

# Lens Shade Selector Guide

| Operation/Process  | Electrode Size in. (mm)  | Arc Current (Amperes) | Minimum Protective Shade | Suggested* Shade No. (Comfort) |
|--|--|-----------------------|--------------------------|--------------------------------|
| Shielded metal arc welding (SMAW)                              | Less than 3/32 (2.5)<br>3/32–5/32 (2.5–4)<br>5/32–1/4 (4–6.4)<br>More than 1/4 (6.4) | Less than 60          | 7                        | —                              |
|  |  | 60–160                | 8                        | 10                             |
|  |  | 160–250               | 10                       | 12                             |
|  |  | 250–550               | 11                       | 14                             |
|  |  |                       |                          |                                |
| Gas metal arc welding (GMAW) and flux cored arc welding (FCAW) |  | Less than 60          | 7                        | —                              |
|  |  | 60–160                | 10                       | 11                             |
|  |  | 160–250               | 10                       | 12                             |
|  |  | 250–550               | 10                       | 14                             |
| Gas tungsten arc welding (GTAW)                                |  | Less than 50          | 8                        | 10                             |
|  |  | 50–150                | 8                        | 12                             |
|  |  | 150–500               | 10                       | 14                             |
| Air carbon arc cutting (CAC–A)                                 | (Light)<br>(Heavy)   | Less than 500         | 10                       | 12                             |
|  |  | 500–1000              | 11                       | 14                             |
| Plasma arc welding (PAW)                                       |  | Less than 20          | 6                        | 6 to 8                         |
|  |  | 20–100                | 8                        | 10                             |
|  |  | 100–400               | 10                       | 12                             |
|  |  | 400–800               | 11                       | 14                             |
| Plasma arc cutting (PAC)                                       |  | Less than 20          | 4                        | 4                              |
|  |  | 20–40                 | 5                        | 5                              |
|  |  | 40–60                 | 6                        | 6                              |
|  |  | 60–80                 | 8                        | 8                              |
|  |  | 80–300                | 8                        | 9                              |
|  |  | 300–400               | 9                        | 12                             |
|  |  | 400–800               | 10                       | 14                             |
| Torch brazing (TB)   |  | —                     | —                        | 3 or 4                         |
| Torch soldering (TS)   |  | —                     | —                        | 2                              |
| Carbon arc welding (CAW)                                       |  | —                     | —                        | 14                             |
|  | Plate thickness  |                       |                          |                                |
|  | in.  | mm                    |                          |                                |
| Oxyfuel gas welding (OFW)                                      | Light<br>Medium<br>Heavy   | Under 3.2             |                          |                                |
|  |  | 3.2 to 12.7           |                          |                                |
|  |  | Over 12.7             |                          |                                |
| Oxygen Cutting (OC)  | Light<br>Medium<br>Heavy   | Under 25              |                          | 3 or 4<br>4 or 5<br>5 or 6     |
|  |  | 25 to 150             |                          |                                |
|  |  | Over 150              |                          |                                |

\* As a rule of thumb, start with a shade that is too dark to see the weld or cut zone. Then go to a lighter shade which gives sufficient view of the weld or cut zone without going below the minimum. In oxyfuel gas welding, cutting, or brazing where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

Guide adapted from ANSI Z49.1, 1999.

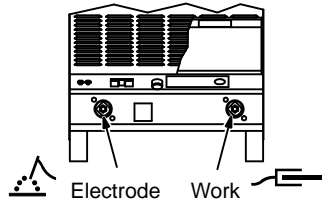
Low Current Plasma arc cutting (0–80 Amperes) supplied by Miller Electric Mfg. Co.

# Weld Cable Selector Guide\*



▲ Turn Off power before connecting to weld output terminals.

▲ Do not use worn, damaged, under-sized, or poorly spliced cables.



| Welding Amperes | Weld Cable Size** And Total Cable (Copper) Length In Weld Circuit Not Exceeding*** |                      |                      |               |
|-----------------|--|----------------------|----------------------|---------------|
|                 | 100 ft (30 m) Or Less  |                      | 150 ft (45 m)        | 200 ft (60 m) |
|                 | 10 – 60% Duty Cycle  | 60 – 100% Duty Cycle | 10 – 100% Duty Cycle |               |
| 100             | 4  | 4                    | 4                    | 3             |
| 150             | 3  | 3                    | 2                    | 1             |
| 200             | 3  | 2                    | 1                    | 1/0           |
| 250             | 2  | 1                    | 1/0                  | 2/0           |
| 300             | 1  | 1/0                  | 2/0                  | 3/0           |
| 350             | 1/0  | 2/0                  | 3/0                  | 4/0           |
| 400             | 1/0  | 2/0                  | 3/0                  | 4/0           |
| 500             | 2/0  | 3/0                  | 4/0                  | 2 ea. 2/0     |
| 600             | 3/0  | 4/0                  | 2 ea. 2/0            | 2 ea. 3/0     |
| 700             | 4/0  | 2 ea. 2/0            | 2 ea. 3/0            | 2 ea. 4/0     |
| 800             | 4/0  | 2 ea. 2/0            | 2 ea. 3/0            | 2 ea. 4/0     |
| 900             | 2 ea. 2/0  | 2 ea. 3/0            | 2 ea. 4/0            | 3 ea. 3/0     |
| 1000            | 2 ea. 2/0  | 2 ea. 3/0            | 2 ea. 4/0            | 3 ea. 3/0     |
| 1250            | 2 ea. 3/0  | 2 ea. 4/0            | 3 ea. 3/0            | 4 ea. 3/0     |

\*This chart is a general guideline and may not suit all applications. If cable overheating occurs (normally you can smell it), use next size larger cable.

\*\*Weld cable size (AWG) is based on either a 4 volts or less drop or a current density of at least 300 circular mils per ampere. Contact your distributor for the mm<sup>2</sup> equivalent weld cable sizes.

\*\*\*For distances longer than those shown in this Guide, call a factory applications representative.

The above information furnished by: Miller Electric Company [www.millerwelds.com](http://www.millerwelds.com) and Hobart Electric Company [www.hobartwelders.com](http://www.hobartwelders.com)