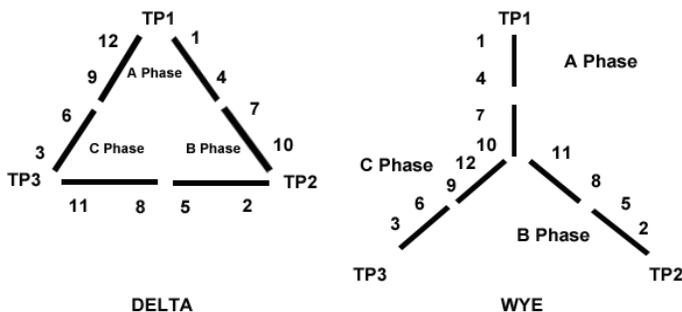


Connections For Twelve Lead Motors For MCA Testing

For MCA trending and analysis of three phase electric motors, three motor leads are connected to the MCA instrument. When new motors are tested the technician may encounter motors with multiple motor leads. This allows for the motors to be used in multiple applications. Normally the connection diagrams are provided by the Original Equipment Manufacturer (OEM). This guide is provided if the manufacturers diagram is unavailable. These guidelines do not supersede the OEM connections. Generally, the coils all use standard numbering schemes so connecting them for MCA testing is straight forward. It is assumed that the technician has basic electrical skills and access to the proper wire connections materials such as wire nuts, split bolts, lugs, assorted machine screws or bolts, and insulating materials that may be needed to make temporary or permanent connections to the motors under test.

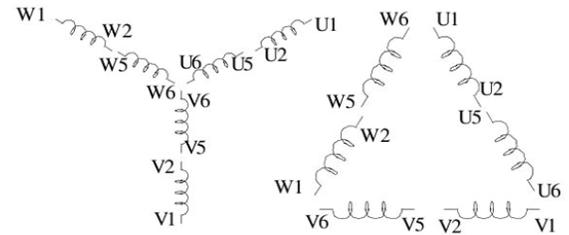
Three phase motor winding each have a start to the phase and the end to the phase. These phases are then connected in a DELTA or WYE configuration. Any unbalance in test results will show up regardless of the connected configuration. If the test result is to be used as baseline data, any subsequent testing should be done in the same configuration for trending and comparative purposes. A note about the test configuration can be entered into the relevant computer analysis software test data file. Example- MCA PRO™ computer software.

Twelve Lead Motors



Twelve lead motors offer the highest flexibility of any motor. They can be connected in a WYE or DELTA configuration, and are used for "high" or "low" voltage operation or multiple speed operations. However, this versatility does not complicate the testing procedure for testing motor spares or those motors returning from repair.

Twelve Leads IEC Motor Diagram Below.



To test the motor in a DELTA configuration, firmly connect leads T1 to T12, T2 to T10, T3 to T11, T4 to T7, T5 to T8, and T6 to T9. Then use the pairs containing T1, T2, and T3 as phases 1,2, and 3 for testing.

To test the motor in a WYE configuration, firmly connect and insulate leads T10, T11, and T12. Then connect leads T4 to T7, T5 to T8, and T6 to T9 and use 1,2, and 3 as phases connections for testing.

There are other configurations which may apply for specific applications. For example: WYE start, DELTA run, or for high voltage or low voltage. For MCA testing the main importance is that all coils get tested during the test and the recommended connections accomplish this. If an unbalance is detected then individual coils can be tested as discussed below.

Individual phases or coils can be tested by performing single phase measurements from the start of a phase or coil to the end of the same phase or coil. For example, in a DELTA connected 12 lead motor, A phase can be measured from 4 to 9, B phase to 5 to 7, and C phase 6 to 8. For a WYE connected motor, A phase 1-10, B phase 2-1, C phase 3-12. Individual segments can be compared using single phase measurements of individual coils, 1-4, 2-5, 3-6, 7-10, 8-11, 9-12.