



Grounding VFD Cable Properly

SAB North America

344 Kaplan Drive

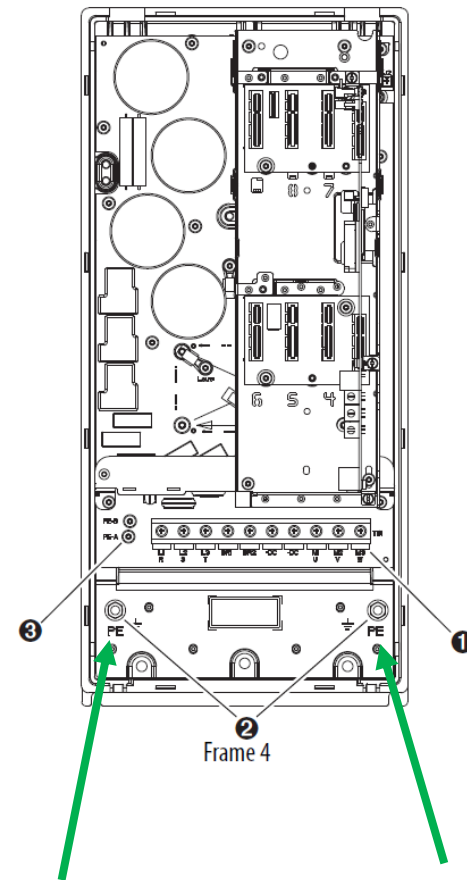
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Grounding at the Drive & Motor



- Shields should always be terminated at the motor and at the drive
- The shield acts as a ground path for CMC, so proper termination is essential
 - A single terminated drain wire is a **weak link!**
- Both Drive and Motor have 2 PE terminals
 - 1 for G/Y ground
 - 1 for shield pig tail



SAB EMC Glands 360° Termination



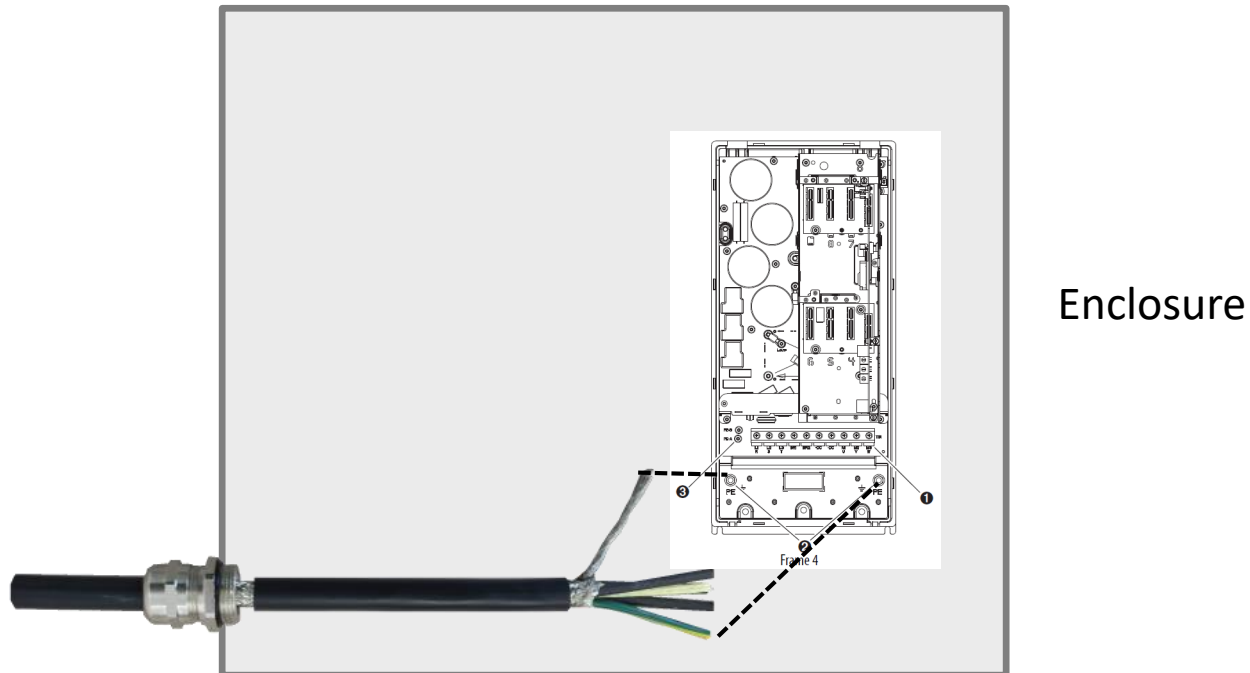
- 360° termination to the enclosure. Excellent ground path versus just braid and drain
- Drain wire not necessary if grounding gland is used
- Grounding EMC gland can be used on the motor and the enclosure



Cable with Grounding Gland



- Ground at enclosure & motor housing
- Ground at PE terminal on drive and motor
- A fully terminated shield to PE terminal in combination with a SAB EMC-2 or EMC-4 grounding gland is a *100% solution to unwanted CMC noise.*

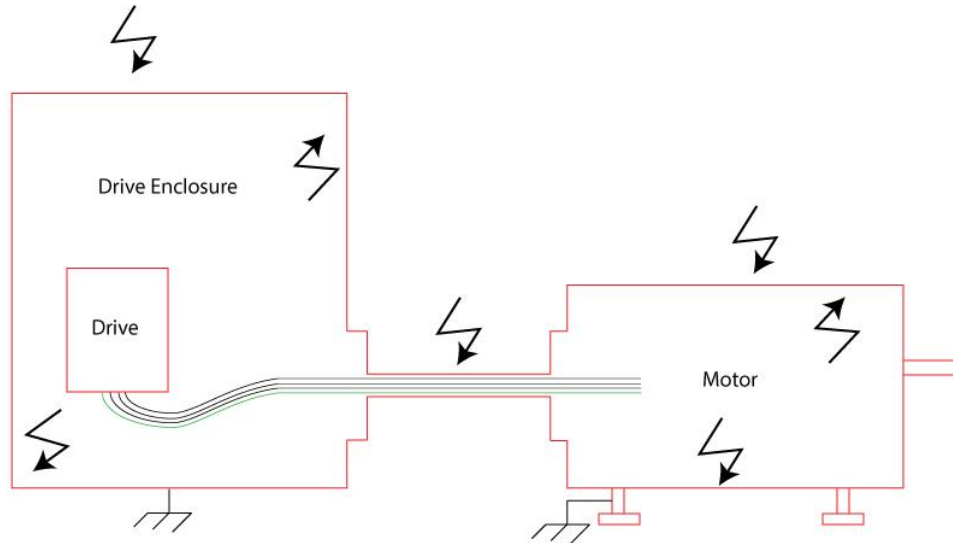


Choose the “SAB SOLUTION”

Faraday Cage Principle



Grounding per SAB's solution creates a Faraday Cage



- A Faraday cage or Faraday shield is an enclosure formed by conducting material or by a mesh of such material. Such an enclosure blocks external static and non-static electric fields by channeling electricity through the mesh, providing constant voltage on all sides of the enclosure. Since the difference in voltage is the measure of electrical potential, no current flows through the space. Faraday cages are named after the English scientist Michael Faraday, who invented them in 1836.^[1]

Additional Reason why SAB solution will work¹



A prominent motor mfr. recommends grounding the shield with 360° contact at the enclosure and to pigtail the shield to the PE terminal on the drive

SAB agrees that this is the best way to eliminate “noise” and common mode current that can cause bearing failure (see Figure 1 for damage.)

Figures 11a and 11b show 360° terminations for European and American cabling practices.

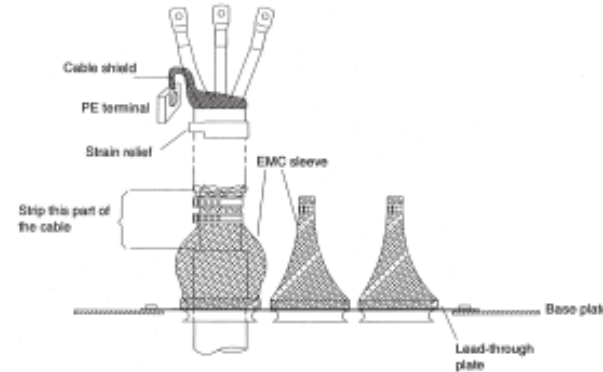


Figure 11 a: Proper 360° termination with European cabling practice. The shield is connected with as short a pigtail as possible to the PE terminal. To make a 360° high frequency connection between the EMC sleeve and the cable shield, the outer insulation of the cable is stripped away.

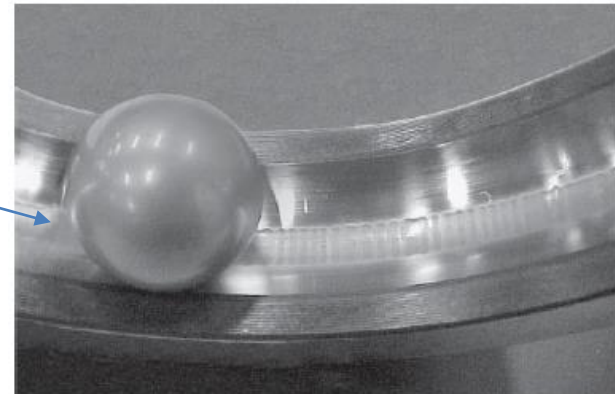


Figure 1: Bearing currents can cause “bearing fluting”, a rhythmic pattern on the bearing’s races.

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