

Name of SOP	5" Disk Grinder
Model	Milwaukee 5" Disk Grinder, Model No. 6155-20
ADL Asset Serial Number	949D805400173, 949D805400180
Effective Date	January 2008
Author	Paul Heerema
Reason for SOP	Potential risk of cut injury due to spinning cutting blade Risk of eye damage from small fragments produced by grinding Risk of burning from hot metal or grinding blades
Approved by (supervisor)	
Date reviewed by JHSC	

Definitions

Terms	
Acronyms	RMM – Risk Management Manual JHSC - Joint Health and Safety Committee EOHSS - Environmental Occupational Health & Safety Service

Requirements

Applicable OSHA regulations and / or codes of practice. <ol style="list-style-type: none"> McMaster University Risk Management Policies OSHA code
Training and Competency <ol style="list-style-type: none"> Training provided by technical staff Competency is shown by individual after training

Description of the Task

Location and time of work	ADL-Main Floor, during normal working hours
Individuals and skills required	Technical staff, Graduate students with proper training
Equipment and supplies required	5" grinder, replacement cutting or grinding blades as needed, blade changing tool.
Personal protective equipment required	Steel Toe Boots, Hard Hat, Long-Sleeve Shirt and Pants, Protective Eyewear, Hearing Protection

All students must be trained by a technician and show competency before use

A. General Equipment Inspection

Electrical Connection

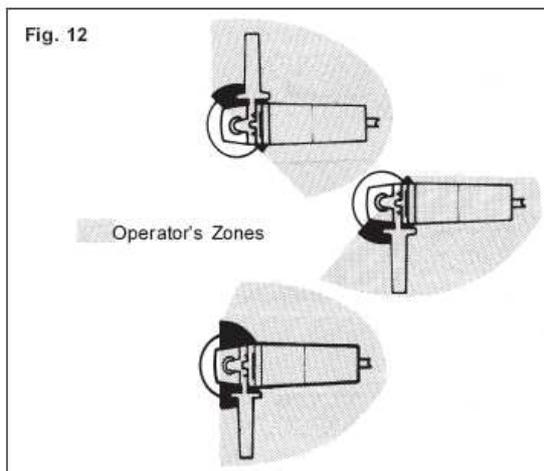
1. For a 12A grinder, the recommended extension cord length is 50 ft or less.
2. Inspect all extension cords and power cord for the saw before use, checking for breaks or splits in the protective outside layer of the cord. Report any problems to Civil Engineering staff and do not proceed until the situation is resolved.

Cutting or Grinding Blade Inspection, Installation and Removal

1. **ALWAYS UNPLUG the grinder before installing, removing or changing blades.** This reduces the risk that the grinder will inadvertently turn on while you are working on it.
2. Check to see that the guard is in place on the cutting head and that it is not loose.
3. Be sure to match the blade to the operation – if cutting a thin blade will be used, if grinding a thicker contoured grinding blade will be used. Consult owner's manual or civil engineering technical staff if unsure.
4. **Inspection:** Before use, the blade must be inspected to ensure proper cutting performance. The grinding or cutting disk must be perfectly circular – if the blade is notched or broken it must be disposed of. A cutting blade must have a minimum 1" clearance from the centre flange screw.
5. **Removing Blades:** be sure that the tool is unplugged. Insert the blade removal tool into the flange nut which holds the blade in place (pins on the blade removal tool line up with holes in the flange nut). Depress the lock button on the grinder (prevents the grinder head from spinning) – and apply counter-clockwise force to the blade removal tool – this should loosen the flange nut.
6. **Changing Blades:** Installing blades is the opposite of removing the blades. When using different blades (thicker or thinner cutting blades, grinding blades) the installation may be slightly different, consult owner's manual for details.

B. Sequential steps to complete the work safely.

1. Ensure personal protective equipment is in place. Significant importance is placed on the eye protection – protective glasses that fully cover the eye area (like goggles) are recommended as small grinding fragments, particularly when working with metal, can get everywhere.
2. Before grinding or cutting, turn on the grinder and watch the wheel spin for at least 10 seconds. If the blade is warped or out-of-balance a significant vibration and wobble should be produced and a significant wobble should be visible. Such a blade would need to be discarded.
3. Ensure that the workpiece is stable. If the piece is small it can be clamped to a surface or held in a bench vise. If the piece is not properly secured it could move unexpectedly due to the rotational force from the grinding or cutting wheel.



4. The device is equipped with a guard to shield the user from shavings produced during the grinding or cutting operation. The guard can be adjusted to match the user's position relative to the grinder. As shown in the figure above, adjust the guard to match your position to give the greatest amount of protection.
5. If cutting, be aware of where the cut off portion of the workpiece will land when the cut is complete. Remove any wires, cables or equipment that may be damaged when the cut off portion is removed. Do not place your feet or any part of your body underneath the portion of the workpiece that is to be cut off, it may be unstable before the cut is complete and may fall prematurely.
6. During operation the blade and the workpiece will become very hot. Ensure that the blade or workpiece is sufficiently cooled before removing it from the tool or work area.

C. General Recommendations for Safe Performance

1. When grinding, hold the grinder at an angle of 5-10 degrees up from the grinding plane so that only the top portion of the grinding plane is contacting the surface to be ground. This will ensure greater control and less torque transferred to the operator.
2. The sound from grinding metal can cause hearing damage – hearing protection is recommended.

Contingency Plan and Reporting

Accident / injury response

1. Apply first aid as required
2. Notify Civil Engineering staff immediately
3. For all injuries, complete an "Injury/Incident Report" and provide a copy to the Chair and to EOHSS.

In the Case of Critical Injuries

1. In case of critical injury, call security (dial 88)
2. In case of critical injury notify EOHSS immediately, ext 24352

Equipment Malfunction

1. If able, release trigger from the grinder and remove it from the working area. If the cutting blade is stuck or wedged do not try to remove the grinder from its working position, the effort to do so may cause instability in the structure you are attempting to cut.
2. If able, disconnect the power source.
3. Notify Civil Engineering staff immediately, especially if unable to complete steps 1 or 2.

Equipment shutdowns

1. Release trigger from the grinder.
2. Disconnect power source
3. Return to tool room

Environmental Responsibility**Waste disposal procedures**

No appreciable waste generated. Metal scraps from cutting procedure can be disposed of in appropriate recycling. Metal shavings can be swept up.

Building air quality

Under normal operation no fumes are generated, normal room ventilation is adequate. Metal shavings do not stay airborne. If fumes are present, shut down equipment as specified under Equipment Malfunction and contact civil engineering staff.

References

1. OSHA/ regulations
2. EPA and Municipal environmental regulations
3. McMaster University Program/ Policy
4. Material Data Sheets (MSDS)
5. RMM #300 Safety Orientation and Training Program
6. RMM #301 Standard Operating Procedure
7. RMM program #309 Laboratory Safety Manual
8. RMM program #310 Eye Protection.
9. RMM program #403 Noise Control and Hearing Preservation
10. RMM program #1000 Reporting and Investigating Injury, Incidents and Occupational
11. Milwaukee Tools Operators Manual, Model 6155-20

Distribution

1. Laboratory safety binder
2. Technical Staff of Civil Engineering
3. Civil Engineering Safety Committee
4. Civil Engineering Chair
5. Faculty of Engineering JHSC