

## AIR CARBON ARC GOUGING DATA

The air carbon arc process is flexible, efficient, and cost effective on practically any metal; carbon steel, stainless steel and other ferrous alloys; gray, malleable and ductile cast iron; aluminum; nickel; copper alloys and other nonferrous metals. Single-phase machines with low open-circuit voltage may not work for air carbon arc gouging (CAC-A). However, any three-phase welding power source of sufficient capacity may be used for air carbon arc gouging. The arc voltage used in air carbon arc gouging and cutting ranges from a low of 35 to a high of 56 volts; thus the open-circuit voltage should be at least 60 volts. The actual arc voltage is governed by arc length and the type of gouging. For most applications CAC-A is used with DCEP (reverse polarity). The electrode should extend at most 7 inches from the gouging torch with the air jet between the electrode and workpiece.

A minimum extension of 2" should be used to prevent damage to the torch parts. Normal compressed air pressures for CAC-A range between 80 psi and 100 psi at the torch; higher pressures may be used, but they don't remove metal more efficiently. Use 60 psi (413.7 kPa) with the light-duty manual torch. The air hose supplying air to the torch body should have an inside diameter of at least 3/8" (6.4 mm).

### SUGGESTED CURRENT RANGES FOR COMMONLY USED ELECTRODE TYPES AND SIZES

| Electrode Diameter |      | DC Electrode With DCEP |              | AC Electrode With AC |              | AC Electrode With DCEN |              |
|--------------------|------|------------------------|--------------|----------------------|--------------|------------------------|--------------|
| in.                | mm   | Minimum Amps           | Maximum Amps | Minimum Amps         | Maximum Amps | Minimum Amps           | Maximum Amps |
| 1/8                | 3.2  | 60                     | 90           | -                    | -            | -                      | -            |
| 5/32               | 4.0  | 90                     | 150          | -                    | -            | -                      | -            |
| 3/16               | 4.8  | 200                    | 250          | 200                  | 250          | 150                    | 180          |
| 1/4                | 6.4  | 300                    | 400          | 300                  | 400          | 200                    | 250          |
| 5/16               | 7.9  | 350                    | 450          | -                    | -            | -                      | -            |
| 3/8                | 9.5  | 450                    | 600          | 350                  | 450          | 300                    | 400          |
| 1/2                | 12.7 | 800                    | 1000         | -                    | -            | -                      | -            |
| 5/8                | 15.9 | 1000                   | 1250         | -                    | -            | -                      | -            |
| 3/4                | 19.1 | 1250                   | 1600         | -                    | -            | -                      | -            |
| 1                  | 25.4 | 1600                   | 2200         | -                    | -            | -                      | -            |

### RECOMMENDED MINIMUM AIR REQUIREMENTS

| Type of Torch    | Recommended Compressor Rating |     |                 |       |                  |     |                |      |                    |        |
|------------------|-------------------------------|-----|-----------------|-------|------------------|-----|----------------|------|--------------------|--------|
|                  | (1) Air Pressure              |     | Air Consumption |       | Intermittent Use |     | Continuous Use |      | ASME Receiver Size |        |
|                  | psi                           | kPa | cfm             | L/min | hp               | kW  | hp             | kW   | gal                | litres |
| Light Duty (2)   | 40                            | 280 | 8               | 227   | .5               | 0.4 | 1.5            | 1.1  | 60                 | 227    |
| General Duty (2) | 80                            | 550 | 25              | 708   | 5.0              | 3.7 | 7.5            | 5.6  | 80                 | 303    |
| Multipurpose (3) | 80                            | 550 | 33              | 934   | 7.5              | 5.6 | 10             | 7.5  | 80                 | 303    |
| Automatic (4)    | 60                            | 414 | 46              | 1303  |                  |     | 15             | 11.2 | 80                 | 303    |

1. Pressure while torch is in operation.
2. Accommodates flat electrodes.
3. Generally considered a foundry torch.
4. Requires some kind of mechanical manipulation.

### PERMISSIBLE NOISE EXPOSURE

Ear protection is recommended when noise from the air carbon arc process exceeds permissible levels as listed in OSHA 1910.95

| Duration Per Day | Sound Level DBA (in hours) Slow Response |
|------------------|------------------------------------------|
| 8                | 90                                       |
| 6                | 92                                       |
| 4                | 95                                       |
| 3                | 97                                       |
| 2                | 100                                      |
| 1 1/2            | 102                                      |
| 1                | 105                                      |
| 1/4 or less      | 115                                      |