CAPACITALK™

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No. 104

CAL in the World of Motor Starters
(Part II)

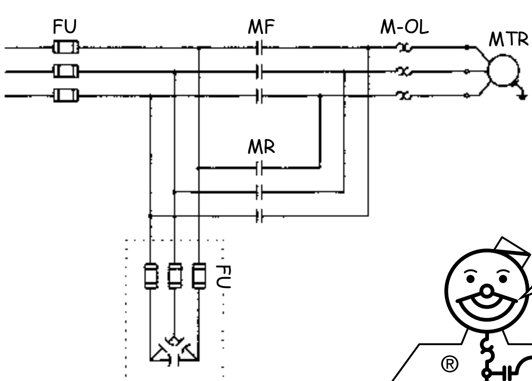
In *Capacitalk No. 100*, we talked about wiring power factor capacitors to across-the-line starters. In this issue, we will talk about wiring power factor capacitors to reversing and two-speed starters.

When you consider these types of starters, one important factor stands out: There is some type of switching going on with the motor windings. Anytime you have a switching event going on with the motor, you must ask yourself, “Will these have an effect on the capacitor? WIll I be switching the capacitor on and off, not giving the capacitor time to discharge?” With this type of action, it may not take long for the capacitor to either blow a fuse or fail.

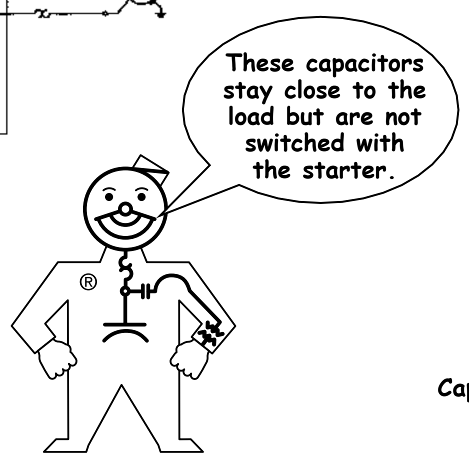
Let’s look at how to connect your capacitors to these types of motor circuits properly to keep both your capacitors and starters in good working order.

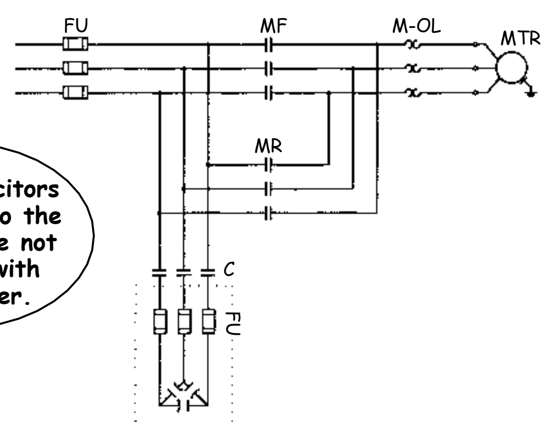
Reversing Motors

On reversing motors, it is important to stay on the line side of the starter. You do not want to turn the capacitor on and off when the motor is switched from forward to reverse or from reverse to forward. In this way, you can protect the capacitor from the effects of the phases being reversed and also from the contact switching of the starter.



Capacitor connected without dedicated contactor.





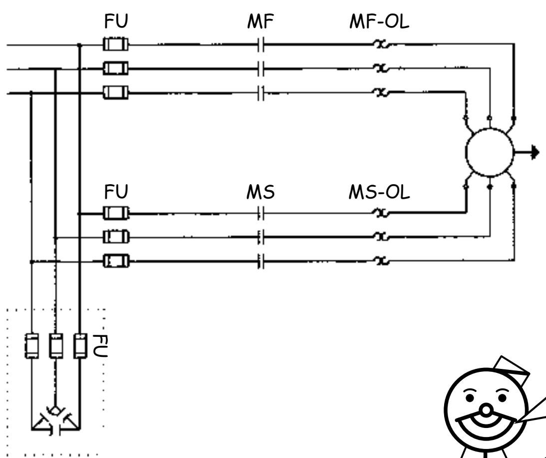
Capacitor connected with dedicated contactor.

Two-Speed Motors

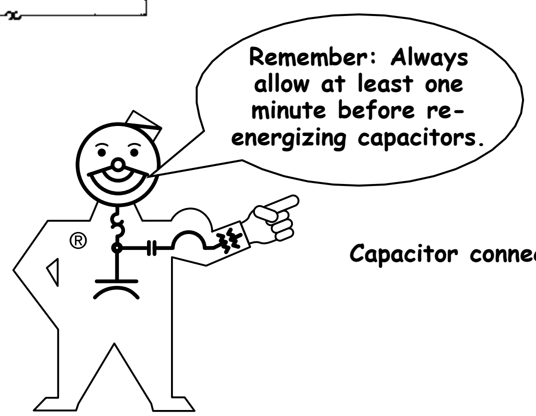
Two-speed motors can cause your capacitors the same problem as with reversing motors. The starter goes from fast to slow or from slow to fast. There are two things that must be considered with two-speed motors.

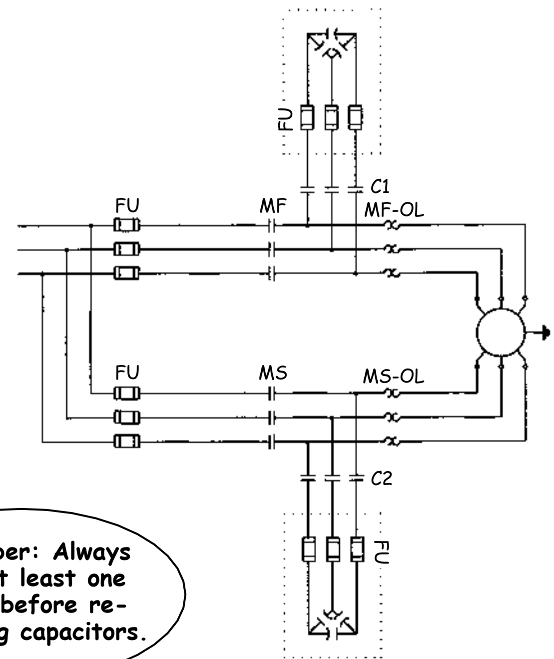
The first issue is, “How do I size my capacitor for this application?” It is best to size the capacitor for the speed that the motor will be on for the most amount of time.

The second issue is, “How do I connect the capacitor to my starter the safest way?” To do this, apply the capacitor to the line side of the starter. If you must have a capacitor for each speed, and you want to connect them to the starter between the starter contacts and the overloads, make sure you use a contactor on each capacitor. This way you isolate the capacitors from the motor. When you energize the speed you want, then you energize that speed’s capacitor. But care must be given to avoid going from fast to slow or from slow to fast too abruptly. Doing so will not allow the capacitor time to discharge, causing failure or a blown fuse.



Capacitor connected without dedicated contactor.





Capacitor connected with dedicated contactor.

In both applications, when you connect the capacitor to the line side of the motor starter, you may want to add a contactor in series with the capacitor and turn it on and off with your motor circuit.

If you have any questions for CAL about your power factor capacitors, simply write to Myron Zucker, Inc. or e-mail us at **info@myronzucker.com**.

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