SAFE OPERATING PROCEDURE

Task / Equipment Description: Core Drill

Potential Hazards and Risks

- Moving parts
- Electrical hazard
- Entanglement
- Impact and cutting
- Exposure to heat
- Dust
- Noise and vibration
- Projectiles
- Sharp objects

DO NOT use this equipment unless you have been trained in its safe use and operation.

Required Personal Protective Equipment (PPE) – check as appropriate

PPE ✓	Gloves	Hearing Protection	Head Protection	Eye Protection	Eye (UV) Protection	Safety Footwear	Face Shield	Dust Mask	Half Face Mask (P2)	Breathing Appartus	Hi-Vis Apparel	Full Body Clothing	Harness
	✓	✓	☐	✓	☐	✓	☐	✓	☐	☐	☐	☐	☐

Other PPE required:

ALWAYS

- Wear appropriate PPE for the task.
- Wear eye protection.
- Wear safety shoes/boots.
- Check that core drill bit to be used is suitable for the materials to be drilled – concrete, rock and masonary
- Use the additional handles supplied with the device – loss of control can cause injuries

NEVER

- Never use core drill if bit has not been secured into chuck or shows signs of wobbling.
- Never use equipment that is damaged or faulty.
- Never drill in damp or rain
- Never drill in near flammable liquids, gases or dusts – electric tools can generate sparks
- Never overload the device

This document does not replace training; it is provided as a guide to the safe use of this type of equipment. Refer to the manufacturer's manual or training documents for further information. This is a non-specific document and must be assessed against your particular brand of equipment and the working environment. Where necessary a Task Specific Risk Assessment should be undertaken.

Safe Operating Procedure:

Pre-Operation – Safety Checks:

- Refer to the drill manual on the Diamond Hire website
- Identify onsite hazards and plan to control the risks they present
- Have a plan of what you are going to drill. Is there any rebar, sewer lines, electrical lines or gas lines where you will be drilling? Check again you are drilling in the right spot.
- If stressed components or components affecting the integrity of a building are damaged during drilling, operators can be at serious risk
- When coring through floors above ground level, the core will release and fall to the lower level and can cause extremely serious injuries. Ensure the area below the drill hole is restricted with a barrier and guarded by a worker.
- Ensure you have selected the right sized core barrel that suits the material you are drilling, the type of machine you are using and it's horsepower, and selected the right speed. For operator safety, it is recommend drilling over 60mm be done with the drill mounted in a stand.
- Check the core barrel for any damage from transport, or from the last time it was used
- Make sure the drill is in correct working order (with all safety guards, RCD etc in place), and will be safely operated by trained users
- Use the shortest possible extension lead possible, and never longer than 30 meters due to the ever increasing resistance in current flow
- Check with the site electrician there is adequate power as the drill may draw up to 25 amps
- Check all electrical cords and plugs and elevate them to protect them from water. Test the RCD.
- Waterproof grease on the drill spindle thread will make bit changing easier
- Make sure the drill has adequate clean water running before turning on the motor. Otherwise the water jacket seals on the drill can overheat, which will cause them to leak.
- Ensure adequate ventilation is allowed for petrol powered drills
- Ensure adequate collection of slurry
- Ensure the user is wearing appropriate personal protective equipment eg hearing protection, safety eye wear, dust mask etc.
- Ensure adequate lighting
- Have a fire extinguisher and first aid kit nearby
- Plan for the removal of debris and rubble
- Beware of sun damage to the operator

Operation – Safety Procedure:

Positioning:

- Properly support and clamp the material being cored if necessary e.g. concrete pipe, to prevent movement while working
- Proper rig anchoring is essential to ensure a straight core. The best method of anchoring the drill rig is using physical anchors rated for core drilling. Providing the surface is smooth and the vacuum gasket is in good working order, a vacuum can also be good option
- When hand drilling, use a guide or template to keep the core barrel in the correct position. A simple template made from wood can be pinned to the concrete wall or stood on when floor drilling
- Make sure there is an exclusion area around the cutting area adequate to keep other workers, general public and animals safe.

- Never work off ladders, crates, drums or chairs. Always use proper access equipment if the work cannot be reached from the ground.
- Be aware concrete and masonry cutting and drilling equipment can be heavy, and the operator may be required to carry it around on site, then hold it in an awkward position for a long time.
- Use correct manual handling techniques.
- Adopt the correct grip and stance to control the drill. You need to be well balanced as the barrel will turn clockwise to your right and you need to counter the rotational forces.
- Be aware of vibration fatigue and how to manage it.
- Be aware of slippery floors, and unstable or uneven surfaces.
- The risk of harm increases when working alone, even if that is just out of sight of other workers.

Drilling:

- Only start drilling after water starts to flow from the drill bit
- Select the drill speed (R.P.M.) based on the diameter of the core bit. The smaller the diameter then the greater the speed allowable. Refer to manual.
- If drilling by hand, start drilling at a slight angle, then when a crescent shaped notch has formed, raise the drill to the vertical position
- Do not force the bit - allow the drill to do the work. Forcing or twisting the barrel can cause binding, overheating, distortion and segment damage.
- If hand drilling, keep the same drilling angle at all times to avoid uneven wear to the core bit or jamming.
- When removing the bit, turn the water down and back the bit out while the drill motor is still running.
- Check the bit periodically for heat marks, cracks in the steel core or segments, or excessive wear underneath the segment.
- If excessive vibration or 'snatching' at the core barrel is detected – stop, remove the core drill, remove the core and investigate. Remove any loose material, pieces of steel rod etc. When drilling brick walls, wall ties maybe encountered - remove them with pliers. Failure to fix these problems may result in segment damage or loss.
- When the slurry changes colour (usually to gray) or the drill motor speed drops, you are most probably cutting steel. Drop the motor speed down and relax pressure by about 1/3. Some operators reduce water after exiting the steel to redress the bit again, but don't forget to turn the water up again afterwards.
- Maintain a straight drilling direction. If you allow the barrel to skew , usually the wall of the barrel will bind in the hole or break off segments.
- If the drilling is slow, the barrel may have glazed up. Redress the bit by reducing the water by half for a few minutes, or by drilling into an abrasive material like limestone, a cinder block or similar. A bit of Ajax or builders sand down the hole can also have the same effect - run the drill at a slower speed, with reduced downwards pressure, so that an abrasive paste forms that will sharpen the segments.
- To remove the barrel from the hole, turn the water to very low and remove barrel while drill is still running.
- Never leave a running machine unattended.
- Compared to SDS percussive drilling, drilling with diamonds (an abrasive technology) is the slowest of all cutting methods. Concrete drilling with embedded steel can take many times longer. Have realistic expectations as to the time it requires

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Post-Operation – Housekeeping,

- Ensure good housekeeping practices are in place to minimise dust build-up;
- Ensure machine is secured dring transportation