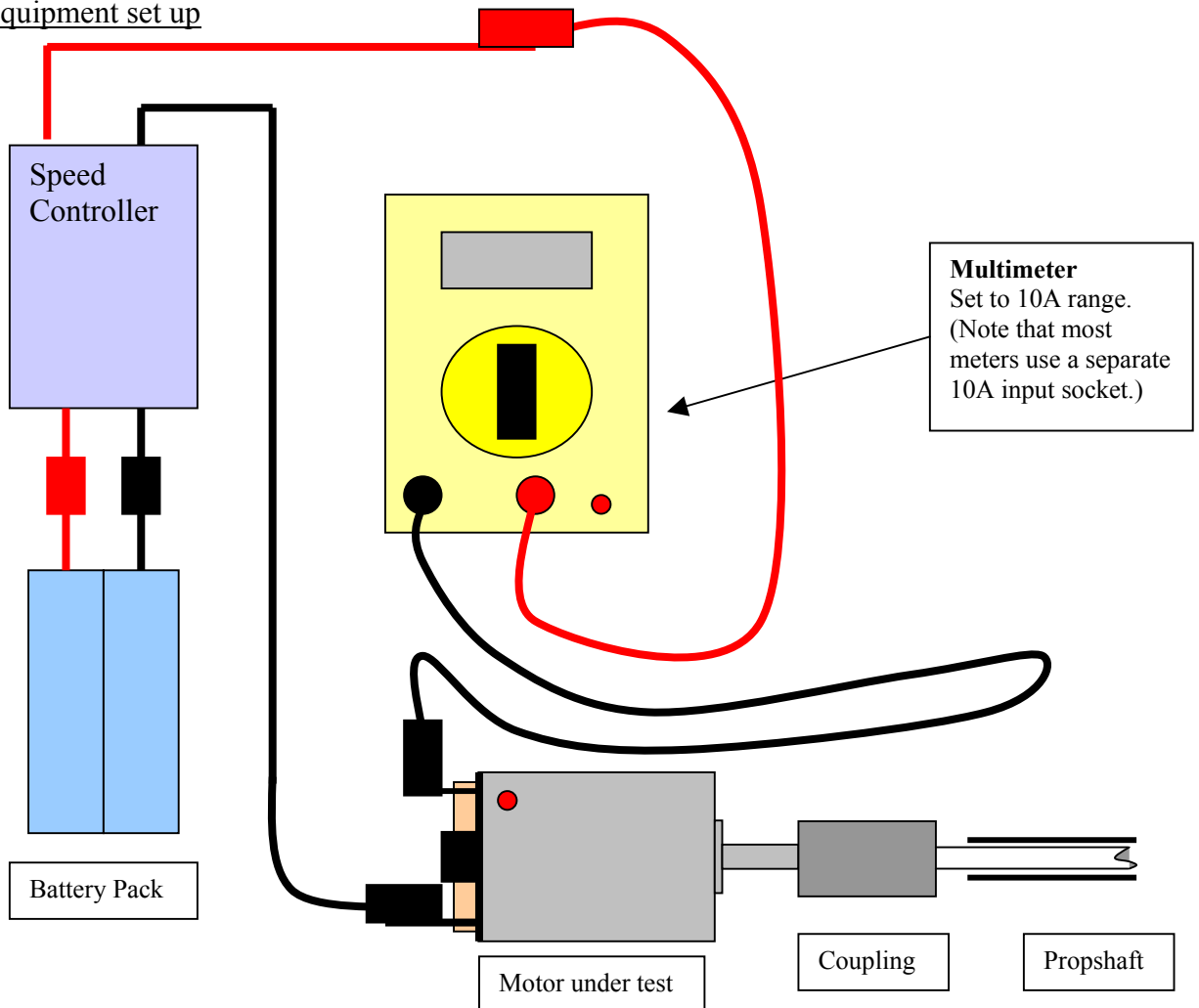


Aligning a motor for maximum efficiency

Careful alignment of the motor and propshaft in a boat results in a more efficient drive chain, reducing friction and increasing boat speed and run time. This article describes how to align your motor with the aid of a multimeter.

Equipment set up



1. Set up your equipment as shown in the diagram. The multimeter can either be installed between the battery and speed control or between the speed controller and the motor.
2. Adjust the trim on your r/c transmitter so that the motor is turning at low speed. If you do not use an electronic speed control it is possible to run the motor a low speed by just attaching 2/3 cells direct to the motor.
3. Make small adjustments to the motor/propshaft alignment with the motor running and adjust for a minimum current reading on the meter. You should also be able to tell when there is minimum friction by observing the speed of the motor.
4. Tighten up all the fastenings and recheck your current reading.
5. Run the motor at full speed and record the current reading. This can be used as a reference to see if the system needs realigning at a later date.

You can calculate the friction losses in your system by noting the difference in current when the motor is running uncoupled and when it is connected to the drive system. The smaller the difference in current the greater the overall efficiency.

This system can also be used if the motor is connected via a gearbox, as the meshing of the gears is very critical. Adjust the position of the motor pinion and the drive coupling for minimum current.

With flexible drive systems there is even more to adjust. Make sure that the curve on your shaft does not introduce too much friction. Lubricants are also important, so use this method to find the best one for your set up. Flex-drives do tighten up and shorten when the boat is in the water so always leave a couple of millimetres of shaft between the end of the tube and the propeller.

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