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Workshop machinery and tools

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The following machines are currently available for Membership to hire - bookings must be made 24 hours before the booking is due to start. Please check our article 'Workshop Calendar' for days/times they can be booked.

2.5 x 1.25 m Maxicam CNC router with 8 pocket carousel tool changer.

This CNC (Computer Numerically Controlled) router is ideal for cutting, grooving and rebating plywood and composite panels for the construction of storage units such as wardrobes, bookcases, kitchen cabinets, sideboards and open storage structures. Unlike the Wadkin SP 130 table saw – traditionally used for panel cutting and deemed High-risk woodwork machinery - the Maxicam, with correct instruction, training, and supervision - can be used by members independently, and professional results achieved, safely: trained operators stand behind a laser barrier which is tripped and the machine stops if an intrusion into safe-cutting area is detected, hence the *usableness* of the Maxicam by all prospective members and makers. The CNC is operated with V-carve drawing and tool-pathing software, version Cut2D, and drawings can be imported into Cut 2D in a variety of formats such as dxf, dwg or imported bitmaps. The machine will also do text engraving or cut out letters in a wide variety of fonts and sizes. Most cutting is based on a 2.4 x 1.2 m standard commercial board which mirrors the overall bed size, but smaller stock can be used. Work material is held fixed to the bed with a large vacuum pump and this bed is quartered into four vacuum zones which can be switched on or off. Cutters in the tool changing carousel are pre-selected in the cut library and the machine automatically selects the correct feed and spindle speed. Cutters range from 1-12mm end mills, large skimming cutters, V cutters, and drills. The machine is supplemented with a large air compressor and waste removed to an extraction unit via manifold system. The machine is a fantastic piece of equipment allowing experienced makers and new-starters to create useful accurate components or make bespoke furniture. The CNC is also used in conjunction with other workshop hand power tools that are deployed in the secondary jointing processes such as 'domino' and 'biscuit' cutting to build stable square artefacts.

Large Bandsaw

The workshop bandsaw, is a key piece of kit in the workshops allowing makers to cut curves and shapes in solid wood or sheet materials, cut small tenons and dovetails or other joints in solid timber. It can be used to rip both solid and laminate materials into accurate strips or lengths. The large industry-spec Scheppac Basa 5 is also capable of deep cutting solid timber to thickness or large turning blanks into round sections. It has an accurate rip fence and the bed can be altered for angled cutting. The saw has an extended cutting range allowing material to be cut up to 300 mm deep. It has its own extraction system. In everyday use it has a general purpose 16mm blade fitted and maybe used to cut thin plastics.

Pillar Drills

We have two 'Woodpecker' 8323P pillar drills situated in separate workshops. One is bench mounted the other floor-standing allowing work pieces of extended height to be drilled accurately. The drill beds rotate and tilt and can be set for angled drilling. Beds have T slots for bolting work, vices, and jigs. The drilling machines are variable speed and can be used for metal, wood and plastics. Chucks are hand-tightened variety rather than key operated and used in conjunction with a wide range of flat bits, forstner, jobber and centre drills (imperial and metric).

Large router and table

For manual grooving, rebating and moulding of timber – and some soft plastics/acrylics - the workshops are complimented by a large Festool router mounted under a table, fitted with adjustable fence and cutter guard. Fulfilling the function of a spindle moulder, but accessible to members and other makers, the table router set up is an additional tool for furniture making, general woodwork tasks and construction projects. Like the Makita lamella cutter and Festool Domino jointer, the router is primarily for secondary production after primary dimensioning machining completed with CNC or table saw and Axminster planer thicknesser. Depth of cut is accurately selected and changed with a simple crank tool. The router takes 6,8,12 shanked cutters and has matching interchangeable collets. A range of router tools are available from bearing cutters, end mills, and moulding profiles. It has its own Record extraction LEV unit drawing waste from the cut area through the fence back. The router can be disassembled to allow use of the Festool as a traditional hand router for heavy machining the smaller workshop Festool is unsuited for. The router table set up can also be used for jigwork especially curved profiling.

Mortice machine

Workshop 3 houses a medium sized mortice machine. It is a robust late-60s cast-iron morticer made by Sedgewick. It can be used with its range of square chisel and drill sets from 6mm -18mm; ideal for small cabinetry or larger joinery jobs needing traditional mortice and tenon jointing. It has adjustable depth stops and is set and traversed by a single front wheel.

Union Graduate Woodwork Lathe

Three phased the lathe is capable of turning bowls up to 500mm diameter and between-centre spindle work of a 1000mm. It is variable speed which can be easily adjusted to required rpm. The tailstock is a morse taper and can be used with drill chucks. The flatbed faceplate area is ideal for smaller turned faceplate work such as boxes, small bowls or plates. The flatbed-side faceplate area is ideal for smaller turned faceplate work such as boxes, small bowls or plates. It has two orthodox steel faceplates, and a tapered dovetailed facing ring to match the Robert Sorbey adjustable chuck. There is also a 350mm Longworth style chuck for refacing turned pieces. A selection of turning tools are available and various measuring tools.

Disc and bobbin freestanding sanders

The disc sander has a 250mm diameter sanding area with a top belt sander 150 mm in width. The disc sander bed is adjustable for angled machining and the sander bed tilts to upright position. Belts are general 60 grit. The machine is extracted by workshop manifold system. It can be used for sanding soft and hardwoods, plywoods and some plastics and resins. The Axminster bobbin sander has spindles ranging from 8mm-50mm and an adjustable angled bed. Each bobbin has its own matched collar. Both sanders are ideal for accurate sharp geometric work and general finishing of resistant material components.

Hot wire acrylic folder

CR Clarke Hot Strip Wire Heater is a dual wire folder for post forming and bending acrylic up to 9mm. it has top and bottom heating elements which

can be switched on or off for differing processes. The bed is 1000mm long. It can be used to make functional acrylic and plastic components or for display case work. The Strip heater is often used in conjunction with laser cutter.

Laser Engraver

The GCC Laser pro MG 380 hybrid, as the name suggests, has a metal and glass tube and can be used for cutting and engraving. It has auto-focus function and can be used to cut laser plywood and acrylics up to 9mm. It can also be used to cut out fabrics for textile work, paper and cardboard. Some plastics are not conducive to be cut on laser, such as PVC. A variety of materials can be engraved on machine. Metal cannot be processed. The cutting area of the laser is 960mm x 600mm. The MG 380 works in combination with a Zoomstorm PC and Adobe drawing software. Work is sent from PC to laser and files executed to suitable power settings depending on operation and material specifications. The laser is served by a Purex fume and particle extractor.

Colchester Student metal-turning lathe

This metalworking machine has a 1400mm operating bed and an approximate working length (between centres) of 900mm. It can be used for chuck jaw turning and is equipped with three and four jaw chucks, tool-posts, a set of general-purpose cutting tools. It has a traverse tool slide and which can be set for geometric angles and tapered cutting. A Morse taper chuck is used in retractable tailstock. It can be used for making accurate engineering components, bespoke mechanical repairs, threading, boring and profile cutting, steels, brass, aluminium, cast-iron and other metals. Plastics, nylon and acrylics can also be cut and profiled on the Colchester Student.

Vertical and Horizontal metal miller

This small general-purpose Excel Multi-mill can be used for small engineering and component-machining projects. It has an operating bed of 350 x 200 mm with a Z height of 120 mm (approximate dimensions depending on tooling). It can be operated using eight-speed selection gears. It has an angled head and a T-section machined bed for bolting work to bed. There is a small range of end mills and boring tools. The Multi-mill can be used for making accurate engineering components, bespoke mechanical repairs, threading, boring and profile cutting, steels, brass, aluminium, cast-iron and other metals. Plastics, nylon and acrylics can also be cut and profiled. It can be used in conjunction with Colchester Student.

Kingsland combination metalworking station

Operated with hydraulics this heavy-duty combination metal processing equipment can be used to process a wide range of metal stock: sheet metal, round and square bar, angled sections. It has a guillotine function, die cutting head for punching metal, notching and adjustable mitre facility as well as an accurate bar-cutting head. It can be used in conjunction with MIG welder and twin-bed forge to create functional and ornamental metal components, structures and furniture. It has a range of uses but is complimented by the workshop metal-cutting bandsaw. Hydraulic function is powered/operated by foot pedal.

Welder

The workshop has a Thermal-arc 3-in-1 inverter that can be switched between stick, MIG and TIG welding functions. The common general function the machine is set for is MIG and is served by Argon gas cylinder. The welder is screened with anti-flash curtains and welding is carried out on a purpose-built metal mobile welding bench. The welding booth is served by extraction ports which expel fumes through a fan system to outside of workshops. Welding wire is a consumable and is fed from the welding unit generally using .8 mm wire and tips. The common material the machine is set up for on a day-to-day operational basis is mild steel. Other materials can be welded – such as aluminium and stainless steel - but would need consultation and separate pricing with workshop team. The welder is ideal for making metal-fabricated components, furniture, functional structures and decorative artefacts and designs in metal.

Box folder and roller

Studios and workshops share a selection of metal folding and rolling equipment. We have a small Groz metalworking tool, an Axminster universal metal worker capable of guillotine work, rolling sheet material and light bar and simple box folding. There is also a 350 mm finger-box folder for more intricate sheet metal or tin-smithing fabrication work. For smaller work - potentially jewellery – there is a 300 mm hand-cranked roller for small diameter artefacts. These rollers and benders are commonly used in conjunction with welder and forge. They can be used for making metal components, radii in metal, cranks, pins, fasteners, brackets, small artefacts such as metal boxes and tools.

Workshop Bench – 4 available

Two benches are traditional beechwood woodworking stations with twin Eclipse 200mm vices for holding work for planning, shaping drilling etc. Two benches are our air-benches which have removable plywood tops and are ok for assembly, sanding and clamping work post machining. The benches when hired include access to a variety of hand and power tools for post primary machining jointing and assembly.

Hand tools: Wood chisels, carving gouges, files, rasps, hacksaws, block and smoothing planes, spokeshaves, measuring and marking equipment, Power Tools: Festool Domino Cutter, hand router, circular saw and guide rail, Makita biscuit jointer, jigsaw, battery screwdrivers and drills, palm, orbital and detail sanders, Clarkes polisher, multi-cutter, Paslode nailer, Makita compressed-air brad-nail and staplers, mains power drills.

Wadkin SP 130 Universal Rip and Panel Saw.

Utilises four interchangeable 250mm diameter circular saws: a general purpose blade, a fine panel cutting blade, a saw for acrylics and a coarse blade for ripping hardwood planks down end grain. The blade can be tilted to 45° as can the extended crosscut fence. This arm is calibrated square and dimensionally accurate. It can be removed for wide ripping and extended. The fence has two stops for extended repetition cuts. The sliding carriage which supports the cross-cut arm is also removable and can be taken off for large plank rips. For ripping or deep cutting solids the Wadkin has a 75mm height capacity. The 1.2m pull-off-table at the rear of the saw must be in place at all times; it supports sawn work and ensures saw operatives pulling work from saw are a safe distance from cutting blade. It is industry spec and capable of highly accurate and extended work demands. ***Only qualified and experienced operatives are permitted to work this highly dangerous woodworking machine and can only be operated by qualified, experienced authorised workshop staff. Members can request machining time and so hire SP 130 as other equipment by the hour.***

Axminster Trade Surface/Thickness Planer

This combination planer has a flip top bed allowing alternate surfacing and thickness dimensioning. It is 1100mm x 250mm in size and rests over a planer block which takes three spring-loaded adjustable and sharpenable 250mm HSS blades. For surfacing and edging the planer has a removable and adjustable fence. This combination planer is used for squaring, edging and thickening timber from sawn-cut planks into dimensioned, flat, smooth components before secondary machining such as morticing or tenoning for door construction. Or, preparing planks for panel work or table-tops. ***The planer is classed under current woodworking regulations as a highly dangerous woodworking machine and can only be operated by qualified, experienced authorised workshop staff. Members can request machining time and so hire planer as other equipment by the hour.***

The following equipment are in the workshops and will become available in the future for use by Museum of Making members. Our members will be updated when these are available to hire.

Twin Forge

Capable of light blacksmithing and brazing work the DS430 Chip Forge is gas fed and heats ceramic chips in which metal can be heated to red-heat for forming in jigs or leg vice and anvil work. Work can be functional metal work or decorative art pieces. The forge will heat up to 6mm mild steel bar and plate to a plastic state ready for working into curves, flats, tapers and profiles. The forge and brazing hearths are suited for functional toolmaking and ornamental light bespoke manufacturing. Forges are extracted for heat and fumes. DS430 compliments Kingsland metal worker and MIG welder.

Electric Kiln

For firing small ceramics and glass jewellery pieces the ROHDE KE 35 B Frontloader has a volume of 35 litres and internal dimensions of 340x340x340mm. It will reach temperatures of 1280° C and has an output of 3.6kW. The KE 35 will fire stone and slipware and can be used in a variety of ways from making small-scale ceramics, jewellery artefacts, decorative applications in glaze or enamels as well as a range of casting techniques.

Auto-tilt crucible

This small auto-tilting crucible and furnace – CRM 700 - is capable of melting a range of metals including aluminium, brass, gold and silver and is designed for educational use and industry practice. It has applications for casting artefacts, teaching casting techniques, and small-scale component production and prototyping. It could be employed to recast parts for restoration projects, decorative artefacts or functional castings. It can be used in combination with metal machining lathe and milling machine (post-casting machining). It has a medium-sized melting crucible which is ideal for small scale production and casting and patternmaking and mould-making related projects.

Jewellery bench.

The twin station EM222 Jewellery bench is 2000 x 600 x 75.6 H. It has two gas-air fired jewellery torches and its own internal extraction unit to remove heat and fumes from the area. There are two working pegs for filing and processing small pieces. It can be used in conjunction with other equipment such as metal rolling bending kit, forge, and electric kiln. It is complimented by a range of general jewellery making tooling and associated equipment.

The following machines are located in the Museum of Making studios and will be available in the future. Members will be informed when these are available to hire.

Vacuum Former

The CR Clarke large bed 750FLB is used to heat plastic sheets to a malleable state and then a vacuum applied to pull the heated sheeting over a solid former producing moulds or positive formed artefacts for prototyping or actual functional plastic encasing components. The mobile floor-standing equipment will produce professional, quality and high definition vacuum formings on a small/medium scale as required by model makers, development engineers and students quickly efficiently and consistently. It has a working bed area of 500 x 450 mm. height of mouldable patterns can be created up to 150 mm. it will post-form plastics up to 6mm in thickness. Can be used in conjunction with woodworking patternmaking and 3D printers.

3D Printers – Museum of Making's Studio now houses two industry-standard Ultimaker 3D printers. Joining the original Ultimaker 2, with single material extrusion and a build volume of 230 x 225 205mm, is the cutting edge Ultimaker S3, featuring dual material extrusion, fully automated bed-leveling, the ability to print high strength composite materials and a print volume of 230 x 190 x 200mm.