

Choosing A Tape Recorder

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OUR GRANDFATHERS did not have this problem. Choosing a tape recorder at the turn of the century was a simple matter—it was Magnetophon or nothing.

Now we have hundreds from which to make our choice, all—if you believe the advertisements—offering something special. The problem is, very often, to distinguish between those that offer what you want and those which are simply embellishing what may be a basically good model, but for which you pay more, get more, but use less.

First—read the reviewers. Read 'em diligently. Contrary to many opinions, these gents (myself among them, though not in these pages or even in this country) do their best to describe good and bad points of the equipment sent to them, adding a personal nuance here and there, which their own coterie of followers will learn to love or hate, and should always back their opinions with the hard bedrock of measured fact.

Second—if there is a point on which you are not clear, then ask! Ask the reviewer, ask the Editor, ask Joe Giovannelli; or for specific advice on tape questions ask Herman Burstein, ask the Editor, or, if you are prepared to wait for the Transatlantic carrier pigeons, ask Donald Aldous or me—but ask. . . . We are here to serve. We do not want you to waste your money, tuck the tape recorder under the bed and go back, disgruntled, to off-the-air programs of someone else's choosing. If there is a question about a switch function, a system matching, interpretation of technical terms, or any other suchlike bother, then we should be able to help you. But if it is a question of whether A is better than B, you may not be so easily served.

With tape, it depends on what you mean by "better."

Less noise? Well, yes, the noise reduction systems do have an effect and it is greatest with necessarily slow-speed cassettes.

For reel-to-reel machines it may

seem less important. But tape hiss, the everpresent bugbear, is also relevant at higher speeds and on wider tracks. So the "add-on" noise reduction device is worth consideration.

Some tape recorders will already have the noise reduction facility built-in. Watch for those which add distortion or rob your recording of its dynamic range. There are several methods: One aim of most is to reduce the higher frequencies when the overall signal is lowest. Using the same argument as the more sophisticated Dolby, they sense signal level and apply a frequency-conscious stop filter. Some of these can be viciously potent; my advice is record and replay a familiar piece of music, then listen very carefully for those artificial rises and falls in ambient noise level that give the game away.

Some machines do it both ways, that is, they apply extra pre-emphasis during recording or can be switched to high-energy tape activation, then utilize a noise reduction switch on replay. Although these refinements are more often encountered on cassette machines, where practically *any* improvement has to be beneficial (Ouch! Ed.), makers of reel-to-reel tape recorders are adding all sorts of similar sophistications.

Choice of a reel-to-reel tape recorder, as distinct from a cassette or cartridge machine, argues that one wants the choice of speeds or some greater track-switching flexibility than is currently available because of cassette head size and mounting restrictions.

Accepting that argument, you should look for the tape recorder that does what you particularly want and no more, but one that does it as well as can be.

Tape recorder makers will not love me for saying so, but there's a heck of a lot of apparatus gathering dust because its promise outlived its performance. New models come along;

they glitter more, have a lot of inviting facilities, merit a very close look. . . . But when you look, remember that a "track-transfer, multi-sound, echo-flip device" may sound impressive when you show your friends, but may have cost you the dollars you could have spent in getting the simpler, higher-speed, better-performing machine.

Make your choice logically. Say: (1) What do I want to do with this thing? (2) What am I likely to want to do later? and (3) How about after that?

Point 1 is the most important as well as the most immediate. If your main work is vocal—interviews, reports of meetings, out-and-about effects—you need as good a microphone as you can get. Likely you will have bought it or still be drooling over the catalogs. OK, don't waste money on the machine with mic. Not unless *that* machine, for other reasons, seems the best.

General purpose work is a vague term, but we all know what it means. Monday you just had to catch Station Zee-Dee-Kay giving forth on Mahler's love-life; Tuesday was when Junior visited, with his newest-born just gurgling to be historied; Wednesday—well, wasn't that the day the Stag Club just "took off" and haven't you just got to prove that Joe had said what he did before carting your precious tapes and slides to the PTA social on Thursday for your annual lecture on the Lakes of Saskatchewan? General purpose means what it says: your machine has to withstand a bit of hard handling and maybe a can of beer in its innards.

So choose it, expecting the worst. But remember, that Mahler has to come over soft and clear, and you'll do that better at a higher speed, if quality of performance matters more to you than a miserly saving on the cost of tape.

Which brings up another point. Tape length, and, related to it, tape thickness. Calculate your probable program length

and add a bit for fluffing. There are plenty of good tape length/time/grade tables around—no need to bore you with another. But let me remind you that, for example, a 1 mil polyester tape on a 7-in. reel (1800 feet length) can give you 45 minutes of recording if you are using half-track stereo at $7\frac{1}{2}$ ips, to get the best signal-to-noise ratio and dynamic range from your machine.

Use a quarter-track machine (I don't like the term 4-track in this context, with so much multi-track studio stuff about) and you'll double the playing time, but have to invert reels midway through that doubled performance. The use of $3\frac{3}{4}$ ips would have gotten you the same playing time, but for that you would have sacrificed a couple of thousand Hz frequency response at the top end (and don't kid yourself, the hiss is not all up there!) and had to put up with a fractionally worse wow and flutter performance.

The point I am trying to make is that the real perfectionist will go for the highest speed and the widest track and to hell with playing time per spool. Bert Whyte was enthusing about the Nagra—only just breaking out into stereo, forsooth!, when we are all in a quadraphonic fever—and my personal memories of this machine are a blissful month of full-track 15 ips recording while its owner, an explorer friend of mine, laid low by some bug, left it in my loving care. As Bert says, if only we could run two units in sync, we could make such things as outdoor four-channel stereo recordings.

Coming down out of the clouds a while, let me say that, as an engineer, I have the utmost difficulty in choosing tape recorders. I am always more con-

cerned with the design factors and the probable life, the true specification (not just what is quoted, which can be regrettably ambiguous), and the *basic facilities* of the machine.

This is all the more important when reel-to-reel recorders are considered. Mainly because the range of facilities becomes so much wider—and the ultimate quality realizable so much higher. (*That* should offend a few marketeers! Ed.)

I assume you are reading this because the virtues of easy loading, portability, and a library you can carry in your auto map pocket are not so important as those of wider frequency range, better speed stability, improved signal-to-noise ratio (Dolby notwithstanding), and a tremendous eruption of facilities.

Choosing your reel-to-reel recorder is truly a matter of matching your needs to your pocket. In a challenged market, you can be sure that the goods are competitive. If you are a true tape enthusiast, *now* is the time to invest. Quadraphonics, as far as you are concerned, is an impossible or impossibly costly conversion from two-channel stereo. If you want surround sound, get in there now. Makers are jostling for your custom and the technology is not likely to be outdated in the lifetime of your machine—all the headwork is going into broadcasting and discs.

The design commitment in tape recording today is toward getting more flux on the tape, tailoring circuitry to get less noise without losing or distorting signal, and—most significantly—motor control.

Where only one of the "big boys" had a servo-controlled motor a year ago, several are seeing the advantage of

this device in 1972 and there are more waiting in the wings. It calls for a hunk of circuit, but that is no great problem in these days of ICs. It gives spot-on speed and makes for less hum radiation, besides cutting down weight.

Automatic recording level control, once the specialty of the portable, is creeping into more and more of the larger models. So is single meter (peak-selective) indication. Both can have advantages in the right situation. Question is, is it yours?

How to choose from the welter of superlatives in the catalogs? The answer, as I said at the outset, is: Read your reviewers. Find whose opinion most matches your own experience or who consistently convinces you. Before making a choice, read as many independent reports on the model as you can. Shop around and try out that all-important factor, operability.

Yes, I *know* the word's not in Webster's. I coined it a couple years ago when reviewing a portable which was the first I'd met where all the controls seemed to "come to hand." And *that* was a reel-to-reel machine, incidentally.

Make your choice the same way: Check the specs., read the reports, and handle it. If you are buying across the counter, be sure you get the chance to try before you buy. If you are buying mail order, well, you take a chance along with your discount.

Note that I've named no names? Deliberately. *You* have to do the choosing, friend; all I can hope is that my remarks may have sparked off a few ideas to help you. Only one thing is certain—the one you finally select will be the one you just can't quite afford. . . .

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