

KHR Guide to (HSE) Health Safety Executive - in relation to LÄGLER Professional Floor Sanding Machines.

Useful information for Risk assessment / Method statement

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1. Dust Emissions

All LÄGLER equipment manufactured since 1988 does not exceed **2mg/m³ (0.024gr. /cu.yd.)** in line with TRGS 553 8/3008.

- HUMMELs produced after 2012 do not exceed **1 mg/m³ (0.012 gr./ cu.yd.)**
- TRIO and FLIP do not exceed **0.2 mg/m³ (0.0024 gr. / cu.yd.)**

Employees should be provided with correct PPE, P2 Dust masks for the purpose of emptying dust bags or should conditions deteriorate because of other trades on site.

Current HSE exposure limits of both hardwood and softwood dusts have a Workplace Exposure Limit (WEL) of 5mg/m³ which must not be exceeded. These are limits placed on the amount of dust in the air, averaged over an eight-hour working day. However, you must always take responsibility to reduce exposure to wood dust and keep it as low as 'reasonably practicable'.

The Control of Substances Hazardous to Health (COSHH) Regulations 2002 requires employers protect workers from the hazards of wood dust. Hardwood dust can cause cancer, particularly of the nose. Settled dust contains the fine particles that are most likely to cause respiratory conditions and damage the lungs.

2. Hand-Arm Vibration

The results of vibration measurements at final inspection of all new equipment, covering all LÄGLER machine types does not exceed the EU Vibration Guideline 2002/44/EG given release value for Hand-Arm-Oscillations of $2,5\text{m/s}^2$.

This places all LÄGLER machines below HSE "Exposure Action value" EAV For hand-arm vibration at a daily exposure of $2.5\text{ m/s}^2\text{ A(8)}$ over 8hrs. Furthermore take into consideration a machine operator will not work continuously for 1 full hour, stopping regularly to empty dust bags, change sanding belts/discs, move extension cables and take personal breaks.

It is the employer's responsibility to protect the employee against HAVS and carpal tunnel syndrome in accordance with HSE approved code of practice. Hand Arm Vibration Syndrome (HAVS) caused by exposure to vibration at work is preventable, but once the damage is done it is permanent!

3. Noise Emissions

Noise emissions are measured above the floor at operator's ear level. A tolerance of +/- 4 db(A) must be allowed for variation of site conditions, floor type, floor construction, Grit level of abrasive used.

Machine Noise Emissions as quoted from Manufacture Instruction Manual:

| | |
|--------------------|---------|
| LÄGLER HUMMEL | 76db(A) |
| LÄGLER ELF | 77db(A) |
| LÄGLER SUPERHUMMEL | 76db(A) |
| LÄGLER TRIO | 80db(A) |
| LÄGLER SINGLE | 77db(A) |
| LÄGLER ELAN | 89db(A) |
| LÄGLER FLIP | 86db(A) |
| LÄGLER UNICO | 77db(A) |

Employees must be provided with correct PPE in accordance with HSE approved code of practice. Choice of ear defenders or earplugs is the personal preference of the employee to ensure comfort, with suitable db reduction rating.

- The lower exposure action value is a daily or weekly average noise exposure level of 80 dB, at which the employer has to provide information and training and make hearing protection available.
- The upper exposure action value is set at a daily or weekly average noise exposure of 85 dB, above which the employer is required to take reasonably practicable measures to reduce noise exposure, such as engineering controls or other technical measures. The use of hearing protection is also mandatory if the noise cannot be controlled by these measures, or while these measures are being planned or carried out.
- Finally there is an exposure limit value of 87 dB, above which no worker can be exposed (taking hearing protection into account).

If you have to raise your voice to have a normal conversation when about 2 m apart from the other person, for any part of the day then you are at risk!

4. Lifting & Transportation

Machine Weights as quoted from Manufacture Instruction Manual:

| | | |
|--------------------|-------|---|
| LÄGLER HUMMEL | 79kg | (Machine Housing 41kg / Motor 34kg / Dust Tube 4kg) |
| LÄGLER ELF | 79kg | (Machine Housing 41kg / Motor 34kg / Dust Tube 4kg) |
| LÄGLER PROFIT | 44kg | Complete |
| LÄGLER SUPERHUMMEL | 87kg | (Machine Housing 47kg / Motor 35kg / Dust Tube 5kg) |
| LÄGLER TRIO | 86kg | (Machine Housing 54kg / Chassis 24kg / Add. Weight 8kg) |
| LÄGLER SINGLE | 45kg | Complete |
| LÄGLER ELAN | 8kg | Complete |
| LÄGLER FLIP | 9.8kg | Complete |
| LÄGLER UNICO | 20kg | Complete |

Safe manual handling and transportation of equipment should be done in accordance with HSE guidelines. There is no absolute maximum allowed weight limit by law but the HSE guidelines set out safe weights under specific conditions. The guidelines indicate men should be able to safely carry a load of up to 25kg if held close to the body at waist height and women 16kg.

Each employee should lift responsibly in accordance with HSE Manual Handling Regulations 1992 and risk assessment guidelines, within their own physical capability & comply employer's manual handling policy and training.

It is the employer's responsibility to provide training where 'reasonably practicable' balancing the level of risk against the measures needed to control the risk in terms of money, time and trouble. If it is 'reasonably practicable', the use of lifting aids, trolleys, tail lifts and ramps should be used wherever possible.

5. Understanding Electrical Safety on Construction Sites

Pre Construction Information for projects will specify that all tools must be cordless tools or those that operate from a 110V centre tapped to earth (CTE) supply system so that the maximum voltage to earth does not exceed 55V in accordance with ACOP (**Approved Code of Practice**). This is then included in the Principal Contractors Construction Phase documentation.

It is then up to the Principal Contractor to ensure all site operatives and appointed Sub-Contractors adhere to the site rules. If the Principal Contractor is appointing Sub-Contractors he has a list of approved "subbies" which he has assembled, all of whom are competent enough to follow the rules set out in the CDM (Construction, Design & Management) documentation. It is entirely the Principal Contractor's discretion to allow specialist trades to use 230v or higher equipment where necessary.

It is important to point out that 110v centre tapped or below voltage power tools are **NOT a legal** requirement on construction sites; but a **RECOMENDATION** of the HSE ACOP's

The use of 110v centre tapped and below equipment is an ACOP and best practice. The HSE will frown upon higher voltage powered tools being used, but cannot dictate the use of 110v due to EU directives. If the UK HSE enforces the use of 110v they are in direct breach of those directives and the philosophy of an open market within the EU.

The HSE expects support from industry on the best practice of using cordless & 110v and below powered tools as they have been proven not to kill anyone who uses them. This requirement (the

use of 110v centre tapped or below powered tools) should be identified within your company H&S policy the Construction Phase HSE Plan.

240v and greater electrical voltage power and tools can be used on site, however strict control measures are required; the use of armoured cabling, shortest lead lengths as possible, RCBO's/RCD's within the line, earthing, weather proofing, stringent inspections and usage, etc. Must be in place prior to use (ACOPs are available from the HSE).

Furthermore an electrical appliance site register must be formed and developed to enter the electrical equipment/tool details and records of inspections on the site. All appliances must be tagged and Portable Appliance Tested (PAT) every 3 months unless specified as low risk; e.g. fax PC's, kettles, photocopiers, etc.

Some examples of electrical powered tools that are greater than 110v being generally used on construction sites; electrical hoists, Sky climbers, overhead gantry's, electrical welding equipment, specialist core drilling, radiography and professional floor sanding.

As with most UK legislation they are Risk Assessment based.

6. Using 230v Sanding Equipment on Construction Sites

Classification: A professional sanding machine is not classified as "Hand Operated Equipment" (i.e. Portable Tool such as drill, angle grinder, breaker) but is in fact classified as "Hand Guided Equipment" as weight is in excess of 50kgs and the operator is positioned behind the machine and merely guides the direction of it and correcting the walking speed at which it travels, as it moves & rests on its own wheels. The operator during operation is at no time exposed to the risk of any moving mechanical parts, or any debris or dust generated as it is removed by its own incorporated extraction facility.

All brands of professional wood floor surface Sanding Machines are manufactured worldwide in 220/230v single phase or 440v three phase. It is impossible to achieve the rpm and power required for operating this type of equipment using 110v motor to sand a wooden floor to a professional standard with acceptable levels of dust extraction.

Smaller edge sanding machines that weigh up to 25kgs can be supplied in 110v variations should they be required. However once permission is granted for larger 230v equipment then it is no longer an issue.

- Trailing cables: Trained operators will clear a safe path in order to operate the equipment, ensuring to avoid other operators working at a safe distance apart.
- Blue Cable & 230v 16a Blue IP44 "Commando" sockets should be used to clearly identify them apart from other 110v yellow cables,
- If necessary barriers should be used to cordoned off a safe working area. Signs should be posted notifying other trades that 230v machinery is in use.
- Due to the processes required to sand and finish a wooden floor, the specific working area will need to be cleaned of debris and obstacles, with no other trades working in the immediate area or directly on the floor being sanded. In the event trailing cables were to be accidentally to be run over and damaged, installed "RCD/RCBOs" would protect the operator and equipment.
- Residual Current Device. (RCD). If equipment operating at 230v or higher is used, an RCD provides additional safety. An RCD is a device which detects faults in the electrical system

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and rapidly switches off the power supply. RCD's are installed into the main switchboard or as close to the socket-outlet, as this means that the trailing supply cables to the equipment are permanently protected for the safety of the operator & equipment.

- Residual-current circuit breaker with overcurrent protection. (RCBO) combine the operation of the MCB and the RCD into one unit. RCBO's offer an extra level of safety with incorporated overload protection, used to protect individual circuits.
- (PAT) Portable Appliance Testing should be carried out every 12 months as a minimum, or as per the request of the principal contractor's requirement for using 230v equipment on site. Usually within 3 months.

7. Waste Material generated from floor sanding.

- Potential Fire Risk can occur from dust / waste material generated from sanding Process.
 - Empty the dust bag responsibly into a non-combustible container outdoors and cover/seal this container with a non-combustible cover and dispose of responsibly.
 - Never leave full bags of dust on machines, including dust extractors and vacuum cleaners unattended on site.
 - Always clean and empty machines before transport or storage!
 - Always disconnect power when not in use!
 - Increased risk of fire when sanding woods with a large amount of resin, oil or wax floors or metal!
- Oil, Wax & Metal Sparks can lead to spontaneous combustion!
 - Increased risk of fire when sanding woods with a large saturation of resin, oil or wax floors or metal objects that are not below the surface!
 - The machine must always be cleaned carefully after use, before transport or storage!
 - Cloths and pads that have been saturated in oil or wax can spontaneously combust and must be disposed of responsibly!
- Increased risk of fire due to the formation of sparks while sanding:
 - Exposed nail heads in the floor, that have not been punched below the surface.
 - Machines that have not been serviced and adjusted correctly.

8. EC Conformity

All LÄGLER equipment displays the CE symbol which indicates the manufactured equipment conforms to EC Directives. A copy of this certificate is on the rear of each individual machine instruction manual. Also contained in each manual are technical specifications.

9. Disclaimer & Resources

The information provided within this guide is our interpretation of current information and regulations and is correct to the best of our knowledge. No liability for any errors or omissions is accepted. KHR Company Ltd can accept no responsibility or liability for any loss as a result of any person placing reliance on any information contained herein. Prospective users should therefore satisfy themselves by conducting their own appropriate research. This revision Feb 2017

Resources:

<http://www.laegler.com>

<http://www.hse.gov.uk>

<http://www.chas.co.uk>