By C.J. Huss

Chapter Ten
The Virtues Of Minimalism

Hi, folks, I'm back! Didja miss me? You did? You didn't? No worries, I'm easy to get along with, or at least I try. I strive to keep life's relationships as simple as possible. What's that, you do too? You don't? You try but fail? But you meant well? And therapy can get so expensive and/or cut into your time surfing the net? I understand.

Lessee now, where was I... oh, yes. I was going to talk about tape this issue. Having spent a fair number of columns on turntables, and then a few regarding the sad decline of the audio (and other) consumer service industries, I thought it was time to switch gears (or belts or even idler wheels) and talk about another newly relic-ized member of the audio world, magnetic tape.

While recordings of sound made by encoding mechanical vibration on either cyclinder or disc predated purely electronic recording, first via placing magnetic fields onto wire, then later on plastic tape coated with a magnetic material, it is a very fair statement to credit the technology of magnetic recording to the eventual massive success of bringing music and other sounds into the lives of the public at large. And in a very different evolution of that technology we have today—using computers to place a digital recording of music (or sounds) on a spinning hard drive—the basic concept lives on.

But as I was getting my thoughts together for said column, another situation intruded, and so I'll be putting the tribute to taping off until next issue. What situation, pray tell?

That's okay, no praying necessary, I'm easy to get along with, remember?

The sitch was one that no responsible technician wants to get into, which is the inabilty to successfully repair a component not simply because of a lack of parts, or accurate service data, or fire, flood, plague of locusts, plagues of any kind, but... utter frustration at being stymied by a component's pointlessly excessive technical complexity.

Yep, bummer, big time.

The reason this happened to be linked to my forming tape column thoughts was that the annoying component in question was an open reel tape machine, one designed and manufactured by a normally competent and respected Japanese audio company. Who? Not saying, because this sometime problem of engineers trying to show off-- in my humble technician who has to repair the stuff they create opinion—is not by any means unique to this manufacturer.

The deck, a premium 10 inch reel capacity machine was, according to some internet research I did, held in very high regard by many users and collectors of vintage and/or classic open reel decks. I have no wish to dispute those opinions, since the build quality of the machine was obviously top-notch even before I opened it up for service, and as already stated, the manufacturer is one that generally knows their stuff.

In fact, the visual build quality was obviously such that I, who frankly should have known better*, went ahead and sent the two badly deteriorated pinch rollers (they had largely turned to de-vulcanized, rubbery goo) out to a roller rebuilder right after the deck came in, foolishly assuming that whatever else might be wrong with the deck would be ultimately correctable.

* (Note-- while I have never attended an actual rodeo, I have long since lost count of the number of tape machines I've worked on over the last four-plus decades).

Ohhh, bad move, CJ, bad move. Because the deck then got stuck in the incoming job queue for far longer than expected, and when I finally got it on the bench, installed the rebuilt pinch rollers, powered it up and started to test its various functions, I was in for a rude surprise when it worked for about two minutes, and then the capstan motor suddenly stopped. (The capstan motor is the one that actually pulls the tape from the supply reel and feeds it to the takeup reel. The reel motor's job is to supply some tension to spool up the tape as it's fed to or from them during either playback or recording).

Now, generally speaking, motor failure on an open reel deck, especially one like this which has a separate motor for each reel plus the capstan motor-- the best possible way to do things in tape recorder land-- is very rare. The motors are large, hefty, precision machines. At most, they may need some cleaning and oiling, after which they may go their merry spinning way for years.

So, I open the machine up, check some obvious possible causes, go online and download a service manual for the deck (an essential thing at this point even for a machine far less electrically complex as this one was) and begin to study the circuitry. And I soon note something that troubles me greatly, which is that this deck is using a DC brush-type motor for the critical capstan motor, a rarity for a deck at this level. Why use this type of motor instead of the more conventional (and reliable) AC motor?

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Because this deck is not an ordinary open reel deck. Besides the normal two speeds (7 ½ and 3 ¾ inches per second), it is also an auto-reverse, bi-directional transport. Meaning—it can play or record not just forward, from left reel to right reel, but reverse and play or record right reel to left, using a second set of heads. Managing a tape transport like this is a monumental task, and a part reason for the extensive internal circuitry, particularly the transport and motor drive control circuitry. I won't get into the technical details, but... trust me on this, it's wicked tricky.

Why do this? Because it extends the playback or recording time without you having to manually flip the tape reels over at the end to play the other side of the tape. Useful? Can be, but... now a possible price to be paid for the feature.

The engineers selected a DC motor for the capstan drive because a DC motor can be made to run forwards or backwards by simply reversing the polarity of the voltage feeding it. Doing this with an AC motor can only be done by using a more expensive motor variant or a possibly tricky mechanical workaround. But the kicker here was—not that this DC motor was a cheap one, which it wasn't, but that it had brushes, and a commutator. For a power tool or a leaf blower? Fine. For a tape deck motor? Not the best idea.

Brushes wear, generate electrical noise which must be suppressed, commutators can get oxidized. The motor eventually gives up the ghost, much sooner than an AC motor. And in this particular machine, in an effort to maintain the necessary degree of precision desired for top performance, the control and drive circuitry for it suddenly becomes seriously, seriously complicated. Sinking feelings begin to emerge. I connect the motor to an external power supply, and it begins to run, so I figure, okay, good, the problem is in the drive and control circuitry. And indeed, I find trouble there. I replace multiple bad or failing parts, fire the machine up. It now runs but in a mere 30 seconds I smell something overheating.

It's the drive circuitry I just repaired. Ohhhhhh, yet more of the not good. I futz about for some additional several hours, and finally, after nearly a day's work going into the machine, deduce that while the motor may run, it has an internal fault that is causing it to draw way more current than it should. So—only fix? That's right, new motor. Finding one? Good luck with that. A used one scavenged from another deck of the same model? DC brush motor, remember—how reliable might a used one be? No way would I risk it.

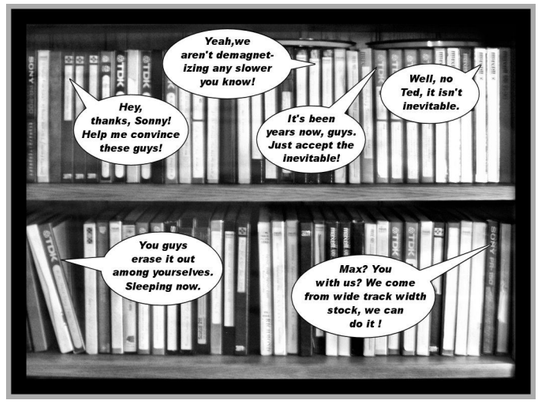
Plus!! -- We haven't even gotten to where the machine will move tape reliably enough to make any checks of the audio circuits! Will it play or record? No way to tell unless the motor is first replaced. Frustrated in the extreme, I sadly pull the diagnostics plug on the thing, write off about $500.00 worth of time, and return the deck to the customer charging only for the electronic parts used in the repair attempt and with an explanation much like the one just presented.

So, the point of all this, for ya'all out there reading? 'Tis a cautionary tale, verily. Be extremely careful when buying machines that may have lots of cool-seeming features, but try to judge whether the value of those features will be worth the inevitable trade-offs of reliability and/or ultimate longevity. Engineers are often proud to show off just what marvels they can achieve, but sometimes the best engineering is by those who strive to do more with less rather than more with more.

Specifics—who, historically, has done well in this regard—is a worthy subject for a future column, but for now, 'nuff said. Next issue— TAPE! TAPE! TAPE! Open reel, cassettes, 8-tracks, DATs, oddball unsuccessful formats, whathaveyou, but how tape tech got us where we are today, and should not be forgotten.

Meanwhile, as always, live long, prosper, buy carefully, and happy tunes! :-) :-) :-)

-- CJ



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If so, consider helping support us by spreading the word about our monthly shows!
One way to do this is to hand out show flyers to the members of the general public who, even after all these many years, are not aware we exist, or unsure what we do!

No, no, we don't mean stand on a street corner and wave them at drivers, that's a wee bit hazardous, both for you and them. But! Do you have a favorite hangout, like a resturant, club or bar? Easy-peasy, then ... pick up a plexiglas flyer holder at your local office supplies store, and arrange with the folks at your hangout to... hang it up somewhere in a high traffic area, such as the one shown at left in a resturant frequented by one KRC member who happened to have a spare microphone stand handy, and handily adapted the flyer holder to fit it!

So... be creative and spread the word and... we thank you very much!