



SNS COLLEGE OF TECHNOLOGY

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COIMBATORE-35

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 23EEB201 / Electrical Machines and Drives

II YEAR / IV SEMESTER

Unit II – ELECATRICAL MOTORS

Topic : Point Starter



4- POINT STARTER

The functional characteristics of a 4 point starter are similar to a 3 point starter. Four point starter works as a current controlling device in the deficiency of back EMF while starts running of the DC motor. A four-point starter also works as a protecting device. The main difference between a 4 point starter compared to a 3 point starter is, the holding coil is detached from the shunt-field circuit. After this, Sit is connected in series with the current limiting resistance (R) across the line. The contact points of the circuit are called as studs that are denoted with 1,2,3,4,5 which are showed below in the 4 point starter circuit diagram.



4- POINT STARTER





4- POINT STARTER

Difference between 3 Point Starter and 4 Point Starter

3 Point Starter:

The 3 point starter uses three terminals for running the motor

Terminals: The 3 point starter includes 3 terminals namely, Armature terminal (A), Field terminal (F), and the Line Terminal (L).

NVC (No Volt Coil): The connection of three-point starter can be done in series with the field coil.

4 Point Starter:

The 4 point starter uses four terminals for speeding up the motor

Terminals: The 4 point starter includes 4 terminals namely, Armature terminal (A), Field terminal (F), and the Line Terminal (L).

NVC (No Volt Coil): The connection of four-point starter can be done in parallel with the field coil.



4- POINT STARTER

A 4 point starter includes four most important operational points.

The line terminal (L) is connected to a positive supply

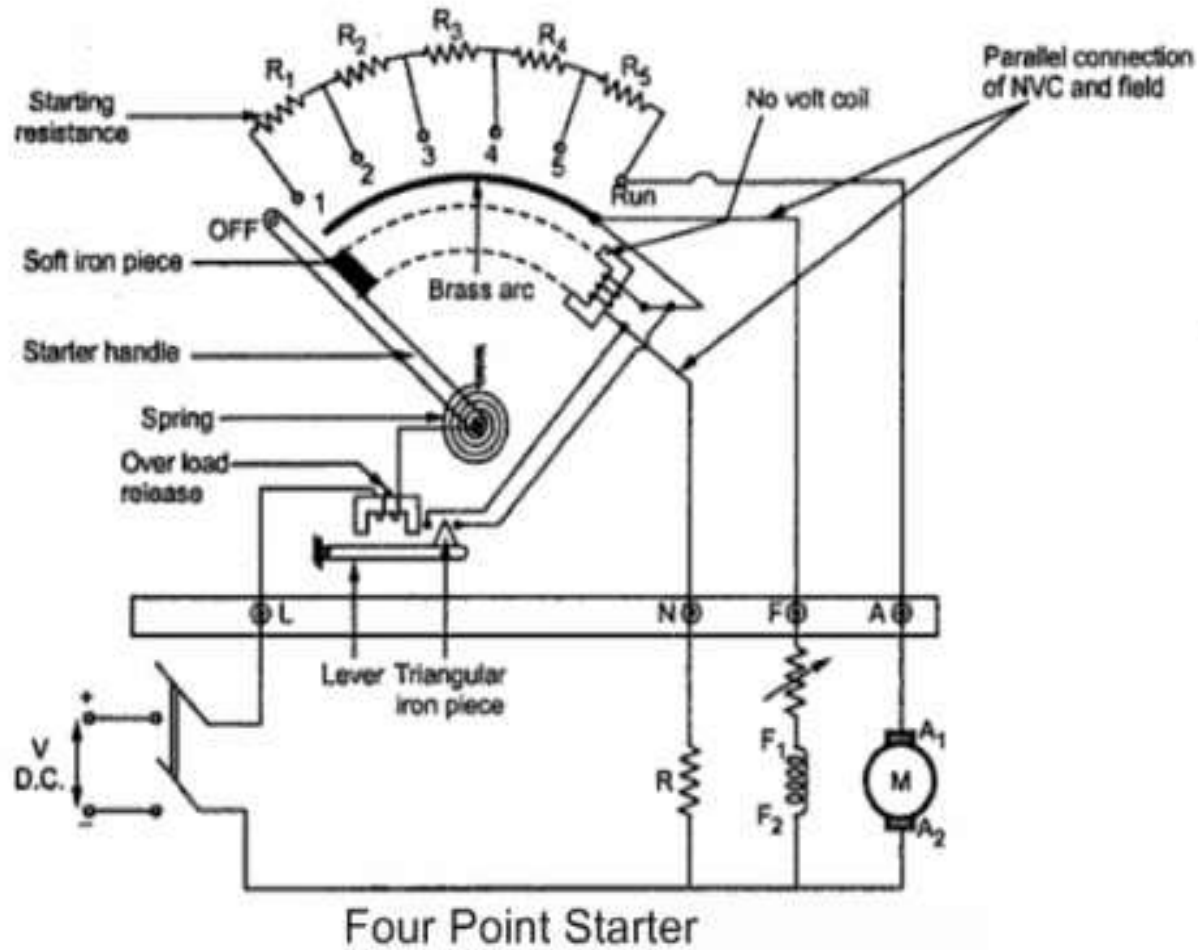
The Armature terminal (A) is connected the winding of an armature.

The field terminal (F) is connected to the field winding.

In addition to 3 point starter, there is an extra operational point which is denoted with the letter N, and it is connected to the NVC (No Voltage Coil)



4- POINT STARTER





4- POINT STARTER

The circuit diagram of a four-point starter is shown below, and its arrangement can form three parallel circuits.

- Armature, shunt field winding and starting resistance
- The shunt field winding & a variable resistance coil.
- The current limiting resistance and holding coil

From the above three circuit arrangements, there is no flow of current effect using the holding coil if there is some difference in speed of the motor.

Currently, regular push-button starters are also utilized. In these starters, the ON-switch is pushed to link the current limiting beginning resistors in series through the armature circuit, then the complete line voltage is obtainable to the circuit. The beginning resistor is slowly detached with an automatic controlling plan.

The armature circuit is detached once the OFF switch is pressed. The usual starter circuits have been designed with time delay relays and electromagnetic contactors. The main benefit of this starter is that it allows even the new operator to operate the motor easily.



4- POINT STARTER

Drawbacks of 4 Point Starter

- The only drawback or limitation of the four-point starter is that it cannot control the speed of the high current in the motor. When the motor winding is opened under the working condition then the field current usually decreases to zero. Although as a few of the remaining flux is still there in the DC motor, as well as we know that this flux is correlative to the motor's speed. Thus, the motor's speed enhances thoroughly, which is unsafe and therefore safety is not feasible. This unexpected rise in the motor's speed is known as "high-speed act of the motor".
- This is all about 4 point starter, and its working. From the above information finally, we can conclude that both the 3 point starter & 4 point starter are same in construction. Although in 3 point starter, once the motor speed changes then the flow of current through the field coil & this current will affect on the no voltage coil. For reducing this problem, the 4 point starter is implemented. Three-point or four-point starters are used for controlling the speed of motors. Whenever no speed control or small speed control is required then 3 point starter or 4 points starter can be used.