Engraving Safety			
Business Name:		ABN:	
Business Address:			
Contact Person:	Phone:	Email:	

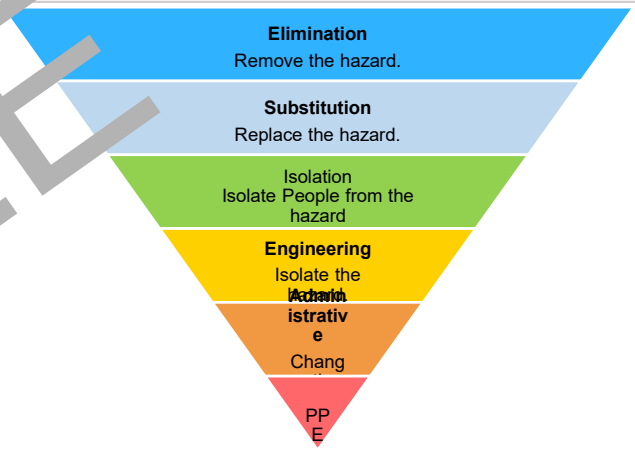
THIS RISK ASSESSMENT IS APPROVED BY THE PCBU OF THE PROJECT		
Under the Work Health and Safety Regulation (WHS Regulation), a person conducting a business or undertaking (PCBU) is required to ensure that a RISK ASSESSMENT is prepared before the proposed work starts.		
Full Name:		
Signature:	Title:	Date:

CLIENT OR PRINCIPAL CONTRACTOR DETAILS	
Client:	SCOPE OF WORKS
Project Name:	
Project Address:	
Project Manager:	
Contact Phone:	
Date Risk Assessment supplied to Project Manager:	

RISK MATRIX

LIKELIHOOD	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC	SCORE	ACTION
ALMOST CERTAIN	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4 ACUTE		
LIKELY	2 MODERATE	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4A ACUTE	DO NOT PROCEED
POSSIBLE	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	4 ACUTE	3H HIGH	Rev before work
UNLIKELY	1 LOW	1 LOW	2 MODERATE	3 HIGH	4 ACU	2M MO RATE	Ensure control measures in place.
RARE	1 LOW	1 LOW	2 MODERATE	3 HIGH	3 H	1L LOW	Monitor and keep records.

HIERARCHY OF CONTROLS



Risk Rating & Required Action:

4A	Stop work. The risk is intolerable. E inate the hazar redesign the activity before proceeding. A Safe Work Method Statement (SWMS) or hi er-level authorisati is required.
3H	Review and approve additional c rols b ask arts. Senior supervisor sign-off needed.
2M	Ensure all nominated controls are in ace and effe ive. Proceed with caution; monitor conditions.
1L	Proceed, following standard operating procedures Monitor and keep records.

Consequence Scale:

Consequence	People (injury/illness)	Project / Assets	Compliance / Reputation
Catastrophic	Fatality or permanent total disability	project shutdown	Significant regulator intervention; criminal prosecution
Major	Serious injury/illness (hospital > 5 days)	critical delay	Improvement notice; major media coverage
Moderate	Medical-treatment injury; lost-time > 1 day	moderate delay	Minor breach; adverse client comment
Minor	First-aid only, no lost time	negligible delay	Isolated non-conformance
Insignificant	No injury	no schedule impact	Deviation caught and corrected on site

Notes on Hierarchy of Controls:
Remember to apply controls in the preferred order shown by the coloured pyramid:

1. **Eliminate**
2. Substitute
3. Isolate
4. Engineering
5. Administrative
6. PPE

Always document **why** a lower-order control is accepted if elimination or substitution is not reasonably practicable.

aligned with Safe Work Australia's Managing the risk of fatigue at work *(2023) and ISO 45001:2018 clauses 6–8.*

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
1. WHS Governance, Duties and Consultation	• Lack of clear allocation of WHS duties under WHS Act 2011 for PCBUs, officers and workers involved in engraving operations • Inadequate consultation with workers and health and safety representatives about high-speed engraving risks and controls • No formal WHS policy or objectives specific to high-speed metal engraving environments • Failure of officers to exercise due diligence in monitoring resources, systems and compliance for engraving safety • Poor integration of contractor and labour-hire workers into the site WHS governance framework	4A	• Establish and document a WHS governance framework clearly defining PCBUs, officers and workers' responsibilities for high-speed engraving activities in line with WHS Act 2011 • Implement a formal WHS policy endorsed by senior management that explicitly references metal engraving and high-speed machinery risks • Set up structured consultation mechanisms (e.g. WHS committee, toolbox talks, digital feedback channels) so engraving workers can raise safety issues and participate in risk control decisions • Require officers to demonstrate due diligence through regular WHS performance reviews, audit participation and documented verification of control implementation • Ensure contractor management processes require contractors and labour-hire providers to comply with site engraving safety standards, including induction and verification of competence • Integrate engraving-specific WHS KPIs (e.g. guarding defects closed out, health monitoring participation) into management performance reviews	3H
2. Plant Procurement, Design and Commissioning (Metal Engraving Machines)	• Purchase of metal engraving machines without appropriate guarding, interlocks or emergency stop systems for high-speed operation • Failure to verify compliance of imported engraving equipment with Australian Standards and WHS regulations • Inadequate design consideration for chip and swarf containment, extraction and collection, leading to ejection of projectiles • Poor layout and anchoring of engraving machines leading to vibration, instability and collision with other plant or workers • Lack of functional safety assessment for high-speed spindles, automatic tool changers and powered axes	4A	• Implement a formal plant procurement procedure requiring pre-purchase WHS review of all engraving machines against relevant Australian Standards and codes of practice • Specify minimum safety features in purchase contracts, including fixed and interlocked guards, two-hand controls where applicable, emergency stop devices, and fail-safe control systems • Require suppliers to provide conformity documentation, safety interlock schematics, and evidence of compliance with AS/NZS 4024 series for machinery safety • Conduct a risk-based commissioning process for each new engraving machine, including verification of guarding, interlocks, emergency stops, isolation points and chip containment systems • Ensure machine layout and foundations are designed by competent persons to minimise vibration, ensure stability and maintain safe separation distances from walkways and other plant • Document and approve any modifications to original machine safety systems via a management of change process with re-validation of risk controls	2M
3. Guarding, Interlocks and Physical Containment	• Inadequate or defeated guards allowing access to high-speed rotating tools, moving axes and workpieces • Interlock systems bypassed or not maintained, enabling operation of the	4A	• Implement an engineering standard for guarding and interlocks on all engraving machines, including fixed guards, interlocked doors and viewing panels rated for potential projectile impact • Introduce a formal process to prohibit and monitor any bypassing of interlocks, including tamper-evident devices and disciplinary procedures for unauthorised modification	2M

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	metal engraving machine with doors or covers open • Poor containment of high-velocity metal swarf, chips and fragments causing eye and face injuries or penetrating wounds • Inconsistent standards across machines leading to confusion about safe access points and exclusion zones • Failure to consider maintenance and cleaning tasks in guarding design, leading to workers removing or not replacing guards		• Ensure all enclosures and chip guards are designed to fully contain expected projectiles and high-speed debris, with clear viewing windows and adequate internal lighting • Develop documented procedures for safe access i[illegible]e guarded areas, including lockout-tagout (LOTO), hold-to-run controls and restricted key [illegible]ess for competent persons • Schedule regular inspection and function[illegible]esting of gu[illegible]s and interlocks, with defects logged, risk-rated and closed out via a maintenance [illegible]tem • Integrate maintainability into guard design (hin[illegible] doors, quick[illegible]lease mechanisms, dedicated access points) so routine cleaning a[illegible]servicing can occu[illegible]without r[illegible]oving safety devices	
4. Machine Controls, Isolation and Emergency Response Systems	• Complex or poorly labelled control panels leading to incorrect machine operation or unexpected high-speed spindle start-ups • Lack of clearly identified isolation points for electrical, pneumatic and hydraulic systems during maintenance or setup changes • Inadequate emergency stop devices o[illegible] poor accessibility durin[illegible]peed engraving operation • Failure of control [illegible]ystem soft[illegible]or firmware creating u[illegible]rating states (e.g. loss of braking, uncontro[illegible]d overspeed) • No systematic testing re[illegible]of emergency stops, interlocks and isolation procedures	4A	[redacted]	2M
5. High-Speed Operating Parameters, Tooling and Workpiece Management	• Incorrect spindle speeds, feed rates or tool paths resulting in tool breakage, high-velocity projectiles or workpiece ejection • Use of unsuitable, worn or counterfeit engraving tools not rated for operating speeds • Inadequate clamping or fixturing systems causing workpieces to shift or detach at high speed	4A	[redacted]	2M

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	• Lack of system for validating CNC programs, templates or engraving files prior to full-speed production runs • Poor control of process variations (material hardness, tool geometry, coolant type) leading to unpredictable cutting behaviour and machine vibration		[redacted]	
6. Maintenance, Inspection and Change Management for Engraving Equipment	• Inadequate preventative maintenance leading to spindle failures, bearing seizure or uncontrolled vibration at high speed • Failure to identify fatigue cracks in spindles, tool holders or guards that could result in catastrophic failure • Unplanned breakdown maintenance performed under time pressure without proper isolation and testing • Modifications or upgrades to engraving machines (software, guards, fixtures) without formal risk assessment • Poor recordkeeping of maintenance, inspection findings and corrective actions	4A	[redacted]	2M
7. Worker Competency, Training and Authorisation	• Workers operating high-speed metal engraving machines without formal competency assessment • Inadequate training on machine-specific risks, emergency procedures and control interfaces • Poor understanding of high-speed machining principles, leading to unsafe selection of speeds, feeds and tools • No structured process for authorising or de-authorising operators and setters for particular machines or tasks	4A	[redacted]	2M

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	• Failure to refresh training after incidents, near-misses, plant modifications or procedure changes		[redacted]	
8. Supervision, Work Organisation and Production Pressure	• Insufficient supervision of high-risk engraving tasks, especially during night shifts or overtime • Production targets or incentive schemes that encourage bypassing guards, speeding up machines or skipping checks • Uncontrolled concurrent activities around engraving machines (e.g. forklift traffic, other maintenance) increasing collision and distraction risks • Lack of clear escalation pathways when operators identify unsafe conditions or defective equipment • Extended shifts and poor rostering contributing to fatigue-related errors in machine setup and monitoring	3H	[redacted]	2M
9. Physical Work Environment, Layout and Access Control	• Poor workshop la[illegible]ut resulti[illegible] congested access t[illegible]ng machines and emergency exits • Inadequate separation between high-speed engraving ma[illegible] and walkways or other workstations • Slips, trips and falls due to accumulation of metal swarf, lubricants, coolants and offcuts • Insufficient lighting or line of sight to machine status indicators and work areas • Uncontrolled access to engraving cells by untrained personnel, visitors or apprentices	3H	[redacted]	2M

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10. Exposure to Noise, Vibration, Airborne Contaminants and Thermal Hazards	• Excessive noise from high-speed spindles, chip impact and extraction systems causing hearing damage • Hand-arm vibration from manual handling of vibrating workpieces, fixtures or handheld finishing tools • Airborne metal dust, fine chips and mist from coolants or lubricants leading to respiratory or skin irritation • Heat build-up in workpieces, tooling and machine components leading to burns during handling or maintenance • Inadequate monitoring of exposure levels to noise and airborne contaminants over time	3H	[redacted]	2M
11. Electrical, Fire and Energy Source Management	• Faulty electrical installations or damaged cables on engraving machine leading to electric shock or fire • Overloaded circuits and inadequate segregation of power and control wiring causing overheating or malfunction • Accumulation of combustible materials (packaging, paper templates, rags with oils) near hot surfaces or ignition sources • Uncontrolled release of stored energy in pneumatic or hydraulic systems during maintenance or jam clearing • Lack of appropriate fire detection, suppression equipment and evacuation arrangements in engraving areas	3H	[redacted]	2M
12. Incident Reporting, Investigation and Continuous Improvement	• Under-reporting of near-misses and minor incidents related to engraving operations • Inadequate investigation of high-potential events such as tool	3H	[redacted]	1L

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	breakages, workpiece ejections or interlock failures • Failure to implement and track corrective and preventive actions arising from incidents and audits • Lack of trend analysis to identify recurring high-speed engraving risks and systemic weaknesses • Poor communication of lessons learned back to operators, supervisors and contractors		[redacted]	
13. Contractor, Supplier and Visitor Management for Engraving Areas	• Contractors performing installation, servicing or programming on engraving machines without understanding site-specific risks and procedures • Suppliers providing unsuitable tooling, fixtures or consumables that are not compatible with site safety standards machine ratings • Visitors entering high-risk areas witho appropriate controls o • Inconsistent supe sion of third-party technicians during gh-risk ta h as commissioning maintena e • Poor coordination between multipl PCBUs working around the sam engraving machinery	3H	[redacted]	2M
14. Documentation, Procedures and Record Management	• Absence of clear, up-to-date procedures for operating, setting and maintaining high-speed metal engraving machines • Workers relying on informal practices or verbal instructions that conflict with safe operating limits • Outdated or missing technical manuals, drawings and safety documentation for engraving equipment	3H	[redacted]	2M

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	• Poor version control leading to multiple, inconsistent copies of procedures and parameter standards • Inadequate retention and retrieval of WHS records such as risk assessments, inspections, training and health monitoring		[redacted]	
15. Health Monitoring, Fitness for Work and Psychosocial Risks	• Unrecognised health conditions (e.g. vision impairment, neurological disorders) affecting safe operation of engraving machines • Unmanaged effects of noise, vibration or chemical exposure over time in engraving roles • Fatigue, stress and workload pressures contributing to reduced concentration and increased error rates • Lack of support systems for workers experiencing anxiety or stress related high-risk tasks or incidents • No clear process for determining and managing fitness for work in safety-critical engraving roles	3H	[redacted]	2M

EMERGENCY RESPONSE – CALL 000 FOR EMERGENCIES

Ensure to have an Emergency Management Plan in place as well as adequate numbers of trained first aid staff with easy access to fully stocked first aid kits, rescue equipment, material safety data sheets, adequate access to emergency communication equipment and fire-fighting equipment suitable for all classes of fire and ignition sources.

LEGISLATIVE REFERENCES

RELEVANT LEGISLATION AND CODES OF PRACTICE. DELETE THE LEGISLATIVE REFERENCES FOR ANY STATE THAT ARE NOT APPLICABLE

Queensland & Australian Capital Territory
Work Health and Safety Act 2011
Work Health and Safety Regulations 2011
Legislation QLD: https://www.worksafe.qld.gov.au/laws-and-compliance/work-health-and-safety-laws
Codes of Practice QLD: https://www.worksafe.qld.gov.au/laws-and-compliance/codes-of-practice
Legislation ACT: https://www.worksafe.act.gov.au/laws-and-compliance/acts-and-regulations
Codes of Practice ACT: https://www.worksafe.act.gov.au/laws-and-compliance/codes-of-practice

New South Wales
Work Health and Safety Act 2011
Work Health and Safety Regulations 2025
Legislation NSW: https://www.safework.nsw.gov.au/legal-obligations/legislation
Codes of Practice NSW: https://www.safework.nsw.gov.au/resource-library/list-of-codes-of-practice

Northern Territory
Work Health and Safety (National Uniform Legislation) Act 2011
Work Health and Safety (National Uniform Legislation) Regulations 2011
Legislation NT: https://worksafe.nt.gov.au/laws-and-compliance/workplace-safety-laws
Codes of Practice NT: https://worksafe.nt.gov.au/forms-and-resources/codes-of-practice

South Australia
Work Health and Safety Act 2012 (SA)
Work Health and Safety Regulations 2012 (SA)
Legislation for SA: https://www.safework.sa.gov.au/resources/legislation
Codes of Practice for SA: https://www.safework.sa.gov.au/workplaces/codes-of-practice#COPs

Tasmania
Work Health and Safety Act 2012
Work Health and Safety (Transitional and Consequential Provisions) Act 2012
Work Health and Safety Regulations 2012
Work Health and Safety (Transitional) Regulations 2012
Legislation for TAS: https://worksafe.tas.gov.au/topics/laws-and-compliance/acts-and-regulations
Codes of Practice for TAS: https://worksafe.tas.gov.au/topics/laws-and-compliance/codes-of-practice

Details of permits, licenses or access required by regulatory bodies (add or delete as required):

- Permits from local council
- Authorisation to commence work
- Any required documents.

Victoria
Occupational Health and Safety Act 2004
Occupational Health and Safety Regulations 2017
Legislation VIC: https://www.worksafe.vic.gov.au/occupational-health-and-safety-act-and-regulations
Codes of Practice VIC: https://www.worksafe.vic.gov.au/compliance-codes-and-codes-practice

Western Australia
Work Health and Safety Act 2020
Work Health and Safety Regulations 2022
Legislation Western Australia: https://www.commerce.wa.gov.au/worksafe/legislation
Codes of Practice WA: https://www.commerce.wa.gov.au/worksafe/codes-practice

Safe Work Australia Links
Law and Regulation (All States): https://www.safeworkaustralia.gov.au/law-and-regulation
Model Codes of Practice: https://www.safeworkaustralia.gov.au/resources-publications/model-codes-of-practice

Model Codes of Practice

- Managing noise and preventing hearing loss at work
- Confined spaces
- Labelling of workplace hazardous chemicals
- Managing risks of hazardous chemicals in the workplace
- Welding processes
- First aid in the workplace
- Managing the risk of falls at workplaces
- Hazardous manual tasks
- Managing the risk of falls in housing construction
- Managing electrical risks in the workplace
- Demolition work
- Excavation work
- Work health and safety consultation, cooperation and coordination
- Managing the work environment and facilities
- How to manage work health and safety risks
- Managing risks of plant in the workplace
- Construction work