

3. A wirewound potentiometer having 300 turns is to be used in the following system.

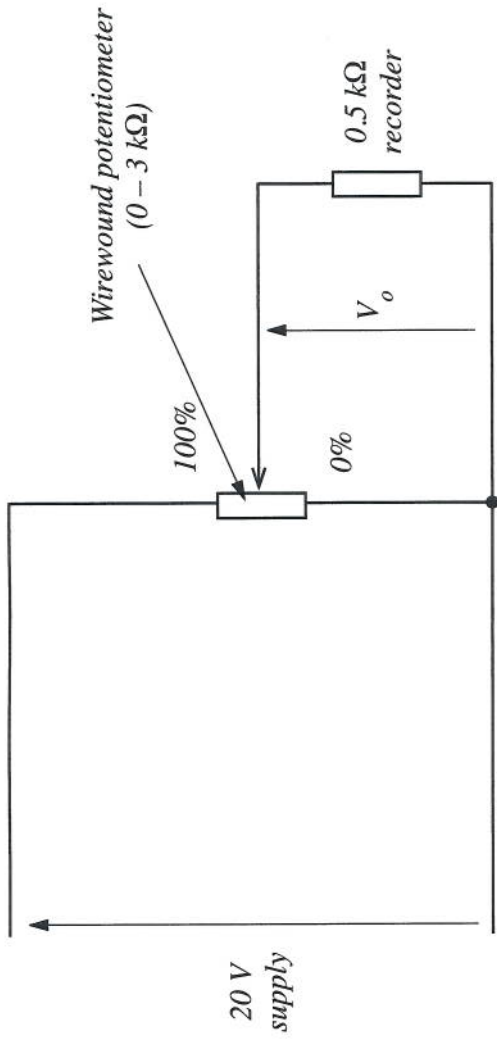


FIG. 2

As the slider is positioned in 10% increments from the 0% point to the 100% point, the following voltage levels were recorded.

Tapper position	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Output voltage	0 V	1.298 V	2.04 V	2.654 V	3.278 V		4.918 V	6.194 V	8.163 V	11.688 V	20 V

- Calculate the value of the output voltage at 50%.
- Draw a graph of 'tapper' position against output voltage,  $V_o$ .
- Indicate on the graph the ideal characteristics of such a system.
- Calculate the maximum error as a percentage of the true value.
- Suggest how the system could be improved to give a characteristic closer to the ideal.