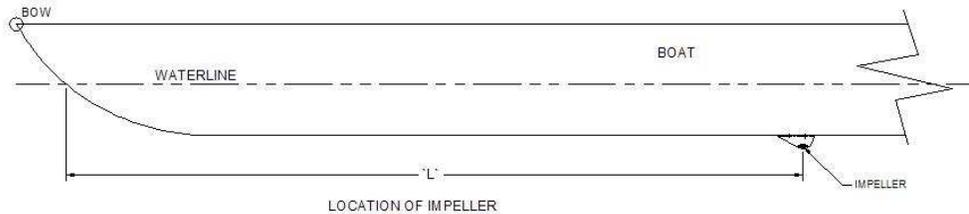


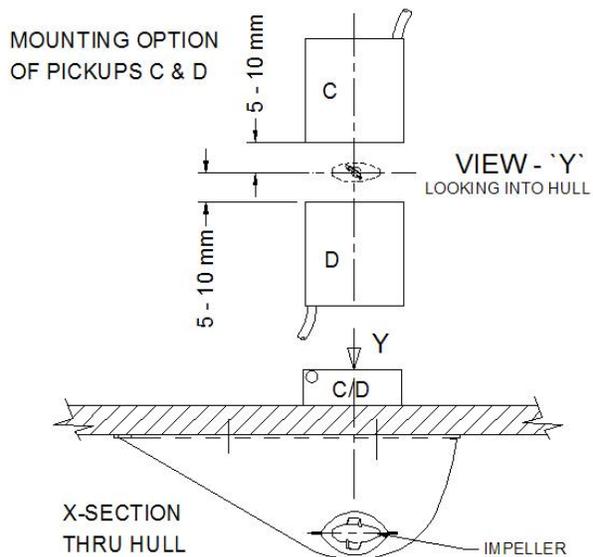
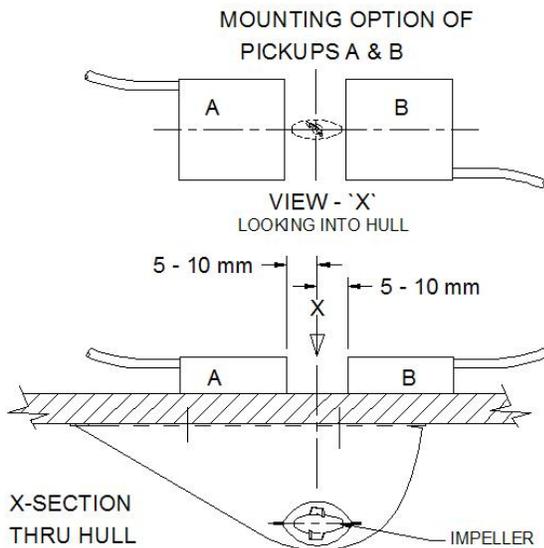
## Coxmate SC-XP Speed Sensor

The speed sensor comprises a small magnetic impeller which mounts to the outside of the shell, and an electronics pick up/conditioning unit with cable to transmit speed signal to **SC (SC-R)** control unit. There are four options for the cable: SC-XP-14m – 14 metres for eight, SC-XP-(5+9)m for eight with section connector, SC-XP-7m – 7metres for stern coxed fours and SC-XP-2m – 2 metres for bow coxed fours. The pick up/conditioning unit can also be used with the Nielsen Kellerman impeller unit supplied with Speed Coach™ unit – however this would require a different calibration constant, and would have to be calibrated.

The nominal calibration figure supplied with sensor, assumes it is mounted 2.0 metres from the bow at the waterline (L=2m). However as this is only a nominal calibration, it is not critical, provided 'in boat' calibration is performed. It is important to mount the speed sensor as far forward as possible. As the sensor gets further from the bow, so does the degree of turbulent noise. This noise appears on the instantaneous speed curve, and reduces it's value for analysis. Practical access restrictions may limit how close to the bow the sensor is mounted. If access was not a problem then a distance less than the 2 metres eg between 1 and 1.5 metres would be optimal. If you do not want to use the 'stroke profile analysis', i.e. the variation of speed through the stroke, features of the software, then the impeller can be mounted further astern. In this case, all other functions will still operate.



The mounting of the speed sensor impeller and pick up is shown in following diagram. Four mounting arrangements: A,B, C and D are shown. To assist in positioning the sensor in respect to the impeller, a magnet may be helpful – place magnet eg stroke sensor magnet, on inside of hull and determine position on outside of hull with a small piece of magnetic material eg a paperclip.



The location of the pick up is relatively tolerant. However the alignment of the impeller fin is critical – it must be in line with the hull. It is helpful to use a long straight edge or a piece of string to align fin. It is generally recommended for the fin to be mounted at or near the centreline of the hull.

The fin is normally affixed with double sided tape. If you are using the tape, carefully mark intended position of fin on hull with a pencil. It is important to position fin correctly first time -once backing tape is removed from fin, and it is stuck to boat, it is difficult to reposition it. The fin has two holes in it, so it can also be fitted with 2 x 3mm screws. The advantage of using screws is it makes it easy to remove and refit fin. Some boatbuilders are looking at providing the threads built into the hull for this purpose. When double sided tape is used for affixing fin, the hull must be clean and dry. If the unit is removed from boat, then apply a steady force, to ease fin off. Wrenching it off without care may result in damage to the gel coat or paint finish.

The impeller spins within an enclosed 316 stainless steel fin. This fin provides mechanical protection for the impeller. The impeller is fitted with a hardened copper bearing, so it is unaffected by spinning at speed if boat is being towed. The impeller and fin should be kept clear of weed or other foreign material. The pick up is connected to the SC via a 4 pin waterproof connector. The mounting of pick up is shown in diagram. It is supplied with double sided tape. The inside of boats is sometimes difficult to stick due to moisture or residual materials. It is important for the surface to be thoroughly cleaned and dried. It may need a slight abrading to remove foreign materials and ensure a clean surface. An alcohol swab is also provided to assist. If the double sided tape does not work, then duck tape, or standard adhesive sealants can be used – some commonly available acrylic sealants are suitable for wet surfaces. The SC-XP speed sensor cable is available in several lengths, depending on boat type. This cable must be fed through the boat to the cox's position.

To test speed sensor before putting boat in water, connect SC unit and start timer. Blow on impeller to cause it to spin. The SC should then register some distance. Remember the timer will stop if it does not see a stroke for 12 seconds. If this happens, then press 'start' button to restart timer. If there are two of you, then one can move seat over seat/stroke sensor – this keeps timer running, whilst the other blows on the impeller. You will now see speed and cover readings as well as distance. When the impellers spin there will be a feint 'whirring' noise. This is normal.

**Fault finding:**

If there is no speed or distance reading, then the first thing to check is the fin to ensure it is clear of weed. The 'whirring' sound mentioned above is usually a good indicator that impeller is not fouled. It is often possible for the bow man to put his hand under the boat and clear weed. If impeller is clear, then check speed sensor is connected and communicating with SC. To do this go to '8 Calibrate' on the SC. Press 'Ent', if the SC does not detect the speed sensor it will display "Turbine not connected". If it detects speed sensor, it will go into calibration mode. If SC does not detect speed sensor, then check it will communicate by connecting it to PC and running PC Analysis Software.

