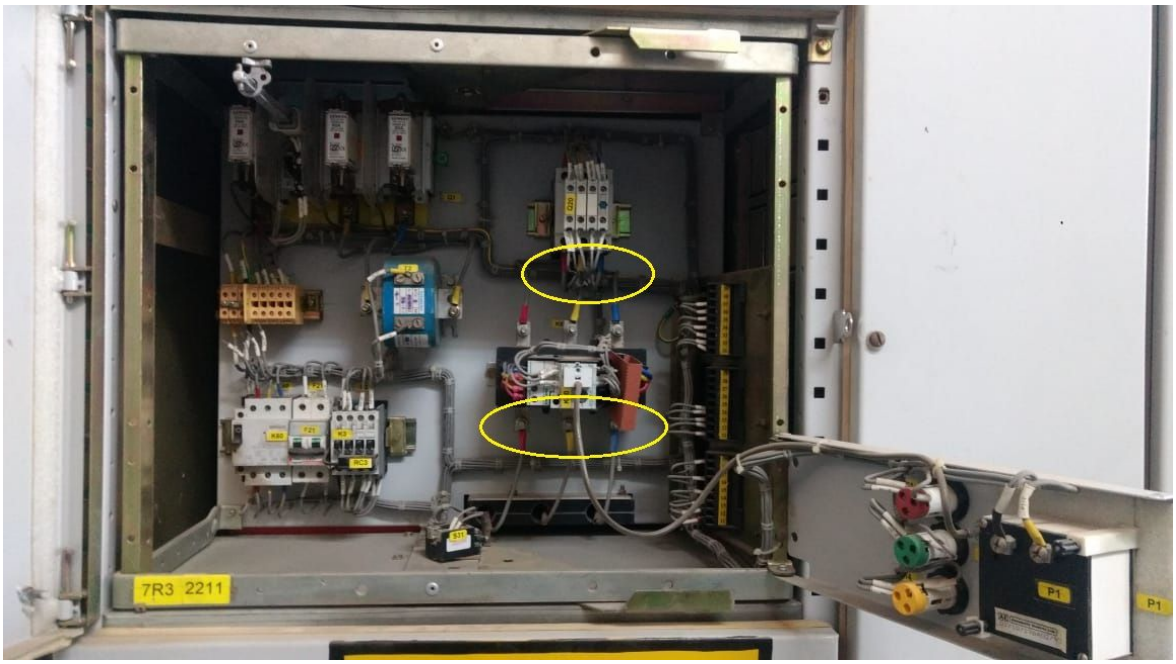
# Case Study - From Where did you change the direction of Motor?

Hello Friends / Sir,

In many plants, a common operation and maintenance practice for changing the direction of LT motors (below 15 kW) involves altering the phase sequence within the panel. This is often done by modifying connections below the power contactor, thermal overload relay, or other relays (for various operational reasons), as highlighted in the yellow circle in Pic A.1.




**Pic: A.1**

One of the primary reasons for changing the power cable from the relay and power contactor, rather than at the motor terminal side, is to save time and reduce manpower effort. However, this practice can create a **"Near Miss" or even an Accident** scenario, potentially leading to equipment damage or safety hazards within the plant.

How? Let's break it down.

In continuous process industries operating 24x7, it's common to have multiple identical motors with the same rating, performing similar functions, all powered from the same MCC. Additionally, motors with the same rating but different applications can also be housed within the same MCC.

For example, consider an MCC with nine 5.5 kW DOL starter feeders—eight in operation (four for fans, two for screw conveyors, and two for belt conveyors with gearboxes) and one as a spare. During MCC manufacturing, the power cable wiring in all feeders is typically arranged in a fixed R, Y, B sequence (from left to right).

During O&M or plant shutdowns, there are instances where, due to operational requirements or equipment issues, maintenance personnel need to change the direction of a motor. To do this quickly, engineers and technicians often swap power cables below the relay or power contactor instead of at the motor terminals.

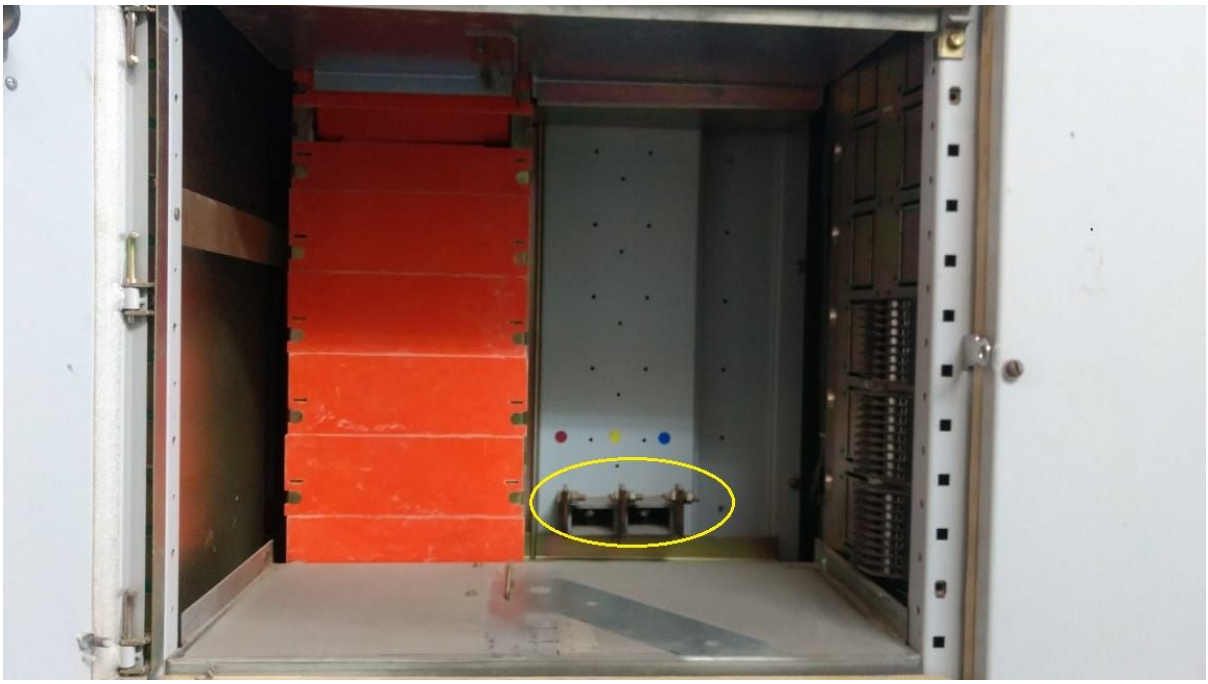
Similarly, when replacing an old motor with a new one, a no-load trial might reveal that the motor's rotation is reversed. To correct this, the R & Y power cables are interchanged below the relay or power contactor, as it is a quicker and less cumbersome solution. While this fixes the direction, it unknowingly alters the internal feeder wiring to Y, R, B instead of the standard R, Y, B.

Now, imagine a scenario where an issue arises with the same feeder in the future, and troubleshooting fails to resolve it. In an urgent situation, maintenance personnel might swap it with a spare feeder of the same rating, unknowingly inheriting the phase sequence mismatch. What happens next?

However, in the spare feeder, the cable sequence follows the standard R, Y, B. If the maintenance engineer or technician notices the mismatch, they may correct it before giving the start clearance. But since spare feeders are typically used in urgent situations, we have observed that engineers and technicians often overlook verifying the phase sequence inside the feeder. This oversight can lead to the motor running in the wrong direction.

The consequences of incorrect motor rotation can range from minor to severe. It could simply increase downtime, damage critical equipment components, create a near-miss incident, or even lead to a serious accident. Ultimately, something valuable—time, equipment, or safety—is at risk.

To prevent such issues, we strongly recommend that when changing the direction of an LT motor (below 15 kW) from the feeder, it should ideally be done from the panel termination side (as shown in the reference image) or from the outgoing terminal in the cable chamber, depending on the MCC design. While this method may take 10-15 minutes longer than swapping cables below the relay or contactor, it significantly reduces the risk of operational hazards. Safety and reliability should always take precedence over convenience.



**Pic: A.2**

We, as an Electrical asset consultant and service provider always suggest what is best to run your industries smoothly and without hiccups of maloperation and breakdown.

And if you are looking for a dedicated agency that understands the direct link between your assets and your revenue, call/write to us, we will be happy to assist you.

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