on all channels. All meters should peak simultaneously.
   For precise azimuth alignment of a two-track system, use a two-channel oscilloscope or compatible plug-in software to match the phases. This is strongly recommended for high-quality reproduction and recording (e.g., Electrical Summing, X-Y Plot, etc.).

3. **Check 1 kHz Tone Again:**
   Replay the 1 kHz tone and, if necessary, readjust the REPRO gain pot to 0 VU.

4. **Adjust Reproduce HF with 10 kHz Tone:**
   Play back the 10 kHz tone again and adjust the REPRO HF pot to 0 VU. This ensures minimal interaction between the REPRO gain and HF equalizer pots.

5. **Play Back Low-Frequency Tones (100 and 50 Hz):**
   Note that LF levels may exceed 0 VU. Higher speeds may produce higher levels. Adjust LF @50 Hz to approximately plus 1–2 VU, although some decks may go up to 2.5 VU. This variation is normal due to fringing effects, which differ with each machine's head configuration and condition.
   More information is available in the Calibration Tapes Q&A section on our website.

6. **Check for Flat Response with Chromatic Sweep:**
   During playback of the chromatic sweep (1 kHz through 16 kHz), VU meters should vary only slightly. If they do not, there may be an issue. This is known as a "flat response."
   Skip this step if your alignment tape does not include a chromatic sweep.

SETTING A RECORD LEVEL:

7. **Load Blank Tape and Set Record Levels:**
   Remove the alignment tape and thread a blank reel. Arm all tracks for recording. Generate a 1 kHz tone at +4 dB (1.23 V) into all recorder channels and set the RECORD gain pots on all tracks to 0 VU.

8. **Set Bias with 10 kHz Tone (15 IPS):**
   Using **RTM or ATR Master Tape**, generate a 10 kHz tone into all tracks. Adjust the BIAS ADJ. pot by first turning it counterclockwise (CCW) slowly until the VU meter peaks. Stop at the peak, then turn the BIAS ADJ. pot clockwise (CW) until the signal drops 2.0 VU (for SM911, ATR Master, or SM900 tapes, adjust to a 3.0 VU drop). Repeat for all tracks.

9. **Adjust Record Gain with 1 kHz Tone:**
   Generate a 1 kHz tone into all channels and readjust the RECORD GAIN pots to 0 VU.

10. **Set Record Head Azimuth with 10 kHz Tone:**
    Generate a 10 kHz tone into all channels and adjust the RECORD HEAD AZIMUTH for maximum needle deflection.
    For precise azimuth alignment of a two-track system, use a two-channel oscilloscope or plug-in software to match the phases.

11. **Final 1 kHz Record Gain Adjustment:**
    Generate a 1 kHz tone into all channels and confirm the RECORD gain pots are set to 0 VU.

12. **Low Frequency Adjustment (100 and 50 Hz) Tones:**
    Switch the generator to 50/100 Hz. Ensure that recording levels match the previously calibrated playback LF level, considering the fringing effect.
    Do not attempt to bring the 50 Hz level to zero—it is natural for the playback head to resonate around this range.

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