Lab 3 Prelab

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Part 1:
Current raises from 100-300 mA when 10V is applied.
Ohm's Law: $V=IR$
Assuming the Motor is drawing 200 mA, I believe a resistor with 3 Ω should be used as the measuring resistor.

$V = .200A \cdot 3\Omega = 0.6\ V$

I chose 200 mA as the current draw because it is in the middle range of possible current draw, but the 3Ω resistor performs well at the lowest and highest possible current as well.
at 100mA: $.100A \cdot 3\Omega = 0.3\ V$
at 300mA: $.300A \cdot 3\Omega = 0.9\ V$
at the lowest voltage, the oscilliscope would still be able to read it, and at the highest current, the voltage across the resistor is less than 10% of the input voltage (10V)
Formula for Power: $P = I^2 R$

Power dissipated across the highest current:
$P = (300A)^2 \cdot 3\Omega = 0.27\ W$

The power rating for this resistor is $\frac{1}{2}$ W.