

ILLUSIONS AUSTRALIA

SAFE WORK PROCEDURE

SWP 010 – CNC ROUTER - 5 AXIS

1. PURPOSE AND SCOPE

Minimum requirements for safe setup and operation of the 5-axis CNC router at Illusions Australia.

Applies to programming, loading, machining, tool changes, unloading and normal operator cleaning.

2. AUTHORISATION AND COMPETENCY

Only trained, competent and specifically authorised CNC operators may use the machine.

Operators must understand machine coordinates, multi-axis movement, tooling, workholding, guarding/interlocks, extraction and emergency stops.

3. REQUIRED PPE

The following PPE must be worn as appropriate:

- Eye protection where required by the machine/task.
- Hearing protection.
- Safety footwear.
- Respiratory protection where extraction does not adequately control dust.
- No loose clothing, jewellery or unsecured hair.

4. PRE-START CHECKS

Before commencing work, confirm that:

- Program/toolpath has been checked for the intended material and setup.
- Correct cutter is fitted, secure and suitable for programmed speed/feed.
- Workpiece is securely clamped/held and fixtures will clear all axes.
- Guards, doors, interlocks and emergency stops are operational.
- Dust extraction is operating and correctly connected.
- Operating envelope is clear of people, tools and loose material.
- Machine datum/origin and tool offsets are correct.
- No collision risk exists through the full 5-axis movement.

5. SAFE OPERATING PROCEDURE

1. Review the program and setup before cycle start.
2. Load and secure the workpiece with the machine in a safe state.
3. Fit/confirm tooling and offsets.
4. Close guards/doors and start extraction.
5. Run simulation, dry-run or reduced-speed verification where appropriate for unfamiliar programs.
6. Start the cycle from the designated operator position.

7. Remain outside the operating envelope while axes/spindle are moving.
8. Monitor machining for abnormal noise, vibration, workpiece movement or extraction failure.
9. Stop the machine before entering the guarded area.
10. After the cycle, wait for all movement and spindle rotation to stop before unloading.

6. PROHIBITED PRACTICES

Workers must not:

- Reach into the operating envelope while the machine is moving.
- Defeat guards or interlocks.
- Run an unverified program where collision risk is not understood.
- Use damaged or incorrectly rated cutters.
- Machine an inadequately secured workpiece.
- Leave abnormal machining unattended.
- Clear jams or offcuts while spindle/axes can move.

7. 5-AXIS COLLISION RISK

Simultaneous axis movement creates complex pinch, crush and collision zones.

- Verify toolpaths, fixtures and clearances.
- Use simulation/dry-run for new or changed setups where practicable.
- Keep all persons outside the guarded operating envelope.

8. TOOL CHANGES AND ISOLATION

Tool contact and unexpected movement can cause severe injury.

- Place machine in the required safe state before tool changes.
- Isolate where access exposes the worker to hazardous stored or powered movement.
- Confirm tooling is securely installed before restart.

9. DUST AND FIRE

Routing timber, MDF, foam and plastics may create dust, heat and combustible waste.

- Run extraction throughout machining.
- Use only approved materials.
- Stop for smoke, burning or extraction failure.

10. FAULTS, DAMAGE AND ABNORMAL OPERATION

Stop for collision, workpiece movement, tool breakage, abnormal vibration/noise, smoke, extraction failure or interlock fault.

Use emergency stop where immediate hazardous movement must be stopped. Isolate before investigation.

11. SHUTDOWN AND HOUSEKEEPING

- Stop spindle and all axis movement.

- Return machine to safe park position.
- Isolate where cleaning requires access to hazardous areas.
- Remove waste using suitable vacuum/extraction methods.
- Clean bed and fixtures.
- Report faults and tooling damage.

12. EMERGENCY AND INCIDENT RESPONSE

1. Stop the equipment or activity immediately.
2. Isolate energy sources where safe to do so.
3. Provide or obtain first aid as required.
4. Notify the Foreman, Leading Hand or other authorised Illusions Australia representative.
5. Call emergency services where required.
6. Do not recommence until the incident, defect or unsafe condition has been addressed.

13. STOP WORK REQUIREMENT

Work must stop where:

- Program or setup cannot be verified.
- Workholding is inadequate.
- Guard/interlock or emergency stop is defective.
- Extraction is unavailable.
- Unexpected movement, collision risk or material behaviour occurs.

No production requirement or deadline takes priority over safe work.

DOCUMENT CONTROL

Document	SWP 010 – CNC Router - 5 Axis
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