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[TekScopes] Restoring TM500/5000 equipment

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I have done a lot of these systems over the years, and th9nk a few points are worth passing on:

1. The TM5000 series is totally unsuitable for ramping with a variac due to its power supply design, it might work with a TM500 unit if you feel it's needed. I have never used a variac in restoring these, but that's just my technique. Be sure the frame is set to the correct line voltage before any work is done.

2. Age is important. Very early units are problematic, but later ones not so much. I have had VERY FEW frame issues that are capacitor related, and then only in units from the earliest production. The FP can style style electrolytics in the frames are not the best possible units, but they did hold up well in this application. Before applying power, INSPECT EVERYTHING, look for leakage or burn damage, remove any dust, and tighten all the screws. It's surprising how many issues these simple steps resolve before you ever turn anything on.

3. Ripple and voltage are the key frame issues, I always start with the frame BY ITSELF. Let it run for a few minutes, and then test the AC/DC voltages in each slot. I have a test plug in to do this. Marginal DC supplies show high ripple, and another common frame problem is blown fuses caused by defective plug ins, this is quickly detected. My plug in also checks the transistors, and it is very helpful to know all these items are GOOD before any plug ins are inserted.

4. Try a power supply plug in in each slot, under load. If there are any residual frame issues, they will show up right away in failure to reach the maximum voltage or high ripple. Once you get to this stage, things are looking good, and your confidence level in the frame is high Now you can go ahead and test plug ins, which I recommend on an extender cable. Once I think things are working, I always burn everything in for a day, this reveals any marginal issues with considerable success. Tantalums in plug-ins are sometimes a problem, so watch them carefully, I often do a finger pinch temperature test to be sure they are not marginal before burn-in.

5. Reforming electrolytics with certainty is not so easy in circuit, but dead simple stand-alone with a sencore z-meter, like an LC53. I strongly recommend one of these for this task, and it tests the part under the actual applied voltage. I have seen many older caps heal themselves after long shelf storage when equipment is run and allowed to sit for a while, they re-form naturally in-circuit. The ripple test is the real measure of performance in-circuit, and shorted caps or rectifiers are not going to magically fix themselves, they will fail regardless of the technique used to power up. I do appreciate that tricks like a light in series with a unit may have value, but I have never used it, and have had no issues because of that. I always find that a visual first (make a few resistance checks if you have doubts) reveals a lot of issues prior to powering up, and I recommend that as a first step with any gear that is new to you, and old in reality.

all the best,
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https://www.sphere.bc.ca/test/index.html