Safe Use of Cut-Off Saws

Before you even pick up a cut-off saw or assign someone to use it, you have to make sure that you and your employees are fully aware of the operating characteristics of the saw. A thorough knowledge of the particular saw used by your organization is essential, as there are many different manufacturers, models and power sources available. No matter which one you use, they all have one thing in common: they can be dangerous if you are not properly trained on them or if you don’t understand the power associated with this tool.

Blades

Let’s start with the blade. It is imperative that you have the correct blade for the task at hand. The wrong blade or a blade that has damage can kill or maim. If it’s made to cut steel or concrete, it will cut you, no questions asked. Fatal injuries have occurred to operators using cut-off saws.

When inspecting your blade before use, look for:

- Cracks
- Missing teeth
- Missing or irregularly worn cutting edge
- Warped or unevenly worn blade.

If any of these items noted above appear, take the blade out of service.

Types of Blades

The most common blades used in public works are the diamond cutting wheel and abrasive blade.

Diamond Blade – Depending on the version of the blade, the diamond blade is suitable for the following applications:

- Asphalt
- Concrete
- Stone
- Clay brick
- Pipe

Diamond blades are made precisely for their intended use, as well as for the saw’s RPMs. The more teeth on the blade, the smoother the saw will operate. Blades with fewer teeth are more aggressive and will therefore cause the saw to chatter and take bigger chunks of material. An adequate amount of water must be used when working with a diamond blade.
**Abrasive Blade** — Abrasive blades are suitable for the following applications:

- Asphalt
- Concrete
- Stone
- Ductile cast iron
- Steel

Abrasive blades are also manufactured precisely for their intended use and for the saw’s RPMs. An abrasive blade is made for cutting. It is **not to be used as a grinding wheel**. No pressure is to be applied to the side of the blade.

There are several different types of abrasive discs. Two of the more common blades are aluminum oxide for metal and silicon carbide for concrete. They **look very similar, so it is important to read the label**. Composite blades come in both wet and dry versions. Make sure you know whether water is needed or not.

There should be a label on the blade, which in most cases will face you as you put the blade on the saw. On the label is a combination of letters and numbers that indicate the material best suited for the blade. You may have to reference the blade manufacturer’s information for proper blade selection. The label will also tell you the maximum RPM to be used with the blade and the size of the arbor compared to the saw. Being familiar with the saw is a must.

Talk to your blade supplier for more detailed information regarding safety and usage.

**Your health status is also important to consider before using the saw.**

- Make sure that you are in good shape to run the saw.
- This type of work can be strenuous, so if you get tired, take a break.
- Avoid using the saw when you have taken certain medications.

The ignition system on some saws emits an electromagnetic field of very low intensity, so if you have a pacemaker, consult your doctor and the manufacturer of your pacemaker to avoid health-related effects.

**Refer to the operator’s manual for proper maintenance and starting procedures.**

- Perform a visual inspection of the saw prior to use.
- Make sure the blade guard is in place and properly adjusted for the cutting angle you will be using.
- Never modify the saw in any way.

**Starting the Saw**

- Make sure you are at least 10 feet away from the area where fueling has taken place.
- Make sure you use the proper mix.
- Make sure a fire extinguisher is close by.

The saw should be operated by only one person. Always follow the manufacturer’s recommendations for cold starting and warm starting saws.

**NEVER DROP-START A CUT-OFF SAW!** A significant amount of power is generated by these saws, and the torque that is generated by the engine is transferred to the blade. This torque will cause the blade to walk. A saw that is not properly held will drift up and to the left or right. The weight of the saw will cause the blade to drift towards the ground or item being cut. This can cause the saw to run along the ground or violently move lighter weight material like rebar or masonry block.
Proper starting techniques should be observed.

- Always start the saw on the ground with your foot on the hand guard or through the handle.
- Make sure the area is clear of debris and that you have a good footing.
- The cutting wheel may begin to spin as soon as the saw is started. The cutting wheel continues to run for some time after the throttle trigger has been released and the saw may want to drift; maintain control of the saw.
- Always hold the saw firmly with both hands—right hand on the rear handle, left hand on the top stabilizer bar. Both hands should use a “power grip” with your thumbs wrapped tightly around each handle.

Check for correct idling, ensuring that the cutting wheel is no longer driven when the throttle trigger is released and comes to a complete stop.

**Transporting the Saw**

Always stop the engine and carry the saw by the top handle with the cutting wheel towards the rear and the muffler facing away from the body. In vehicles, make sure the saw is properly secured to prevent turnover, damage and fuel spillage.

**Using the Saw**

- Make sure the working area is clear of obstacles, holes, pits, tripping hazards, uneven ground, ice and snow.
- Do not work alone! Co-workers should be within shouting distance if help is required. However, co-workers should be far enough away so that they are not affected by flying debris and noise hazards.
- Have a stocked first aid kit on site.

**Watch for hazards.**

- Gas powered saws produce exhaust fumes, unburnt hydrocarbons and carbon monoxide, which can accumulate in trenches, poorly ventilated areas or indoors. Ensure proper ventilation. If you feel sick, have vision or hearing problems or get dizzy, stop working immediately.
- Never use the saw inside pipes or containers unless you are absolutely sure that they do not contain any volatile or flammable gases. Air monitoring will be required to guarantee the space is free of these hazards.
- Be aware that the item to be cut may move. Small block and rebar may jam the cutting wheel. Round pipes need to be chocked to prevent rolling.
- The object must be supported so that the cut remains open during and after the cut is made. The cutting wheel must be guided straight in the cut, without wedging. Never exert lateral pressure on the cutting wheel.
- While in use, the saw will want to move forward and pull away from the user when the cutting wheel touches the surface.

**Tips for Proper Usage**

- Never stand in line with the cutting wheel.
- Do not lean too far forward, and never bend over the cutting wheel, especially when the deflector has been pulled back.
- Do not work above shoulder height.
- NEVER operate the saw with one hand.
- Do not push down on the saw; let the blade do the work.
- Never touch a rotating cutting wheel with your hand or any part of your body.
Never leave the saw unattended with the engine running. Switch the engine to the OFF position before leaving the machine.

Only after the engine is off and the blade has stopped spinning is it safe to place the saw on the ground.

Inspect the cutting wheel often. Changes in vibration and chattering and reduced cutting time efficiency are signs that the blade may need to be changed.

Always decide the cutting direction before you start the cut. Grind a groove along the line you want to cut. Try to avoid reinforcement. To obtain a clean cut, the cutting wheel should be pulled into the work piece if possible or moved back and forth in the cutting direction. It must never be pushed. It must not be plunged into the item being cut. Several smaller cuts of no more than two (2) inches deep may be needed using the back and forth motion.

If necessary, leave small hinges that will hold the part that is to be separated. Break these hinges after all of the cuts have been made. Before making the final separation, determine how heavy the part is, how it can be moved after separation and whether the part is under tension.

Watch Out for Kickback

Like a chainsaw, rotary saws can KICK BACK. A kickback is when the saw is suddenly thrown up and back in an uncontrolled arc towards the operator. Kickback can occur when the cutting wheel becomes jammed above the upper quarter of the blade or is severely braked through frictional contact with a solid object.

In order to reduce kickback:

- Work cautiously and methodically.
- Hold the saw firmly with both hands with a power grip.
- DO NOT use the upper quarter of the cutting wheel for cutting.

The cutting wheel must be introduced into the cut with extreme care, without pushing or twisting. Always be aware that the object being cut may move or twist causing the cutting wheel to jam. The object being cut must be supported so that the cut remains open during and after the cut.

Personal Safety and Personal Protective Equipment

Safety Protection for Operators

- Clothing must be close-fitting and allow for movement. You may want to consider the use of chaps. Do not wear clothing that can be caught in moving parts. Avoid scarfs, necklaces and other jewelry. Long hair must be tied back and covered.

- Wear safety shoes with steel caps and non-slip soles. Wear a hard hat if there is an overhead fall hazard and safety glasses or goggles to protect from flying objects. Reminder: a face shield is not sufficient eye protection.

- Wear hearing protection; decibel levels are high enough to require ear plugs or ear muffs.

- Wear heavy-duty non-slip gloves, preferably leather. If using the saw for an extended period of time, anti-vibration gloves may be helpful. Continued vibration may cause “White Finger Syndrome,” which can cause poor circulation to hands.

- Wear your respirator. Cutting concrete and stone can create dust with silica. See OSHA’s Fact Sheet on Control of Silica Dust in Construction, referenced below, for more details.

- If using water to control dust, make sure the blade can be used with water. Check your footing regularly when the temperatures get close to freezing, and watch for tripping hazards associated with the water hose.
References:


For more Tailgate Talks, Safety Briefs or more information about the Connecticut Training and Technical Assistance Center, visit us at: [www.T2center.uconn.edu](http://www.T2center.uconn.edu)
Topic: **Safe Use of Cut-Off Saws**

**Agency:** ____________________________________________________________

**Crew:** _____________________________________________________________

**Supervisor/Talk Leader:** _____________________________________________

**Date:** ________________________________

<table>
<thead>
<tr>
<th>Print Name</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td></td>
</tr>
</tbody>
</table>