RISK ASSESSMENTS ASSOCIATED WITH METAL MACHINING

THE CENTRE LATHE

THIS EQUIPMENT CAN BE USED BY PUPILS IF THEY HAVE RECEIVED PROPER INSTRUCTION AND ARE SUBJECT TO THE USUAL RULES OF SUPERVISION.

		CONTROL MEASURES
HOW MIGHT AN ACCIDENT OCCUR?	**ENTANGLEMENT WITH MOVING PARTS**	■ The centre lathe has a number of moving parts – chuck, lead screw and feed shaft. ■ The chuck must be adequately guarded to prevent contact whilst in motion. Ideally the chuck guard should be interlocked with a micro-switch to prevent operation when the chuck is exposed (fig.1). ■ Operators must be made aware that the lead screw or feed shaft rotate in use and may be unguarded with a danger of clothing being drawn in when in use. The lead screw and feed shaft should ideally be fitted with telescopic guards and must be disengaged when not in use. Operators should also be aware that when using the lead screw and feed shafts the hand wheels will turn and can become entangled with clothing. ■ The machine should stop within 10secs (PUWER) but because of the momentum and power of the lathe it is impossible to pull trapped clothing away. It is essential that no loose clothing, jewellery or long hair is worn. ■ Materials should not project beyond the headstock gearing cover through the hollow spindle. In normal use the access hole in the cover should be closed off with a removable blanking plate (fig.2).
WHO MIGHT BE AFFECTED?	**OPERATOR**	
WHAT INJURY MIGHT OCCUR?	**LACERATION, ABRASION, BRUISING AND BREAKING OF BONES**	
SEVERITY	**HIGH**	

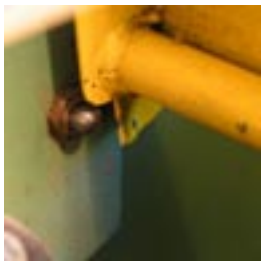

Fig.1

Fig.2

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		CONTROL MEASURES
HOW MIGHT AN ACCIDENT OCCUR?	**EJECTION OF WORK PIECE, TOOLS, CHUCK KEY AND SWARF**	■ Owing to the speed at which the centre lathe operates, sudden violent ejection of the work-piece, chuck key, broken tools and swarf can occur. ■ The work-piece should be firmly held by a substantial amount of material in the chuck. Work mounted on a face plate should be securely bolted to it and counterbalanced to prevent excessive vibration. ■ Chuck keys should never be left in the chuck and should be spring-loaded where possible to prevent this. ■ Cutting tools must be securely held in the tool post and excessive overhang of the tool should be avoided to reduce the possibility of breakage. ■ Unless the lathe is placed parallel to a wall it should always be fitted with a back-plate. This is to prevent objects being projected into the room or onto other machines if they are arranged in a chevron arrangement. ■ **Goggles rated for impact must be worn at all times.**
WHO MIGHT BE AFFECTED?	**OPERATOR AND OTHERS**	
WHAT INJURY MIGHT OCCUR?	**LACERATION, ABRASION, BRUISING AND EYE INJURY**	
SEVERITY	**HIGH**	
HOW MIGHT AN ACCIDENT OCCUR?	**SWARF AND OTHER WASTE MATERIALS**	■ When turning on the lathe, swarf will be produced. Swarf is extremely sharp and should never be handled with bare hands, appropriate tools should be employed. Mild steel and aluminium produce long spirals of swarf and no attempt should ever be made to remove it whilst the machine is in motion, as it can draw hands and clothing into the machine. Swarf should not be allowed to build up around the work-piece as it can be violently ejected. ■ When turning brass the swarf takes the form of small sharp pieces which can enter clothing and be extremely uncomfortable. ■ Swarf can also be extremely hot and burns can occur. ■ **Goggles rated for impact must be worn at all times.**
WHO MIGHT BE AFFECTED?	**OPERATOR AND OTHERS**	
WHAT INJURY MIGHT OCCUR?	**LACERATION, BURNS AND EYE INJURY**	
SEVERITY	**HIGH**	

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		CONTROL MEASURES
HOW MIGHT AN ACCIDENT OCCUR?	**SLIPPING ON SPILLAGES OF CUTTING FLUIDS/ SUDS**	■ See section on cutting oils and lubricants ■ The coolant pipe must not be adjusted when machine is in motion. ■ Suds oils that have been sprayed from the work-piece onto the floor should be soaked up immediately with an absorbent material and cleared away.
WHO MIGHT BE AFFECTED?	**OPERATOR AND OTHERS**	
WHAT INJURY MIGHT OCCUR?	**ALLERGIES AND SKIN INFECTIONS FROM CONTACT WITH OIL; BRUISING AND CUTS**	
SEVERITY	**MEDIUM**	
HOW MIGHT AN ACCIDENT OCCUR?	**MANUAL HANDLING OF CHUCKS AND FACE PLATES**	■ Although chucks and face-plates usually found in schools are not excessively heavy they might require the construction of a purpose-made cradle to facilitate two-person lifting. This cradle should also prevent the danger of chucks rolling off the bed onto the hands and feet of the operator.
WHO MIGHT BE AFFECTED?	**OPERATOR AND OTHERS**	
WHAT INJURY MIGHT OCCUR?	**BACK INJURY, TRAPPING OF HANDS, FINGERS AND FEET**	
SEVERITY	**MEDIUM**	

THE CENTRE LATHE

		CONTROL MEASURES
HOW MIGHT AN ACCIDENT OCCUR?	**DISTRACTION**	■ The machine should be sited in its own space according to Building Bulletin 81. ■ The machine should not be sited where the operator is exposed to accidental collision with others.
WHO MIGHT BE AFFECTED?	**OPERATOR**	
WHAT INJURY MIGHT OCCUR?	**VARIOUS**	
SEVERITY	**MEDIUM**	
HOW MIGHT AN ACCIDENT OCCUR?	**FINISHING IN THE LATHE**	■ The use of files and abrasives eg emery cloth, to finish work in the lathe is potentially hazardous and should not be encouraged.
WHO MIGHT BE AFFECTED?	**OPERATOR**	
WHAT INJURY MIGHT OCCUR?	**LACERATION, ABRASION, BRUISING AND BREAKING OF BONES**	
SEVERITY	**HIGH**	

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		CONTROL MEASURES
HOW MIGHT AN ACCIDENT OCCUR?	**POOR LIGHTING AND VISIBILITY**	■ The lathe should be fitted with a filament or high intensity LED lamp to overcome the stroboscopic effect of the fluorescent strip lights fitted in the workshops. At certain speeds the work-piece can appear to be stationary or travelling in reverse due to flickering of the fluorescent lights. ■ Chuck and tool-post guards (where fitted) should be clean and free from scratches to limit the need for the operator to look around them see their work (fig.1).
WHO MIGHT BE AFFECTED?	**OPERATOR**	
WHAT INJURY MIGHT OCCUR?	**VARIOUS**	
SEVERITY	**MEDIUM**	

Fig.1