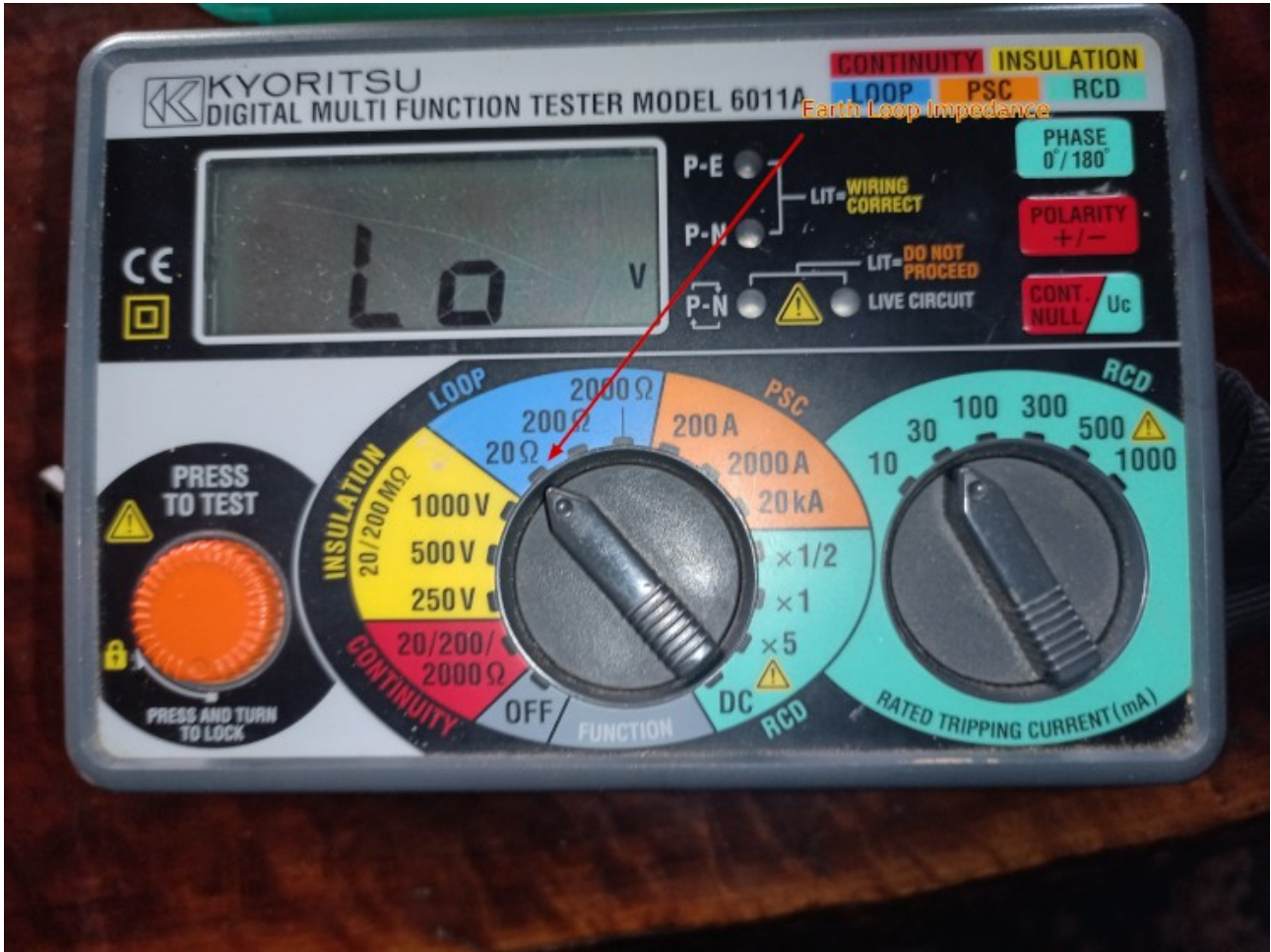


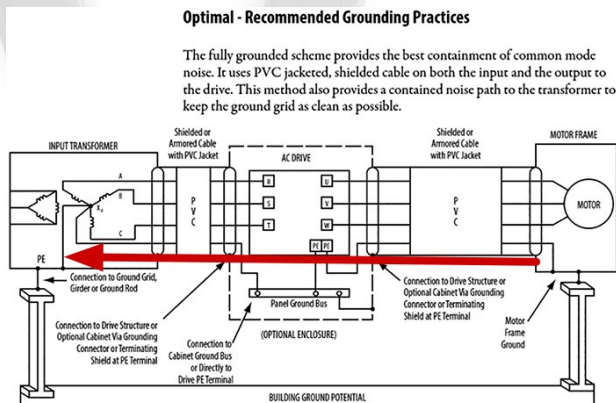
Why Earth Loop Impedance Testing is essential for VSD Applications.



Multifunction Tester showing Earth Loop Impedance Setting.

It is essential that Variable Speed Drives are grounded with a low Impedance back to the supply. While Loop Testing explained very well in <https://www.youtube.com/watch?v=HsWWKzjVUxE> is essential for safety, ELI (Earth Loop Impedance) provides a secondary function for Variable Speed Drive applications.

Variable Speed Drives emit High Frequency emissions and if they are unable to flow back to the supply source through a low impedance path, then the risk of Bearing attack is increased.



Low Impedance Path is Essential to reduce bearing attack.

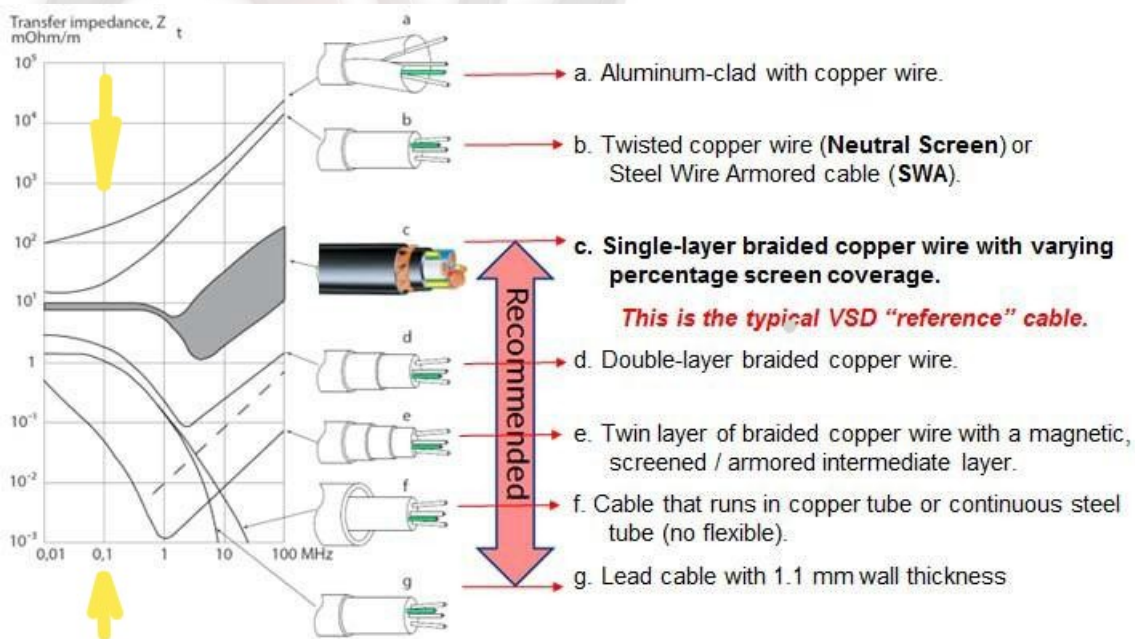
Problems that are likely:

- Facilities with earth grids separated from transformer MEN (Multi Earth Neutral)
- Long earth conductors of small cross section
- High resistive connections
- Terminations on painted surfaces
- Poor Cable or Cable gland installation or selection
- Isolators not grounded correctly
- Cable tray not bonded for High Frequency currents

Conducting a ELI (Earth loop Impedance Test) from the Drive cabinet GPO (General Power Outlet) and AC resistive testing of the Motor/Cable circuit ensures this complete loop is suitable for Variable Speed Drives.

Test results should be as close as possible to 0.0 Ohms on Drive Cabinet earths, and 5 milliOhm per meter of cable for cable screens measured in steps to 100khz. See chart below.

Verifying grounding using these methods has the effect of reducing bearing attack and should be attempted before installing Insulated bearings or Earth brushes. Not verifying grounding may render these devices useless in a very short period of time.



<http://www.3phi-reliability.com/blog>