



## Safety in the use of hand- and foot-operated presses

### Engineering Sheet No 30

#### Introduction

Hand and foot presses (also known as fly presses) are manually powered presses usually fitted with tools for the purpose of forming or cutting metal. Sometimes a pneumatic ejection system is fitted. They are often used in the production of small components in industries such as spring making, jewellery, ventilation, electrical, and light pressings.

Force is applied to the tools via a hand- or foot-operated ram. The workpieces are loaded and unloaded using the free hand, which is therefore frequently in the danger area between the tools. Employees may be paid piece-rate, and high production rates can be achieved. Accidents result from employees' hands being caught between the tools when the press is operated.

#### Accident history

Since 1984, HSE inspectors have investigated 92 of the reported accidents at hand presses. The injuries sustained were:

- amputation of part of a finger (33 cases)
- crush injuries to fingers (eight cases)
- fractures to fingers (ten cases)
- other injuries leading to three days' or more absence from work (41 cases)

In nearly all of these cases, the presses were not adequately safeguarded.

#### Legal requirements

The tools of hand presses are dangerous parts of machinery to which access should be prevented under regulation 11 of the Provision and Use of Work Equipment Regulations 1998.

#### Safeguarding requirements

In order to prevent access to the tools, the following steps should be taken.

(a) **Fixed guards or closed tools, and devices to restrict maximum openings** should be used. Only if these cannot be used should the next class of safeguards in the hierarchy of control measures be selected.

A **fixed guard** should enclose the tools (see Figure 1). Any gaps in the fixed guard should be shaped to allow the workpiece to be easily fed into the tools, but prevent the operator's fingers from reaching the dangerous parts. Normally, openings should be less than 4-6 mm in size, depending on the distance to the danger zone (see BS EN294).

If a dangerous trap can be formed between the fixed guard and the tool, when excessively raised, then the maximum opening height should be limited by fitting a restricted stroke device (see Figure 3).

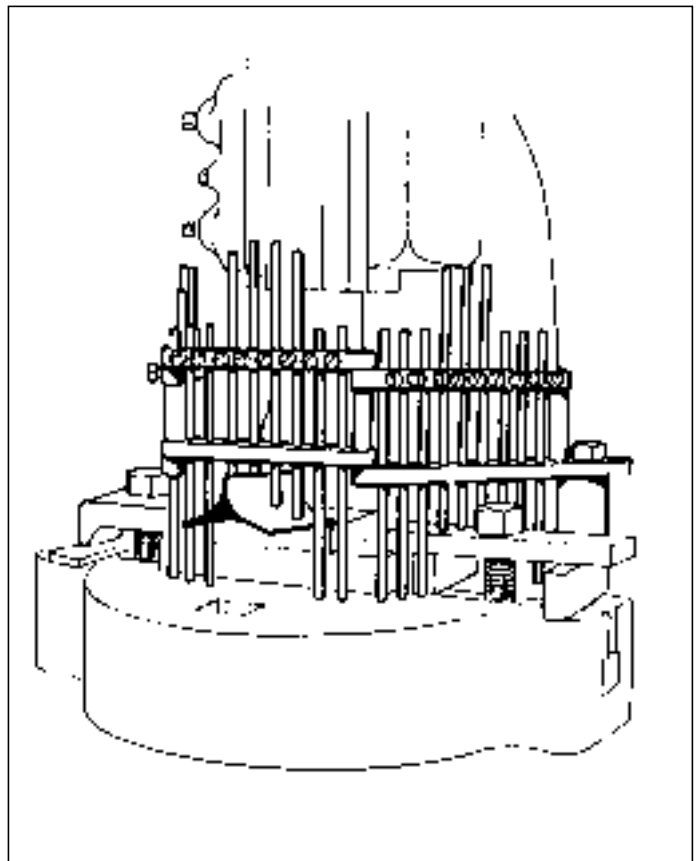
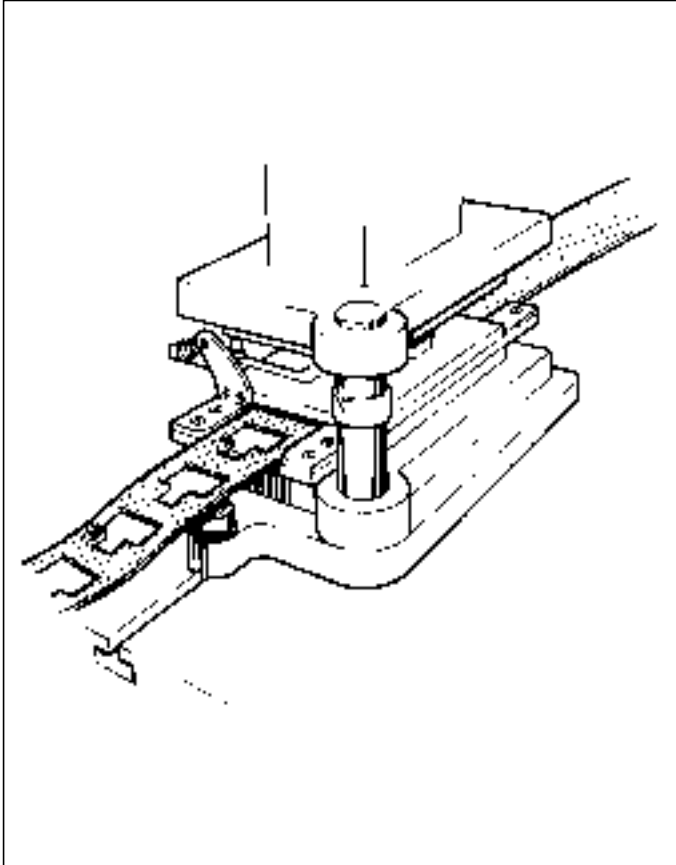


Figure 1 Fixed guard

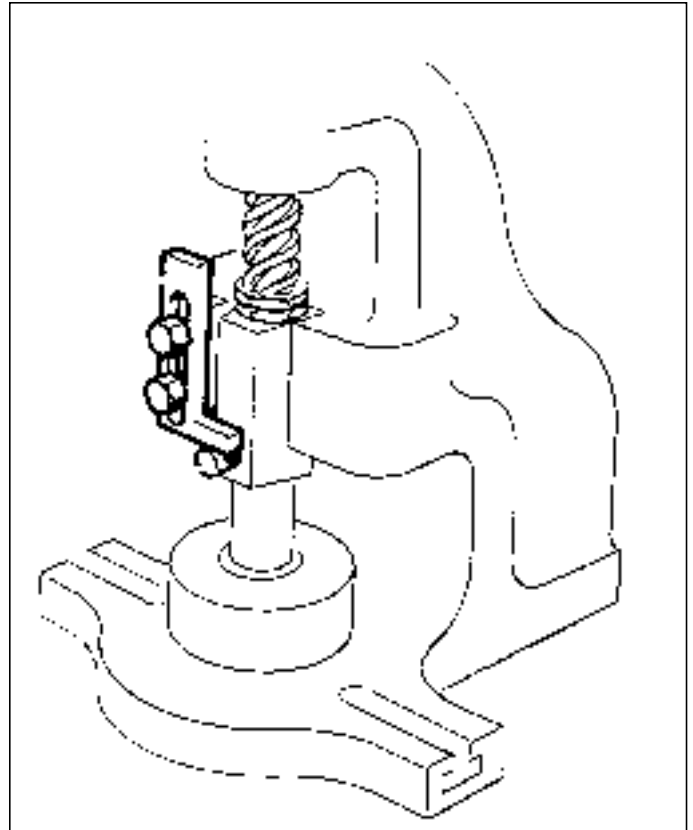
When **closed tools** (see Figure 2) are used, the top tool does not emerge from the lower tool. Openings in the closed tool are shaped so as to allow easy feeding of the workpieces, but prevent operators' fingers from reaching the dangerous parts. Again, openings should be less than 4-6 mm in size (see BS EN294).



**Figure 2** Closed tool

If vertical movement of the top tool is excessive, dangerous traps can be formed between the top and bottom tool, so a device to limit the maximum opening height should be fitted (see Figure 3).

A **restricted stroke device** can be used on its own to limit the gap between the top and bottom tools to 4 mm or less, so that finger access between the tools is not possible.



**Figure 3** Restricted stroke device

(b) **Interlocking guards**, which prevent the tools from closing unless the guard is closed and the dangerous parts are inaccessible, can be used at hand presses. Interlocking guards are available from commercial suppliers (see Figure 4).

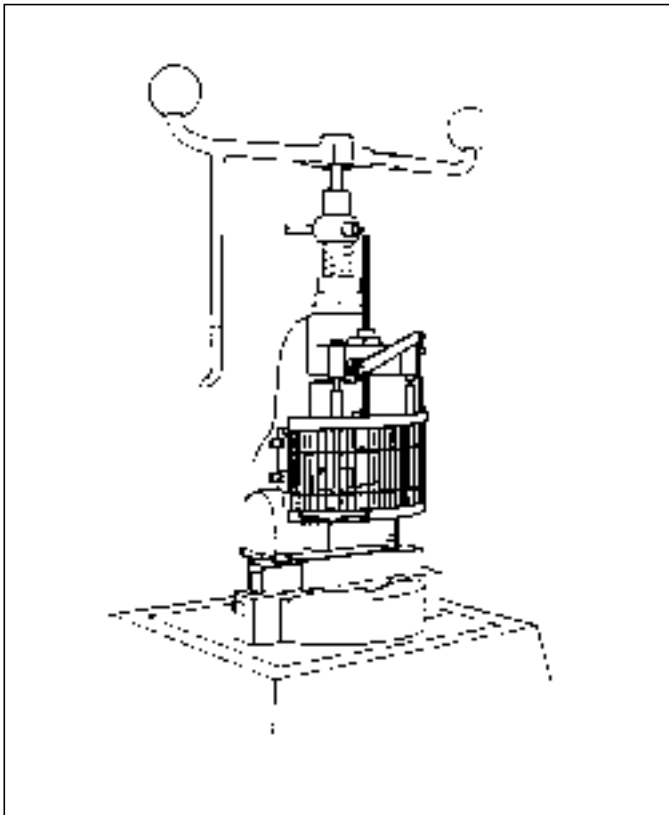


Figure 4 Interlocking guard

(c) Where none of the above-mentioned guards and safety devices are practicable, other devices, such as **sweep-away guards**, may be used. These should be set so that the arm sweeps across the front of the tools as they begin to close and either sweeps the employees' fingers out of the way, or stops the press (see Figure 5).

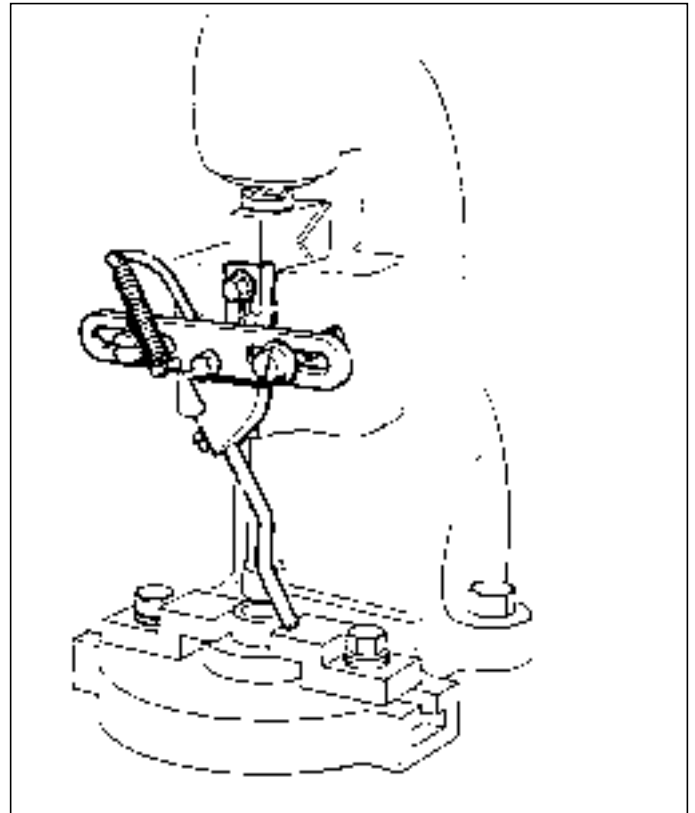


Figure 5 Sweep-away guard

### Vee bending tools

Where these tools are fitted, the maximum openings between the top and bottom tools should be kept as close to the top surface of the unbent workpiece as possible. A restricted stroke device (see Figure 3) should be used. The bottom tool should be designed to allow the formed workpiece to be extracted, without having to raise the top tool beyond its starting position.

## Useful publications

Work equipment Provision and Use of Work Equipment Regulations 1998. Guidance on Regulations L22 HSE Books ISBN 0 7176 1626 6

Health and safety in engineering workshops HSG129 HSE Books ISBN 0 7176 0880 8

BS 5304:1988 Safety of machinery

BS EN294:1992 Safety of machinery - safety distances to prevent danger zones being reached by the upper limbs

The future availability and accuracy of the publications listed in this information sheet cannot be guaranteed.

HSE priced and free publications are available by mail order from HSE Books, PO Box 1999, Sudbury, Suffolk CO10 6FS (Tel: 01787 881165/Fax: 01787 313995).

HSE priced publications are also available from good booksellers.

For other enquiries ring HSE's Infoline Tel: 0541 545500, or write to HSE's Information Centre, Broad Lane, Sheffield S3 7HQ.

HSE home page on the World Wide Web:  
<http://www.open.gov.uk/hse/hsehome.htm>

## Acknowledgements

Details of guarding shown in this information sheet have been taken from information supplied by the following companies.

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Highwood Engineering Ltd, 124 Parkfield Road, Birmingham, West Midlands, B8 3AZ.  
Tel: 0121 327 3231.

C Brandauer & Co Ltd, 401 New John Street West, Birmingham, West Midlands, B19. Tel: 0121 359 2822.

<p>This leaflet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.</p>
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