

REPLACEMENT AND CARE OF PLASMA TORCH PARTS

1. **Nozzles** will eventually get dirty from out-gassing from the weld puddle due to dirty parts or elements in the welded material. There will also be oxides that migrate out of the copper nozzle and oxides that burn off from the tungsten electrode that are trapped inside the nozzle, and these elements will eventually coat the inside of the nozzle, and form an insulating barrier that deters proper pilot arc starting and weld arc transfer. Clean the nozzle every time that the tungsten electrode is re-ground. Clean the nozzle with alcohol or acetone and a Q-tip. A round wooden tooth pick can be used to clean the orifice of the nozzle. The tooth pick is softer than the copper nozzle and will not damage the nozzle.
2. The **tungsten electrode** will erode and wear down during welding. It will need to be re-ground when the weld arc does not transfer consistently or when it is difficult to start the pilot arc. The tungsten electrode can be re-sharpened and used again until it is too short for fit in the torch. It is recommended that the tungsten be hand buffed using scotch bright and then cleaned with alcohol or acetone. Make sure that the person's hands are clean and they do not get dirt or oil on the tungsten electrode when it is being installed.
3. The **ceramic sleeve** that is inside the plasma torch body can be checked and cleaned with alcohol or acetone at the end of every shift. If the ceramic is not cracked or broken it can be used without any problems.
4. The **brass centering case** is used to hold and center the collet. When inserting the centering case into the ceramic sleeve you must put the flat side of the centering case into the ceramic sleeve. The centering case can be cleaned when the ceramic sleeve is cleaned. Check the end of the centering case, where the collet seats, to insure that it has not been worn or deformed by the collet. The job of the centering case is to give a surface in which the collet is tightened down, and locks the tungsten electrode in place. As long as the tungsten electrode is locked tightly in place, the sleeve is doing its job properly.
5. The **collet** centers the tungsten inside the plasma torch body and locks the tungsten electrode in place when the adjusting screw at the end of the torch barrel is tightened. The collet can be cleaned when the other internal plasma torch parts are cleaned with either alcohol or acetone. If the tungsten electrode cannot be locked down properly, it might be because the collet has been bent from the pressure of the adjusting screw and the heat inside of the torch. As long as the tungsten electrode can be locked in place, there should not be a need to replace the collet.
6. The **adjusting screw** is used to tighten the tungsten electrode in the torch and hold it in place. The screw is tightened with a **setting gauge** that sets the distance the tungsten sticks out of the torch. If you tighten the screw too much you can break or crack the ceramic sleeve. You can check to see if the adjusting screw needs cleaning and clean it periodically. There should not be a need to replace the screw, unless it has been damaged.
7. The **shield gas cups** should not be replaced unless they have been lost or broken. They can also be cleaned periodically.
8. The **o'ring or gasket** between the shield gas cup and torch body seals the shield gas cup from air being sucked into the shield gas between the gas cup and torch

body. The o’ring can be checked occasionally for nicks or cracks. If it has a nick or crack, replace the o’ring or gasket. Do not clean the o’ring with acetone. Acetone will damage plastics and rubbers. **Acetone is flammable. Do not get it close to the welding arc.**

9. Items 1-9 are based on using a machine torch for automated welding. If you use a hand torch for manual it will have a back cap with an o’ring that keeps the torch from leaking gas at the back cap seal. The o’ring needs to be checked for defects that might cause a gas leak. O’rings are inexpensive and easy to replace. Make sure that they are clean and free of dirt .
10. Plasma torches are delicate and expensive instruments. They need to be treated with care. The torch head can be cracked by running it into tooling or fixtures. Torch heads also crack from excessive heat. This is most frequently caused by poor water flow. The torch heads can usually be replaced: which is less expensive than buying a new torch.

