



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

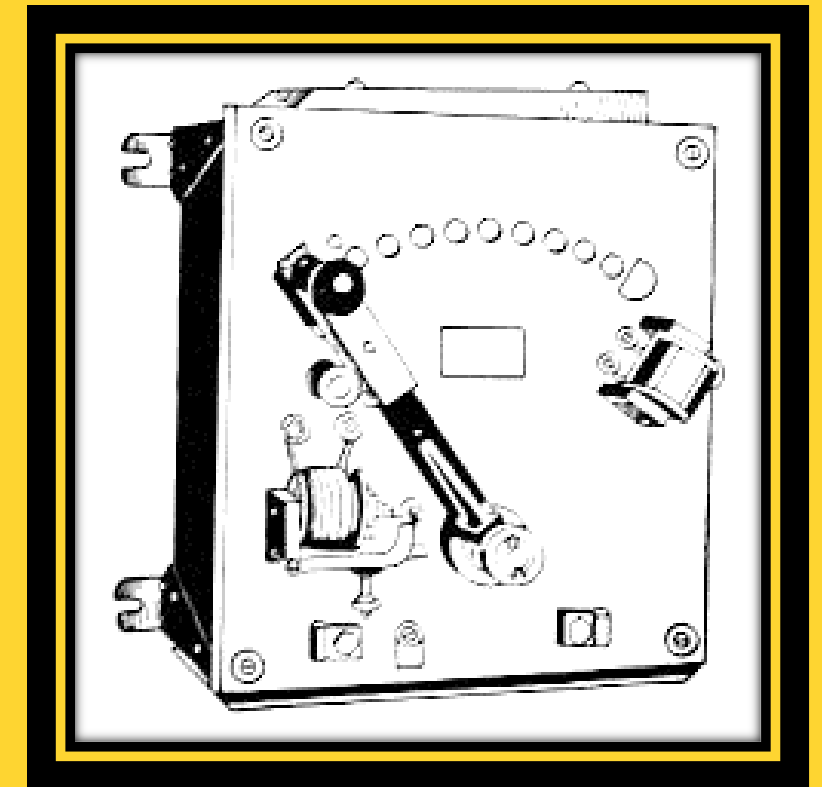
- Let us consider a case of 230 V, 5 kW DC motor having armature resistance of 0.5 W and full load current of 27.0 A.
- If this DC motor is directly connected to supply mains, it will draw a starting current of 17 times its full load current.

$$(I_{fL} = 5000 / (230 \times 0.8)) \\ = 27.17 \text{ Amp}$$

Assume efficiency = 80%

$$I_L = 230 / 0.4 \\ = 460.0 \text{ Amp}$$

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

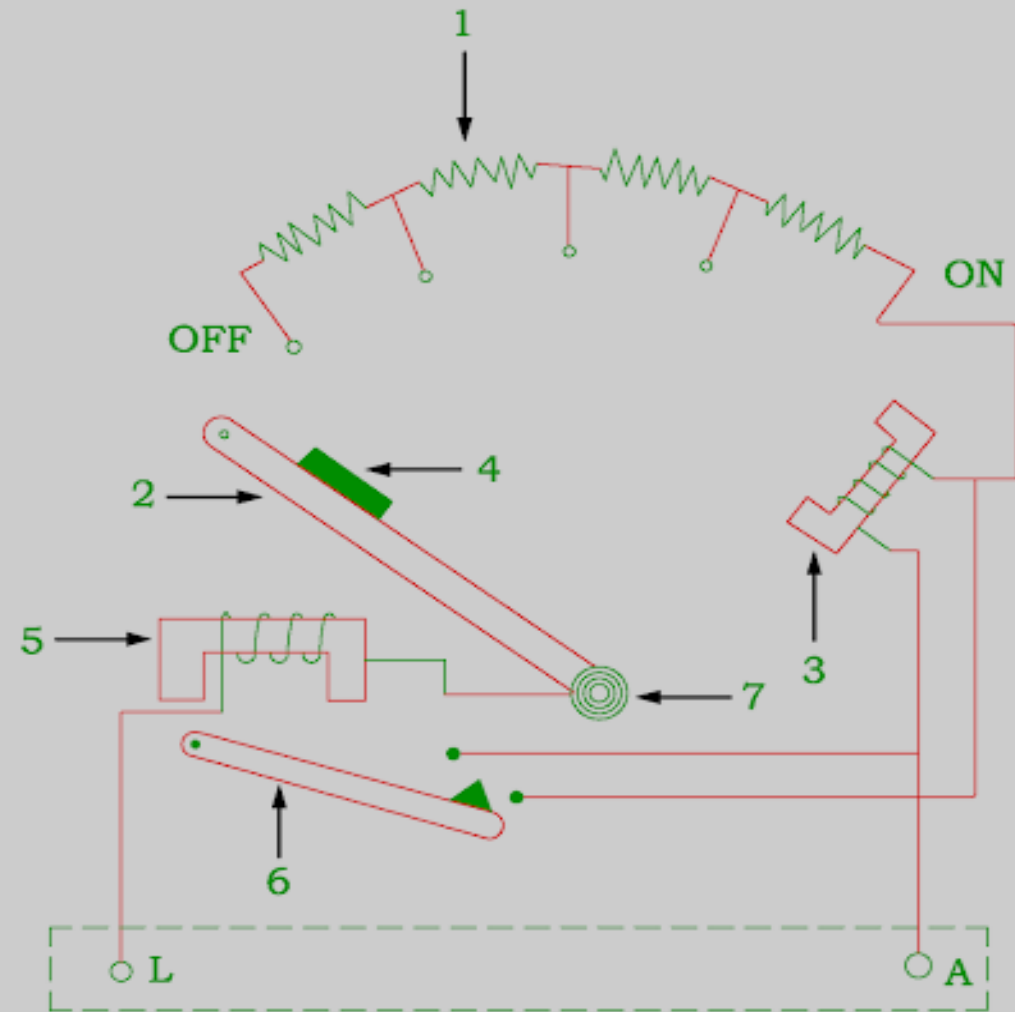
(III) Produces large voltage drops in the supply voltage line.

Therefore the motor must be protected against the flow of excessive current during starting period

(say 5 to 10 seconds).



Two Point Starter

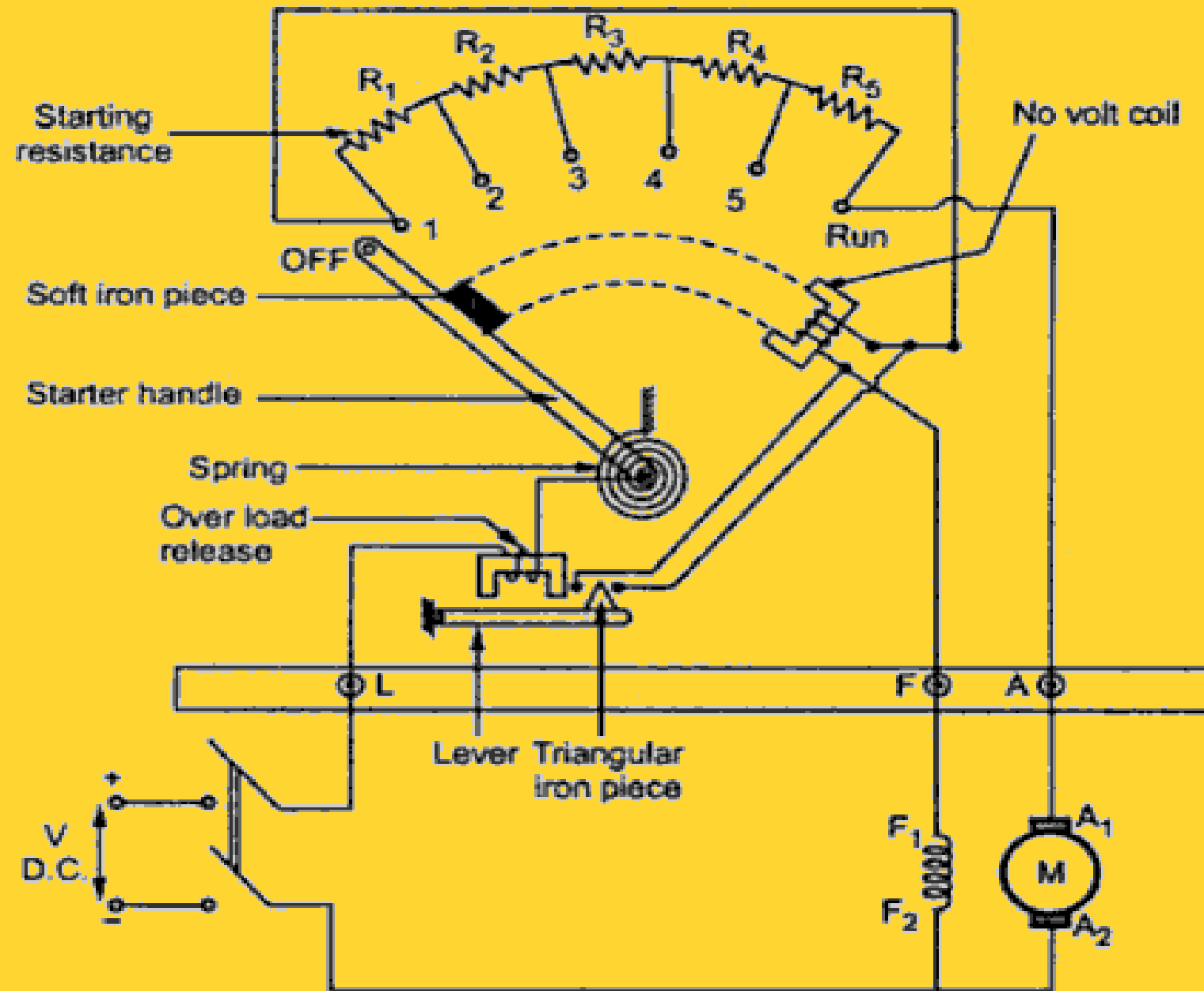


- | | |
|------------------------|------------------|
| 1 STARTING RESISTANCE | 5 OVERLOAD RELAY |
| 2 STARTING ARM | 6 ARMATURE |
| 3 NVC (HOLD - ON COIL) | 7 SPRING |
| 4 SOFT IRON PIECE | L - LINE |
| A - ARMATURE TERMINAL | |

FIG C : SERIES MOTOR STARTER



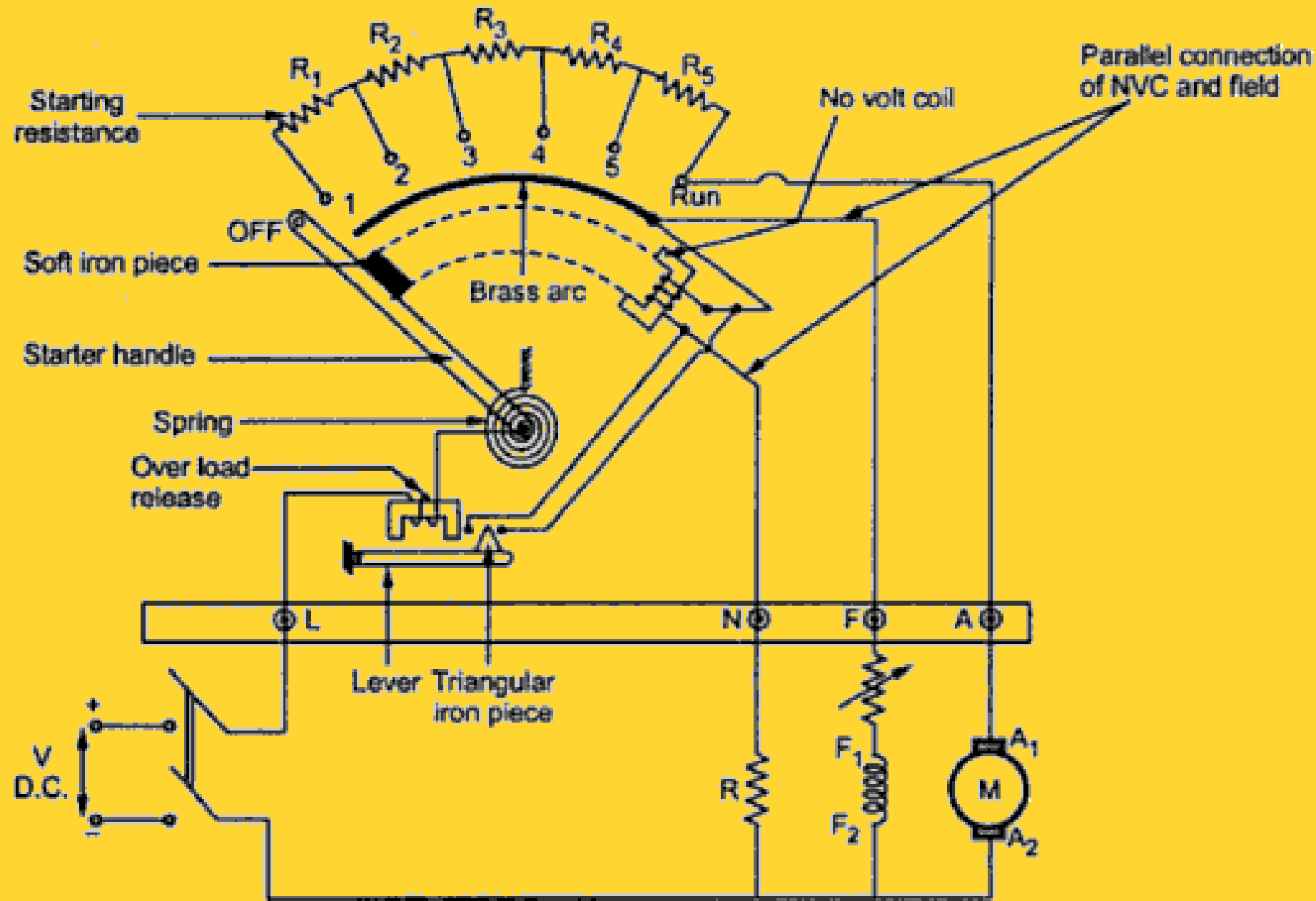
Three Point Starter



3 point Starter



Four Point Starter



4 point Starter



RECALL



1. List the Three types of DC Motor Starters



THANK YOU