

Controlling construction dust with on-tool extraction

HSE information sheet

Construction Information Sheet No 69

Introduction

This information sheet gives guidance on choosing, using and maintaining on-tool extraction for controlling construction dust. It is mainly for managers and supervisors but is also useful for trade union safety representatives and workers.

The hazards posed by construction dust

Regularly breathing construction dust can cause diseases like lung cancer, asthma, chronic obstructive pulmonary disease (COPD – which includes emphysema and other breathing difficulties) and silicosis. Silica is the second biggest killer of construction workers after asbestos.¹

Some of the most common construction jobs create high dust levels. These jobs often involve the use of power tools like cut-off saws, grinders, breakers and sanders. There is a legal duty for employers² to prevent or adequately control worker exposure to construction dust. On-tool extraction is an effective control for this dust and will reduce the risk of ill health.

How to choose on-tool extraction

On-tool extraction is a type of local exhaust ventilation (LEV) system which is fitted directly onto the tool. The 'system' consists of several individual parts – the tool, captor hood, extraction unit and tubing. Each part plays a role in establishing how effective the system is and the level of control it gives. Manufacturers/suppliers do provide complete systems but some parts (especially extraction units) can be used with other tool makes and models.

It is important to choose parts that are compatible and work together. The dust may be poorly controlled if you do not. Make sure the system is right for the particular task(s) and the method(s) of work. Involve workers in the selection process. Use the following guidelines:

Tools and accessories

Limit the amount of dust created by choosing appropriate tools and accessories – eg sanding blocks/pads or grinding discs with enough holes to allow the dust to be extracted through them (see Figure 1).



Figure 1 Tools and accessories providing for effective dust removal

Captor hood

The hood is the most important part of the LEV system. It is often manufactured as part of the power tool but it can also be retro-fitted to existing equipment. See Figure 2 for examples.

What it does

The hood captures the dust as it is produced.

How to choose the right one

Poor design or damage to the hood will significantly affect the control of dust. Check that the hood:

- is designed for the tool and the work that you are going to do (seek guidance on this from the manufacturer or supplier);
- sits as closely as possible to the work surface when in use – dust will escape through any gaps between the two;
- is easy to use and does not interfere with the work unnecessarily.



Figure 2 Examples of captor hoods on a grinder and breaker

Extraction unit

The extraction unit is like an industrial vacuum. It is a portable unit and also an important part of the LEV system (see Figure 3).

What it does

The extraction unit removes the dust from the captor hood, filters it and then stores it for safe disposal. Selecting the correct extraction unit is key to achieving this successfully.



Figure 3 Examples of different extraction units

How to choose the right one

You can use extraction units interchangeably on some tools but the specification of the unit must be suitable for the tool and the task:

- Choose an H (High) or M (Medium) class unit.³ These units provide effective and reliable extraction capability and are fitted with low-flow indicators. The units are marked with a special label (see Figure 4). Don't just use a HEPA filter in a general commercial vacuum. (Note: An L (Low) class unit is only suitable for lower-toxicity dusts like gypsum in plasterboard.)
- Check that the unit creates and maintains enough air suction to cope with the amount of dust the work will create (manufacturers/suppliers can advise). It needs to remove the dust as fast as it is created.
- Lots of fine dust can quickly clog filters. Choose units with pre-filters, built-in 'back-flushing' filter cleaning mechanisms or similar devices.
- Think how often the unit will need emptying. Check the waste capacity is right for the work.



Figure 4 Examples of labels on H and M class extraction units

Tubing

What it does

The tubing connects the captor hood to the extraction unit.

How to choose the right one

Check that the tubing:

- is the right construction, diameter and length for the work and the extraction unit;
- fits securely to both hood and unit.

How to use on-tool extraction correctly

Just providing the right equipment is not enough to control dust risks. The equipment needs to be operated correctly and be properly maintained. That means you should pay particular attention to the following stages:

Before use

Provide training

Workers need the right training before using on-tool extraction. This includes information on:

- selecting the right on-tool system;
- pre-use checks and maintenance;
- how to use the system correctly;
- other controls that may be needed (eg respiratory protective equipment) and how to use them;
- common faults, how to spot them and the action to take;
- what to do if there is a problem.

During use

Follow instructions on use

Make sure you apply the system to the work in the correct way. Focus on:

- checking it is in good working order (not damaged) before work starts;
- following the method of work;
- using the equipment in the right way. Follow manufacturer's instructions;
- ensuring the captor hood is as close as possible to the work surface;
- ensuring the tubing has a good connection to both the captor hood and extraction unit. Use an adaptor if needed, not tape;
- emptying the extraction unit regularly. Use the correct disposable waste bags. Seal and place in the right waste container. Do not empty these bags to recycle them;
- cleaning the equipment regularly (eg wipe down daily). Do not let dust build up on working parts.

How to maintain on-tool extraction

Regular checks/maintenance

Ensure that the system works properly first time, every time. Carry out formal maintenance checks at least once a week. You may have to do this more frequently if there is a high risk of the equipment being damaged. Concentrate on:

- damage to parts of the system such as the hood or ducting. Repair or replace straight away;
- maintaining the extraction unit's flow of air. Follow the manufacturer's instructions. Check that the airflow indicator and any built-in cleaning mechanism work properly. Replace filters when needed;
- replacing worn cutting discs etc.

Thorough examination and test (TExT)

Equipment also needs proper servicing and testing to make sure that it remains effective over a long period.

A TExT is a detailed and systematic examination that ensures the equipment can continue to perform as intended by its design. A person with the right knowledge, capabilities and experience should carry out a TExT **at least** every 14 months. You might need more frequent testing if regular wear and tear could limit the effectiveness of the system more quickly.

If you own an on-tool extraction system you will need to arrange for this examination and keep a suitable record to show that it has been done. If you are hiring

equipment, check with the hire company whether it has been appropriately tested with the hire company.

Further advice is provided elsewhere by HSE on these issues.^{4,5}

Other important issues

There are a number of other important issues relevant to users of on-tool extraction. These include:

- the risks linked to the dusts involved;
- other controls needed for these risks;
- guarding dangerous parts of the equipment;
- electrical safety and fire or explosion risks;
- lifting and carrying the equipment;
- working at height with the equipment;
- slips and trips from trailing cables.

Follow the advice given elsewhere by HSE on these issues.⁶

Cordless tools

The general principles of the above standards also apply to cordless tools with integrated filtered extraction devices. These units do not fall under the H (High), M (Medium) or L (Low) (filter) unit classification system.

References

- 1 www.hse.gov.uk/statistics/index.htm
- 2 *Control of substances hazardous to health (Fifth edition). The Control of Substances Hazardous to Health Regulations 2002. Approved Code of Practice and guidance L5* (Fifth edition) HSE Books 2005 ISBN 978 0 7176 2981 7
www.hse.gov.uk/pubns/books/l5.htm
- 3 BS EN 60335-2-69:2009 *Household and similar electrical appliances. Safety. Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for commercial use* British Standards Institution <http://shop.bsigroup.com/>
- 4 *Controlling airborne contaminants at work: A guide to local exhaust ventilation (LEV)* HSG258 (Second edition) HSE Books 2011 ISBN 978 0 7176 6415 3
www.hse.gov.uk/pubns/books/hsg258.htm
- 5 Are you a supplier, importer or hirer of equipment?
www.hse.gov.uk/work-equipment-machinery/supplier.htm
- 6 Health and safety issues www.hse.gov.uk

Further reading

For more general information on extraction see www.hse.gov.uk/lev/index.htm

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

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