


<b>Health and Safety Executive</b>		<b>Sector Information Minute</b>	
<b>Manufacturing</b>		<b>SIM 03/2003/03</b>	
<b>Cancellation Date</b>	07/03/2007	<b>Open Government Status</b>	Fully Open
<b>Version No &amp; Date</b>	2: 08/04/2003	<b>Author Unit/Section</b>	Engineering & Utilities - Birmingham

Target Audience  
 AFQ Inspectors  
 SG Specialist Inspectors (Mech)

## **SAFETY AT TYPE B75 SALA ADIGE AUTOMATIC PIVOTING-HEAD METAL-CUTTING CIRCULAR SAWS**

This SIM alerts inspectors to the mechanical risks associated with Type B75 Sala Adige automatic, pivoting-head metal-cutting circular saws and gives advice on the standards of safeguarding.

### INTRODUCTION

- 1 [Engineering Information Sheet EIS 12 \(rev\) Safety at manually-fed pivoting-head metal-cutting saws](#)  contains guidance for users of general purpose pivoting-head saws where the saw is manually pulled down onto the workpiece to effect the cut. Such machines have been involved in a number of serious accidents, (a recent one resulting in fatal injury), usually as a result of inadvertent entanglement of the operator's clothing with the rotating saw blade.
- 2 The Sala Adige type B75 is an automatic variation of this type of machine in which the pivoting-head automatically falls and rises to cut the workpiece. Such machines are likely to be encountered in general engineering workshops and used-machinery outlets. Because of clamping, end-stop arrangements etc at this type of machine, it is not always practicable to fit the self-adjusting (lower) guard found on manually fed machines to prevent contact with the rotating blade when in the raised/rest position.
- 3 In a recent serious accident involving a Sala Adige Type B75 machine, an employee suffered very severe lacerations to his arm when his clothing became entangled on the rotating blade as he was attempting to set the machine whilst it was still running. The machine had been purchased second-hand and was only taken into use in the factory the day before the accident. The supplier was successfully prosecuted under HSW Act s.6 and the user under Provision and Use of Work Equipment Regulations (PUWER '98) reg.11(1).
- 4 These machines are of Italian origin and first appeared on the UK market about 25 years ago. Originally, they were imported and supplied by the Addison Tool Co Ltd, Wolverhampton. However, although their manufacture and importation ceased about ten years ago (probably pre Supply of Machinery (Safety) Regulations 1992 (SMS Regulations)) many type B75 machines are still in use and there is a significant market in second hand machines. (Note: BLM Adige (UK) Ltd who import and supply other machinery into the UK is no longer involved with this particular machine.) The machines are covered by the HSW Act s.6. In the unlikely event of any of them being imported into the EU (ie from

non-EU countries) for the first time after 31 December 1994 then they must comply with the SMS Regulations irrespective of the actual date of manufacture; any supplied after that date must be CE-marked and compliant (at the date of supply).

## DIFFERENT TYPES OF THE B75 SAW

5 On the type B75 metal-cutting circular saw the rise and fall of the pivoting-head is controlled pneumatically, with an 'air-over-oil' damping cylinder to ensure a smooth operation. There are three models of this machine, each identified according to the arrangement for feeding the workpiece, though the basic automatic sawing operation and discharge of cut lengths is the same:

- 1) **O-type (manual):** on this model, the workpiece is manually fed to a preset length gauge on the cutting table. Activation of the length gauge stop initiates the cutting cycle which starts with the clamping of the material and, after the sawing head has completed its cutting operation and returned to its raised position, ends when the cut length is discharged from the machine by the tilting action of the table.
- 2) **M-type (semi-automatic):** this model is similar to the O-type but includes a device for pushing the feedstock under the pivoting-head to the length gauge stop.
- 3) **A-type (automatic)** (see appendix [photographs 1-3](#)): on this model there is a magazine loader which can hold up to 20-30 lengths of feedstock at a time and the stock selection, feed, cutting and discharge is fully automatic.

6 Like manually fed machines, the main mechanical danger zone for operators of the Sala Adige is at the rotating saw blade. With the Sala Adige, however, other danger zones also exist, eg at the various traps and inrunning nips at the lift cams on the feed magazine, feed rollers and clamps, depending upon the particular model (ie O-, M- or A- type).

7 EIS 12(rev) describes conventional methods of safeguarding pivoting-head metal-cutting circular saws to prevent contact with the saw blade, when the saw head is in the raised/rest position, and to limit the amount of blade which is exposed when cutting. Additional fixed and/or interlocked guards may be required to prevent unauthorised access to other danger zones, such as at the clamps and feed rollers mentioned above.

8 The original guarding on the B75 type machines comprised a fixed guard which enclosed only the top half of the saw blade (appendix [photographs 1 & 2](#)). However, with the need for frequent access to the area around the blade for setting, adjusting, feeding, retrieval of workpieces, swarf removal or cleaning, etc there was a foreseeable risk of inadvertent contact with the moving blade if the machine was not switched off and the blade stationary before such work was carried out. Accident experience indicated that, to maintain production and avoid inconvenience, operators did not always do this. Also that, because of the speed and quietness of rotation of the blade, it is not always immediately obvious that it is running. These issues were acknowledged by the manufacturers who fitted an additional substantial hinged, interlocked hood to provide greater blade enclosure at later machines.

## SAFEGUARDS

9 PUWER '98 requires the fitting of guards or other protection devices where and to the extent that it is practicable to do so for B75 type machines:

### Saw blade

1) if practicable, access to the saw blade in the raised/rest position should be prevented by the fitting of a suitable mechanically-linked self-adjusting guard, as described in EIS 12(rev) and the Machine Tool Trades Association (MTTA) Code of Practice *Safeguarding sawing & cutting-off machines* (SF 227). (Note: the MTTA is now known as the Manufacturing Technologies Association (MTA) and the Code of Practice is being revised.);

2) where this is not practicable, eg because of clamping and end-stop positioning etc, inadvertent access to the saw blade can be prevented by a suitably robust guard fitted around the saw-head assembly, and extending downwards to a position as close to the workpiece as practicable. A 'home-made' guard is shown in [photograph 3](#). (NOTE: the guard provided by the original manufacturer was ineffective). To allow ease of access to the saw-head, eg for adjustment of the blade, the guard may be hinged and interlocked. In such cases, the interlock should comprise a single switch suitable for safety applications installed in the positive mode in accordance with **British Standard BS EN 1088: 1996 Safety of machinery - interlocking devices associated with guards - principles for design and selection** and, where practicable, should keep the guard closed until movement of the blade has stopped;

#### Other trapping points

3) access from the front and rear of the machine to any trapping points, eg at the feed magazine or at the rolls, clamps, pivoting head or material take-off tilting mechanism, should be prevented by suitable fixed and/or interlocked guards fitted in accordance with the standards below. In some cases a suitable enclosure will be required.

- **PD 5304: 2000 - Safe use of machinery**
- **BS EN 294: 1992 Safety of machinery - safety distances to prevent danger zones being reached by the upper limbs**
- **BS EN 953: 1997 - Guards - general requirements for the design and construction of fixed and movable guards.**

#### SAFE SYSTEMS OF WORK, ETC

10 In line with the requirements of PUWER '98 reg.11(2), machine guarding must be backed up by the provision of effective safe systems of work and adequate information, instruction, training and supervision to those at risk ie operators, maintenance staff, etc.

11 The measures to reduce the risks to the safety of operators and maintenance staff should stress:

- 1) the nature of the hazards;
- 2) the safety devices fitted to the machine and their limitations; and
- 3) the need for switching off power to the machine and allowing the blade to come to rest before setting, maintenance or otherwise approaching it.

In addition, the wearing of loose clothing or jewellery at such machines should be prohibited


and elasticated cuffs on sleeves are recommended.

### ACTION BY INSPECTORS

12 Where inspectors come across this non-priority topic, eg during the investigation of an accident or complaint or where the absence of safeguarding is seen as creating a risk of serious personal injury which would normally result in enforcement, action should be taken to ensure that the risks have been fully assessed and the appropriate precautions taken. The absence of effective guarding which prevents inadvertent access to the rotating blade when it is in the raised/rest position is a matter of evident concern.

#### [Enforcement Management Model \(EMM\) \(Version 3.0\)](#)

13 With an appropriate standard of guarding of the saw blade and other dangerous parts, and the provision of adequate information, instruction, training and supervision for operators, maintenance staff, etc the Benchmark is a **nil/negligible** risk of serious personal injury. Where the appropriate control measures are not in place, the Actual risk for operators and maintenance staff, who need frequent access to the area around the blade for setting, adjusting, feeding, retrieval of workpieces, swarf removal or cleaning, etc is **possible/probable** and the Risk Gap **extreme**.

14 Where inspectors come across a second-hand machine at which the saw blade is not adequately guarded, they should secure the necessary improvements at the machine and raise a **SAPID1**  which should be copied to the Engineering Sector and FOD Safety Unit (see [OM 2001/111](#)).

### FURTHER INFORMATION

15 The Sector is currently updating advice in EIS 12(rev) to include changes in legislation and new European Standards. Further information can be obtained from the Engineering Sector in Birmingham.

Date first issued: 7 March 2003



[Back to Main Paper SIM 3/2003/03](#)

APPENDIX  
(paras 5(3) 8 and 9(2))



Photographs 1 & 2: Automatic fed Type A machine showing saw blade inadequately guarded with only 50% blade enclosure.



Photograph 3: Automatically fed Type A machine showing fitted additional hinged, interlocked hood guard to prevent inadvertent access to saw blade.

TOP ▲