



Safety at power-operated paper cutting guillotines:

your responsibilities



INTRODUCTION

This leaflet is aimed at anyone who uses or operates a power-operated paper cutting guillotine. Such guillotines must be adequately safeguarded, regularly checked by both operators (with competent supervision and guidance) and competent guillotine engineers. Not doing this could lead to serious accidents.



Training

Many accidents at power-operated guillotines occur when they are not properly used or maintained. All operators must receive instruction and training in the safe use of the guillotine. This should be provided by the employer either in house or by a reputable training provider. Do not assume manufacturers' or suppliers' training, when available, is the full training required. Supervisors should monitor new operatives' progress and generally ensure that staff do not fall into bad working habits.

Safety inspections

Subject all guillotines to daily or monthly checks and six-monthly inspections as appropriate (see Table 1). Checks should also take place after knife changing.

Record the results of every check and inspection. Carry out daily or monthly checks using trained, competent operators (see the checklist at the end of this leaflet.) Supervisors should ensure that the checks take place. The checklist has a place for supervisors to sign to confirm that the checks have taken place. If the guillotine fails any test, take it out of service and have it inspected by a competent guillotine engineer.

Six-monthly inspections, including all safety components (eg brakes, clutches, interlocks, switches and cams) stopping performance and gauging pressure, need to be carried out by a competent guillotine engineer. It may also include routine maintenance work.

Guillotine safety device	Daily check	After knife change	Monthly check	Six-monthly inspections
Interlocking	Operator ✓	Operator ✓		Guillotine engineer ✓
Photoelectric	Operator ✓	Operator ✓		Guillotine engineer ✓
Sweepaway		Operator ✓	Operator ✓	Guillotine engineer ✓

Table 1 Safety checks

Any abnormal function or strange behaviour on any part of the guillotine should be investigated by a competent person.

Keep a record of all checks and inspections as part of a log (see Table 1).

You will need to ensure the competency of any guillotine engineer you use. To check the engineer is competent you may want to ask some questions, such as:

- What equipment are you using for clamp beam gauging force measurement?
- When was it last calibrated?
- Can I see your calibration certificate/label?
- Who are your other customers?
- What guidance do you use as the comparative standard by which you ensure the guillotine is safe?
- Can you send me a completed specimen of the report you give when you test a guillotine ?

You can probably think of other questions.

Knife changing

Knife changing is particularly hazardous. Special precautions are required to prevent injury. The guillotine manufacturers' instructions, **which should be incorporated into a written site specific safety working procedure**, must be followed. These usually involve procedures using devices such as knife handles or slides and supports for safe removal, mounting boards for safe transport and storage and the use of an assistant when changing knives on larger machines. Precautions should also be taken to keep others away during knife changing, eg by the use of barriers. Employers should ensure that manufacturers' tools/equipment or equivalent for knife changing, are available at the machine. The working area should be clear and arranged to prevent unnecessary transport of the knife blade. Ask the supplier whether they supply the correct tools for safe knife change, ie a knife carrier and crank handle for the fly wheel, etc.

Purchase of new and second-hand equipment

Guidance below lists what you need to consider for both new and second-hand guillotines.

General

- Ask what training on use and maintenance, specific to the type of machine, the suppliers offer.
- Make sure a manual has been supplied that includes instructions for safe use and knife changing, again specific to the type of machine.
- A logbook and tools should come with the machine. The logbook on new machines should be numbered serially and matches the machine's serial number.
- Check that technical information comes with the machine, including overall stopping performance and gauging force.
- Carry out a risk assessment. This will tie in with siting, maintenance and operation of the machine and training required for both operative(s) and supervisor.

New

- Many of the guillotines, manufactured outside the EC, do not comply with current UK Health and Safety laws and often offer safeguards (photoelectric, etc) as optional extras. **They are not optional extras.**
- Deal with a reputable supplier who can offer a full service after purchase including training on operations and maintenance.
- Talk to local firms who have recently purchased a new guillotine or trade associations who will know who has, to discuss installation problems or pitfalls.

Second hand

- Deal with a reputable supplier (having purchased the machine you will be responsible for maintaining it in a safe condition) who can offer a full service after purchase including training on both operations and maintenance. A missing serial number and year of manufacture may, for example, indicate a disreputable supplier.

- Ensure that if the supplier offers a support service for six-monthly inspections, etc, that they have competent engineers to ensure this. (You might liaise with other local printers who have gone through a similar process.)
- Ask if there is a record of maintenance and repairs/modifications which comes with the machine along with any manual (and log).
- Ask what the supplier has specifically done to bring any machine older than 1990 up to the standards required.

Standards

Common requirements for all power-operated paper cutting guillotines

Modifications to guillotine safety systems should only be carried out by competent guillotine engineers, manufacturers or suppliers because of the complexity of the systems and the potential dangers resulting from inadequate modifications.

Simultaneous two-hand controls should be fitted to all machines. Older machines may need their controls upgrading. The two-hand control should meet the following basic standards:

- both buttons should be operated within 0.5 s of each other before the machine will operate;
- if one control is released, both buttons should have to be released and re-operated for re-initiation;
- the controls should not be capable of being spanned by one hand;
- if one or both controls are released, the machine should stop or return to top dead centre.

The above guidelines are very general and the detailed requirements of individual machine types and models should be checked with the manufacturer/supplier and against the guidelines in the book *Safety at power operated paper cutting guillotines*.

Photoelectric (electrosensitive) safety systems

Photoelectric safety systems for power-operated paper cutting guillotines should meet minimum standards with full function monitoring (FFM) as the lowest acceptable level for old machines. However, on some guillotines, certain modifications will need to be carried out such as the removal of the fully automated cutting facility. A competent guillotine engineer should be able to advise you. New machines will need to meet more stringent standards.

In general, guillotines supplied prior to 1974 with original photoelectric guards will not be of the required safety integrity and new guarding systems will be necessary.

Guillotines supplied after 1987 should be equipped with photoelectric guards meeting BS 6491: Part 2, or an equivalent standard.

Guillotines supplied after 1 January 1995 should be 'CE' marked and comply with the Supply of Machinery (Safety) Regulations 1992 as amended.

Checkpoints

The key points you should check when using photoelectronic safety systems, interlocking guards and automatic sweepaway guards are listed in the checklist at the end of this leaflet.

You should note that sweepaway guards should not be changed for electrosensitive systems if the knife drive is fitted with an unsuitable brake, ie a band brake or an electromagnetically actuated brake.

Body push guards

Body push guards fitted to guillotines are no longer considered adequate safety devices. Guillotines fitted with body push guards should have been withdrawn from service in 1993.

References

Electro-sensitive safety systems for industrial machine specification, for particular requirements for an electro-sensitive safety system incorporating a photo-electric sensing unit BS 6491: Part 2 1987

Safety at power operated paper cutting guillotines HSE Books 1988 ISBN 0 11 885460 7

The printer's guide to health and safety HSE Books 1998 ISBN 0 7176 1486 7

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>

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

This publication may be freely reproduced, except for advertising, endorsement or commercial purposes. The information is current at 9/98. Please acknowledge the source as HSE.

Guillotine safety checklist

Machine make..... Model..... Serial No.....
 Type of safeguard Photoelectric / Interlocking / Sweepaway

Week commencing	Mon	Tue	Wed	Thur	Fri	Sat	Sun
Date of test/check							
Time/shift							

Machines fitted with photoelectric guard

Test/Check	Mon	Tue	Wed	Thur	Fri	Sat	Sun
Does the guard indicator work							
Is the downward motion of the knife & clamp arrested on insertion of the test piece into the light curtain							
Test piece diameter.....mm							
Are the enclosures housing the electronic equipment locked and closed							
Is the lock out key removed and retained by the designated person							
Is the photoelectric curtain correctly located							
Do the two final switching devices provided for fully automatic machines function correctly							
Do the simultaneous two hand controls function correctly							
Is the dynamic gauging force less than 500 Newtons							
Is the rear table guarding fitted and in place							

Machines fitted with interlocking guards

Test/check	Mon	Tue	Wed	Thur	Fri	Sat	Sun
Are all the interlocking devices (cams, levers, linkages) etc, correctly aligned and attached to the guard							
Is there any side play or wear in the guard which might prevent the interlocking devices from engaging							
Does the guard prevent access to the danger zone †							
Does the dual channel control system (if fitted) function correctly							
Do the simultaneous two hand controls function correctly							
Is the rear table guarding fitted preventing access to the moving clamp, blade or backgauge							

† You shouldn't be able to reach over, around or beneath the guard when it is in the down position and lifting the guard stops the machine before you can reach the blade or clamp.

Machines fitted with sweepaway guards (monthly only)

Test/check	Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
Does the front guard extend to 500 mm by the time the clamp or knife has descended						
Are guard linkages in good condition and securely fixed						
Are the front guard screens firmly fixed in place and does it prevent access over/through the guard						
Is side access to danger zone prevented by side guards or large side tables						
Do the simultaneous two hand controls function correctly						
Is the rear table guarding suitable and firmly and correctly positioned						

Two hand control device and rear table guard

Does the hand to knife control device work correctly							
Are the rear table guards firmly and correctly fixed in place							
Test carried out by							
Confirmed by supervisor							
Repairs carried out							