



## Risk assessment for : Leeds Wood Recycling Cic



<b>Risk assessment name</b>	CNC wood router	<b>Assessment type</b>	 General
<b>Assessor name</b>	Leon Varga	<b>Affected site(s)</b>	Leeds Wood Recycling CIC (LS11 9RT)
<b>Assessment date</b>	27/04/2023	<b>Review period</b>	Annually
<b>Approved by</b>	Leon Varga	<b>Review date</b>	27/04/2024
<b>Approved date</b>	27/04/2023	<b>Reference</b>	LEE1808799

Workspace(s)	Description
 Processing	<p>There are many different machine designs with varying degrees of complexity. All machines should be installed to the manufacturer's specification with the correct services provided. This should include having sufficient extraction for the removal of chips and dust. Never modify a machine in any way unless you have first consulted with the manufacturer/ supplier and received confirmation that the modification will not be detrimental to the safety/ integrity of the machine. Each machine has its own characteristics and configuration which you should take into account when identifying the hazards and assessing the risks. You will need to consider the following hazards:</p> <ul style="list-style-type: none"> <li>■ ejection of the workpiece or cutter – make sure that they are secure before starting;</li> <li>■ contact with rotating cutters and automatic tool changers (where fitted);</li> <li>■ trapping and crushing caused by moving tables or machining heads;</li> <li>■ unexpected movement or start-up caused by faults in the control system;</li> <li>■ excessive noise emission;</li> <li>■ the production of dust and chippings;</li> </ul> <p>2 of 6 pages Health and Safety Executive</p> <ul style="list-style-type: none"> <li>■ automatic handling and loading devices (where fitted);</li> <li>■ pneumatic and vacuum clamping devices</li> </ul>

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Workspace(s)	Description
	<p>(where fitted);</p> <ul style="list-style-type: none"> <li>■ safe programming of cutting tool rotation and approach speeds compatible with the material being processed;</li> <li>■ any new programmes should have a 'dry run' at slow speed in case of any mistakes, to avoid collisions etc.</li> </ul> <p>Figure 1a Small overhead/C-frame CNC router with fixed distance guard. The risks from any crushing or trapping hazard between fixed and moving machine parts must also be controlled</p> <p>Figure 1b C-frame/cantilever arm machine with pressure sensitive bumpers</p> <p>CNC routers and machining centres</p> <p>CNC routers and machining centres have two main categories:</p> <ul style="list-style-type: none"> <li>■ C-frame/cantilever arm/overhead;</li> <li>■ Portal frame (gantry/goalpost).</li> </ul> <p>C-frame/cantilever arm/overhead</p> <p>These machines, sometimes referred to as overhead routers, have a single or multifunction head unit mounted on a C-frame/cantilever arm that either moves across the table or remains stationary while the work table moves underneath it, see Figures 1a, b and c.</p> <p>Figure 1c C-frame/cantilever arm machine with safety mats</p> <p>3 of 6 pages Health and Safety Executive tool changer Details of tool guarding Partial enclosure Panels Beams Portal frame (gantry/goalpost)</p> <p>These machines have a single or multifunction head unit mounted on a portal frame (gantry/goal post) which can move over the work table or remain stationary while the work table moves underneath it, see Figure 2.</p>

Workspace(s)	Description
	<p>Multi-position Figure 2 Portal (gantry/goalpost frame) machine with partial enclosure and light barrier Machining centre applications could include routing, vertical and horizontal boring, grooving and shaping applications. These are all served by a multiposition tool changer mounted adjacent to the head unit or placed on the frame of the machine, see Figure 2. It is important that the correct tool is used, suitable for the machine and the application. Tools should also be maintained in good condition. The majority of machines operate in three axes, X and Y (horizontal movement) and Z (vertical movement). Some machines have the facility to operate with vertical and horizontal rotational axis (five axis machines) and all of these axes will need to be taken into account in the risk assessment. This is especially important for dust and chip collection and the trajectory of ejected waste fragments from the workpiece.</p> <p>Safeguarding CNC routers can be guarded by a variety of fixed guards but any safety distances should comply with BS EN 13857:2008.5 If the fixed guards are to be demounted by the user for maintenance or cleaning purposes etc, then their fixing systems should remain attached to the guard or to the machine when the guard is removed, eg be fitted with screws that remain attached to the guard. However, as the control systems on routers have developed from manual control to CNC, the degree of operator intervention during the machining process has decreased. The addition of automatic loading and unloading facilities and automatic tool changing has further reduced the need for close approach to the cutting area. This has allowed manufacturers to adopt safeguarding methods that differ from the close guarding traditionally used on older, manually operated machines. On large machines it is normal practice to prevent access to the cutting area during the machining process by an enclosure, see Figure 3. The purpose</p>

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	<p>of the enclosure is to prevent:</p> <ul style="list-style-type: none"> <li>■ access to the danger zone;</li> <li>■ the ejection of part of the tool;</li> <li>■ any crushing or trapping hazard between fixed and moving machine parts.</li> </ul> <p>4 of 6 pages Health and Safety Executive Figure 3 CNC machining centre inside full enclosure Access into the enclosure is normally required for:</p> <ul style="list-style-type: none"> <li>■ loading or unloading the workpiece;</li> <li>■ cleaning, setting or adjustment;</li> <li>■ tool changing.</li> </ul> <p>Where entry into an enclosure is necessary then it should be via an interlocked door that will prevent access while the cutters and other dangerous parts are moving. Any interlocks used should comply with BS EN ISO 14119:2013.6</p> <p>Enclosure requirements include:</p> <ul style="list-style-type: none"> <li>■ providing protection up to at least 1.8 m from the floor level;</li> <li>■ being made of impact-resistant materials capable of containing ejected workpieces or machine components;</li> <li>■ having audible or visual warning (eg a yellow light) of impending start up;</li> <li>■ having an emergency stop device (inside the enclosure) that will stop start-up if necessary;</li> <li>■ having a control device to reset the interlocking of the door that complies with BS EN ISO 13849-1:2008.7</li> </ul> <p>This should be located outside the enclosure but in a position that allows a clear view of the inside. It should not be reachable from within the enclosure;</p> <ul style="list-style-type: none"> <li>■ having noise reducing features where machines produce noise levels greater than 85 dB(A).</li> </ul> <p>Other safeguards can be used instead of a full enclosure, such as:</p>

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	<ul style="list-style-type: none"> <li>■ partial enclosures, with or without light barriers/beams (Figure 2);</li> <li>■ pressure sensitive bumpers (Figure 1b);</li> <li>■ pressure sensitive mats (Figure 1c).</li> </ul> <p>The choice of safeguards chosen will be dependent on the manufacturer's/designer's assessment to ensure that the essential safety requirements of the Machinery Directive and associated European Free Trade Association (EFTA) regulations have been met.</p> <p>Machinery Directive and associated European Free Trade Association (EFTA) regulations have been met.</p> <p>If there are any openings then curtains should be used to protect against the risk of ejection of parts of tools or parts of the workpiece. They should therefore be capable of passing an impact test that holds a 100 g projectile when hit at a speed of 70 m/s.</p> <p>Further details of these options can be found in BS EN 848</p> <p>Where infrequent access is required, for example, just for maintenance operations, then a fixed guard can be used (Figure 1a). This is provided the necessary steps have been taken to prevent an accidental start-up while the machine is being worked on (see 'Maintenance').</p> <p>Both CNC and manual routers should be fitted with effective Local Exhaust Ventilation (LEV) to control wood dust.</p> <p>Suitable Respiratory Protective Equipment (RPE) with a UK Standard Assigned Protection Factor (APF) of at least 20 may be required during operation and will normally be required for maintenance and cleaning</p> <p><b>Braking</b></p> <p>There should be an automatic electrical brake provided for the tool spindle(s) so that they stop within ten seconds.</p> <p><b>Tool changing mechanism</b></p> <p>In some cases, the enclosure for the cutting area will prevent contact with the tool changer. In other cases there may be a tool magazine that is separate from the machining area and has its own access door. Such access doors should be interlocked with the tool</p>














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	changer and if there is access to the cutters, also interlocked with them. During manual tool changing, there should be no risk of rotation of the tool holder while tools are being inserted or removed. Use either 'hold-to-run' or single-step pendant controls.













Overall risk rating : 9 ( Low )

Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)

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Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 <p>Manual handling Risk of injury whilst undertaking the manual handing of tall, awkward &amp; unwieldy loads.</p>	<p>All staff</p> <p>How Many? vary</p> <p>How? s an employer, you must protect your workers from the risk of injury from hazardous manual handling in the workplace. Manual handling means transporting or supporting a load by hand or bodily force. It includes lifting, putting down, pushing, pulling, carrying or moving loads. A load can be an object, person or animal.</p> <p>The law sets out how employers must deal with risks from manual handling:</p> <p>avoid hazardous manual handling, so far as reasonably practicable assess the risk of injury from any hazardous manual handling operations that cannot be avoided reduce the risk of injury from hazardous manual handling to as low as reasonably practicable The weight of a load is important, though the law does not set specific weight limits.</p>	<div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;">  <p><b>All Employees Receive Induction Training</b> All employees receive induction training upon commencement with the Company</p> </div> <div style="width: 50%;">  <p><b>Eye Protection Worn</b> Eye protection supplied to BS EN 166 &amp; relevant to the work activity hazard</p> </div> <div style="width: 50%;">  <p><b>Eye Wash Station Provided</b> Eye wash station provided for first aid treatment for debris/dust etc. in eyes.</p> </div> <div style="width: 50%;">  <p><b>Foot Protection Worn</b> Foot protection supplied &amp; worn to BS EN 20345 relevant to the work activity hazard</p> </div> <div style="width: 50%;">  <p><b>Gloves Worn - EN 388 Mechanical Risks (Abrasion)</b> Gloves Worn - EN 388 Mechanical Risks (Abrasion Resistant)</p> </div> <div style="width: 50%;">  <p><b>Good Manual Handling Techniques/Postures Used</b> All staff are provided training on safe lifting techniques and recommended postures</p> </div> <div style="width: 50%;">  <p><b>Lifting Equipment Only Used On Firm, Level Ground</b> The lifting equipment is only to be used on firm level ground/floors.</p> </div> <div style="width: 50%;">  <p><b>Manual Handling - Team Lifting</b> Team lifting will be applied as required</p> </div> <div style="width: 50%;">  <p><b>Manual Handling Risk Assessment Carried Out</b> An assessment of the manual handling risk has been carried out for the task.</p> </div> <div style="width: 50%;">  <p><b>Manual Handling Training Given</b> All relevant employees have received training on correct manual handling techniques</p> </div> <div style="width: 50%;">  <p><b>Protective Footwear Worn Whilst Manual Handling</b> Suitable protective footwear is worn whilst carrying out manual handling activity.</p> </div> <div style="width: 50%;">  <p><b>Storage Plan To Reduce Manual Handling Operations</b> Storage plan in place to reduce the risk from manual handling operations whilst picking stock.</p> </div> </div>	<p>2 x 2</p> <p style="color: green; font-size: 2em;">4</p> <p>Low</p>

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Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
	<p>In some cases, you must provide information about the weight and position of the centre of gravity of each load, if there is a risk of injury and it is reasonably practicable to do this.</p>		
 <p>Noise levels at/above 85 dB(A) Risk of hearing damage due to exposure to excessive levels of noise.</p>	<p>All staff, Operators</p> <p>How Many? vary</p> <p>How? Loud noise can create physical and psychological stress, reduce productivity, interfere with communication and concentration, and contribute to workplace accidents and injuries by making it difficult to hear warning signals. However, repeated exposures to loud noise can lead to permanent tinnitus and/or hearing loss. Loud noise can create physical and psychological stress, reduce productivity, interfere with communication and concentration, and contribute to workplace accidents and injuries by making it difficult to hear warning signals.</p>	<div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;">  <p><b>Adequate Supervision Provided</b> Adequate Supervision Provided</p> </div> <div style="width: 50%;">  <p><b>All Employees Receive Induction Training</b> All employees receive induction training upon commencement with the Company</p> </div> <div style="width: 50%;">  <p><b>Appropriate First Aid Provided</b> Casualties treated by first aider until emergency help arrives</p> </div> <div style="width: 50%;">  <p><b>Barriers In Place To Prevent Unauthorised Access</b> Barriers In Place To Prevent Unauthorised Access</p> </div> <div style="width: 50%;">  <p><b>Daily Check For Faults &amp; Damage</b> Daily check for faults &amp; damage and that equipment is in full working order</p> </div> <div style="width: 50%;">  <p><b>Hearing protection provided &amp; worn</b> Hearing protection available and to be worn whilst carrying out noisy work activities</p> </div> <div style="width: 50%;">  <p><b>Inexperienced people monitored</b> Inexperienced employees are closely supervised and under instruction at all times</p> </div> <div style="width: 50%;">  <p><b>Machine Fitted With Automatic Braking Device</b> Automatic brake is fitted that stops the tool in ten seconds or less if there is a risk of contact</p> </div> <div style="width: 50%;">  <p><b>Mandatory Hearing Protection Zones Designated</b> Mandatory hearing protection zones designated as noise levels are 85dB(A) and above in the area.</p> </div> <div style="width: 50%;">  <p><b>Noise Risk Assessment Carried Out</b> Noise risk assessment carried out c/w regular measurements to ensure it is kept valid and up to date</p> </div> </div>	<p>4 x 4</p>  <p>16</p> <p>Medium</p>



















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Hazard	Who could be harmed and how?	Existing controls		Risk rating (L x S)
		<p> <b>Only Competent Persons Can Operate The Machine</b> Only personnel with sufficient information, instruction and training can operate the machine</p> <p> <b>PPE Stored Correctly</b> PPE Stored Correctly</p> <p> <b>Protective Screens Provided &amp; Used</b> Protective Screens Provided &amp; Used</p> <p> <b>Warning &amp; Information Signage Displayed</b> Relevant warning &amp; information signage displayed relative to the work activity, hazard &amp; risks</p>	<p> <b>PPE Issued, Worn &amp; Kept In Good Condition</b> PPE Issued, Worn &amp; Kept In Good Condition</p> <p> <b>Pre-start Checks Undertaken</b> Pre-start Checks Undertaken</p> <p> <b>Routine Maintenance Undertaken</b> Routine maintenance is undertaken in accordance with the manufacturer's requirements</p>	

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Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
 <p>Poor Housekeeping Risk of injury during access &amp; egress due to poor housekeeping.</p>	<p>All staff, Operators, visitors</p> <p>How Many? vary</p> <p>How? One of the most common findings in workplaces is poor housekeeping i.e. untidiness, disorder, poor storage of materials and stock. On many workplace inspection visits one can usually see dirt and dust on the workbenches, light fittings and floors etc.</p>	<div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;">  <p><b>Aisles &amp; Gangways Kept Clear For Good Housekeeping</b> All aisles and gangways kept clear to avoid slips and trips</p> </div> <div style="width: 50%;">  <p><b>All Staff Trained In Good Housekeeping Techniques</b> All staff are trained in good housekeeping techniques &amp; the standards expected in the workplace</p> </div> <div style="width: 50%;">  <p><b>Appropriate First Aid Provided</b> Casualties treated by first aider until emergency help arrives</p> </div> <div style="width: 50%;">  <p><b>Cleaning Schedules in Operation</b> Cleaning Schedules in Operation</p> </div> <div style="width: 50%;">  <p><b>Electrical Cable Management In Place</b> Electrical cable management in place ensuring no trailing wires in the workplace reducing trip risks</p> </div> <div style="width: 50%;">  <p><b>Good Housekeeping Observed During The Task</b> Good housekeeping standards observed &amp; maintained by operatives throughout the duration of the task</p> </div> <div style="width: 50%;">  <p><b>Regular Housekeeping Inspections Are Carried Out</b> Regular housekeeping inspections are carried out in the workplace.</p> </div> <div style="width: 50%;">  <p><b>Trailing Wires/Cables Made Safe To Prevent Trips</b> Leads &amp; extension cables are routed and/or secured/taped to minimise trip risks</p> </div> <div style="width: 50%;">  <p><b>Waste Bins Are Provided Within The Premises</b> Waste Bins Are Provided Within The Premises</p> </div> </div>	<p>2 x 2</p> <p style="font-size: 2em; color: green;">4</p> <p>Low</p>

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Hazard	Who could be harmed and how?	Existing controls		Risk rating (L x S)
 <p>Wood Dust Risk of ill-health due to the inhalation of harmful soft/hard wood &amp; M.D.F. dust.</p>	<p>All staff, Operators</p> <p>How Many? vary</p> <p>How? f you work with wood, you're going to create dust. But if wood dust enters your lungs, it can cause health problems like asthma, and in some cases, cancer. If you work with wood, you need to be aware of the health hazards created by wood dust, so that you can protect yourself and work safely.</p> <p>Inhaling Wood Dust: What Are You Breathing Into Your Lungs? header image</p> <p>Wood is a natural material, so many people don't consider it to be harmful. It comes from trees, and trees are good. But did you know that asbestos is also a naturally occurring material? In fact, there are lots of naturally occurring materials that are hazardous. Lead, arsenic, silica, and in some circumstances, wood.</p> <p>Having wood in your home or workplace does not come with a safety warning. And don't worry,</p>	<div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;">  <p><b>All Employees Receive Induction Training</b> All employees receive induction training upon commencement with the Company</p> </div> <div style="width: 50%;">  <p><b>All Staff Trained In Good Housekeeping Techniques</b> All staff are trained in good housekeeping techniques &amp; the standards expected in the workplace</p> </div> <div style="width: 50%;">  <p><b>Appropriate First Aid Provided</b> Casualties treated by first aider until emergency help arrives</p> </div> <div style="width: 50%;">  <p><b>Cleaning Schedules in Operation</b> Cleaning Schedules in Operation</p> </div> <div style="width: 50%;">  <p><b>Frequent Cleaning Of Work Areas &amp; Equipment</b> Work areas &amp; equipment are cleaned frequently between uses including handles &amp; regular touch points</p> </div> <div style="width: 50%;">  <p><b>Local Exhaust Ventilation Provided For The Task</b> Local Exhaust Ventilation Provided For The Task</p> </div> <div style="width: 50%;">  <p><b>Machine Fitted With Automatic Braking Device</b> Automatic brake is fitted that stops the tool in ten seconds or less if there is a risk of contact</p> </div> <div style="width: 50%;">  <p><b>Natural Ventilation Provided For The Task</b> Natural Ventilation Provided For The Task</p> </div> <div style="width: 50%;">  <p><b>Only Competent Persons Can Carry Out The Task</b> Only personnel with sufficient information, instruction and training can carry out the task.</p> </div> <div style="width: 50%;">  <p><b>Provision Of Written Safe Systems of Work In Place</b> Provisions of written Safe Systems of Work to control the process with the minimum risk of injury</p> </div> <div style="width: 50%;">  <p><b>RPE - Disposable Respirator FFP 1/2/3</b> Protects against fine dust, mists &amp; fumes (FFP1 - APF of 4; FFP2 - APF of 10 &amp; FFP3 - APF of 20)</p> </div> <div style="width: 50%;">  <p><b>RPE - Half Face Mask</b> Protects against fine dust, mists &amp; fumes. Up to 50 x TLV</p> </div> <div style="width: 50%;">  <p><b>Statutory Inspection On Local Exhaust Ventilation</b> Local Exhaust Ventilation Tested in accordance with the statutory requirement for the work/type.</p> </div> <div style="width: 50%;">  <p><b>Wood Dust Control</b> Dust extraction is fitted to the machinery &amp; vacuums are provided to remove wood dust from flooring.</p> </div> </div>		<p>4 x 4</p>  <p>16</p> <p>Medium</p>














CNC wood router

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Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
	<p>you don't need to send your chest of drawers to a hazardous waste site. Wood is a safe material.</p> <p>But if you work with wood, you're at risk. You're four times more likely to get asthma. And certain types of wood are known to cause cancer.</p> <p>Because when you work with wood, to cut, drill or shape it, for example, you produce dust. And this dust, when inhaled into your lungs, can cause health issues.</p> <p>Wood dust is a common by-product in both manufacturing environments and construction sites in professions such as carpentry and joinery. Even if you do not work with timber yourself, the wood dust produced from these activities can also affect those close to the work.</p> <p>If asked to write down all the harmful materials on site, very few would list wood at all. But wood dust is a hazardous substance. It's covered by the Control of Substances Hazardous</p>		

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Hazard	Who could be harmed and how?	Existing controls	Risk rating (L x S)
	to Health Regulations (COSHH).  So if you work with wood, you should be aware of the health hazards created by wood dust and how to stay safe.		

Hazard	Who could be harmed and how?	Existing controls		Risk rating (L x S)
 <p>Work Equipment (Woodworking Machinery) Risk of injury due to contact with blades &amp; ill health due to the inhalation of wood dust created.</p>	<p>All staff, Operators</p> <p>How Many? vary</p> <p>How? The woodworking industry has one of the highest rates of accidents caused by contact with moving machinery. The majority of these are because of operator's hands or fingers making contact with the rotating cutters. Analysis of accidents investigated by HSE has found that the most common causes were:</p> <ul style="list-style-type: none"> <li>■ inadequate or missing guards;</li> <li>■ inadequate or lack of operator training.</li> </ul>	<div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;">  <p><b>Barriers In Place To Prevent Unauthorised Access</b> Barriers In Place To Prevent Unauthorised Access</p> </div> <div style="width: 50%;">  <p><b>Fixed Guards in Place At All Times</b> Fixed guards in place at all times &amp; regularly checked</p> </div> <div style="width: 50%;">  <p><b>Foot Protection Worn</b> Foot protection supplied &amp; worn to BS EN 20345 relevant to the work activity hazard</p> </div> <div style="width: 50%;">  <p><b>Guards Checked Prior To Machinery Use</b> All safety devices checked regularly to ensure that they are fully operational</p> </div> <div style="width: 50%;">  <p><b>Isolate power</b> Any reported mains issues must be isolated at the main fuse board and where possible a lock off procedure put in place</p> </div> <div style="width: 50%;">  <p><b>Machine Fitted With Automatic Braking Device</b> Automatic brake is fitted that stops the tool in ten seconds or less if there is a risk of contact</p> </div> <div style="width: 50%;">  <p><b>Only Competent Persons Can Operate The Machine</b> Only personnel with sufficient information, instruction and training can operate the machine</p> </div> <div style="width: 50%;">  <p><b>Pre-start Checks Undertaken On Machinery</b> Pre-start Checks Undertaken On Machinery</p> </div> <div style="width: 50%;">  <p><b>Routine Maintenance Undertaken</b> Routine maintenance is undertaken in accordance with the manufacturer's requirements</p> </div> <div style="width: 50%;">  <p><b>RPE - Disposable Respirator FFP 1/2/3</b> Protects against fine dust, mists &amp; fumes (FFP1 - APF of 4; FFP2 - APF of 10 &amp; FFP3 - APF of 20)</p> </div> <div style="width: 50%;">  <p><b>Safe System of Work In Place For The Task</b> Operatives work to the Safe System Of Work in place for the safe operation of the task</p> </div> </div>		<p>4 x 4</p>  <p>16</p> <p>Medium</p>

**Further control measures**

## Operating procedures

### Training and information

It is important that the machine is fitted with the necessary safeguards and machine operators are trained to use them and carry out the work they are expected to do safely. Training is particularly important for those involved in maintenance, setting and cleaning to ensure that these activities are undertaken in a safe manner. No one should be allowed to work at a woodworking machine unless they have demonstrated competence. It is advisable that competent operators are authorised in writing by a responsible person (director, senior manager etc). This will then form part of the training records.

Anyone who supervises the use of work equipment must also have received adequate training and both operators and supervisors must have access to information and where appropriate, written instructions.

### Risk assessment

There are many different machine designs with varying degrees of complexity. All machines should be installed to the manufacturer's specification with the correct services provided. This should include having sufficient extraction for the removal of chips and dust. Never modify a machine in any way unless you have first consulted with the manufacturer/ supplier and received confirmation that the modification will not be detrimental to the safety/ integrity of the machine. Each machine has its own characteristics and configuration which you should take into account when identifying the hazards and assessing the risks. You will need to consider the following hazards:

- ejection of the workpiece or cutter – make sure

that they are secure before starting;

- contact with rotating cutters and automatic tool changers (where fitted);
- trapping and crushing caused by moving tables or machining heads;
- unexpected movement or start-up caused by faults in the control system;
- excessive noise emission;
- the production of dust and chippings;

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Health and Safety

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- automatic handling and loading devices (where fitted);
- pneumatic and vacuum clamping devices (where fitted);
- safe programming of cutting tool rotation and approach speeds compatible with the material being processed;
- any new programmes should have a 'dry run' at slow speed in case of any mistakes, to avoid collisions etc.

Figure 1a Small overhead/C-frame CNC router with fixed distance guard. The risks from any crushing or trapping hazard between fixed and moving machine parts must also be controlled

Figure 1b C-frame/cantilever arm machine with pressure sensitive bumpers

CNC routers and machining centres

CNC routers and machining centres have two main categories:

- C-frame/cantilever arm/overhead;
- Portal frame (gantry/goalpost).

C-frame/cantilever arm/overhead

These machines, sometimes referred to as overhead routers, have a single or multifunction head unit mounted on a C-frame/cantilever arm that either



moves across the table or remains stationary while the work table moves underneath it, see Figures 1a, b and c.

### Supporting evidence

[eh44 Dust in the workplace hse.pdf](#)

27/04/2023 -606729 kb

[indg362 Noise at work.pdf](#)

27/04/2023 -400632 kb

[mw1 HSE cnc guide.pdf](#)

27/04/2023 -289525 kb

[wis22 Routers and CNC hse.pdf](#)

27/04/2023 -7526693 kb

[wis35 Safe use of power-operated cross-cut  
saws.pdf](#)

27/04/2023 -2124303 kb

Assessor's signature: Leon Varga

Approved by signature: Leon Varga