MONASH University

WaM Sheet Metal Induction

OUR WORKSHOP OPENING HOURS ARE:

MONDAY - FRIDAY 9.00AM - 1PM / 2PM - 5.00PM

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WAM SHEET METAL EQUIPMENT:

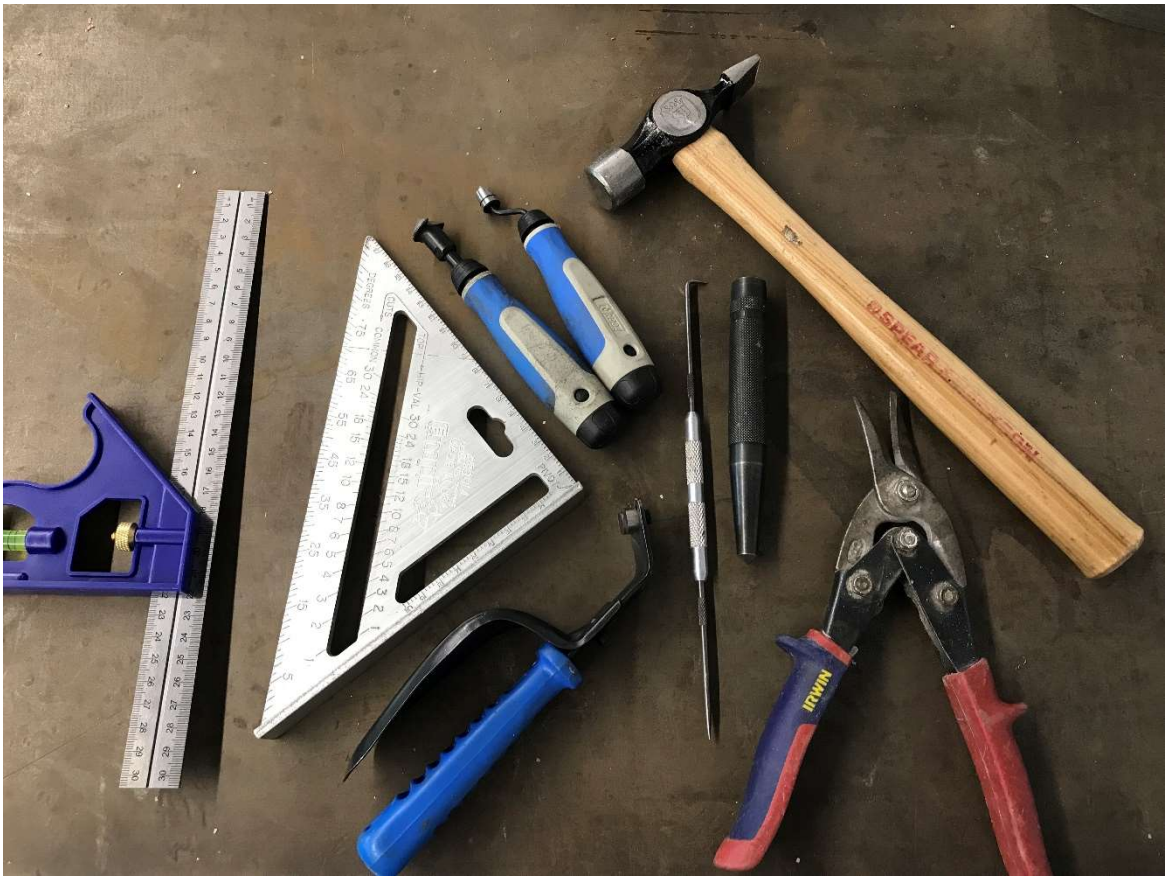
Students will be able to use the following equipment upon completion and sign off of **both an online and practical level 3 induction/demonstration.**

The following equipment is now located in E112 open access workshop area.

- **METAL HAND TOOLS**
- **GUILLOTINE**
- **BENCH SHEARS**
- **SPOT WELDER**
- **BAR BENDER**
- **MAGNA BEND**
- **SHEET ROLLER**

- NOTE: Additional metal working machines such as ‘metal lathe’, ‘cold saw’, ‘bench grinders’ and ‘angle grinders’ are covered under Specific Tools Inductions. Please refer to the website and submit an enquiry form if you wish to be inducted on these machines.

METAL WORKING HAND TOOLS



There are a number of hand tools located in the workshop specific to metal work. These will be covered in detail during your practical induction.

Safety Guidelines

- Always ensure you have received appropriate induction before using tools. Ask a technician for assistance if you are unsure.
- Ensure the metal you are using is clean and free of any burs or sharp edges.
- Know and understand the type of metal material you are working with.

Workshop Etiquette

- Replace tools in their appropriate location.
- Place scraps and offcuts in re-use tubs or in the blue metal recycling bin located outside of the workshop.
- Ensure equipment is locked when finished. See a technician.

GUILLOTINE

The guillotine is used for cutting medium to large pieces of sheet metal. It is ideal for cutting straight edges and can cut a maximum sheet width of 900mm.

It is manually operated by the foot pressure of the operator.

Maximum material thickness for this guillotine is 1.6mm. Do not attempt to cut any material thicker than 1.6mm.

Never attempt to cut rod, strap or wire with this machine**. Sheet metal Only.**

Always refer to the Standard Operating Procedure prior to use and as part of your induction.

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Safety Guidelines

- Before using the guillotine, ensure the locking pin and safety lock has been removed by a workshop technician.
- Ensure the metal you are using is clean and free of any burs or sharp edges.
- Always wear gloves when handling sheet metal.
- Be mindful of the workspace and other people when carrying sheet metal to the guillotine.
- Hold the sheet firmly or use the G clamps to secure and prevent creep when cutting.
- Use both feet on the foot lever at the same time.

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BENCH SHEARS

Bench shears provide a fast and effective method of cutting through small to medium sized sheet metal.

Always refer to the Standard Operating Procedure prior to use and as part of your induction.

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Safety Guidelines:

- Ensure material is properly supported during cutting.
- Use supports for long material. Signpost if a tripping hazard.
- Hold material securely to prevent it tilting during the cut.
- Ensure fingers and limbs are clear while operating the bench shears.
- Bring the handle down slowly using even pressure to cut workpiece
- Do NOT place excessive force on the handle
- Do NOT use faulty equipment. Immediately report suspect machinery.
- Never use bench shears for cutting metal that is beyond the machine's capacity for thickness, shape or type.
- When finished, lock the shears using the locking pin and padlock.

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MAGNA BEND

This machine is used for bending sheet metal up to 1.6mm in thickness and uses a powerful electromagnet to clamp down the sheet for bending. It is quick to use and versatile for making objects and shapes with multiple bends such as boxes.

Always refer to the Standard Operating Procedure prior to use and as part of your induction.

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Safety Guidelines:

- Never use this machine for bending metal that is beyond the machine's capacity with respect to thickness, shape or type. Refer to the manufacturer 'User Manual'.
- Never attempt to bend rod, wire, strap, or spring steel sheets in this machine.
- Adjust for thickness of workpiece – rotate adjusters either end of clamp bar.
- Insert workpiece and align bending edge of clamp bar & bending-beam with the bend line of the workpiece.
- Press and hold the 'START' button (this applies pre-clamping pressure to the workpiece).
- Using other hand lift handle (this applies full clamping) and continue bend to required angle.
- Keep clear of moving handles and bending-beam.
- Slotted or short clamp bars should be used for bending box shapes.

SPOT WELDER

Spot welding is a “resistance welding” process and works by passing an electrical current through the materials to be joined and the resulting pressure and heat melts the materials together at the spot or point of contact.

Commonly used to join sheet metal or metal wire(rod) up to approximately 3mm in thickness and is often used in place of rivets. The process is very fast, as the weld can occur in seconds and wont cause excessive heating of the remainder of the material.

Always refer to the Standard Operating Procedure prior to use and as part of your induction.

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Safety Guidelines

- Before using the spot welder examine the power cord, extension lead, plugs, sockets and power outlet for damage.
- Ensure the metal is clean and conductive by removing rust, oxidisation etc.
- Never operate the spot welding machine in wet or damp conditions.
- Position the electrode points at right angles to the metal surfaces with the tip faces flat.
- Clamp the metal pieces between the points by closing the electrode arms.
- Adjust the locking pressure for each weld.
- Switch on the current and release the switch as soon as weld area turns red.
- Handle hot materials with care. Regard all metal workpieces in the welding area as being hot, and handle them with care.

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BAR BENDER

This manual bender is used to cold bend steel and other metals to angles between 0 and 90 degrees. It is capable of bending mild steel flat bar to a size of 100 x 8mm or 50 x 12mm and round bar to approximately 25mm in diameter. If unsure of its capabilities, always check with a technician prior to use. Be aware that it may bend the material but damage the structural integrity of the metal at the bend, especially with softer metals such as aluminium.

Always refer to the Standard Operating Procedure prior to use and as part of your induction.

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Safety guidelines.

- Always ensure the work area is clear and allow room for the material and handle to move freely without obstruction.
- Ensure the work is securely tight in the vice.
- Adjust the bending plate to be just in contact with the material. For a larger bend radius, adjust the bending plate away from the material.
- Slowly pull on the handle in an arc until the desired angle is achieved.

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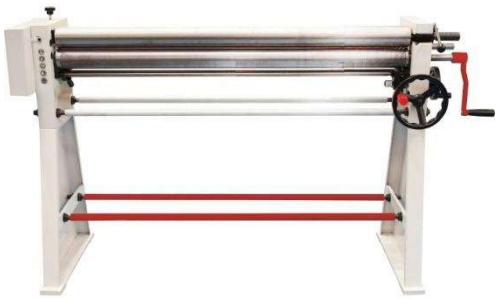
SHEET ROLLER



The sheet roller is a useful machine for creating curves and rolls in sheet metal material and also some wire.

It can roll sheet up to a width of 1200mm.

It is manually operated and can progressively add curvature to material by multiple passes through the roller while adjusting the rollers each time.

Maximum material thickness for this roller is 1.6mm. Do not attempt to roll any material thicker than 1.6mm.

Always refer to the Standard Operating Procedure prior to use and as part of your induction.

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Safety Guidelines

- Before using the roller, ensure the locking plate and safety lock has been removed by a workshop technician.
- Ensure the metal you are using is clean and free of any burs or sharp edges.
- Always wear gloves when handling sheet metal.
- Be mindful of the workspace and other people when carrying sheet metal to the roller.
- **Caution**: Keep fingers, gloves and other clothing clear of rollers at all times.