Umbilical Cord Used on PowlVac® Circuit Breakers

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Occasionally, customers or prospective customers question our use of a manually-operated control disconnect ("umbilical cord") on our PowlVac® circuit breakers. Some of the questions asked, and our answers to them, are:

Q. Why does Powell use an umbilical cord for its control disconnect?

A. The use of the umbilical cord is part of our user-friendly design, which locates all circuit breaker control accessories in the front of the cell. In addition to the control disconnect, these devices include the mechanism-operated cell switch (MOC) and the truck-operated cell switch (TOC). In our PowlVac® design, these devices are located where they may be observed by an operator inserting or removing the circuit breaker, allowing the operator to check alignment and operation when the circuit breaker is installed. These devices are also available for servicing without removing the circuit breaker from the cell.

Q. Is this design safe?

A. Yes. The umbilical cord's plug mechanism is mechanically interlocked with the circuit breaker to insure safe operation. Interlocks provided include:

- The circuit breaker cannot be inserted into the cell without plugging in the umbilical cord.
- Once the circuit breaker racking mechanism has been operated to start the circuit breaker insertion process, the plug cannot be removed. It is therefore not possible to disconnect the control circuits of a circuit breaker that is in service.
- Unplugging the umbilical cord trips the circuit breaker if it is closed and discharges the closing spring if it is charged. Since the plug must be removed in order to remove the circuit breaker from its cell, these interlocks insure that the circuit breaker is open and all energy storage springs are discharged when the circuit breaker is taken out of the cell.

Q. Why does Powell differ from all other manufacturers in the method of disconnecting the control connections to the circuit breaker?

A. Powell does not differ from "all other manufacturers". While the umbilical cord design has not been used frequently in the United States, other American manufacturers have used it. It is also commonly used in Europe. We chose to use this design because we think it offers superior performance in total.
Q. Does the umbilical cord design meet ANSI standards?

A. Yes. This design, including required interlocking, is covered in detail in ANSI/IEEE Standard C37.20.2-6.2.7. The PowlVac® circuit breaker meets these requirements.

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