

PROTECT YOUR BOAT WITH THE CORRECT SIZE WIRE AND FUSE

U.S. Coast Guard and other regulatory agencies require all circuits, except the starting circuit, to be protected with a circuit breaker or a fuse.
For 24V DC Systems divide distance by 2 or consult the Circuit Wizard at www.circuitwizard.blueseasystems.com

STEP 1 Choose the Correct Wire

A Locate the **CURRENT FLOW IN AMPS** of your circuit along the top of the chart to the right.

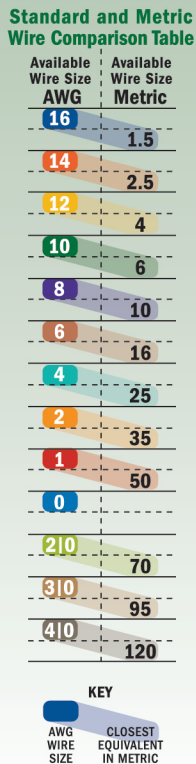
B Select the **CIRCUIT TYPE**.

- 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

C Find the **CIRCUIT LENGTH** along the left side of the chart.

- The circuit length is the length of the negative conductor added to the length of the positive conductor.
- Calculations are based on 105°C wire. For wire rated at 80°C or lower, use the circuit length row below the actual circuit length, which represents the next longest distance.
Example: A 20A load with 3% voltage drop and a circuit length of 15 ft would be 10 AWG for 105°C wire and 8 AWG for wire rated at 80°C or lower.

D 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 conductor added together, which in this example is 50 ft / 15.2 M The circuit type is 'non-critical', and the correct wire size is 4 AWG /107 mm².



CIRCUIT TYPE				CURRENT FLOW IN AMPS															
10% VOLTAGE DROP Non Critical		3% VOLTAGE DROP Critical		5A	10A	15A	20A	25A	30A	40A	50A	60A	70A	80A	90A	100A	120A	150A	200A
CIRCUIT LENGTH	0 to 20 ft	0 to 6.1 M	0 to 6 ft	0 to 1.8 M	16 AWG	16 AWG	14 AWG	14 AWG	12 AWG	10 AWG	8 AWG	6 AWG	6 AWG	4 AWG	4 AWG	4 AWG	2 AWG	1 AWG	2/0 AWG
	30 ft	9.1 M	10 ft	3.0 M	16 AWG	14 AWG	12 AWG	12 AWG	10 AWG	8 AWG	6 AWG	4 AWG	4 AWG	4 AWG	2 AWG	2 AWG	2 AWG	1 AWG	2/0 AWG
	50 ft	15.2 M	15 ft	4.6 M	14 AWG	12 AWG	10 AWG	10 AWG	8 AWG	6 AWG	4 AWG	4 AWG	2 AWG	2 AWG	2 AWG	2 AWG	1 AWG	0 AWG	2/0 AWG
	65 ft	19.8 M	20 ft	6.1 M	12 AWG	10 AWG	8 AWG	8 AWG	6 AWG	4 AWG	4 AWG	2 AWG	2 AWG	1 AWG	1 AWG	1 AWG	0 AWG	0 AWG	3/0 AWG
	80 ft	24.4 M	25 ft	7.6 M	10 AWG	8 AWG	6 AWG	6 AWG	4 AWG	4 AWG	2 AWG	2 AWG	1 AWG	1 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
	100 ft	30.5 M	30 ft	9.1 M	8 AWG	6 AWG	4 AWG	4 AWG	2 AWG	2 AWG	1 AWG	1 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
	130 ft	39.6 M	40 ft	12.2 M	6 AWG	4 AWG	2 AWG	2 AWG	1 AWG	1 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
	165 ft	50.3 M	50 ft	15.2 M	4 AWG	2 AWG	1 AWG	1 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
	200 ft	61.0 M	60 ft	18.3 M	2 AWG	1 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
			70 ft	21.3 M	1 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
			80 ft	24.4 M	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
			90 ft	27.4 M	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
			100 ft	30.5 M	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
			110 ft	33.5 M	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
			120 ft	36.6 M	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG
			130 ft	39.6 M	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	0 AWG	4/0 AWG

STEP 2 Choose the Correct Fuse and Fuse Amperage

A Choose a Fuse from the list on the top of the chart to the right by following along the line of the AWG wire size 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
- Calculations are based on 105°C wire. For wire rated at 80°C or lower, use the fuse amperage for the next smaller wire size.
Example: For a 4 AWG single wire outside an engine room, the fuse amperage is 150A and 125A for 80°C degree rated wire.

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 fuse amperage, use the 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 the wire size that intersects with the specified fuse amperage.

LEGEND		MDL® AGC®	ATO® or ATC® Fuse	MAXI™ Fuse	AMI® or MIDI® Fuse	MRBF TERMINAL Fuse	MEGA® or AMG® Fuse	CLASS T Fuse	ANL® Fuse
		Outside Engine Room	Inside Engine Room	Outside Engine Room	Inside Engine Room	Outside Engine Room	Inside Engine Room	Outside Engine Room	Inside Engine Room
		.25A to 30A	1A to 30A	30A to 80A	30A to 200A	30A to 300A	100A to 300A	225A to 400A	35A to 400A
AWG WIRE SIZE	16 AWG	25A	20A	20A	15A				
	14 AWG	30A	25A	20A	15A				
	12 AWG	30A	25A	20A	15A				
	10 AWG								
	8 AWG								
	6 AWG								
	4 AWG								
	2 AWG								
	1 AWG								
	0 AWG								
	2/0 AWG								
	3/0 AWG								
	4/0 AWG								

STEP 3 Choose a Fuse Holder

A Using the same colored headings as in the steps above, 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

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

● Ignition protection ● Ingress protection ● Ignition protection and 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.

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 installer.

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MDL® AGC®	ATO® or ATC® Fuse	MAXI™ Fuse	AMI® or MIDI® Fuse	MRBF TERMINAL Fuse	MEGA® or AMG® Fuse	CLASS T Fuse	ANL® Fuse
Crimpable In-Line Fuse Holder 5060 Waterproof In-Line Fuse Holders 5061 5062 Heavy Duty In-Line Fuse Holder 5063 ST Glass Fuse Blocks 5015 5018	ATO® or ATC® In-Line Fuse Holders 5064 5065 ST Blade Fuse Blocks 5025 5026 5028 5029 SafetyHub Fuse Blocks 7725 7748 7748 7727	MAXI™ Fuse Block 5006	AMI® or MIDI® Safety Fuse Block 7720 SafetyHub Fuse Blocks 7725 7748 7727	Terminal MRBF Fuse Blocks 5191 2151	MEGA® or AMG® Safety Fuse Block 7721	CLASS T Fuse Block 5502	ANL® Fuse Blocks 5005 5503
Additional replacement fuses available from Blue Sea Systems: GMA® Fuse 1A to 10A ACA® Fuse 20A ATM® Fuse 5A to 30A							