

Consumables article

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8:33 AM

When should consumables be replaced?

The easy answer is that [consumables](#) should be replaced just before they are worn out. The harder answer is that you need to develop skill at evaluating the condition of your consumables so that you'll know when replacement is needed.

Of course, if you try to continue using your consumables past the point when they need replacement, the quality of your cut parts will suffer--if you can even cut at all.

If you look at the consumable cost calculator, it is easy to see that the cost of replacement can add up, so what can you do to reduce your consumable costs?

<http://torchmate.com/Consumable-Cost-Calculator>

First, be certain you have the right consumables for your amperage, and that your amperage is correct for the material you are cutting. Consult your cut chart for your plasma power unit whenever you change materials. Perform speed tests and evaluate cut quality. Look for adjustments that will improve quality and those adjustments will often extend consumable life.

Second, don't simply replace every component in your consumable stack when one component is worn out. Replacing the nozzle, electrode, and cap all at the same time every time can cause your cost per part to rise.

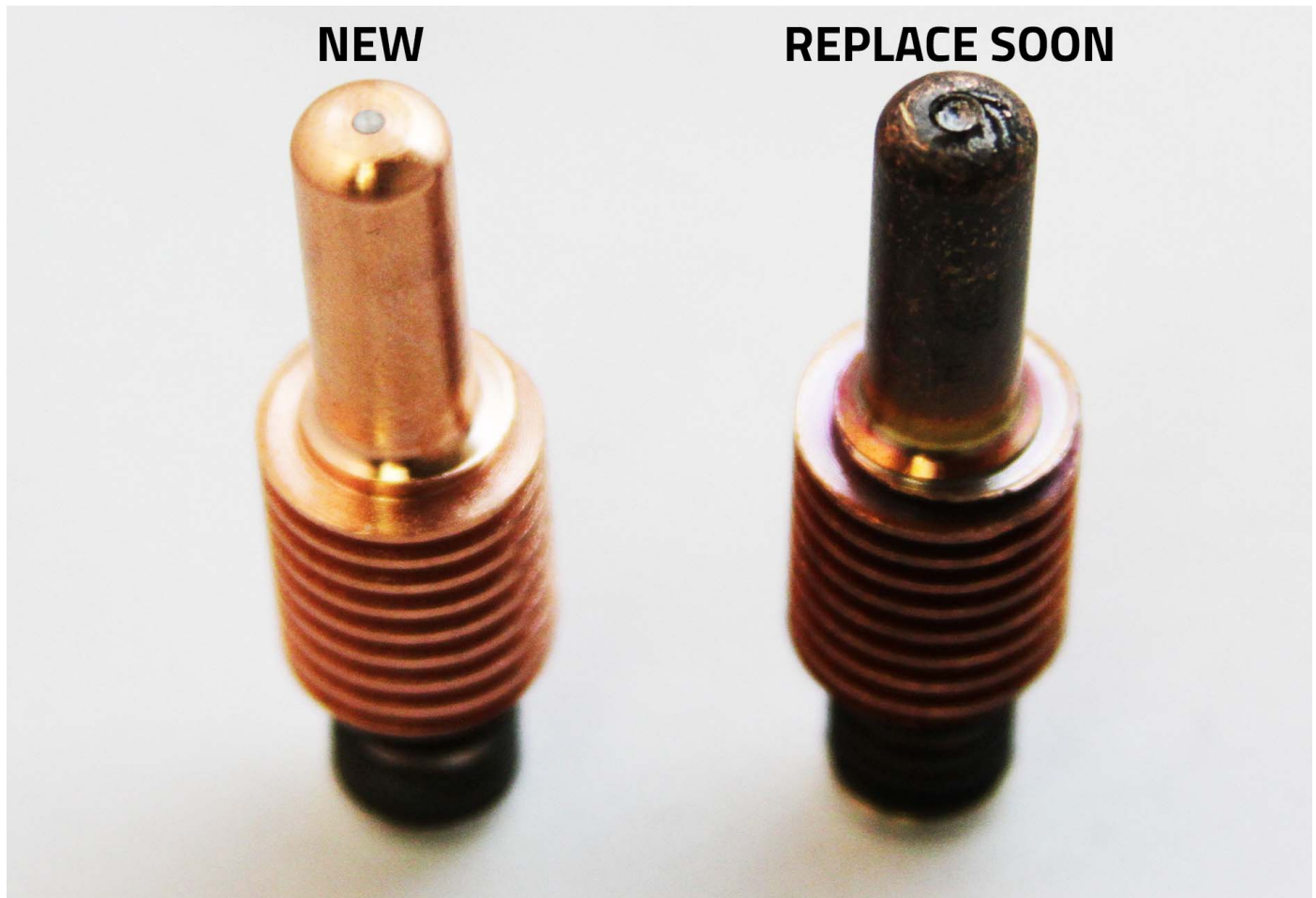
Third, if you experience a fall-off in cut quality, make some immediate observations. Inspect the consumables individually and replace those that are damaged or worn out. But, also look at your air supply to check for excess moisture or oil. Check your work lead connection. And, stay aware of any changes to your cutting height, bevel, and dross. Not only can these problems cause lower cut quality, but they can accelerate wear on your consumables, and that costs you money.

Fourth, get as much experience as you can with your machine so that you can be perceptive of the subtle changes in its operation. This experience will help you to extend / maximize the life of your consumables, as well as to reduce the cost of unnecessary replacements.

Fifth, keep a log of when you replace your consumables. This can help identify issues that you can discuss with our technical support department. It can also help you plan your consumable purchases so that you are neither overstocked nor in danger of telling a customer you have to put off their job due to lack of consumables while you scramble to get replacements.

These examples may look different in shape from your consumables, but the key indicators for replacement will be very similar:

Electrode



The electrode is the source of the plasma arc and is constantly being consumed when the arc is on. It is usually made from copper or a copper-silver alloy with a tungsten or hafnium emitter rod in its center. The wear on the emitter causes a pit or dimple in the electrode, and trying to run the torch when this wear pit is too deep can cause significant damage. This is a key observation to make. Check the specifications for the electrode and learn to judge the pit depth by measuring them regularly.

Swirl ring



To create repeatable, high-precision cuts, you want the pressurized plasma arc to rapidly rotate, as this stabilizes the plasma jet. The swirl ring introduces a circular gas motion that causes the high-pressure plasma to form the desired rotating jet when it exits the nozzle. It also provides insulation between the nozzle and the electrode. It is not consumed by the arc, but because it is part of the consumables disassembly process, it can get chipped or cracked and minute quantities of dirt can build up over time and plug the swirl holes. Also, the O-ring seals can tear or crack. If you find any of these conditions, replace the O-ring(s), or the entire swirl ring.

[Nozzle](#)

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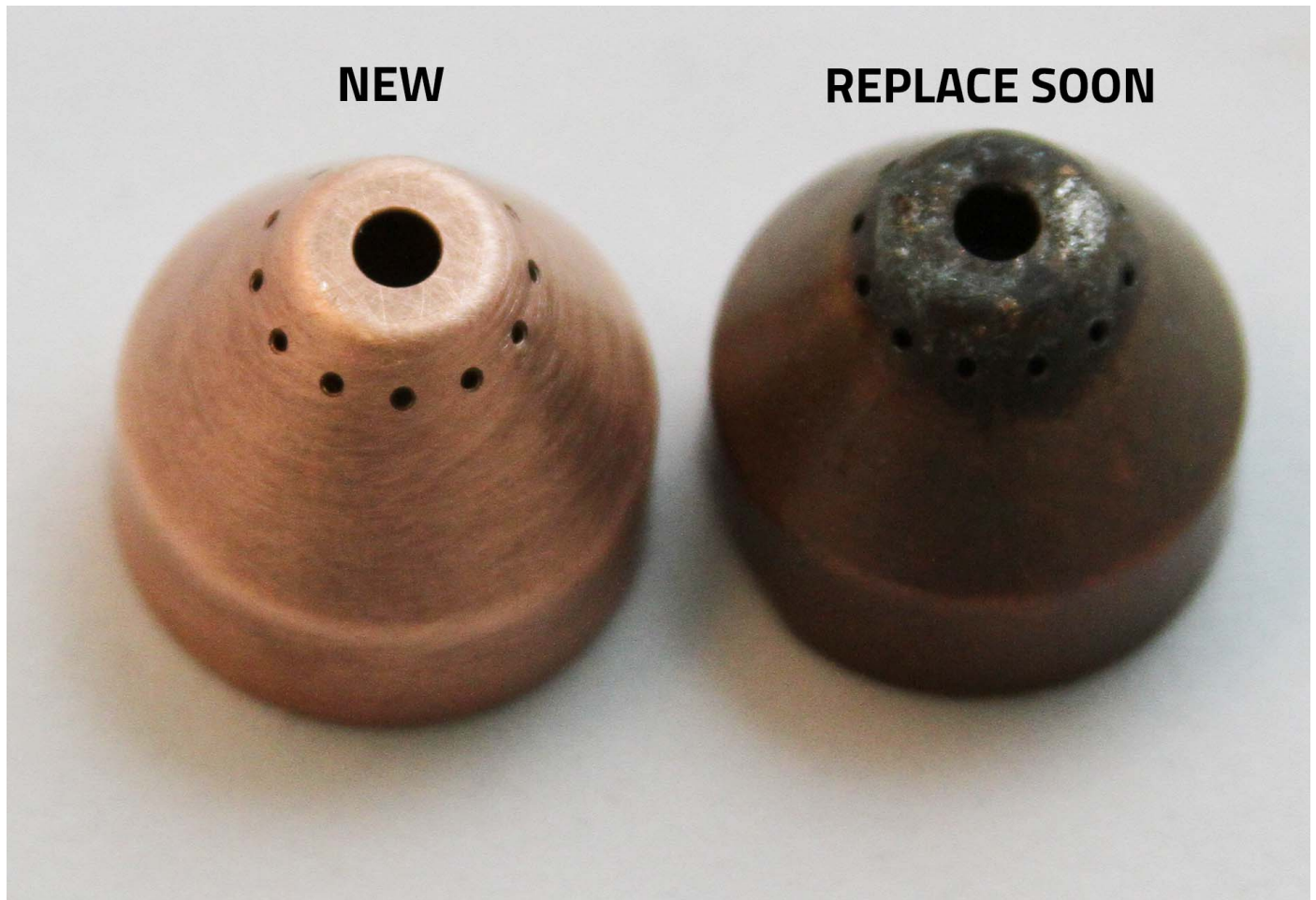


REPLACE SOON



The copper or alloy nozzle directs the plasma jet from the torch through its orifice (nozzle opening). Larger amperage nozzles will have larger orifices, but any new nozzle will have an orifice that is not only round, but has sharp, not rounded, edges. Check the orifice and replace it if it shows any oval or oblong shape.

[Shield cap](#)



The shield cap orifice should be round and smooth. Because it is close to the work piece, it can suffer from spatter, and nicks. You can clean it with a non-metallic kitchen abrasive pad (don't use sandpaper), if it is not badly burned, dented, or cracked around the orifice. When you remove the shield cap, check the O-ring (if present) and its lubrication.

For more information, see <http://www.lincolnelectric.com/en-us/equipment/plasma-cutters/Pages/improving-plasma-torch-consumable-life.aspx>.

Looking for a great price on Consumables? Please call the Lincoln Electric Cutting Systems parts department at 775-673-2200 for consumables for most major brands. Shop online at torchmatestore.com.