Safe work procedure

Title: Gear Drive Drill

Description of activity: Using a gear drive drill for drilling holes in metals, plastics and timber.

3. List Hazards and risk controls as per risk assessment

Associated risk assessment number and location:
There is no separate Risk Assessment, or HIRAC performed for this SWP. All hazards have been identified, with control mechanisms listed. Provided all controls are followed, the likelihood of injury is low.

<table>
<thead>
<tr>
<th>Potential hazards</th>
<th>Controls</th>
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<tbody>
<tr>
<td>Hair/clothing getting caught in moving machine parts.</td>
<td>Long hair to be tied back. No loose clothing to be worn.</td>
</tr>
<tr>
<td>Eye injuries.</td>
<td>Safety glasses to be worn at all times during operation. Take care to avoid contact with spinning swarf around the hands.</td>
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<tr>
<td>Flying swarf and chips.</td>
<td>Take care to avoid cutting skin on newly drilled holes. Clamp thin or small jobs in a vice while drilling to avoid lacerating fingers from spinning sharp edges.</td>
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<tr>
<td>Sharp edges and burs.</td>
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</tbody>
</table>

4. List resources required including personal protective clothing, chemicals and equipment needed

**PERSONAL PROTECTIVE EQUIPMENT**

- Safety glasses must be worn at all times in work areas.
- Sturdy footwear must be worn at all times in work areas.
- Long and loose hair must be contained.
- Close fitting/protective clothing must be worn.
- Gloves must not be worn.
- Rings and jewellery must not be worn.

5. List step by step instructions or order for undertaking the task

**PRE-OPERATIONAL SAFETY CHECKS**

- Locate and ensure you are familiar with all machine operations and controls.
- Ensure all guards are fitted, secure and functional. Do not operate if guards are missing or faulty.
- Check workspaces and walkways to ensure no slip/trip hazards are present. Ensure adequate lighting.
- Ensure the chuck key (if used) has been removed from the drill chuck.
- Ensure that the drill bit to be used is sharp and correctly sharpened. Thin down the web on larger drills. Remove the positive rake for brass.
- When drilling larger diameter holes (above 12mm or so) use a tapered shank drill. Wipe the taper clean and dry of oil with a rag before fitting.
- Follow correct clamping procedures to ensure work is secure. Use a vice to hold small pieces.
✓ Erect a barricade if the job obstructs the walkway.

OPERATIONAL SAFETY CHECKS
✓ Before making adjustments or before cleaning swarf accumulations, switch off and bring the machine to a complete standstill.
✓ Ensure that the quill taper ejection stop is engaged (if fitted) to prevent ejection of tapered shank drill/chuck.
✓ Adjust the spindle speed and direction of rotation to suit drill or cutter diameter and material.
✓ Use a centre drill initially to establish the hole position in the workpiece if accuracy is required.
✓ Ensure that the drill is positioned over a hole or void in the table or vice. Set the stop if it is not a through hole so that the table cannot be drilled when the drill breaks through the underside of the workpiece.
✓ Ensure that the table to column clamp/s are locked securely before drilling. If fitted with adjustable height head ensure the clamps are locked too.
✓ Use a safe working posture.
✓ Use appropriate cutting fluid or coolant on the drill or cutter.
✓ Feed downwards at a sufficient rate to keep the drill cutting.
✓ Feed with care as the drill breaks through the underside of the work.
✓ When using larger diameter drills use vice or clamp workpiece to table. In doubt use vice or clamp.
✓ When drilling brass with drills above 5mm or so ensure that rake angle of cutting edge is reduced to zero with an oil stone for a distance of at least 0.2mm (more for very big drills). Failure to do this may result in the drill feeding itself in and jamming.

ENDING OPERATIONS AND CLEANING UP
✓ Switch off the machine when work completed.
✓ Leave the machine in a safe, clean and tidy state

DON’T
✗ Do not use faulty equipment. Immediately report suspect equipment.
✗ Do not try to lift workpieces or machine accessories that are too heavy for you.
✗ Do not use blunt or incorrectly sharpened drills.
✗ Do not use rags near rotating drill, cutter or other machine parts.
✗ Do not hold workpiece by hand if it is of a shape that might cause injury should the drill jam and spin it. If in doubt use a vice or clamp to hold workpiece.
✗ Do not hold workpiece by hand when using larger diameter drills or cutting tool arrangements that cut a large diameter or apply strong torque to the workpiece.
✗ Do not use the drill for tapping holes unless a tapping head is used. Can be used to initially start a tap straight in a hole if chuck is only turned by hand without using drill motor.
✗ Never leave the machine running unattended.
✗ Do not use compressed air for cleaning the machine.

6. List emergency shutdown procedures
Hit emergency stop button.

7. List Emergency procedures for how to deal with fires, spills or exposure to hazardous substances
Not applicable to this machinery.

8. List Clean up and waste disposal requirements
Brush swarf from the machine into general waste. Where appropriate or possible, recycle materials.

9. List legislation used in the development of this SWP

10a. List competency required – qualifications, certificates, licensing, training - e.g. course or instruction:
Metal Trades Craftsmen’s Certificate, or equivalent.

10b. List competency of Assessor
David Beech - Senior Technical Officer (Physics) - BSc (Eng)

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11. Supervisory approval, And review

**Supervisor:** Gemma Thompson  
**Signature:**

**Responsibility for SWP review:** Gemma Thompson  
**Date of review:** 9th August 2013

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12. SWP Sign off sheet

**SWP name and version:**

In signing this section the assessor/authoriser agrees that the following persons are competent in following this SWP.

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date Competent</th>
<th>Name of Assessor/Authoriser</th>
<th>Assessor/Authoriser signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrew McVicar</td>
<td></td>
<td>9th August 2013</td>
<td>David Beech</td>
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<tr>
<td>Marcel Kaegi</td>
<td></td>
<td>9th August 2013</td>
<td>David Beech</td>
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<tr>
<td>Rattan Bhandari</td>
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<td>9th August 2013</td>
<td>David Beech</td>
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<tr>
<td>Ces Delapez</td>
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<td>9th August 2013</td>
<td>David Beech</td>
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<tr>
<td>Michael Paterson</td>
<td>See Physics file</td>
<td>6th October 2011</td>
<td></td>
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<tr>
<td>Terry Pfeiffer</td>
<td>See Physics file</td>
<td>6th October 2011</td>
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