

Control of Vibration  
at Work Procedure

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## 1 Introduction

Mervyn Lambert Plant Ltd cares about the health and safety of its people and accepts its responsibility to do all that is reasonably practicable to ensure that people who may suffer from vibration at work are managed within current legislative requirements.

This document outlines the Mervyn Lambert Plant Ltd policy relating to requirements imposed by the Health and Safety at Work etc. Act 1974, The Control of Vibration at Work Regulations 2005 as well as The Management of Health & Safety at Work Regulations 1999 as amended.

## 2 Scope

This Policy outlines procedures and plans to remove or reduce risk to Mervyn Lambert Plant Ltd people who may become susceptible to vibration at work.

### 2.1 Employers' Responsibilities

Underlying the policy should be the communication to employees of the management's positive attitude to health, safety and welfare.

## 3 Policy

Elimination of risk is the corner stone and key factor in all work activities and Mervyn Lambert Plant Ltd's Policy reflects our standards and safe systems of work. Resulting damage from vibration induced complaints is irreversible which is why engineering, purchasing solutions and vibration protection, is required when vibration hazards are identified.

The Control of Vibration at Work Regulations 2005 set out action levels for vibration exposure. The priority is for vibration to be reduced below these levels and anti vibration protection only to be used whilst vibration reduction improvements are being made or where such reductions are not possible by other means.

Regular, long-term exposure to vibration can lead to ill health, such as vibration white finger (VWF). The Control of Vibration at Work Regulations 2005, which came into force in July 2005, are intended to protect people from both hand-arm vibration and whole-body vibrations arising from work activities. The regulations place a duty on employers to ensure that health risks arising from exposure to vibration are assessed thoroughly and are then either eliminated or reduced so far as is reasonably practicable. Where a risk of the development of ill health from exposure to vibration exists, employers are under a duty to provide suitable health surveillance.

## 4 Management Responsibilities

It is the responsibility of Management to ensure that this Policy is appropriately communicated, understood and implemented. This will be achieved by the local managers carrying out regular one to ones, team briefs and toolbox talks etc.

## 5 Policy Objectives

The regulations have been developed in order to comply with the Physical Agents (Vibration) Directive, which aims to protect workers from risks to their health arising from exposure to hand-arm vibration and whole-body vibrations. The daily exposure limit and daily exposure action values are described below, and the prime

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responsibility is to eliminate or reduce the vibration to below the figures shown below.

**For hand-arm vibration:**

- the daily exposure limit value is 5m/s<sup>2</sup> A(8)
- the daily exposure action value is 2.5m/s<sup>2</sup> A(8).

**For whole-body vibration:**

- the daily exposure limit value is 1.15m/s<sup>2</sup> A(8)
- the daily exposure action value is 0.5m/s<sup>2</sup> A(8).

## 6 What is hand-arm (HAVS) and whole body (WBV) vibration?

Hand-arm vibration is vibration transmitted from work processes into workers' hands and arms. It can be caused by operating hand-held power tools, such as road breakers, and hand-guided equipment, such as powered lawnmowers, or by holding materials being processed by machines, such as pedestal grinders.

Whole-body vibration occurs when vibration is transmitted to the whole body of a person sitting, standing or lying on a vibrating surface. In such cases, vibration affects all body organs together with the muscular skeletal system.

## 7 Risk Assessment

The Control of Vibration at Work Regulations 2005, places a duty on employers to make a suitable and sufficient assessment of the risks to employees (and others) arising from workplace exposure to vibration (both hand-arm vibration and whole-body vibration).

In the event that current risk assessments address all of these issues adequately, there will be no need to produce new risk assessments just for vibration. As with all other risk assessments, vibration risk assessments must be kept up to date and reviewed in the event of any significant change or if it is suspected that they are out of date for any reason.

To carry out a detailed vibration assessment on specific tools, equipment and or a process is a specialist task that can only be carried out by trained competent persons. If it is suspected that the equipment that is being used exposes staff to high levels of vibration then this should be reported to supervision who shall inform the Safety Department. They will then examine the task and may after consideration seek further specialist assistance in carrying out a detailed assessment.

### Elimination, Substitution and Other Control Measures

These regulations places a duty on the employer to ensure that risks from the exposure of employees to vibration are either eliminated at source or, where this is not reasonably practicable, reduced to as low a level as is reasonably practicable. Where it is not reasonably practicable to eliminate risk at source and an exposure action value is likely to be reached (or exceeded), the employer must reduce exposure to as low a level as is reasonably practicable.

With the assistance of the Health and Safety Manager it is the responsibility of each Manager to complete task specific assessments for all work activities their people carry out. The primary duty placed on the employer is to ensure that risks from the exposure of employees to vibration are either eliminated at source or, where this is not reasonably practicable, reduced to as low a level as is reasonably practicable. Where it is not reasonably practicable to eliminate risk at source and an exposure

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action value is likely to be reached (or exceeded), the employer shall reduce exposure to as low a level as is reasonably practicable. This should be achieved by establishing and implementing a programme of organisational and technical measures appropriate to the activity.

The measures taken by the employer must be based on the general principles of prevention described in schedule 1 to the Management of Health and Safety at Work Regulations 1999, and must include consideration of:

- Other working methods, which eliminate or reduce exposure to vibration
- Choice of work equipment of appropriate ergonomic design which, taking account of the work to be done, produces the least possible vibration
- The provision of auxiliary equipment, which reduces the risk of injuries, caused by vibration
- Appropriate maintenance programmes for work equipment, the workplace and workplace systems
- The design and layout of workplaces, work stations and rest facilities
- Suitable and sufficient information and training for employees, such that work equipment may be used correctly and safely in order to minimise their exposure to vibration
- Limitation of the duration and magnitude of exposure to vibration
- Appropriate work schedules with adequate rest periods
- The provision of clothing to protect employees from cold and damp.

**Employers must also:**

- ensure that employees are not exposed to vibration above an exposure limit value, or
- If an exposure limit value is exceeded, immediately:
  - reduce exposure to vibration to below the limit value
  - identify the reason for that limit being exceeded and
  - Modify existing control measures to prevent it being exceeded again.

**In practical terms, this may mean:**

- considering alternative ways of working that eliminate exposure to vibration, e.g. by mechanising or automating the work
- providing the most appropriate equipment for each task
- minimising individuals' exposure to vibration, such as by job rotation
- breaking up periods of continuous equipment use by individuals, e.g. by introducing other tasks
- designing the task so that poor posture (resulting in strain on hands and arms) is avoided
- constructing suitable jigs for holding or supporting materials or tools
- maintaining all tools and equipment in accordance with the manufacturer's specifications to avoid worsening vibration, e.g.:
  - replacing vibration mounts before they are worn out
  - checking rotating parts for balance and replacing them as necessary
  - keeping tools sharp
- working in accordance with the equipment manufacturer's advice on the safe use of the equipment
- obtaining advice (such as from a trade association) on best practice
- implementing a purchasing policy specifying low-vibration performance for new equipment
- Fitting anti-vibration mounts to isolate the operator from the vibration source

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- provide ergonomic aids to support the weight of the tool (such as tensioners or balancers), allowing the operator to reduce grip and feed force.
- Ensure that the workplace temperature is suitable or provide warm clothing and gloves.

Before undertaking a risk assessment, employers should create a tool/plant register and a list of potentially hazardous hand–arm vibration activities. Equipment that may typically appear on this list includes:

- Chainsaws
- Concrete breakers/road drills
- hammer drills
- Hand-held grinders, sanders, finishers and polishers
- Nut runners
- pedestal grinders
- powered lawnmowers
- Strimmers/brush cutters

The risk assessment must be suitable and sufficient. It should consider:

- The magnitude, type and duration of exposure, including any exposure to intermittent vibration or repeated shocks
- The effects of exposure to vibration on employees whose health is at particular risk from such exposure
- any effects of vibration on the workplace and work equipment, including the proper handling of controls, the reading of indicators, the stability of structures and the security of joints
- Any information provided by the manufacturers of the work equipment
- The availability of replacement equipment designed to reduce exposure to vibration
- Any extension of exposure at the workplace to whole-body vibration beyond normal working hours, including rest facilities supervised by the employer
- Specific working conditions, such as low temperatures
- Appropriate information obtained from health surveillance.

## 8 Arrangements

Compliance with the following arrangements will ensure the achievement of the Mervyn Lambert Plant Ltd policy objectives above.

Many jobs involve exposure to vibration. Any activity where it is suspected that vibration levels reach the action levels set out in the 2005 Regulations will require a proper assessment.

## Risk Controls

The main ways of limiting or controlling vibration are:

- Reduction of vibration at source
- Isolation from the source of vibration
- Anti Vibration protection for workers at risk
- Reduction of time to which personnel are exposed to vibration.
- Wearing of protective clothing when necessary to keep warm and dry. This will encourage good blood circulation which should help protect from developing vibration white finger.

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All possible measures should be taken to ensure vibration is controlled at the source. However, should it prove impossible or impracticable to reduce vibration levels to within safe limits, then it is necessary to supply exposed workers with some personal form of vibration protection to further reduce exposure to the hazard as a last resort.

Various forms of vibration protection equipment are available such as:

- Anti vibration Gloves
- Anti Vibration Mountings

Each form of protection has its own specific characteristics. However, all types should provide effective vibration attenuation, be comfortable and safe to use, be aesthetically acceptable, and not provoke a toxic reaction in the wearer.

Caution should be taken when using anti-vibration gloves as they provide minimal protection and should only be used as a secondary measure.

## 9 Risks from Excessive Vibration Exposure

Whole-body vibration occurs when vibration is transmitted to the whole body of a person sitting, standing or lying on a vibrating surface. In such cases, vibration affects all body organs. Reported effects of prolonged whole-body vibration include dizziness, headaches, nausea, weight loss, varicose veins, blurred vision, spinal damage, rectal bleeding, haematuria (the appearance of blood in the urine), lung damage and, in a few cases, heart failure. Spinal damage is the main problem for drivers. Most of these effects are reversible when vibration exposure ceases. Potentially dangerous frequencies are 60Hz–70Hz, the natural frequency of the eyeball, which can cause blurred vision, and 10Hz–20Hz, the frequency of the alpha wave of the brain, which may induce sleep. Motion sickness and sea sickness result from exposure to frequencies below 1 Hz.

Hand–arm vibration is vibration, which reaches the hands or a person working with hand-held power tools or hand-guided machinery, or a person holding materials, which are being processed by machinery.

Regular exposure to hand–arm vibration can cause a range of permanent injuries to the hands and arms, which are known as hand–arm vibration syndrome (HAVS). Injuries could include damage to the blood circulation system (vibration white finger VWF), sensory nerves, muscles, bones and joints. Identified cases of HAVS must be reported to the enforcing authority, as it is a prescribed disease under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR).

### Vibration White Finger

The symptoms of VWF usually arise when the hands or body become cold or wet. Initially the symptoms are mild and the first sign is often the occasional attack, when the fingertips become white. Continued work with vibrating tools will enlarge the affected area. During an attack, the fingers may become numb and "pins and needles" may be experienced. An attack may end with the whiteness in the fingers changing to a deep-red flush. This is often very painful. VWF is a "prescribed disease" under the Social Security (Industrial Injuries) (Prescribed Diseases) Regulations 1985.

### Sensory Nerve Damage

Damage to the nerves in the fingers will reduce the senses of touch and temperature. Permanent numbness or tingling in the fingers may be experienced.

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#### Damage to Muscles, Bones and Joints

Loss of strength in the hands and pain in the wrists and arms may be noticed.

Industries where the health of employees may be adversely affected by vibration in the workplace typically include:

- Building and maintenance of roads
- Concrete products
- Construction
- Forestry
- estate management (e.g. maintenance of grounds, parks, water courses, road verges)

#### **Carpal Tunnel Syndrome**

Carpal tunnel syndrome is a nerve disorder which may involve pain, tingling, numbness and weakness in parts of the hand, and can be caused by, among other things, exposure to vibration.

### **10 Health Surveillance**

A pre-employment medical examination if required, should include checks for Raynaud's disease of non-occupational origin (When exposed to cold temperatures, the blood supply to the fingers or toes is markedly reduced; the skin turns pale or white and becomes cold and numb) or HAVS from previous employment if the prospective employee is to work with vibrating tools. Under regulation 7, a health surveillance programme will be appropriate if:

- The risk assessment indicates that there is a risk to the health of employees who are, or are liable to be, exposed to vibration
- Employees are likely to be exposed to vibration at or above an exposure action value.

Suitable records of all health surveillance must be maintained by the employer. Where health surveillance reveals that an employee has an identifiable disease or adverse health effect that is considered by a doctor or other occupational health professional to be the result of exposure to vibration, the individual's employer shall:

- ensure that a suitably qualified person informs the employee accordingly and provides the employee with information and advice regarding further health surveillance, including any health surveillance which he should undergo following the end of the exposure
- ensure that he or she is aware of any significant findings from the employee's health surveillance, taking medical confidentiality into account
- review the risk assessment and the control measures implemented
- consider assigning the employee to alternative work where there is no risk from further exposure to vibration
- provide for a review of the health of any other employee who has been similarly exposed, including a medical examination where such an examination is recommended by a doctor or occupational health professional or by the enforcing authority.

### **11 Training**

If employees are at risk of developing ill health from exposure to vibration at work, the employer must provide suitable and sufficient information, instruction and training. This training should cover:

- identifying potential sources of vibration
- The control measures to be implemented to prevent ill health developing

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- The exposure limit values and action values set (see DEFINITIONS above)
- The significant findings of the risk assessment
- Why and how to detect and report signs of injury
- Information on appropriate health surveillance
- Safe working practices to minimise exposure to vibration
- The collective results of any health surveillance.

### Summary: Checklist of Actions

An overall checklist of actions that employers need to take in respect of vibration might include the following:

- identifying and assessing operations in which employees (and others) may be exposed to vibrations
- introducing control measures to reduce the risks associated with vibration
- implementing a purchasing and hiring policy strongly influenced by levels of vibration
- providing accessible, up-to-date and easily understood risk management information at all levels in the organisation
- introducing a suitable level of health surveillance for personnel exposed to vibration above the action level
- implementing an appropriate programme of staff training
- keeping appropriately detailed records.

All requests for training and Occupational Health consultation must be made via Human Resources. Competent preferred suppliers and/or in-house personnel will deliver approved training in a timely and cost effective way. On completion of training HR will update central records and training details will be added to personnel files.

## 12 References

The Control of Vibration at Work Regulations 2005

Management of Health & Safety at Work Regulations 1999 as amended.

The Health and Safety at Work etc. Act 1974

The Workplace Health, Safety & Welfare Regulations 1992 as amended

HSG88: Hand-arm Vibration

INDG126: Health Risks from Hand-arm Vibration: Advice for Employees and the Self-employed

INDG175: Health Risks from Hand-arm Vibration: Advice for Employers

INDG242: In the Driving Seat: Advice to Employers on Reducing Back Pain in Drivers and Machinery Operators

INDG296P: Hand-arm Vibration Syndrome: Pocket Card for Employees

The following standards are available from the BSI

- BS 6841: 1987 Guide to Measurement and Evaluation of Human Exposure to Whole-body Mechanical Vibration and Repeated Shock
- BS 7482: 1991 Instrumentation for the Measurement of Vibration Exposure of Human Beings
- BS EN 28662: 1993-1995: Hand-held Portable Power Tools. Measurement of Vibrations at the Handle.

## 13 Enquiries

For additional information regarding this document contact the SHE team.

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