

# PLC123 LAB 2.3: DC SHUNT MOTORS

Student Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

## LAB OUTCOMES:

Upon completion of this lab procedure, the student should be able to:

1. Identify and explain all the parts of the Machines Training Unit.
2. Wire a self-excited DC shunt motor.
3. Wire a separately-excited DC shunt motor.
4. Vary the speed of a self-excited DC shunt motor and a separately-excited DC shunt motor.
5. Reverse the direction of rotation of a self-excited DC shunt motor and a separately-excited DC shunt motor.

## LAB PROCESS:

**\*\*Extremely Important** – It is important that everyone working in the lab with rotating machinery must wear approved safety glasses, whether you are working on a motor or not.

Secure a Machines Training unit, and mount a DC machine to the left side of the training unit. Ask the instructor for help if the machine is too heavy to put into place. If there is a coupling on the motor shaft or not, secure a coupling guard over the unit.

**Warning:** Do not run a rotating machine with a key stock in the key way.

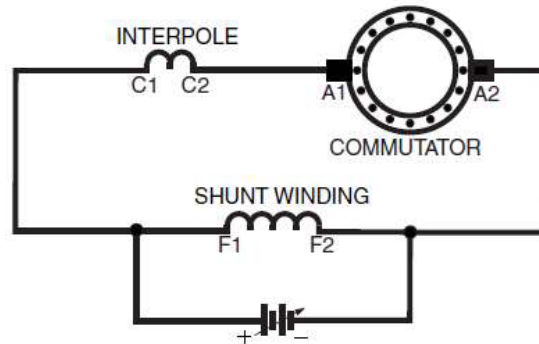
## Part 1:

1. Identify and explain the purpose of the following components on the Machines Training Unit:
  - a. Ground Fault Current Interrupter
  - b. Variac (variable transformer)
  - c. Variable DC power supply

- d. Variable AC power supply
  - e. Emergency Stop pushbutton
  - f. Field DC power supply
  - g. Three phase circuit breaker
2. Correlate the rotating machine plug with external connectors

**Part 2:**

1. Wire a DC self-excited shunt motor, as shown below.



2. Measure the voltage coming into the DC motor.

\_\_\_\_\_ Volts

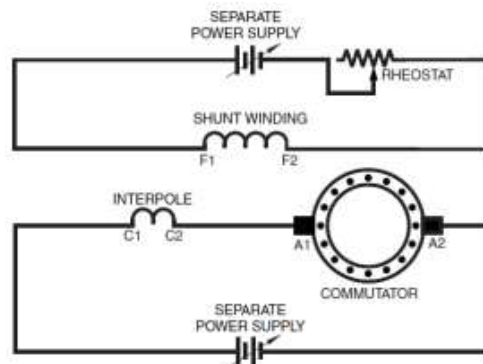
3. Interpret the nameplate data on the DC motor:  
HP, Amps, xx, xx

4. Explain how to vary the speed of a DC motor.

5. Reverse the direction of rotation.
6. Replace a brush on the DC shunt motor.
7. Load a DC motor. Explain the meter readings (load vs. current)

**Part 3:**

1. Wire a DC separately-excited shunt motor.



2. Demonstrate and explain how the speed of the separately-excited DC motor is varied with armature & field current.
3. Reverse the direction of rotation of a DC separately-excited shunt motor.

*The outcomes of this exercise (listed on page 1) specifies the skills that the Student must demonstrate to the Instructor. Once the Instructor is satisfied with the demonstration of Knowledge & Skills by the individual student, they will sign this document (for the student), then enter a 100% into the Hands-On Lab grade in Sakai.*

I verify that this student has completed all of the requirements of this Hands-On Assessment:

Student Name: \_\_\_\_\_

Faculty Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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