Motor Minute™ Technical Tip – How To Diagnose Constant Torque ECM Motors

Hi, Chris from Regal here with your Motor Minute™ technical tip. Helping you become an HVAC motor pro one minute at a time.

In today's Motor Minute technical tip we will discuss how to diagnose constant torque ECM motors.

Constant torque ECM indoor blower motors, used in HVAC applications, are predominantly built with a recognizable standard 9-terminal plug at the motor and 24 VAC speed taps. These are the motors we are going to discuss.

- There are two inputs required for the motor to operate:
  - Rated line voltage
  - 24 VAC
- Measure the line voltage between the line 1 terminal (L) and the neutral or line 2 terminal (N).
- The measured line voltage should match the motor's voltage rating within ± 10%.
- Measure the 24 VAC between the common terminal (C) and the energized tap by demand (in this case terminal #5 for the cooling demand).
- Make sure to check the unit schematic to confirm that the selected terminal is viable. Some HVAC OEMs do not program all terminals for operation.
- If the motor **IS** receiving both the correct rated line voltage and 24 VAC inputs and does not operate, the motor is failed.
- If the motor **IS NOT** receiving one or both of these values, trace the wires back to the HVAC system circuit board and diagnose the failure point.

For more information about constant torque and constant airflow ECM motors including applications, operation, airflow adjustments and diagnostics please visit regalmmu.com and select the articles and/or podcast section.

And that's a wrap on this segment of Motor Minute™ technical tips. Remember that we provide motor training and product information in multiple formats including videos, literature, podcasts, articles, of course Motor Minute technical tips, and classroom education both online and face to face. All of this industry leading training is available at no charge to HVAC professionals at regalmmu.com. Thank you for taking the time to build your motor knowledge.