



Powell Technical Brief #44

Preparing Foundations for Indoor Installation of Switchgear

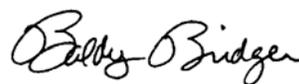
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Nearly every manufacturer of switchgear and motor control equipment will tell users that the equipment must be installed on a level foundation. If the equipment includes drawout circuit breakers or contactors, most manufacturers will recommend that steel channels or rails be imbedded in the floor to provide support and a level surface. These recommendations lead inevitably to two questions: "How level is level?" and "Do I really have to install the floor steel?" The quick answers to these are "Damn flat!" and "No, but you'll be sorry if you don't."

Some smaller equipments, like low voltage motor control centers and switchboards, either come with their own built-in base channels or are not terribly sensitive to slightly uneven floors. For larger equipments, however, a level floor is absolutely necessary to maintain the critical alignment of drawout devices. Manufacturers have been rather shy about putting a tolerance on "level" over the years, but the lore in the industry seems to be that a one-eighth inch slope, evenly spread over the front-to-back or the end-to-end dimension of the lineup, is tolerable. For indoor equipments without built-in bases, maintaining such a tolerance almost certainly requires carefully installed floor channels.

Once you decide that floor steel is required, here are a few cautions about using it:

- Be sure to locate the channels where the manufacturer shows them. Normally, each lineup has a channel near the front of the gear and another near the rear of the gear. These are usually located under the bolt-down holes in the equipment, so their location is important. Frequently, in deep switchgear, such as PowlVac[®] metal-clad switchgear, a third channel is shown somewhere between the first two. Often, this channel does not match any bolt-down holes, so its location may not seem to be as important as the location of the other two channels. However, the manufacturer may have located this channel under some feature of the design which need good support, so its location may be as important as the locations of the other two channels.
- The concrete needs to be no higher than the floor steel. If the circuit breakers roll out on the floor, the floor on the drawout side of the switchgear needs to be flush with the top of the floor steel so the breakers will roll in and out smoothly.
- Once a level surface is established by the floor channels, be sure that the equipment sits flush on the surface of the channels. This may seem elementary, but I have seen installations where one side of a 36" unit was flush with the channel and the other side was ¼" above the channel. All the effort and expense put into the level floor channels was negated by a poor installation of the equipment on the channels.



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