



STEAM SAFETY AT MTMBC

At MTMBC, all our members who own and sail steam powered vessels must follow the club's steam safety policies and guidelines for steam use.

The policies have been established over many years and reflect both the explicit requirements of our public liability insurance policy and practical guidelines gleaned from many years of experience. These policies and practices are designed to keep everyone safe and allow you and others to enjoy the sailing of live steam powered boats at public venues.

When sailing a steam power boat, except when docking, the boat should be kept 1.5m (5ft) from the bank, particularly when sailing in public areas.

THE RULES

All steam plants/boilers must have an annual inspection of the general condition of the boiler, associated pipework, pressurised ancillaries such as water pumps and a test of the effective operation of the Pressure Release Valve.

These annual inspections must be observed/undertaken by at least two other MTMBC members and a pass or fail recorded in the Steam Register Book which is kept in the Club House. You must not operate a steam plant/boiler without a valid inspection/test pass recorded in the Steam Register Book and you will not be covered by the Club's insurance policy without it

Day to Day & Annual Inspection Requirements:

The following checks should be undertaken by the owner or operator before every day operation:

- a. Check that the safety valve(s) operate at the specified release pressure as indicated by the red line on the pressure gauge.
- b. Check for any leaks or weeps from fittings, bushes and pipe work.
- c. Check the water level gauge waterways are clear by blowing down the glass and confirm that the water level returns to its correct position without delay.
- d. Check the correct operation of any pumps/injectors required to maintain or replenish the water level in the boiler(s)
- e. Check that the hand pump (if fitted) operates correctly and can be used to put water into the boiler in an emergency.
- f. Check that all clack valves seat properly.
- g. Check the regulator operation that it operates smoothly and that it can be completely closed and opened.

These day to day checks form the basis of the Annual Inspection that must be undertaken and a pass or fail recorded in the Steam Register Book

In addition, some boilers (dependant of water capacity & operating pressure (see **below***) require a boiler pressure test every 2 years. When these boilers are tested,

a test certificate will be issued and the details of this must be recorded in the Steam Register Book. Again, if your boiler requires a pressure test certificate, it must not be operated without a valid certificate recorded in the Steam Register Book and you will not be covered by the Club's insurance policy.

All commercially made refillable gas fuel tanks require a pressure test when manufactured and a Certificate should be supplied when purchased. At present, there is no requirement for refillable gas tanks to be re-tested during their useful life. If you own and plan to use such a tank you must record the pressure test certificate details in the Steam Register. If you plan to use a homebuilt gas tank, or a commercially manufactured tank that you do not have a test certificate for then you must have this tested and obtain the necessary certificate before use.

Operational guidelines

1. Do not refill gas tanks whilst installed inside the hull of your model. Butane gas is heavier than air and any leaks or spillage will accumulate in the bottom of the hull, and maybe ignited later!
2. Only refill gas tanks in the open air, away from potential ignition sources and other personnel. Under no circumstances should a refill of a gas tank be carried out inside the Club House.
3. You should only fire up a steam boiler some distance away from other Club members and members of the public. Ideally you should fire up the boiler on the table adjacent to the lakeside and if other members are already using the table ask them to move away until your boiler has reached normal operating pressure and your boat is ready to be launched.
4. Whilst your boiler and steam plant are heating and coming up to pressure, please do not stand over or lean over the boat/steam plant until the boiler reaches operating pressure. When you first attempt to operate the engine, you may get spurts of boiling water/steam/lubricating oil exiting the exhaust pipework which can scald or burn anyone who it comes into contact with!
5. Please double check that you have sufficient fuel on-board for the anticipated run time of the steam plan and that you have sufficient water in the boiler so that it will not boil dry in use. Do not rely on sight glass tubes alone to check the water level as these can often give false readings.

So, if you have a steam engine in a hull, or out, and are seeking help and advice on installation and operation, or if you acquire a dusty old steam engine/boiler and are wondering if it could fit in a boat why not bring it along to a Steam Team meeting, or contact, Alan Whitbread (email orsonkarte@btinternet.com Tel:01865 820582 or mobile 07765 263718 in the first instance.

***How do I work out if my boiler needs a pressure test every two years?**

It is a legal requirement that only boilers that have a product of more than 3 bar/litre need to be hydraulically pressure tested to 1.5 times normal operating pressure every two years.

To calculate if your boiler exceeds the 3 bar/litre measurement and requires a bi-annual test, firstly measure the full (complete) capacity of your boiler in litres.

NB. This is with the boiler completely filled with water and without the usual airspace you have during normal operation.

This gives your boiler **capacity figure in litres**.

Then look-up or note the normal maximum operating pressure of your boiler when in full steam. This should be recorded on your original boiler test certificate, or from the manufacturers data, or from the pressure gauge reading when the pressure release valve is just leaking excess steam.

This gives your **pressure figure** (usually in pounds per square inch PSI) and this needs to be converted into bars.

1.bar = 14.50psi

2.bar = 29.00psi

3.bar = 43.51psi

4.bar = 58.01psi

5.bar = 72.51psi

The majority of model boat steam boilers are normally operated at around 30psi – 60psi. To calculate the bar/litre product of your boiler simply multiply the capacity in litres by the normal operating pressure in bars to obtain the bar/litre figure.

e.g.

1. If your boiler operates at 2 bar (30psi) and has a capacity of 1 litre then it has a **2 bar/litre rating**.
2. If your boiler operates at 3 bar (43psi) and has a capacity of 0.75 litre then it has a **2.25 bar/litre rating**.
3. If your boiler operates at 3 bar (43psi) and has a capacity of 1.5 litres then it has a **4.5 bar/litre rating**.

ONLY BOILERS OF GREATER THAN 3 BAR/LITRE NEED TO BE PRESSURE TESTED EVERY 2 YEARS

Registering the boiler number

Commercially manufactured boilers and refillable gas fuel tanks usually have a unique serial number marked on them. All boilers and gas tanks must have an identification serial number which will be recorded on the original test certificate.

If there is no existing serial number, a number will be allocated by the boiler tester at the initial test and this number must be permanently displayed on the boiler or gas tank in such a way as to not give rise to any additional stresses on the boiler shell or tank.

Whenever you make a record in the Club's Steam Register Book you must use the serial number of the boiler or gas tank to identify your equipment.

Boiler Testing

Contact Alan Whitbread on mobile 07765 263718 or email him at orsonkarte@btinternet.com who has contact with the boiler tester from SMBEC. For a small payment Boiler test and Gas Tank test can be done and certificates issued.