



A Leader in Electric Motor Testing

# Tip Of The Week

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## Special Application Motors - Part 2: DC Motor

There are three types of DC motors: Series, Shunt, and Compound. They are similar in the components they have, but dissimilar in the way the field coils are connected. The basic components of a typical DC motor are the frame, field windings, pole pieces, armature, commutator, brushes, and brush holders.

Series DC motors provide high startup torque to move large loads like crane hoists and locomotives. Shunt DC motors provide good speed and tension control which is necessary on a machine shop lathes and industry process lines. Compound DC motors offer both high starting torque and good speed control, making compound DC motors suitable for a variety of applications such as business machines, machine tools, agitators, shears, presses, and reciprocating machines.

DC motors are expensive to purchase and maintain and are often very critical to the facility utilizing them. Early detection of problems is important to minimize any repair cost and lost production. DC motor testing can be performed with the motor running or de-energized. Visual inspections should be part of every DC motor maintenance strategy with heavy focus on the commutator and brushes. One test performed on the commutator and armature windings is the bar-to-bar test. This test is more often performed for initial baseline acceptance of the armature and for troubleshooting. Probes connected to the commutator can detect shorted turns or high resistance connections in the commutator, riser, or armature winding. The larger the commutator the more commutator segments to test. In these situations it is recommended to perform a spanned bar test to significantly shorten the test time. To see a case study on testing a DC motor visit our website at:

[http://www.pdma.com/pdfs/cs/CASE\\_STUDY\\_DC\\_Commutator\\_Testing\\_Richard\\_Love.pdf](http://www.pdma.com/pdfs/cs/CASE_STUDY_DC_Commutator_Testing_Richard_Love.pdf)

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