

# Stereo Tape Head Tips on Adjustments and Measurements

By HAROLD REED

**H**ALF-TRACK and quarter-track tape-recorder heads can present some special problems to the serious-minded audiophile and service technician. In stereo recording and reproduction these problems should be given careful consideration.

## Azimuth Alignment

Azimuth adjustment, the process of correctly positioning the head with respect to the magnetic tape as it travels across the head, is best done with a standard alignment tape. The output of the high-frequency signal from this tape is observed on the recorder vu meter or external audio voltmeter connected to the recorder output. Head adjustment is then made to obtain maximum meter reading.

In a dual-track stereo system it may be found that optimum adjustment for one head track is not the best for the other. The output reading of one channel may reach peak output when the other channel has passed through its peak and dropped down 2 or 3 decibels. In many cases an improved azimuthal setting can be attained by first adjusting for the peak point of the track with the greatest output then slowly adjusting for a rising output of the other track while watching the meter reading of the higher output track previously peaked. Often, with this method the lower output track can be raised to a higher level, sometimes approaching the level of the other track, with a reduction in the output of the higher level track of only a fraction of a decibel. This method requires the use of both channel vu meters, simultaneously, or two external output meters if there are no vu meters in the system.

## Output Level Variations

Output level variations between tracks with the same head may occur when recording and playing back. The author investigated a number of complaints concerning this condition and observed variations of as much as 8 db in the output from one track compared to the output from the other track. It is desirable to hold this deviation to at least within 2 db. Many times considerable improvement can be obtained, and often the deviation can be held to within 2 db, by a slight adjustment of the recording bias. Most recorders use a small trimmer capacitor for bias adjustment. Maximum bias level to the recording head does not necessarily result in maximum normal recording level on the tape. This adjustment is made to obtain an output level from a recorded and played-back tape that approaches the output level from a standard alignment tape and is performed as follows.

A standard alignment tape, such as Ampex #5563, contains a 250-cps signal

recorded at normal, maximum recording level. With the dual-track, stereo recording system in the playback mode, adjust the recorder volume controls to obtain zero vu on each of the channel vu meters, or a convenient reading on external output meters if used, when playing the standard tape. Do not change the setting of the recorder volume controls for the duration of this test. Replace the standard alignment tape with a blank, unrecorded tape. Connect a signal generator, set for 250 cps, to the input of one of the channels of the recording system. Adjust the signal generator output for normal recording level (zero vu on the meter) and record on the blank tape.

Now, play back this tape and observe the meter reading. Ideally, it should be zero VU, matching the output reading from the standard tape. If it deviates more than 2 db make a slight adjustment on the bias control of this channel, re-record and play back, noting the meter to see if the output rises or falls. If there is no improvement, try turning the bias control in the opposite direction and check again. Most often the output is below that of the standard tape and can be brought up when optimum bias adjustment is attained.

Perform the same tests on the other track and stereo channel. The final goal is to obtain a close output level balance between the channels and to have them within 2 db of the standard alignment tape output level.

## Crosstalk

Crosstalk, that undesirable condition of the signals from one stereo channel or tape-head section coupling into the other, may be checked by the following method.

Connect an audio voltmeter to the output of one channel, say channel 2. Feed a signal generator set for 1000 cps to the input of this channel and record and play back a tape, adjusting the channel controls to obtain zero vu on the channel meter. Note the reading on the audio voltmeter. Now, connect the signal generator to the input of channel 1 and record the 1000-cps signal on this channel. Play back this recording with the controls of the recorder adjusted to obtain zero vu on the channel-1 meter. Observe the reading on the voltmeter at the output of channel 2. This is the crosstalk level.

Crosstalk can occur in both the dual-track sections of the tape head and in the wiring of the stereo amplifier, particularly in leads associated with switching components. If it is unusually high, wiring should be checked. It may be that original lead dress was disturbed during some service work with the result that there is considerable coupling between certain wires in the circuit. ▲



## SUPRA PROFESSIONAL

World's most magnificent recorder and greatest performance value per dollar!



### NEW SUPRA BX801—FULL TRACK

Also available in half track, two track stereo and quarter track stereo

### CROWN GUARANTEED PERFORMANCE

FREQUENCY RESPONSE	IPS SPEED	FLUTTER & NOISE WOV	RATIO
±2 db 30 to 28,000 CPS	15	.06%	60 db
±2 db 30 to 16,000 CPS	7 1/2	.09%	60 db
±3 db 30 to 8,000 CPS	3 3/4	.18%	55 db

Some dealer franchises available. Write Dept. EW-102 or phone JA 3-4919 for complete information.

## CROWN INTERNATIONAL

Division of  
INTERNATIONAL RADIO & ELECTRONICS CORP.  
ELKHART, INDIANA



those who  
Serve Best  
Use

## QUIETROLE



6 oz. SPRAY PACK CAN  
(with FREE Extender Tube)

2, 4, 8 oz. Bottles  
(with dropper)

Product of  
**QUIETROLE**  
COMPANY

Spartanburg, South Carolina

in Canada: CROSS CANADA ELECTRONICS  
12 Laurel Street, Waterloo, Ontario

There's never any doubt with QUIETROLE... it always says "Sh, Sh" to noisy controls and switches on TV, radio and electronics instruments. Now, Quietrole is even easier to use... has FREE EXTENDER TUBE that hits those hard to reach places right on the button. It's Quality Quietrole that makes those once pesty repairs easier than ever. See how Quietrole can ease the jangled nerves of even your hardest to please customers. Quietrole, helps the serviceman serve better than ever.

