

## ADDENDUM to IOM – Tech Notes

### Electronically Commutated Motor (ECM) – Test & info

#### Testing ECM Motors

ECM motors behave differently from standard shaded pole or PSC motors. They have an unusual start sequence which can seem erratic and give the impression that the motor is defective. Also it is not possible to identify a bad ECM motor with an ohm meter or a continuity tester. An ohm meter placed on the terminals of an ECM motor can show open circuit or high impedance even when the motor is good. Because of these differences HTPG is issuing the following test method to help the service technician identify bad ECM motors. For best results follow the test sequence in the order it appears below.

#### EC Motor Functional Test

*Note:* Startup total time can be up to 10 seconds.

1. **CAUTION: DISCONNECT POWER BEFORE SERVICING! ALWAYS FOLLOW SAFE WORK PRACTICES! USE LOCKOUT TAGOUT PROCEDURES TO PREVENT OTHERS FROM ENERGIZING THE CIRCUIT WHILE YOU ARE WORKING!**
2. Check the motor (and fan if attached) to make sure they are not obstructed from turning. When turning the shaft manually the required torque will vary due to the motor's internal magnets.
3. Check the motor leads and plugs for damage. Make sure the plugs mate properly with the receptacle sockets.
4. If a fan is attached, make sure that it is safely guarded so it will not hit anyone or anything. Remove the fan if testing without a fan guard.
5. Safely energize the motor with the motor nameplate voltage. This is usually the same as the unit nameplate voltage but in some cases they may differ. (Use care to apply the proper voltage. Applying 230V to an 115V rated motor will destroy the motor!)
6. Immediately after applying power the motor goes through an alignment routine during which the motor moves to a starting position. During this routine the motor may start and stop or twitch and may even briefly move backwards (it will not move if the motor is already properly positioned).
7. The motor will then begin to run in the proper direction and ramp up to full speed.
8. If the motor is good, safely disconnect it and return it to service.
9. If the motor is faulty, pack it securely to prevent damage and return it for evaluation.

#### Other Considerations

ECM motors are more susceptible to shipping and handling damage than shaded pole or PSC motors. The internal control board can separate from its mounts and destroy the motor if it is hit or dropped. Don't use any motors which have been hit or dropped.

See our websites for even more info [www.RussellCoil.com](http://www.RussellCoil.com), [www.WittHtp.com](http://www.WittHtp.com), [www.ColdZone.com](http://www.ColdZone.com), and [www.KramerUSA.net](http://www.KramerUSA.net) under "Products and Literature" and/or "Tech Tips".

***Thank you for helping us "help" our Customer.***

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