Motor Winding

To apply the maximum turns to a rubber motor, it must be stretched while being wound.
I have seen a number of ingenious home-made winders constructed from fishing spinning reels, hand drills and similar devices. A winder that multiplies turns is a great device to help with the task. Some very light weight indoor models use motors wound with thousands of turns.

There are a number of commercially available hand operated winders sold in different ratios, meaning for each turn of the handle they will turn the motor 5, 10 or 15 times. To avoid the potential damage to the model and maximize the number of turns stored in the motor, the motor needs to be wound when it is completely off the model. Additionally, this method allows a single person to practice winding. To wind a motor properly and quickly during a competition requires practice. Winding the motor while it is off the model requires the use of a device called a stooge.

Stooges can range from very simple to very sophisticated. Before you start winding prepare a winding log. If you have multiple motors have a way to identify each one. A separate sandwich bag labeled for each motor is recommended. The log should record the motor number, its width, length and the number of turns applied to it each time it is wound. Take a clean lubricated motor (if it falls on the floor or gets dirt on it, wash it and re-lubricate it). Place the knot of the motor at the stooge and the other end on the winder.

Hold the winder lightly, with just your fingers, not in a death grip, and stretch the motor to approximately 4 times its relaxed length. The shaft on the winder should be directly in line with the stooge not sideways.

Do not hold the winder sideways to the stooge.

During a competition you will most likely attempt more than one flight. Therefore it is important to be able to expediently wind the motor and transfer it onto your model. The following video scenes will show each step involved in this process. Practice this activity until you can complete the process with confidence.

For almost all applications the winder will be turned in a clock-wise direction to twist the motor in a clockwise direction. Keep a count of the number of turns you rotate the winder handle. If you get distracted or loose count while winding, start over by allowing the motor to completely unwind. While turning the winder you will soon feel the motor try to pull the winder toward the stooge.

As you wind, gradually move the winder toward the stooge as knots begin to form. The goal is to keep a uniform distribution of knots on the motor. These knots will start as single row then double, triple and so on. The motor should have a full set of knots over its entire length before starting to generate another set of knots. If uneven knots start to form it is a sign the motor is not sufficiently lubricated or uniformly lubricated.

It is not a bad idea to occasionally stop and rub the motor applying additional lubricant to insure the knots are evenly distributed. Do not allow the winder to get closer to the stooge then the distance between the propeller shaft and the tail hook.

Be aware that when the motor breaks it can damage your model. Which is another reason to use a stooge. Should the motor break while you are winding it record the number of turns that had been applied. If you divide this value by the original length of the motor, the result will be the number of turns per inch or centimeter that can be wound into a motor of that specific width, broken in exactly the same way. To really determine how many turns you can put into a motor it is necessary to wind one until it breaks. This can be done with a loop that is shorter than the one intended for the model since you want to determine the number of turns per inch or centimeter of loop. Once the value is determined use approximately 85% of this number for future non-competitive use.