

CUT-OFF SAWS

Adhering to these guidelines will help prevent serious or fatal injuries, protect bystanders, and reduce equipment damage.

Operator Fitness and Training

Operators must be in good physical and mental health, free from fatigue, medications, or substances that impair judgment and coordination.

Every user should receive practical, hands-on instruction before operating a cut-off saw and understand the machine's controls, starting procedure, and emergency shutdown protocol.

Using your agency's saw – show the students how to safely start, operate, and shut down the saw.

Personal Protective Equipment (PPE)

Ask Students: What PPE needs to be worn when operating a cut-off saw?

To minimize the risk of injury from flying debris, sparks, and noise, operators must wear the following:

- Head protection: Hard hat meeting ANSI Z89.1
- Eye and face protection: Safety glasses or goggles with top and side shields (ANSI Z87.1+)
- Hearing protection: Earplugs or muffs rated for power-tool noise
- Respiratory protection: NIOSH/MSHA-approved respirator when dry cutting or when wet cutting cannot achieve ≥ 0.6 L/min water flow
- Hand protection: Heavy-duty work gloves (leather or wear-resistant material)
- Body protection: Flame-resistant clothing (leather, wool, flame-retardant cotton/denim), avoiding loose fit, cuffs, jewelry, or long hair that may get caught
- Foot protection: Steel-toed, non-slip work boots

Machine Inspection and Setup

Before each shift and after any impact or vibration, inspect the following:

- Fuel system (tank, hoses, primer bulb) for leaks or damage
- Spark arrester screen and muffler for blockage or wear
- Anti-vibration mountings for signs of deterioration
- Carburetor idle speed—the engine at idle must not rotate the wheel
- Throttle trigger, lockout, and stop switch for full, reliable operation
- Wheel guard positioning—must be adjusted to deflect sparks and fragments away from the operator
- Ribbed V-belt tension per manufacturer's specification

Always follow proper lockout/tag out procedures, including stopping the engine, letting the wheel coast to a halt, and unplugging the spark plug boot before performing any maintenance.

Cutting Attachments: Selection and Mounting

Only use abrasive or diamond wheels expressly approved by the saw manufacturer for your model. Never fit circular-saw blades, toothed blades, or saws designed for wood.

Confirm that each wheel's maximum operating speed is at least equal to the saw's spindle RPM. Replace any wheel that is cracked, warped, chipped, or has loose segments.

Mount wheels only with the correct flanges and washers. Do not use reducer bushings in composite wheel arbors. Hand-tighten mounting nuts and then torque to specification.

Test new or remounted wheels by running at full speed for one minute before cutting. Keep bystanders clear of the test area.

Safe Cutting Practices

Always hold the saw with both hands—left hand on the front handle, right hand on the rear handle, and throttle. Maintain a solid, balanced stance and ensure the work area is clear of obstructions.

Position your body to avoid standing in line with the cutting wheel. Never cut above shoulder height or from a ladder. Ensure an adequate workspace in trenches or confined areas.

Begin each cut at full throttle. Do not force the wheel into the material; allow it to advance at its own pace for efficient cutting and reduce kickback risk.

Reactive and Gyroscopic Forces

Reactive forces occur when the rotating wheel is pinched, bound, or abruptly slowed. Common forms include:

- Pull-away: The Wheel bottom jams, and the saw pulls away from the operator
- Climbing: Wheel front catches and climbs onto the workpiece
- Rotational kickback: Severe pinch in the upper quadrant violently ejects the saw back toward the user

To reduce risks:

- Avoid cuts in the upper quadrant of the wheel where possible
- Support the workpiece to prevent kerf closure and pinching
- Only use approved, high-quality wheels that do not wobble or bear side abrasives
- Employ wet cutting to lubricate the kerf and suppress dust if feasible

Gyroscopic forces from the high-speed wheel oppose rapid side movements—anticipate this resistance when changing direction.

Wet vs. Dry Cutting

Explain if your agency's saw has the option to add water and show how to connect the water supply.

Wet cutting with a water flow of at least 0.6 L/min (20 fl oz/min) extends wheel life, suppresses dust, and reduces reactive force energy. Water must reach both sides of the wheel.

If wet cutting is not possible, all personnel on the jobsite must wear appropriate respirators such as an N95.

Maintenance, Storage, and Transport

Perform daily cleaning of dust and slurry from engine fins, guards, and attachments. Weekly or as needed: replace air filter elements, inspect spark arrester, and retighten all nuts/bolts.

Store unused wheels flat in a dry, frost-free location away from heat and sunlight. Always remove wheels before machine storage. Drain fuel for any downtime over a few days.

Transport saws with engines off, wheels stopped, guard in place, and fuel caps secured. Strap machines to prevent tipping or vibration in vehicles.

Emergency Response

In case of wheel shatter or severe binding/kickback, immediately shut off the engine, set the saw down safely, and attend to any injuries. Keep a first-aid kit and fire extinguisher readily accessible.

If burns or lacerations occur, administer appropriate first aid and seek medical attention. Report any near-miss or equipment failure to your supervisor for review and corrective action.

Adherence to these guidelines will help create a safer cutting environment, protect operators and bystanders, and maintain the integrity of your equipment.

Always consult the full manufacturer's instruction manual for detailed procedures and contact your authorized dealer with any questions.