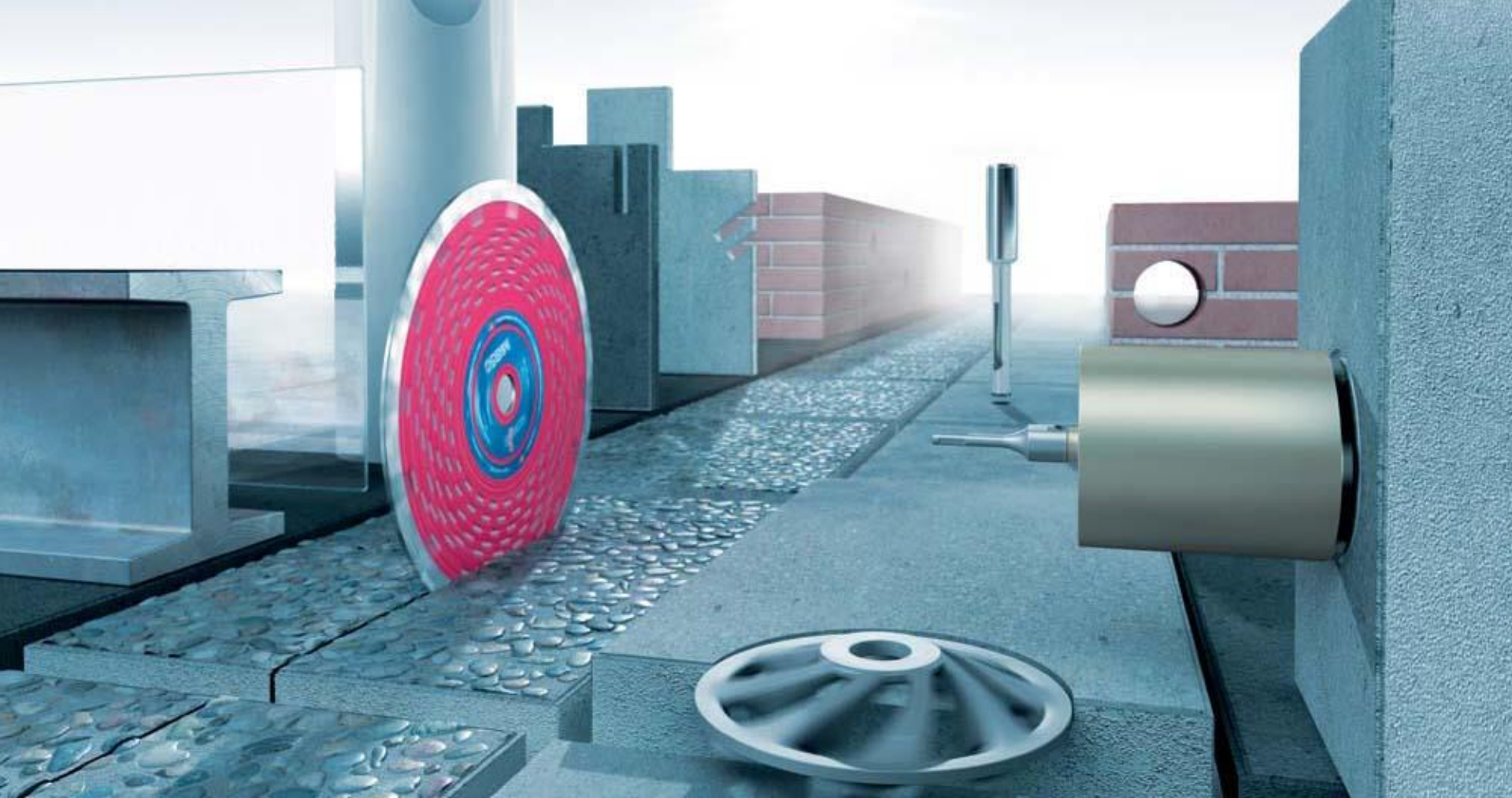
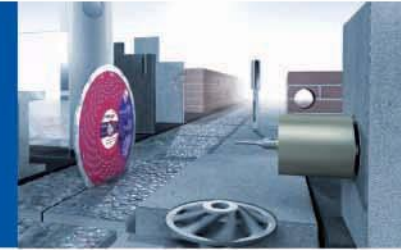


HAVS HAND ARM VIBRATION SYNDROME





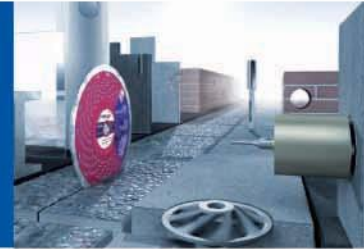
HAVS HAND ARM VIBRATION SYNDROME

WHAT DOES IT MEAN?

- EU Physical Agents (Vibration) Directive 2002/44/EC was introduced on 6th July 2005. This directive has gained legal status across Europe and is now law in the UK under the Vibration at Work Regulations.
- The aim of the law is to reduce or prevent the most commonly reported industrial disease HAVS (Hand Arm Vibration Syndrome) and in particular its best known form Vibration White Finger (VWF).



HAVS HAND ARM VIBRATION SYNDROME



- HSE estimates 300,000 people (in the UK) with advanced stage VWF.
- Several hundred millions of compensation have been awarded already ... HSE estimates that much larger compensations will yet be sought and awarded.



HAVS HAND ARM VIBRATION SYNDROME

- The employer by law must:
 - Assess the risk of every employee subjected to vibrations.
 - Keep the assessment updated and filed.
- Minimise the risk to every employee.
- Ensure that the legally permissible limit is not exceeded.
- Manage the danger to every employee.
- Advise every employee, who is at risk, of the potential danger to his health!



HAVS HAND ARM VIBRATION SYNDROME

EAV = EXPOSURE ACTION VALUE 2.5 m/s² (A8)

- If a worker is found, through risk assessment to be receiving a hand arm vibration dose, above EAV, the following steps must be taken immediately:
 - The risk must be acknowledged.
 - The worker must be informed.
 - The risk must be monitored.
 - Medical examination must be offered.
 - Practical ways must be sought to reduce the exposure.



HAVS HAND ARM VIBRATION SYNDROME

ELV = EXPOSURE LIMIT VALUE 5 m/s² (A8)

- Working above this level will not be permitted.
- **Working above the limit ELV is likely to affect health!**
- If a worker is found to have been exposed to vibration above ELV, the following steps must be taken by the employer immediately:
 - Prevent exposure by seeking alternative working methods.
 - Advise the employee.
 - Offer regular health checks.
 - Advise the authorities as soon as damage to the employee's health has been identified!

HAVS HAND ARM VIBRATION SYNDROME



DANGER

- Electro pneumatic rotary hammers and breakers cause extremely high vibrations!
- When using rotary hammers to drill larger diameter holes the limits EAV and ELV are reached in a frighteningly short time!



HAVS HAND ARM VIBRATION SYNDROME

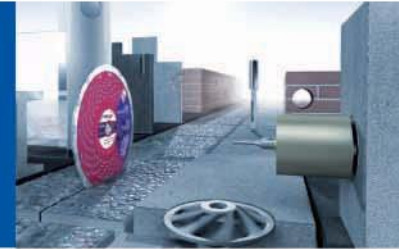
How can the employer reduce vibrations with rotary hammers?

- **HSE recommends** = consider alternative methods i.e., diamond drilling instead of hammer drilling.
- **Hilti recommends** = consider alternative working methods such as diamond drilling instead of hammer drilling.
- **Bosch recommends** = consider alternative working methods i.e., diamond drilling instead of rotary hammer drilling.
- **Makita recommends** = consider alternative working methods i.e., diamond drilling instead of hammer drilling.



HAVS HAND ARM VIBRATION SYNDROME

- The vibration figures provided by the power tool industry are average figures based on a variety of holes from small to large.
- The figures are based on new and sharp drill bits and quite often on an average of materials from soft to hard!
- As soon as hard English concrete is being drilled with large diameter bits or TCT cores, the vibration skyrockets!
- If blunt TCT cores were to be used, the vibration levels would increase even more dramatically!



HAVS HAND ARM VIBRATION SYNDROME

Example:

- Drilling of unreinforced concrete, 45 newton, limestone aggregate, 300 mm depth, Ø 82 mm.

**Maximum number of holes by one man
to real exposure action value (EAV).**

Makita HR 4011-c AVT Vibration dampened (new machine) Ø 82 mm TCT core (New)	1.3 Holes *
Marcryst DDM3 with DS150 Drill Stand Ø 82 mm Diamond core	605 Holes *

- Vibration levels measured and certified by “Fivesquared Vibration Management Solutions” one of Britain’s leading vibration management institutions.

HAVS HAND ARM VIBRATION SYNDROME



THE SOLUTION

- Diamond drilling with quality diamond cores.
- 506 holes per day in 45 newton concrete, Ø 82 mm, 300 mm depth.



HAVS HAND ARM VIBRATION SYNDROME

ALLOWABLE MAXIMUM NUMBER OF HOLES *

Drill Type	Diameter (mm)	Machine	Hand-held or rig mounted	Wet or dry	Material	Time to drill 80 mm	Time to drill 300 mm	Max allowable time	Max allowable no of holes (300 mm depth)
Marcryst Diamond Core CCU850X	78	DDM3	Hand-held	Dry	Concrete	0.55	3.26	06:00:00	104.7
Marcryst Diamond Core CCU805X	78	DDM3	Hand-held	Dry	London Brick	0.19	1.11	16:00:00	808.4
Marcryst Diamond Core WCU	82	DDM3	Rig Mounted	Wet	Concrete	0.38	2.22	23:59:00	605.9
Marcryst Diamond Core WCF	35	DDM3	Rig Mounted	Wet	Concrete	0.39	2.26	20:00:00	492.3
TCT Hammer Bit	82	Makita	Hand-held	Dry	Concrete	3.36	13.30	00:17:00	1.3
SDS Masonry Drill	35	Makita	Hand-held	Dry	Concrete	1.08	4.15	00:40:00	9.4

* Measured and Certified by Fivesquared Management Solutions (February 2009)