

## GENERAL APPLICATION GUIDE

### A. Joining Wire to Wire (.001" to .375" diameter)

Welding is the most spectacular. Flame is played upon the larger wire with the smaller wire shielded behind the larger wire. As the larger wire melts, its heat transfer to the smaller wire causes melting of the smaller wire, and fusion takes place. Another method is to bring the larger wire to the molten stage and rapidly push the smaller wire (cold) into the melt, where it will also melt and fuse. Use care to prevent overheating and burning of the smaller wire. In brazing or soldering, heat is played upon large wire, braze or solder is added, and the small wire is pushed into the puddle. Flame should not normally be directed onto the solder or braze.

Applications	Methods
Thermocouples	Weld, Silver Braze, Solder
Wires to Headers	Weld, Silver Braze, Solder
Wires to Terminals	Weld, Silver Braze, Solder
Coil Wire	Weld
Wire to Tubing	Weld, Braze, Solder
Stranded Wire to Stranded Wire	Weld, Silver Braze, Solder
Stranded Wire to Solid Wire	Weld, Silver Braze, Solder
Large Wire to Small Wire	Weld, Silver Braze, Solder

### B. Joining Wire to Sheet and Terminals

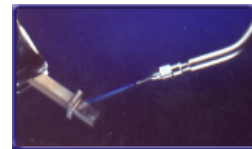
Flame should be directed mainly onto the part presenting the greatest mass of heat sink - the lesser part is introduced to the greater part when the greater part has reached (approximately) proper working temperature. This important precaution permits parts to reach proper working temperature simultaneously - neither one over-heating.

Applications	Methods
Thermocouples to Test Piece	Weld, Silver Braze, Solder
Wires to Cases and Chassis	Weld, Braze, Solder
Wires to Relay Blades	Weld, Silver Braze, Solder
Component Leads to Terminals	Solder
Wires to Castings	Weld, Silver Braze
Lead Wires to Circuit Boards	Silver Braze, Solder
Wires to Couplings (Slip Rings)	Weld, Silver Braze
Wires to Connectors	Solder

### C. Joining of Sheet Stock (.001" to .109")

Lower melting materials are best suited for welding. Higher melting materials require brazing or soldering. The Flux-flame (flux added to booster alcohol) comes into its own on this application when brazing the higher melting metals such as steel.

Applications	Methods
Hermetic Sealing	Weld, Braze, Solder
Metal Tape to Itself	Weld, Braze
Fabrication of Enclosures	Weld, Braze, Solder
Foil to Itself	Weld, Silver Braze, Solder
Repair of Lead Electrode Plates	Weld, Solder
Bimetal Stock	Silver Braze
Tank Linings	Weld



Brazing

### D. Joining of Wire Mesh (.0005" to .375")

Best results on fine wire are obtained when using a flux/solder paste mix. Finely divided solder (or braze material) particles in this substance form minimum heat sink and allow joining without overheating the wire in order to bring solder to flowing state.

Applications	Methods
Wire Mesh to Mandrels	Weld, Silver Braze, Solder
Wire Mesh to Wire Mesh	Silver Braze
Wire Mesh in Vacuum Tubes	Weld, Silver Braze

### E. Metal Cutting (.0005" to .015")


Oxidizing flame (without booster) is best because true cutting is really a matter of high speed

oxidation. Atmospheric oxygen does the job when metal to be cut is brought to brilliant white heat.

Applications
Thin Stock Sheets
Wire Mesh
Wires

### F. Glass and Plastic Working

Chemistry of the materials to be worked is important - Pyrex glass for instance works best under booster flame with borax added to booster alcohol (1 teaspoon to 1 pint). Flame resistant plastics perform best for joining applications.

Applications	
Laboratory Apparatus	
Welding Thermometer Tubes	
Fusion of Sheet Stock	

### G. Glass to Metal Seals

Heat the glass first to the following stage, then heat metal to dull red as it comes in contact with glass puddle. Push metal into glass - then flow glass around metal to form hermetic seal.

Applications
Wire to Glass Blocks
BiMetal Strips into Glass Blocks
Salvage of Header Pins

### H. Hole Drilling (.0005" to .020" Sheet Stock and .001" to .020" Wall Thickness Tubing)

Highest temperature flame (without booster) and high pressure (20 ounces and up) is best to produce minimum hole size. Slow flame produces extensive adjacent overheating which is often undesirable.

Applications
Quartz
High Melting Metals
Ceramics
Glass
Hard to Drill Metals (Abrasive Materials)

### I. Annealing

Controlled heat input to part is necessary. This input is varied by one or more of three methods.

1. Control time of flame application.
2. Control flame size.
3. Control distance of flame from workplace.

Applications
Spring Wires
Flat or Coil Springs
Spot Welds

### J. Quartz Working

Quartz requires temperatures up to over 6000 degrees F. By filling the booster with pellets of silica gel or dry crystals of calcium chloride monohydrate or using drying tower, an extremely dry gas will be produced which will improve the results. do not use booster with methyl alcohol as flame temperature will be too low.

Applications
Lamp Tubes
Weldments (Structural)

### **K. General Heat Source**

Important factors for this application are: high reliability, low operating cost, requires only water and electricity, unidirectional heat, cleanliness, portability, and complete control over flame size and velocity.

<b>Applications</b>
Spectrographic Sample Burning
Melting of High Temperature Plastic
Maintaining Temperature in Die Casting Metal and Plastic
Wire Stripping
Curing Deposited Carbon for Resistors
Repairing Printed Circuit Boards