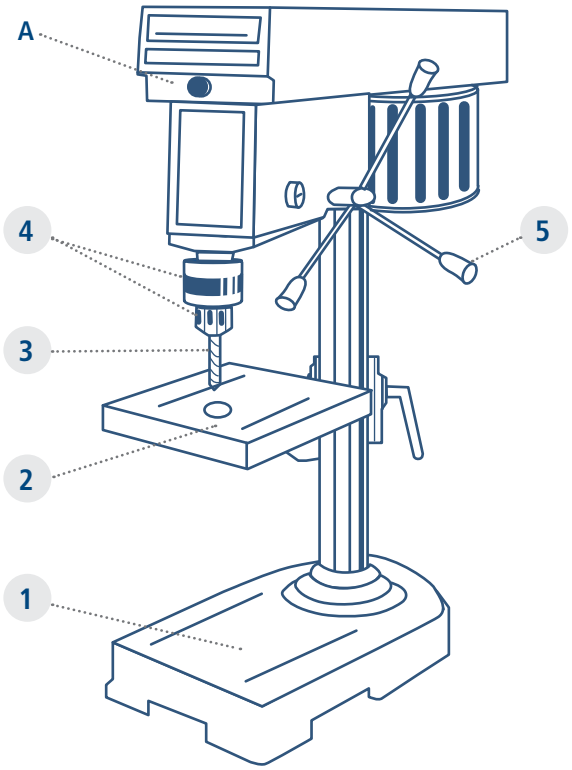
DRILL PRESSES

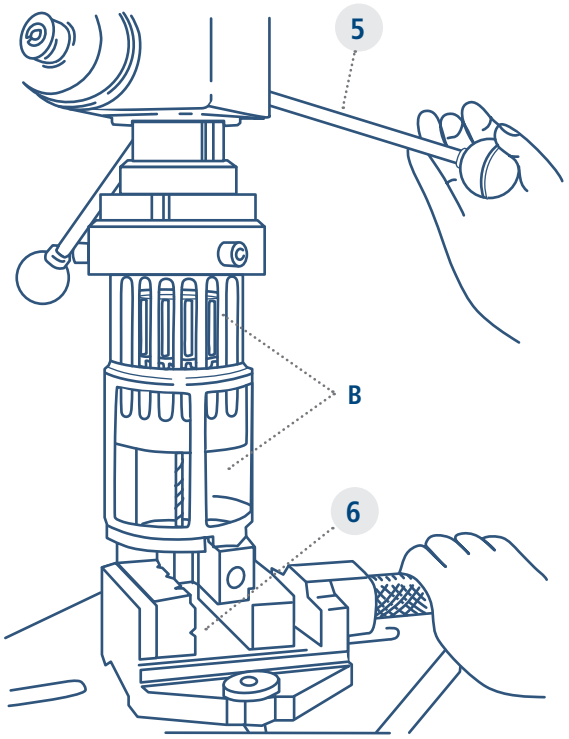
Equipment Identification:

Completed by: Date:

MACHINE ACTION TOOL

The purpose of this technical sheet is to provide information on the main risk factors associated with drill presses and to propose different ways to control them.





Components of a drill

1. Base
2. Table
3. Tool
4. Chuck
5. Lever
6. Clamping system

Safety features

A Emergency stop button

B Sliding guard

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HOW TO USE THIS DOCUMENT?

In the manner of an audit:

- Systematically review potential risk factors and identify those that are present.
- For each of the identified risk factors, review the proposed prevention measures to select those that seem most appropriate.

For training purposes:

- Target the instructions within the set of prevention measures.
- Provide the necessary means to comply with the instructions.
- Pass on instructions to workers and ensure their implementation.

CAUTION

This document focuses only on mechanical and electrical risk factors. However, there may be other risk factors when using this machine, including those of a chemical, biological or ergonomic nature.

DESCRIPTION

The drill press is a machine designed to make holes in metal by means of a sharp rotating tool. The axial movement of the tool is controlled by a handwheel or a lever. The movement may include a motorized axis feed or unprogrammed positioning of the spindle or workpiece. The part is held in a vice or other clamping system.

INJURIES

The most common injuries with this machine are cuts, amputation, fractures, crushing, foreign objects, electrification, and burns.

RISK FACTORS

#	MECHANICAL	PRESENT? (Yes / No)
1	Contact with rotating tool or chuck	
2	Accidental start of the drill	
3	Accidentally starting the drill during maintenance or repair	
4	Contact with pulleys and belts	
5	Contact with the cutting edges of chips, poorly deburred parts or the tool when stationary	
6	Fall of material	
7	Falling, slipping	
8	Projections of various elements (chuck key, tool fragments, part, chips, etc.)	
8 a)	Projection of the chuck key	
8 b)	Projection of the part or fragments	
8 c)	Chip projection and movement	
#	**ELECTRIC**	
9	Contact with elements usually or accidentally energized	

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1 CONTACT WITH ROTATING TOOL OR CHUCK

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
TECHNICAL MEASURES			
Install a fixed, adjustable, or interlocking guard without a locking device* around the chuck and tool.	☐		
Install an emergency stop device (button, "sensitive" stop rod, etc.).	☐		
SAFETY INSTRUCTIONS			
Wait for the complete stop of the rotation of the chuck before carrying out any intervention near the chuck or the tool such as removing or fixing a part, measuring, etc	☐		
Use a brush with long, smooth handle without loops or hooks to remove chips or to lubricate the tool.	☐		
Never approach the rotating tool or chuck with gloves or a rag.	☐		
Wear close-fitting clothing.	☐		
Do not wear jewelry.	☐		
Tie back long hair and contain it in a cap.	☐		
Never leave the drill running unattended.	☐		
Fix the part according to best practices (with a vice, clamps, etc.). Do not hold the workpiece during drilling.	☐		

2 ACCIDENTAL START OF THE DRILL

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
TECHNICAL MEASURES			
Install a flush-mounted or recessed start button.	☐		
Make sure that if there is a power failure, the drill will not start automatically when it is turned back on (anti-restart device).	☐		

3 ACCIDENTALLY STARTING THE DRILL PRESS DURING MAINTENANCE OR REPAIR

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
SAFETY INSTRUCTIONS			
Apply a lockout procedure during maintenance or repair work: • Isolate energy sources • Lock out the isolation devices • Dissipate residual energy • Make sure that no start-up is possible.	☐		

4 CONTACT WITH PULLEYS AND BELTS

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
TECHNICAL MEASURES			
Install a fixed or an interlocking guard*.	☐		
SAFETY INSTRUCTIONS			
Reduce the frequency of access to the pulleys by avoiding too frequent speed changes.	☐		

*NOTES
An interlocking guard without a locking device must have the following characteristics:
- It causes the machine or its dangerous parts to stop working when it is moved;
- It makes it impossible to start the machine or to operate its dangerous parts until it is replaced;
- it does not cause the machine or its dangerous parts to start up when it is put back in place.

For interlocking, use a safety-rated switch designed with positive break contacts, installed according to the positive actuation principle.

5 CONTACT WITH THE CUTTING EDGES OF CHIPS, POORLY DEBURRED PARTS OR THE TOOL WHEN STATIONARY

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
SAFETY INSTRUCTIONS			
Use a rag or cut-resistant gloves for handling, only when the tool and chuck are stopped.	☐		
Immediately store unused tools.	☐		
Remove metal chips with a vacuum cleaner or a brush.	☐		
Use plier to remove long metal chip.	☐		

6 FALL OF MATERIAL

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
TECHNICAL MEASURES			
Anchor the drill frame securely to the floor or table.	☐		
Provide mechanical handling equipment (hoist, manual lift table, etc.) appropriate to the weight and size of the parts.	☐		
SAFETY INSTRUCTIONS			
Check that there is no object on the drill that could potentially fall.	☐		
Wear CSA approved safety shoes with steel toe caps.	☐		

7 FALLING, SLIPPING

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
TECHNICAL MEASURES			
Repair and clean the floor: uneven surface, holes, slippery floor, presence of chips, etc.	☐		
SAFETY INSTRUCTIONS			
Avoid extension cords that clutter the floor.	☐		

Remarks

8 PROJECTION OF VARIOUS ELEMENTS (CHUCK KEY, TOOL FRAGMENTS, PART, CHIPS, ETC.)

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
TECHNICAL MEASURES			
Install a screen behind the drill or install it against a wall.	☐		
SAFETY INSTRUCTIONS			
Stop the drill if an unusual vibration or sound is heard.	☐		
Do not attach the chuck key to the end of a chain attached to the drill.	☐		
Wear CSA approved safety glasses with side shields.	☐		
If necessary, wear a CSA approved safety face shield in addition to protective eyewear.	☐		

8 a) PROJECTION OF THE CHUCK KEY

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
TECHNICAL MEASURES			
Install a keyless quick connect chuck to secure the tool.	☐		
Provide a spring-loaded chuck key.	☐		
SAFETY INSTRUCTIONS			
Make sure the key is off the chuck before starting the drill.	☐		
Never strike the chuck key with a hammer.	☐		

8 b) PROJECTION OF THE PART OR FRAGMENTS

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
SAFETY INSTRUCTIONS			
Check that the cutting edges of the tool are in good condition.	☐		
Securely fasten the tool.	☐		
Fix the part according to best practices (with a vice, clamps, etc.). Do not hold work by hand when drilling holes.	☐		
Choose the speed of rotation according to the tool and the material to be machined.	☐		
Apply gradual pressure during drilling.	☐		
Drill a guide hole before drilling a large diameter hole.	☐		

8 c) CHIP PROJECTION AND MOVEMENT

PREVENTIVE MEASURES	Applied ☑	Not applicable n/a	NOTES (responsible / schedule / priority)
SAFETY INSTRUCTIONS			
Use tools equipped with chip breakers. Otherwise, move back and forth when drilling.	☐		
Remove chips with a vacuum cleaner or a brush.	☐		
Use pliers to remove a long chip.	☐		
The preferred method for cleaning chips should be the use of a brush. If compressed air is needed, make sure the pressure stays below 200 kPa (30 psi).	☐		
Never blow with your mouth to remove the metal chips.	☐		

Remarks

9 CONTACT WITH ELEMENTS USUALLY OR ACCIDENTALLY ENERGIZED

MESURES DE PRÉVENTION	Appliquée ☑	Non applicable n/a	NOTES (responsible / schedule / priority)
TECHNICAL MEASURES			
Install and identify a circuit breaker or outlet near the drill.	☐		
SAFETY INSTRUCTIONS			
Apply a lockout procedure during maintenance or repair work: • Isolate energy sources • Lock out the isolation devices • Dissipate residual energy (wait for the equipment to stop completely) • Make sure that no start-up is possible.	☐		
Check the insulation of the power cables and the grounding of the electrical circuit of the drill.	☐		

Remarks

NEED ASSISTANCE?

Do not hesitate to consult your MultiPrevention consultants if you have any questions about this sheet or about occupational health and safety.

REFERENCES

The proposed preventive measures come in part from the Regulation respecting occupational health and safety (RROHS, S-2.1, r.19.01), the Quebec Act respecting occupational health and safety (AOHS, S-2.1), *Machining techniques: Module 6, Workshop work* published by CEMEQ, 2000, the INRS safety data sheet 19; *Drilling machines,* 1978, as well as the EN 12717 standard: Safety of machine tools - Drilling machines, 2009.

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MARCH2025