

CIRCUIT DIAGRAM: OCC AND LOAD CHARACTERISTICS OF SELF EXCITED DC SHUNT GENERATOR

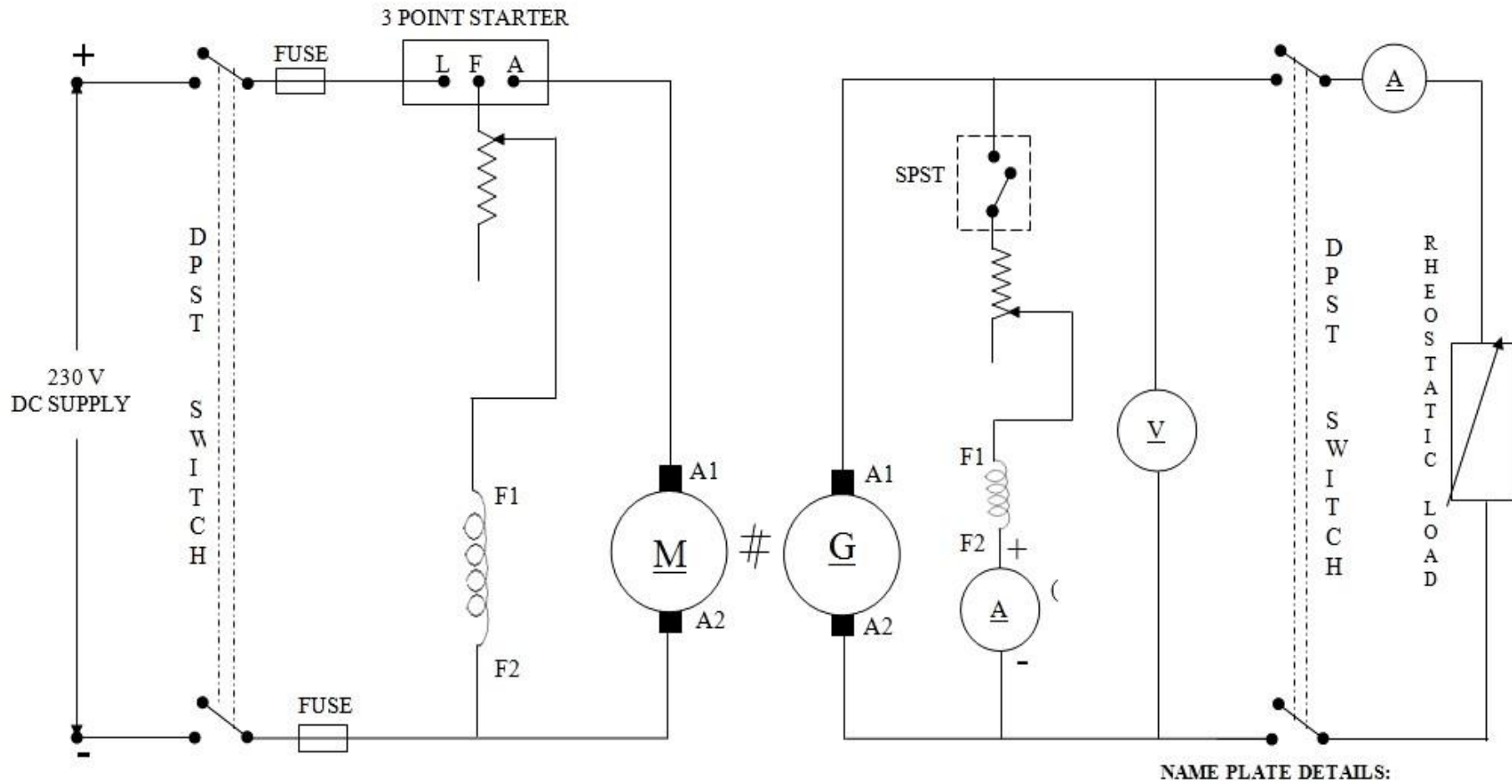


Figure 6.1 OCC AND LOAD CHARACTERISTICS OF SELF EXCITED DC SHUNT GENERATOR

Ex. No:	OCC AND LOAD CHARACTERISTICS OF SELF EXCITED DC SHUNT GENERATOR
Date :	

AIM:

To conduct the suitable experiment on the given dc shunt generator and to draw the OCC & load characteristics of the same.

OBJECTIVES:

1. To find the generated voltage (E_g) of a separately excited DC generator for different field currents (I_f) by open circuit test.
2. To find the armature resistance (R_a)
3. To determine Internal, External Characteristics of given DC generator by conducting load test.

APPARATUS REQUIRED:

S.NO	APPARATUS NAME	RANGE	TYPE	QUANTITY
1.	Ammeter			
2.	Voltmeter			
3.	Rheostat			
4.	Tachometer			
5.	DPST switch			
6.	SPST switch			
7.	Loading Rheostat			

FORMULA:

$$E_g = V_L + I_a R_a \quad \text{Volts}$$

Where

E_g – generated emf (V)

V_L – Load Voltage (V)

I_a – armature current (A)

R_a – Armature resistance in ohms = 1.5 (given).

Table No 6.1 OPEN CIRCUIT CHARACTERISTICS TEST OF DC SHUNT GENRATOR

S.NO	FIELD CURRENT I_f (A)	GENERATED VOLTAGE E_g (Volts)

Table No 6.2 LOAD TEST OF DC SHUNT GENERATOR

Armature Resistance $R_a = 1.5$ ohm

S.NO	FIELD CURRENT I_f (A)	LOAD CURRENT I_L (A)	LOAD VOLTAGE V_L (Volts)	$I_a = I_L + I_f$ (A)	$E_g = V_L + I_a R_a$ (Volts)

PRECAUTION:

1. The motor field rheostat should be kept at minimum position at the time of starting.
2. The generator field rheostat should be kept at maximum position at the time of starting.
3. DPST switch 2 is opened during OCC test.
4. SPST switch is opened at starting to note the residual voltage.

PROCEDURE:**OCC TEST:**

1. By closing DPST switch 1 & using 3 point starter the motor is started.
2. The motor field rheostat is adjusted and the rated speed is set.
3. The residual voltage is noted down from the voltmeter & SPST switch is closed.
4. The generator field rheostat is varied and the generated voltage (E_g) & corresponding field current (I_f) are noted.
5. The same procedure is repeated up to the rated voltage.

LOAD TEST:

1. The DPST switch 2 is closed when the rated voltage is reached.
2. Then the load is applied using loading rheostat and the load current (I_L), load voltage (V_L) & field current (I_f) are noted down for various load current.
3. The same procedure is repeated up to the rated current

MODEL GRAPH:

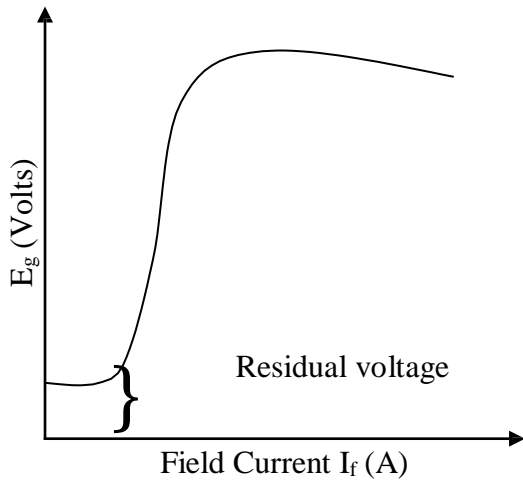


Figure 6.2 OCC Characteristics

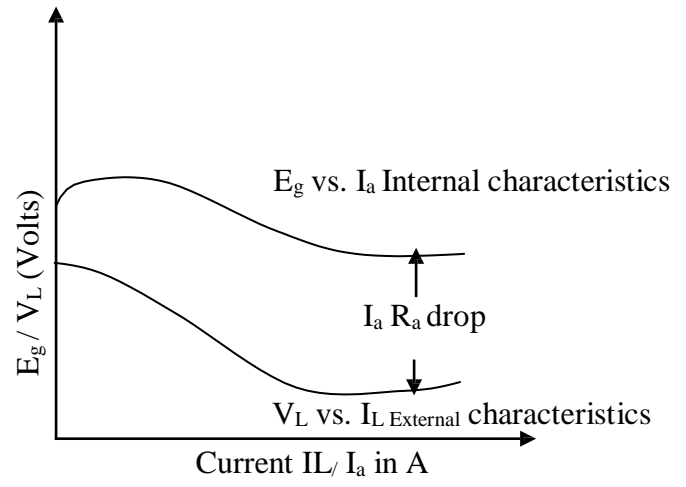


Figure 6.3 Load Characteristics

MODEL CALCULATION: