Metal Forming Punching and Bending Machinery

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:

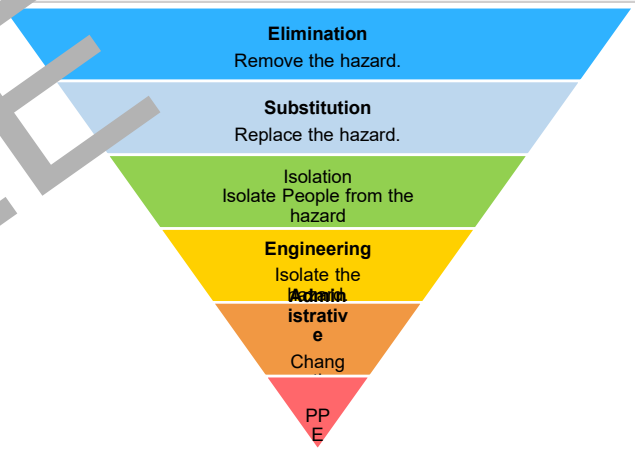
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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. Governance, WHS Duties and Legal Compliance	• Lack of clear allocation of WHS responsibilities for metal forming, punching and bending machinery under WHS Act 2011 and WHS Regulations • Failure to consult, cooperate and coordinate with PCBUs such as host employers, labour hire providers, contractors and maintenance providers • Inadequate integration of machinery safety into broader WHS management system and risk register • Failure to keep up to date with changes in Australian Standards and regulatory guidance for press and metal working equipment (e.g. AS 4024 series, guarding and interlocking requirements) • Insufficient due diligence by officers in verifying that metal forming machinery risks are being identified, controlled and monitored • Poor documentation of decisions abo acceptable risk and use of residual risk controls	4A	• Establish and document a WHS governan framework that explicitly covers all metal forming, punching, bending, notching, shearing, stamping and forming erations in line with WHS Act 2011 and WHS Regulations • Assign and record clear role responsibilities a accountabi s for officers, managers, supervisors and operators relating to mac ery procurement, arding olation, inspection and maintenance • Maintain a site-wide k registe hat includes all cla es of machinery (e.g. metal forming presses, turret punch pres , pipe tcher ydraulic iron workers, angle notchers, metal tube benders, slotters and chamferi machines) • Implement a cumente process to w and apply relevant Australian Standards (including AS/NZS 4024 es on m hin y safety) and regulator codes of practice to all metal forming machinery • Requ e ular o er due diligence reviews (e.g. quarterly) of machinery risks, performance indicators and inc en ends, w actions tracked to closure • Embed onsu tion requirements with other PCBUs into contractor management and labour hire a eme s for a work involving metal forming and punching machinery • Ensu HS policies explicitly reference the requirement to eliminate or minimise risks so far as is asonably practicable (SFAIRP) for all machinery-based tasks	3H
2. Machinery Procurement, Design and Engineering Standards	• Purchase of meta orming, punching and bending mach ery that d comply with Austra ards o not fit for intended use • Inadequate design risk assess t from suppliers for metal p s, turret punch presses, hydraulic punch and shear machines and notching equipment • Lack of verification of safety functions such as interlocks, two-hand controls, emergency stops and light curtains • Modification of imported or legacy equipment (e.g. metal stamping press, metal tube bending machine, pipe notcher) without proper engineering assessment • Inadequate selection of control systems (e.g. single-channel instead of	4A	• Implement a formal machinery procurement procedure requiring pre-purchase WHS review and sign-off by engineering and WHS advisors for all metal forming and punching equipment • Specify compliance with relevant Australian Standards (e.g. AS 4024 series, AS 1219 for power presses as applicable) and CE/other conformity evidence in supplier contracts and purchase orders • Require suppliers of metal forming presses, turret punch presses, hydraulic iron workers, angle notchers, metal notching machines and wire bending machines to provide documented design risk assessments, safety integrity data and verification reports • Mandate factory acceptance testing (FAT) and site acceptance testing (SAT) protocols to validate safety functions such as interlocks, guards, light curtains, laser scanners, emergency stops and two-hand control devices • Introduce an engineering change management procedure for any modification, retrofit or relocation of metal forming and punching machinery, including formal risk assessment and re-validation of safety circuits • Maintain an engineering library of all machine technical files, drawings, control logic descriptions, safety PLC programs and manuals in a controlled document management system	2M

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	dual-channel safety circuits) leading to dangerous failure modes • Missing or non-compliant safety documentation, manuals, schematics and machine-specific risk assessments from suppliers			
3. Guarding, Interlocks and Physical Safeguarding Systems	• Inadequate or missing fixed guards, interlocked guards or presence-sensing devices on presses, turrets, notchers and bending machines • Defeatable or bypassed interlocks allowing access to danger zones during operation • Insufficient guarding for in-feed and out-feed areas on metal punching machines, slotters and metal chamfering machines • Poor design of tooling and dies resulting in trapping, crushing or shearing hazards during metal forming, bending and notching • Lack of standardisation of guarding principles across different brands and types of machinery, confusing operators and maintenance personnel • Failure of guarding inspection and verification processes, leading to undetected degradation or removal of guards	4A	• Adopt a site-wide guarding standard aligned with AS 4024 that defines required guard types, distances, safety categories and interlocking methods for each class of metal forming and punching machinery • Conduct formal guarding risk assessments and machine-specific safeguarding design reviews for all press, turret punch presses, hydraulic punch and shear units, pipe notchers, slotters and chamfering machines • Implement an engineering change control procedure for any alterations to guards, interlocks, light curtains, laser guards or tool designs, including re-validation of safety distances and stopping times • Introduce a scheduled guarding inspection program with documented checklists, photographs and sign-off by competent persons, including verification of interlock integrity and absence of bypass devices • Standardise lockable interlocked doors, fixed barrier guards and presence-sensing systems where practicable, with common signage and colour coding across the workshop • Prohibit the use of makeshift or temporary guards through policy, supported by supervisor training and periodic compliance audits	2M
4. Isolation, Lockout and Energy Control Systems	• Uncontrolled release of hazardous energy (electrical, hydraulic, pneumatic, mechanical, thermal) during maintenance, tooling change-outs or fault-finding • Lack of standardised lockout/tagout (LOTO) procedures for metal forming presses, turret punches and hydraulic punch and shear machines • Unlabelled or inaccessible isolation points on older or modified machinery • Stored energy in hydraulic accumulators, counterweights, springs	4A	[redacted]	2M

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	or clamping systems causing crush or shear injuries • Failure to isolate heating systems associated with hot metal forming processes and heat treatment equipment • Contractors or fitters working without adequate isolation controls due to poor coordination or unclear responsibilities		[redacted]	
5. Competency, Training and Authorisation	• Operators and setters using metal forming, punching and bending machinery without formal competency assessment • Inadequate training on specific risks of hot metal forming processes, hydraulic systems and high-force presses • Lack of authorisation controls limiting who can operate or adjust critical machines such as metal stamping presses or turret punch presses • Insufficient refresher training leading skill fade and normalisation of unsafe shortcuts • Supervisors not a quately trained in machinery risk ma gement, guarding principles and isola n ex ation • No verification that contracted tradespeople are competent to wo on complex control systems d ty circuitry	4A	[redacted]	2M
6. Safe Operating Procedures and Work Instructions (Non-SWMS Focus)	• Absence of standardised safe operating procedures (SOPs) for classes of machinery leading to inconsistent practices between shifts and sites • Failure to integrate system-level controls (e.g. guarding, isolation, maintenance schedules) into operating expectations for metal forming and punching equipment • Use of outdated or uncontrolled documents that do not reflect current	3H	[redacted]	2M

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	guarding, automation or process changes • Over-reliance on informal verbal instructions from experienced operators rather than controlled documentation • SOPs not aligned with emergency procedures, leading to confusion in abnormal or fault conditions		[redacted]	
7. Maintenance, Inspection and Reliability Management	• Breakdown or degradation of critical safety components such as interlocks, light curtains, two-hand controls and emergency stops on metal forming and punching machinery • Inadequate preventative maintenance schedules for hydraulic systems, leading to leaks, burst hoses or uncontrolled movement • Lack of documented inspection regimes for press frames, tooling, clamps and fixtures on metal bending machines and stamping presses • Reactive maintenance culture causing extended operation of machinery with known defects or temporary repairs • Poor spare parts management resulting in use of non-OEM incompatible components in safety circuits • Limited feedback loops from failures and defects to engineering design and procurement processes	4A	[redacted]	2M
8. Layout, Traffic Management and Work Environment	• Poor workshop layout causing congestion around presses, benders, notchers and turret punch presses • Interaction between forklifts, trolleys and pedestrians near loading and unloading zones for long or heavy metal stock • Inadequate space for safe handling of long tube, bar and sheet materials at in-feed and out-feed of metal forming machines	3H	[redacted]	2M

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	• Insufficient lighting, ventilation and noise control in areas housing heavy metal forming and hot metal operations • Inappropriate floor surfaces or housekeeping leading to slips, trips and falls in proximity to moving machinery • Blocked access to emergency stops, isolation points and escape routes		[redacted]	
9. Material Handling, Workpiece Management and Ergonomics	• Manual handling of heavy plate, bar, tube and formed components leading to musculoskeletal disorders • Unsafe lifting and positioning of dies, punches, bending tools and fixtures for presses and bending machines • Poor system for storing and retrieving long sections of metal stock, increasing risk of crush or struck-by incidents • Lack of jigs, fixtures and supports leading to awkward postures and excessive force during bending and forming operations • Inadequate controls f[redacted]ing hot components from h[redacted]metal forming and heat treatment pro[redacted]sses	3H	[redacted]	2M
10. Control of Hot Work, Heating and Heat Treatment Processes	• Uncontrolled exposure to radiant he[redacted], hot surfaces and hot metal compon[redacted]s during hot metal forming and he[redacted] treatment operations • Fire or explosion risk from heating equipment, gas systems and nearby combustible materials • Inadequate controls for quenching operations leading to steam, splashing and thermal shock hazards • Lack of integration between hot work permit systems and routine hot metal forming processes • Insufficient monitoring of fumes and airborne contaminants generated during heating and treating operations	4A	[redacted]	2M

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			[redacted]	
11. Chemical, Fume and Noise Exposure Management	• Exposure to metal fumes, mists and particulates generated from punching, shearing, notching, chamfering and hot forming operations • Use of oils, lubricants, coolants and cleaning agents without adequate control of skin contact and inhalation • High noise levels from metal stamping presses, hydraulic iron workers, turret punch presses and tube bending machines leading to noise-induced hearing loss • Inadequate monitoring and assessment of airborne contaminants and noise in metal forming areas • Lack of integration between plant selection and controls for vibration and noise levels	3H	[redacted]	2M
12. Contractor, Visitor and Third-Party Management	• External technicians, inspectors and commissioning engineers working on presses and forming machinery without alignment to site WHS standards • Inadequate induction of contractors on machinery-specific hazards, isolation procedures and guarding expectations • Visitors and non-operational staff entering high-risk metal forming and punching areas without control • Poor communication between PCBUs leading to gaps in supervision and emergency response coverage for contractors • Lack of verification that contractors follow safe systems of work when modifying machinery or control systems	3H	[redacted]	2M
13. Change Management, New	• Introduction of new metal forming machinery (e.g. metal turret punch, wire	3H		2M

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Processes and Commissioning	bending machine, hydraulic notcher) without systematic WHS review • Process changes such as new materials, thicknesses, or forming techniques not assessed for their impact on forces, guarding and ergonomics • Inadequate commissioning and validation of safety systems when relocating or upgrading existing presses and benders • Uncontrolled software or parameter changes in CNC and automated metal forming and punching equipment • Lack of consultation with workers and health and safety representatives during change processes		[redacted]	
14. Emergency Preparedness, Incident Response and First Aid	• Delayed or ineffective response to crush, amputation or burn injuries associated with metal forming and punching machinery • Lack of clear emergency stop and shutdown strategies for complex automated presses and punch systems • Inadequate first a resources training for injuries metal forming, bending and not work operations • Poor coordination with emergency services due to unfamiliarity with site layout and machinery hazards • Failing to capture, investigate and learn from near misses and minor incidents involving machinery	3H	[redacted]	2M
15. Health Monitoring, Fatigue and Human Factors	• Undetected health conditions (e.g. reduced dexterity, vision or reaction time) impacting safe operation of metal forming machinery • Fatigue from shift work, overtime or high workload affecting vigilance during repetitive punching and forming tasks	3H	[redacted]	2M

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	• Cognitive overload from complex interfaces and high information demands on CNC turret punch, bending and forming machines • Insufficient consideration of human factors in design of control panels, indicators and alarm systems • Stress, distraction or poor supervision increasing likelihood of unsafe responses to jams, misfeeds or faults		[redacted]	
16. Monitoring, Audit and Continuous Improvement	• Failure to detect declining safety performance or emerging risks in metal forming and punching operations • Inconsistent application of risk controls across different shifts, crews or sites • Reliance on lag indicators such as injury statistics without adequate leading indicators for machinery risk • Audit processes that focus on paperwork rather than practical verification of guarding [illegible]n and maintenance contro[illegible] • Lack of structure[illegible]eview of t[illegible] assessment and W[illegible]gement system effectiveness over time	3H	[redacted]	1L

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