

Field Operations Directorate

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HM Principal Inspector of Health &
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Bill Hazleton

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Dear

SUPPLY OF PINSPOTTER/PINSETTER MACHINES: ACTION REQUIRED FOR SAFETY
Section 6 of the Health & Safety at work etc Act 1974
Supply of Machinery (Safety) Regulations 1992 (as amended in 1994)

You may be aware that HSE has been working for the last 2 years, in conjunction with the main manufacturers and some users, on the safety of pinspotter/pinsetter machines because of serious safety concerns following a fatal incident involving one of these machines at a ten pin bowling centre in north London in June 2006. I am therefore writing to all currently known UK suppliers of second hand/refurbished pinspotter/pinsetter machinery to update you on the current situation, and to provide you with a reminder of the legal obligations that suppliers have under Health and Safety law: in short, to supply equipment for use at work which is safe.

Recently this topic was discussed at the European level within the October meeting of the Machinery Directive Advisory Committee. At that meeting support was given for the position HSE has been developing with key representatives from other European health & safety authorities (These include Sweden, Denmark & Germany). Some further information on what has been taking place in the UK can also be found on the Local Authority Newsletter web pages at [HTTP://WWW.HSE.GOV.UK/LAUNEWS/JUNE08/FORINFO.HTM#6](http://www.hse.gov.uk/launews/june08/forinfo.htm#6).

New machines (which includes re-supplied machines "new" to European member states) must comply with the requirements of the current Machinery Directive [98/37/EC]. The Directive requires Conformity Assessment (design/manufacture for safety, CE marking, provision of declaration of Conformity, etc) and is implemented in the UK by the above Supply of Machinery Safety Regulations (please note that the new Supply of Machinery (Safety) Regulations 2008 come into force from 29 December 2009 implementing the revised Machinery Directive [2006/42/EC], for a free download of the new regulations see [HTTP://WWW.OPSI.GOV.UK/SI/SI2008/UKSI_20081597_EN_1](http://www.opsi.gov.uk/si/si2008/ukSI_20081597_EN_1)

It is understood that both Brunswick and Quick AMF are close to being able to supply new machinery which meets the safety objectives of the Machinery Directive. Additionally, HSE as now seen working examples of several upgrade safety solutions for existing machinery developed with the aim of meeting the requirements of PUWER (the Provision and Use of Work Equipment Regulations 1998 which impose duties on persons in control and users of equipment). Some of these solutions appear to achieve a reasonable level of safety; others may do so with some further modification. In all cases the equipment and modifications needed to address the safety of these machines have been relatively simple and make use of commonly available technology.

It is believed that in the UK and probably elsewhere in Europe, most new pinspotters/pinsetters supplied since the Machinery Directive came into effect in 1995 were not supplied in compliance with its requirements for safety. It also appears that prior to the Machinery Directive coming into effect, most new pinspotters/pinsetters supplied in the UK did not meet the requirements of Section 6 of the Health & Safety at Work etc Act 1974, and in addition, most second-hand or refurbished pins potters/pinsetters supplied since 1974 have probably not met the requirements of Section 6 of the above 1974 Act.

In order to avoid injury, which may include in this case loss of life, all pinspotters/pinsetters whether they are completely new, "new" Second hand/refurbished, or existing installed machines will need a package of safety measures applied to them. This is likely to involve some form of physical upgrade (guarding and interlocking), along with the rigorous application of safe systems of work for interventions and enhanced training/supervision, all determined on the basis of sound risk assessment. For existing machines the primary responsibility for this rests with the bowling centre using them, but for new or second-hand machinery, in the first instance *all suppliers will need to improve the physical standards of pins potter/pinsetter safety to meet their legal duties*. The enclosed information sheet which was presented to the Ten Pin Bowling Proprietor's Association Meeting in January 2008 and made publicly available since, outlines the key issues that need to be addressed for safety.

HSE believes that there are no fundamental reasons why pinspotter/pinsetter machines cannot now be supplied safe and in the case of new machines compliant with the Machinery Directive. You are therefore informed that **as of November 2008 the supply of any of these machines should meet the above relevant legal requirements**. Exactly what and how the necessary safety improvements are delivered is up to individual suppliers; they may purchase upgrade kits from others, or develop their own solutions. In either case it is important that an adequate level of safety is provided at the point of supply and the process is properly risk assessed and documented.

Mr Roger Upfold, HM Inspector in HSE's Product Supply Team Southern based in Basingstoke, is leading on this work and will be happy to discuss these issues further and if necessary meet with you. In the first instance, please contact him by e-mail at ROGER.UPFOLD@HSE.GSI.GOV.UK.

I would be grateful if you would acknowledge receipt of this letter and its contents.

Yours Sincerely

Mrs J Vanchinathan
Product Safety Officer

IMPROVING THE SAFETY OF PINSPOTTERS & PINSETTERS: TECHNICAL SUMMARY (02/2008)

Most of the pinspotter/pinsetter machines which HSE has seen do not have adequate safeguards to effectively prevent injury from foreseeable access. The hazards are not just from the various **dangerous moving parts**, created in the main by shearing, trapping and entanglement risks (which in certain circumstances have the potential for fatal injury), but also from **falls from a height** during access on/off and to parts of the machinery (again fatal injury is possible even from relatively low falls).

While the machine operatives are the most at risk, particularly during the various interventions they undertake (sometimes under significant pressure to quickly resolve stoppages in order to minimise customer inconvenience), access into the machine from “front-of-house” also presents a risk and this may involve members of the public.

ACTION REQUIRED FOR COMPLIANCE

To ensure adequate compliance of existing machines with the Provision and Use of Work Equipment Regulations 1998 and the Work at Height Regulations 2005 operators of bowling centres should:

- assess the risks site-by-site to determine the precise safety issues,
- identify the most reasonable ways of managing risk,
- and take action to reduce those risks to an acceptable level.

Effective health and safety is usually delivered by an integrated package of measures taking account of the hardware (guarding etc), the systems (for intervention, such as isolation) and human factors (understanding what goes on and how to minimise non-compliances). These measures do not sit in isolation of each other and should be considered together in the assessment and management of risk.

Although a user may choose to adopt any off-the-shelf solution which may be available from the machine supplier, there is no obligation to do so. Users are free to implement their own safety strategy, sourcing expertise and/or equipment from wherever they like, provided they meet their basic minimum legal obligations for safety.

ACCESS ON/OFF THE MACHINE

Safe access onto/in to the machines should be provided such that the Work at Height Regulations 2005 are met. In particular steps and walkways should be suitably non slip and of sufficient size/width (taking account of any limitations imposed by existing buildings).

Adequate fencing/hand railing should be provided and securely fixed to prevent falls which could cause injury. Where such fencing performs the joint function of preventing access to dangerous parts it should be designed to fulfil both functions without compromise to the other. See the Annex for standards that may be used to support common sense design.

DANGEROUS MOVING PARTS

To safeguard dangerous parts, a number of additional safety features may need to be added to existing machines. These should either prevent access to dangerous parts (for example, fixed guards) or automatically render the machine safe when access is gained (for example, interlocked moveable guards).

When designing safeguards, the possibility of access from one machine to another should be considered. This may mean that “cells” of machines need to be created with some

safeguarding features that are common to all the machines in a cell. Machines at each end of a line of machines may need special consideration because of these access issues. The objective should be to provide a package of physical measures which obviate the total reliance on following a safe system of work, such as isolation, prior to intervention.

Relevant European standards are listed in the Annex. For older installations (pre 1995), PD 5304 can be used (this was the British Standard for machinery safety prior to the full introduction of the Machinery Directive in 1995).

CONTROL SYSTEMS

Where control systems are used to provide safety, for example the safety circuit of an interlocked, moveable guard, they should be designed to have sufficient integrity to ensure the reliable and dependable operation of the safety function. Where existing circuits are modified, it needs to be ensured that existing safety functions are not compromised by the modifications. When programmable systems are used, for example a PLC, the integrity of the software also needs to be considered in addition to the hardware.

EMERGENCY STOPS

The emergency stop function may need supplementing with additional buttons in appropriate locations. Operators should consider whether the emergency stop function should stop all machines, groups or just individual machines (any third party will need to easily determine which button to operate to stop a particular machine in an emergency).

ACCESS FROM FRONT-OF-HOUSE

Because customers need to see the pins and bowling balls entering the machine, managing the risk of access into the machine from the lanes is more difficult. Coupled with securing the mask (if it is moveable: padlock or bolt down), a single photoelectric beam across the front of the lane may be the best that can be achieved. The beam should be located at a height suitable to clear the bowled ball and still ensure personnel detection. The beam also needs to be sited far enough down the lane to ensure that the machine stops before anyone can access it. Installations seen with this solution have generally "paired" the machines, but other configurations are possible. Photoelectric devices should be designed to BS EN 61496-1. Through beam devices, using a separate transmitter and receiver, should be used rather than retro-reflective devices because the latter are easily defeated. The devices should be carefully positioned to avoid cross talk between neighbouring installations.

MACHINE ISOLATION

For maintenance, cleaning and other operations requiring longer term access to the machine, each machine should be provided with a means to isolate the power supply. The means for isolation should be easily accessible, identifiable and located where its operation does not expose operators to hazards. It should also be possible to prevent inadvertent reconnection of the supply, for example by locking the means of isolation in the off position.

SUMMARY

The aim of the measures applied should be to ensure the significant risks arising from access on/off and into the machine are managed such that where possible danger is removed by stopping hazardous movement or preventing access to dangerous parts, so reducing the reliance for safety on training and following safe systems of work. However, these remain important not least because it is recognised that it will take time to properly undertake and complete all the work necessary for improving safety on these machines.

Annex: all standards are available from the British Standards Institution (BSI)

- BS EN ISO 12100-1 Safety of machinery — Basic concepts, general principles for design - Part 1: Basic terminology, methodology.
- BS EN ISO 12100-2 Safety of machinery — Basic concepts, general principles for design - Technical principles
- BS EN ISO 14121-1 Safety of machinery — Risk assessment — Part 1: Principles.
- BS EN 954-1 Safety of machinery – Safety related parts of control systems. (Will be withdrawn in 2009)
- BS EN ISO 13849-1 Safety of machinery – Safety related parts of control systems.
- BS EN 62061 Safety of machinery – Functional Safety of safety-related electrical, electronic and programmable electronic control systems.
- BS EN 60204-1 Safety of machinery – Electrical equipment of machines – Part1: General requirements.
- BS EN 999 Safety of machinery – The positioning of protective equipment in respect of approach speeds of parts of the human body. (Under revision, to be BS EN ISO 13855)
- BS EN 1088 Safety of machinery – Interlocking devices associated with guards. Principles for design and selection.
- BS EN 61496-1 Safety of machinery – Electro sensitive protective equipment – Part 1: General requirements and tests.
- BS EN ISO 13850 Safety of machinery – Emergency stop equipment – Functional aspects and principles for design.
- BS EN 953 Safety of machinery – Guards. General requirements for the design and construction of fixed and movable guards.
- BS EN 294 Safety of machinery – Safety distances to prevent danger zones from being reached by the upper limbs.
- BS EN 811 Safety of machinery – Safety distances to prevent danger zones being reached by the lower limbs.
- BS EN ISO 14122-1:2001 Safety of machinery – Permanent means of access to machinery Part 1: Choice of a fixed means of access between two levels.
- BS EN ISO 14122-2:2001 Safety of machinery – Permanent means of access to machinery Part 2: Working platforms and walkways.
- BS EN ISO 14122-3:2001 Safety of machinery – Permanent means of access to machinery Part 3: Stairways, stepladders and guard-rails.
- BS EN ISO 14122-4:2004 Safety of machinery – Permanent means of access to machinery Part 4: Fixed ladders.
- PD 5304: 2005 Guidance on Safe Use of Machinery