

Training Guide: Bed Bug Exterminator



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Introduction



This guide has been created by LVC UK Ltd to help users operate and maintain their Duplex equipment safely and effectively.

It provides practical, day-to-day guidance. For full technical specifications and compliance documentation, please refer to the original manufacturer's manual supplied with the machine.

Understanding Bed Bugs



Bed bugs (*Cimex lectularius*) remain a growing and persistent challenge worldwide. These small, elusive insects are highly skilled at concealing themselves in cracks, joints and soft furnishings and have developed increasing resistance to many traditional insecticides. Like other blood-feeding insects, they rely on human hosts to survive, often feeding unnoticed.

To manage bed bugs effectively, it is essential to understand their behaviour, life cycle and movement patterns, alongside the most effective control and prevention strategies. Infestations are no longer limited to private homes or accommodation settings such as hotels and bed & breakfasts. In recent years, bed bugs have been identified in a wide range of public and shared environments, including public transport systems, train stations and airports, with confirmed findings on seating in buses, trains and aircraft.

This guide has been developed to provide clear, practical insight into bed bugs and to support professionals involved in the detection, management and eradication of infestations.

Although bed bug bites are often painless at the point of contact, allowing the insects to feed undetected, they can later result in itching, skin irritation and, in some cases, allergic reactions. Beyond physical symptoms, infestations can also cause significant psychological distress and disruption.

Across Europe, the scale of the issue has increased sharply. Countries including France, Germany and the UK reported severe national outbreaks in 2023, prompting widespread concern, while Italy has also seen a notable rise in reported infestations. This underscores the growing need for effective, non-chemical and reliable solutions to control bed bug populations.



Health Impact of Bed Bugs

Bed bug bites can trigger skin redness and allergic responses. While the bite itself is typically unnoticed at the time, it often leads to persistent itching afterwards. Scratching can increase the risk of secondary skin infections and ongoing infestations are frequently linked to disrupted sleep, heightened anxiety and psychological distress.

Although bed bugs are not known to spread disease, their presence can significantly affect well being and quality of life. Combined with the financial burden of pest control and disruption to premises, this makes proactive and effective bed bug management essential .

Bed Bug Biology

Bed bugs are small, flattened, oval-shaped insects that are most active at night. Adult bed bugs typically measure around 4–5 mm in length and are reddish-brown in colour. As they feed exclusively on human blood, their appearance darkens noticeably after feeding.

Their development follows three stages: egg, nymph and adult. Nymphs must take a blood meal between each moulting stage in order to mature. Egg hatching times vary depending on environmental conditions, particularly temperature. In warmer conditions, eggs can hatch within a few days, while cooler environments extend this period. Under favourable conditions, the full development from egg to adult generally takes around one month.

Behaviour and Feeding Patterns

Bed bugs locate their hosts by detecting body heat and carbon dioxide released through breathing. They usually feed at intervals of several days but are capable of surviving for extended periods without a blood meal. Feeding sessions typically last a few minutes, during which the insect remains attached to the skin until it is fully fed.

Outside of feeding times, bed bugs seek shelter in dark, undisturbed locations close to resting areas. Common hiding places include mattresses, bed frames and surrounding cracks or joints. They may also be found in less obvious locations such as skirting boards, electrical sockets, furniture, behind wall hangings or within curtain folds, as they naturally avoid light.

How to identify a bed bug infestation



Recognising a bed bug infestation requires a lot of attention and patience. In order to carry out an accurate inspection, it is necessary to have some essential tools to identify their presence early on, including:

- Torch
- Magnifying glass
- Screwdriver
- Insect collector (like a jar with a screw-on lid which you can find in pharmacies)
- Insect brush or tweezers

Caution: *Following the guest's report, it is essential to carry out the environmental inspection as soon as possible, in order to promptly take the required measures to eliminate the presence of bed bugs*

Signs that could indicate the presence of bed bugs are as follows:

1. Bites on the skin: if the host wakes up with bites on the skin, often arranged in lines or groups, these could be a sign of bed bugs. These bites can be itchy and tend to appear mainly on arms, legs, neck or other exposed body parts during sleep.
2. Traces of blood or faeces: after feeding, bed bugs can leave traces of blood on sheets or pyjamas, a sign of their passage. In this regard, it is essential to carefully observe the seams around mattresses or pillows. It is also possible to find dark-coloured excrements (0.3 mm to 1 mm in diameter) in the drawers of furniture next to beds, in wardrobes or inside suitcases.
3. Unpleasant smell: it is possible to perceive an 'unpleasant' smell in the bedroom or in the vicinity of the bed and/or sofa; this could be a sign of infestation. However, the smell alone does not provide any evidence that bedbugs are actually present in the room.
4. Direct sighting of bed bugs: it is likely to have seen with the naked eye (and even photographed) young or adult bed bugs on the mattress, bed or surrounding furniture.

Why Steam?



- **Immediate effectiveness**

High-temperature steam quickly kills adult bed bugs as well as their eggs and nymphs. The high temperatures penetrate into cracks and folds in mattresses, recesses where bedbugs tend to hide.

- **Penetration into crevices**

Steam has the ability to penetrate cracks and hidden places where bed bugs often take refuge, reaching areas that would otherwise be difficult to treat with insecticide sprays or powders.

- **Absence of neurotoxic insecticides**

Pest elimination by steam does not require the use of insecticides or other chemicals: this is particularly advantageous for 'sensitive' environments such as bedrooms, hospitals and schools, where exposure to chemicals could be dangerous.

- **Reducing insecticide resistance (absence of resistance)**

Bed bugs can develop resistance to insecticides over time, making chemical treatments less effective. In contrast, steam benefits of the physical heat given by the high temperature, to which bedbugs cannot develop resistance.

- **Safety for human and pet health**

Steam is safe for people and pets. It does not leave toxic residues in the surrounding environment and does not represent a risk for human health.

- **Versatility and accessibility**

Steam generators are versatile tools that can be used on a wide range of surfaces and materials, including mattresses, furniture, upholstery, carpets and curtains.

- **Removal of hidden dirt**

In addition to eliminating bed bugs, steam also removes hidden dirt and allergens, improving the overall cleanliness of the environment.

- **Environmental sustainability**

The use of steam makes it possible to manage the infestation of these pests through an environmentally friendly and sustainable method, reducing or eliminating the need for harmful chemicals.

Advantages of using Steam-X

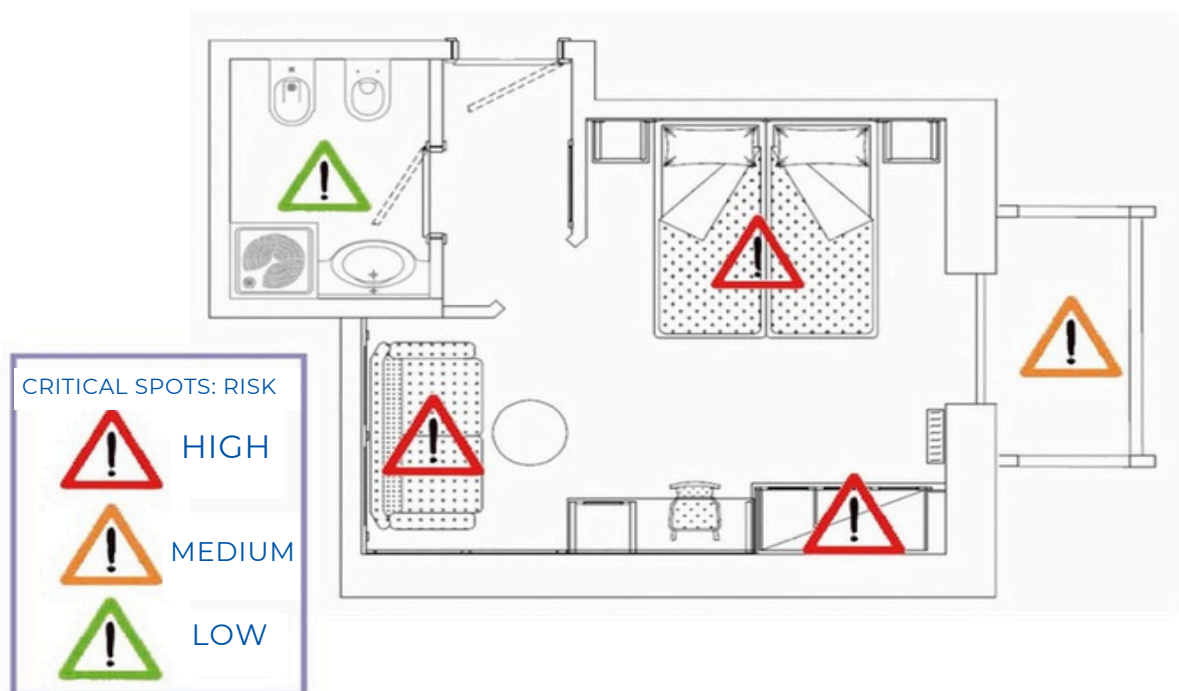


- Steam gun equipped with an internal 400W heating element that allows the output steam to superheat to 130°C.
- The accessory's special terminal softens the steam flow to prevent the dispersion of the bugs into the surrounding areas.
- High-temperature steam is lethal for bedbugs and their eggs.
- Unlike chemical pesticides, steam is a completely environmentally friendly cleaning method that does not release harmful residues into the environment.
- The gun can be used on all surfaces.
- Supervision of the environment and regular use of steam helps to prevent the reappearance of new infestations.



Preparing the area to be treated

- Remove bed linen (sheets, blankets, pillowcases) and proceed to machine wash at 60°C at least.
- Inspect the mattress, also carefully check the bed frame. If possible, dismantle the bed to inspect each component.
- Remove clothing and other textiles: move all clothing, pillows, curtains and other textiles in the room. Also wash these items at high temperatures and dry them properly.
- Reduce clutter: reduce clutter in the room and inside furniture and cupboards to facilitate the operator's access to all infested areas.
- Clean the environment: in addition to catching bugs and their eggs, use a vacuum cleaner with a HEPA filter to remove dust and other debris from the area.
- Dispose of waste: immediately empty the vacuum drum into a sealed plastic bag and then steam the surface to eliminate all living forms of bedbugs or other organisms.



Preparation of the steam generator with Steam-X

1. Fill the tank or the boiler, depending on the model you purchased, with water.
Connect the power cord of the steam generator to the electrical outlet.
2. Connect the Steam-X accessory
3. Plug the socket on your steam generator, ensuring that the black spring on the plug is correctly locked into the socket.



4. Activate the general power switch on the back of the machine, press the power and the boiler button, wait approximately 5/6 minutes until the green 'steam ready' indicator on the machine lights up, at which point both the steam generator and the Steam-X gun will be ready to be usage.
5. If the accessory is correctly plugged in, the heating element inside the gun will start to heat up

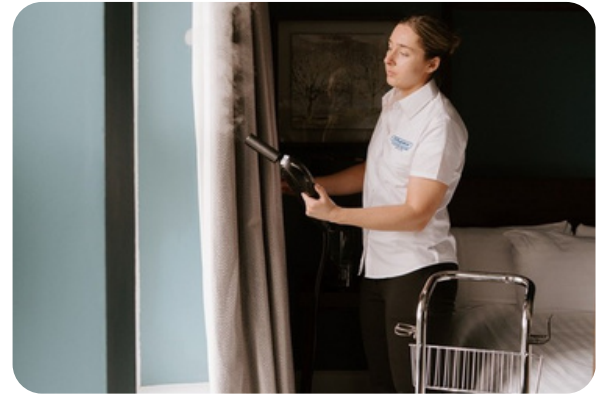
Caution: When this tool switched on for the first time, smoke may come out of the gun. This is due to moisture accumulated during storage and will cease after a few minutes. With the first usage or if not in use for a longer time, make sure to discharge the first steam flow to the ground to clean the hose of any eventual processing dross and impurities.

6. To activate the steam flow, press one of the two buttons on the accessory handle. Both buttons are set with the same steam flow rate (minimum steam flow).



■ Caution: Before steaming surfaces, discharge the condensation produced by the appliance into a container for approximately one minute.

7. It will now be possible to proceed with the surface treatment: work at a distance of about 20 centimetres while keeping the gun in a SLOW movement.



Suggestions to guarantee a complete and effective treatment

In order to guarantee a complete and effective treatment against bedbugs, it is important to follow a few key tips:

Inspect all suspicious areas including beds, furniture, carpets, curtains, electrical outlets, baseboards or cracks in the floor or walls.

Look for the presence of bedbugs or their passage (such as dark stains on fabrics)

Move the dispensed steam slowly over all infected surfaces to ensure that the heat penetrates and kills the bedbugs and their eggs.

If the bedbug infestation is particularly massive, more inspections and more steam interventions will be necessary.

After the first treatment, it is suggested to schedule at least one follow-up treatment within 7-10 days.

All signs of infestation (blood spots, faeces, adults, and nymph) must be removed in order to not confuse future inspections.



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