Troubleshooting Guide for Dewert Systems

Dewert electronics aren't as common as Okin systems as they're mainly used by one manufacturer (Pride). However, Pride is the largest lift chair manufacturer in the USA, so there are hundreds of thousands of chairs in use with the Dewert system. There are four components to a newer Dewert system, and even less in an older Dewert MB1 system. Here they are in order of the most often experienced problems:

1) **Hand control**: The hand control is **by far the part that we sell the most…** Most Dewert hand controls are operated by a paddle switch; they don't have a circuit board built into them like the Okin controls do. The only real significance of this is that on most Dewert controls, the switch can be replaced (see symptoms below). The problem is that as the hand control is used — and abused (dropped, sat on, water spilled on it, chair let down on it, etc.), the solder contacts loosen and the control will start working intermittently. Then at some point it quits altogether…

2) **Transformer**: This is the Dewert part that we have the second most problems with. It's not that they are abused that much (except when liquids get spilled into them or it somehow gets under the chair and the chair comes down on it), but the fact is that it's operating 24/7, and nothing lasts forever (at least, nothing that **I** own)…. There are two styles of Dewert transformers:

- Older model Dewert systems like the MB1 have an “internal” transformer that is mounted on the motor assembly under the chair.
- Newer model chairs have an “external” transformer that sits behind the chair with a power cord connecting it to the hand control and motor.

We’ll discuss troubleshooting both types in the symptoms below.

3) **Motor**: Many people who call in say their chair isn’t working, and they think the motor is out. It’s sort of like if you come into your house in mid-summer and the house is hot; you automatically assume the compressor is out; many times (unless you have my luck…) that’s not the case. In fact, I spend a great deal of my days talking people out of ordering new motors. The motor is one of the last things I suspect in a lift chair problem. Usually, if a defective motor is the problem, it will be pretty obvious; the motor will smoke or it will run but not pick up the chair, or you can hear gears grinding, etc. The motor is hardly ever the problem if it is just dead silent and not making any noise at all.

4) **Power Cord**: Unless the cord has obvious damage (which does happen, as a loose cord can easily get caught in the chair mechanism when it moves), cords hardly ever cause any problem. In 24 years, I can count on two hands how many power cords I have found that were bad without showing any external damage.

Problems

1) **Nothing about the chair will work.**

The most common problem is that the chair is not connected to the electrical supply or the electrical supply is not working due to a breaker, a fuse or a loose wall outlet in the home.

- Make sure there is electrical current at the outlet.
- Try plugging a working lamp into the outlet the chair is plugged into. If the lamp lights up, wiggle the lamp plug in the outlet a little to make sure the lamp doesn't go out because of a short in the wall receptacle. Then make sure the chair is connected to the outlet (don't roll your eyes at how stupid this sounds – you don't want to know the number of miles I have driven to a call, only to find that the chair wasn't plugged in or the wall plug was loose).
- If the power is OK, then the first step is to check the transformer.

a) Easiest to do, but the least accurate:

Make sure the transformer's power cord is connected to the wall, and that the hand control is plugged in. A quick check you can do (especially if you don't have any test equipment to work with) is to feel the bottom of the transformer after it has been plugged in for at least an hour to see if it's warm. It should be warm, but not so hot that you don't want to hold onto it. If it's that hot, it needs to be replaced whether it's still working or not because it's a fire hazard. If the chair won't do anything and the transformer is cold to the touch after it's been plugged in for awhile, that means the coil inside the

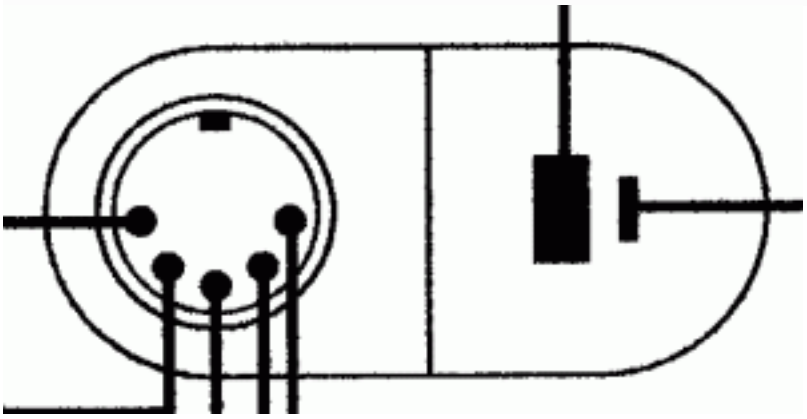
transformer is bad, so it should be replaced. If it is warm to the touch, continue on with the next step.

- If you have the older style MB1transformer that is attached to the motor, then turn the chair over on its side so you can get your ear close to the transformer; if you have the newer style external transformer that sits behind the chair, move it around so you can get your ear close to it.
- With everything hooked up, push the switch on the hand control whichever way the chair won't go and listen for a "click" in the transformer (you'll hear a little click in the hand control switch, but the click in the transformer will be much louder).
- If you don't hear a click in the transformer, the problem is most likely in the hand control (either the switch or the hand control wiring). If you do hear a click in the transformer in both directions, then the problem is most likely in the transformer.
- The theory behind this is that if you don't hear the click in the transformer, this means that power is not getting through the hand control back to the relays in the transformer – the click you hear is the relays engaging… If you don't hear the click, you can check out the switch and/or the hand control wiring using the steps farther down in this section. If you do hear a click both directions, then odds are that the transformer is the problem.

This test is around 75% accurate (sort of like a 75% chance of rain – most of the time it will rain, but sometimes not)… I have checked a good many systems where you can hear the click in the transformer and it ended up being the hand control anyway. Also, if you hear the click in the transformer, it could be working as it should and the problem is in the motor itself. That doesn't happen often but the Dewert motors do go out from time to time without making a sound…

b) Little harder to do, but more accurate:

In this test, we are going to eliminate the hand control from the system and see what happens.

- If you have the older style MB1 transformer that's attached to the motor, then turn the chair over on its side so you can more easily get to the transformer.
- If you have the newer style external transformer that sits behind the chair, the easiest way to do this is to take the motor out of the chair: just turn the chair over on its side, pull the clevis pins out of each end of the motor, and take the motor out. Then unplug the dual-headed connector cable coming from the chair out of the transformer, and plug the motor directly into the transformer.
- Now, get two paper clips and straighten them out.
- 
- Turn the transformer so that it looks like the picture. Carefully, put one paper clip in the hole on the five-pin plug on the **far right** (pin #5 counting from the left); Then, carefully put the other paper clip in the hole just to the left of the hole that the other paper clip is in (pin #4 counting from the left).

- Carefully (there's that word again) touch the paper clips together. The round tube should retract in (if the motor tube is all the way in already, all you will hear is a click from the transformer).
- Leave the paper clip in the far right hole in, and take the other clip out and move it to the middle hole on the plug (pin # 3 counting from the left).
- Carefully touch the paper clips together. The round tube should extend out (if the motor tube is all the way out already, all you will hear is a click from the transformer).
- If the motor moves both ways with these tests, it confirms that both the transformer and motor are OK. This makes it almost certain that the problem is in the hand control; you can check out the switch and/or the hand control wiring using the steps farther down in this section.

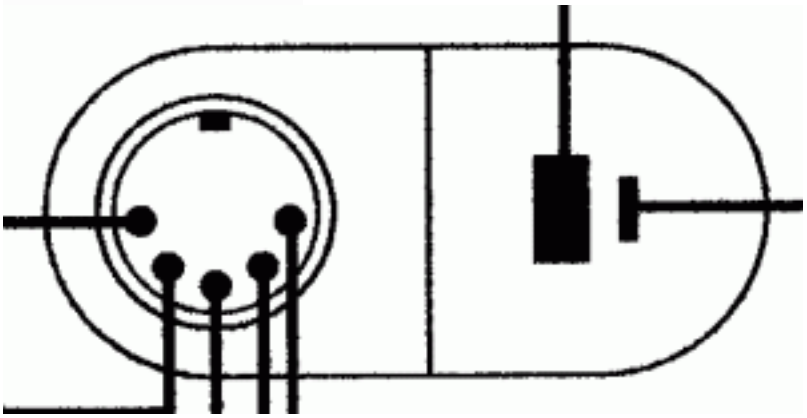
c) Still harder to do, but the most accurate:

These steps involve a good deal of work with electrical test equipment to check the various components of the electrical system. These tests isolate each component to see if they pass or fail; following these steps closely, you should be fairly certain (or, as certain as you can be in lift chair repair..) to isolate the problem with the chair:

As mentioned above, there are two styles of Dewert transformers; older model Dewert systems like the MB1 have what we call an "internal" transformer (the transformer is mounted on the motor assembly under the chair). Newer model chairs have an "external" transformer (the transformer sits behind the chair with a power cord connecting the transformer to the hand control and motor). To find

which one you have, simply follow the power cord from the wall – whatever the cord is attached to is the transformer…

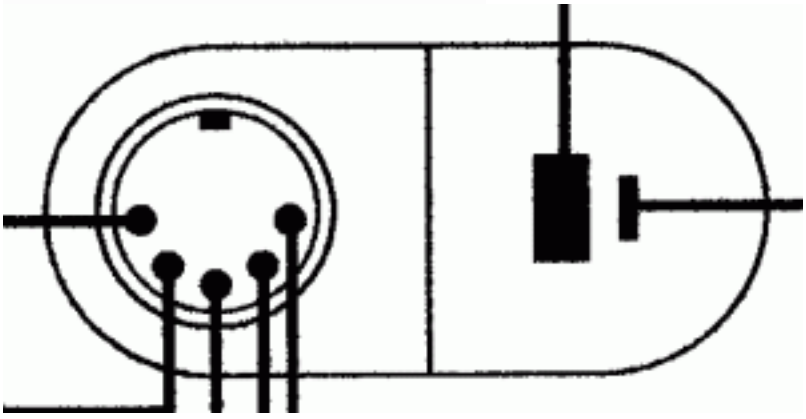
Check the Transformer:

- **Internal (MB1) Transformer System mounted to the motor)**: Turn the chair on its side and find the connections on the transformer that's strapped to the motor.
- Unplug the hand control from the control box.
- Plug the chair into the wall, if not already done (the Dewert motor is a low volt system, greatly minimizing the danger of electrical shock).
- 
- Turn the transformer so that it looks like the picture. Set your multimeter to the DC Volts setting, put your RED lead onto the hole on five-pin plug on the **far right** (pin # 5 counting from the left (you will probably have to put a paper clip or pin into the holes, then put your lead onto that; I don't understand why they made the contact points so small, but then again, they didn't ask me…).

- Then put your BLACK meter lead onto the hole just to the left of the hole that the red lead is in (pin # 4 counting from the left). Your meter should read 30-38 Volts DC.

Next, move the BLACK lead from the hole it is in to the middle hole on the plug (pin # 3 counting from the left). Your meter should read 30-38 Volts DC.

If you don't get those readings, then either replace the transformer with our Dewert Transformer Kit, or if you would rather replace all the electrical parts in the chair (recommended if you plan to have the chair for some time), then order our Okin DeltaDrive Motor Set.

- **External (MBZ) Transformer System**: Locate the transformer sitting behind or beside the chair.
- Unplug the dual headed "Mickey Mouse" plug coming from the chair that plugs into the transformer.
- Plug the transformer into the wall, if not already done (the Dewert motor is a low volt system, greatly minimizing the danger of electrical shock).
- 
- Next, move the BLACK lead from the hole it is in to the middle hole on the plug (pin # 3 counting from the left). Your meter should read 30-38 Volts DC.

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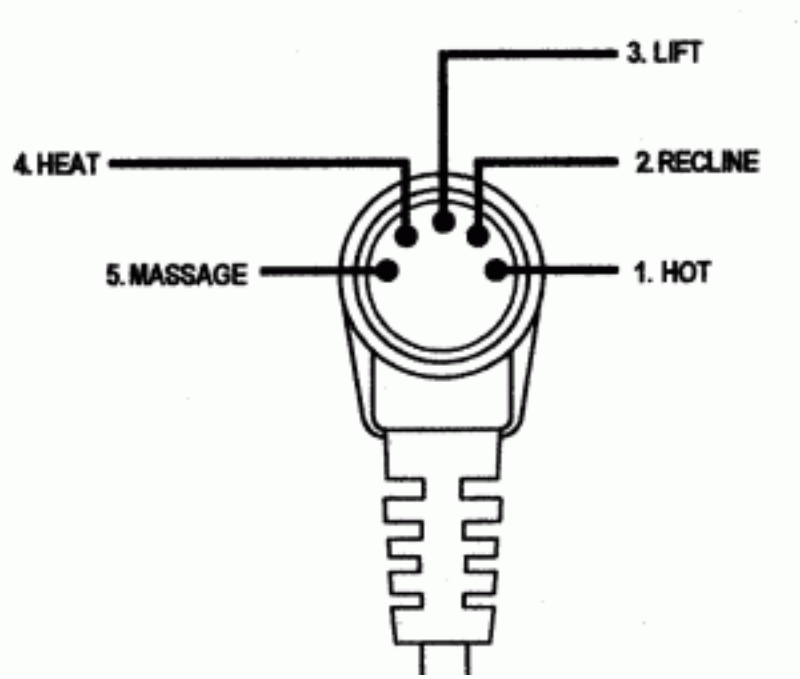
- Next, move the BLACK lead from the hole it is in to the middle hole on the plug (pin # 3 counting from the left). Your meter should read 30-38 Volts DC.

If you don't get those readings, then replace the transformer.

If you don't get those readings, then either replace the transformer with our Dewert Transformer Kit, or if you would rather replace all the electrical parts in the chair (recommended if you plan to have the chair for some time), then order our Okin DeltaDrive Motor Set.

Check the Hand Control Wiring

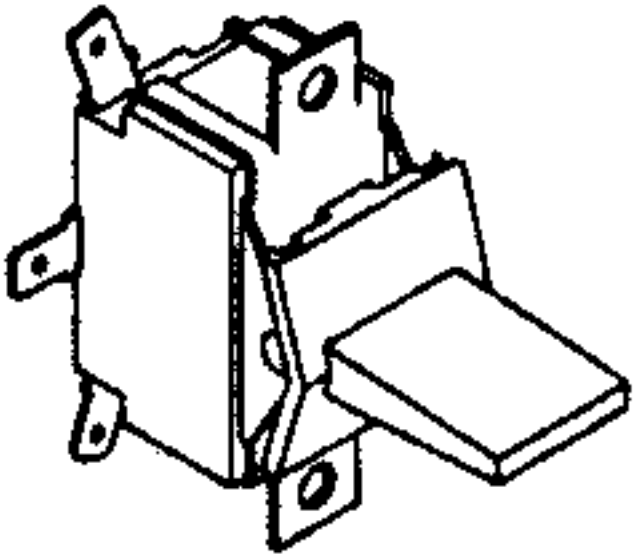
Note: The following procedure is very difficult to do by yourself with your own two hands. It's very hard to hold the plug with one hand and your two meter leads with the other, and get both the leads on those small pins without it touching the adjacent pins and giving a false reading. Either having another person hold the plug for you, or putting the plug in a vise or some other holding device helps greatly…



- Unplug the chair from the power source.
- Disconnect the hand control lead from the transformer (if not already disconnected from the previous step).
- Set your multimeter to the OHMS setting.
- Using the diagram above, place the RED multimeter lead on PIN 1 of the hand control cord.
- Place the BLACK lead on PIN 2.
- Press the switch to the DOWN position. A low reading means the hand control is operating properly in the “recline” position.
- Move the BLACK lead to PIN 3.
- Press the switch to the UP position. A low reading means the hand control is operating properly in the “lift” position.

- If either test fails, replace the switch (if replaceable) or the hand control.

Check the switch:



When folks are having lift chair problems, they automatically think it's either the motor or the switch. While it's very seldom that the motor is the problem, it's oftentimes due to a bad switch. Thankfully, switches are very easy to check and the following test should be done by everyone before you order a switch from us:

If you have a meter:

- Remove the screws from the back of the hand control and take the hand control apart, exposing the switch.
- Set meter to OHMS setting.
- Pull the wire (usually red but not always) off the middle tab on the switch.
- Put your RED meter lead on the middle tab on the switch.

- Put your BLACK meter lead on one of the other outer tabs.
- Press the switch in each direction; a low reading in one of the directions (and only one) means the switch is operating properly
- Now, move the BLACK lead to the other outer tab and do the same test as # 6

If you get a low reading on both tests, then the switch is OK. If not, the replace the switch.

If you don't have a meter:

- Remove the screws from the back of the hand control and take the hand control apart, exposing the switch.
- Make sure the chair is plugged into the wall and all wiring is hooked up.
- Take an insulated screwdriver (plastic, rubber or wooden handle) and touch the middle connector on the switch to one of the outside connectors (we call this "shorting" the switch); this should make the chair run in one direction.
- Then, take the insulated screwdriver (plastic, rubber or wooden handle) and touch the middle connector on the switch to the other outside connector; this should make the chair run in the other direction.
- If the chair runs in each direction with this test, then replace the switch; if the chair still won't run both ways, then the problem is NOT in the switch, so ordering a switch would do NO good (also, if you order a switch and hook the wires to it, then we can't take it back as it would leave marks on the tabs and would look make it look used.).

Check the Motor:

a) Resistance Method:

Unplug the chair from the power source.

At the motor, disconnect the small two prong wire coming from the transformer.

Set your multimeter to the MILLIOHMS setting.

Place the BLACK lead on the LARGE pin, and the RED lead on the SMALL pin.

The meter reading should show resistance in the 1.5 to 2.5 milliohm range. If less than one (1) milliohm is read on the meter, replace the motor.

b) Transformer Output Method:

If the transformer and hand control both pass your tests, then we need to take an output reading from the transformer.

Make sure all wires and components are hooked up correctly.

Unplug the motor from the transformer (if you have the internal transformer system where the transformer is mounted to the chair) or from the connector cable (if you have the newer external transformer system where the transformer sits behind the chair.

Set your multimeter to the DC Volt setting.

Put your meter leads in the female connector that the motor was just unplugged from in # 3 above.

Push the UP button on the hand control; the meter should read 30-38 Volts DC

Push the DOWN button on the hand control; the meter should read MINUS 30-38 Volts DC

If you get both these readings, then the rest of the system is giving the correct voltage to the motor, and the motor is not running, so the motor should be replaced.

c) Direct Voltage Method:

A Dewert motor can also be checked by applying voltage directly to the motor. You can take a 12 volt battery, or two 9 volt batteries wired in series, and put voltage directly to the motor terminals. The large pin is the ground on the motor, an the smaller pin is the hot lead. Positive voltage will make the motor push tube extend, and negative voltage will make it retract. NOTE: this is less voltage than the motor is designed for, so don't run the motor but just a few seconds to see if it is operable or not.

Note: Please refer to the notes about the motor above. I have seen a great many Dewert motors that checked OK with the test above, but the motor was bad. In reality, **there is no really good electrical test that will definitely show a bad motor**. The best thing to do (if you don't have a known good part to test with) is to eliminate everything else in the system, and if you are fairly sure that everything else is OK, then try replacing the motor. IMPORTANT: When you receive the new motor, try it by plugging the wires into the motor **without mounting** the motor in the chair; we can't take the motor back if it has been installed in the chair.

2) The chair will raise up but not recline, or will recline but won't raise (in other words, the chair will run one way but not the other).

This is more difficult to diagnose in a Dewert system than in the Okin system above; in the Okin system, power is given to the motor continually, so in that system, if the chair will run at all, then the transformer and power cord are OK. In the Dewert system, power isn't given to the motor until the switch is depressed. in each direction, power has to complete the circuit through the hand control, and then the relay has to energize to send power to the motor. If there is a problem in either side of that system (up or down), the chair can run in one direction and be completely dead in the other.

The only real difference between this symptom and the "nothing about the chair will work" discussion above is that there is almost **no** chance that the motor assembly is the problem… I don't know that I have ever seen a Dewert motor that would run one direction but not the other… Also, there couldn't be a problem with the household electrical power supply. Other than that, the checks should be the same as #1 above; please go to symptom #1 above and look there and follow the steps to check out your system.

3) The chair will raise up to a standing position OK, and it goes back down to a sitting position OK, but when the chair gets to the point that the footrest should extend and the back recline, the chair stops moving, and you hear a grinding or squeaking noise.

This is usually caused by a broken spindle nut inside the actuator (our part #8248). As mentioned in the introduction above, a lift chair motor **pushes** the chair to the lift position and **pulls** the chair to recline. If the spindle nut is cracked or broken, it holds together to push the chair up; the weight of the operator helps to take the chair to the sitting position. But when the chair goes back any further, the spindle

nut has to pull to get the chair to recline; if the nut is damaged, it can't do that. To tell for sure, do the following test:

a) Checking the spindle nut:

Run the chair to the standing position, then push the down button to get the chair back to the sitting position. Hold the down button to get the chair into the recline position, until the footrest stops going out and the chair stops going back and the problem starts

Then, turn the chair on its side, and take the clevis pin out of the end of the stroke tube, so that the end of the motor is now detached from the chair.

Check to see if the stroke tube (the long round shaft that goes in and out of the motor) is loose inside the actuator tube; In a normal motor, you would have to unscrew the tube out of the motor. A motor with a broken spindle nut will be loose inside the housing; usually, you can simply pull it out of the housing without unscrewing. Replace the spindle nut, and all should be well again.

INSTALLATION INSTRUCTIONS FOR DEWERT SPINDLE NUT

Thank you for your purchase of the replacement spindle nut for your Dewert Megamat motor. This new spindle nut should make the motor work as it was when new, but it must be installed correctly in order to function properly. We have found that following the steps below are the fastest and easiest way to accomplish this:

Remove the four screws holding the clevis mount to the bottom of the motor.

Once the clevis mount is off, you will see a bearing in the housing; remove it and save it for reinstallation (notice before you remove the bearing where it is positioned in that motor housing; this is where the bearing should be for reinstallation later).

Remove the cover over the armature of the motor; this cover snaps on with three plastic “catches” built into the cover. The easiest way to remove this cover is to hold the motor assy. upright and strike down with the ball of your hand on the end of that cover; that should release the “catches” and the cover should come off.

Look on the side of the motor assy. and find two either allen head or star shaped screws; remove those screws while holding up the armature of the motor (leave the Phillips screw in the middle with the red paint alone). Once the screws are off, the armature can be removed from the spindle assy. Once the armature is out of the way, you should be able to pull the complete spindle assy. out the back of the motor.

Unscrew what is left of the old spindle nut off the worm screw, and screw the new spindle nut onto the worm screw, about halfway down. Then reinstall the spindle assy. in the outer tube, aligning the three “tabs” on the spindle nut with the grooves in the outer tube.

Push the spindle assy. in all the way, and then carefully move the armature back into place, aligning the end of the armature with the plastic spindle gear. This is the only real part of this job that is tricky, as you don’t want the armature and the spindle gear to bind up. Reinstall the two screws through the side of the motor into the armature, and “snug them up” without over-tightening.

Install the bearing back in the housing, and try to fit the clevis mount back onto the motor housing. IMPORTANT: if the clevis mount does not fit snug to the motor housing, then something isn’t aligned

correctly – do not force the clevis mount on. Back off the two side screws holding the armature on, and reposition the armature on the spindle gear. When everything is positioned correctly, the clevis mount will touch the motor housing on all sides. Install the four screws in the clevis mount, and try running the motor without it being mounted in the chair to ensure everything is aligned properly. If everything seems OK, then reinstall the motor in the chair, screw the stroke tube back onto the motor assy., and you are done.

If the spindle nut is OK, the problem may be a bent scissor mechanism or damaged framework under the chair. Please do the following:

b) Check for scissor or frame damage:

Turn the chair on its side, Examine the entire base of the chair for bends or breaks. Check the scissor mechanisms for excessive wear or broken welds. Examine the wood and the lift frame near the scissors for scrapes or damage; The problem may lie with those instead of the scissors. Check the base of the motor; there is a clevis mount (our part #8240) there that attaches the bottom of the motor to the chair frame. They are made of a composite plastic , and it is a "weak point" of the motor assembly. If you can't tell if the noise is coming from the chair frame or the motor, try removing the motor from the chair and manually move the chair to its various positions; sometimes you can find the squeak easier that way. You can also run the motor while it is off the chair; if you hear loud noises from the motor that way, then the motor needs replacing.

Also check the end of the motor lift tube, where it bolts to the chair; the older Dewert motors had a plastic connector on the end of the push tube, and it was another "weak point" of the motor assembly. If you find that broken, replace the stroke tube in your motor assembly

with our new style stroke tube (our part #8244), and you are back in business.

4) The chair is suddenly running very slowly, and sometimes won't work at all is someone is stilling in the chair.

It could be that the transformer is not working correctly with the household current, and it is now trying to work off the emergency battery backup. In certain conditions, the transformer won't run on standard 120 volt power, but will still run off the batteries. To test this, do the following:

Replace the two 9 volt batteries in the transformer with new batteries.

Try running the chair without anyone sitting in the chair; see if the chair is running up and down, even if it still runs slower than normal.

Now, with the chair still plugged into the wall receptacle, unplug the two 9 volt batteries

Try running the chair again; if it doesn't run this time, then the transformer is defective and must be replaced.

5) The battery backup system is not working.

PROBLEM: The batteries may be dead, or the battery leads may be damaged.

SOLUTION: Batteries need to be changed every 6 months (a good idea is to do this when you change your smoke detector batteries), or after every time they are activated due to power failure (the batteries only have enough power to run the chair for a cycle or two, then they will be dead). If, after you change the batteries, the backup system still doesn't work, examine the battery leads for breaks, cracks, etc. You can try replacing the battery connectors If you have the room; if

not, replace the transformer, if the battery backup is important to you (probably 90% of chairs with this feature don’t have any batteries installed, or the batteries are dead, but manufacturers know that it is a good selling point, so they still use them).