**Circuit Wizard App**
Easily calculate the proper wire size, fuse, and circuit breaker from your mobile device or computer.

Available for Android and iPhone

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**You Can Do It**

**PROJECT**

**PROTECT**

Your Boat

With the Correct Size

DC Wire, Fuse, and Fuse Holder
### WIRE SELECTION CHART

Calculations are based on 105°C wire. For more detailed calculations, consult the Circuit Wizard at [www.circuitwizard.bluesea.com](http://www.circuitwizard.bluesea.com).

#### STEP 1 Choose the Correct Wire

- Locate the **CURRENT FLOW IN AMPS** of your circuit along the top of the **WIRE SELECTION CHART**.
- Select the **CIRCUIT TYPE**.
  - Non-critical circuits with 10% allowable voltage drop include: general lighting, windlasses, bait pumps, general appliances
  - Critical circuits with 3% allowable voltage drop include: panel main feeders, bilge blowers, electronics, navigation lights
- Find the **CIRCUIT LENGTH** along the left side of the **WIRE SELECTION CHART**.
  - The circuit length is the length of the negative wire added to the length of the positive wire.
  - Calculations are based on 105°C wire. For wire rated at 90°C or lower, or for wire that passes through an engine room, the first row of the chart, in gray, does not apply.
- Intersect the **CURRENT FLOW IN AMPS** with **CIRCUIT LENGTH** to identify the correct wire size.

**Example**: A windlass rated 80A is 25 ft. from the battery. The circuit length is the total length of the positive and negative wire added together, which in this example is 50 ft. The circuit type is ‘non-critical’, and the correct wire size is 4 AWG.

### AWG WIRE SIZE CHART

Circles indicate actual diameter of wire (not including insulation).
### FUSE SELECTION CHART

Calculations are based on 105°C wire. For lower temperature rated wire, consult the Circuit Wizard at [www.circuitwizard.bluesea.com](http://www.circuitwizard.bluesea.com).

**LEGEND**
- Outside Engine Room
- Inside Engine Room

**STEP 2** Choose the Correct Fuse and Fuse Amperage

**A** Choose a fuse from the list on the top of the FUSE SELECTION CHART by following along the line of the **AWG WIRE SIZE** determined from Step 1. Appropriate fuses will have a gray bar that intersects the line.

**B** The appropriate fuse amperage will be found in one of the four gray bars below the selected fuse type.
- Single Wire, Outside Engine Room = First column dark gray bar
- Single Wire, Inside Engine Room = First column light gray bar
- Bundled Wire, Outside Engine Room = Second column dark gray bar
- Bundled Wire, Inside Engine Room = Second column light gray bar

*Example: For a 4 AWG single 105°C rated wire outside an engine room, the maximum fuse amperage is 150A.*

**Note:**
- Possible fuse amperages for a circuit can fall between a range of maximum and minimum fuse amperages. The procedure above calculates the maximum fuse amperage which reduces nuisance blows but may offer less protection than a lower amperage fuse.
- The minimum fuse amperage is calculated by multiplying the current flow in amps by 125%.
- If the product instructions specify a fuse amperage, use that value if it is under the maximum amperage found in the above procedure.
- If the specified fuse amperage is over the maximum suggested, move down the column and choose a larger wire size that intersects with the specified fuse amperage.
**STEP 3  Choose a Fuse Holder**

A Using the same colored headings as in the FUSE SELECTION CHART (Step 2), follow the columns down to find fuse holders or fuse blocks that meet your specific requirements.

B Consider environmental factors:
- Ignition protection is required where flammable vapors may accumulate.

  **Example: Engine room and propane locker**
  Consult American Boat and Yacht Council (ABYC) E-11.5.3 for Ignition Protection
  - Ignition protection

- Ingress protection protects fuses from spray, washdown, and humidity.
  IP66 - protected against powerful water jets
  - Ingress protection

C Decide between an in-line fuse holder or a fuse block:
- In-line fuse holders are compact and hold a single low-amperage fuse.
- Fuse blocks mount to a solid surface and may hold a single fuse or multiple fuses.

### FUSE HOLDER SELECTION CHART

<table>
<thead>
<tr>
<th></th>
<th>AGC® or MDL® Fuse</th>
<th>ATO® or ATC® Fuse</th>
<th>MAXI™ Fuse</th>
<th>AMI® or MIDI® Fuse</th>
<th>MRBF TERMINAL Fuse</th>
<th>MEGA® or AMG® Fuse</th>
<th>CLASS T Fuse</th>
<th>ANL® Fuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crimpable In-Line Fuse Holder</td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
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<tr>
<td>Waterproof In-Line Fuse Holders</td>
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<td><img src="image10.png" alt="Image" /></td>
<td><img src="image11.png" alt="Image" /></td>
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<td>ST Blade Fuse Blocks</td>
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**LEGEND**
- Ingress protection
- Ignition protection

Although this process uses information from ABYC E-11 to recommend wire size and circuit protection, it may not cover all of the unique characteristics that may exist on a boat. If you have specific questions about your installation please consult an ABYC certified marine electrical technician.