

LSSC boat race timer – Quick start Guide v7

Pursuit race

Plug the horn cable into the USB socket in the dog-house, then the mains13 Amp plug – wait 30 seconds

When the race type, start time and length is displayed, use mouse to click on the “Select if OK” button

Select button to run a Std Pursuit race. Click on the “HORN” button to test it is working

Click on all the boat types racing and “Yes” will appear next to them. When they start this will turn to “Started”

The horn will do all the start signals as indicated by the Next Start entry on the screen

Crew Pursuit race

Plug the horn cable into the USB socket in the dog-house, then the mains13 Amp plug – wait 30 seconds

When the race type, start time and length is displayed, use mouse to click on the “Select if OK” button

Select button to run a Crew Pursuit race. Click on the “HORN” button to test it is working

Click on all the helm name of each person who is racing followed by clicking on the boat and sail number displayed at the top of the screen.

Once a boat has started the Yes will turn to a lap number. Log laps as they occur for each sailor by clicking on the helm name. The lap will increase by 1 and the positions recalculated. After lap 2 the last lap time in seconds will be shown next to the lap number

At race end the horn will sound to indicate race finishing. Check if boats have changed positions in the last lap then click on the Log results button and enter the finishing positions. When all have been entered click on the Save results button and the results will be written to a file against the race date and start time.

Click on Close button then shutdown to close it down

Standard Handicap race

Plug the horn cable into the USB socket in the dog-house, then the mains13 Amp plug – wait 30 seconds

When the race type, start time and length is displayed, use mouse to click on the “Select if OK” button

Click on the “HORN” button to test it is working

Click on all the helm name of each person who is racing followed by clicking on the boat and sail number displayed at the top of the screen. Check that the fast or slow text is displayed against the helm name

Log laps completed independently of the system

At race end sound horn to indicate race finishing

Click on the Log Finishes button

As each boat completes the required number of laps, click on the helm name to record the finish time

Copy finish times and corrected timed off the screen before closing it down

Personal Handicap (pursuit) race

Plug the horn cable into the USB socket in the dog-house, then the mains 13 Amp plug – wait 30 seconds

When the race type, start time and length is displayed, use mouse to click on the “Select if OK” button

Click on the “HORN” button to test it is working

The screen will show all the persons who could race and their personal handicaps for that race.

Make sure that everyone racing knows what their personal handicap is for that race.

Click on all the helm name of each person who is racing. The Racing? column will now say “Yes”. When they start, the Racing? Column will change to “Started”

Keep track of the positions as the race is finishing. At race end the horn will sound.

Click on the “Log Results” button then put in the finish positions starting from 1st to last following the prompt on the top line of the screen. Ensure that you put in a position for everyone who finished, but do not put in a position for DNFs, then click on the Save Results button.

It will calculate the handicaps for the next race, tell you that the results have been saved and give you the file name where the results and the new handicaps are saved.

Close down the system using the close button

Moth Open race

The annual Moth Open race is similar to a standard handicap race except that the start signals are at 5 minutes, 4 minutes, one minute and start. The one-minute horn signal has a double length sounding. Names and boat numbers of entrants should be put into the mothhelms.csv file before starting the actual race, leaving the first dummy entry alone. After system boot up, use the close button to get back to the start screen to open and update the mothhelm.csv file. It will open as a spreadsheet in LibreOffice. You can also change the start time for the races in the racecalendar.csv file if needed. After saving the file restart the system to pick up the amended helm names.

If you need to start the race at another time select “other race” then Moth Open then a time to nearest ¼ hour. Then when main screen opens use the delay start to move the time back by further increments of 5 minutes if needed. Also, use this to delay the start if the boats are not all ready on time.

To set up the boats racing, after selecting a helm name, you still need to select the Normal Boat raced even though it will always be a British Moth. Once the boats have started select “log finishes” then when the required number of laps have been manually logged and completed click on the horn button to sound the end of the race. Then click on each helm name as they complete the number of laps raced which will sound the horn and capture the finish time and corrected time which can be then used to manually assign race positions. Do not click on boats crossing the finish line that are a lap down until they complete any extra laps needed. A file called mothresults2023.csv can be used to log the results of each race and determine the overall winner of the 3 races.

Delay Start

If you click on the Delay Start Button it will move the start back by 5 minutes for each click on it.

LSSC boat race timer – User Manual. Full Guide and configuration

Software v38 – July 13th 2021

1. Connect and switch on

Lift the timer out of its bag by the sides of the screen – not by the blue box or the top of the screen.

Check that the mouse is plugged into the left hand USB socket on the top of the blue box

Plug the horn cable into the Horn USB socket on the blue box and into the horn relay in the dog house

Plug the white lead into the 13 Amp socket in the dog house and switch the power on

Wait about 30 seconds as several boot screens are shown, finishing with the Boatstart one

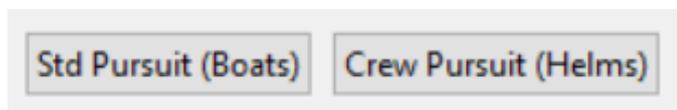
Mouse should be lit up blue and fan on back of blue box should be spinning – nudge it if not.

2. Race selection

The top line of screen will show the expected race type, length and time derived from the race calendar

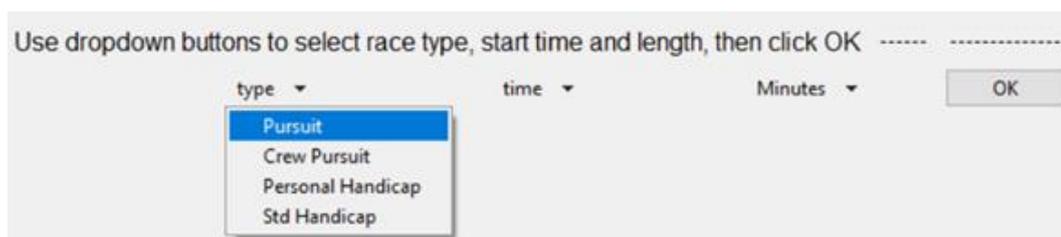
If this is the race you want to run, use the mouse to click on the “Select if OK” button

If the expected race type is Pursuit you will then get two buttons to choose from, as to whether you want to run a Std Pursuit (just based on boat classes) or a Crew Pursuit (where all the helms are shown and you can record laps completed and automatically show the positions during the race for each boat).

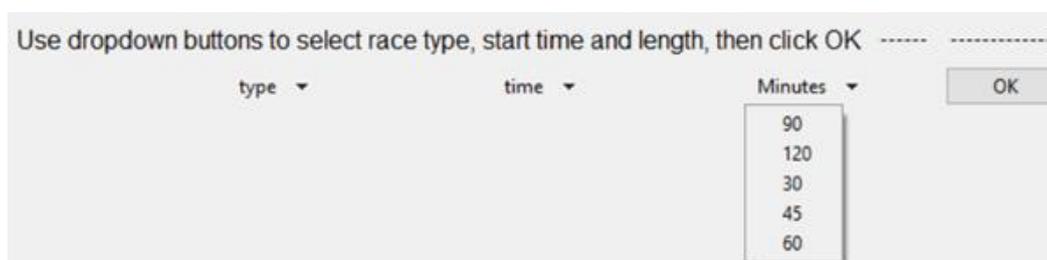


If you want any other race type, or different start time or race length, click on the “Other race” button and a screen will appear with options for Type, First gun start time, and duration in minutes.

Click on the down arrow next to “type” then click on required option to select race type from the dropdown list



Do the same for “time” and “Minutes” to set the start time and length. (If you don’t select them, they will default to 11am and 90 minutes)



Then click on OK. You will now be taken to the main screen for the race type selected

3. Pursuit race type selected

This is the simplest form of pursuit race as only boat classes are selected not crews or individual boats. You will see this screen showing boat classes, their start time after first gun, the current time and the time to the next sounding of the horn (Next start) and what it is for. Boat types normally crewed by 2 persons but being raced with just one are shown in the second column (Helm only) with a (1) against them.

Boatstart

Selected: Pursuit race at 11:00 for 90 minutes -----

Boat Class	Racing?	Start Time	Click on boat if racing		
Topper		10:00			
Comet		19:00			
Comet Duo		21:00			
Lightning 368		22:00			
British Moth		22:00			
Laser Radial		22:45			
Solo		23:00			
GP14		23:45			
Streaker		24:00			
Enterprise		24:15			
Laser		25:30			
Solution		26:00			
National 12		26:15			
Supernova		27:00			
RS Aero 7		27:30			
K1		27:45			
Albacore		29:00			
RS Aero 9		30:30			
Phantom		31:15			

Current Time

Hours	Mins	Secs
10	18	8

Next start

First Gun

In: Mins Secs

41	52
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Helm only

Boat Class	Racing?	Start Time
Comet Duo (1)		24:30
GP14 (1)		27:00
Enterprise (1)		27:30
National (1)		29:15
Albacore (1)		32:00
Race End	Yes	90

3.1 Test Horn

Click on the "HORN" button to test the horn is working correctly

A message will appear on the screen if the horn cable is not connected correctly

3.2 Select boat classes in race

For each class of boat racing, click on the boat name and "Yes" will appear in the Racing? column next to that boat class. Clicking again on the same boat will remove it from the racing list and delete the "Yes"

Once a boat class has started the "Yes" will change to "Started"

Boat Class	Racing?	Start Time
Topper	Started	10:00
Comet	Started	19:00
Comet Duo	Yes	21:00
Lightning 368	Yes	22:00

3.3 Start signals

The system is now ready. It will sound the horn for **First Gun** (e.g. often at 11am), then at **Five Minute**, then at **First Start** or for Topper if that is racing as they are both at the same time. It will then sound the horn for the start time of each boat class racing and finally for **Race End**.

For 10 seconds before the horn is sounded a small beep will be sounded from the timer itself

There will also be 5 small beeps one minute before First Gun to let you know crews to get ready to set their watches

Here is a screen shot with 10 boat types selected

Boatstart

Selected: Pursuit race at 20:45 for 90 minutes -----

Boat Class	Racing?	Start Time	Click on boat if racing
Topper		10:00	
Comet	Yes	19:00	
Comet Duo		21:00	
Lightning 368	Yes	22:00	
British Moth	Yes	22:00	
Laser Radial		22:45	
Solo		23:00	
GP14		23:45	
Streaker		24:00	
Enterprise	Yes	24:15	
Laser	Yes	25:30	
Solution		26:00	
National 12	Yes	26:15	
Supernova	Yes	27:00	
RS Aero 7		27:30	
K1	Yes	27:45	
Albacore		29:00	
RS Aero 9		30:30	
Phantom		31:15	

Current Time

Hours	Mins	Secs
20	45	1

Next start

Five Minute

In:	Mins	Secs
	4	59

Helm only

Boat Class	Racing?	Start Time
Comet Duo (1)		24:30
GP14 (1)		27:00
Enterprise (1)	Yes	27:30
National (1)		29:15
Albacore (1)		32:00
Race End	Yes	90

And here is one with the Lightning 386 and British Moth ready to start in 11 mins 27secs

Note: If two or more boat types have the same handicap, the last one in the list will be shown as Next Start

Boatstart

Selected: Pursuit race at 20:45 for 90 minutes

Boat Class	Racing?	Start Time
Topper		10:00
Comet		19:00
Comet Duo		21:00
Lightning 368	Yes	22:00
British Moth	Yes	22:00
Laser Radial		22:45
Solo		23:00
GP14		23:45
Streaker		24:00
Enterprise	Yes	24:15
Laser	Yes	25:30
Solution		26:00
National 12	Yes	26:15
Supernova	Yes	27:00
RS Aero 7		27:30
K1	Yes	27:45
Albacore		29:00
RS Aero 9		30:30
Phantom		31:15

Click on boat if racing

Current Time
 Hours: 20 Mins: 55 Secs: 33

Next start
British Moth
 In: Mins: 11 Secs: 27

Helm only

Boat Class	Racing?	Start Time
Comet Duo (1)		24:30
GP14 (1)		27:00
Enterprise (1)	Yes	27:30
National (1)		29:15
Albacore (1)		32:00
Race End	Yes	90

There is no scope for logging laps or race positions with this race type mode as individual boats and their crews are not recorded.

4. Crew Pursuit race type selected

This is still a standard pursuit race with start times determined by handicaps, but we display and select helm names instead of boat classes. There is therefore an entry available for each person who is likely to helm a boat in a race. Once we select the helm name, we are prompted with the expected boat class and sail number and we can select this or an alternative boat class. By having an entry for each boat in the race we can record the progress of each boat in the race by capturing each time a boat completes a lap of the course.

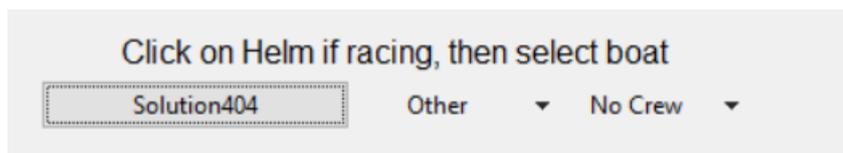
4.1 Test Horn

Click on the “HORN” button to test the horn is working correctly

A message will appear on the screen if the horn cable is not connected correctly

4.2 Select Helm names and Boat classes in race

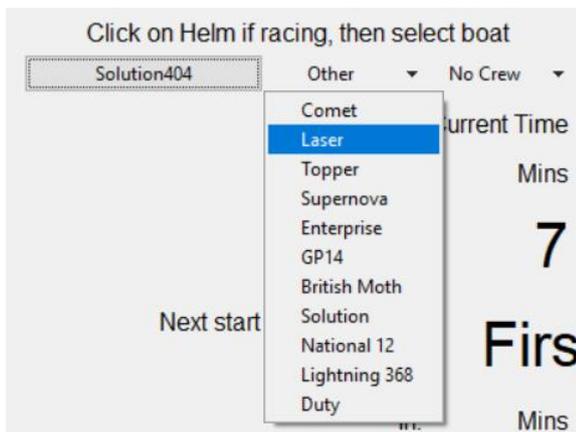
For each person racing as helm of a boat, click on the helm name and “Yes” will appear in the Racing? column next to that boat class. Now click on the boat being raced. The normal boat raced by that person will appear as default – in this example below “Solution404”.



If they are racing in their normal boat click on it. The boat class and optional sail number and handicap will appear next to the helm name like this:

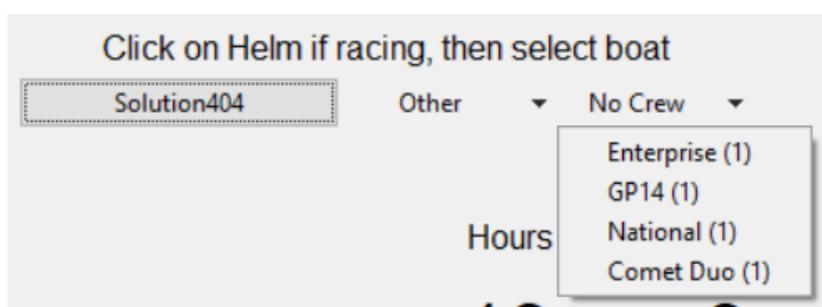


If they are racing in a different boat, click on the “Other” button and a menu list of other boats will appear.



Click on the required boat class and it will appear with its handicap next to the helm name

If they are sailing single handed in a normally 2 crewed boat click on the “No Crew” button and a menu list of possible boat types will appear for selection



Click on the required single crewed boat class and it will appear with its handicap next to the helm name. Note : All single crewed boats that normally have 2 crew have “(1)” after their name. They will have a different handicap to dual crewed boats of the same class

Having selected several helm names and their boats you should see something like this:

Selected: Crew Pursuit race at 19:00 for 90 minutes software v 31

Helm Name	Boat & Sail no.	Racing?/Lap	Start/Posn
Alan Mattocks	Comet0	Yes	19:00
Barry Marsh	British Moth885	Yes	22:00
David Hannaford			:
David Murray	Comet435	Yes	19:00
Don Clark			:
Duncan Lavery	British Moth860	Yes	22:00
Elaine Lavery	British Moth886	Yes	22:00
Geoff Coop			:
Jayne Whigham	Comet538	Yes	19:00
Laurie Walker	Supernova585	Yes	27:00
Mark Ellard	Solution450	Yes	26:00
Martin Seaton	Enterprise22658	Yes	24:15
Pam Coop			:
Paul Maddock	K1109	Yes	27:45
Peter Lee			:
Phil Muddeman			:
Ray Meredith			:

Click on Helm if racing, then select boat
British Moth885 Other No Crew

Current Time
Hours: 18 Mins: 59 Secs: 18

Next start
First Gun
In: 0 Mins: 42 Secs

Undo last item Log results Delay start Close HORN

Helm	Boat & Sail no	Racing?/Lap	Start/Posn
Richard Colwell			:
Robin Williams			:
Stella Ellard	British Moth0	Yes	22:00
Steve Baker			:
Stuart Watts			:
Tom Billyard			:
Wills D-Baker			:

4.3 Correcting mistakes

4.3.1 wrong person added If you click on the wrong person racing while setting up the people sailing, as long as they haven't been shown as started, another click on them will remove the "Yes" and they will not be included in the start signals. Their boat and handicap will still continue to show if you selected a boat for them, but nothing else will be done for them as long as there is no "Yes" or "Lap 0" shown.

4.3.2 Person missed out If you miss someone out, you can add them at any time but if it is after their start time, they will not get a start sound on the hooter and their "Yes" will turn almost immediately to "Lap 0" so that you can record lap completions for them.

4.3.3 Selected wrong boat If you have selected the wrong boat for a person, as long as they haven't started, click twice on their name then reselect the correct boat for them. It should now appear with the "Yes" and the updated start time.

4.3.4 lap added incorrectly If after a boat has started and is showing a lap number, you incorrectly add a lap to a boat or to the wrong boat, click on the "Undo last item" button. This will reduce the lap number by 1 for the last clicked on helm name. Each click will reduce the lap number by 1 down to a minimum of 0. If you reduce too many laps, click on the helm name to increase the lap number again. Note that reducing or increasing the lap number at other than a correctly completed lap will invalidate the last lap time shown, until the next 2 correct lap updates for that helm.

4.4 Start signals

The system is now ready. It will sound the horn for **First Gun** (e.g. often at 11am), then at **Five Minute**, then at **First Start** or for Topper if that is racing as they are both at the same time. It will then sound the horn for the start time of each boat class racing and finally for **Race End**.

For 10 seconds before the horn is sounded a small beep will be sounded from the timer itself.

There will also be 5 small beeps one minute before First Gun to let you know crews to get ready to set their watches

The horn will sound for each class of boats starting and the helm name for the next boat to start will be shown with the time to its start as shown here:

Next start	Peter Lee		
In:	Mins	Secs	
	11	4	

Note: If two or more helm names have the same handicap, the last one in the list will be shown as Next Start

4.5 Lap recording and position display

As each boat starts the "Yes" in column 3 will change to say "Lap 0" like this:

Peter Lee	Solution404	Lap 0	26:00
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Until you start recording laps, the start time will continue to appear in column 4.

When a boat that has started completes a lap, click on the helm name, and the start time will be replaced by a position

Peter Lee	Solution404	Lap 1	1
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As each boat completes its first lap, click on the helm name and its position will be recorded. For all subsequent laps click on the helm name as they complete the lap and their lap count will increase by one and the positions will be recalculated. Note that boats that have not competed one lap may not have a position shown yet.

At lap 2 and following laps, the latest lap time for the boat (in seconds) will be shown next to the lap number.

Peter Lee	Solution404	Lap 3-782	7
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Once all boats have completed several laps, the screen will look something like this (as shown on next page), with all boats showing their current number of laps and positions at the last time any boat completed a lap. Boats that have completed 2 or more laps are also showing their last lap time in seconds next to the lap number.

Selected: Crew Pursuit race at 18:45 for 90 minutes

Helm	Boat & Sail no.	Racing?/Lap	Start/Posn
Alan Mattocks			
Barry Marsh	British Moth885	Lap 4-804	1
David Hannaford	Laser108967	Lap 3-866	4
David Murray	Comet435	Lap 4-1074	2
Don Clark	Comet881	Lap 1	16
Duncan Lavery	British Moth860	Lap 3-776	3
Elaine Lavery			
Geoff Coop	Comet Duo65	Lap 3-844	5
Jayne Whigham			
Laurie Walker	Supernova585	Lap 2-781	11
Mark Ellard	Solution450	Lap 1	14
Martin Seaton	Enterprise22658	Lap 3-780	6
Pam Coop	British Moth432	Lap 2-743	10
Paul Maddock			
Peter Lee	Solution404	Lap 3-782	7
Phil Muddeman	National 123461	Lap 3-847	9
Ray Meredith			
Richard Colwell	GP1410208	Lap 3-817	8

Click on Helm if racing, then select boat

Normal Boat raced Other No Crew

Current Time

Hours Mins Secs

19 46 19

Next start

Race end

In: Mins Secs

28 41

Undo last item Log results Delay start Close HORN

Helm	Boat & Sail no	Racing?/Lap	Start/Posn
Robin Williams	RS Aero 71814	Lap 2-753	12
Stella Ellard	British Moth0	Lap 2-758	13
Steve Baker			
Stuart Watts			
Tom Billyard	Lightning 368167	Lap 1	15
Wills D-Baker			
Visitor			

4.5 Position and lap time calculation

4.5.1 Positions shown Boats that have completed the largest number of laps will be ahead of those that have done less laps. For boats that have done the same number of laps, the ones that completed them at the earliest time will be ahead of those that completed them at a later time. The system uses these 2 facts to recalculate and display the positions every time any boat completes a lap. If two boats complete a similar number of laps with less than a second difference between them, the system cannot establish which is first so will assign the 2 positions arbitrarily. Therefore, if 2 boats are approaching the lap marker buoy together, the race officer should leave a second between clicking on the helm names to be certain to get the relative positions recorded accurately.

4.5.2 Lap times The lap time shown is the difference in time in seconds between the last 2 clicks on the helm name after a boat has started. This will normally be the time between recording two successive laps for that helm name. However, if the "Undo last item" button is used to reduce a previously added lap this will invalidate the lap time for the last clicked on helm name, until a further 2 correct lap updates have been made.

4.6 Race end

At the end of the race the horn will sound.

Using the shown race positions as a starting guide, check whether any boats have passed others during their last lap – in which case you can manually amend the race positions. If you click on the "Log Results" button it will prompt you to select the helm names in order of position and will show these in the column before the one with the calculated positions. When all of the results have been entered click on the Save results button and a file of the results will be written with filename of the date and start time of the race. It is suggested that you also record the results on the race form or take a screen shot with a phone.

When the results have been saved, click on the "Close" button and follow the instructions in section 7.

5. Std Handicap race type selected

For a standard handicap race the boat classes are divided into two groups - slow and fast start boats, depending on their PY yardsticks. Slow class boats will start at 10 minutes after first gun, and fast class boats will start at 15 minutes after first gun. Rather than boat classes being listed, helm names are listed and selected to be racing.

The initial screen will look like this:

The screenshot shows the 'Boatstart' application window. At the top, it says 'Selected: Std Handicap race at 10:00 for 90 minutes'. Below this is a 'Helm' column with a list of names: Alan Mattocks, Barry Marsh, David Hannaford, David Murray, Don Clark, Duncan Lavery, Elaine Lavery, Geoff Coop, Jayne Whigham, Laurie Walker, Mark Ellard, Martin Seaton, Pam Coop, Paul Maddock, Peter Lee, Phil Muddeman, Ray Meredith, and Richard Colwell. To the right of the list are three buttons: 'Laser0', 'other', and 'no crew'. Below these is a 'Current Time' display showing '9 Hours', '45 Mins', and '58 Secs'. Further right is a 'Next start' display showing 'First Gun' and a time of '14 Mins' and '2 Secs'. At the bottom right, there are four buttons: 'Log finishes', 'Delay start', 'Close', and 'HORN'. A 'More Helm' section is also visible, listing Robin Williams, Stella Ellard, Steve Baker, Stuart Watts, Tom Billyard, and Wills D-B.

5.1 Test Horn

Click on the "HORN" button to test the horn is working correctly

A message will appear on the screen if the horn cable is not connected correctly

5.2 Select persons taking part in the race, and their boats

For each helm who is racing, click on the person name and "Yes" will appear in the Racing column and the expected boat class and sail number will appear near the top of the screen like this:

This close-up shows the instruction 'Click on Helm if racing, then select boat' above three buttons: 'British Moth860', 'other', and 'no crew'.

If that is the boat that they are sailing today click on it and it will copy the details next to the helm name and also put up whether it is a fast or slow start boat. The button at the

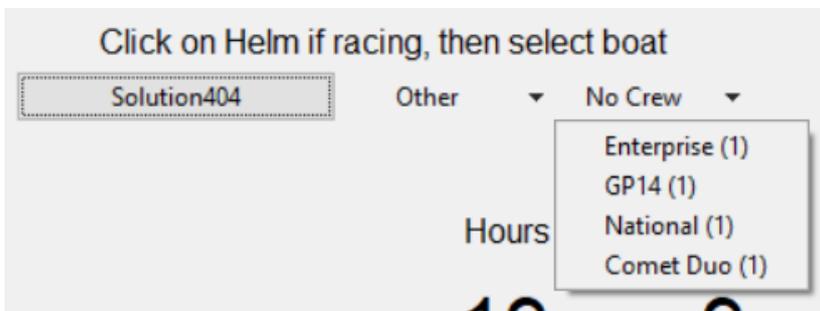
top of the screen will reset to the text "Normal boat raced".

If they are racing in a different boat, click on the "Other" button and a menu list of other boats will appear.



Click on the required boat class and it will appear with its handicap next to the helm name

If they are sailing single handed in a normally 2 crewed boat click on the "No Crew" button and a menu list of possible boat types will appear for selection



Click on the required single crewed boat class and it will appear with its handicap next to the helm name. Note : All single crewed boats that normally have 2 crew have "(1)" after their name. They will have a different handicap to dual crewed boats of the same class

Having selected a few helm names and their boats, the screen should now look like this:

Boatstart

Selected: Std Handicap race at 10:00 for 90 minutes

Helm

Click on Helm if racing, then select boat

Normal boat raced | other | no crew

Helm	Boat	Yes	Slow	Fast	Current Time
					Hours Mins Secs
Alan Mattocks					
Barry Marsh	British Moth885	Yes	Slow		
David Hannaford	Laser108967	Yes	Fast		10 2 20
David Murray					
Don Clark					
Duncan Lavery	British Moth860	Yes	Slow		
Elaine Lavery	British Moth886	Yes	Slow		
Geoff Coop					
Jayne Whigham	Comet538	Yes	Slow		
Laurie Walker					
Mark Ellard	Solution450	Yes	Fast		
Martin Seaton	Enterprise22658	Yes	Fast		
Pam Coop					
Paul Maddock	K1109	Yes	Fast		
Peter Lee	Solution404	Yes	Fast		
Phil Muddeman					
Ray Meredith					
Richard Colwell					

Next start: Five Minute

More | Log finishes | Delay start | Close | HORN

Helm	Boat	Yes	Slow	Fast
Robin Williams				
Stella Ellard	British Moth0	Yes	Slow	
Steve Baker	Enterprise22888	Yes	Fast	
Stuart Watts				
Tom Billyard				
Wills D-B				

5.3 Start signals

The system is now fully ready for the race to start and the horn will automatically sound for **First Gun, Five Minute, Slow Hcap Start** (at 10 minutes) and **Fast Hcap Start** (at 15 minutes), with the times to these events being shown below the current time

There will also be 10 short beeps on the machine before the horn is sounded and 5 short beeps one minute before First Gun to let you know crews to get ready to set their watches.

Once the Fast Hcap Start has occurred the Next start will default to the last helm name in the list and put up a time to go of 0. Ignore this as it is meaningless at this time. As a std handicap race does not have a fixed duration, only a specified number of laps, we cannot put up a time to the end of the race

5.4 Race progress and finishing

During the race, the race officer will be logging the number of laps performed by each boat independently of the system (further developments to be made here shortly) and will decide at some stage that they wish to start the finishing process. This is indicated to the sailors by a blast on the horn using the **HORN** button.

At this time the race officer should also click on the **Log finishes** button. The “Racing?” Heading will change to say “Finish Time”

As each boat completes the required number of laps, the race officer should click on the helm name and the system will replace the Yes on the screen with the current time, the corrected time (taking into account the start time and handicap) and sound the horn.

Boatstart

Click on helm name when boat finishes required no of laps to r

Helm	Boat & Sail no.	Finish Time	Corrected
Alan Mattocks			:
Barry Marsh	British Moth-885	8:33:34	1995
David Hannaford	Laser-214141	8:33:28	1825
David Murray			:
Don Clark			:

The corrected time, will determine the position in the race, with the lowest corrected time being first place and the rest in ascending order of corrected time.

When all the boats have finished copy down the finish time and corrected times on the race officer’s sheet, then use the corrected times to record the final positions of each crew. You may want to take a backup of the information by taking a photo of the screen on your phone.

The system does not currently store the results, so make sure to copy down the finish times before closing the system using the **Close** button. See section 7 for the closedown process.

6. Personal Handicap race type selected

For a personal handicap pursuit race the initial screen will show the crew names and their personal handicap for that race. These handicaps will change for each race as they are recalculated based on the results of the previous race. The initial screen will look something like this:

Boatstart

Selected: Personal Handicap race at 13:00 for 90 minutes temp=48.3'C

Crew	Boat	Racing?	Start Time	Click on crew if racing
Jayne Whigham	Comet		19 : 00	
Don Clark	Comet		19 : 00	
Alan Mattocks	Comet		19 : 00	
David Murray	Comet		19 : 00	
Terry Jefferson	Lightning 368		22 : 00	
Pam Coop	British Moth		22 : 00	
Stella Ellard	British Moth		22 : 00	
Stephen Baker	British Moth		22 : 00	
Tom Billyard	British Moth		22 : 00	
Barry Marsh	British Moth		22 : 00	
Janet Smith	British Moth		22 : 00	
Elaine Laverty	British Moth		22 : 00	
Peter Lee	Solo		23 : 00	
Phil Muddeman	Europe		23 : 15	
Martin & Anne Seaton	Enterprise		24 : 15	
Ray & Dot Meredith	Enterprise		24 : 15	
Roger Cooper (No crew)	Comet Duo		24 : 30	
Jonnie Bowman	Laser		25 : 30	
David Hannaford	Laser		25 : 30	

Current Time

Hours Mins Secs

12 59 29

Next start

First Gun

In: Mins Secs

0 31

Log results Delay start Close HORN

Boat	Racing?	Start Time
Richard Colwell (No crew)		GP14 27 : 00
Stuart Watts		Supernova 27 : 00
Mark Ellard		Supernova 27 : 00
Laurie Walker		Supernova 27 : 00
Robin Williams		RS Aero 7 27 : 30
Paul Maddock		K1 27 : 45
Duncan Laverty		D-Zero 29 : 45

Make sure that everyone racing knows what their personal handicap is for that race as shown on the screen.

Click once on all the helm name of each person who is racing. The Racing? column will now say "Yes". Clicking on the name again will remove them from the race and the Racing? Column will go blank again.

Selected: Personal Handicap race at 13:00 for 90 minutes

Crew	Boat	Racing?	Start Time
Jayne Whigham	Comet	Yes	19 : 00
Don Clark	Comet	Yes	19 : 00
Alan Mattocks	Comet		19 : 00
David Murray	Comet		19 : 00
Terry Jefferson	Lightning 368	Yes	22 : 00
Pam Coop	British Moth	Yes	22 : 00
Stella Ellard	British Moth	Yes	22 : 00
Stephen Baker	British Moth		22 : 00
Tom Billyard	British Moth		22 : 00

Here Jayne, Don, Terry, Pam and Stella have been selected to race

The horn will sound for each separate start time, so in this instance at 19 and 22 minutes.

As they start, the Racing? Column will change to “Started as shown here:

Selected: Personal Handicap race at 12:45 for 90 minutes

Crew	Boat	Racing?	Start Time
Jayne Whigham	Comet	Started	19 : 00
Don Clark	Comet	Started	19 : 00
Alan Mattocks	Comet		19 : 00
David Murray	Comet		19 : 00
Terry Jefferson	Lightning 368	Yes	22 : 00
Pam Coop	British Moth	Yes	22 : 00
Stella Ellard	British Moth	Yes	22 : 00
Stephen Baker	British Moth		22 : 00

Here at 20 minutes after the start gun, it shows that Jayne and Don have already started, but Terry, Pam and Stella are still waiting to start

When everyone has started the system will count down the time to race end when the horn will sound again for the end of the race.

There is no facility for logging laps, so record these on the manual form as normal.

Keep track of the positions in the race as normal and then at the actual end as the race end horn sounds.

When the race has ended, click on the button and the top line will say:

Click on the helm name of the boat that came in position 1 or click or Save Results if done. Do not log DNFs, leave as Started

For the boat that came first click on the helm name, and the screen will change the “Racing?” heading to “Position” and update the position value for Jayne like this;

Click on the helm name of the boat that came in position 2 or click or Save Results if done. Do not log DNFs, leave as Started

Crew	Boat	Position	Start Time	Current Time
Jayne Whigham	Comet	1	19 : 00	0
Don Clark	Comet	Started	17 : 00	Hours Mins Secs
Alan Mattocks	Comet		19 : 00	
David Murray	Comet		19 : 00	
Terry Jefferson	Lightning 368	Started	20 : 30	
Pam Coop	British Moth	Started	21 : 00	Next start
Stella Ellard	British Moth	Started	22 : 00	

Race end

Then put in the rest of the finishing positions starting from second through to last by clicking on the helm name, following the prompts on the top line of the screen. In this example there are 5 boats racing so after putting in all 5 you will see something like this:

Click on the helm name of the boat that came in position 6 or click or Save Results if done. Do not log DNFs, leave as Started -----

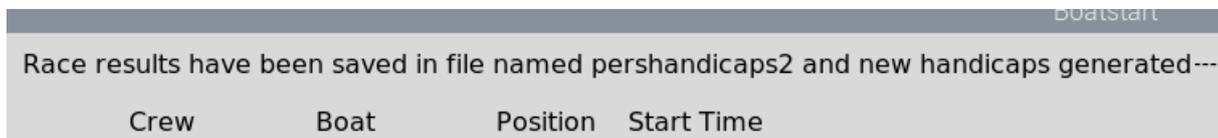
Crew	Boat	Position	Start Time	0
Jayne Whigham	Comet	1	19 : 00	
Don Clark	Comet	2	17 : 00	Current Time
Alan Mattocks	Comet		19 : 00	Hours Mins Secs
David Murray	Comet		19 : 00	
Terry Jefferson	Lightning 368	4	20 : 30	
Pam Coop	British Moth	5	21 : 00	Next start
Stella Ellard	British Moth	3	22 : 00	Race end
Stephen Baker	British Moth		22 : 00	In: Mins Secs
Tom Billyard	British Moth		22 : 00	
Barry Marsh	British Moth		22 : 00	Save results Reset to prev

Make sure that you put in a position for every boat that finished the race, but do not put in a position for any that retired – Leave them saying Started.

If you put in a position incorrectly, click on the “Reset positions” button and it will reset the position being logged back to one, so that you can re-enter all the positions correctly.

A “Save results” button will now have appeared on the screen.

Ensure that you have put in a position for everyone who finished but not for anyone who started but has retired, then click on the button, and the following message should appear on the top line



When you click on the Save results button It will calculate the handicaps for the next race, and give you the file name where the results and the new handicaps are saved. Only boats that have raced and finished will get a different handicap next time. Those who came in the top half will get progressively higher handicaps and later starts and those in the bottom half will get progressively lower ones. Anyone who retired will get an unchanged handicap in the next race.

If you don't get the Race results have been saved message make sure you have recorded the finishing positions on the race sheet then contact David Hannaford so that he can generate a file for the next race.

Close down the race timer program using the close button.

If you wish to see the handicaps that have been generated for the next race, use the file explorer function to open the file called personalhandicapsn.csv where n is the number of the race from 1 to 10.

7. Configuration files

The following files are stored on a memory card, and are used to control the operation of the system:

boatpynumbers.csv – This holds the Portsmouth Yardstick (PY) numbers against each class of boat, and the normal number of crew for that boat. The PY numbers are used to calculate the handicaps to apply to each boat in each type and length of race. The system can hold and display up to 20 different classes of boats plus up to 8 classes that are normally crewed with 2 persons but are racing helm only (i.e. no second crew). The current file has 18 boat classes and 4 helm only.

The first line of the file holds the PY number which is the dividing line between fast and slow start boats.

racecalendar.csv – This holds an entry for each race, giving its date, type, length, start time and name. It is normally held in date sequence with the earliest dates at the start of the file but if you want to put in all the Sunday races followed by all the Wednesday ones that is OK. If there are multiple races on one date however, they need to be in ascending time sequence. It is used at system start-up to identify the default race type, start time and length that will be run on that date.

helmnames.csv – This holds the names of sailors who helm boats, plus the sail number and type of their boat. Note that boat type names must match exactly with the names used in the boatpynumbers.csv file. The file can hold and display up to 26 helm names – They are normally held in alphabetical order for ease of finding a name, but this is not essential and if we wanted to group the most frequent sailors at the top of the list we could do so. We currently use the last 2 helm names for visitors.

personalhandicaps.csv – This holds the names of sailors taking part in the personal handicap races plus details of their sail no, boat type and current handicap. A new copy with a numeric suffix is created for each personal handicap race that is held, with the latest one holding the handicaps for the next race. A file called filenumber.csv is used to show the latest handicap file.

7.1 Updating the configuration files

All of these files are saved in the Comma Separated Values (CSV) file format so that they can be easily updated on any computer system. They are all held in a folder named pi which is within the home folder. They can be updated on the race machine directly by plugging in a keyboard and opening the file in Libre Office (a Linux based free spreadsheet program), or by copying them across to a memory stick inserted in any blue box USB socket, then updated on a PC or other machine and then copied back.

The boatpynumbers.csv file will be updated once a year when we wish to apply the new set of PY numbers issued by the RYA. We usually do this at the end of the Spring series of races. PY numbers for helm only sailed boats that normally have a second crew member are calculated by reducing the normally crewed PY number by 5%. Boat classes must be kept in the file in PY sequence from high to low. If boat classes are added or removed and the number of boat classes held in the file changes, it is necessary to update the “end” and “helmend” fields at the start of the main program. The file should finish with an entry for Duty with a PY number of 1 and number of crew = 1.

The racecalendar.csv file is updated once a year to add the race dates for the following year, or if the racing programme is amended. New dates can be added to the existing file at any time as long as they are kept in date sequence. Dates that have passed can be deleted at any time.

The helmnames.csv file is updated when a sailing member starts helming who is not on the list, or when a helm sailor changes their normally sailed boat, or if a sailor on the list leaves the club or stops sailing.

If personal handicaps are to be reset at the start of the series ensure that in the personalhandicaps1.csv file the Last Hcap and the Next Hcap columns are all set to zero, and the start mins and start seconds reflect the standard handicap times. Then reset the filename.csv column 2 entry to 1.

8. System Closedown

- At the end of the race click on the “Close” button just below the Next Start time fields. The screen will now show the “Leamington Spa Sailing Club lake with birds” background page.
- Click on the raspberry logo in the top left corner and select “Shutdown” from the bottom item in the list.
- On the Shutdown Options window click to select Shutdown. The screen will go black. Wait 5 seconds.

Disconnect the horn cable from the horn relay box – you can leave it connected to the blue box if you wish. Switch off the power and remove the 13 Amp plug. Carefully put everything back in the bag.

9. Battery replacement

The CR1220 battery which keep the time going when the system is not connected should be replaced every 3 years or earlier if it fails. It is in a separate compartment in the blue box at the back of the monitor.



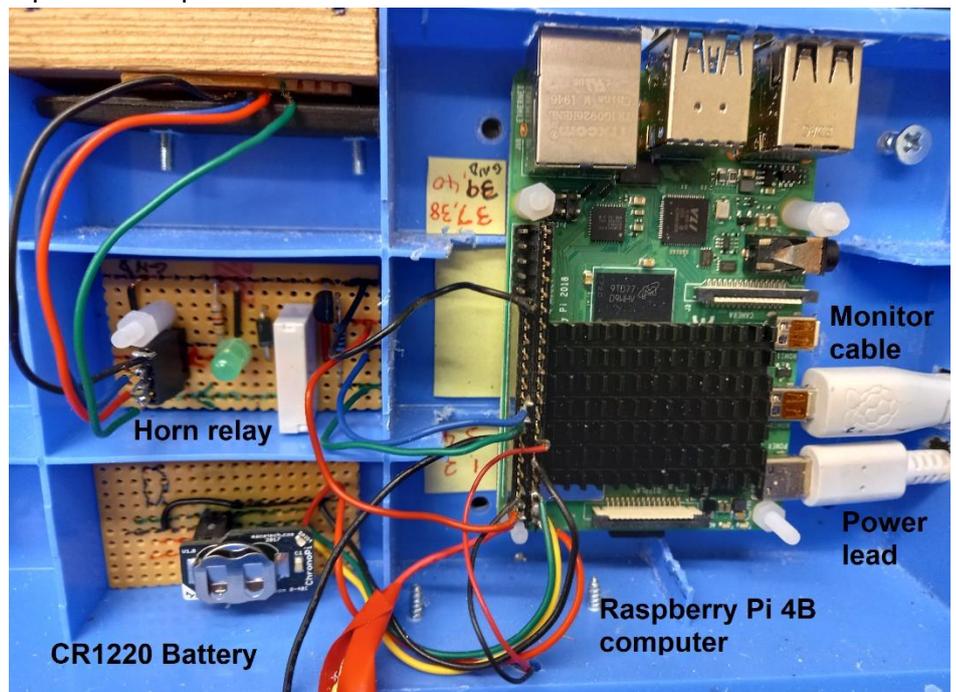
Open the box and slide out the battery upwards from the holder. You can lift out the clock unit on its leads to make it easier to get to the battery. Make sure that the battery is put in the right way round when inserting the new battery (the + outwards)

After replacing the battery, the date and time will need to be reset.

Establish an internet connection either by taking it to a location with wi-fi or through someone’s phone by putting the phone into local wi-fi hotspot mode then :

- Stat up the boat timer system
- Close the boat timer app, with the X in the top right corner
- Click on the wi-fi symbol (2 Xs) in the top right and select the wi-fi network
- Put in the security code for the network to allow access
- When the network connects access the world time page on the internet

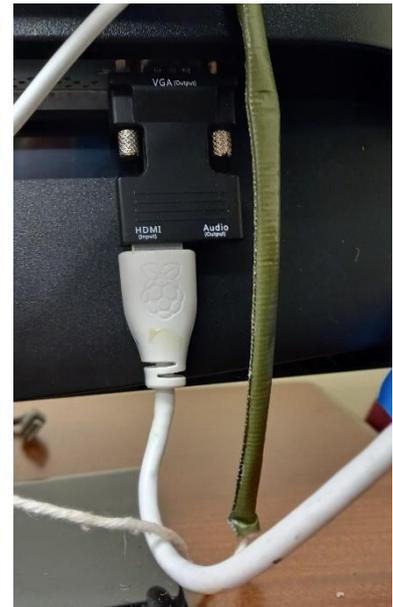
Check that the time shown in the top right of the screen matches the time shown on world time. Now reboot the system and everything should be ok the next time you start it up



10) Problems and Errors

If when you boot up the system you get a “cable not connected” message on the screen it is likely that the monitor cable has come out of the back of the monitor.

The white monitor cable from the blue processor box should go into the HDMI input socket on the HDMI to VGA adaptor. Then the VGA adaptor should plug into the VGA socket at the back of the monitor. It should be held in place by the 2 knurled screws which should be tightened up if loose.



LSSC boat race timer – Technical Manual.

Software v45 - April 27th 2022

1. Hardware

The timer system consists of the following components:

- A Raspberry Pi 4b microprocessor board with 8gig RAM and a memory card with 4 USB ports, and 2 video HDMI outputs
- A ChronoPI real time clock module powered by a CR1220 battery which should keep it running for 3 to 4 years
- A 5 Volt, 4 Amp, mains power supply – for the Raspberry pi and to power the ChronoPI when the system is on, and provide power for the external horn relay
- A non-standard wired USB socket for connection to the external horn relay in the doghouse
- A small horn interface board with a relay for isolating the horn driver signal
- All the above items are mounted in a blue box fixed at the back of the monitor
- An HDMI to VGA video signal converter so that the system can use a VGA monitor as a display
- A letterbox format VGA computer monitor
- A 2-way power adaptor to plug in the Raspberry pi power supply and the monitor
- A USB wired mouse
- An optional USB keyboard for making changes on the machine

2. Software

The system uses the following items of software running on the Raspberry Pi:

- The Raspbian Linux operating system
- Python 3 code interpreter and runtime environment
- TK screen display libraries
- Boat timer software written in Python 3
- Libreoffice spreadsheet software for amending configuration files on the machine
- Linux File manager for displaying and copying files from the memory card to an externally plugged in memory stick or back the other way
- Utilities for starting programs automatically at boot up

3 Software Functions

readboatpynos() This function reads in the current PY numbers for each boat class except for crew pursuit races

getboathandicaps() This function reads in the current PY numbers for each boat class just for crew pursuit races

readpershandicaps() This function reads in the personal handicaps file

readhelmnames() This function reads in the list of helm names and their boats and sail numbers

writepershandicaps() This function writes out the personal handicaps file

readfileno() This function reads in the file number which sets the version number for the personal handicap file that is written out

writefileno() This function writes out the updated file number after a personal handicap race

readracecalendar() This function reads in the race calendar entry that sets the default race type, length and time for each date. The file also contains the race series name

calchcap(pynumber, rlen) This function calculates the handicap for a given PY no and race length

stdpursuit() This function sets up the screen for a standard pursuit race based on boat classes

crewpursuit() This function sets up the screen for a crew pursuit race based on helm names

closewindow() This function shuts down the IO ports that are used to read in the current date and time, sound the beeps and the horn. Then it closes the main screen window

setrun() This function starts the timer function running which updates the time and the next start information

horn(n) This function switches the horn on (n=1) and off (n=0)

horntest() This function sounds the horn when the onscreen HORN button is pressed

horncheck() This function checks that the horn cable is connected by looking for a return back from the horn relay unit. It puts out a warning message if it is not connected

beep() This function puts out a half second beep on the piezo sounder

undolast() This function is called when the "Undo last item" onscreen button is pressed. It calls boatstat with the number of the helm name to have a lap number reduced

boatstat(x) This function is called when a helm name or boat class button is clicked on. It switches helms or boat classes on or off for racing, plus captures and displays handicap race end times. For helms that have started it also updates lap numbers.

selectboat() This function is called when the normal boat is being raced. It puts the boat being sailed next to the helm name

selectother(boatselected) This function is called when another boat from the normal one is selected from the dropdown menu. It puts the selected boat type next to the helm name

gethandicap(x) This function looks up the PY handicap for a boat class by searching through the PY table. It also identifies slow and fast handicap boats for the handicap race type

calcposns() This function calculates the positions in a crew pursuit race

Firstly, it identifies the boats that have started, and for each on it calculates a number that gives a value to each boat where the higher it is the higher in the position it should be. The calculated number is the (number of laps +1) x 10000 – the last lap end time since the start, in seconds. It saves the number of boats that have started in numstarted. This will be the number of positions to be assigned

Next, for each of the positions to be assigned – starting with no 1, it checks each started boat to find the calculated value that is the highest. Having checked all the boats it assigns the position to the highest one

found. It records that one as processed then adds one to the position number to be assigned then goes round again until all the positions have been assigned.

timesec() This function is called every half second. It works out which boats or helms are racing and for each one that has not started it calculates how long until their start time. For the one with the lowest amount of time to the start time it displays this and the time to start on the screen. This also handles the start signal and race end signal in a similar way. It generates the calls to the beep function and the horn at the appropriate times and switches the horn off after a preset time

gettime() This function obtains the current date and time for display on the screen and to enable the start sequences to be determined. The date and time are maintained by the battery powered real time clock module when used on the Raspberry Pi. Otherwise they are provided by the operating system.

timediff() This function calculates the difference in time between the current time and the race start time

showtime() This function puts the current hours, minutes and seconds on the screen display

pauserun() This function delays the race start time by 5 minutes. It is called each time that the onscreen Delay Start button is pressed

stdhcap() This function sets up all the screen and parameters for a standard handicap race. It calls the people function to display the helm names and generates the onscreen fields to hold the handicap times

logtimes() This function is called when the Log finishes button is pressed. It updates headers and messages as to what to do next plus sets the logendtime flag that allows the boatset function to capture and display the standard handicap end times for each helm that is racing.

pershcap() This function sets up all the screen and parameters for a personal handicap race

people() This function creates the helm name buttons on screen in 2 columns

boatclasses() This function creates the boat class name buttons on screen in 2 columns for the standard pursuit race

startsignals() This function sets up the names and times for the start signals

handicapstarts() This function sets up the additional fast and slow names and times for the handicap racestart

message(n) This function displays the selected message at the top of the screen

warning(n) This function displays the selected warning at the top of the screen

getresults() This function establishes how many boats were racing and sets up boatstat so that the final race positions can be entered

resetposns() This function reduces the current position being assigned by 1 so that errors can be corrected

saveresults() This function saves the results for a personal handicap race so that the subsequent race can use them to calculate the new handicaps

calcnew() This function calculates the new handicaps for a personal handicap race, based upon their standard handicap and their position in the last race

plannedrace() This function is called when Ok is clicked on for selecting the default race as defined by the race calendar. For a pursuit race it also generates the option to run a standard (boat classes) or crew (helm names) pursuit race

startim() This function sets the timesec function running once the race type has been selected and the screen set up

stdselected() This function is called when the "Std Pursuit (Boats)" button is pressed. It calls the stdpursuit function

crewselected() This function is called when the "Crew Pursuit (Helms)" button is pressed. It calls the crewpursuit function

setgrid() This function sets out the basic grid pattern of the screen so that as the other fields are added they go in the right place

othermenus() This function is called when the "Other Race" button is pressed while selecting the race type to be run. It displays the drop down menus for selecting the race type, start time and race length.

callback1(rtyp) This function is called when the race type is selected from the menu

callback2(rtim) This function is called when the race time is selected from the menu

callback3(rlen) This function is called when the race length is selected from the menu

done() This function is called when the "OK" button is clicked during race selection. It saves the race type and calls the function required to set it up

sethdrs1() This function puts up onscreen headers for Racing and start time

sethdrs2() This function puts up onscreen fields for Current time, Hours Mins, Secs

sethdrs3() This function puts up onscreen buttons for Close, Horn and Delay start, and headers for Next Start in, Mins, Secs

sethdrs4() This function puts up onscreen headers for Boat, Racing, and Start Time

sethdrs5() This function puts up onscreen headers for Crew Pursuit races

sethdrs6() This function puts up onscreen headers for Std Handicap races