# METALLIC

# INERT GAS

# WELDING

# UNIT

Metallic Inert Gas

Introduction

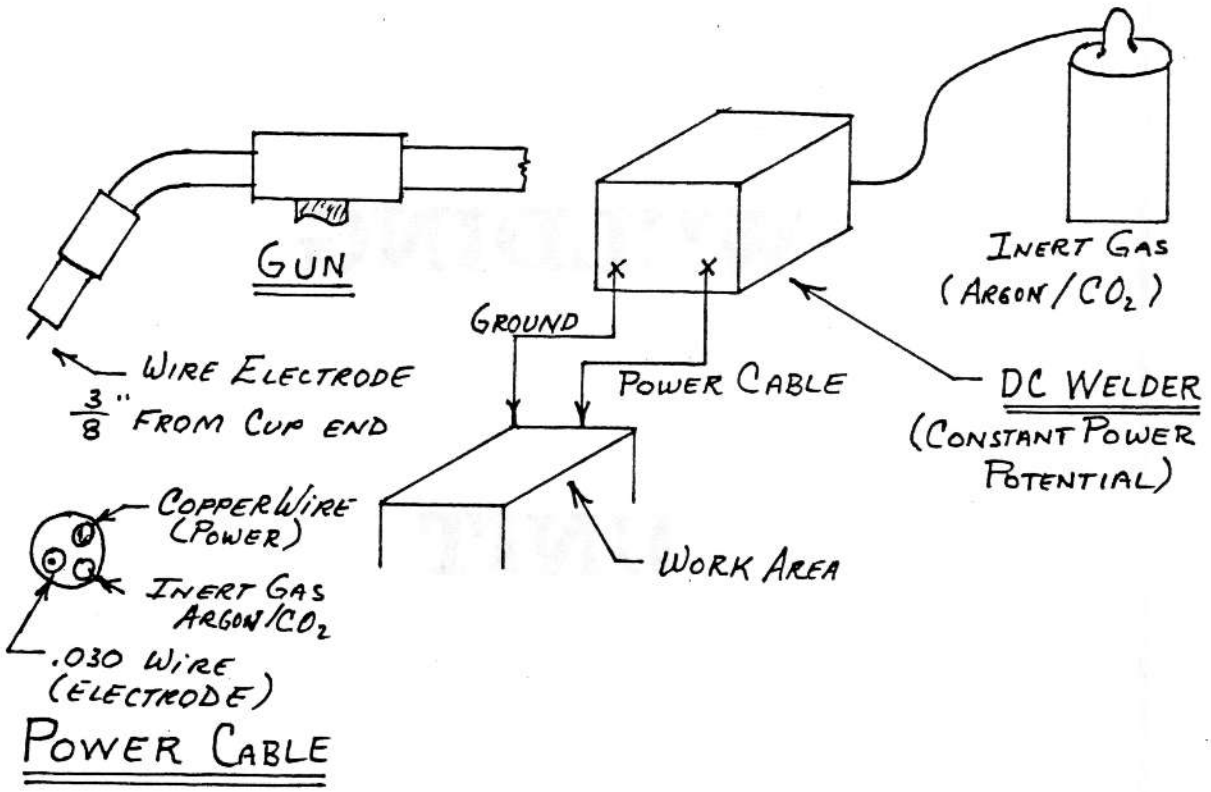
For Quiz Purposes:

Read Unit 30 - 20 and demonstration notes along with experiences while in the area.

Terminology:

MIG (Metallic Inert Gas) is also referred to in industry as "short arc." The most proper term today is GMAW - Gas Metal Arc Welding. This process uses a continuous wire fed into the weld zone. The wire itself is the electrode. Another popular deep penetrating process in the GMAW family is "flux core" welding.

BASIC DIAGRAM OF MIG WELDER




Welder:

The power source for the MIG welding is a DC Constant Power Potential machine. This is to suggest a different type of welder than the ordinary DC machine in that regardless of the arcing or shorting out process going on in the weld zone, this welder's current will not dip or vary.

Inert Gas:

The shielding gas is a combination of **Argon 75%** and **Carbon Dioxide 25%**. There are different percentage mixes that can be acquired; however, this is the one used in our lab. The Argon is present as a shield over the weld zone to keep the weld clean and protected from the atmosphere, the Carbon Dioxide is involved to do internal cleaning of the liquid weld metal. A higher percentage of Argon provides cleaner welds with shallow penetration. A higher percentage of Carbon Dioxide produces rougher weld surfaces and deeper penetration.

The Electrode:

The wires available for this process are .030, .035, and .040. We use .030 in our lab. The wire is copper coated to prevent rust or oxidation on the surface, and has a **silicate** in the wire for additional internal cleaning purposes in the weld zone. Silicate "beadlets" can be seen on the surface of the finished weld.

Metals Weldable with Process:

*Steel, Aluminum, Stainless Steel

*Steel is the metal welded in our lab.

For many years aluminum has been welded with this process by use of a "Spool Arc" gun on the end of the power cable. This unit was awkward because it was so heavy and cumbersome. A small drive motor would push the wire from the 1 lb. spool out the end of the gun. Today a hard durable wire has been developed that can be pushed through the power cable like the steel wire.

"Spool Arc" Gun

# DEMONSTRATION NOTES AND THOUGHTS