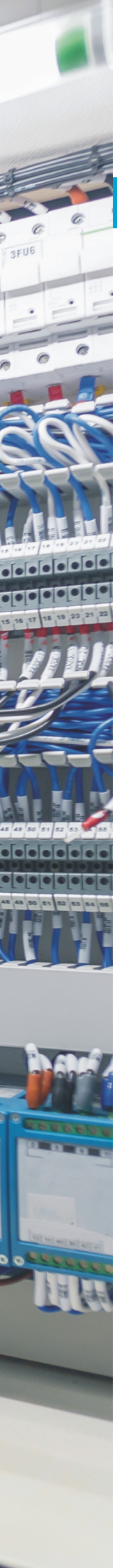


Recollecting the basics of Electrical Starters

As the name suggests, a starter is mainly used for starting of a motor. It enables the smooth starting, working as a safety or a protecting device.

In Industries, as we tend to focus more on the result rather than going deep into the engineering concept. Hence, recollecting the knowledge about the working principle and the applications of Electrical Starters will help the engineers get to the roots of one of the very important devices of Motor Control Circuits (MCC). With the help of this article, designers will be able to visualize the starter circuit along with its exact application whereas, the salesperson will get the basic insight of the starters.

There we go!

Talking about the physical construction of a starter, it consists of two parts, Contactors and Overload protection relay.

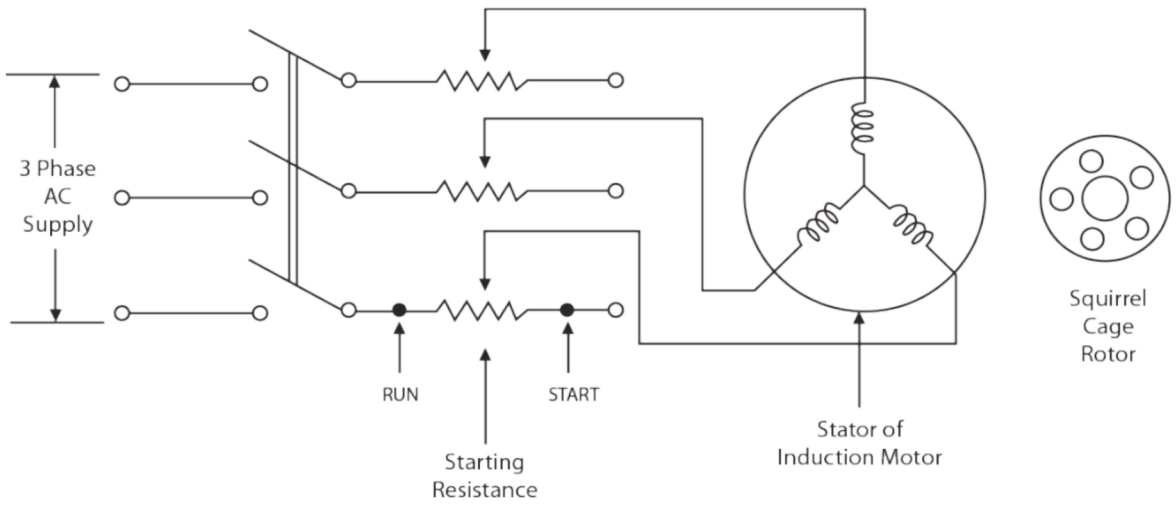
The contactor supplies the power and interrupts the power to the circuit. Hence, it acts as a making and breaking device.
Overload protection relay protects motors from drawing excessive current or overheating.

Depending upon various applications, types of starters to be used are classified.
The most common types of starters are as follows.

- **Startor resistance starter**
- **Auto transformer starter**
- **Star-delta starter**
- **Direct online starter**

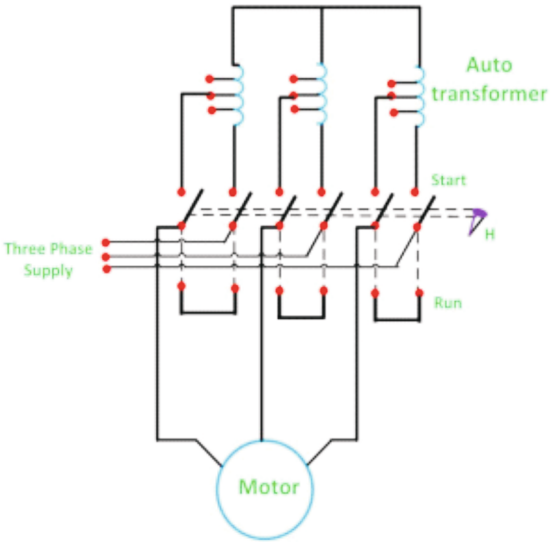
Stator resistance Starter

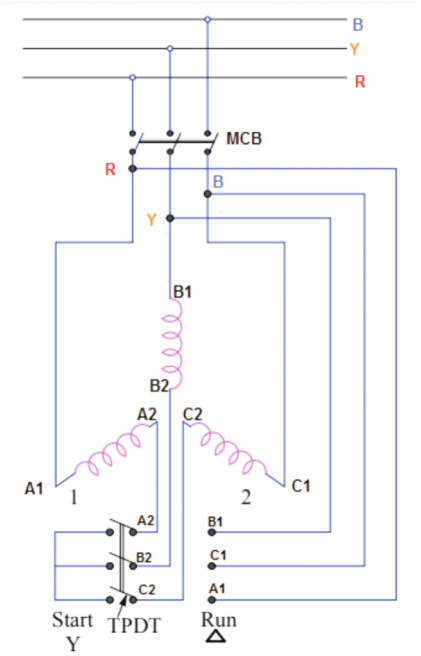
This is also known as primary resistance starter. The resistances are connected in series with each phase of stator winding while starting of the motor. Thus, there is a voltage drop across the resistance. This reduces the voltage across the motor terminals and hence the starting current. When the motor starts rotating in normal speed, the resistances are cut off gradually, thus increasing the voltage across the motor terminals. Then at the rated speed, the resistance is set to zero and full line voltage is applied to the motor.



Auto transformer Starter

This one is suitable for star as well as delta connected motors. While starting of a motor, with the help of a three-phase auto transformer, the starting current is limited. This reduces the initial stator voltage. Once the motor picks up about 80 percent of its rated speed, the auto transformer is disconnected from the circuit and the motor has its full rated voltage. In case of overload, the relay also provides with the overload protection.





Star-Delta Starter

At the time of starting of a motor, this starter connects the motor winding in Star. This reduces the voltage across the motor winding. After the motor reaches about 80 percent of its full load speed, it will begin to run in a delta connected stator winding, and hence the motor has its rated voltage. The switch is used for changing the Star to Delta connection in this starter.

Direct Online Starter

At starting, the contactor of a DOL started is closed. This applies full line oltage to the motor windings. It connects the motor directly to the upply without reduction in supply voltage. It provides the overload protection to the motor. Its applications include fans, small motors. Blowers etc.