

Vibration and Noise

Hand-arm vibration and hearing damage from tools · both permanent, both preventable, both need records

Scope and limitations — read before use

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1. Hand-arm vibration — the values that matter

Value	Level	What it means you must do
Exposure Action Value (EAV)	2.5 m/s ² A(8) = 100 points	Assess and reduce exposure, provide information and training, and put the worker under health surveillance.
Exposure Limit Value (ELV)	5 m/s ² A(8) = 400 points	Must not be exceeded. If a worker reaches it, exposure must be reduced immediately.

HAVS causes permanent numbness, tingling, loss of grip and blanching of the fingers, plus carpal tunnel syndrome. It does not recover. Once a worker has it, the only remedy is to stop the exposure, which usually means they can no longer do the job.

2. Points — the practical way to manage it

Points are easier on site than m/s². 100 points is the action value for the day, 400 is the limit. Add up the points for every tool a person uses in a day.

Typical tool	Typical vibration	Points per hour (approx)	Time to reach 100 pts	Time to reach 400 pts
Angle grinder	4 – 6 m/s ²	65 – 145	1 hr 30 – 3 hrs	6 – 12 hrs
Hammer drill / SDS	9 – 12 m/s ²	325 – 575	10 – 18 min	40 – 75 min
Breaker (medium)	12 – 18 m/s ²	575 – 1300	5 – 10 min	20 – 40 min
Needle gun / scabbler	15 – 20 m/s ²	900 – 1600	4 – 7 min	15 – 27 min
Disc cutter	4 – 8 m/s ²	65 – 260	45 min – 3 hrs	3 – 12 hrs
Impact wrench	5 – 9 m/s ²	100 – 325	18 min – 1 hr	1 hr 15 – 4 hrs
Sander (orbital)	3 – 6 m/s ²	36 – 145	1 hr 30 – 4 hrs	6 – 16 hrs

These are indicative ranges only, for planning. Use the actual figures for YOUR tools — the manufacturer's declared value, and preferably real in-use data, because declared values are often optimistic. HSE publishes a hand-arm vibration exposure calculator.

Look at the breaker row again. A worker on a breaker can pass the daily action value in about five minutes and the legal limit in about half an hour. That is why this needs managing rather than assuming.

3. Controlling vibration

- Eliminate the task. Can it be done by a machine, or bought in cut to size?
- Choose lower-vibration tools and keep them maintained — blunt discs and worn bits massively increase exposure and time on the tool.
- Limit trigger time, not shift time. It is the time the tool is actually running in the hand that counts.
- Rotate the task between workers so no one person absorbs the whole exposure.
- Keep hands warm and dry. Cold makes symptoms far worse. Gloves keep hands warm but do NOT reduce vibration — anti-vibration gloves are not a control.
- Train workers to report symptoms early, before the damage is permanent.

4. Daily vibration exposure record

Date	Name	Tool	Trigger time	Points	Daily total	Over EAV (100)?	Over ELV (400)?	Action taken

5. Noise — the values that matter

Value	Level	What it means you must do
Lower Exposure Action Value	80 dB(A) daily or weekly average	Assess the risk, provide information and training, and make hearing protection available on request.
Upper Exposure Action Value	85 dB(A)	Reduce exposure by means other than hearing protection so far as reasonably practicable. Provide hearing protection and mark hearing protection zones where its use is mandatory. Health surveillance required.
Exposure Limit Value	87 dB(A)	Must not be exceeded, taking account of the reduction given by hearing protection. If it is exceeded, act immediately to reduce it.

Rule of thumb: if you have to shout to be understood by somebody two metres away, you are probably around 85 dB(A) and you need to do something about it.

Typical activity	Approximate level
Normal conversation	60 dB(A)
Concrete mixer, general site background	80 – 85 dB(A)
Angle grinder, circular saw	95 – 105 dB(A)
Breaker, disc cutter	100 – 115 dB(A)
Cartridge tool, piling	110 – 125 dB(A)

Indicative only. Assess your own activities.

6. Controlling noise

- Quieter methods and quieter equipment first — a block splitter instead of a disc cutter, hydraulic bursting instead of breaking.
- Keep other people out of the noisy area. Distance and screening work.
- Limit the time anyone spends in high noise.
- Hearing protection selected for the actual noise level — over-protection is a real problem too, because a worker who cannot hear a reversing alarm is in a different danger.
- Hearing protection zones marked and enforced.
- Audiometric health surveillance where exposure is at or above the upper action value.

7. Noise and hearing protection record

Task / area	Measured or estimated level	Protection required	Zone marked?	Health surveillance needed?	Review date

CONSTRUCTION SITE SAFETY

Assessed by	Signature	Date	Review date