| SAFE OPERATING PROCEDURE (SOP) & ACCREDITATION GUIDE | **Cold Saw** | Accreditation Code | **M3** |
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| **Safety Requirements whilst operating the Metal-Cutting Cold Saw** |  **Compulsory**<br>  **If using the machine for extended periods or if high noise level** |  **Long and loose hair must be restrained**<br>  **Do not wear gloves unless handling blade during blade exchange or suffer coolant sensitive skin** | **Protective overalls or an apron is encouraged to prevent clothing soiling and contamination** |

- Knowledge of Key features of the Cold Saw must be understood and clearly evident during competency assessment and its safe operation must also be demonstrated.
- This document applies to the following **Pedrazzoli Super Brown Cold Saw** and must be read in conjunction with the Manuals and appropriate guides. Recognition of the main parts of this machine is necessary in order to understand descriptions below. Reference to diagrams in the Cold Saw Manual and observation of the actual machine may be useful information sources. Web tutorials can also be an excellent informer eg https://www.youtube.com/watch?v=JMsRTKPXFJY & https://www.youtube.com/watch?v=YDbx97QgYAg
- Clear knowledge of our Shed's Safety Induction Package should also be evident and practised by aspiring Cold Saw operators.

## Key Features of Metal Cold Saw

- This three phase machine has a circular steel toothed cutting blade which rotates relatively slowly but with considerable torque. The blade is cooled with a cutting fluid which is pumped up from a sump under the body of the machine by a small electric motor. The sump fluid requires topping up when low or replacement when contaminated.
- The work is must be very firmly held during cutting by use of the integral machine vice or very secure clamps. The machine has a length stop which can be set when cutting multiple pieces of the same length. There is a quick clamp lever, which once set to give correct clamping pressure, can be used when making multiple cuts of a single sized material.
- Compound angular cuts can be made by setting the blade angle to the work. The motor together with the head of the machine can swivel horizontally and vertically. Rotation of the head about the horizontal axis is complex and should only be done with assistance from a Coordinator who has experience in this task and when multiple cuts warrant this being done.
- The blade is fed into the work gently to avoid teeth chipping and then apply firm pressure to a lowering lever such that minimal vibration occurs and a steady cutting action is maintained. The sound of the machine during operation is the best indicator of efficient cutting or excessive vibration, poor cutting and likelihood of the blade being damaged. Too light a pressure on the work can result in insufficient cutting action and glazing of the work and saw blade.
- The saw has two speeds of rotation controlled by the start switch. Higher speeds are used for non ferrous and softer metals including plastics. The slower speed is used when cutting harder materials. This machine competently cuts stainless steel when set on a slow speed and provided a steady feed pressure is maintained.
- The machine can be used to cut other materials such as plastics and can cut various sectioned material including round, tube, square, hexagon, flat bar and rolled or extruded sections. Material less than 3 mm thick should not be cut vertically as the teeth on the blade have a greater pitch than this and may be stripped or blunted during the cut. Wide flat material can be cut with a

specially fitted larger toothed blade if cut on the flat and a broad cutting surface is being cut.

- Cutting waste produced (swarf) is similar to filings and requires clearing off the machine and vice surfaces. A magnet in a plastic bag has been placed near the sump return drain for the cutting fluid at the back right side of the machine. This helps collect ferrous cuttings but requires regular cleaning to prevent the drain clogging and maintain magnetic efficiency.

# Safety & Procedural Issues

## Safety

1. Keep hands away from blade and heavy pivoting sections of the machine
2. Wear eye protection. Thoroughly irrigate eyes with fresh clean water if coolant splashes into them
3. If skin is irritable from exposure to oils and cutting fluids, use preventative protection such as barrier cream or close fitting neoprene gloves
4. Ensure work being cut is handled carefully especially if long and likely to cause injury to others or inadvertently hit surrounding objects or people. Barriers may be required to warn of overhang hazards
5. Cut ends of work can have sharp edges or burrs which can cause injury if not careful
6. Always ensure work pieces are very securely clamped and any long lengths supported during cuts
7. Ensure the work area and floor is clear of off-cuts, tools and cutting fluid

## Before making a cut

8. ***If in doubt about the operation you are about to do, seek a Coordinator's assistance.***
9. Do not attempt to cut thin sections. Wall thickness should be no less than 1.6mm for square or round tube and material should be at least 3mm thick if cutting its edge.
10. Check that the floor area, machine and coolant drain are clear of off cuts, tools and swarf material. Clean up if necessary
11. Seek the padlock key from a qualified Coordinator and unlock the switch. Place the lock in a safe but obvious position ready for locking the switch after cutting is complete.
12. Check that the blade looks in good condition by lowering it when the machine is off both at the wall outlet and on the machine. Look at the exposed teeth after the safety guard retracts sufficiently.
13. Adjust and/or check the angle of the cut and adjust machine to suit desired angle
14. Ensure the surface onto which the work is to rest is clean and the work sits firmly on it when clamped. Set up the machine's roller and additional supports for longer work. The work should usually sit on surface at the bottom of the vice. It is essential to ensure good support under and behind the metal being cut and additional thick metal backing or vice jaw adjustment may be required for this. Make sure machine vice jaws are not in the line of cut. Ensure the work piece is very securely held otherwise the teeth or/or blade may break.
15. With the machine turned off, lower the blade to see that it lines up with the desired cut location. Adjust appropriately.
16. With the blade in the raised position, test the coolant flow by starting the machine and ensuring a steady coolant flow onto the blade occurs. If it does not start flowing the priming bulb in the coolant line may require several squeezes to start the flow or the tap regulating the flow may require adjusting.
17. Place "stops" on longer work to prevent coolant running along and dripping on the floor. Rags, magnets or small metal offcuts can be sat on bar to act as drip directors. Keep rags well clear of the blade. Immediately clean up any coolant which drips or splashes onto the floor as it becomes a slip hazard because of its oiliness. Coolant contaminated rags should not be stored in bins but should be dried out if they cannot be disposed of immediately. They create a spontaneous combustion fire risk.

## Making a cut

**18.** Use switch either to 1 (Low speed) or 2 (High speed) position to turn the machine on to the appropriate speed. Lower the blade steadily into the work to make the cut. Never start the machine with the teeth already in contact with the work or in an existing cut. The saw should be run slower for harder materials eg stainless and other steels. The faster speed can be used for softer materials such as brass, aluminium and copper.

**19.** Ensure steady coolant flow to wash away cuttings and keep the work and blade cool so that blade life is prolonged and prevents galling (built up of cut waste material sticking on blade) especially with stainless steel, copper and aluminium.

**20.** Listen to the sound of the machine which indicates correct cutting action and avoid vibration during cut as this may damage the blade. Maintain pressure on the cut until completed. Beware of offcuts which can inadvertently fall.

**21.** Turn the machine off before removing the work and setting it up for any additional cuts

## After machine use

**22.** Remove the work and clean the machine such that it is ready to use by the next operator.

**23.** Replace the switch padlock and any supports and length stops in their correct storage positions.

**24.** Return any barriers or roller stands to storage positions.

| **COORDINATORS' OPTIONAL CHECK LIST AND NOTES** | **INITIAL** | **DATE** |
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| **1.** Machine checking ie blade condition, angles of cut, cleanliness of clamp surfaces, coolant flow | | |
| **2.** Setting up work piece and correct clamping | | |
| **3.** Making cut correctly | | |
| **4.** Clean up and pack up procedure | | |
| **5.** | | |
| **6.** | | |

| **Version Date:** | 11-11-2015 | **Version Prepared by:** | M Bailey | **Version Authorised by:** | M Vernon |
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Please tick ONLY ONE of the boxes:
**New Accreditation to be added to records** ☐ **Confirmation of existing accreditation** ☐

| **Accreditation seekers signature to acknowledge receipt and understanding of instructions:** | **Date:** | **Accred Code:** | **1st Assessor's signature:** | **2nd Assessor's signature:** |
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