SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 19EEB201 DC Machines and Transformers

II YEAR / III SEMESTER

Unit 2 – DC Motor

Topic 5: Starters for DC Motor

What We'll Discuss

TOPIC OUTLINE

Necessity of starter

Two Point Starter

Three Point Starter

Four Point Starter

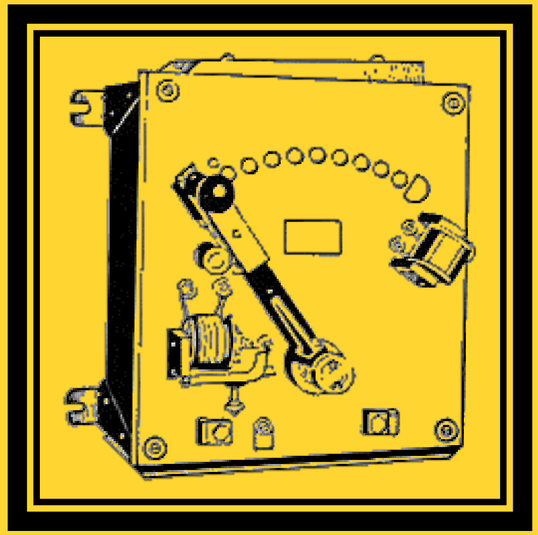
Assessment

Necessity of Starter

- Let us consider a case of 230 V, 5 kW DC motor having armature resistance of 0.5 W and full load current of 27.0 A.
- If this DC motor is directly connected to supply mains, it will draw a starting current of 17 times its full load current.

(IfL = 5000 / (230 × 0.8)
= 27.17 Amp
Assume efficiency = 80%

IL = 230 / 0.4
= 460.0 Amp
Starting current drawn by motor
= 460 / 27.17
= 17 times full load current

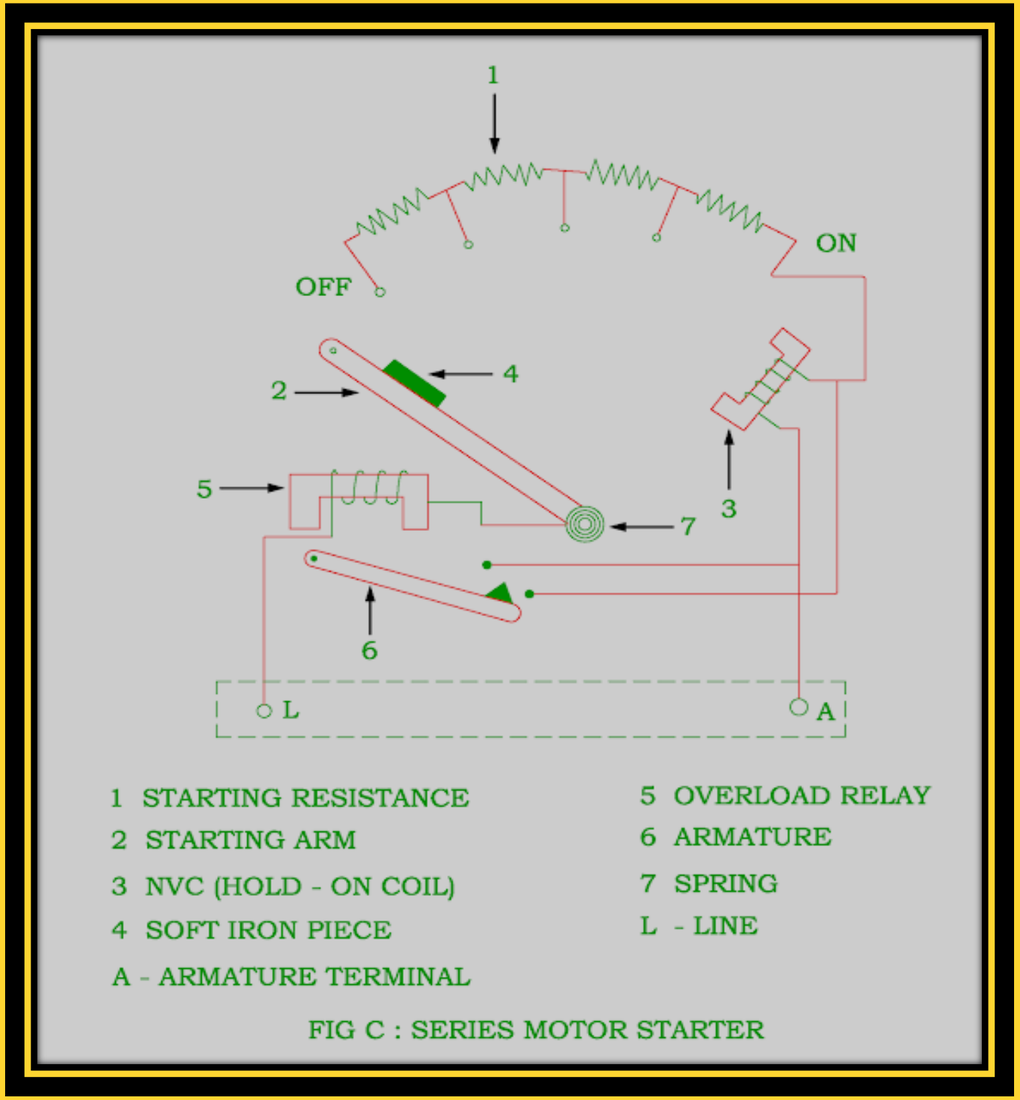


Necessity of Starter

This excessive current
(I) Blow out the fuses
(II) Damage the commutator, brushes and also armature winding and
(III) Produces large voltage drops in the supply voltage line.

Therefore the motor must be protected against the flow of excessive current during starting period (say 5 to 10 seconds).

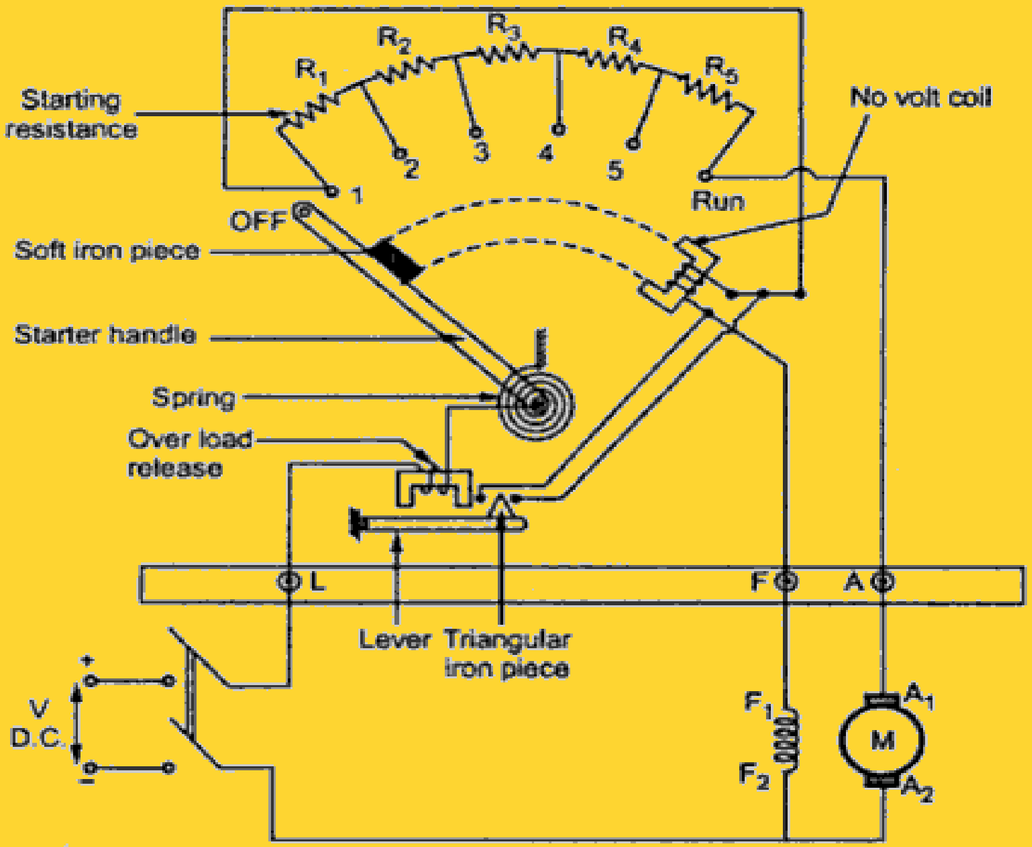
Two Point Starter



1 STARTING RESISTANCE
2 STARTING ARM
3 NVC (HOLD - ON COIL)
4 SOFT IRON PIECE
A - ARMATURE TERMINAL
5 OVERLOAD RELAY
6 ARMATURE
7 SPRING
L - LINE

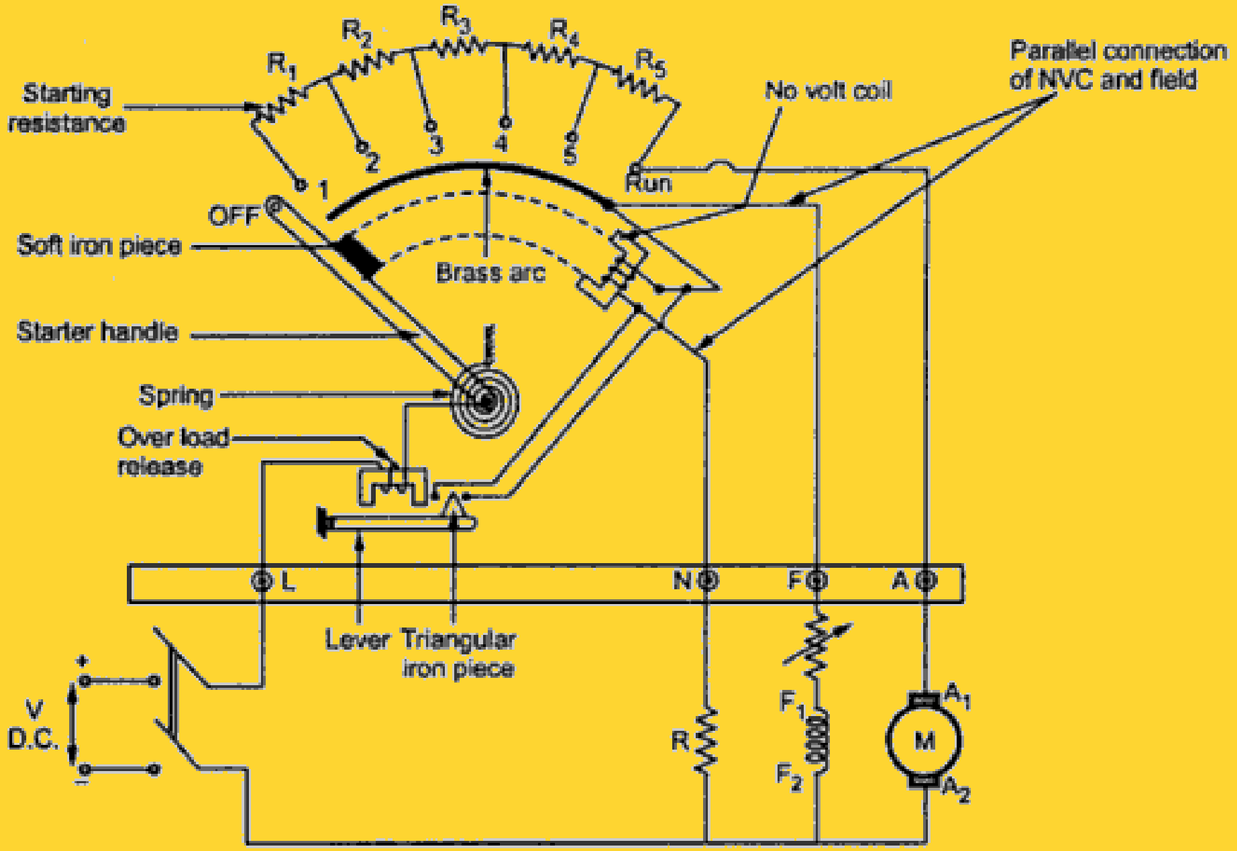
FIG C : SERIES MOTOR STARTER

Three Point Starter



3 point Starter

Four Point Starter



4 point Starter

RECALL

1. List the Three types of DC Motor Starters

THANK YOU