Safe use of manually fed pivoting-head metal-cutting circular saws

HSE information sheet

Engineering Information Sheet No 12 (Revision 1)

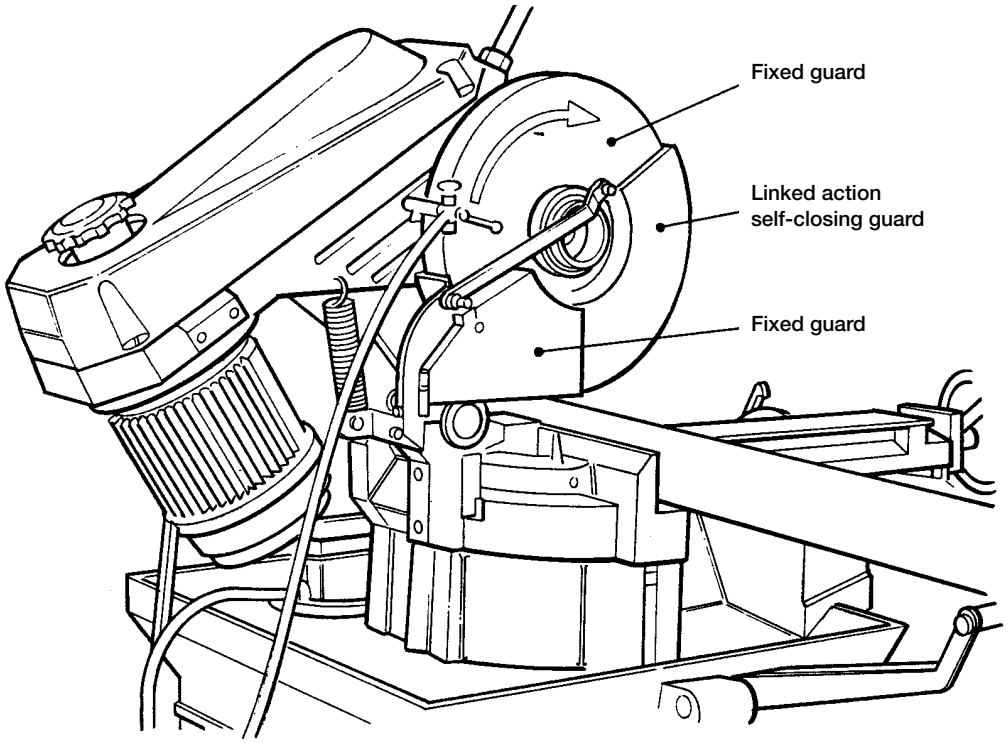

Figure 1 Manualy fed, pivoting-head, metal-cutting saw

Introduction

This guidance is for employers and operators of pivoting-head metal-cutting circular saws where the saw blade is manually pulled down onto the work piece for cutting (see Figure1).

It has been produced in order to assist with meeting legal duties specified in the Provision and Use of Work Equipment Regulations 1998 (PUWER 98)[1]. It gives practical guidance on safe use of these types of machine. Some of the general principles described may also be applicable to other types of saws.

Hazards and risks

The main hazards for operators of this type of machine arise from contact with the dangerous rotating, toothed saw blade. The rotating blade poses an entanglement risk and can draw a person into the machine during feeding, adjusting or retrieval of workpieces. Operators may be also be exposed to additional risk of injury during swarf removal or cleaning, particularly where the machine is left running while such tasks are being undertaken.

Many of the accidents that occur at this type of machine result in very serious injury to the operator's hands and arms, including amputations. The majority of accidents are associated with inadequate standards of guarding. Contributory factors include entanglement of loose clothing in the rotating saw blade, poor systems of work and poor maintenance.

Safeguards

Types of safeguards

These types of sawing machines can be effectively safeguarded in a variety of ways. Guards are required in order to prevent contact with the rotating saw blade when the saw head is in the rest or raised position and to limit the amount of saw blade exposed during the cutting process.

A suitable linked action, self-closing guard should be used (see figure 1). This type of guard opens progressively as it is pulled down onto the work piece for cutting and allows only the minimum blade exposure for cutting. Saw blade guards, which rely solely on gravity operation for their adjustment, are not considered fully effective.

In circumstances where it is not possible to fit a linked action, self-closing guard (eg due to design constraints on the machine), other guarding methods (eg a fixed and gravity operated supplementary guard) should be provided but with the addition of a hold-to-run control. This may be a button or trigger switch on the operating handle (see PD 5304)[2]. The button or switch should be arranged so that, when the operating handle is released, power to the saw blade spindle is removed.

Alternatively, where a saw is dedicated to a particular operation and requires minimal re-setting, for mitre cutting etc, fixed guarding attached to the machine table is a practicable option. The size of feed and take-off apertures in fixed guarding should not allow finger access to the saw blade and should be in accordance with BS EN ISO 13857.[3]

Tunnel guards are another useful method of restricting finger access to the saw blade at feed and take-off points. Clamping devices and push sticks should be used in conjunction with this type of guarding to ensure the operator is protected from the dangerous rotating saw blade.

Additional precautions

While it is not a legal requirement, the use of feed stops or length gauges is recommended as these devices minimise the need for direct sight of the blade and work piece when cutting. Where a view is required, transparent or mesh materials may be used in fixed guards. Problems associated with swarf build-up when using fixed guards, can be rectified by using a removable swarf tray.

Table or workbenches either side of the saw should be provided in order to support the work piece and any off-cuts.

All the guards should be suitable for the purpose for which they are provided and be of good construction, sound material and adequate strength to withstand the stresses of the expected service conditions. In addition, guards must be maintained in an efficient state, in efficient working order and in good repair.

Information, instruction and training

All relevant health and safety information and, where appropriate, written instructions on the safe use of pivoting-head metal-cutting circular saws must be made available to operators.

Adequate training should make sure that those who use the machine are competent to use it safely. This includes making sure they have the correct skill, knowledge and risk awareness, and are physically suited to the task.

Do not let unauthorised, unqualified or untrained people use machinery – never allow young people under the minimum school leaving age, eg on work experience, to operate or help at machines. Some workers, eg. new starters, young people or those with disabilities, may be particularly at risk and need additional instruction, training or supervision.

Inspection and maintenance

It is essential to carry out regular inspection and maintenance of the safety devices and safety critical parts of the machine such as counterbalance springs and their fixing points. Detailed advice on this matter should be contained in the manufacturer's instruction manual. Where saw blades are replaced the self-closing guard will need to be checked by a suitably qualified person to ensure that the guard remains effective in preventing access to the dangerous cutting blade. The machine should be switched off and isolated for cleaning.

Health risks

The health risks associated with pivoting head metal-cutting circular saws include exposure to noise and metal working fluids. Further advice and guidance on how to control the risks from exposure to noise and metal working fluids is available at www.hse.gov.uk/engineering.

References

1 *Safe use of work equipment Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and guidance* L22 (Fourth edition) HSE Books 2014 www.hse.gov.uk/pubns/books/l22.htm

2 PD 5304:2014
Guidance on safe use of machinery British Standards Institution

3 BS EN ISO 13857:2008 *Safety of machinery. Safety distances to prevent hazard zones being reached by upper and lower limbs* British Standards Institution

Further reading

Further information for suppliers, installers and users of new and second-hand machinery can be found on HSE's Work equipment and machinery webpages www.hse.gov.uk/work-equipment-machinery/index.htm

BS EN 953:1997+A1:2009 *Safety of machinery. Guards. General requirements for the design and construction of fixed and movable guards*
British Standards Institution

BS EN ISO 13850:2008 *Safety of machinery Emergency stop-Principles for design*
British Standards Institution

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

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