

# 4 Biggest Vibration at Work Mistakes...



...and how to fix them

A FREE  
eBook from  
The Noise &  
Vibration Experts

 **Cirrus**  
Research plc  
dedicated to noise measurement

# Find Your Way Around

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# Getting Started

## Who is this eBook for?

Any Health & Safety Manager who is responsible to undertaking Vibration at Work Risk Assessments. Whether you are new to the role or require a refresher, this eBook is perfect for you.

We will take a high-level overview of the Control of Vibration at Work Regulations 2005, highlighting the 4 biggest challenges and how to overcome them.

## What You will Achieve

After reading this guide, you will feel more confident about making accurate vibration measurements and identifying potential hazards in the workplace.

You will also get some useful hints and tips on the best instruments to help you achieve this.

If you have any questions then contact our Vibration at Work Experts.



## Sound good to you? Let's begin.....

# What is Vibration at Work?

## Preventing Hand-Arm Vibration Syndrome (HAVS)

HAVS is a relatively recent occupational hazard despite the fact we have been using power tools for more than 100 years. Awareness and concern over health impacts caused by excessive exposure to vibration is growing but does lag behind falls, chemical hazards and noise.

The exact definition of this issue as defined by the Health & Safety Executive (HSE) is:

*“Hand-arm vibration is vibration transmitted into workers’ hands and arms. This can come from use of hand-held power tools (such as grinders or road breakers), handguided equipment (such as powered lawnmowers or pedestrian controlled floor saws) or by holding materials being worked by hand-fed machines (such as pedestal grinders or forge hammers).”*

The aim of monitoring Vibration at Work is to protect workers from risks to health from vibration.

### Know the Facts

# £22,000

The amount an individual affected by HAVS could be awarded in personal compensation.

Is your business protected against this?

## Other HAVS Facts and Figures

- HAVS is the third biggest category of Industrial Injuries Disablement Benefit (IIDB)
- 50-55% of employers cite vibration exposure as a risk factor
- There were 610 new claims to the HSE for HAVS in 2014, compared to 580 and 635 in 2013 and 2012 respectively

# How it Works

## What are the Action Levels and Limit Values for Vibration at Work?

The Control of Vibration at Work Regulations 2005 introduced action and limit values for Hand-Arm and Whole Body Vibration.

### Hand-Arm Vibration

#### Exposure Action Value

2.5 m/s<sup>2</sup> A(8). The level at which level employers should introduce measures to reduce exposure

#### Exposure Limit Value

5.0 m/s<sup>2</sup> A(8). The level which should not be exceeded in relation to vibration exposure

### Whole Body Vibration

#### Exposure Action Value

0.5 m/s<sup>2</sup> A(8). The level at which level employers should introduce measures to reduce exposure

#### Exposure Limit Value

1.15 m/s<sup>2</sup> A(8). The level which should not be exceeded in relation to vibration exposure

## IMPORTANT THINGS TO REMEMBER

If your readings exceed any of the these values, you must take action to reduce these where possible.

You must assess and identify measures to help prevent risks from exposure to excessive vibration levels.

This will ensure that you can protect your employees from risks to their health.

If anything alters in your workplace, it is good practise to review any changes that may affect exposure levels to vibration. It is then time to do a measurement survey again.



# Who Are Cirrus Research

## We Believe in making Noise and Vibration Measurement Simple

Cirrus Research is world leader in the creation of noise measurement instruments. Since 1970, Cirrus' mission has been to make monitoring noise simple.

Today, thousands of companies around the world are using our instruments to help them comply with the Standards, Regulations and Legislation that governs noise.

Our innovative approach to product design has helped redefine the way the world looks at noise measurement instruments.

**Trojan**<sup>LITE</sup>  
Noise Nuisance Recorder

**optimus**  
sound level meters

**revo**  
VIBRATION METERS

**doseB**adge<sup>TM</sup>  
The original wireless noise dosimeter

  
noisetools

# Mistake 1



# Not Doing Anything

# 3 Reasons Why this is a Mistake

**1**

**You could be exposing your employees to high vibration levels that are damaging to their health**

Are your employees showing any symptoms already? Tingling or numbness in the fingers, not being able to feel things or loss of strength in the hands are all signs of HAVS

Personl Injury Lawyers are actively seeking compensation for HAVS claims. This can range from £6,000 to £22,000. Protect your buisness from action

**2**

**You could become liable if your employees ever develop Hand-Arm Vibration Syndrome**

One manufacturer was fined a total of £38,000 by the HSE for not properly protecting an employee from HAVS - they failed to do anything proactive to reduce the risks

**3**

**You are breaking the law, specifically the Control of Vibration at Work Regulations 2005**



# How to Fix it

## Start a Vibration at Work Risk Assessment

Identify where there may be a risk from vibration and those likely to be affected

**TIP:** Most common risks include hand-held instruments such as pneumatic drills, chainsaws, grinders and other power tools



Obtain a reliable estimate of your employee's exposure and compare this with the exposure action value and limits

**TIP:** You will need a fully compliant Hand-Arm/Whole Body Vibration Meter to measure this accurately



Work out what you need to do to comply with the Regulations. Are there vibration control measures you can introduce?

**TIP:** You need to try and reduce and control the risks first before introducing Personal Protective Equipment (PPE)



Regularly assess vibration risks to ensure optimum protection

**TIP:** If you have changed a process, or introduced new equipment, it is time to do another assessment.

Learn how our vibration measurement equipment can help.

Visit [www.cirrusresearch.co.uk/revo](http://www.cirrusresearch.co.uk/revo)

## Mistake 2



# Not Using the Right Instrument

# 3 Reasons Why this is a Mistake

**1**

**Your readings may not be accurate or provide enough data for your risk assessment**

While cheaper instruments might seem attractive, can you be as sure of their accuracy levels?

The Control of Vibration at Work Regulations 2005 are very clear about what you need to use to comply. Are you?

**2**

**If you're using an instrument that doesn't meet the Standard, your readings could be invalid**

**3**

**You could be putting yourself at risk taking the measurements**

There are different types of vibration measurement instrument. Are you using the right one for the type of tools that you have?

# How to Fix it

## Key Questions when Choosing the Right Vibration Meter

**Q:** What measurement data do you require?

**A:** Do not over complicate matters. Choose an instrument that offers what you need, not everything going. The Control of Vibration at Work Regulations 2005 specify the daily exposure limits for Hand-Arm and Whole Body Vibration. Your instrument needs to have this as an absolute minimum.

*The exposure levels for vibration are calculated using the A (8) value - the average over an 8 hour day. For this you need to know the magnitude of the vibration (movements per second) and the duration you measured it*

**Q:** Does the instrument have a valid calibration certificate?

**A:** If the answer is no, how can you ensure that it measures accurately?



**Q:** Does your vibration meter comply the required Standards?


**A:** It's all about the Regulations. If it does not meet the Standard, your measurements could be called into question further down the line

*“Your vibration meter should meet the requirements within ISO 8041 – Human response to vibration for measuring instrumentation.”*

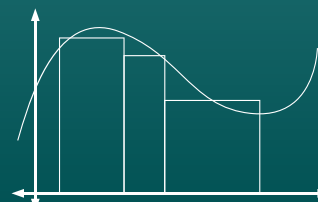
The Revo Vibration Meter fits the Standard and is simple to use. Contact us to discover what it can do for you.

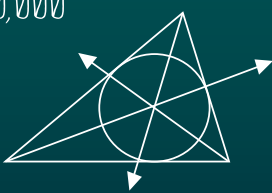

**revo**  
VIBRATION METERS




# Mistake 3

$\pi/4 = 1/1 - 1/3 + 1/5 - 1/7 + \dots$   
 CONE =  $(1/3) \pi R^2 H$   
**ABSOLUTE VALUE**  
 $(4/3) \pi R^2 R$   
  
 $P = C E R T$   
 $V = 5,000$   
 1.  $|-A| = |A|$   
 2.  $|A| \geq 0$

1.  $|-A| = |A|$   
 2.  $|A| \geq 0$   
 $(N \ 0)B^0 + (N \ 1)B^1 + (N \ 2)B^2$

GAMMA =  $-\text{INTEGRAL}(0-\text{INF}) E^{-X} \text{LN } X \text{ DX}$   
 $| -23| + |4|$   
  
 $-(X+2) = 9$   
 $-X - 2 = 9$   
 $-X = 11$   
 $X = -11$

PYRAMID =  $(1/3) B H$   
 $L = 50,000$   
  
 $4 \times \pi \times R^2$   
 $A + B = C$   
  
 $GAMMA(X+1) = X \text{ GAMMA}(X)$   
 $|A - B| \geq |A| - |B|$   
 $B = A (1 + R/N)^{NT} - P$   
 $(1/2) D^2$

$GAMMA(X) = R \times (\text{INTEGRAL})(0 \text{ TO } \text{INF}) E^{-RT} T^{(X-1)} DT$   
  
  
  
 $P = C (1 + R)^T$   
 $2/\pi = \text{SQRT}2/2 * \text{SQRT}(2 + \text{SQRT}2)/2 * \text{SQRT}(2 + (\text{SQRT}(2 + \text{SQRT}2)))/2 * \dots C$

# Not Measuring Correctly

# 3 Reasons Why this is a Mistake

**1**

**You are not getting an accurate representation of the vibration levels**

Just because you have measured the vibration levels on a particular machine does not mean that the exact same type of machine will have the same vibration exposure. There are variables that can effect this. Are you measuring correctly?

If you don't follow the best practice guidelines, your assessments could be invalid and would be ineffective for potential disputes

**2**

**You are breaching the best practice guidelines**

If your readings are not an accurate representation of the vibration level then how can you provide the right mitigation and protection?

**3**

**You could end up under-protecting your employees**

# How to Fix it

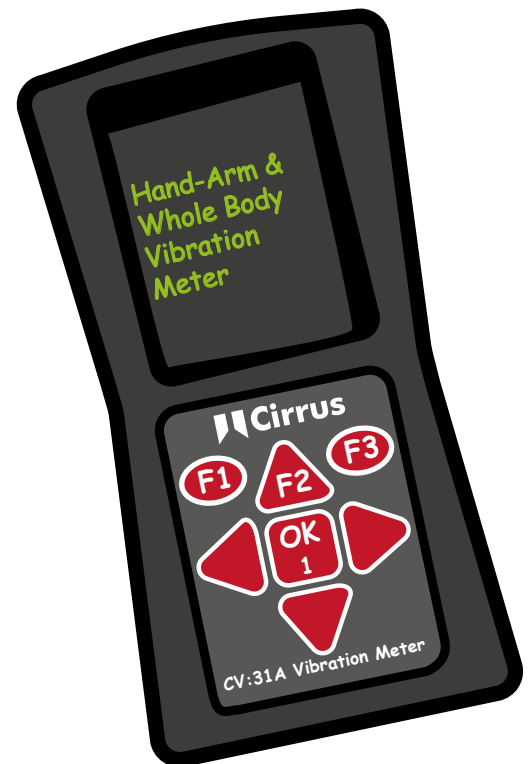
## Have an Accurate Measure for Assessing the Vibration Exposure

### Why?

- You are now capturing accurate data on the risks facing your employees
- You can assess and analyse vibration risks based on these measurements with confidence
- You will be able to choose appropriate protection and vibration control measures to protect your work force, as well as your business

### How?

- Plan the session
- Use appropriate measurement instruments
- Think about the attachment to the tools
- Sample the work properly
- Avoid measurement errors such as:
  - DC Shift
  - Resilient handles
- Estimate the overall accuracy
- Collect relevant information in a survey sheet



# Mistake 4



## Not Controlling the Risks



# 3 Reasons Why this is a Mistake

**1**

## The risks still exist

You've identified a vibration risk and provided protective gloves but the risk is still there. Can you reduce it?

You have taken the first step and starting monitoring the risks but by not controlling them people are still at risk

**2**

## Your employees are still at risk of developing HAVS

PPE is always the last resort. You should be trying to reduce the risks first. Businesses that don't do this can be fined by the HSE

**3**

## You're still open to action from the Health & Safety Executive

# How to Fix it

## Protect Your Employees by Eliminating the Risks

When you identify risks, you must do all that is reasonably practical to control it. Here are just some of the risk control methods.

### 8 Risk Control Methods

1. Reduce the amount of time an individual spends with high-risk equipment by planning your work schedules in advance - avoid long, continuous periods of exposure
2. Look for solutions to automate or mechanise the tasks
3. Check that the equipment being used is suitable for the job and offers the lowest levels of vibration
4. Introduce a regular maintenance programme to keep equipment in good working order and replace older tools that are worn out
5. Improve the employee's workstation to minimise the impact on hands, wrists and arms
6. Provide protective clothing where necessary that helps promote good blood circulation and keep hands warm - this should not be wholly relied on to control the risks
7. Train your employees and managers, so that they understand the risks and what they need to do to mitigate them
8. Regularly check that the controls you have in place are being followed by your employees. If a process changes or a new tool is introduced, check that your controls are still practical.



# Measure Your Success

## Now it's over to You

We have given you some guidance on implementing an accurate process for measuring Vibration at Work.

Now it is time to review your risk assessments and ensure you are adhering to these best practices.

Remember it is not just about protecting your employees; it's also about protecting your business against potential injury claims and fines for breaching these important Regulations.

## Extra Support

Do you want to know about more measuring Vibration at Work.

Our noise and vibration measurement experts are always available to provide technical advice on the best solutions.

**Online:** Find An Answer or Ask A Question

**Email:** [support@cirrusresearch.com](mailto:support@cirrusresearch.com)

**Phone:** 0845 230 2434



**Need Help Measuring  
Vibration at Work?**

**Call the Noise & Vibration Experts  
on 0845 230 2434**



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