

If fumes get into your boat, you'll need a lifesaver



CO Alarm Requirements v1.0 Mar 2019

From the 1st April 2019 a carbon monoxide alarm will be required on all boats in scope of the Boat Safety Scheme (BSS) requirements that have accommodation spaces. BSS Certifications will not be issued to boats without suitable alarms.

Carbon monoxide (CO), is produced when fuels such as petrol, coal, wood, oil, paraffin or gas don't burn efficiently, and sources include domestic appliances like heaters or cookers and engine exhaust fumes. It cannot be seen heard, touched or felt and is so toxic it can kill in minutes while longer exposure at lower concentrations can affect peoples' physical and mental well-being.

Why do I need to be protected by a carbon monoxide alarm?

Appliances and engines on your own boat can cause CO, but you can and should take steps to stop that by having good installation, regular maintenance and using equipment as the manufacturer intended - prevention is always better than detection.

But a boat crew has no means to control or prevent CO from external sources such as the exhaust fumes of adjacent craft and nearby equipment. The only protection from outside sources of CO is a warning alarm and this is the reason why the BSS has introduced the new requirements.

The presence of CO is a creeping danger that needs an immediate alert. People are at most risk when asleep as they may not become aware of the symptoms of carbon monoxide poisoning until it's too late.

The alarms specified in the BSS requirements are also sensitive to the lower quantities of the gas so providing a warning to the potential risk of long-term health damage.

Placing the alarms to provide the best protection - what do the CO alarm makers say?

Follow the manufacturer's installation instructions as far as the space and nature of the boat allow, to get the best protection from inside and outside sources of CO.

But if the directions are difficult to meet on your boat, follow these best practice pointers:

- In living quarters place alarms between 1m and 3m (on plan view) from appliances
- Keep alarms from being directly above a source of heat or steam
- If wall mounting an alarm, fix it high up, but at least 150mm from the ceiling and where the indicator lights can be seen
- If ceiling mounting, fix alarms at least 300mm from the cabin sides and bulkheads
- In sleeping quarters have the alarm in the "breathing zone", i.e. near the bed head
- Before fixing, test that the crew can hear an alarm from any position in the boat, or buy further alarm(s)



The BSS CO Alarm Requirements - Section 6.4 BSS Examination Checking Procedures

Check 6.4.1 Do I need an alarm, or alarms, on my boat to meet the requirements?

To have the protection from the risk of outside sources of CO and to comply with the BSS Requirements, any boat that has accommodation space will need to have at least one CO alarm i.e. a cabin or other space surrounded by permanent boat structure and if that space is used for sleeping, cooking, eating, washing or steering.

Audibility is the key issue in setting the numbers of alarms needed. Boats with one open-plan space will need only one CO alarm.

However, if the boat has internal doors, then the CO alarm must be no more than 10 metres away from any door into any accommodation space. Having an alarm within 10 metres of any internal door will help ensure that an alarm activation will be audible to all onboard, wherever they are.

6.4.1R – If the vessel has one or more accommodation space(s), are the correct number of carbon monoxide alarms provided?	
<p>Identify the presence of one or more accommodation space(s).</p> <p>If present, check for the presence and location of CO alarm(s).</p> <p>Check by visual assessment and if necessary, measure the distance between carbon monoxide alarm(s) and any door that links accommodation spaces'.</p>	<p>All vessels having one or more accommodation space(s) must be provided with at least one carbon monoxide alarm.</p> <p>A carbon monoxide alarm must be located within 10m of any door that links accommodation spaces.</p>
<p>Note: where there is only a single, open-plan accommodation space only one carbon monoxide alarm is required irrespective of the size of the space.</p> <p>Guidance for owners: this is a minimum safety requirement, intended to provide a warning that is audible throughout the boat, related to carbon monoxide entering the boat from outside sources. For the best protection from carbon monoxide entering the boat from sources outside and inside the boat follow the carbon monoxide alarm manufacturer's or supplier's advice about the number and placement of alarms as far as the space and nature of the boat allow.</p> <p>Guidance for owners: make sure alarms are audible to everyone aboard. More information about staying safe from carbon monoxide on boats is available at www.boatsafety.org/co.</p>	

Owners action: test alarm audibility with your crew today.

Did you know: many makers of certified CO alarms that meet the BSS requirements, can supply accessories such as extreme loudness remote sounders, flashing lights and under-pillow vibrating pads for people with hearing loss.

Check 6.4.2. On private boats, strong advice is to have a carbon monoxide alarm in the same space as any solid fuel stove. On non-private boats, including hire boats, this is mandatory.

Because stoves produce huge amounts of CO, a faulty stove or one used with the door open, could easily flood a cabin with poisonous fumes. So, if anyone sleeps aboard and if your boat has one or more solid fuel stoves, a CO alarm within each accommodation space that contains a solid fuel stove will give protection to the boat occupants.

Although non-compliance with 6.4.2 will not stop the certification of a private boat, our advice is to meet this Check for the safety of you, your family and friends.

6.4.2 A/R – If any solid fuel stoves are installed, and if the vessel has berths present within any accommodation space, is a carbon monoxide alarm provided within the same accommodation space(s) as the solid fuel stove(s)?

Identify the presence of any solid fuel stove and whether berths are present within any accommodation space.

If any solid fuel stove(s) and berths within any accommodation space(s) are present, check for the presence and location of CO alarm(s).

All vessels having one or more solid fuel stove(s) installed, and where berths are present within one or more accommodation space(s), must be provided with a CO alarm within each accommodation space that contains a solid fuel stove.

Note: the provision of a carbon monoxide alarm(s) in support of the requirement at Check 6.4.2 does not have to be in addition to the provision at Check 6.4.1. Depending on the configuration of the accommodation spaces (see 2nd requirement at Check 6.4.1) one correctly located alarm might be all that is required to comply with Checks 6.4.1 and 6.4.2.

Check 6.4.3. Which alarm should I choose?



There are many alarms on the market and making the right choice could save your life, and that is why the BSS requires certain quality standards.

Only CO alarms marked as being certified by an accredited third-party certification body to BS EN 50291 comply.

Certification marks show an alarm has been made to an acceptable standard and provide an assurance about performance and reliability - whereas non-certified products don't. Look for the BSI and LPCB certification marks – the major, well known brands mentioned in the check have these. Combined fire and CO alarms can be accepted, but make sure the carbon monoxide element of the alarm is certified to BS EN 50291

6.4.3R – Are carbon monoxide alarms in open view and of a suitable type?

Where one or more CO alarms have been found to be necessary at Checks 6.4.1 and/or 6.4.2, check the location of each required alarm.

Check the markings on each required CO alarm.

Identify the test function button on each required CO alarm.

CO alarms must be in open view with all cabin doors, cupboard doors, curtains and loose furniture etc in place

CO alarms must be marked as being certified by an accredited third-party certification body to BS EN 50291 or equivalent.

CO Alarms must be provided with a test-function button

Note: the main accredited third-party certification bodies in the UK are BSI and LPCB. For the following makes of carbon monoxide alarm accredited third-party certification to BS EN 50291 can be assumed – BRK, Dicon, Ei Electronics, Fire Angel, FireHawk Alarms, First Alert, Honeywell and Kidde. For other makes, removing the alarm from its base may be necessary to view labels and approval marking on the base. Permission for removal should be sought from the owner (or representative). Documentary evidence of accredited third-party certification to BS EN 50291 is acceptable.

Guidance for owners: although not a BSS requirement, CO alarms marked to the 'BS EN 50291-2' are the best choice for boats. They have been tested to meet the more onerous conditions found in boats.

Did you know: BS EN 50291-2 includes additional tests for vibration, shock and motion as well as covering immunity to higher levels of electrical or radio interference; all typical in boats. Sensors will be made of corrosion resistant materials suitable for use near water.

'Black-spot' colour-changing indicator cards are not a suitable alternative to CO alarms, they will not wake you if you are sleeping.

Owner action: check your alarms are certified. If you require new alarms, see the list of industry-recommended CO alarms for use on boats at www.boatsafetyscheme.org

These CO alarms are readily available from chandlers to supermarkets, independent hardware high street shops, DIY chain-stores, electrical retailers, builders' merchants as well as specialist online suppliers and the major online shopping outlets.

Check 6.4.4. Looking after your carbon monoxide alarm

CO alarms usually have a life of between 7 -10 years but if your alarm gets damaged replace it without delay. Your CO alarm will have a function test button. Press the test button on your CO alarm when you first board the boat to check that it is working properly and test the alarm at least once a month when the boat is in use.

6.4.4R Are carbon monoxide alarms in good condition?

Where one or more CO alarms have been found to be necessary at Checks 6.4.1 and/or 6.4.2, visually check the condition of each required CO alarm.

Operate the test function button on each required CO alarm.

CO alarms must be in good general condition, and must not show signs of any of the following indicators of poor condition:

- damage or deterioration to the body of the alarm or the fixing mechanism;
- having passed any manufacturer's express replacement date;
- failing the test function test.

Note: Examiners are not required to open up alarms to check for internal damage or deterioration or for manufacturer's express replacement dates.

Owner action: consider removing the alarm from a winterised boat because long periods of sub-zero temperatures may affect its sensor and battery performance.

Owner action: boat owners are strongly recommended to remove or replace any additional CO alarms that are not in good condition and/or not independently certified. Expecting that these will work when most needed may be unrealistic and could put you and the crew at risk.

Did you know: pushing the test button proves the sensor is fully active; any analogue or digital circuitry and software are operational; the battery is healthy; and that the LEDs, display and audible sounder are functioning.

Living With Your Carbon Monoxide Alarms

What should I do if the alarm goes off?

If your CO alarm goes into alarm, open doors, windows, and awnings to allow fresh air into the boat. Turn off all fuel burning appliances, such as ovens, heaters and the engine, and get off the boat as safely as possible. Make sure you find out what the source of the problem was CO and have a qualified person fix any engine or appliance faults before using them again.

What should I do if I suspect I've been poisoned?

Owner action: understand that any of the following symptoms could be caused by CO poisoning:



Owner action: If you think you are suffering carbon monoxide poisoning, contact your doctor or if the symptoms are severe get to A&E and let them know you suspect carbon monoxide poisoning. They can do a blood or breath test to check you are ok.

Remember that CO alarms save lives never ignore them – they NEVER false alarm.

Visit boatsafetyscheme.org for more information about the symptoms of carbon monoxide poisoning and how to steer clear of danger.