The Coxmate SX Manual

1. Introduction:

The SX provides audio amplification, feedback of rowing performance to cox: – rate, speed, distance, time, and, much more. The unit has large memory capacity for storing rowing data, which can be downloaded to a PC and analysed. An inbuilt GPS is included to provide speed and distance information. SX also has provision for connection to an impeller.

2. Features:

- Inbuilt GPS. Optional Impeller. GPS can be used to calibrate impeller. Just row 250 metres in a straight line in both directions, and SX will automatically calibrate impeller.
- USB interface for PC connection
- Compact, lightweight and tough enclosure.
- Standard input connector for external radio – for coach to crew communication.
- High contrast display with backlight. Displays Rate, Speed, Time and Distance in default mode. Can be configured for Average Speed, Stroke Count, Dist/Stroke, and Speed Ratio(minimum speed/maximum speed for each stroke – requires impeller).
- Long life large capacity rechargeable 800mAh NiMH batteries.
- Digital audio amplifier increases battery life by 60%
- Substantial memory for storing data and a real time clock for time/date stamping rowing records. Data can be stored in 'micro' detail (speed recorded every 20mS – only relevant if impeller used) or 'macro' (details of each stroke recorded). In micro mode up to 4 hours and in macro mode over 60 hours rowing can be recorded. An optional PC link and Analysis Software package is available.
- 3 modes of operation: RUN – normal mode; PACE - set up a pace boat to race against, and WORKOUT - the SX has 6 Workout programmes. Each Workout has up to 60 steps. Speed, and Rate can be programmed against time or distance. Workout programme can be edited on SX, but PC Link and Analysis Software make task easier and provide more options – eg infinite number of workout programmes can be stored on PC.
- Adjustable bracket for mounting in boat – enables both position and viewing angle to be optimised. It is also supplied with an adaptor for fitting into NK CoxBox™ cup.

- Will operate with both the Coxmate Micro, Standard or Jumbo impeller or NK impeller. Micro impeller is a significant improvement over existing impellers, dramatically reducing drag, susceptibility to damage and weed contamination. Jumbo impeller is for temporary use to analyse boat speed.
- A 'Lock/Unlock' function can be used to disable/enable the more complex functions.

3. Installation

The kit comes with an adjustable bracket which is fitted into boat. It can be fitted into boat with either double sided tape or four M3x20 stainless steel screws/washers/nuts, both the tape and screws are supplied. Generally the tape is easier to use. Make sure surface is clean and dry – a light abrasion with Scotchbrite® or similar will help clean surface. The mounting kit also has an alcohol swab to help clean surface. The bracket can be mounted on any flat surface – horizontal, vertical or sloping. If the bracket is affixed with the tape, then it is wise to avoid placing too much stress on it for the first 24hours.

The adjustment of bracket makes selection of mounting position easier. The bracket has two friction hinges which are designed to enable regular adjustment. The tension on them can be adjusted with the two wing nuts. To fit the **SX** to mounting bracket, place it on plate – it is held in place with magnets. The adjacent picture shows SX being presented to bracket. To connect to speakers, connect the four pin rubber connector. Plug microphone into socket on faceplate marked 'MIC'. Two other optional connections can be made: Impeller pick up can be plugged into socket on side, and, an external radio can be plugged into a 3.5mm jack on faceplate, marked 'RADIO'.

4. Operation:

4.1 Overview

4.2 Connections: The **SX** connects, via the standard 4 pin rubber connector to speakers and seat sensor. Microphone is connected via 3.5mm waterproofed jack on face plate. There are two other 3.5mm waterproof jacks, one on the front for connecting to external radio – for coach to crew communication and one on the side for connection to impeller.

4.3 Buttons: The two buttons on top right are for volume control. The other set of four buttons provide two functions:

- [**Menu**], [▲], [▼]) and [**Ent**] for configuring unit
- ⏻ for power, and [**Start**],[**Stop**] and [**Reset**] for timer control
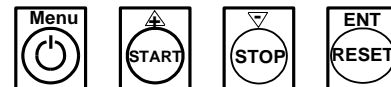
4.4 Lock/Unlock

The **SX** is a powerful device with a vast array of capabilities. The downside of this is coxes can be confused by getting into areas where they aren't familiar with. To avoid this the **SX** has a 'Lock' function which prevents the operator from reconfiguring system.

This 'Lock' disables the operating Mode change and all the Set Up functions except calibration. The Lock/Unlock is accessed by pressing [**Menu**] 5 times in quick succession when in the ready '***Rdy***' state. The [▲] and [▼] will set the lock ***On*** or ***OFF*** .

To change the configuration of unit it is necessary to unlock it. Once changes have been made it can then be relocked.

4.5 ON/OFF

ON: Press ⏻

When the unit is turned on, it displays in sequence, the following information about the unit. Some of the listed functions can be configured - to configure, press [**Ent**] when function is shown:

- Displays software version eg ***v1.05***
- Displays ***Lo Batt*** if battery low
- Select speed sensor: Press [**Ent**]. When ***SPd SEnS*** displayed: Will be either ***GPS*** or ***IMP.*** [▲] and [▼] will change selection. Then press [**Ent**].
- Set date. Press [**Ent**] when date displayed, use [▲] and [▼] to adjust numbers and [**Ent**] to step on to next digit(s). Press **[Menu]** when done.
- Set ***Alarm.*** Press [**Ent**] when alarm time displayed to enter an alarm time, then use, use [▲] and [▼] to adjust numbers and [**Ent**] to step on to next digit(s). Press **[Menu]** when done.
- Displays ***Batt***ery percentage
- Displays ***vOL***ume setting
- Displays ***RdY*** (ready).

If GPS is selected unit will briefly show ***Conn GPS*** whilst it is connecting to GPS, then after start up, it will flash ***gPS*** top right, indicating it is looking for satellites. Normally it will take around a minute to find satellites. However in some circumstances, eg if you are several hundred kilometres, from the position unit was last used, it could take up to five minutes. Once GPS has found satellites the speed value will replace '***gPS'*** on top right display***.*** Note: Unit must have clear view of sky to find satellites.

OFF: Press ⏻ for 2 seconds, or, unit will automatically turn off after a few minutes, if it is not being used.

4.6 Volume:

Adjust Vol: Use **Vol [+]** and **[-]**

Mute: Vol [+] and **[-]** at same time. Press either **Vol [+]** or **[-]** to release

Note: Unit will remember volume setting, even if turned OFF.

4.7 Battery: Displays *Batt %* on start up. Otherwise hold down **Vol [+]** or **[-]** for 2 seconds.

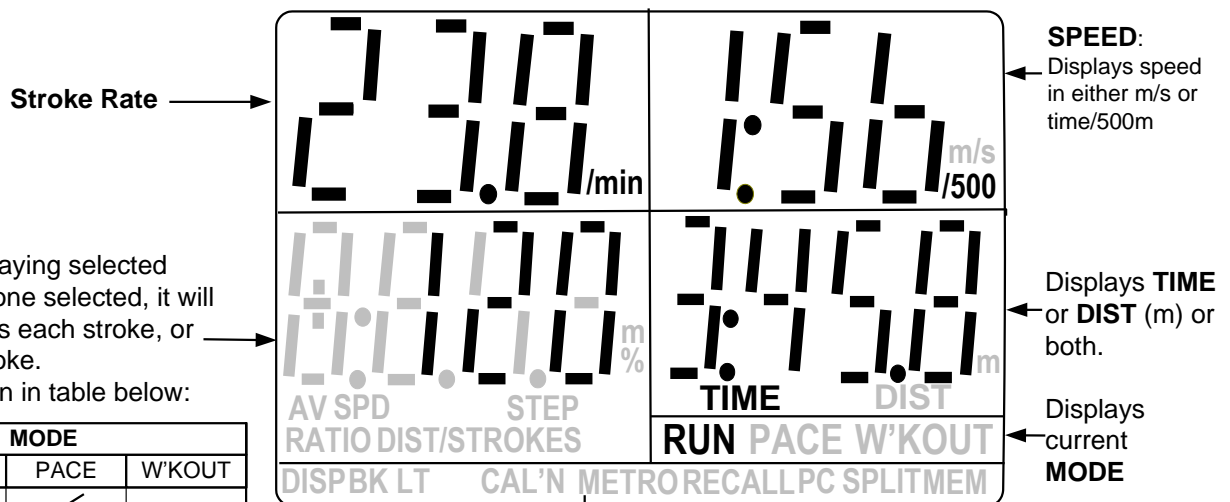## 4.8 Timer: Use buttons: **Start**, **Stop** and **Reset.**

Status displayed:

- Ready (*Rdy*) – displayed at start up and after reset
- Set (*Set*) –   After press of **Start** , timer will start from seat sensor or another press of **Start**;
- Stop(*StP*) -   After press of **Stop**, or no stroke sensed* time will flash, alternating with **(*StP*)**

* If no stroke sensed timer will stop after 30 seconds – this period can be changed – see section 9.

4.9 Display: As supplied, the unit is in **RUN** mode with **Rate** (Strokes per minute) and **Speed** (Time per 500m) displayed on top line. When the timer is started, distance(metres) and time will be displayed on lower line. The display can be configured for a variety of other variables eg Stroke count, distance per stroke, speed in m/s. To change configuration, see section 6.

The full array of display options is shown below:

Stroke Rate → (top left display /min)

SPEED: Displays speed in either m/s or time/500m (top right display /500 m/s)

Feature Display, for displaying selected variable(s). If more than one selected, it will switch between selections each stroke, or every 4 seconds if no stroke.
Display options are shown in table below:

Displays **TIME** or **DIST** (m) or both.

Displays current **MODE**

VARIABLE	MODE		
	RUN	PACE	W'KOUT
AV SPD	✓	✓	
STEP			✓ *
RATIO	✓	✓	✓
DIST	✓	✓ *	✓
DIST/STROKE	✓	✓	✓
STROKES	✓	✓	✓

*These selections are mandatory

Shows current SET Up function:
DISP: For selecting variables and units for display
BK LT: For setting brightness level of backlight
CAL'N: For calibrating speed sensor
METRO: For setting metronome frequency and turning ON/OFF
RECALL: For recalling speed and rate last time timer was run.
PC: On when connected to PC and for selecting Macro/Micro data storage
SPLIT: For displaying average speed rate etc at the end of set SPLIT distance
MEM: for checking memory usage and clearing memory

5. Operating Modes

There are three operating Modes **RUN, PACE** and **W'KOUT.** To change mode, press [**Menu**] once when in **Rdy**(Ready) state, **Mode** will be displayed, then [▲] and [▼] to select and [**Ent**].

- **RUN** Mode: The default display is Rate and Speed on upper line and Distance and Time on lower line. Time and Distance are only displayed when Timer is running. See 4.9 for other display options
- **PACE** Mode: The default display is Rate and Speed on upper line and Distance, in front of or behind PACE boat, lower left and total Distance lower right. Distances are only displayed when Timer is running. See 4.9 for other display options. To set PACE boat speed, press [**Ent**] when in **Rdy**(Ready) state, use [▲] and [▼] to adjust and [**Ent**].
- **W'KOUT** Mode: The default display is Rate and Speed on upper line, STEP lower left and Time lower right. The time counts down, indicating how much time is left on current step. See 4.9 for other display options When step complete new set values are flashed for 5 seconds. These values will also be displayed if [**Start**] button pressed.

6 . Set Up

To go into **Set Up** press [**Menu**] twice when in **Rdy**(Ready) state. **Set UP** will flash. Note: unit must be in unlocked state (see section 4.4) to access all set up options.

The Set Up options are shown at the lowest line of display: **DISP, BK LT,CAL'N, METRO, RECALL,PC,**

Use the [▲] and [▼] to select option:

- **DISP:** For selecting which variables are to be displayed. It will show current selections when first selected. If [**Ent**] pressed it will then show first display option (AV SPD). [▲] and [▼] will move through all the options. To select or deselect an option press [**Ent**], it will display steady if it is selected and flashing it is NOT selected. See 4.9 for display options. Use [**Menu**] to exit.
- **BK LT:** Displays backlight brightness. Press [**Ent**] and use [▲] and [▼] to adjust. Use [**Menu**] to exit.
- **CAL'N:** Calibration. If unit is set up for IMP (impeller) speed sensor, then this provides access to impeller type selection and manual calibration. If unit is set up for GPS calibration, then is provides access to GPS calibration of impeller. See section 7 for more details.
- **METRO:** Pressing [**Ent**] will access the frequency adjustment and turning metronome ON/OFF.
- **RECALL:** Pressing [**Ent**] will access the rating and speed when the timer was last run. Initially unit will display the total time with overall average values of rating and speed. The [▲] and [▼] buttons will step through the record in 15 or 30 seconds increments. The **Vol [+]** and **[-]** buttons will toggle between 15 and 30 seconds.
- **PC: T**his will turn on if unit connected via USB to PC. See section 12.
- **SPLIT:** Provides option to set SPLIT distance of 100, 250 or 500metres. Select **nOnE** if not required. If a split distance is selected, then at the end of every split distance interval, the unit will flash the average values, eg speed rating and time for that interval for 5 seconds.
- **MEM:** Indicate memory usage as a percentage , and enables memory to be cleared.

7. Calibration

If you are using an impeller speed sensor, then it will require calibration if you wish to have an accurate reading. If you are using an impeller other than the Coxmate Micro – the standard one supplied, then you must select the correct impeller type – see end of this section. This selection is important for high accuracy, because different impellers have different linearity characteristics and accuracy will be compromised if the correct one is not selected. Calibration can be achieved by using the inbuilt GPS or by the conventional method of rowing over a known distance, and adjusting K value – see below.

To use GPS for auto calibration, set unit for **GPS** speed sensor – it will be necessary to turn unit OFF/On to make this selection - see section 4.5. Then go to **Set Up/CAL'N** and press **[Ent].** (If unit is 'locked' just press [Menu] once to go to **Set Up/CAL'N**) **.** *CAL IMP* will be displayed. Press **[Ent]** and *GO* will be displayed. Start rowing in straight line – the calibration start is triggered by speed exceeding ~2.5m/s. Unit will then display countdown from 10 seconds – this is to ensure GPS speed signal has stabilised. Once countdown complete distance travelled will be shown. When you have travelled 250 metres, unit will display '*Stop'* and *'Turn'.* Turn, and row back the other way for 250 metres. Press **[Ent]** , and new K value will be displayed. If you are on still water with no wind, then you only need to row until '*Turn'* is displayed and press **[Ent]** twice – it will bypass second 250 metre leg, and display new K value. If you want to run with impeller speed sensor, don't forget to reset the speed sensor selection to impeller.

To perform manual calibration, unit must be set up for impeller speed sensor, and you must row over a known distance. Record distance displayed on **SX**, Then go to **Set Up/CAL'N** and press **[Ent].** (If unit is 'locked' just press [Menu] once to go to **Set Up/CAL'N**)
The current K value will be displayed. Press **[Ent]** and *MAn* will appear. Pressing **[Ent]** again will show K value flashing. Use [▲] and [▼] buttons to adjust as required. See below for value. Once new value is set, exit with **[Menu]** button twice.

.   The new K value is determined as follows:

$$\text{New K} = (\text{Old K}) \times \frac{(\text{known distance})}{(\text{distance recorded on HC})}$$

An example: Old K= 1.000. You row over 500metres known distance and the **SX** registers 480metres.

$$\text{New K} = 1.000 \times \frac{500}{480} = 1.042$$

The Coxmate SX is supplied with a default K value of 1.000, and configured for a Coxmate Micro impeller – the standard one supplied by Coxmate. If installed as recommended – 3 metres from bow waterline - this will give an accuracy of a few per cent without any in- boat calibration, assuming it is correctly mounted. If an NK impeller is being used, then the SX should be configured for an NK impeller, and the same accuracy will apply. The HC has 3 impeller selections: Coxmate Micro impeller (**CMt**), NK impeller (**nK**), and a special (**SPEC**) which is available for other impellers.
Impellers do not provide a linear change in frequency with change in speed, and this non linearity is different for different impellers. The selection of impeller ensures the correct linearising curve is applied, increasing accuracy. If an (**nK**) impeller is selected, then if the same K value is entered, it will SX will display same speed value as NK Speedcoach™.
Selecting Impeller. (SX must be 'Unlocked'). Go to **Set Up/CAL'N** and press **[Ent].** *MAn* will flash, press [▲] or [▼] and '**SEL IMP'** will be displayed. Press **[Ent]**, and you can scroll through the 3 options: Coxmate Micro impeller (**CMt**), NK impeller (**nK**), and a special (**SPEC**). The special is provided for future use.

8. Changing Timer 'Auto' stop

If no strokes are detected, the timer will automatically stop – this avoids wasting memory. The default for this is 30 seconds. However in some circumstances, eg when surfing a wave in a surf boat, this may last longer than 30 seconds and you may wish to keep Timer and recording running. To adjust this auto stop period, go to **Set Up/METRO** (Metronome). Hold **[Ent]** button down for 3 seconds. Lower left will show **StOP** and lower right the auto stop period. Press **[Ent]** then use [▲] and [▼] buttons to step through options - 30 seconds, 2 minutes, 10minutes and '00'which turns 'Auto Stop' OFF.

9. Speed Ratio(Check Factor)

The '**Ratio**' value displayed is the percentage ratio of minimum to maximum speed for each stroke. It indicates the degree of 'checking' – the higher the value the less the checking. This value is influenced by the level of turbulent noise. Whilst the **SX** has complex filtering to remove the noise component, the quality of this reading will always be improved with a 'clean ' signal eg with impeller mounted near bow. This reading is averaged over 5 strokes.

10. Operating Without Seat Sensor

If you are in a vessel which does not have a seat sensor eg a Dragon Boat, then the unit must be set up accordingly. Go into **Set Up** and select (use [▲], [▼] buttons) **Cal**. Hold **[Ent]** button down for 3 seconds. If unit operating with seat sensor display will show **0000** (lower left), and **SS** (lower right). The **0000** can be adjusted with [▲] and [▼] buttons. The value can be adjusted between **0000** and **0050**. If the value is not **0000** then lower right will display noSS (no seat sensor). The setting of this value will depend on type of craft. ForDragon Boats it will be ~4-6, for kayaks it will be low ~2 or 3, and for a sculling boat it will be ~10-20. The lower value will give a greater sensitivity to small speed variations through stroke, and the higher value will make unit less sensitive to false triggering due to turbulent noise. Mounting impeller near to bow will always improve reliability if noise is a problem.

11. Memory/Data Storage

The **SX** stores rowing data whenever the Timer is running. The data stored includes speed, heart rate (if used), rate and speed ratio. The data can be store in either **Micro** detail, where speed is recorded every 20mS, or **Macro** detail, where the average speed for stroke is recorded. In **Micro ,** approx 4 hours of rowing can be stored, and, in **Macro** approx 60 hours (over 100,000 strokes!) can be stored. Each time Timer is started a new record, which is time and date stamped is created. There is no practical limit on the number of records which can be stored. Unless impeller is mounted in a position where there is little noise, and you are interested in analysing the stroke speed profile, then **Macro** should be selected. All the rowing data can be downloaded to PC and analysed with Coxmate PC Analysis Software- PC Interface and software is optional extra.

To check how much memory has been used, to clear memory, or to select **Micro** or **Macro** detail, go into **Set Up** and select (use [▲], [▼] buttons) **MEM.** It will display memory used eg '5% USEd' . Press Ent again and it will display 'CLR?'. Press Ent to clear memory. To change **Micro**/ **Macro;** when memory used eg '5% USEd' is displayed, hold Ent key down for 2 seconds, and use [▲], [▼] buttons to select either **Micro** or **Macro.**

12. PC Connection

To connect to PC, remove the black screw cover on USB port. See section 4.1. Then plug USB cable – supplied with PC Analysis Kit – into PC and **SX.** Once **SX** identifies a PC is connected it will display **Set UP** flashing and **PC** on bottom line.

13.Recall

If you don't have a PC, and want a quick look at your rowing data for the race you just had, then you can use the Recall. Go to **Set Up/RECALL** and press **[Ent]** It will show the total time and average Rating and Speed for duration of record. The [▲], [▼] buttons will step through the record in increments of 15 or 30 seconds. To change between 15 and 30 seconds, press Reset battery % to 0% by pressing Ent and Vol+ down for 10 seconds – open to other suggestions!The recorded data will be lost once Timer is restarted.

14.Split

If a SPLIT distance is set, the **SX** will beep each time the split distance has been rowed and display the Time, Average Speed and Rate for the distance. The display will flash this data for 5 seconds, and then resume normal operation. To set split distance go into **Set Up/SPLIT** and select (using [▲], [▼] buttons), **SPLIT.** Press **Ent,** and
[▲], [▼] buttons to scroll through **nOnE. 100, 250** and **500** metres. Press **Ent** to select.

15. Clock

The unit has a built in real time clock. This only shows time and date on power up. Its main purposes are for time and date stamping of records which are transferred to PC and alarm function. To adjust/set time, press **Ent** when time is displayed on power up.

16. Battery Management

The unit is fitted with 800mAH NiMH rechargeable batteries. Batteries should be charged no less than once every 3 months. It is detrimental for them to be left flat for long periods eg the Winter months when you may not be able to row. If your unit is only used for part of the year, then it is recommended you leave unit connected to charger which is connected to a low cost timer. Timer should be set to come on for around 10 minutes per day, or pro rata for a week.
Batteries can be replaced by removing 4 screws from rear of unit. Push face plate out by pushing small screwdriver or similar into one of the 4 screw holes. Note position of battery. Then carefully lift old battery out, unplug from circuit board, plug in new battery and carefully position in base of unit. Make sure no wires are trapped or caught up with stand-offs as you replace face plate. Refit and firmly tighten four screws. There are to types of battery packs used – either 10 or 12 cells. If unit has a 12 cell pack, then it must be charged with a 19.5Vcharger – there is a label adjacent to charge socket indicating same. If unit has 10 cells, then it can be charged with either a 16.6V or 19.5V charger. Firmware versions V1.21 and up and V2.33 and up, then there are a number of extra features. (The V*1*.xx and V*2*.xx denote different circuit board versions).
- The battery voltage can be displayed by pressing both **Vol [+]** and **[-]** buttons whilst charging.
- The batt% can be forced to 0% by holding both **Ent** and **Vol [-]** down for 10 seconds.
- If the wrong charger is connected, unit will display *Lo voLts* when charging.

With earlier firmware versions(V1.19 or lower and V2.22 or lower), the batt % figure can develop an error if the unit is left on charger once it is 100%. To correct this error, set the unit for impeller speed sensor and leave it turned on and connected to speaker harness overnight.

17. General Maintenance

Always rinse any salty water off unit. The unit should be washed in warm soapy water to clean it. Ethyl alcohol(methylated spirit) and propyl alcohol (propanol) can be used, but other organic solvents, especially aromatics and acetone, should be avoided as they will damage unit. The display window should be treated with care as it can be easily scratched. All connectors, both metal and rubber parts should be greased with silicone grease every ~3 monthly for fresh water and monthly for salt water rowing.

18. Resetting

If the unit locks up for any reason, then CPU can be reset by removing batteries. Unit should be left unpowered for ~10 seconds, to allow all residual power to be used.

19. Appendix

- **Flow Charts – defining SX operation**
  - o **Turn On**
  - o **Mode Select**
  - o **Set Up**
  - o **Turn Off**
  - o **Timer**
  - o **Timer – Delayed Start**
  - o **Lock/Unlock**
  - o **RUN**
  - o **PACE**
  - o **Using W'KOUT**
  - o **Modifying W'KOUT programme**

- **Examples of Operations**
  - o **A1 Timer Operation**
  - o **A2 Changing Mode**
  - o **A3 Setting Pace Speed**
  - o **A4 Changing Display Variables**
  - o **A5 Calibration(Manual)**

LOCK/UNLOCK

LOCK/ UNLOCK
Starting from Ready state (*Rdy* displayed)

Press Menu 5 times in quick succession

Menu **Menu** **Menu** **Menu** **Menu**

Will toggle LOCK ON/Off

START (△)

STOP (▽)

→ **ENT RESET**
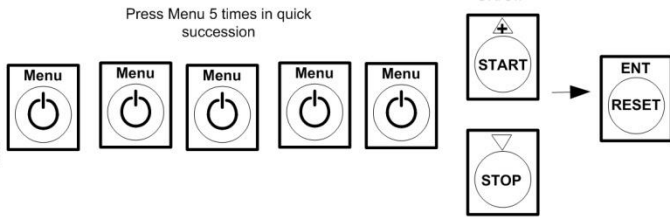
RUN

RUN
Starting from Ready state (*Rdy* displayed) in *RUN MODE*

Starting Timer - as shown on previous page.

Rate and Speed will be displayed on top line. The default display on bottom line is distance on left and TIME on right. See display options in General Operation section, if you wish to display other variables.
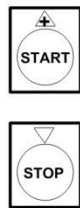
PACE

PACE
Starting from Ready state (*Rdy* displayed) in *PACE MODE*

ENT RESET →

PACE SPEED will be displayed

The *PACE SPEED* is adjusted as required

START (△)

STOP (▽)

→ **ENT RESET**

Rdy to start timer. Timer operates as per above. When Timer running unit will display position relative to PACE boat in metres- resolved to 0.1m

Rate and Speed will be displayed on top line. The default display on bottom line is distance : +/- metres from PACE boat on left and TIME on right. See display options in General Operation section, if you wish to display other variables.

WORKOUT

USING W'KOUT
Starting from Ready state (*Rdy* displayed) in *W'KOUT* MODE

ENT RESET →

Selected Workout programme (from1-6) will be displayed

The desired W'KOUT programme is selected

START (△)

STOP (▽)

→ **ENT RESET**

Rdy to start timer.

START (△)

SEt will be displayed with the target values of selected programme, Step 1
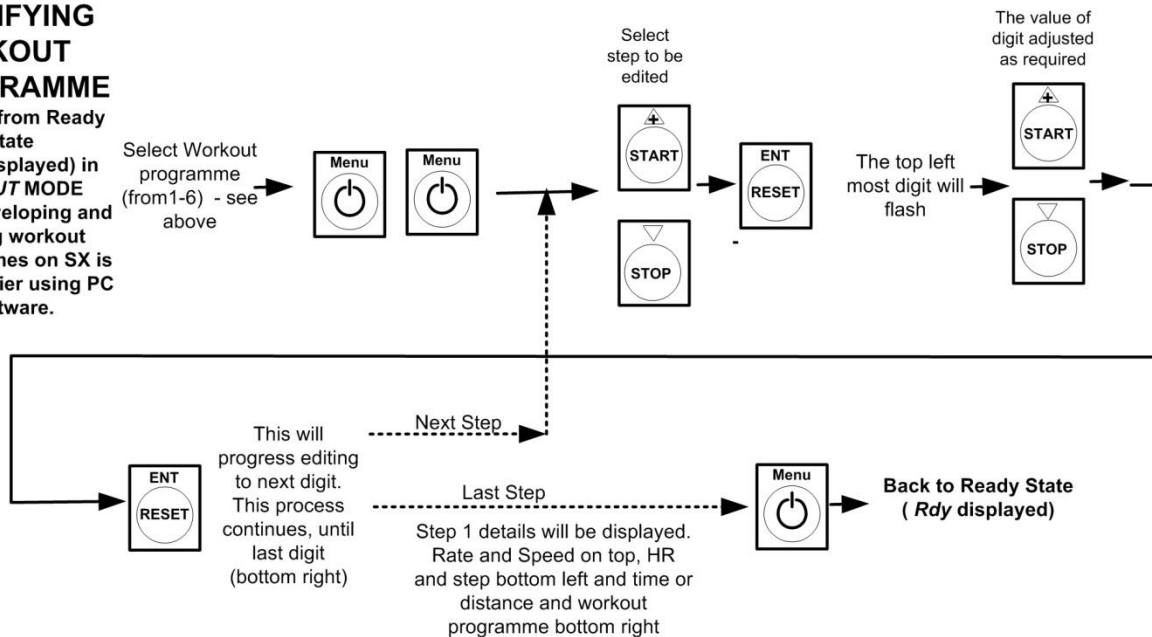
START (△)

Timer will start. At the start of each step, unit will beep and target values will be displayed (flashing) for 5 seconds. After this actuals will be displayed

→ At completion of last step, unit will go back to Ready state (*Rdy* displayed)

Note: If *Ent* button pressed during workout, programme will hold, and HOLD will be displayed. Pressing *Ent* again will release HOLD. This feature is handy if you have to stop during your workout, eg to make a turn.

MODIFYING W'KOUT PROGRAMME

Starting from Ready state (*Rdy* displayed) in *W'KOUT* MODE
Note: Developing and Editing workout programmes on SX is much easier using PC software.

Select Workout programme (from1-6) - see above →

Menu **Menu** →

Select step to be edited

START (△)

STOP (▽)

→ **ENT RESET**

The top left most digit will flash →

The value of digit adjusted as required

START (△)

STOP (▽)

ENT RESET →

This will progress editing to next digit. This process continues, until last digit (bottom right)

- - - Next Step - - - →

- - - Last Step - - - →

Step 1 details will be displayed. Rate and Speed on top, HR and step bottom left and time or distance and workout programme bottom right

Menu →

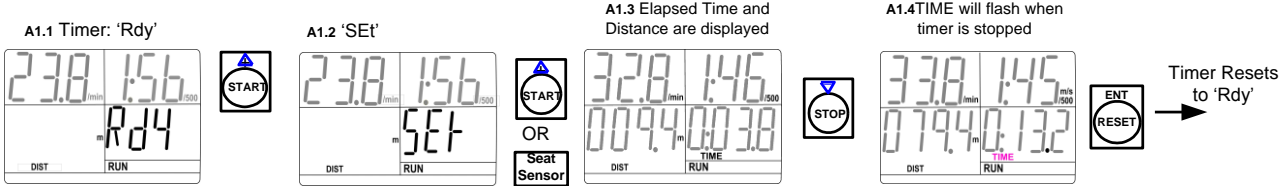**Back to Ready State (*Rdy* displayed)**
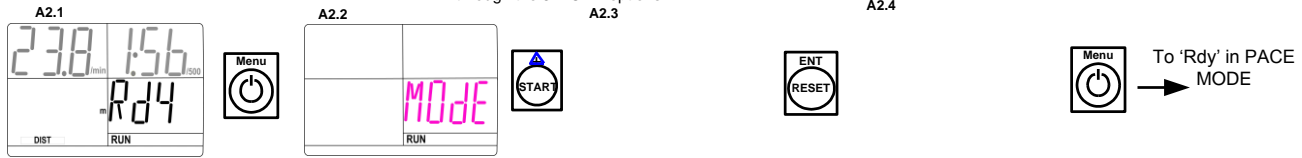
Examples

Note: The characters on the SX display will be flashed for specific purposes. These are represented by:
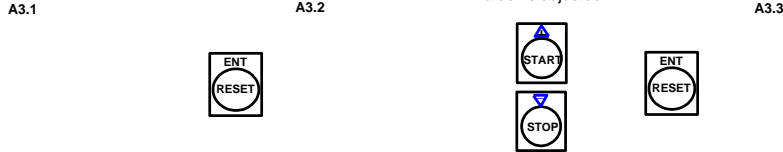**FAST FLASH**   **SLOW FLASH**
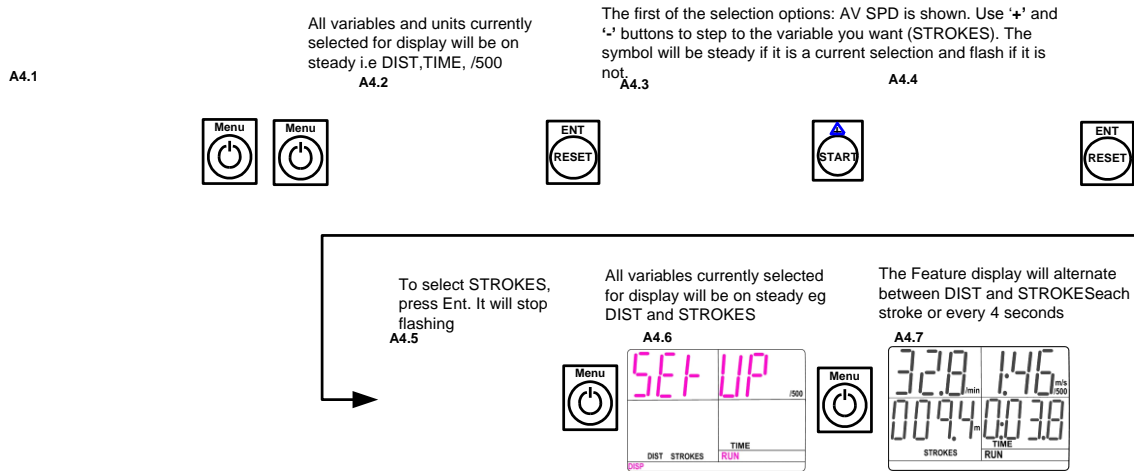
A1 Timer Operation

A1.1 Timer: 'Rdy'

A1.2 'SEt'

A1.3 Elapsed Time and Distance are displayed

A1.4 TIME will flash when timer is stopped

Timer Resets to 'Rdy'

OR
Seat Sensor

A2 Changing MODE

A2.1

A2.2 The '+' and '-' buttons will step through the 3 MODE options

A2.3

A2.4

To 'Rdy' in PACE MODE

A3 Setting Pace Speed: (Unit in PACE MODE)

A3.1

A3.2

PACE speed value is adjusted

A3.3

A4 * Changing Display variables: Add stroke count (STROKES) Feature Display(lower left) in RUN MODE

A4.1

A4.2 All variables and units currently selected for display will be on steady i.e DIST,TIME, /500

A4.3 The first of the selection options: AV SPD is shown. Use '+' and '-' buttons to step to the variable you want (STROKES). The symbol will be steady if it is a current selection and flash if it is not.

A4.4

A4.5 To select STROKES, press Ent. It will stop flashing

A4.6 All variables currently selected for display will be on steady eg DIST and STROKES

A4.7 The Feature display will alternate between DIST and STROKES each stroke or every 4 seconds

A5 Calibration: (Manual Calibration when using Impeller Speed Sensor)Note: This function is accessible when unit is locked or unlocked

A6.1 Go into SET UP as in example A4

The '+' and '-' buttons will step through the SET UP options - DISPL – BK LT- CAL'N....

A6.2 Press Ent when CAL'N is reached.

A6.3 The 'MAN' refers to manual calibration. An optional automatic GPS calibration is available – see GPS calibration section

A6.4 Adjust value and press Ent when target value reached. See calibration section for calculating value

A6.5

To 'Rdy'

* Unit must be unlocked to access these functions