



O U R C

Equipment checks

1. Equipment checks

Equipment is checked for a variety of reasons:

- a. The safety of the crew: bow-ball fitted, heel-restraints in place, buoyancy compartments intact;
- b. Prevention of further damage to equipment: eg spotting cracks in the hull or blades and getting them repaired;
- c. To ensure the equipment is usable for and/or will last the outing: eg if a fin or top-nut comes off during an outing, that is the session finished from a training point of view;
- d. To make rowing comfortable: badly pitched pins, worn slides, etc will not necessarily prevent you from using a boat, but they will certainly make rowing difficult; and
- e. To tune the boat for a specific crew in a specific event: to set the gearing ratio, heights, pitches, etc.

As a result you don't need to check everything every time. At the most basic, a pre-outing check is not going to take the same form as an annual check. Depending on how much time you have, it's probably best to work down the above list from (a) to (e).

2. Major check

All equipment should be thoroughly checked on a regular basis (at least once a year). Generally this check will cover (a), (b), (c) and possibly (d). By the end of it you should be confident that the boat is safe to be taken on the water, and could be used by a scratch crew. This check should include:

1. **Bow-ball:** Check that:
 - a. it is securely fixed on. This involves the rubber not being perished or split, and it being attached with a screw, not tape.
To test this try to pull it off.
 - b. it will offer protection if it hits someone. This involves covering the bow adequately, and not deflecting in any direction on contact. For both of these, the ball must be hard up against the end of the bow.
To test this, push it up, down and to the sides.

NB: you cannot repair a bow-ball. If it fails these tests it needs to be replaced. If you cannot find a replacement, the boat must be quarantined.
2. **Heel-restraints:** Check that:
 - a. the heel-restraints are intact, and can withstand tension.
 - b. the heel-restraints are independent (ie not the same piece of string looped under the footplate).
 - c. the heel-restraints are securely fastened to the footplate, and the footplate is both sound and securely fastened to the boat.

- d. the heel-restraints are set to a length that allows the heel to lift at most 7 cm. This is difficult for a general test given that the effective length of the heel-restraints on most models of footplates varies when the height of the footplate is changed.
- e. To test all of these, hold the heel of each shoe in turn and quickly pull it up. If you feel movement in the system, repeat this. If there is a problem with the state of the heel-restraint, replace it.

NB: Heel-restraints are vital safety equipment. Do not try to repair heel-restraints by re-tying snapped end together. If one section has snapped it may well be that another section is on the verge of doing so.

3. **Hull:**

- a. With the boat the wrong way up, start at one end of the boat and move to the other end, looking at and running your hands over the hull, checking for nicks, scratches and cracks. Then do the other side.

Make a note of any damage you find. If necessary, quarantine the boat and get a boatman to look at anything you are suspicious of. It is better to be safe than sorry in relation to this part of the boat given that it is in contact with the water. Water seeping through a crack can make the initial damage far worse.

- b. Finally turn the boat over and check the canvases.

4. **Buoyancy compartments:** To ensure that these are water-tight:

- a. all hatch covers and bungs must be intact, in place, and done up.
- b. the rubber seals should also be in place and not perished.
- c. any holes that have been drilled, to accommodate cox-box/Speed-coach cables and the like, should have been sealed.

You can see if there is a problem by looking for excess water in the compartment.

5. **Fin:**

- a. Check that the fin is flat and straight.
- b. Test that the fin is secure by trying to pull it out of the fin-box.

6. **Rudder:**

- a. Check the rudder by pulling the wire both ways and seeing that the rudder moves freely as you do so, and through the right arc.
- b. If there are centring marks, make sure they correspond to the rudder being straight.
- c. Have a close look at the wire to make sure that it is not frayed.
- d. Check the pulleys. The wire should be running smoothly through them.
- e. Make sure the handles are securely attached to the wire, and are level when the rudder is centred.

7. **Riggers:**

- a. Looking from the bow, check that all the riggers are level (stay riggers can be wedged to level them up by placing wedges between the middle-stay and the side of the boat), that all the pins are in line and parallel (that the spreads and lateral pitches are roughly the same) and that all the heights similar.

What you do as a result depends on the purpose of the check. If you are just making sure that the boat can be rowed, then the spreads and heights just need to be similar, though you should alter any pins which are leaning into the boat (ie have negative lateral pitch). If you are checking to see whether the boat is ready to race, you may want to be more exact.

At each seat:

- b. Make sure that the rigger number matches the seat.
- c. Check that the rigger is secure by giving it a light shake.
- d. Check that all the nuts are tight by trying to undo them with your fingers.
- e. Make sure that there are washers in all the places there should be washers.
- f. Check the welds for cracks.
- g. Also check the section of back-stay under the top-nut for hair-line cracks.

- h. Check that the stays are straight. (A bent stay can still work, but the act of bending it might have induced cracks and changed the pin's pitch.)
 - i. Check that the faces of the swivel are not too worn, that all the spacers are in place, so that the swivel doesn't move vertically, and that the inserts are not too worn, allowing the swivel to move horizontally.
 - j. Check that the pitch on the pin is sensible, and that the pitch of the swivel's face is sensible. (Again the degree of accuracy you work to depends on what you are checking for.)
8. **Shoulders:** Check that the shoulders are intact by holding the saxboard and trying to push it out from and in towards the centre line of the boat. If you suspect one might have broken, quarantine the boat and ask a boatman to check it over. NB the shoulders of older small boats may have sustained damage if the boat has been capsized.
9. **Seats:**
- a. Check that the decking is sound.
 - b. Check that the runners are secure and level with each other.
 - c. Check that the runners have stops on both ends.
 - d. Check that the seats slide smoothly, and cannot lift off the runners, or easily slide off the ends.
 - e. Check that the seat with the magnet underneath is over the sensor. This will usually be stroke's seat, the exception being bow-coxed boats, when it will be bow's seat.
10. **Footplates:**
- a. Ensure that all washers and wing-nuts are in place, and are finger-tight.
 - b. Check that the footplate is sitting in the grooves in the tracks, and that the tracks are securely attached to the decking. Give the footplate a push towards the bow and the stern to check that the footplate is secure in the tracks.
 - c. Check that the shoes are in a good state, and are securely attached to the footplate.
 - d. Check that the rake of the footplate (its steepness) is sensible.
 - e. Check that the heels are not digging into the bottom of the boat. This can occur at seats at either end of the boat where the hull curves up.
11. **Section:** Check that the washers and wing-nuts are all in place and tightly done up, and that there is no gap open.
12. **Speaker system:** Plug a cox-box in and check that all the speakers work, and that the cox-box shows a rate when the stroke seat is moved.
13. **Blades:**
- a. Check that the overall lengths and inboards are similar. This can be seen quite easily by laying the blades side-by-side on the floor. The level of accuracy accepted will again relate to your purpose and time available.
- For each blade check:
- b. that the shafts have no cracks in them. This can be done by holding the blade vertically, then tipping it over and listening for any water running down the inside of the loom.
 - c. that the handle is secure in the loom, if the blade is adjustable, and that the grip is secure and not too worn.
 - d. that the spoon is intact. Check for delaminating or chips around the edges, but NOT by running your fingers round them. Carbon splinters are not good.
 - e. that the sleeve is not too worn. This can adversely affect the pitch.
 - f. that the collar is level, securely attached and not too worn.

It is a good idea to draw up a check-list form, similar to those found on the Hudson Boat Works website (<http://www.hudsonboatworks.com/?p=information>), fill it in as you do the check, and file it. This sheet should also record any repairs done as a result of the check. If an incident occurs involving one of your boats, it is good to be able to produce a record for the boat in question.

3. Pre-outing check

The crew should run through a short checklist before boating. This will not be the same for every outing, and depends on how long it has been since you last used the boat, and whether you are sharing it with other crews. If, for example, you are using a general club eight which other crews use, or having a session in small boats which you know have not been used for a couple of months, you need to be a bit more thorough than if you are using the eight only you use, and which was fine for yesterday's outing.

These checks will need to be done by different people at different times when getting the boat out of the boathouse and getting into it. It is important, however, that one person, usually the cox or the steersman, takes responsibility for ensuring that they are done. Some they can do themselves, the rest they must check that every other crew member has done before pushing off.

While the boat is still on the rack, the cox/steersman should check the following:

1. Check the fin by lightly trying to pull it off. Check the rudder by pulling the wire both ways and seeing that the rudder moves as you do so.
It is worth doing this every outing, even if everything was fine yesterday because if something goes wrong with the fin or rudder the outing is over (you are unlikely to have a spare to hand), and you will take a long time trying to get back to the boathouse (perhaps not such a problem on the Isis, but not so good at Wallingford).
2. The bow-ball must be secure. Check that it cannot be pulled off, or deflected to the side.

Once the boat has been put on the water, the cox/steersman should check that the bungs for the bow and stern sections are in place. This is more important when using a four sporadically or when training in bad weather, as it is good practice to leave a boat to dry with its hatches open.

Once in the boat each rower should check their seat before numbering off:

1. The seat should move smoothly on the runners for the full length of the stroke.
2. The footplate should be secure and not going to move under the pressure of the first stroke.
3. Riggers should not be loose, and swivels should move freely. Top-nuts must not be loose. A light upward and downward pressure will show if the nuts are loose. To test the top-nuts try to undo them with your fingers.
NB: a top-nut coming off during an outing may well signal the end of the session, unless you have a spare, and spare spacers, with you.
4. Once clothing and/or shoes have been stowed, hatch covers should be closed.
5. If you are using your usual boat you should check that the heel-restraints are intact. If you are using an unfamiliar boat you will also need to check that they are of the appropriate length (in the region of 5 cm long, certainly so that the sole of the shoe cannot pass through the horizontal).
NB: heel-restraint length is dependent on the height of the shoes, so there is no point setting the length if the shoe height has not been set. If you are using the same boat every outing and the crew line-up has been set, this is easy to do. If, however, you are using an unfamiliar boat, each rower will need to set the height of their shoes and then check the length of the heel-restraint, and adjust it if necessary.

If the equipment fails in any of these areas, and cannot be repaired at the time, then do not use the equipment.

Note also that some of these will inevitably be checked: you cannot row if the footplates, riggers or blades are loose or if the seats, swivels or rudder jam - though it is amazing how many people only notice these halfway through the outing. It is the other checks that need to be made, not only because these will not be shown up during the outing, but because these faults and omissions have the most severe safety implications: the bow-ball, the hatch covers, and the length of the heel-restraints.

4. Pre-race check

It is heart-breaking to lose a race because of equipment failure. To avoid this situation you should check your boat before you race in it. The depth of the check will reflect the importance of the race. At the very least you need to be sure the marshals are going to let you boat. For the most important race of the season, however, you want to be sure that all that could have been done to ensure that everything is as it should be has been done before you take to the water.

However, thorough your checks are going to be, you must ensure that you will be safe on the water, and that you will pass the marshals' inspection. They will inspect your bow-ball, heel-restraints and hatch covers, so these must be in good order. Do not leave these to the day of the race, because it is highly unlikely that you will take a spare bow-ball or hatch cover with you.

In the days leading up to the race you should check that the rigging figures are still as you set up once the crew had been set. This involves measuring all the spreads, pitches and blade lengths, as well as heights and footplate positions if you have made a record of these, and re-adjusting for any movement that has occurred since the rigging was set up. Needless to say this requires that you have (a) specifically set these figures in the first place, not just rowed with the boat as it was from last year, and (b) kept a record of what the figures are.

At the same time you should start the inspection process to prevent equipment failure on the day. This must be done in time to do any repairs that are required. Your boatman will not be able to mend a crack in the hull on the day of the race. Finding such damage too late may mean that you have to race in another boat. During this check, which should follow the pattern of the major check, you are looking for anything which, if damaged, would prevent you from racing, and particularly anything that requires more than just a tightening up to correct. This includes damage to the hull, cracks in a rigger weld, frayed rudder wire, and such like. The rudder wire high-lights the fact that some elements of the equipment can carry on working normally right up until the point of failure. A rudder wire frayed down to one strand will carry in working, but will snap at any moment. Another hidden problem to look for is the screws attaching shoes to the footplates coming loose, a problem which is hard to detect until they fall out, and the shoe comes away.

Finally, on the day itself, before you boat you should give the boat one last check-over. Here you are looking to see that the seats and swivels are all moving freely, that all nuts and screws are done up tight enough, that the cox-box system is working, and that the fin and rudder are in working order.

5. Post-re-rigging check

Re-rigging your boat can cause problems, so you should check the boat over after having done so.

1. Check that the riggers have been put back on their correct seats. This is particularly important if you have bow-rigged the boat, so that the maker's numbers on the riggers no longer tally with the seats. (Marking the riggers with tape once they are in the right place saves so much time later on in the season.) Looking down each side from the bow or stern will show if the riggers are not in the right place or if a wedge has been left off or turned

- upside-down. Check that the washers are in position, and the right side of the riggers' endplates.
2. Check that the section is tightly done up, and that no washers have been left between the two bulkheads.
 3. Check that any footplates and seats that were taken out for the journey have been replaced, and in the right places.
 4. Check that the rudder wires have not been trapped when the riggers were put back on.
 5. Check that the connections in the cox-box system have been made again.

6. Boat washing

Boats should be regularly washed to preserve their condition and their performance. It is advisable to do this at least once a week. This is a good time to check over the bottom of the hull for any nicks, scratches and cracks. As part of this weekly wash, certainly before races, the slides and wheels should be washed as well. Finally, given that most infections are transmitted through physical contact, the blade handles should be washed, especially if the blades are being used by more than one person.

7. Reporting and quarantining

It is important that you have a system for reporting any damage found. A book or a whiteboard in the boathouse is better than just phoning the boatman for several reasons. If you just tell the boatman there is the possibility he may forget. Notes of damage written down in the boathouse are available to all users of the boats, so people wanting to use a particular boat can see if damage has been reported, or if a repair has been completed. Finally, a written record of damage noted and repairs carried out is a sensible thing to maintain in case something happens on the water.

This reporting system should be backed up with one for quarantining boat that have been damaged or are under repair. Notices can be attached to the boat. To further ensure that no-one uses the boat, it can be disabled, by removing the riggers for example. Finally a list of quarantined boats could be kept on the prominent safety notice board. Whatever system is put in place it is important that the rowers know what the system is so they can recognise it when it is implemented.