

# L1b: Introduction to Practical Work

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# Goals of this Introduction

1. Show the actuators and motors to be used for the practical work and the assignments
2. Give you some context to the theoretical introduction (as you work through the theory you should be thinking about how the theory will be useful for your assignments)

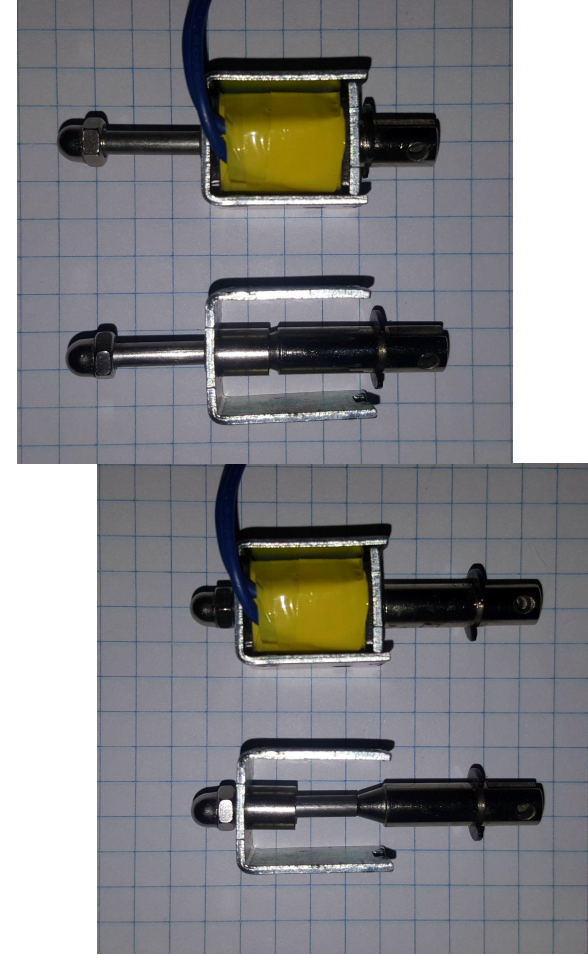
# Solenoid Assignment

The solenoid you will use for your assignment is shown on the the right.

At the top it is shown in the “closed” position both complete and with the wire coil removed to see the internal core.

At the bottom it is shown in the “open” position. You can see that the plunger is conical.

Normally there would be a spring to hold it open. This has been removed to simplify the analysis.

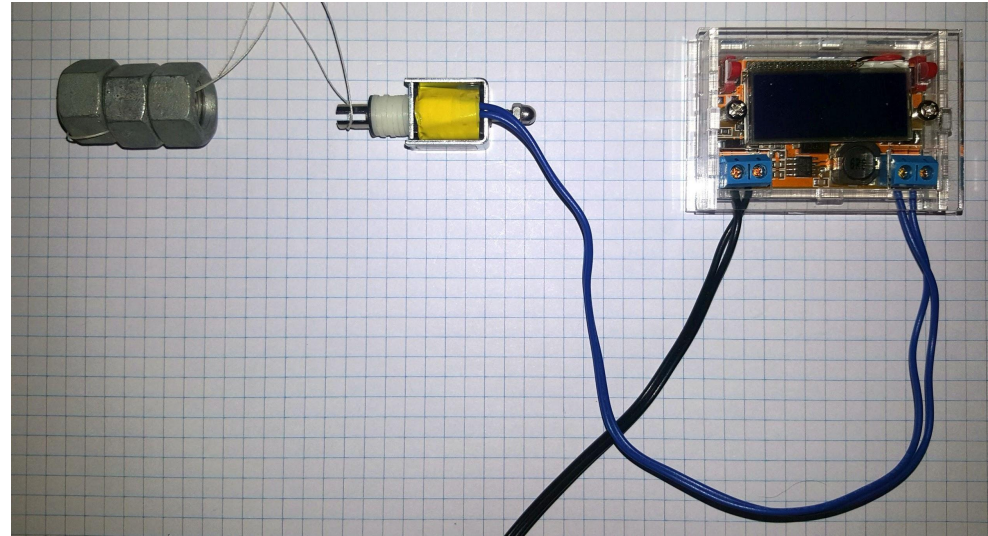


# Solenoid Assignment

You will hang a weight (nuts on right) from the solenoid and then determine the current required to hold that weight.

The starting point will be defined the amount of plastic washers installed on the solenoid prior to energising it.

Each student will have a different number of weights and plastic washers.



# Solenoid questions (discuss for 5 mins in groups of 2-3)

1. What combination of weights and washers will require the least current?
2. What combination of weights and washers will require the most current?
3. Come up with a list of 5 different applications for solenoids.

# Solenoid question discussion

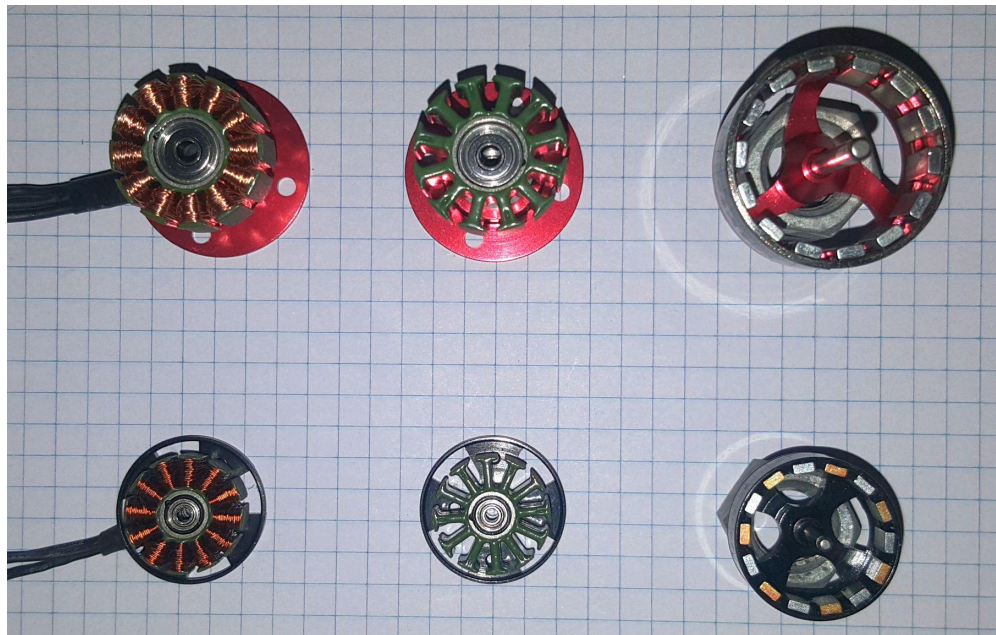
# Assignment Motors

You will be randomly assigned one of three different motors (one not shown as still in post)

For the first part of the assignment you will spin the motor and measure the voltage generated by moving the magnets past the coils.

For the second part of the assignment you will measure the loss

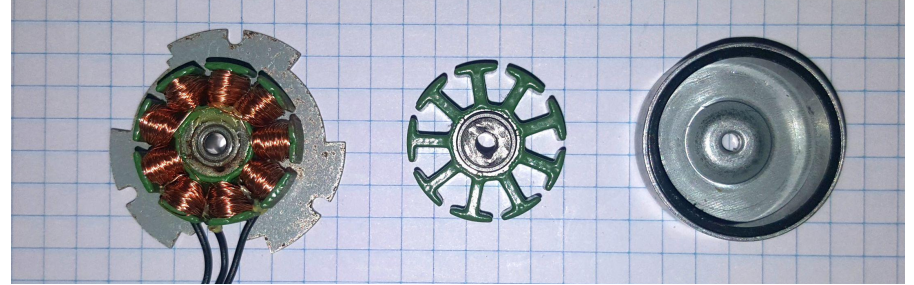
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# Motor questions (discuss for 5 mins in groups of 2-3)

1. What ways can you think about measuring the loss for the second part of the assignment?
2. The bottom image on the right is another motor that I will use as an example in the lectures. I have deliberately chosen it to be different. How many differences can you see?





# Motor question discussion