Equipment identification:

H. M. Robert

Date :

APRIL 6, 2009

Standard Milling Machine

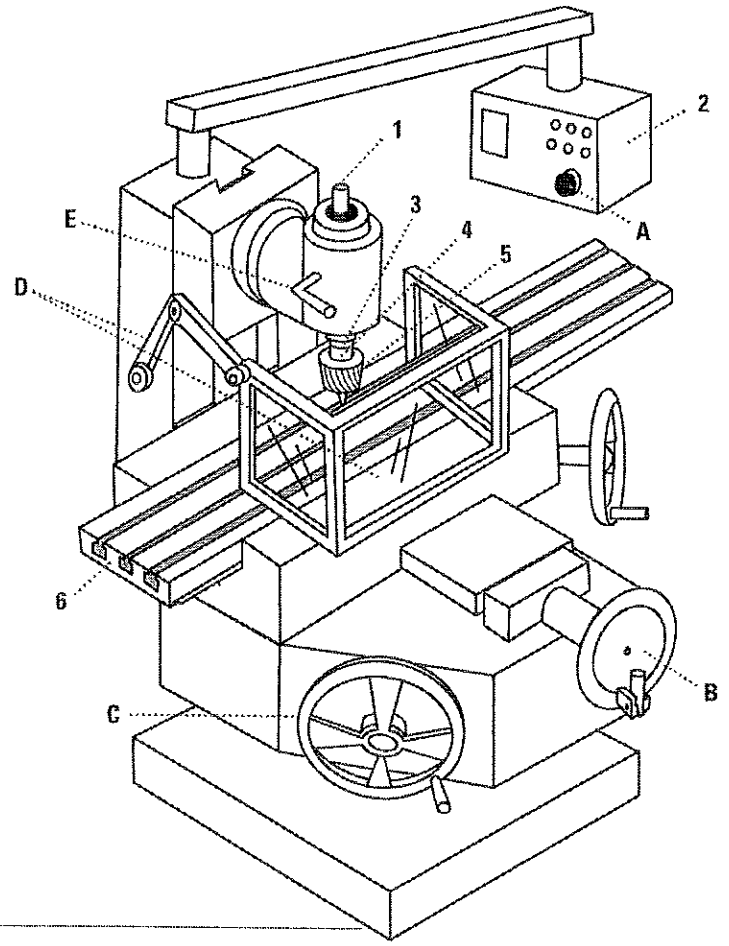
Standard Milling Machine

Standard Milling Machine Parts

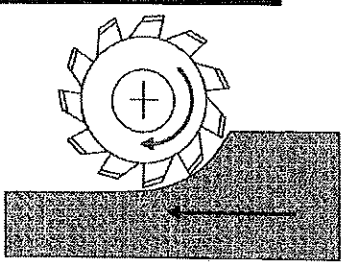
1. Spindle shaft
2. Command console
3. Spindle
4. Taper
5. Cutter
6. Table

Safety Devices

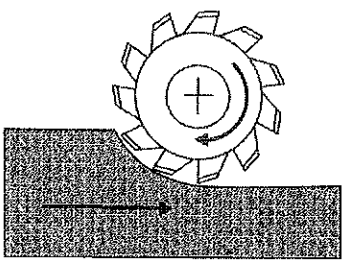
A Emergency Stop Button
B Solid Wheel With Retractable Handle
C Disengaging Wheel
D Articulated Transparent Screen
E Manual Brake Lever



Standard Milling Machine



Climb milling or in-cut milling



Up milling

SELF-ASSESSMENT FORM
For Occupational Health And Safety

MÉTAL ELECTRIQUE
Association paritaire pour la santé et la sécurité du travail
Secteur fabrication de produits en métal et de produits électriques
www.aspme.org

Institut de recherche Robert-Sauvé en santé et en sécurité du travail
www.irsst.qc.ca

IAPA
It's About Making A Difference.
Industrial Accident Prevention Association
207 Queens Quay W, Suite 550
Toronto, ON M5J 2Y3
www.iapa.ca

LEGEND

Preventative Measures

- ▶ Procedural Measures
- ● Orders/instructions

Priority Codes for applying risk measures:

A. Immediate stoppage and resolution
B. Resolution as soon as possible
C. Resolution according to normal company procedures

The suggested preventative measures are based in part from the Workplace Health And Safety Regulations (RSST, S-2.1, r.19), from An Act Respecting Occupational Health and Safety (Québec LSST, S-2.1), as well as Milling Techniques, Module 4 — Health and Safety, edited by CEMEQ, 2000.

Mechanical Hazards

Priority
Schedule
Designated Person

Most likely injuries: Cuts, amputations, fractures, foreign bodies, crushing, etc.

Preventative measures	Applicable ☑ / Not applicable ☒	Notes	Desig.	Sched.	Prior.
Risk Factor: Contact With A Rotating Cutting Tool Or Chuck					
▶ Install a transparent safety screen (articulated, magnetic, etc.) in front of the cutting area.	☑	WILL BE PROVIDED	RL		C
▶ Install a brake (manual, electric, etc.) to quickly stop tool rotation.	☑	MACHINE EQUIPPED			
▶ Install a nozzle to regulate the flow of cutting fluid, and place it so as to allow adjustment without having to approach the cutter or spindle.	☑	"			
● Wait until the tool has come to complete stop before carrying out any work in proximity to the cutter, such as removing or adjusting a workpiece, taking measurements, removing shavings, etc.	☑	CURRENT PRACTICE			
● To remove shavings, use a smooth, long handled brush with no rings, straps or hooks.	☑	"			
● Never approach a rotating cutter while wearing gloves or holding a rag.	☑	"			
● Do not wear loose-fitting clothes or any jewellery.	☑	"			
● Tie up long hair and secure under a cap.	☑	"			
● Register the cutter to the workpiece using an edge finder or by first applying an oil-soaked scrap of paper on the workpiece. Never register with a hand-held piece of paper.	☑	THIS PRACTICE WILL BE IMPEMENTED			
● Never allow the machine to run unattended.	☑	CURRENT PRACTICE			
▶ Install an emergency stop button coupled with a brake to quickly stop tool rotation.	☑	MACHINE EQUIPPED			
Risk Factor: Accidental Start-Up Of The Milling Machine During Maintenance Or Repairs					
● Apply lockout procedures: - disconnect all sources of energy - lockout all sources of energy - verify to ensure start-up is not possible.	☑	LOTO PROCESS FOLLOWED			
Risk Factor: Access To Danger Zones Caused By A Moving Table					
● Ensure there is at least a 60cm (24in) clearance between the maximum table reach and any other obstacle.	☑	RE-ORGANIZATION OF SHOP, UNDERWAY	RON		C
▶ Install an easily accessible and clearly marked emergency stop button.	☑	MACHINE EQUIPPED			
Risk Factor: Contact With a Rotating Control Wheel					
▶ Install disengaging wheels. Otherwise, install solid wheels (spoke less) that are equipped with retractable handles.	☑	CURRENTLY FOLD IN HAND WHEEL. RAPID HAS BEEN DISCONNECTED. REPLACE HAND WHEEL UNDER INVESTIGATION.	RON		B

INSTRUCTION ON USE OF POWER FEED + SOP REVISED

Mechanical Hazards (continued)

Most likely injuries: Cuts, amputations, fractures, foreign bodies, crushing, etc.

Preventative measures	Applicable ☑	Not applicable N/A	Notes	Desig.	Sched.	Prior.	
Risk Factor: Contact With Drive Mechanism							
▶ Install a fixed guard to limit access to moving parts: pulleys, belts, gears, etc.	☑		IN PLACE - TOOL REQ'D FOR REMOVAL				
Risk Factor: Contact With Workpiece Sharp Edges, Shavings, Or Stopped Cutting Tool							
● Clamp the workpiece as far away from the cutter as possible.	☑		CURRENT PRACTICE				
● Handle only with a rag or cut-resistant gloves.	☑		"				
● Tighten clamps by pulling towards you, not away.	☑		"				
● Immediately put away any unused tools.	☑		"				
● Remove shavings with a brush.	☑		"				
Risk Factor: Falling Material Or Milling Machine							
▶ Securely anchor the milling machine to the floor.	☒						
● Ensure any piece overhanging the table will not fall once released from the securing clamp attachments.	☑		CURRENT PRACTICE				
● Remove any object likely to fall from the table.	☑		"				
● Use the motorized table feed or the manual controls to support heavy or bulky tools while being removed from the spindle.	☑		"				
● Wear CSA-approved safety footwear with steel-capped toes.	☑		CIRCUMSTANCE DRIVEN				
Risk Factor: Fall, Slipping							
▶ Install a transparent safety screen (articulated, magnetic, etc.) in front of the cutting area so as to avoid spilling shavings and fluid onto the floor	☑		WILL BE PURCHASED	RY		C	C
● Reduce fluid output from nozzle to a minimum. Orient the stream of fluid so as to minimize splash.	☑		CURRENT PRACTICE				
▶ Repair and clean floor: uneven surfaces, holes, slippery floor, presence of shavings, etc.	☑		"				
▶ Supply floor mats with rising edges.	☒						
Risk Factor: Flying Material (Keys, Screws, Cutter Fragments, Workpiece, Shavings, etc.)							
▶ Install a transparent safety screen (articulated, magnetic, etc.) in front of the cutting area.	☑		WILL BE PURCHASED	RY		C	C
▶ Orient the milling machine so as to reduce the likelihood of flying material reaching adjacent workstations.	☑		CURRENT PRACTICE				
● Check the table to ensure there are no objects that can be projected from the workstation.	☑		"				
● When near a milling machine, wear CSA-approved safety glasses with lateral protection.	☑		"				
● When needed, wear a CSA-approved face shield on top of safety glasses.	☑		"				
● Wear long-sleeve shirts.	☒						

Mechanical Hazards (continued)

Most likely injuries: Cuts, amputations, fractures, foreign bodies, crushing, etc.

Preventative measures	Applicable ✓	Not applicable N/A	Notes	Desig.	Sched.	Prior.
Risk Factor: Flying Key or Wrench						
▶ Supply a spring-loaded chuck key.		☒				
● Never tighten or loosen a cutter by loosening a setscrew or by turning the spindle with the motor.		☒				
● Before starting the milling machine, make sure the key and wrench are not on the chuck or spindle.	☑		CURRENT PRACTICE			
Risk Factor: Flying Fragments After Tool Fracture Or Flying Set Screws						
● Before commencing machining, check that the tool's cutting edges are sharp and that there are no missing or loose tips.	☑		CURRENT PRACTICE			
● Select the shortest possible taper and cutter.	☑		"			
● Properly secure the cutter to the taper.	☑		"			
● Properly secure the taper to the spindle.	☑		"			
● Use the shortest securing bolts possible.	☑		"			
● Stop the rapid advance at a sufficient distance from the workpiece assembly.	☑		"			
Risk Factor: Flying Workpiece Or Fragments From Improperly Secured Workpiece						
● Properly secure the workpiece using accepted safe work practices.	☑		"			
Risk Factor: Flying Workpiece Or Fragments From Improper Cutting Parameters						
● Refer to cutter manufacturer specifications or other technical data to select a good combination of cutting parameters (feed speed, cut depth, cutting speed, lubrication) according to the material being cut, how it is going to be used and the tool that you are using.	☑		"			
● In-cut mill only if the milling machine is equipped with a mechanism to take up any spindle free play.	☑		"			
● Check that the cutter cuts in the same direction as the spindle.	☑		"			
Risk Factor: Flying Chips And Shavings						
● Use tools with chip breakers. Alternatively, use a back-and-forth technique during machining.	☑		"			
● Remove chips and curls by blowing with compressed air at a pressure less than 200 kPa (30 psi).	☑		USE OF AIR IS DISCOURAGED			
● Never remove chips and curls by blowing with your mouth.	☑		CURRENT PRACTICE			

Notes:

Ergonomic Hazards

Most likely injuries: Musculo skeletal disorders, backaches.

Preventative measures — Applicable ☑ Not applicable N/A		Notes	Desig.	Sched.	Prior.
Risk Factor: Handling Of Heavy And Bulky Workpieces					
▶ Supply mechanical handling devices (hoist, dolly with lift table, etc.) suitable to the weight and dimensions of the workpieces.	☑	CURRENT PRACTICE			
● Ask for help from another worker when help is needed.	☑	"			
Risk Factor: Straining Working Positions					
▶ Install a transparent guard, which doesn't cover the area being machined.	☒				
▶ Install sufficient lighting to illuminate the machining area so as to eliminate the need to bend neck and back.	☑	TO BE INSTALLED	RL		C
Risk Factor: Static Standing Work					
▶ Supply an anti fatigue mat.	☒				

Heat-Related Hazards

Most likely injuries: Burns.

Preventative measures — Applicable ☑ Not applicable N/A		Notes	Desig.	Sched.	Prior.
Risk Factor: Contact With Shavings, Cutting Tools And Hot Workpieces					
▶ Install a transparent safety screen (articulated, magnetic, etc.) in front of the cutting area.	☑	WILL BE PURCHASED	RL		C
● Remove shavings with a brush.	☑	CURRENT PRACTICE			
● Wear a long-sleeved shirt.	☒				
● Handle hot workpieces and cutting tools with gloves or a rag.	☑	CURRENT PRACTICE			

Physical Hazards

Most likely injury: Hearing loss

Preventative measures — Applicable ☑ Not applicable N/A		Notes	Desig.	Sched.	Prior.
Risk Factor: Noisy Workplace Environment					
▶ Install sound dampers on compressed air nozzle outlets.	☒				
● Wear earplugs or earmuffs.	☑	AS REQ.D			

Notes:

Chemical and Biological Hazards

Most likely injuries: Dermatitis, intoxication, infection, etc.

Preventative measures	Applicable ☑	Not applicable N/A	Notes	Desig.	Sched.	Prior.
Risk Factor: Inhalation Or Skin Contact Of Contaminants From Cutting Fluids Or The Workpiece						
● Consult the MSDS for the workpiece to determine if there are any hazardous substances (e.g., beryllium, cobalt, manganese, lead, etc.).	☑		CURRENT PRACTICE			
▶ Dry-cut whenever possible.	☑		"			
● Consult the MSDS for the cutting fluid.	☑		"			
▶ Select cutting fluids that do not contain any amines-class chemical substances and that are the least harmful to your health.	☑		"			
▶ Confine the machining area and install an airborne particle recovery system (dust and other airborne particles).	☒					
● Periodically change the cutting fluid and clean all conduits to limit bacterial contamination.	☑		"		as required	
● During handling, wear gloves that are resistant to the cutting fluid used.	☑		"			
● Follow the following personal hygiene precautions: - frequently wash hands and forearms with mild soap and water - promptly report, treat and cover and cuts - regularly change clothing impregnated with cutting fluid.	☑		"			

Electrical Hazards

Most likely injuries: Electrocution.

Preventative measures	Applicable ☑	Not applicable N/A	Notes	Desig.	Sched.	Prior.
Risk Factor: Contact With Parts Normally Or Accidentally Energized						
▶ Install an isolating switch with clear markings near the milling machine.	☑		CURRENT PRACTICE			
● Apply lockout procedures during maintenance and repairs: - disconnect all sources of energy - dissipate (purge) all residual energies - lockout all sources of energy - Verify to ensure start-up is not possible and that all power has been dissipated (purged).	☑		"			
● Check the power supply cables insulation and the milling machine grounding circuit.	☑		"			

Completed By: RON LODEWYKS

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This Self-Diagnosis form was developed following a research project in workplace health and safety from IRSST, a workplace health and safety research institute named (Institut de recherche Robert-Sauvé en santé et en sécurité du travail).