

# Are You Ready?

...to REVOLUTIONIZE coaching by transmitting performance data to the launch in REAL TIME?  
...to see HEART RATE together with performance data?



*Demonstration units  
available now!  
Call us for details.*

## **SpeedCoach<sup>®</sup>XL**

*"Up until now, especially when training over unmarked distances I have had to rely on questioning the crew after a piece to see if their speed improved as technique or rating changes were made. Now they can concentrate on their rowing, and I can give instant feedback to the crew"*

*Nick Garratt -Coach 2008 Quad*

*"I have found the SPC XL to be the most useful coaching tool marketed in the past 10 years. It significantly advances the quality of feedback I can provide when coaching more than one crew. It allows me to view in real time the boat speed, stroke rate and count along with time and distance covered of any crew I am coaching. I would recommend this tool to any internationally aspiring coach; its value to quality coaching should not be underestimated."*

*Dr Andrew Randell*

*Rowing Technical Coordinator, New South Wales Institute of Sport*

### **Transmit Data in Real Time (XL3 & 4)**

*Imagine the power of knowing your crew's speed and stroke rating immediately, stroke-by-stroke, and calling adjustments immediately when needed. No more quizzing the coxswain or rower at the end of the piece and hoping to get it right the next time! The SpeedCoach XL transmits all performance data (speed/split, distance, time, average speed/split, stroke rate, number of strokes, and heart rate) directly to the coach's launch, in real time, on a secure frequency. All data transmission is accurate, real time and digitally secured. Coaches can monitor **up to 9 different boats on separate channels**. Only XL's programmed with your frequency & security code can see your performance data, so there's **no interference** with passing crews, even on busy waterways. Each display unit is both a receiver and transmitter, maximizing versatility within your crew. While transmitting, you can "name" your unit (eg. Senior 8, or Mike's 1x) so your coach can easily tell which boat they are looking at. While receiving information, you can toggle between channels to monitor multiple boats, or use multiple display units to monitor more than one boat at once.*

**Heart Rate on the Display (XL2 & 4).**

**Customizable Menu-Driven Interface and Front-Mount Buttons.**

**Stores Data (1500 points in "Row Mode" & 500 points in "Workout Mode").**

**Upload Data to an optional Interface.**

**Compatible with all SpeedCoach Wiring.**

**Rechargeable Battery (up to 92 hours of use).**

**2 year warranty.**

**What's in the box? Control unit, charger, protective bumper, manual, HR receiver (XL2 & 4), integrated data Tx & Rx (XL3 & 4).**

# Which Coach is Best for You?

Every NK Coach measures stroke rate and time, is waterproof, has a 2 year warranty, plus these additional features:

All units come complete with an owners manual, rubber bumper & carry case.



STROKO COACH



SPEED COACH RED



SPEED COACH GOLD



SPEED COACH XL2



SPEED COACH XL3



SPEED COACH XL4

	Memory	Backlit Display	Batteries	Workouts	Heart Rate	Clock & Calendar	Real-Time Data Transmission to the launch
Strokes stroke rate every 10 seconds for one minute, then every 20 seconds for the next 10 minutes	Not Available	Not Available	1 * CR2032 battery, estimated life of 1600 hours (more than 3 years of average use).	Not Available	Not Available	Not Available	Not Available
25 Intervals of either 100m or 500m each.	Not Available	Not Available	1 * CR2032 battery, estimated life of 1600 hours (more than 3 years of average use).	Not Available	Not Available	Not Available	Not Available
500 Intervals that can be set to any distance, time or # of strokes. Optional computer interface.	Automatic in low-light conditions, can be set to come on every 2 or 3 strokes to preserve battery life.	Not Available	2 * CR2032 battery, estimated life of 600 hours, backlight life 20 hours.	1 workout with up to 100 intervals of any distance, time or # of strokes.	Not Available	Not Available	Not Available
1500 Intervals that can be set to any distance, time or # of strokes. Optional computer interface.	Automatic in low-light conditions.	Not Available	Rechargeable lithium-ion, estimated life before charging: 92 hours if backlight off, 39 if on.	5 workouts each of 20 intervals of any distance, time or # of strokes, stored with alpha-numeric name.	Sensor mounted by tracks, compatible with any coded or non-coded chest strap.	12 or 24-hour clock, with date and time stored with all data.	Not Available
1500 Intervals that can be set to any distance, time or # of strokes. Optional computer interface.	Automatic in low-light conditions.	Not Available	Rechargeable lithium-ion, life before charging: 13+ hours depending on radio & backlight usage (up to 92 hours).	5 workouts each of 20 intervals of any distance, time or # of strokes, stored with alpha-numeric name.	Not Available	12 or 24-hour clock, with date and time stored with all data.	Data transmitted 400+ meters on secure network, with up to 9 boats per network.
1500 Intervals that can be set to any distance, time or # of strokes. Optional computer interface.	Automatic in low-light conditions.	Not Available	Rechargeable lithium-ion, life before charging: 13+ hours depending on radio & backlight usage (up to 92 hours).	5 workouts each of 20 intervals of any distance, time or # of strokes, stored with alpha-numeric name.	Sensor mounted by tracks, compatible with any coded or non-coded chest strap.	12 or 24-hour clock, with date and time stored with all data.	Data transmitted 400+ meters on secure network, with up to 9 boats per network.

# SpeedCoach System

As a coxswain, the more information you have, the better. Add a SpeedCoach to your arsenal of tools, and you are sure to help your boat go faster. The SpeedCoach's immediate, quantitative performance data will help you better understand and respond to changes in boat speed. For instance, you and your crew can see if changes in technique and stroke rate are increasing the speed of the boat. You may find that concentration on quick catches is the key to efficient speed. Or, you might find that concentration on the catch generates nothing but check and slower speed, and your crew should try stretching out their lay back a few inches. If the boat speed jumps, you'll know that's a good technique modification to concentrate on.



Try this exercise using a SpeedCoach to determine your crew's most effective stroke rating: Start out rowing as a comfortable base rating. Every 20 strokes, increase the stroke rating 2 beats. Keep track of the speed of the boat during each shift up. As some point the hull speed will almost certainly start to decrease in spite of the shift up in rate. You will now know the maximum stroke rating that your crew should row at, whether for the start, base, or sprint of a race.

SpeedCoach wiring can simply be added to a coxed boat already equipped with a Cox-Box. When both units are present, use the Cox-Box for audio capabilities only and refer to the SpeedCoach for timing and measuring stroke rate, speed, and distance. The Cox-Box will continue to work normally whether or not the SpeedCoach is present.

## Stroke & SpeedCoach Accessories

### Bumpers & Lanyards

Rubber Bumpers come in an assortment of colours to personalise and protect your StrokeCoach, SpeedCoach, SpeedCoach Gold and SpeedCoach XL display units. Nine bumper colours to choose from: red, orange, yellow, green, blue, purple, pink, grey and white. Complete your color scheme with a replacement lanyard available in black and: red, orange, yellow, green, blue, purple, grey and white. All new units come with one bumper & a lanyard



included. Bumpers **Part# 0159 + colour**



### SpeedCoach Interface

The SpeedCoach Interface allows you to upload your stored data to a computer. Chart the results, review the data closely, or just keep it in an electronic log. Comes complete with downloading software. Compatible with SpeedCoach Gold and SpeedCoach XL. Interface USB port version **Part# 0162**

**Check out our new website at [www.nk.com.au](http://www.nk.com.au) all pricing is available from our website secure on-line shopping now available**



# Tough and Flexible. Just like the best rowers.

## Nielsen-Kellerman's All New Modular Harness System

You want to spend your time on rowing, not repairs. The unique engineering of NK's modular harness ensures improved durability and flexibility.

- Fully molded and sealed design to stand up to the harsh demands of rowing and environmental exposure.
- Build EVERY harness you need from three simple pieces. Even add on pieces as your budget allows.
- Affordable modules eliminate the need for repairs - simply plug in a new section if needed.
- Plug-in rate sensor for instant repairs and trouble-shooting.
- NK proprietary gold-plated pins and sockets resist corrosion.
- Lighter than the HD harness system (24oz/680g for 8-3 harness).
- Fully compatible with all NK speakers and Cox-Box systems.
- Full 3-year warranty: Date coded with month and year.

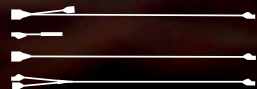
AVAILABLE NOW



**MODULAR**HARNESSES

### COMPONENTS (SEE BACK FOR TYPICAL CONFIGURATIONS)

1. A+ (AUDIO & RATE SENSOR)
2. R (RATE SENSOR)
3. A (AUDIO)
4. M (MULTI-SPEAKER)



**NEW!**

# cox box<sup>®</sup>

Nielsen-Kellerman, maker of outstanding rowing electronics for 30 years, is pleased to introduce the new Cox Box!



Hand/shoulder carrying strap for convenience

Three buttons make timing and recall simple – stores up to 256 splits and rates for 42 minutes of detailed race memory



6 hrs of usage per charge

Improved microphone connection  
reliable waterproof rubber and gold connectors

20% lighter than the previous Cox Box



Removable battery pack allows you to switch batteries on the fly and eliminates need to return to dealer for battery replacement

## BUMPERS

Mix and match rubber bumpers to customize and protect entire Cox Box!

## SOLID



## MIX-N-MATCH



Available early 2009  
Current Stainless Steel units are in stock & will be shipped

# CADENCE™ T1



The Cadence Wristrate Watch from NK is the latest in stroke rate and performance monitors. A full-featured digital sports watch, it can also be quickly and easily strapped onto a sculling or sweep oar for wireless stroke rate measurement. The patented tilt-switch technology calculates stroke rate based on the feathering interval. There are no wires to install, making the Cadence an especially great tool for rowers who use different boats. For the coach or spectator, the Cadence offers a large, dedicated rate button right on the face, allowing easy rate measurement at any time. It's even possible to take rates with one hand by simulating the feathering motion with the watch hand - great when driving a launch. Add in a 100-hour, 99-split chronograph, alarm, and smart auto-adjusting day/date calendar, and you have the complete rower's timepiece.

Customise the Cadence T1 with accessory ES-Wrap wrist straps in a rainbow of colours: red, orange, yellow, dark green, lime green, baby blue, navy blue, purple, burgundy, pink, grey.

# Interval<sup>®</sup> 2000 Split/Rate Watch

An essential tool for every rowing coach, the Interval 2000 packs lots of features in this compact package. Rate measurement, chronograph, and clock are just the beginning - the Interval also offers a 2000 split/rate multi-segment memory, on-the-fly recall and computer upload capability.

With 2000 splits and rates stored in the memory, you'll never need to jot down times again. Display, store and recall lap and cumulative splits, store rates in the memory with the time they were taken, and recall best and average splits.

Stroke Rates are a snap with the Interval. Unlike most stopwatches on the market, the Interval displays the rating right along with the splits, without changing modes. Measure the rate over 1, 2 or 3 strokes, and automatically store all rates or manually store selected rates.

Segmented memory allows you to store multiple sets of time - after timing one event, press the NEXT SEGMENT button to clear the screen. (These times will be stored). Then simply time the next event. Each segment is identified by start date and time. Over 600 segments can be stored, making the Interval ideal for timing complex practices and races.

Like all NK products, the Interval 2000 is completely waterproof, floats and is covered by a two-year warranty (covered for life by the Customer-Care Extended Warranty). The display backlight automatically activates in low light conditions, and the watch comes with a protective rubber cover in 6 different colours. **Part# 0130 + colour**



## Interval<sup>®</sup> Interface & WatchWare<sup>™</sup> Software

Use the WatchWare software and computer interface to turn your Interval watch into a coaching log. Organise, sort, review, print and export the data from your watch. Create an athlete roster and label split times and rates from uploaded workouts. You can even sort and filter times, and attach comments to athletes, splits, rates and segments. The Interval communicates optically with the Interface - simply rest the watch on the cradle and import the data.



### Accessories:

Protect and customise your Interval 2000 with a rubber cover in one of five colours. The cover provides excellent grip when using the watch, and can be reversed to cover and protect the window while not in use. Available in red, orange, yellow, green, blue, pink, purple, grey and white.



### Specifications:

- Stroke rating to 1/2 stroke or 1/100th second resolution.
- Buttons provide audible (beep) plus tactile (click) feedback.
- Batteries included. Replaceable CR2032 coin cell batteries provide 300+ hours.
- Interval Watch and Interface with WatchWare Software sold separately.
- WatchWare<sup>™</sup> System is PC compatible, and requires Windows<sup>®</sup> 95 or higher operating system, 32 MB of RAM, 60 MB HD space and available serial port or USB adapter.

Interface Serial port version **Part# 0131**

Interface USB port version **Part# 0132**

# Why we recommend placing the impeller between five to six metres from the bow.

**Laminar vs. Turbulent Flow:** On a rowing shell, two different kinds of flow are apparent. The smooth laminar flow at the bow (depending on the boat and speed, this can extend up to three metres from bow ball) and turbulent flow, all the little vortices along the hull that ultimately create the lovely sound of a fast moving boat. The laminar flow is very important to boat speed – laminar flow creates significantly less resistance. Therefore, everything has to be done to maintain laminar flow. Even the smallest disruption on the hull will create turbulent flow right away and create an undesired effect on the boat. Hence it's particularly important to keep the bow clean at all times and free of dents, scratches and tape. For this reason we avoid placing the impeller in the laminar flow.



**Accessibility:** A wireless pick-up of impeller measurement is a must to avoid drilling holes through the hull. Hence, a sensor needs to be placed as closely as possible to the spinning impeller. In most rowing shells, there is an easy placement for both around five to six metres from the bow (typically around the two-seat). Since the sensor should be somewhat protected from outside influence, we recommend to place it under the foot stretcher. Under no circumstances should it ever be necessary to drill holes into bulkheads or have wires dangling on bow decks.

**Boat pitch:** The vertical movement of the boat during each stroke needs to be accounted for, too. The impeller needs to be ideally placed where the flow conditions are consistent. Through the pitch, boundary layer thickness changes close to the bow. With our impeller position we have more stability and therefore more accuracy.

**Thickness of Turbulent Layer:** The layer of turbulent flow increases along the hull and also with increasing speed. Additional minor inaccuracies and differences in hull designs affect the boundary layer. To maintain consistent conditions that allow precise calibration, placement of the impeller between five and six metres from the bow works best for most accurate distance and speed measurement.

**Effect on steering:** Five to six metres from the bow, the impeller is relatively close to the turning point of a rowing shell, even an eight. If mounted in the bow, however, an impeller will act as a fin in front of the turning point and could have an adverse effect on steering of a shell.

**How much drag does the impeller create, and will it slow me down?** The hydrodynamic design of the NK impeller mount actually creates a fraction of the drag of a standard skeg. Laboratory tests were performed on the hull mount impeller to determine the drag effects on a rowing shell. For single sculls, the drag from the hull mount impeller is approximately 0.1% of the TOTAL boat drag, and proportionately smaller for larger boats. A larger size impeller does not equal more drag since it is placed in the turbulent flow, however, even the smallest object in or near the laminar flow will have a significant negative effect on boat speed (with no gains).





# Cox-Box<sup>®</sup>

At just about every boathouse and regatta in the world, coxswains can be seen sporting the signature NK blue head band and microphone while carrying the small stainless steel display unit. The Cox-Box is the product that started it all! Considered by tens of thousands to be essential equipment in any coxed boat, the Cox-Box shows time, stroke rate and stroke count while providing a powerful amplifier and speaker system that ensures that the coxswain's voice will be heard in every seat in the boat.

The Cox-Box system's accurate stroke rate, stroke count and timer give the coxswain the basic information needed to practice and race effectively. Whether calling a power ten or whispering a strategic race move, the coxswain can be sure that every seat in the boat will hear them through this powerful amplification system. The display is backlit, making it easy to read during early morning practices, and the timer works with a single toggle switch - easy to use even in cold conditions with gloved fingers. Wiring harnesses are ordered according to boat size and come with two or three speakers.

## Other Features and Specifications:

- Memory automatically stores stroke rate every 10 seconds for the first minute, then every 20 seconds for the next 10 minutes.
- Timer gives 1/10th second resolution and rolls back to 00:00.0 after reaching 59 minutes, 59 seconds.
- Timer automatically starts with first stroke.
- Backlit, large, easy to read liquid crystal display.
- Rechargeable NiCad battery with charger provides approximately 4 hours of operating charge, and car chargers are available. Batteries are factory replaceable.
- Stroke rate taken from a magnet and sensor mounted on the bottom of the stroke 1/2-stroke resolution.
- Unit measures 100mm diameter x 100mm high.
- Two speaker system weighs 1 kg complete.
- Stainless Steel can
- Solid GOLD plated sockets
- 2 YEAR WARRANTY
- Customer Care service available

## Cox-Box Accessories

### Coxswain Kit

Everything a coxswain needs on the water for practice! Carry a Cox-Box, tools and supplies hands-free. Kit includes: pack with Cox-Box holder, 7/16", 10 mm and adjustable wrenches, athletic tape, electrical tape, 2 carabineers, sunscreen, lip balm and blister medic kit.

**Part# 4050**



### Cox-Box Audio Adapter

This adapter allows the microphone as well as another audio device to be plugged into the BNC connector on the Cox-Box. Coaches can use 2-way radios with the adapter to speak through the Cox-Box amplification system, making the adapter an ideal solution for megaphone-free rivers and lakes. Coxswains can use the adapter with digital recorders to record their race and practice calls for off-the-water review. Crews can plug in an iPod or other digital music player to listen to music during workouts. Adapter comes with either 2.5 mm or 3.5 mm size jack. Please refer to our web site for commonly used radios. Part# 0237 (2.5mm) or 0239 (3.5mm)

### Cox-Box Maintenance Kit

Regular maintenance of the sockets and plugs on your electronics will keep them working well for years to come. This kit has everything you need to take care of all the sockets and plugs in your Cox-Box, Cox-Vox and wiring harness. Includes silicone grease, Nyogel grease, applicators, drill bit, screwdriver, and detailed pictorial instructions. **Part# 0230**



# Training with Speed

NK developed the first SpeedCoach more than 10 years ago, and thousands of rowers and coaches have relied on it to help them train more effectively. We're continually making changes and improvements to the SpeedCoach line to make them easier to use, and better performing. Here are some of the common questions we get about the SpeedCoach line of products.

## **How does the SpeedCoach Help Me to train more effectively?**

The SpeedCoach can be such an influential training tool by giving you immediate, quantitative feedback on the way the boat is moving. Did a rigging change help? How about concentrating on quicker catches? If the boat is going faster, then yes, it did. This immediate information is especially valuable for rowers who don't have a coach with them all the time, for coxswains who are making critical race plan decisions, and for coaches who are determining the fastest combinations through seat racing. Strokes of coxed boats can also benefit from the information the SpeedCoach provides - and giving them their own display unit lets them see the stroke rating and boat speed without having to be told by the coxswain. They will know immediately when the stroke rate starts to vary, and they will be able to confirm stroke rate changes on the second stroke.

For maximum benefit, give every rower in the boat their own display unit. NK provides specific wiring for each individual seat in the boat. Multiple wiring harnesses' speed sensors can use the same impeller, allowing every rower to see the same information at the same time. The motivational power of seeing the speed jump when the crew makes a move is tremendous. Elite crews are training with multiple SpeedCoach setups and seeing the benefits of the results.

## **How does the current affect the speed readings?**

The SpeedCoach accurately measures speed and distance through the water so current does not affect your workout distances or times over those distances. By using the distance shown on the SpeedCoach instead of a land-measured distance, you will always be rowing the same length piece regardless of current. This is because the impeller on the boat doesn't 'see' the current in the water. To the impeller, you are always sitting on still water.

If this is a little confusing, imagine sitting in a current without rowing. One minute later, your boat will have traveled some distance down river, even though you haven't rowed a single stroke. The SpeedCoach will read a distance of 0 metres. Conversely, if you row upstream at the exact speed of the current, the SpeedCoach will display this speed and track the distance traveled even though you will appear to be making no forward progress on land.

The benefit of this is that you can compare times for upstream and downstream pieces of equal length measured by the SpeedCoach. For example, if you row a land-measured 2000 metre course both upstream and downstream, this is how far you might have actually rowed through the water and the corresponding time to finish the piece:

	Upstream	Downstream
Actual Distance Rowed (m)	2200	1800
Time (min:sec)	7:30	7:00

You would not be able to compare these times because the pieces on-land measurements were affected by the current, and so were actually different distances.

Next workout, ignore the land course and use the SpeedCoach to measure the 2000 meters rowed. Now look at the distance and time for the piece:

	Upstream	Downstream
Actual Distance Rowed (m)	2000	2000
Time (min:sec)	7:15	7:17

(This crew showed some fatigue on the second piece)

The SpeedCoach eliminates the effect of the current on the time of the piece. Now you can compare pieces from day to day and in any current.

## **How much drag does the impeller create, and will it slow me down?**

The hydrodynamic design of the NK impeller mount actually creates a fraction of the drag of a standard skeg. Laboratory tests were performed on the hull mount impeller to determine the drag effects on a rowing shell. For single sculls, the drag from the hull mount impeller is approximately 0.1% of the TOTAL boat drag, and proportionately smaller for larger boats.

## **What about other performance measurements?**

Force, acceleration, check, drag... these are all pieces of information that coaches ask us about. But it all boils down to one critical measurement- and that's boat speed. The boat with the least amount of check isn't necessarily the boat that crosses the finish line first. That's why NK has focused on developing the best measurement electronics for boat speed - it's what wins races, and we believe if you train with that focus, you will go faster.

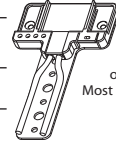
# SpeedCoach® Configuration Guide

## Shell Setup Includes:

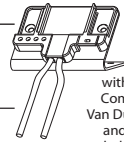
Mounting Dock with VHB Tape, Seat Sensor, Seat Magnet, Speed Sensor, Hull mount (with Impeller)

OPTIONAL: Mounting Bracket #0280 (T) or #0282 (Deck)

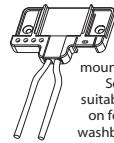
	1x	2x 2+ 2-	4x 4+ 4-	8+	Wiring Harness	Typical Bracket	Speed Cable Length	Rate Cable Length
	<b>Bow Cox</b>		<b>Bow Cox</b>		<b>3166</b>	<b>0282</b>	<b>3.66m</b>	<b>2.13m</b>
	<b>Bow</b>		<b>Bow</b>		<b>3155</b>	<b>0280</b>	<b>0.91m</b>	<b>1.68m</b>
	<b>Stroke</b>		<b>2 Seat</b>		<b>3165</b>	<b>0280</b>	<b>2.13m</b>	<b>1.68m</b>
	<b>Stern Cox</b>		<b>3 Seat</b>		<b>3166</b>	<b>0280</b>	<b>3.66m</b>	<b>2.13m</b>
			<b>Stroke</b>		<b>3168</b>	<b>0280</b>	<b>5.79m</b>	<b>2.13m</b>
			<b>Stern Cox</b>		<b>3172</b>	<b>0280</b>	<b>10.06m</b>	<b>2.13m</b>
			<b>6 Seat</b>		NOTE 6 & 7 Seats will have extra length. May coil extra length or order custom harness (extra cost). Sectioned harness also available for #3172 (extra cost)			
			<b>7 Seat</b>					
			<b>Stroke</b>					
			<b>Stern Cox</b>					



**0280 T-Bracket**  
Installs on footstretcher or wall of cockpit. Most commonly used.



**0282 Angle Bracket**  
Installs on deck or wing rigger with dual-lock tape. Commonly used for Van Dusen, Maas Aero and Kayaks. May be helpful for bow cox (can be rotated 90° and mounted on hull interior).



**No Bracket**  
Harness dock comes with VHB mounting tape applied. Some boats have a suitable mounting area on footstretcher plate, washbox or cockpit and do not require bracket.



**0151 HULL MOUNT**

Includes hull mount, impeller & VHB Tape



**3000 REPLACEMENT IMPELLER UNIT**  
Screws into existing hull mount

### KAYAKS

Stroke rate from paddle tilt switch



3160 0282 1.83m 1.07m

### CANOE (HIGH-KNEEL OR OC-1)

Stroke rate from impeller's speed



3161 0280, 0282 or None 1.07m no rate sensor

### KAYAKS

No stroke rate, speed only



3161 0280 or None 1.07m no rate sensor

### DRAGON BOAT

Stroke rate from impeller's speed

3166 0282 or None 3.66m no rate sensor

### SURF BOAT

Stroke rate from impeller's speed

3161 0282 or None 1.07m no rate sensor



**0152 Two piece Hull Mount**  
Optional removable hull mount. Suitable for Kayaks, Dragon Boats & Surf Boats (requires a #3000 impeller).

### Mounting Hardware

All required mounting hardware is shipped WITH the mounting bracket - screws and nuts, bolts with T-Bracket. Dual-Lock tape with Angle-Bracket.

## INSTALLING THE SPEED SENSOR & IMPELLER

On a rowing shell, the SpeedCoach unit is factory calibrated for correct readings with the impeller installed at 5 to 6 meters from the bow of the boat. This location will typically fall under the footstretchers of a single, or around two seat of a larger boat. Installing the impeller in this location should yield accurate performance even if you don't calibrate your unit. All boats produce a boundary layer of turbulent water from about 2 to 3 metres from the bow to the stern. The first 2 - 3 metres typically fall in the area of the laminar layer. This where the boat cuts through the water, with hardly any turbulence (depending on size and speed). Anything within the first 4 metres of the boat will have a significantly higher effect on the friction drag of the hull, always keep it clean and avoid any kind of disturbance, even a piece of tape. An impeller in that area will also have a negative effect on the way the boat runs, partic steering! If need be, you can put the Impeller at up to 8 metres, but you may need to calibrate. You should avoid placing the impeller farther than 8 metres the bow because the water will be too turbulent for the impeller to spin consistently, so accuracy might be compromised - even if calibrated.

# Contact Info

**Nielsen Kellerman Australia Pty Ltd**

## Delivery Address

(Please send all parcels to this address)

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Oxley Island NSW 2430 AUSTRALIA


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Revised June 2014



**Check out our new website at [www.nk.com.au](http://www.nk.com.au)  
all pricing is available from our website  
secure on-line shopping now available**

## **NK Rowing Electronics Warranty & Service**

NK does not believe in "disposable electronics." We know our products don't lead a pampered life, and we design them for years of performance in tough conditions. We guarantee every NK product to be free of defects in materials and workmanship for a period of TWO YEARS from your date of purchase. We will repair or replace any defective product or part when notified within the warranty period, and will return the product via domestic ground shipping at no charge. The following issues do not result from a manufacturing defect and are not covered under this warranty: damage due to improper use or neglect, including corrosion; impact damage; modifications or attempted repairs by someone other than an authorized NK repair agent; normal wear and tear; failed batteries. NK wants you to be an NK customer for life, so we take care of you even beyond the terms of the normal product warranty with our Customer Care Program. Trade-in any NK display unit, no matter the age or condition, and receive a generous discount on the replacement product.

**Visit [www.nk.com.au](http://www.nk.com.au) at any time for detailed product specifications & troubleshooting guides.**