

Plasma Arc Cutting#5 (Torch Operation)

- When the plasma torch trigger is squeezed, cutting gas flows through the torch
- The **swirl ring** focuses the flowing gas around the electrode
- When the trigger is squeezed, the **electrode** and **nozzle** separate to ionize the gas and create an arc
- The arc transfers to the metal workpiece to start cutting
- Gas is pumped into the plasma torch to create the plasma and also to cool the torch
 - Typically, this gas or a secondary gas is used as a shielding gas to protect the cut surface from atmospheric contamination
- The cutting gas is usually compressed air supplied by an air compressor



Air Compressor

- Machines that use the surrounding air (shop air) require the environment to be free from excessive moisture, oils, or fumes from other work processes
- Clean filters in the air compressor are necessary, and the compressor storage tank should be drained frequently as moisture will accumulate inside over time
- Some cutting applications require a gas other than atmospheric air such as **oxygen** and **nitrogen**. Nitrogen is used to cut thicker metals



Compressed Gas Cylinders

- Operators use **regulators** to precisely control the flow of gas, and air compressors also include **air pressure gauges** to measure the amount of air flowing to the torch
- Manufacturers recommend different air pressures for cutting different thicknesses of metal
- Improper air pressure can shorten the life of consumables, prevent the torch from starting, and result in poor cut quality