

COXMATE

ADVANCED ELECTRONICS FOR ROWING

HC-Mtg-Kit Installation

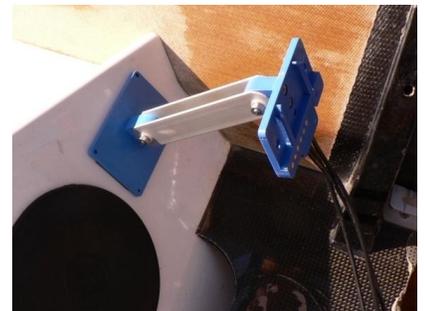
Installation:

This **HC Installation Kit** provides both the electrical and mechanical hardware for fitting **HC** into boat. The **HC Mounting Bracket** is permanently connected via cable to **speed sensor**, **seat sensor** and **auxiliary switch** for foot/leg operation. This bracket can be fitted directly to boat or via the double **hinged arm**. A variety of screws, cable ties, cable clips etc are provided to assist. There are four versions of kit available. The first three are the same, saving the speed sensor cable length – the three lengths are : 0.6m, 2.1m and 5.1m. The fourth is a Master/Slave configuration. This unit has two **Mounting Brackets**. The first connects to **speed sensor** etc., and links to second via a cable. The second is only connected to the first unit and displays the same information as the first.

The following parts are included in Kit:

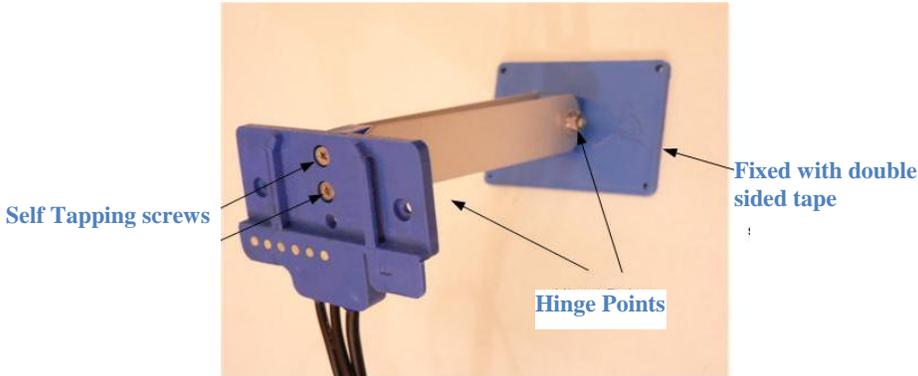
- **Hinged Arm** with 2 small self tapping screws for attaching **Mounting Bracket**
- **Mounting Bracket** with sensors attached:
- Speed Impeller, including:
 - Micro Impeller, fitted with double sided tape
 - Spare piece of double sided tape (clear)
- Seat/Stroke Magnet, including:
 - Magnet
 - 1 x Plastic Spacer
 - 4 x M4x20mm SS screw sets
 - 3 x ~35x25mm pieces of double sided tape (black)
- Double sided tape and fixings for installation:
 - 2 x ~70x30mm (Black) for connecting **Mounting Bracket** OR **Hinged Arm** to boat – one spare.
 - 2 x ~25x50mm (Black) for connecting **speed sensor** (pick up) to boat - one spare
 - 2 x ~25mm dia (Black) for connecting **auxiliary switch** to boat – one spare.
 - 8 x 20x20mm self adhesive cable clips
 - 3 x 25x25mm self adhesive cable tie pads
 - 3 x 100mm cable ties
 - 3 x alcohol swabs for cleaning surfaces
 - 2 x 7mm dia x3 mm magnets – to assist in locating
The impeller and speed sensor pick up.

Mounting Bracket/ Hinged Arm: Whilst the **Mounting Bracket** can be fitted direct to boat without the **Hinged Arm**, it is generally recommended the **Hinged Arm** is used. This allows adjustment for optimal viewing of the **HC**, and enables the whole mounting arrangement to be folded out of danger when boat is being stored or transported. The pictures on next page, show an example of both. The mounting should be positioned so **HC** can be easily viewed by rower, but not interfere with the rower. This will generally be somewhere near, or on the foot stretcher.



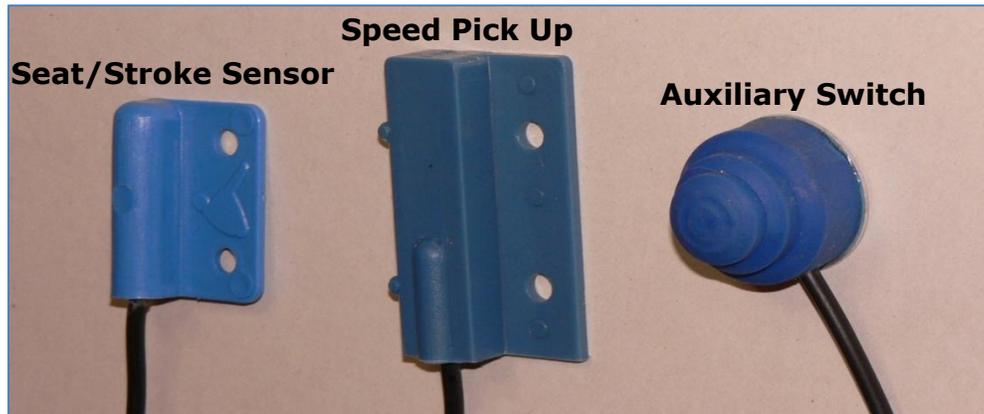
If a heart strap is to be used, then it is important for the HC to be mounted as close as practical to rower. The maximum recommended distance between chest strap and HC is 1150mm.

The **Mounting Bracket** is attached to the **Hinged Arm** with 2 small self tapping screws. Either the **Mounting Bracket** or the base of the **Hinged Arm** is connected to boat with the ~70x35mm double sided tape. Screws can also be used instead of tape (M3 or 1/8th inch – not supplied). The **Hinged Arm** has two friction hinges. These may need occasional adjustment – by tightening/loosening nut. The hinges are designed for regular use, e.g. to unfold/fold arm away when boat is used/stowed.



The Sensors

The three sensors are shown below:

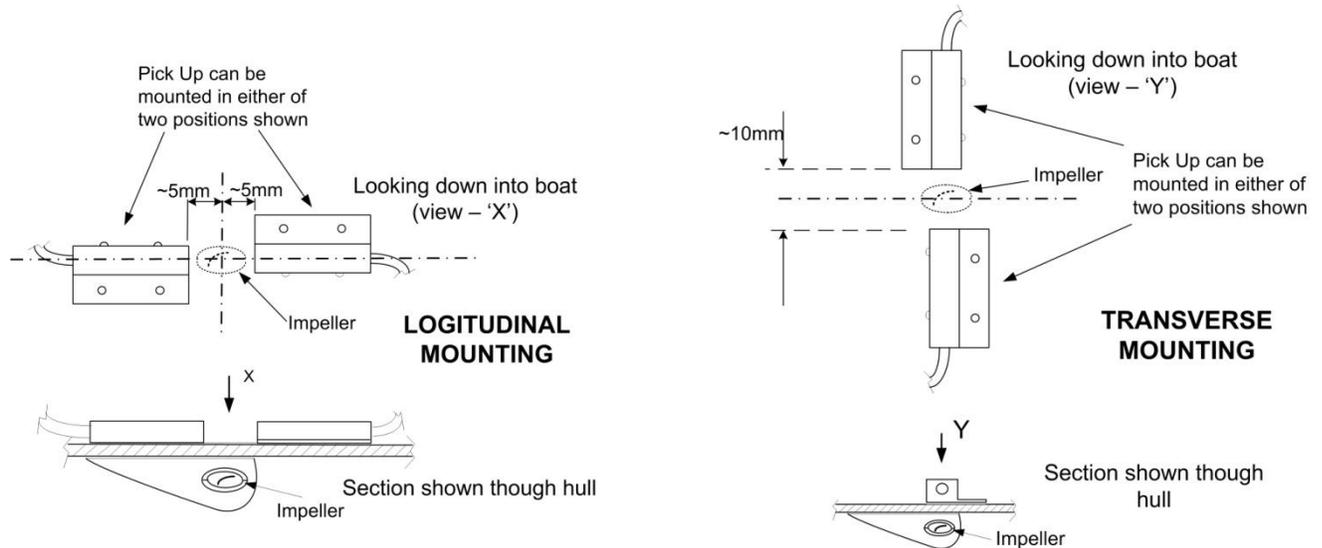


Speed Sensor:

The ideal mounting point for impeller is near the bow, and if a clean signal is desired for stroke velocity profile analysis, then it must be mounted within 2 metres of bow waterline (this does require a Mtg-Kit with adequate cable length). However most rowers do not use this analysis, and a more convenient position is under seat- Coxmate can supply special split cable gland which enables cables to be run through bulkhead without seat sensor etc attached. Mounting seat sensor and speed sensor under seat platform removes them out of harm's way, and makes for a neater installation.

The mounting of the impeller and speed sensor pick up is shown in following diagrams. Four mounting arrangements, two with the speed pick up longitudinal and two transverse to boat. To assist in positioning the sensor in respect to the impeller, the two 7mm diameter magnets – included in kit – can be used. Place one magnet on inside of hull and one on the inside.

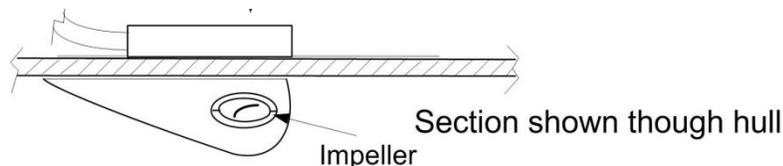
The alignment of the impeller fin is critical – it must be in line with the hull. It is helpful to use a long straight edge to align fin. It is generally recommended for the fin to be mounted at or within ~100mm from the centreline of the hull on a scull/double and up to 200mm for a four/eight.



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 without replacing tape. The hull must be clean and dry. If surface is not clean, a gentle rub with Scotchbrite™ or similar, and a wipe with an alcohol swab should be adequate. If the fin is to be removed from boat, then apply a steady force, to ease fin off. A knife can be used to separate fin from hull, but care should be taken to avoid hull damage. Wrenching fin off without care may result in damage to the gel coat or paint finish.

The speed Pick Up is also attached with double sided tape. Again it is important to have a clean dry surface. Sometimes it is difficult to achieve this as the inside of boats is sometimes hard to dry. If the double sided tape does not work, then standard adhesive sealants can be used – some commonly available acrylic sealants are suitable for wet surfaces.

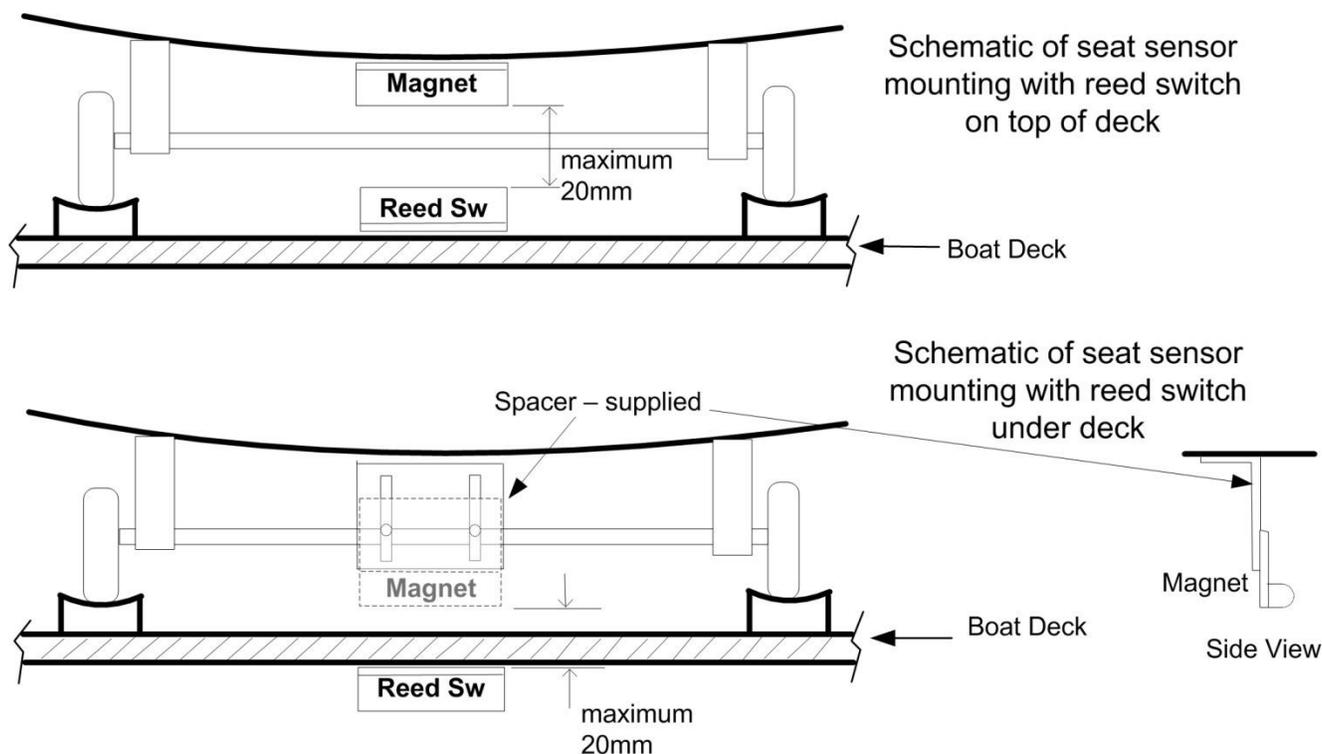
If you are using a Nielsen Kellerman pick up, it is less sensitive than the Coxmate one, and the relative position between Micro impeller and pick up is very critical - shown below:



To test speed sensor before putting boat in water, plug **HC** unit into **mounting bracket**, and start timer. Blow on impeller to cause it to spin. The **HC** should then register some distance. Remember the timer will stop if it does not see a stroke for 30 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. When the impellers spin there will be a feint 'whirring' noise. This is normal.

The Seat Sensor:

This has two components, a **magnet** and a **reed switch** (the one with the wires connected). The **magnet** mounts under the seat, and the **reed switch** mounts on or below the deck beneath the seat, such that the magnet passes over the **reed switch** every stroke. The **reed switch** should be positioned at approximately the midpoint of the seat slide. Each of the two components has two holes, and can be fitted with two screws or double sided tape – both are supplied. Remember to ensure surfaces are clean and dry if using double sided tape. A plastic adjustable spacer is also supplied to make it easy to space magnet away from seat. The following sketches show two options for the orientation of the reed switch and magnet, and an example on how the spacer can be used. The exact arrangement will depend on the structure of seat and slide. If there is a hatch cover on deck area under seat, make sure magnet will not interfere with it.



The Auxiliary Switch:

This waterproof switch can be affixed within ~1.5 metre of mounting bracket. It is supplied with two discs of double sided tape for mounting. One is a spare. The switch avoids the rower having to reach forward to start, stop and reset timer.

Determining the best location for switch may require some trial and error. It is wise to temporarily mount switch with duct tape or similar to help in this determination. It is difficult to determine the position if you are not seated in boat. Generally switch will be operated by heel (switch mounted adjacent to base of foot stretcher) or by the upper part of the lower leg (switch mounted on side of boat). The optimum position is influenced by type of shoes in boat, boat shape and personal preference.

Master Slave System;

If you are installing a Master/Slave system, then you will need to decide where the two units are to be located. The Master is installed as per standard unit – the Master bracket is the one with the three cables attached. It is generally preferable for the Master to be mounted nearer the bow, so the impeller can be mounted as near the bow as possible. (Note: The Master/Slave does not have an Auxiliary switch). The slave can be mounted up to 2 seats away – different lengths can be supplied on request. Mounting the Slave – the Slave bracket is the one with only one cable attached - only involves fixing the Mounting Bracket/Hinged Arm. The two units are then connected via the cable with the in-line connector.

