Equipment identification:

_____

Date :

_____

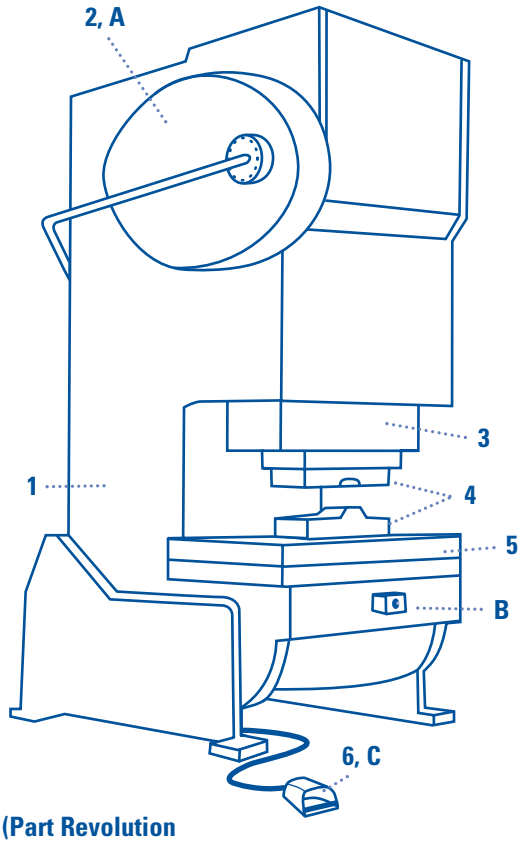
Punch Press

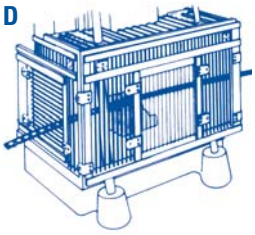
Self-Assessment Form
For Occupational Health And Safety

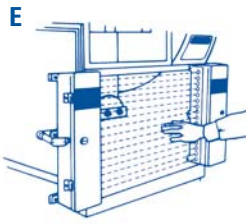
☐ **Positive Clutch (Full Revolution Mechanical Press)**
- The slide action is controlled by a flywheel.
- It is **impossible** to stop the slide until the cycle has been completed.

☐ **Friction Clutch (Partial Revolution Mechanical Press)**
- The slide action is controlled by a flywheel.
- It is **possible** to stop the slide before the cycle has been completed.

☐ o **Hydraulic Mechanical Press**
- The slide action is controlled by hydraulic rams.







Friction Clutch (Part Revolution Mechanical Press) Parts

1 Frame
2 Flywheel
3 Slide
4 Die Shoes
5 Bed
6 Pedal Control

Safety Devices

A Flywheel Guard
B Emergency Cut-Off Switch
C Side- And Top-Capped Pedal Control
D Guard
E Photo detector Security Screen
F Two-Hand Control

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

irsst
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
1-800-406-IAPA (4272)
www.iapa.ca

LEGEND

Preventative Measures

- ▶ Procedural Measures
- ● Orders/instructions

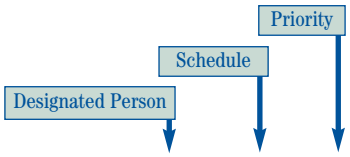
Priority Codes for applying risk measures:

- **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 Occupational Health And Safety Regulations (RSST, S – 2.1, r.19.01), from An Act Respecting Occupational Health and Safety (Quebec LSST-S-2.1), as well as CSA Standard Z142-M 90 and EN 954 -1

Mechanical Hazards

Most likely injuries: Crushing, fractures, cuts and foreign bodies.



Preventative measures — Applicable ☑ Not applicable N/A	Notes	Desig.	Sched.	Prior.
Risk Factor: Access To Danger Zone (die shoes) On a Positive Clutch (Full Revolution Mechanical Press)				
▶ Install fixed guards. ☐				
▶ Install moveable guards with an interlocking device that: ☐ - neutralizes the slide controls when the guard is opened, AND - maintains the guard in the closed position while the slide is descending, AND - does not provoke press start-up at guard closure.				
▶ Install two-hand controls (only for presses with a stroke rate of over 100 strokes per minute). The operator must simultaneously depress both buttons to activate one press stroke. ☐ For automatic mode, add fixed or moveable guards.				
▶ Install a clearly marked emergency stop button located near each operator. ☐				
Risk Factor: Access To Danger Zone (die shoes) On a Hydraulic or Friction Clutch (Part Revolution Mechanical Press)				
▶ Install fixed guards. ☐				
▶ Install moveable guards with an interlocking device that: ☐ - stops the slide controls when the ram descenter slide descent is open and neutralizes the slide control when the guard is open, AND - maintains the guard in the closed position while the slide is descending, AND - does not provoke press start-up at guard closure.				
▶ Install photo detectors approved for safety device use (category 4). ☐				
▶ Install two-hand controls where: ☐ - the operator must simultaneously depress both buttons to activate one press stroke, AND - the slide descent is halted as soon as the operator releases one of the buttons.. For automatic mode, add fixed or moveable guards.				

Mechanical Hazards (Continued)

Most likely injuries: Crushing, fractures, cuts and foreign bodies.

Preventative measures Applicable ☑ Not applicable N/A	Notes	Desig.	Sched.	Prior.
Risk Factor: Access To Danger Zone (Die Shoes) On a hydraulic or Friction Clutch (Part Revolution Mechanical Press)				
▶ Install safety devices (e.g., two-hand controls, etc.) at a safe enough distance from the danger zone so that no one can reach the danger zone before the slide has stopped. ☐				
▶ Install devices that maintain the workpiece in position relative to the die shoes (or bolster plates) without the need of hands. ☐				
▶ Install a clearly marked emergency stop button located near each operator. ☐				
Risk Factor: Involuntary Action On The Pedal Or Button Controls				
▶ Install recessed or flush-mounted control buttons. ☐				
▶ Install a side and top-capped pedal control. ☐				
▶ Install as many controls as there are workers simultaneously using the press. All workers must maintain their control devices depressed to initiate a press stroke. ☐				
▶ Install a by-pass device in order to make any unused control devices inoperative. ☐				
Risk Factor: Repeat Stroke On a positive-clutch (full revolution mechanical press)				
▶ Install a single-action mechanism that: ☐ - deactivates the pedal, the lever, the hydraulic power control unit or the control solenoid after each press stroke, AND - stops the start of a new cycle until the end of the previous cycle.				
▶ Install compression springs in the clutch mechanism. These must be located around a rod or within a guide and the space between the coils must be smaller than the wire diameter. ☐				
▶ Replace defective parts by OEM parts. When this is not possible, replace with parts that meet or exceed OEM specifications. Using welded replacement parts in the clutch is forbidden. ☐				
● Adjust the brake so the clutch does not knock nor make ratcheting noises. ☐				
Risk Factor: Repeat Stroke On a friction-clutch (part revolution mechanical press)				
▶ Install an anti-repeat stroke device. ☐				
▶ Install a dual-body safety valve in the clutch-brake hydraulic or pneumatic circuit. ☐				
▶ Add a second switch to the braking system. In case of failure in one of the switches, the press trips in the top dead centre position and a new cycle cannot be actuated. ☐				
Risk Factor: Repeat Stroke On a hydraulic clutch mechanical press				
▶ Install an anti-repeat stroke device. ☐				

Mechanical Hazards (Continued)

Most likely injuries: Crushing, fractures, cuts and foreign bodies.

Preventative measures — Applicable ✔ / Not applicable N/A	Notes	Desig.	Sched.	Prior.
Risk Factor: Accidental Selection Of Automatic Mode				
▶ Indicate the function of all buttons and function selector switches. ☐				
● Lock the selector in single stroke mode and remove the key. ☐				
Risk Factor: Accidental Descent Of The Slide During Start-Up				
● Apply lock-out procedures: ☐ - disconnect all sources of energy (except power supply to pneumatic counterweight) - dissipate (purge) all residual energies (except power supply to pneumatic counterweight) and wait for the flywheel to come to a complete stop - lockout all sources of energy - validate to ensure start-up is no longer possible and that all power has been dissipated (purged).				
• Place safety chocks between the slide and the bed.				
Risk Factor: Access To Press Moving Parts				
▶ Install fixed guards around moving parts: flywheel, belts, gears, counterweights, etc. ☐				
Risk Factor: Flying Particles Or Fragments (Slivers)				
Keep the die shoes safe from cracking: ● properly adjust the clearance at the time of tooling up the die shoes. ☐				
● Properly secure the die shoes on both the slide and the bed. ☐				
Avoid an overload situation when more than one workpiece is fed at a time. ▶ Install a workpiece ejection system or a stripper plate to keep workpieces from adhering to the die shoes. ☐				
▶ Install a detection device to monitor workpieces and waste movement during automatic feed mode. ☐				
● Use grasping tools made of soft metal (e.g., aluminum or magnesium). ☐				
● Wear CSA-approved safety glasses with lateral protection. ☐				
Risk Factor: Handling Non-Deburred Plates				
● De-burr plate workpieces ☐				
● Wear cut-resistant gloves. ☐				
Risk Factor: Falling Metal Plate				
● Wear CSA-approved safety footwear with steel-capped toes and steel upper plate. ☐				

Ergonomic Hazards

Most likely injuries: Musculo skeletal disorders, backaches, fractures, strains and sprains, etc.

Preventative measures — Applicable ☑ Not applicable N/A	Notes	Desig.	Sched.	Prior.
Risk Factor: Handling Heavy And Bulky Workpieces				
▶ Supply mechanical handling devices (hoist, suction cups, etc.) suitable to the weight and dimensions of the workpiece. ☐				
Install equipment: ▶ to aid the feeding of workpieces, such as roller conveyor, roller-ball table, trestles, elevating table, etc. ☐				
▶ to assist in removing workpieces, such as a gently sloping surface or motorized conveyor. ☐				
● Ask for help from another worker when help is needed. ☐				
Risk Factor: Straining Working Positions and Repetitive Movements				
▶ Supply reclining baskets, elevating tables or receptacles to assist in accessing workpieces. ☐				
▶ Install a system of springs or air jets to assist in the removal of pressed pieces. ☐				
▶ Install an adjustable stand to enable work height adjustments. ☐				
Risk Factor: Strain During Tooling and Re-Tooling Of Die shoes				
▶ Supply a dolly with lift table. ☐				
▶ Install a retooling system with retractable roller or ball tracks in the bed. ☐				
Risk Factor: Insufficient Lighting				
▶ Install sufficient lighting to ensure good visibility in the work area ☐				
Risk Factor: Static Standing Work				
▶ Supply appropriate seating if suitable for such work. ☐				
▶ Supply anti fatigue mats. ☐				

Chemical Hazards

Most likely injuries: Dermatitis, respiratory tract irritation.

Preventative measures — Applicable ☑ Not applicable N/A	Notes	Desig.	Sched.	Prior.
Risk Factor: Exposure To Lubricants				
● Consult the MSDS for the products in use. ☐				
▶ Select lubricants that have little effect on health (skin and respiratory tracts). ☐				
● Reduce lubricant spray as much as possible. ☐				
▶ Collect air samples at workstations in order to evaluate the concentration of toxic substances. ☐				
● Wear gloves that are approved for the products used. Ensure the gloves are also cut resistant and provide good grip to workpieces. ☐				
● Use barrier lotions. ☐				

Physical Hazards

Most likely injury: Hearing loss.

Preventative measures (Applicable ☑ / Not applicable N/A)	Notes	Desig.	Sched.	Prior.
Risk Factor: Impact Noise				
▶ Hone the die shoes frequently. ☐				
▶ Install acoustic batting or screens around the noisy sections of the press. ☐				
▶ Install vibration isolators under the press chassis. ☐				
● Wear earplugs or earmuffs. ☐				
Risk Factor: Noise From Air Nozzles				
▶ Install sound dampers on pneumatic valve nozzles. ☐				
▶ Install silent-type air ejectors for removal of machined and waste pieces. ☐				

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 near the punch press, with clear markings. ☐				
● Apply lock-out procedures: ☐ - disconnect all sources of energy - lockout all power supply - validate to ensure start-up is no longer possible.				
● Never lockout an isolation switch in the ON position. The isolating switch must open the circuit (circuit in the OFF position) at all times. ☐				
▶ Install control devices powered by very low voltage (30 volts or less). ☐				
● Check the power supply cables insulation and the punch press grounding circuit. ☐				

Notes:

Completed By: