

Safe Operation of a Radial Arm Drill Press

Standard Operating Procedure (SOP)

1. Purpose

To prevent entanglement, crush, eye, and serious injury when using a radial arm (radial) drill press for drilling, reaming, tapping, or counterboring large or heavy workpieces.

2. Scope

Applies to all radial arm drill presses in the workplace

3. Responsibilities

Operator: Must be trained, authorised, and never remove or bypass guards.

Supervisor/PCBU: Ensure only authorised operators use the machine and that all guarding and clamping devices are maintained.

4. Major Hazards

- Entanglement with rotating spindle or long drill
- Workpiece spinning if not clamped
- Drill or tap breakage and ejection
- Arm or head movement crushing fingers
- Heavy components falling

5. Mandatory Personal Protective Equipment (PPE)

- Safety glasses or full face shield (AS/NZS 1337.1 medium impact)
- Hearing protection (Class 5 if >85 dB(A))
- Steel-cap safety boots
- Close-fitting clothing – NO GLOVES, loose sleeves, jewellery, or long hair (must be tied back and tucked in)
- Dust mask or respirator when drilling materials that produce hazardous dust (e.g., treated timber, composites)

6. Training & Authorisation

Only persons who have:

- Completed specific radial drill training
- Been assessed competent on this machine
- Current authorisation recorded in the training register

may operate unsupervised.

7. Pre-Operation Checks

- Drill chuck and arbor secure; chuck key removed or spring-eject type
- All guards in place:
 - Chuck guard (transparent, interlocked if fitted)
 - Belt/pulley guard
 - Feed handle guard (if fitted)
- Table and base clean and free of oil
- Arm clamp, column clamp, and head clamp all functional and tight
- Power feed (if fitted) disengaged and working smoothly
- Coolant pump and lines clear (if used)
- Emergency stop button tested
- Floor area clear of trip hazards

8. Safe Operating Procedure

Set-Up

- Clamp workpiece securely to table or base using T-slot clamps, step blocks, or heavy vise – never hold by hand.
- Swing and lock arm and head in position – tighten all three clamps firmly.
- Select correct spindle speed for drill diameter and material (refer chart on machine).
- Insert drill, reamer, or tap correctly and tighten with chuck key in all three holes.
- Adjust table height and arm radius so operator is not over-reaching.

Drilling

- Put on all required PPE – NO GLOVES.
- Spot or centre-drill first for large holes.
- Use cutting fluid or coolant for metal; peck drill deep holes ($>3\times$ diameter) and clear chips regularly.
- Never leave chuck key in chuck.
- Keep hands clear of rotating drill and feed handles.
- If power feed is used:
 - Engage only after drill has started cutting
 - Stay ready to disengage immediately if drill binds

9. Shut-Down & Cleaning

- Raise spindle fully and switch off motor.
- Wait for spindle to stop completely.
- Remove tooling and clean machine.
- Brush or vacuum swarf – never use compressed air near people.

- Lower arm to lowest safe position when finished.

10. Absolutely Prohibited Actions (Zero Tolerance)

- Drilling without the workpiece securely clamped
- Wearing gloves while spindle is turning
- Leaving chuck key in chuck
- Reaching over or around a rotating drill
- Adjusting arm or head position while spindle is turning
- Using cracked or damaged drills/taps
- Overriding or removing chuck guard

11. Emergency Procedures

- Hit red emergency stop immediately if drill binds, workpiece spins, or any unsafe condition occurs
- If clothing/hair becomes entangled: DO NOT pull – hit emergency stop and isolate power
- Call 111 for serious injury

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