



Installation Guide

For Proportional Power Controller (PPC)
PPC520, PPC820, PPC840



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It is essential to follow all instructions within this document to avoid potential personal injury, death, or damage to existing products in the vessel, the vessel's hull integrity, and including this product during installation or operation. Failure to follow instructions within this document will render all warranties given by Sleipner Motor as VOID.

Warnings and situations requiring extra caution are outlined in the documentation. Take extra consideration when warnings are outlined.



WARNING
Indicate a potentially hazardous situation that, if not avoided, could result in death or severe injury.



CAUTION
Indicates a potentially hazardous situation that could result in minor or moderate injury or critical damage to vessel integrity if not avoided.

Responsibility of the installer

General:

- The installer must read this document to ensure necessary familiarity with the product before installation.
- Directions outlined in this document cannot be guaranteed to comply with all international and national regulations, including but not limited to health and safety procedures. It is the installers responsibility to adhere to all applicable international and national regulations when installing Sleipner products.
- This document contains general installation guidelines intended to support experienced installers. Contact professional installers familiar with the vessel, Sleipner products and applicable regulations if assistance is required.
- If local regulation requires any electrical work to be performed by a licensed professional, seek a licensed professional.
- When planning the installation of Sleipner products, ensure easy access to the products for future service and inspection requirements.

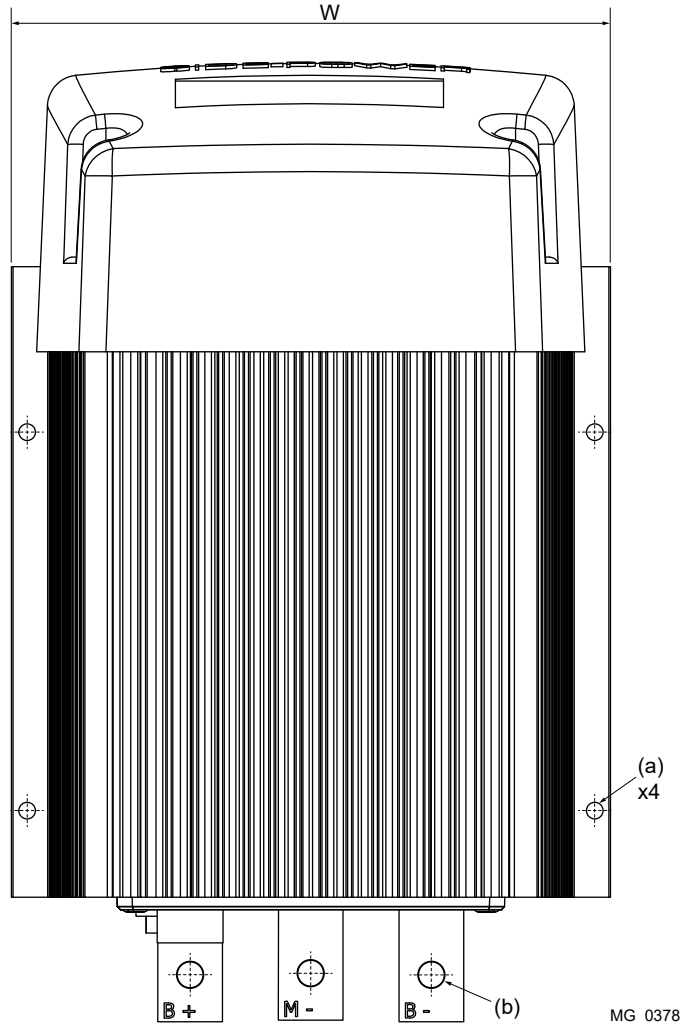
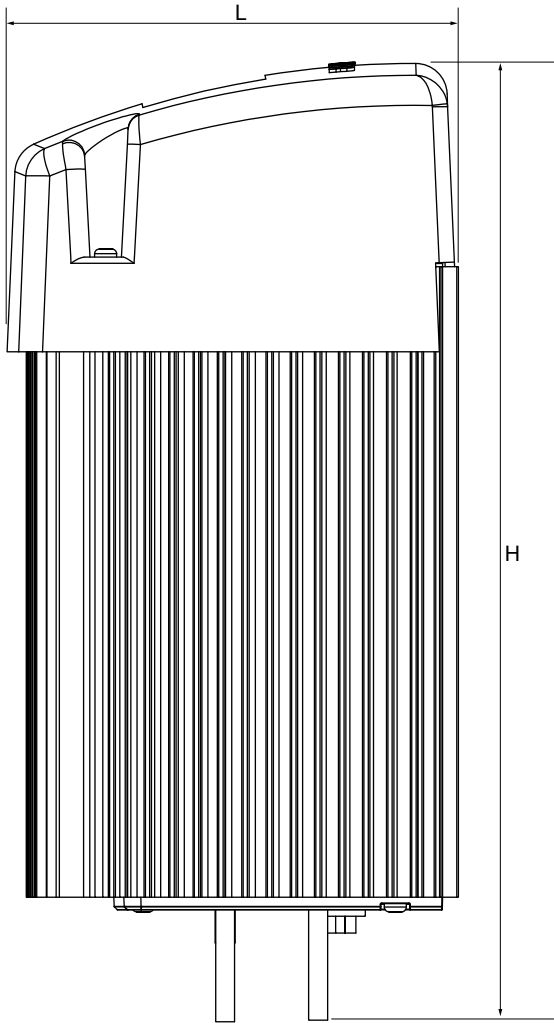
For Sleipner PPC systems:

- The PPC Power control unit should be installed in a dry, ventilated place - cable connections facing down. Mount unit with battery positive cable branching out at unit terminal, not at thruster motor. Allow free space at min 50mm over, 150mm under and min. 100mm in front and at sides. Take into consideration that a 5m multi-cable shall be plugged in between thruster motor and PPC unit.

For Sleipner S-Link™ systems:

- When installing an S-Link™ system, connect ONLY original Sleipner S-Link™ products or other authorized control equipment directly to the S-Link™ bus. When connecting non-authorized third-party equipment, it must always be connected through a Sleipner-supplied interface product.
- Any attempt to directly control or connect to the S-Link™ control system without a designated and approved interface from Sleipner will void all warranties and responsibilities of the connected Sleipner products. If you interface the S-Link™ bus by agreement with Sleipner through a designated Sleipner-supplied interface, you are still required to install at least one original Sleipner control panel to enable efficient troubleshooting if necessary.

Measurement code	Measurement description	PPC520		PPC820		PPC840	
		mm	inch	mm	inch	mm	inch
H	PPC Height	226	8.9	304	12	304	12
W	PPC width	190	7.5	190	7.5	190	7.5
L	PPC length	143	5.6	143	5.6	143	5.6
(a)	Diameter of mounting holes	5.3	0.2	5.3	0.2	5.3	0.2
(b)	PPC terminal hole diameter	8.6	0.3	8.6	0.3	8.6	0.3



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Description	PPC 520	PPC820	PPC840
Available DC System (v)	12v & 24v	12v & 24v	48v
Supply Voltage	9 - 31V	9 - 31V	36 - 60V
Output Voltage	20 - 100% x Vbatt	20 - 100% x Vbatt	20 - 100% x Vbatt
Output Current	500A	1000A	550A
Regulation	PWM, S-Link controlled	PWM, S-Link controlled	PWM, S-Link controlled
Protection	Thermal, under-voltage, over-current	Thermal, under-voltage, over-current	Thermal, under-voltage, over-current

Safety features: The PPC Speed Control unit will turn off motor power each time the main solenoids are activated. This removes any possibility for solenoid lock-in. Any fault in the main solenoids will give feedback to the panel and turn off power to the electric motor.

1. Plan the location of electrical components before starting with the electrical installation. Main electrical components will typically consist of battery, Automatic Main Switch (AMS) or manual main switch, Proportional Power Controller (PPC) and motor, see Wiring Diagram chapter for an overview.
2. Estimate the total length of the power cables to determine the recommended cross section. The total power cable length is defined as the distances from the positive battery pole, via fuse, main switch and PPC to the motor and all the way back to the negative battery pole. Compromising the cable sections named B+, M- and B- on the drawing in the Wiring Diagram chapter.
3. Find the recommended power cable cross section for you installation by using the estimated total power cable length and the table shown in *Electrical Reference Guide* chapter
4. Find the recommended fuse size by using the table shown in *Electrical Reference Guide* chapter. Use slow blow rated fuses to hold stated nominal current for minimum 5 minutes.
5. Use appropriate dimensioned battery with Cold Cranking Amps (CCA) according to recommendations in *Electrical Reference Guide* chapter. Battery voltage must be compliant with the voltage rating of the thruster motor and control circuitry. Capacity and rated discharge current of battery should be according to rated nominal current drawn and typical duty cycle for thruster operation. Nominal current drawn is listed in the *Electrical Reference Guide* chapter. The actual voltage at the motor while running the thruster determines the motor RPM and thrust. Use larger cable cross section and high-capacity battery for improved performance.
6. Install the PPC according to instructions in PPC Installation chapter.
7. Install and connect the battery, fuse, main switch and wiring according to instructions in Wiring Diagram chapter. For safety reasons it is always recommended to install a fuse and a main switch on the power cables and as close as possible to the positive battery pole connection. The main switch must be installed such that it is easily accessible to disconnect the thruster when not on-board or in the case of an emergency.

Follow the instructions in the Motor Lug Connection chapter when fastening the power cables to the motor.

Sleipner offers both manual main switches and Automatic Main Switches (AMS). Sleipner AMS is controlled by the control panel in addition to the option of manual operation. Turning on the control panel does also turn on the automatic main switch. When the control panel is turned off the automatic main switch is also turned off. This ensures that the control electronics and motor is only energized when the control panel is turned on. Sleipner offers AMS supporting either S-Link or ON/OFF control panels. Ensure to select a main switch with voltage rating according to the chosen motor- and battery-voltage. Note that the AMS requires separate power supply which should be protected by a dedicated fuse.

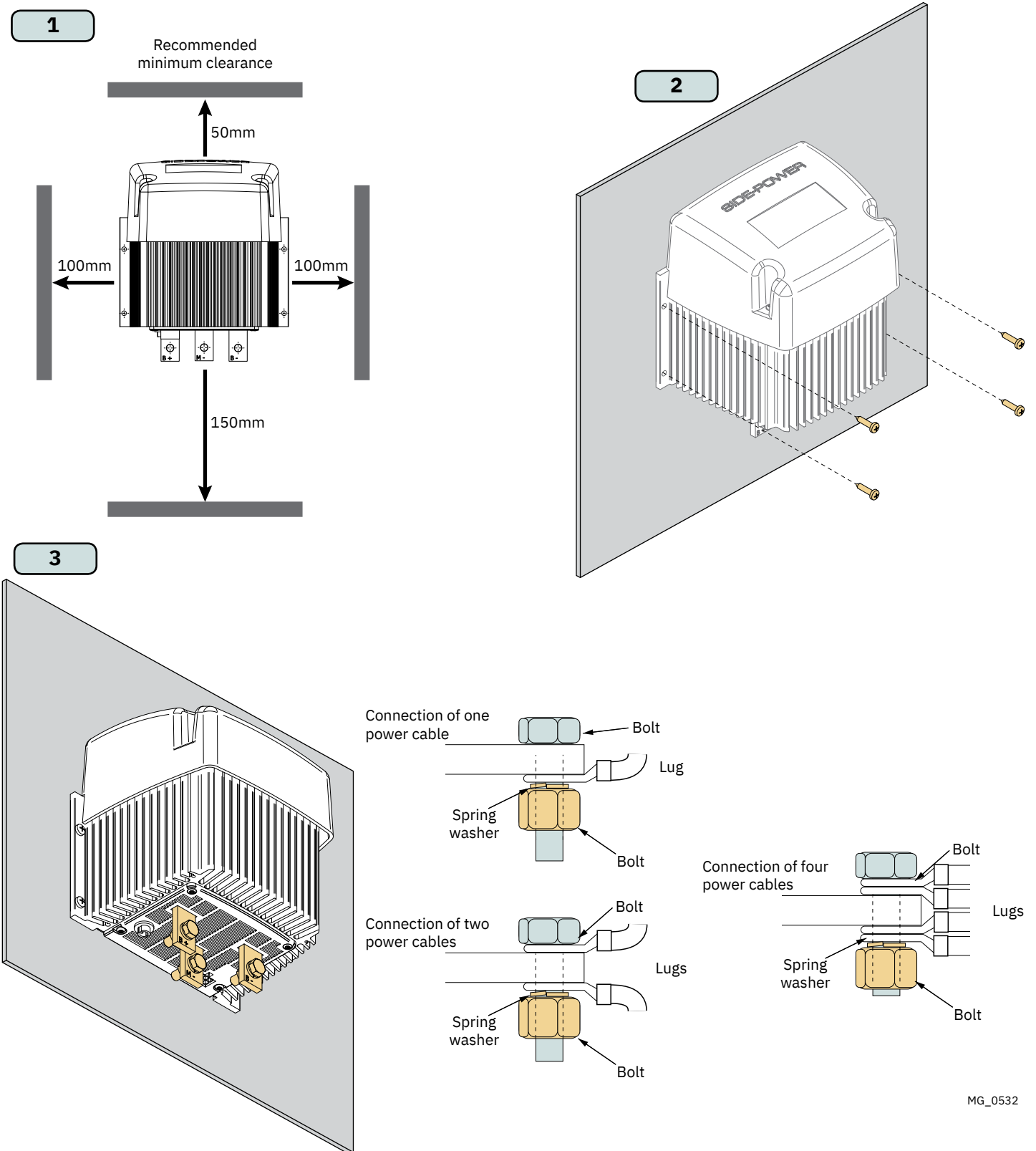
**CAUTION**

After all electrical connections have been completed, turn off main switch and check the following with an ohmmeter:

1. There is no electrical connection between electro-motor flange and the positive terminal on the motor.
2. There is no electrical connection between electro-motor flange and the negative terminal on the motor.

If unsure contact skilled personnel.

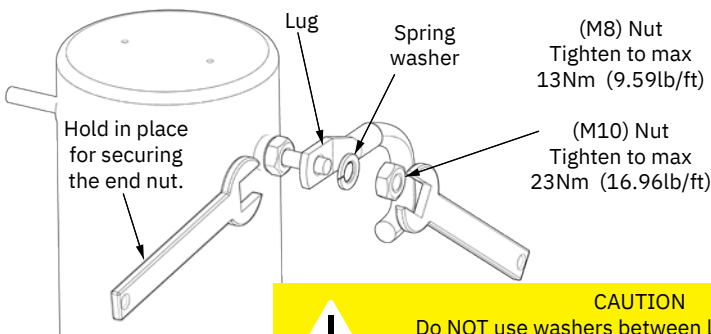
1. The Proportional Power Controller (PPC) is designed to be wall mounted. It should be installed in a dry and well-ventilated compartment and following the clearance recommendation shown in figure below. The PPC can become hot during operation and the recommended minimum clearances are to allow for ventilation.
2. Attach the PPC using the four attachment screws.
3. Attach the power cables to the PPC according to instruction in figure below. Ensure that the cables do not obstruct any other objects and not placed near any object that radiate high temperatures. For complete system wiring configuration refer to the wiring diagram chapter and the *S-Link System Description* chapter.



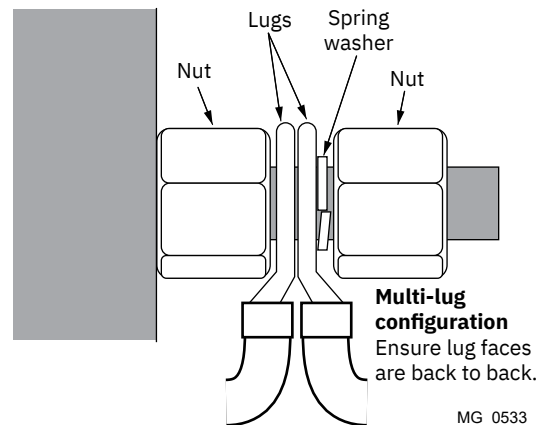
Electrical Reference Guide

Model Size	System Voltage	Nominal current	*Min. battery CCA	Rec. fuse	Cross Section Guide for Power Cables												
					Unit	<7m total + & -		7-14m total + & -		15-21m total + & -		22-28m total + & -		28-35m total + & -		36-45m total + & -	
						Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.
20/110S	12V	150 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm ²	25	35	35	50	50	70	70	95	95	95	120	2 x 70
					AWG	3	2	2	1/0	1/0	2/0	2/0	3/0	3/0	3/0	2 x 4/0	2 x 2/0
25/110S	12V	200 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm ²	25	35	50	50	70	70	95	95	120	120	2 x 70	2 x 70
					AWG	3	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0
30/125S 30/140	12V	245 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm ²	35	50	50	70	70	95	95	120	120	2 x 70	2 x 70	2 x 95
					AWG	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0
40/125S 40/140	12V	315 A	DIN: 300 SAE: 570 EN: 520	ANL 250	mm ²	35	50	70	95	95	120	120	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120
					AWG	2	1/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0
50/140S	12V	370 A	DIN: 350 SAE: 665 EN: 600	ANL 325	mm ²	50	50	70	95	120	2 x 70	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	1/0	1/0	2/0	3/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
	24V	170 A	DIN: 175 SAE: 332 EN: 280	ANL 150	mm ²	25	25	25	35	35	50	35	50	50	70	70	70
					AWG	3	3	3	2	2	1/0	2	1/0	1/0	2/0	2/0	2/0
60/185S 60/140	12V	370 A	DIN: 350 SAE: 665 EN: 600	ANL 325	mm ²	50	50	70	95	120	2 x 70	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	1/0	1/0	2/0	3/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
	24V	170 A	DIN: 175 SAE: 332 EN: 280	ANL 150	mm ²	25	25	25	35	35	50	35	50	50	70	70	70
					AWG	3	3	3	2	2	1/0	2	1/0	1/0	2/0	2/0	2/0
80/185T	12V	530 A	DIN: 550 SAE: 1045 EN: 940	ANL 400	mm ²	70	70	120	2 x 70	2 x 95	2 x 95	2 x 120	2x 120	2 x 120	NA	NA	NA
					AWG	2/0	2/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0	NA	NA	NA
	24V	280 A	DIN: 300 SAE: 570 EN: 520	ANL 250	mm ²	35	35	35	50	50	70	70	95	95	120	120	2 x 95
					AWG	2	2	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0
100/185T	12V	740 A	DIN: 750 SAE: 1425 EN: 1320	ANL 500	mm ²	95	95	2 x 70	2 x 95	2 x 120	NA	NA	NA	NA	NA	NA	NA
					AWG	3/0	3/0	2 x 2/0	2 x 3/0	2 x 4/0	NA	NA	NA	NA	NA	NA	NA
	24V	340 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm ²	50	50	50	70	70	95	95	120	120	2 x 95	2 x 95	2 x 120
					AWG	1/0	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 4/0
120/215T	24V	420 A	DIN: 450 SAE: 855 EN: 760	ANL 325	mm ²	70	70	70	70	70	95	95	120	120	2 x 70	2 x 70	2 x 95
					AWG	2/0	2/0	2/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0
130/250T	12V	800 A	DIN: 750 SAE: 1425 EN: 1320	ANL 500	mm ²	95	95	2 x 95	2 x 95	2 x 120	2 x 120	NA	NA	NA	NA	NA	NA
					AWG	3/0	3/0	2 x 2/0	2 x 3/0	2 x 4/0	2 x 4/0	NA	NA	NA	NA	NA	NA
	24V	350 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm ²	50	50	50	70	70	95	95	120	120	2 x 95	2 x 95	2 x 120
					AWG	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0
150/215T	24V	610 A	DIN: 560 SAE: 1064 EN: 940	ANL 500	mm ²	70	70	95	95	120	120	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					2	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
170/250TC	24V	550 A	DIN: 560 SAE: 1064 EN: 940	ANL 400	mm ²	70	70	70	95	95	120	120	2 x 95	2 x 95	2 x 95	2 x 120	2 x 120
					AWG	2/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0
210/250TC	24V	500 A	DIN: 560 SAE: 1064 EN: 940	ANL 400	mm ²	70	70	70	95	95	120	120	2 x 70	2 x 70	2 x 95	2 x 95	2 x 120
					AWG	2/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0
250/300TC	24V	610-670 A	DIN: 700 SAE: 1330 EN: 1170	ANL 500	mm ²	70	70	95	120	120	2 x 95	2 x 95	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	2/0	2/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
300/300TC	24*2	400-450A (48V)	DIN: 400 SAE: 760 EN: 680	ANL 325	mm ²	50	70	50	70	70	95	95	120	120	120	140	NA
	48V				AWG	1/0	2/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	4/0	4/0	4/0

Motor lug connection



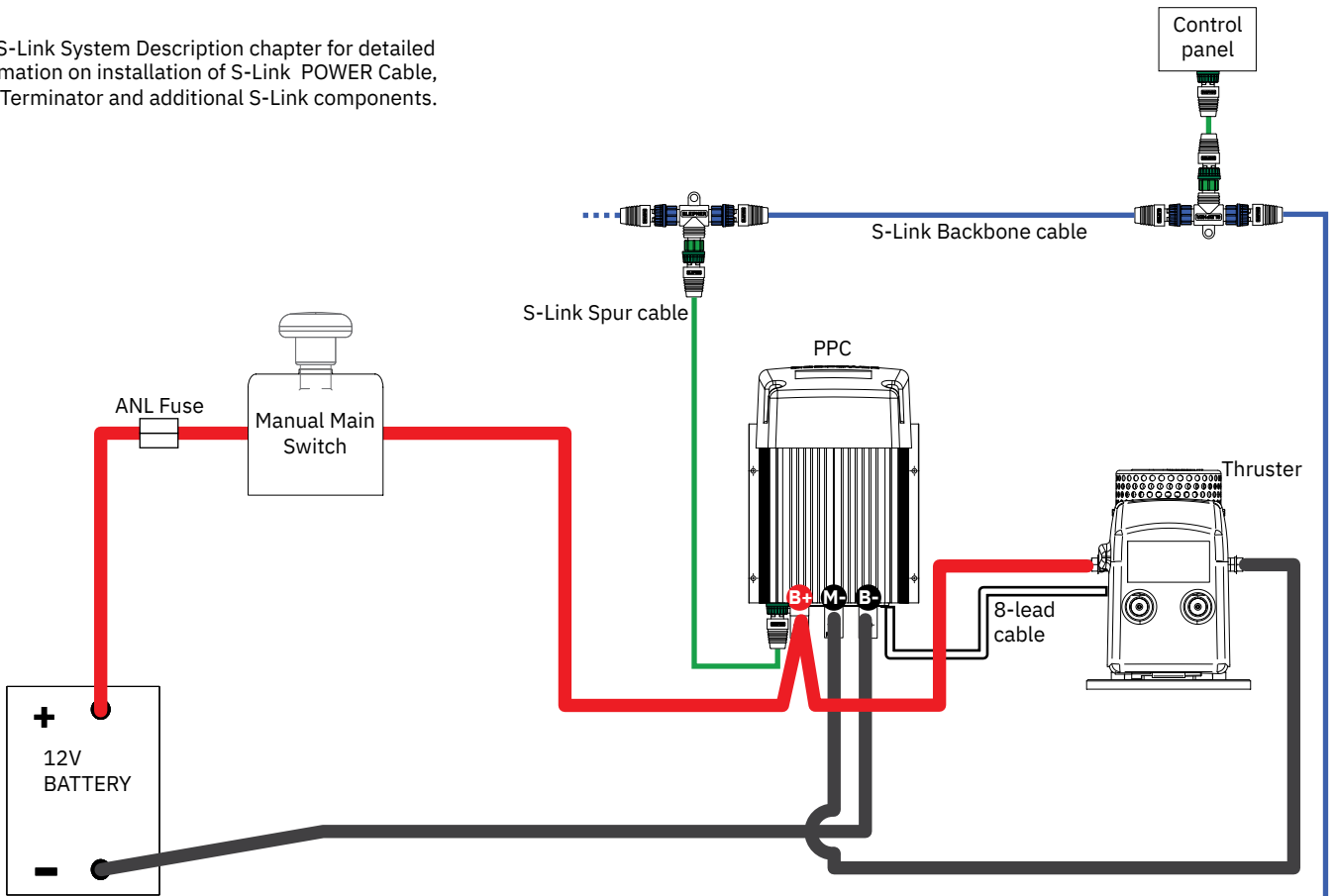
CAUTION
Do NOT use washers between lugs, this causes overheating and fire. Spring washers must be placed in the outer position before tightening nut.



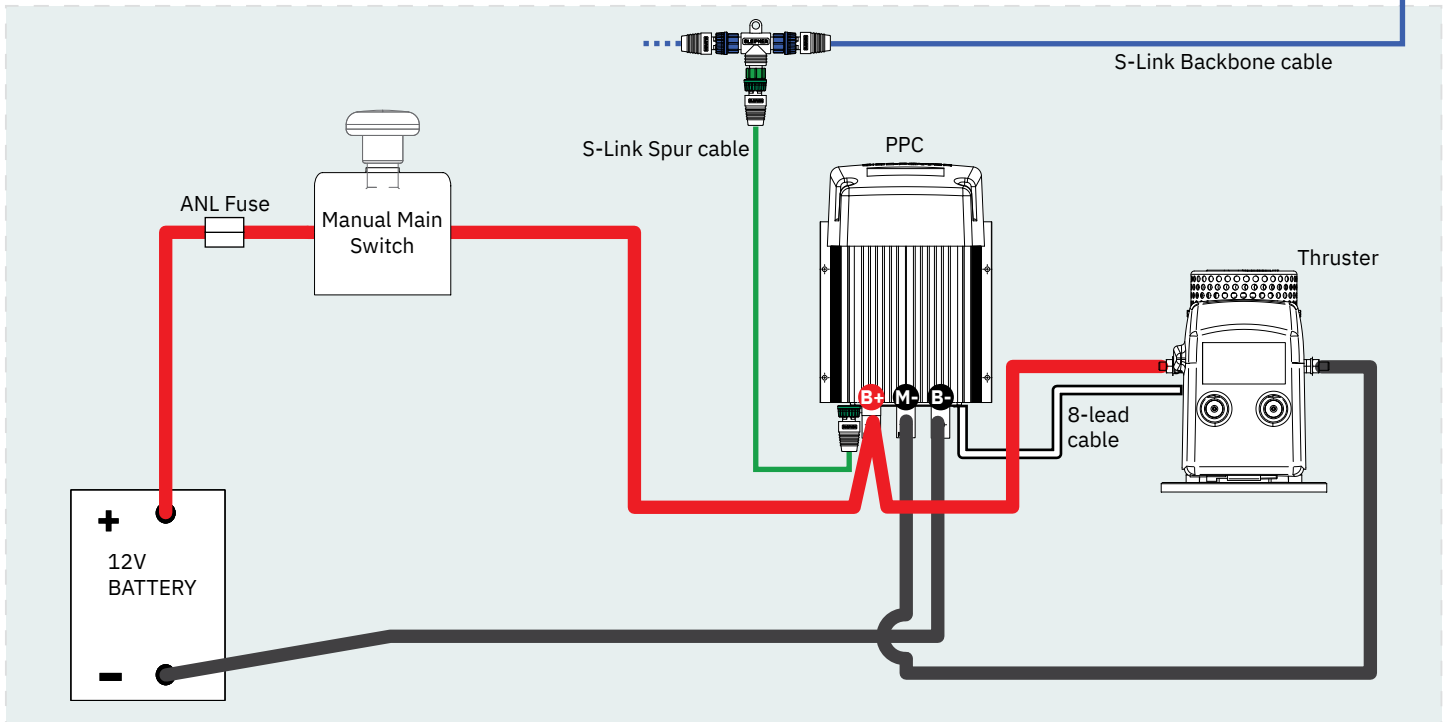
Manual Main Switch Wiring Diagram 12V S-Link Thruster

The Top wiring setup is for a single bow OR stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



The top and bottom wiring setup is for a dual thruster system, For example bow and stern.

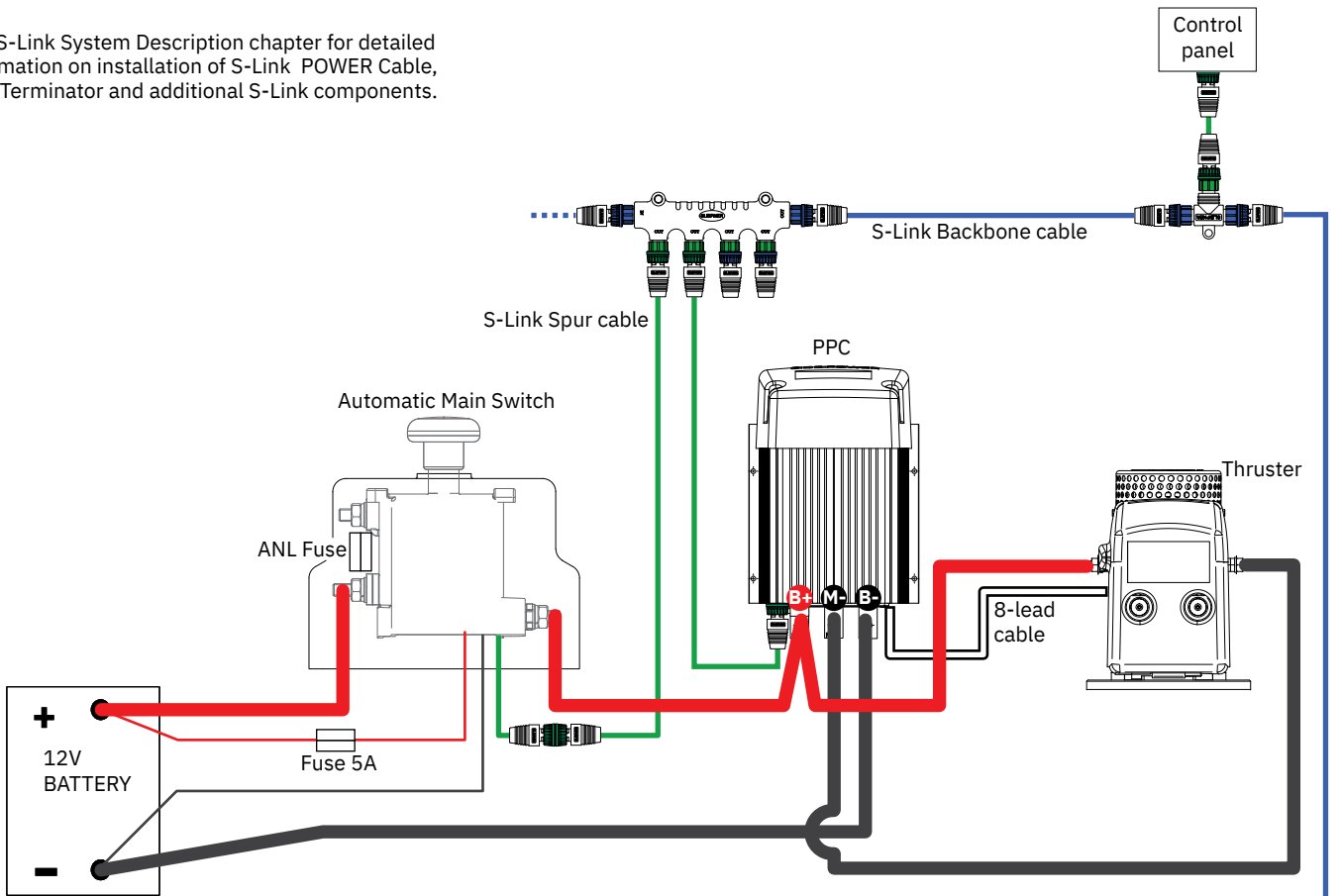


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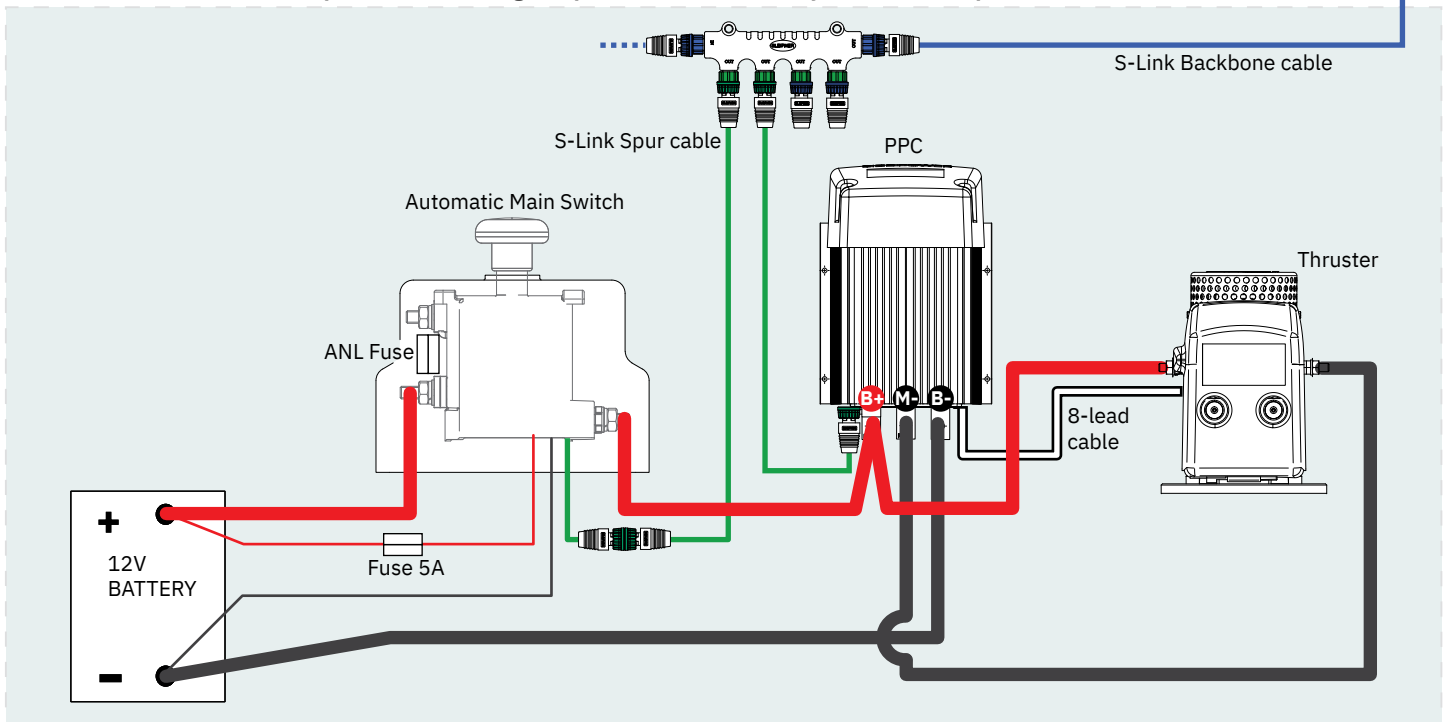
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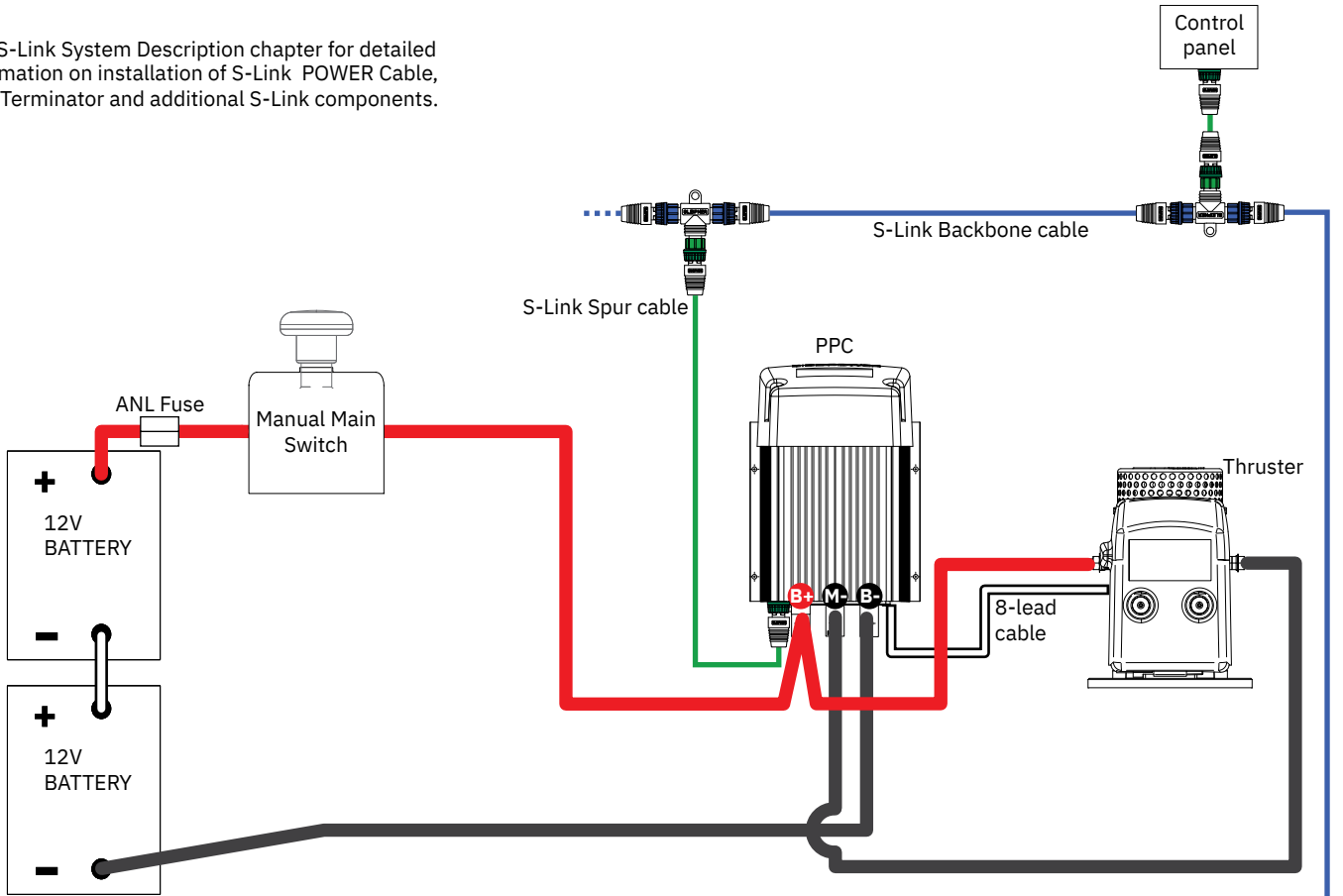
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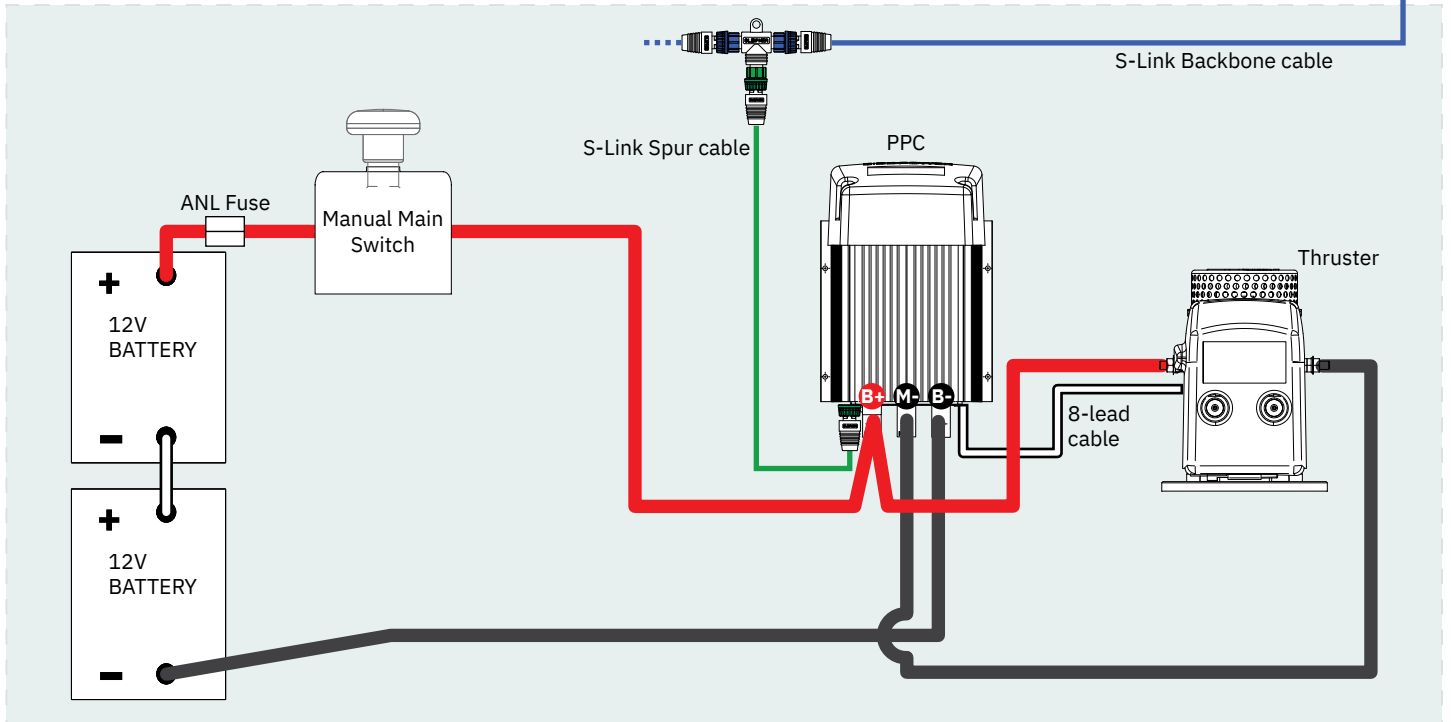
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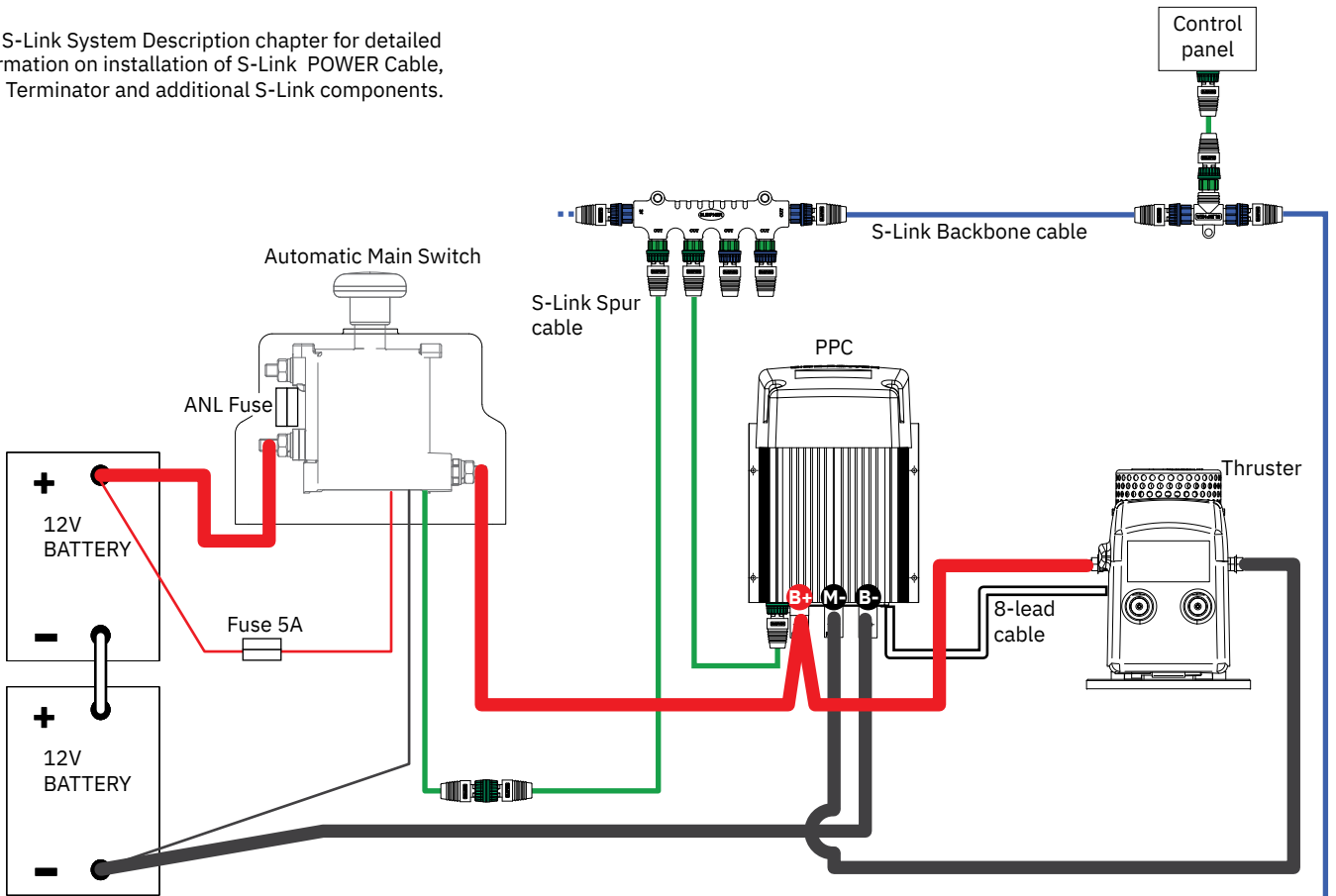
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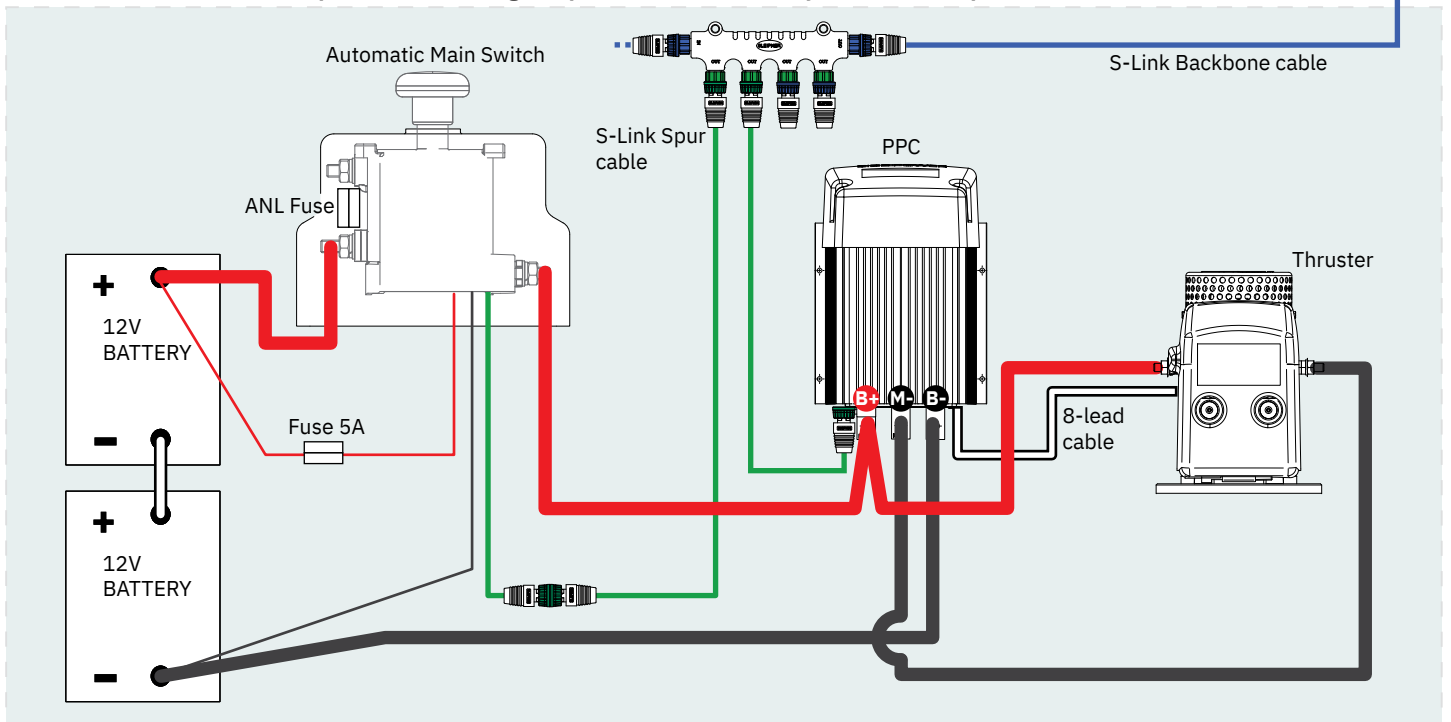
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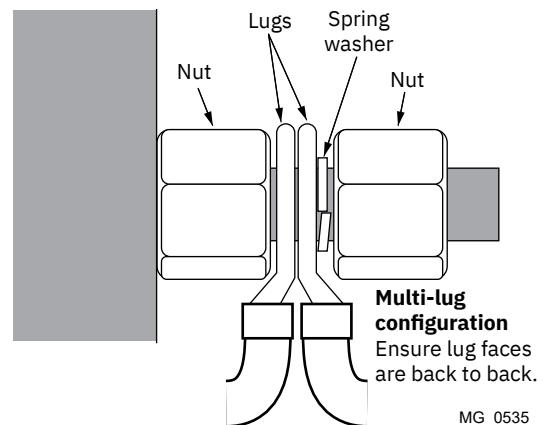
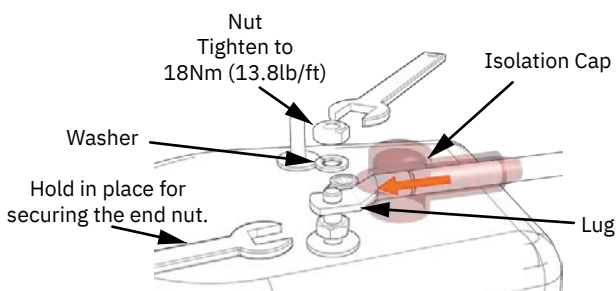
The top and bottom wiring setup is for a dual thruster system, For example bow and stern.



Electrical Reference Guide

Model Size	System Voltage	Nominal current	*Min. battery CCA	Rec. fuse	Cross Section Guide for Power Cables												
					Unit	<7m total + & -		7-14m total + & -		15-21m total + & -		22-28m total + & -		28-35m total + & -		36-45m total + & -	
						Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.
20/110S	12V	150 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm ²	25	35	35	50	50	70	70	95	95	95	120	2 x 70
					AWG	3	2	2	1/0	1/0	2/0	2/0	3/0	3/0	3/0	2 x 4/0	2 x 2/0
25/110S	12V	200 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm ²	25	35	50	50	70	70	95	95	120	120	2 x 70	2 x 70
					AWG	3	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0
30/125S 30/140	12V	245 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm ²	35	50	50	70	70	95	95	120	120	2 x 70	2 x 70	2 x 95
					AWG	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0
40/125S 40/140	12V	315 A	DIN: 300 SAE: 570 EN: 520	ANL 250	mm ²	35	50	70	95	95	120	120	2 x 70	2 x 95	2 x 95	2 x 120	2x 120
					AWG	2	1/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0
50/140S	12V	370 A	DIN: 350 SAE: 665 EN: 600	ANL 325	mm ²	50	50	70	95	120	2 x 70	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	1/0	1/0	2/0	3/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
	24V	170 A	DIN: 175 SAE: 332 EN: 280	ANL 150	mm ²	25	25	25	35	35	50	35	50	50	70	70	70
					AWG	3	3	3	2	2	1/0	2	1/0	1/0	2/0	2/0	2/0
60/185S 60/140	12V	370 A	DIN: 350 SAE: 665 EN: 600	ANL 325	mm ²	50	50	70	95	120	2 x 70	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	1/0	1/0	2/0	3/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
	24V	170 A	DIN: 175 SAE: 332 EN: 280	ANL 150	mm ²	25	25	25	35	35	50	35	50	50	70	70	70
					AWG	3	3	3	2	2	1/0	2	1/0	1/0	2/0	2/0	2/0
80/185T	12V	530 A	DIN: 550 SAE: 1045 EN: 940	ANL 400	mm ²	70	70	120	2 x 70	2 x 95	2 x 95	2 x 120	2x 120	2 x 120	NA	NA	NA
					AWG	2/0	2/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0	NA	NA	NA
	24V	280 A	DIN: 300 SAE: 570 EN: 520	ANL 250	mm ²	35	35	35	50	50	70	70	95	95	120	120	2 x 95
					AWG	2	2	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0
100/185T	12V	740 A	DIN: 750 SAE: 1425 EN: 1320	ANL 500	mm ²	95	95	2 x 70	2 x 95	2 x 120	NA	NA	NA	NA	NA	NA	NA
					AWG	3/0	3/0	2 x 2/0	2 x 3/0	2 x 4/0	NA	NA	NA	NA	NA	NA	NA
	24V	340 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm ²	50	50	50	70	70	95	95	120	120	2 x 95	2 x 95	2 x 120
					AWG	1/0	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 4/0
120/215T	24V	420 A	DIN: 450 SAE: 855 EN: 760	ANL 325	mm ²	70	70	70	70	70	95	95	120	120	2 x 70	2 x 70	2 x 95
					AWG	2/0	2/0	2/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0
130/250T	12V	800 A	DIN: 750 SAE: 1425 EN: 1320	ANL 500	mm ²	95	95	2 x 95	2 x 95	2 x 120	2 x 120	NA	NA	NA	NA	NA	NA
					AWG	3/0	3/0	2 x 2/0	2 x 3/0	2 x 4/0	2 x 4/0	NA	NA	NA	NA	NA	NA
	24V	350 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm ²	50	50	50	70	70	95	95	120	120	2 x 70	2 x 95	2 x 95
					AWG	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0
150/215T	24V	610 A	DIN: 560 SAE: 1064 EN: 940	ANL 500	mm ²	70	70	95	95	120	120	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					2	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
170/250TC	24V	550 A	DIN: 560 SAE: 1064 EN: 940	ANL 400	mm ²	70	70	70	95	95	120	120	2 x 95	2 x 95	2 x 95	2 x 120	2 x 120
					AWG	2/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0
210/250TC	24V	500 A	DIN: 560 SAE: 1064 EN: 940	ANL 400	mm ²	70	70	70	95	95	120	120	2 x 70	2 x 70	2 x 95	2 x 95	2 x 120
					AWG	2/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0
250/300TC	24V	610-670 A	DIN: 700 SAE: 1330 EN: 1170	ANL 500	mm ²	70	70	95	120	120	2 x 95	2 x 95	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	2/0	2/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
300/300TC	24*2	400-450A (48V)	DIN: 400 SAE: 760 EN: 680	ANL 325	mm ²	50	70	50	70	70	95	95	120	120	140	NA	
	48V				AWG	1/0	2/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	4/0		

Product Lug Connection Configuration

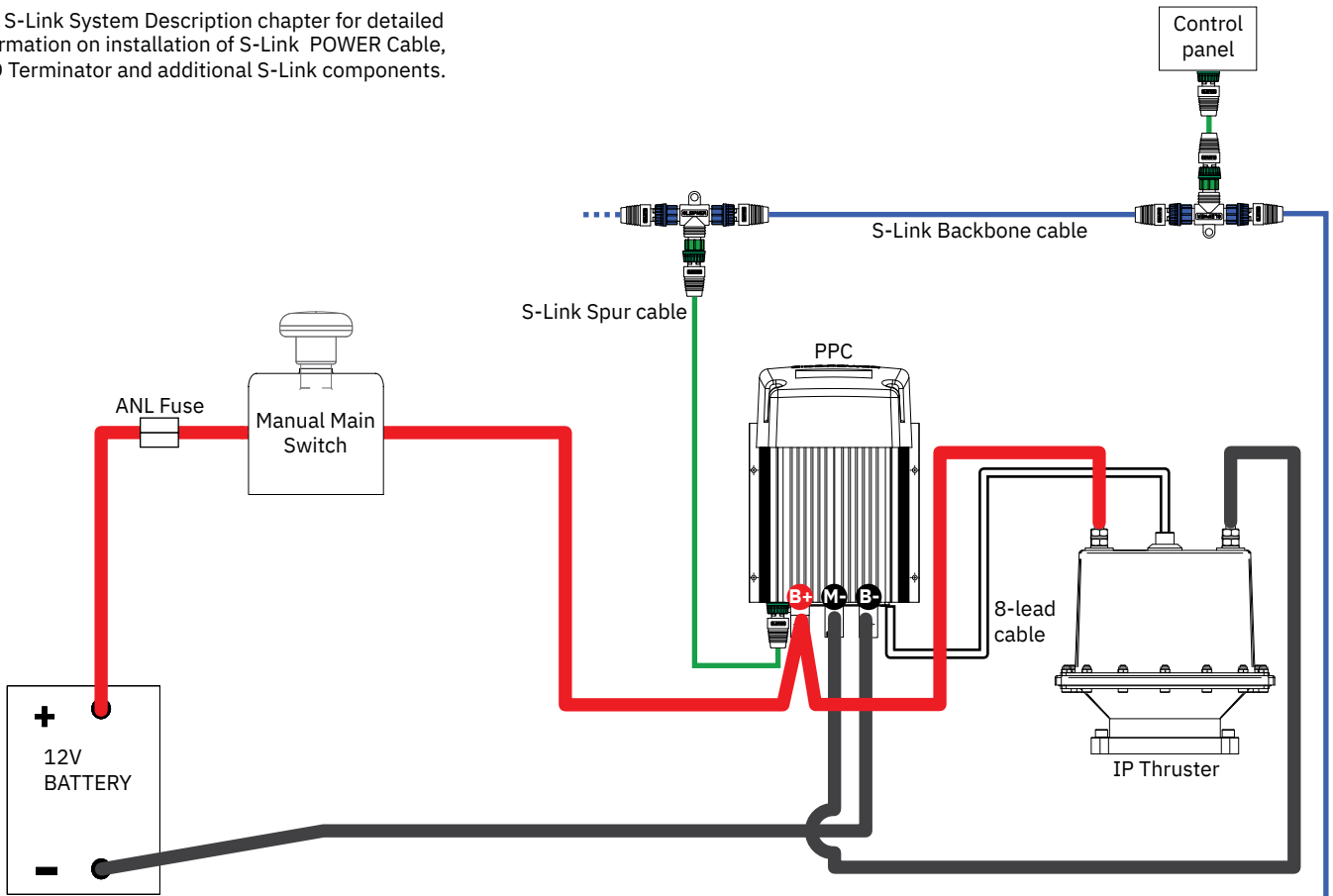


CAUTION
Do not use washers between lugs, this causes overheating and fire. Spring washers must be placed in the outer position before tightening nut.

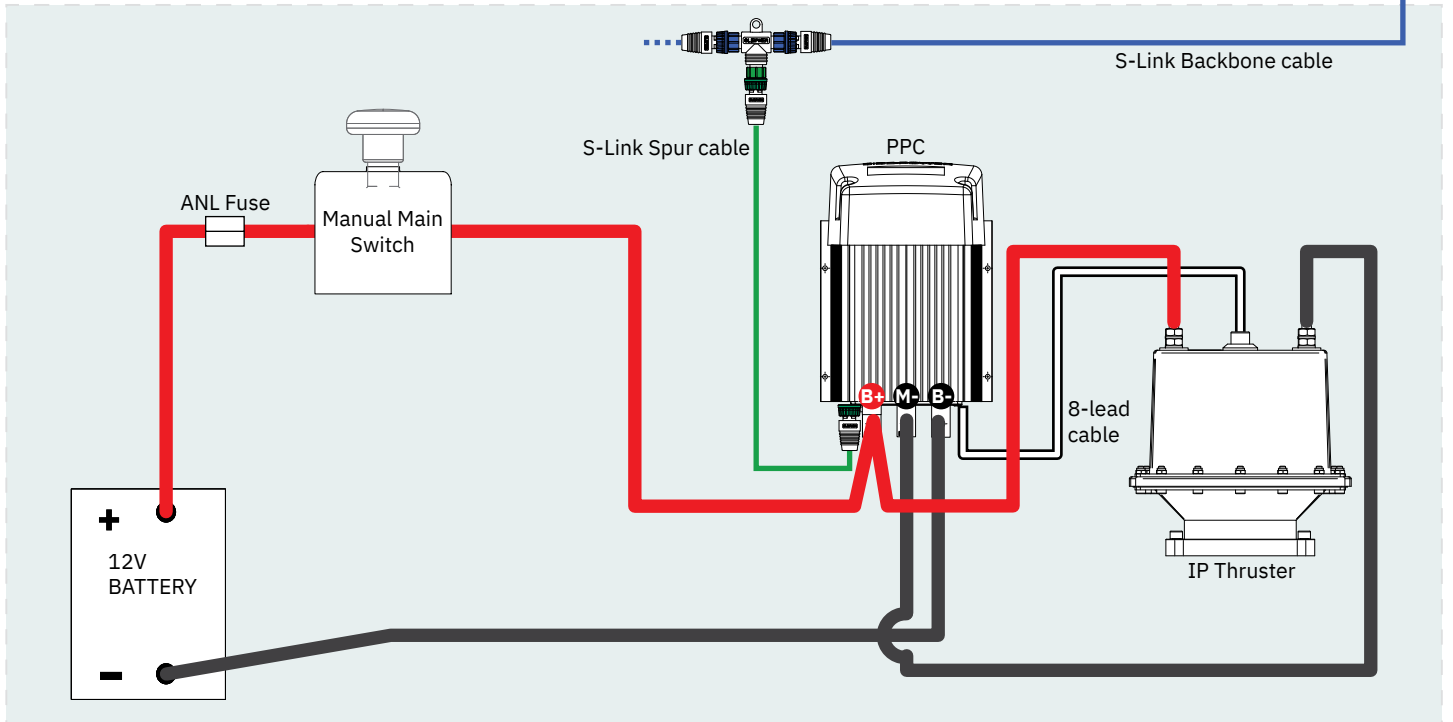
Manual Main Switch Wiring Diagram 12V S-Link IP Thruster

The Top wiring setup is for a single bow OR stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



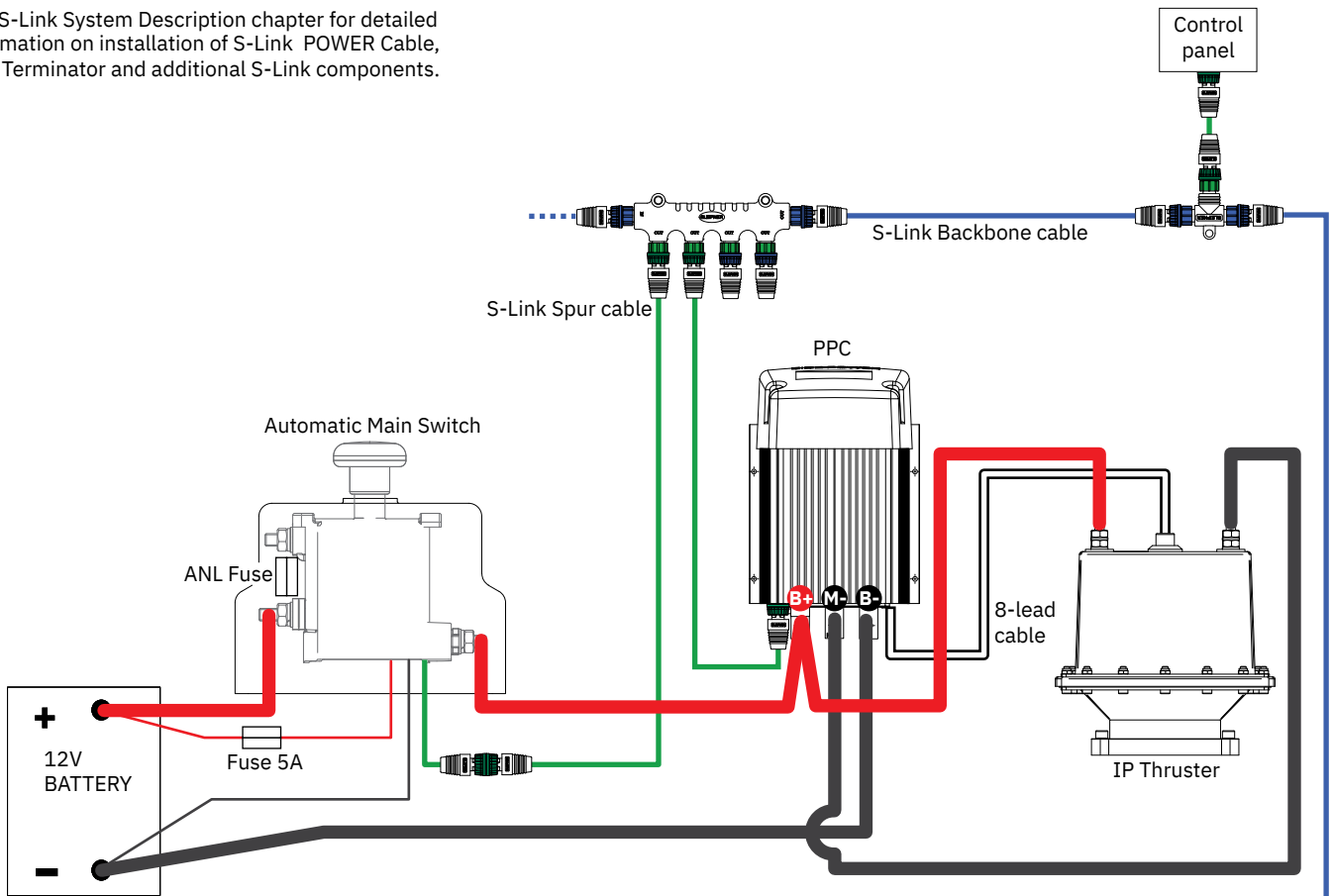
The top and bottom wiring setup is for a dual thruster system, For example bow and stern.



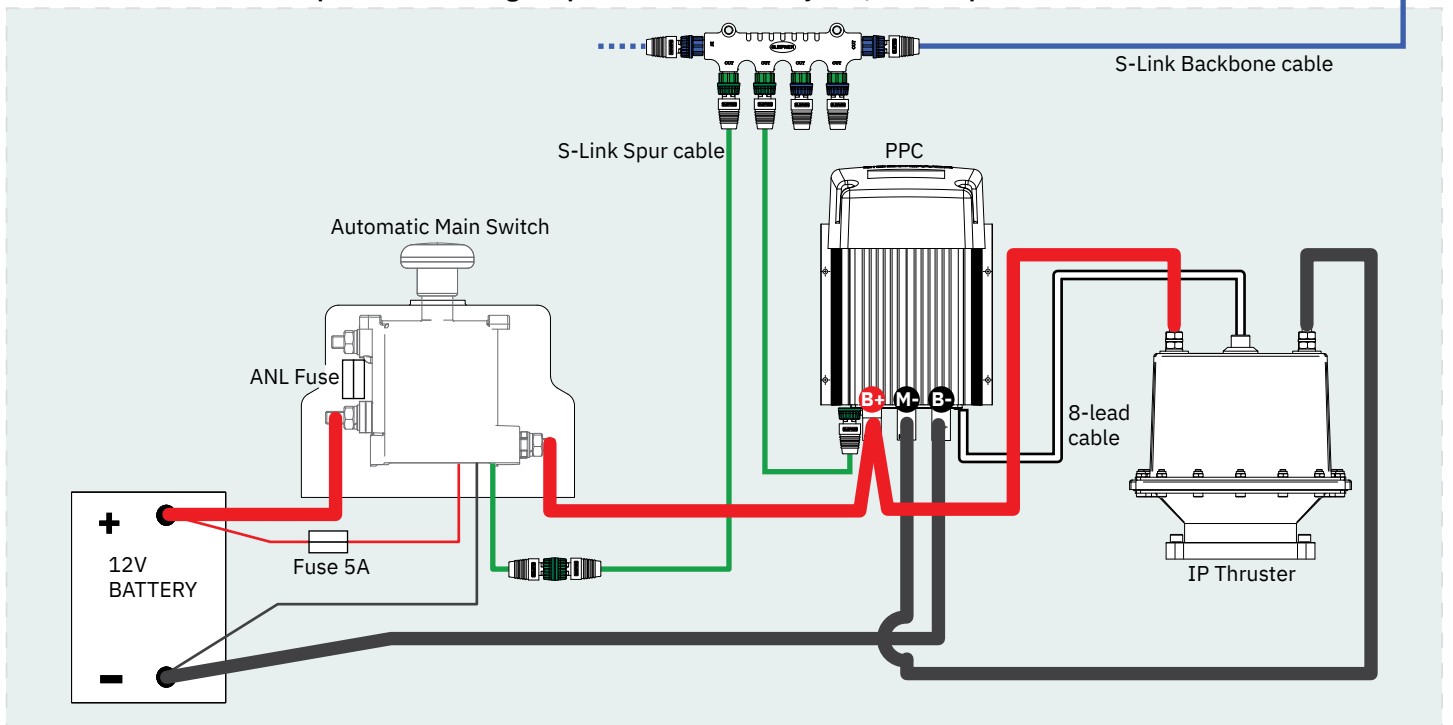
Automatic Main Switch Wiring Diagram 12V S-Link IP Thruster

The Top wiring setup is for a single bow OR stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



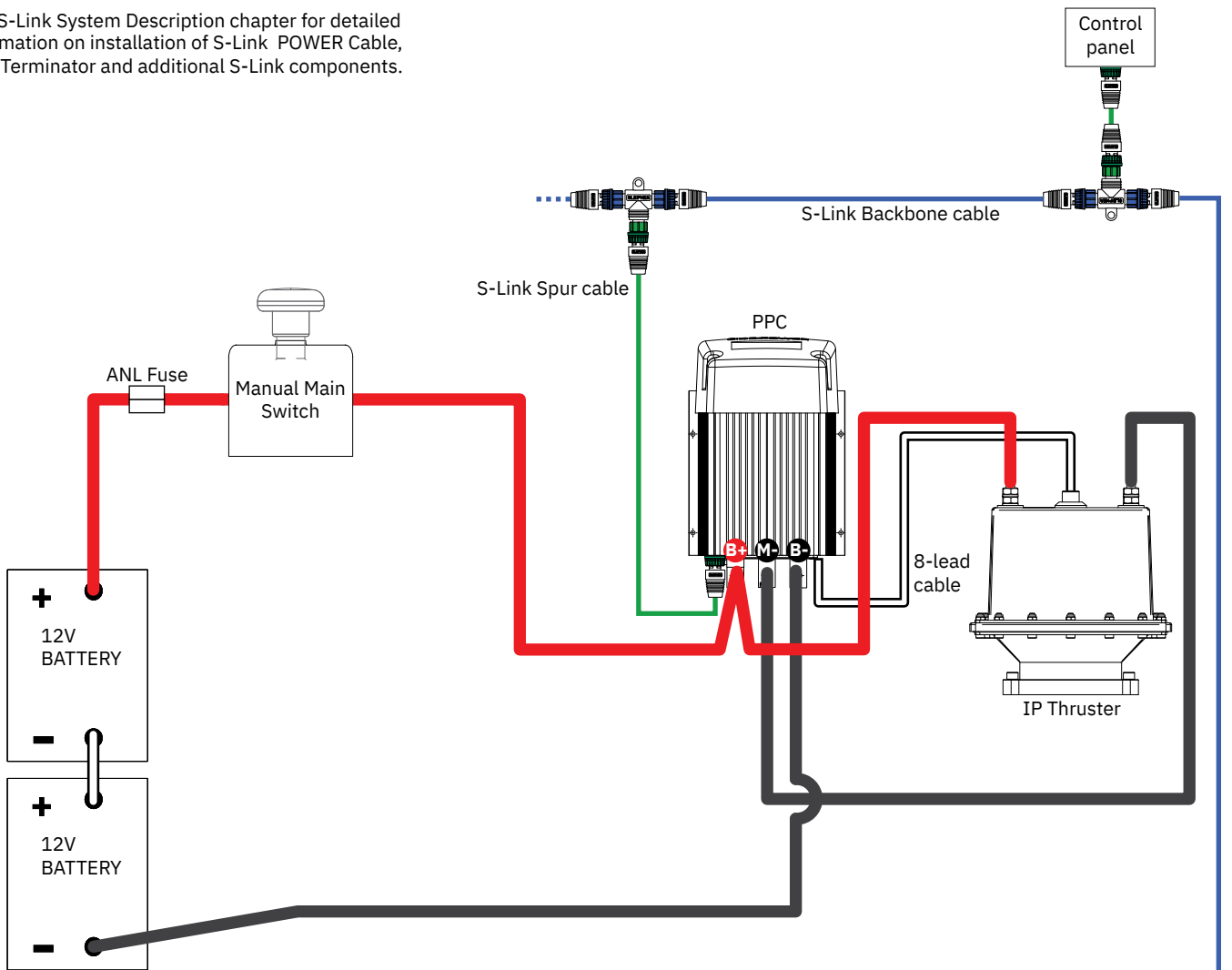
The top and bottom wiring setup is for a dual thruster system, For example bow and stern.



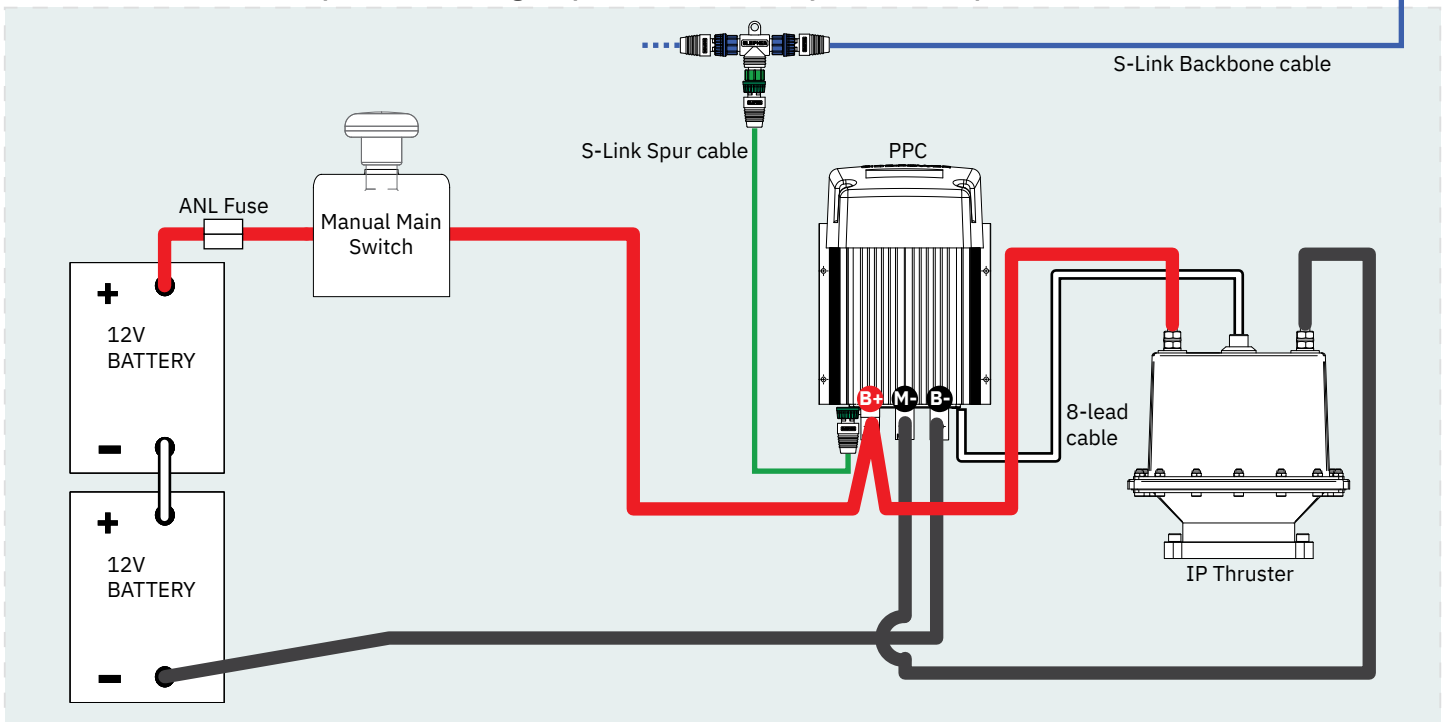
Manual Main Switch Wiring Diagram 24V S-Link IP Thruster

The Top wiring setup is for a single bow OR stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



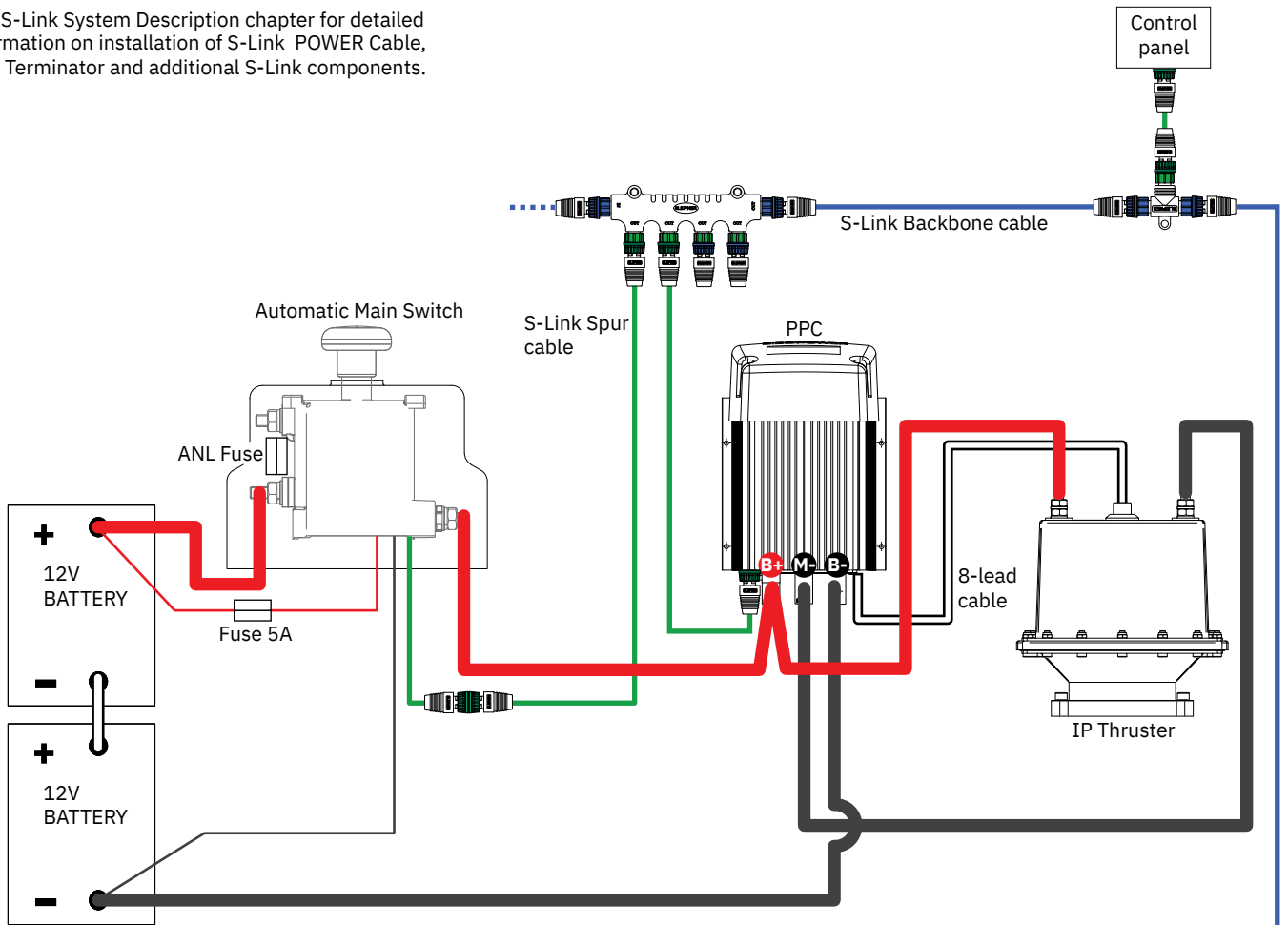
The top and bottom wiring setup is for a dual thruster system, For example bow and stern.



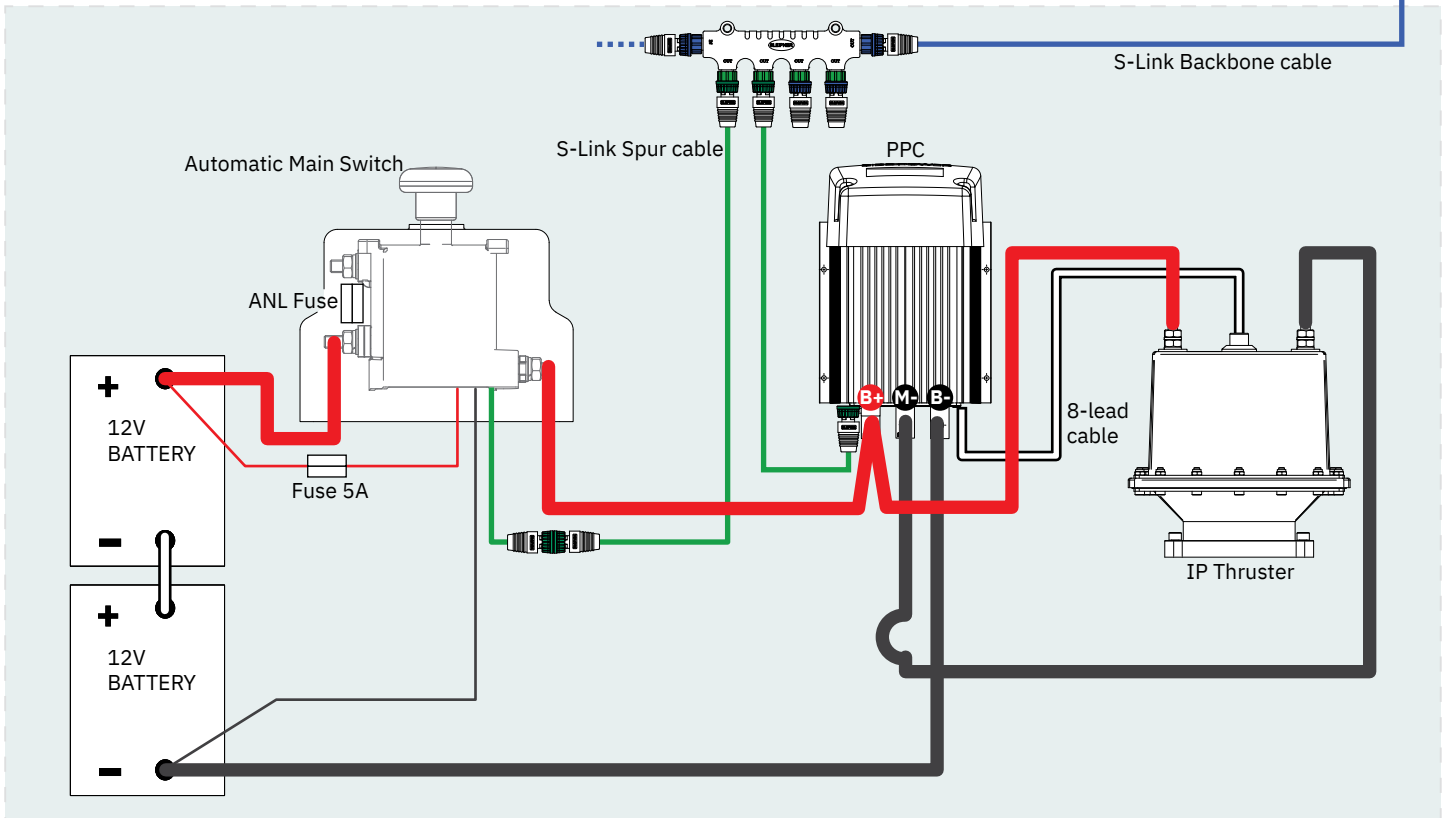
Automatic Main Switch Wiring Diagram 24V S-Link IP Thruster

The Top wiring setup is for a single bow OR stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.

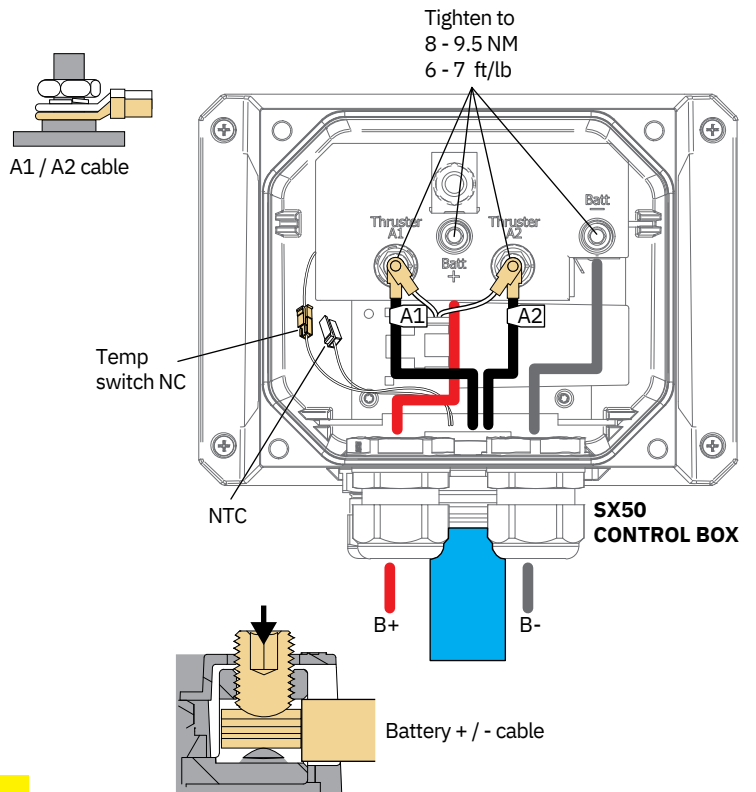
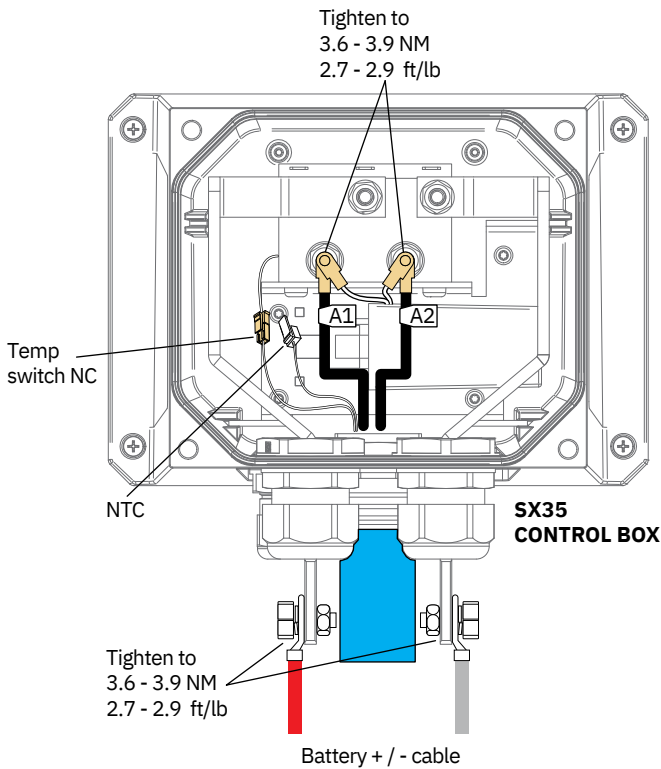


The top and bottom wiring setup is for a dual thruster system, For example bow and stern.



Model Size	System Voltage	Nominal current draw	Min. battery CCA	Rec. fuse	Cross Section Guide for Power Cables												
					Unit	<7m total + & -		7-14m total + & -		15-21m total + & -		22-28m total + & -		28-35m total + & -		36-45m total + & -	
						Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.
35/140	12V	245 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm ²	35	50	50	70	70	95	95	120	120	2 x 70	2 x 70	2 x 95
					AWG	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0
50/140S	12V	370 A	DIN: 350 SAE: 665 EN: 600	ANL 325	mm ²	50	50	70	95	120	2 x 70	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	1/0	1/0	2/0	3/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0

Product Lug Connection Configuration

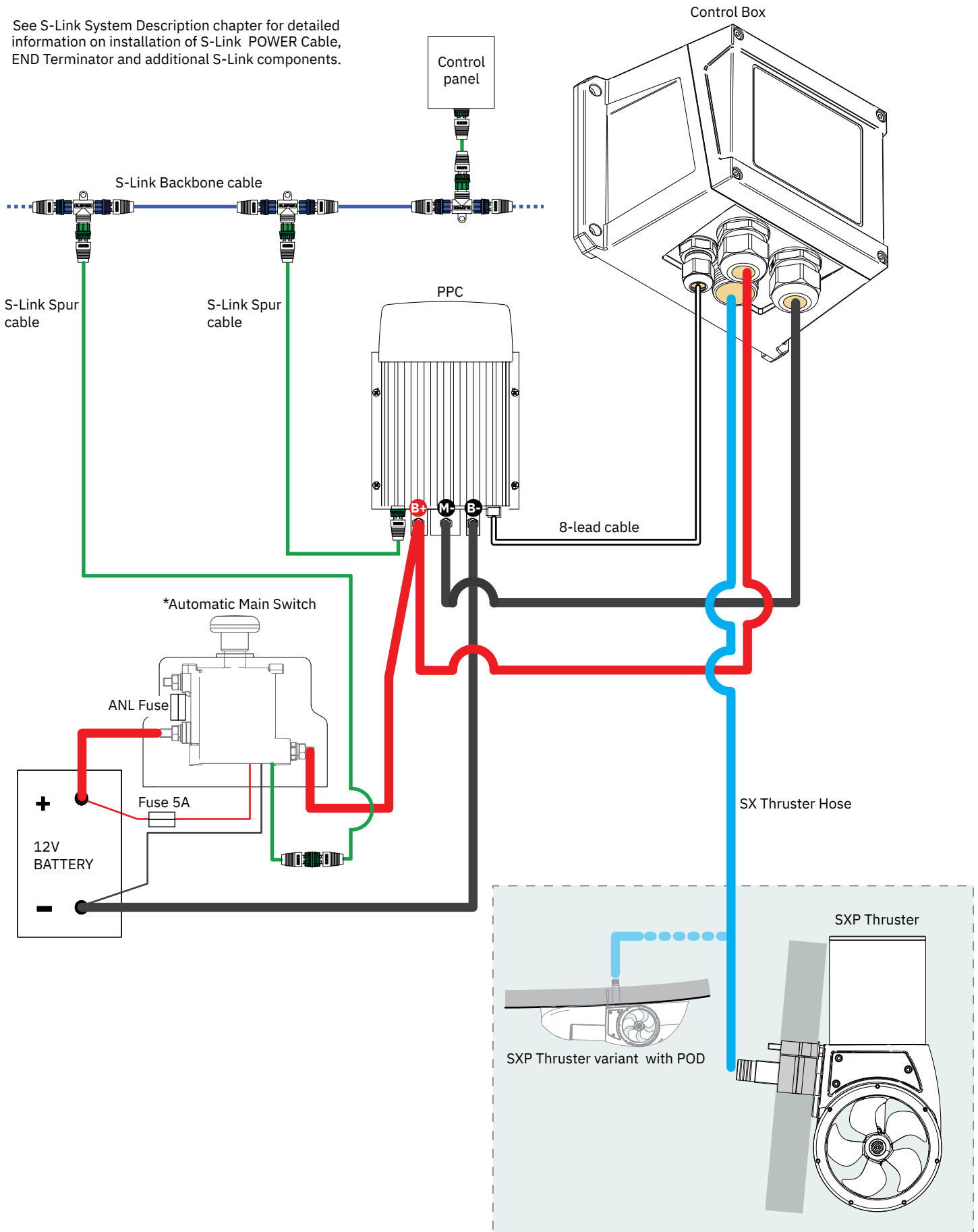


CAUTION
For detailed wiring configuration refer to Control Box Electrical Installation chapter in the SX installation manual

Automatic Main Switch Wiring Diagram 12V S-Link SXP Thruster

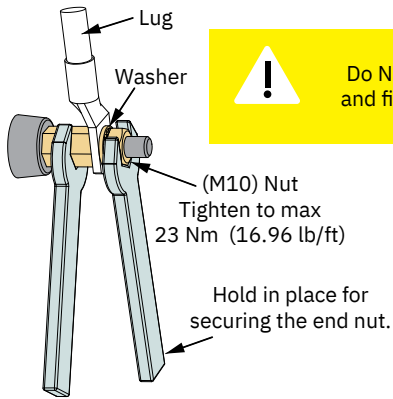
Selection of battery, fuse, main switch and cable cross section is described in *Electrical Installation* chapter.

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.

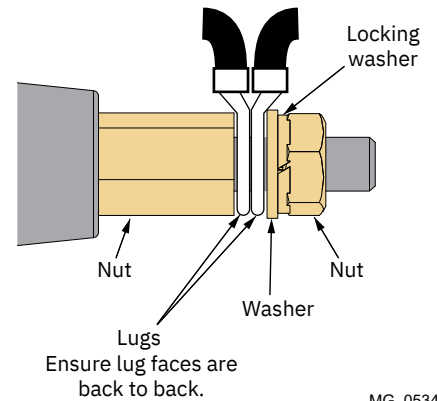


Model Size	System Voltage	Nominal current draw	Min. battery CCA	Rec. fuse	Cross Section Guide for Power Cables												
					Unit	<7m total + & -		7-14m total + & -		15-21m total + & -		22-28m total + & -		28-35m total + & -		36-45m total + & -	
						Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.
*80/185T	12 V	530 A	DIN: 550 SAE: 1045 EN: 940	ANL 400	mm2	70	70	120	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120	NA	NA	NA
					AWG	2/0	2/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0	NA	NA	NA
	24 V	280 A	DIN: 300 SAE: 570 EN: 520	ANL 250	mm2	35	35	35	50	50	70	70	95	95	120	120	2 x 95
					AWG	2	2	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0
*100/185T	12 V	740 A	DIN: 750 SAE: 1425 EN: 1320	ANL 500	mm2	95	95	2 x 70	2 x 95	2 x 120	NA	NA	NA	NA	NA	NA	NA
					AWG	3/0	3/0	2 x 2/0	2 x 3/0	2 x 4/0	NA	NA	NA	NA	NA	NA	NA
	24 V	340 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm2	50	50	50	70	70	95	95	120	120	2 x 95	2 x 95	2 x 120
					AWG	1/0	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 4/0

Product Lug Connection Configuration



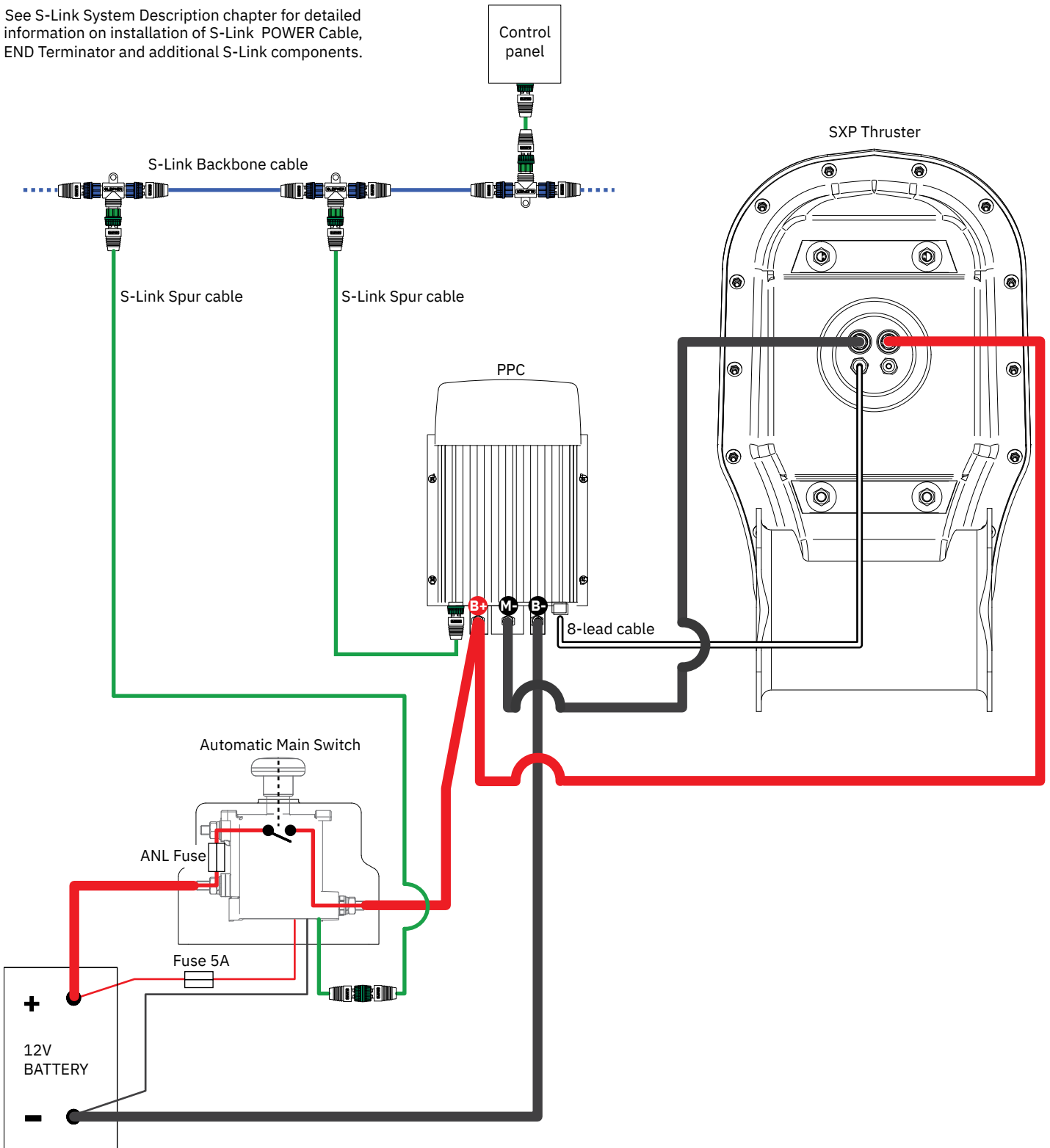
CAUTION
Do NOT use washers between lugs, this causes overheating and fire. Spring washers must be placed in the outer position before tightening nut.



MG_0534

Automatic Main Switch Wiring Diagram 12V S-Link SXP Thruster

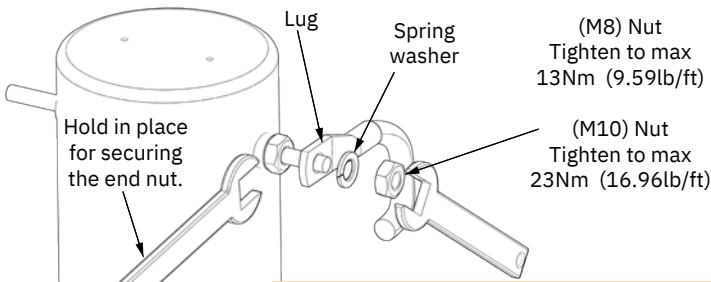
See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



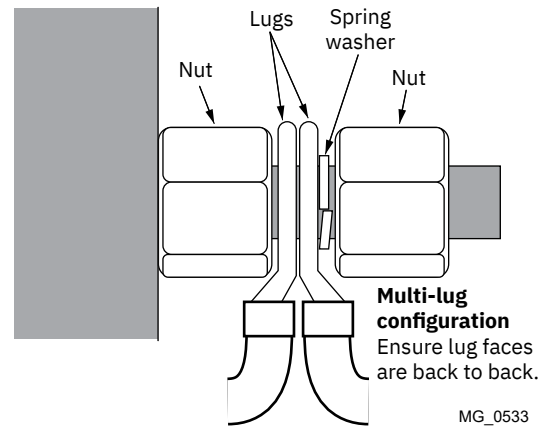
Electrical reference guide

Model Size	System Voltage	Nominal current draw	Min. battery CCA	Rec. fuse	Cross Section Guide for Power Cables												
					Unit	<7m total + & -		7-14m total + & -		15-21m total + & -		22-28m total + & -		28-35m total + & -		36-45m total + & -	
						Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.
80/185T	12 V	530 A	DIN: 550 SAE: 1045 EN: 940	ANL 400	mm2	70	70	120	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120	NA	NA	NA
					AWG	2/0	2/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0	NA	NA	NA
	24 V	280 A	DIN: 300 SAE: 570 EN: 520	ANL 250	mm2	35	35	35	50	50	70	70	95	95	120	120	2 x 95
					AWG	2	2	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0
100/185T	12 V	740 A	DIN: 750 SAE: 1425 EN: 1320	ANL 500	mm2	95	95	2 x 70	2 x 95	2 x 120	NA	NA	NA	NA	NA	NA	NA
					AWG	3/0	3/0	2 x 2/0	2 x 3/0	2 x 4/0	NA	NA	NA	NA	NA	NA	NA
	24 V	340 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm2	50	50	50	70	70	95	95	120	120	2 x 95	2 x 95	2 x 120
					AWG	1/0	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 4/0

Motor lug connection



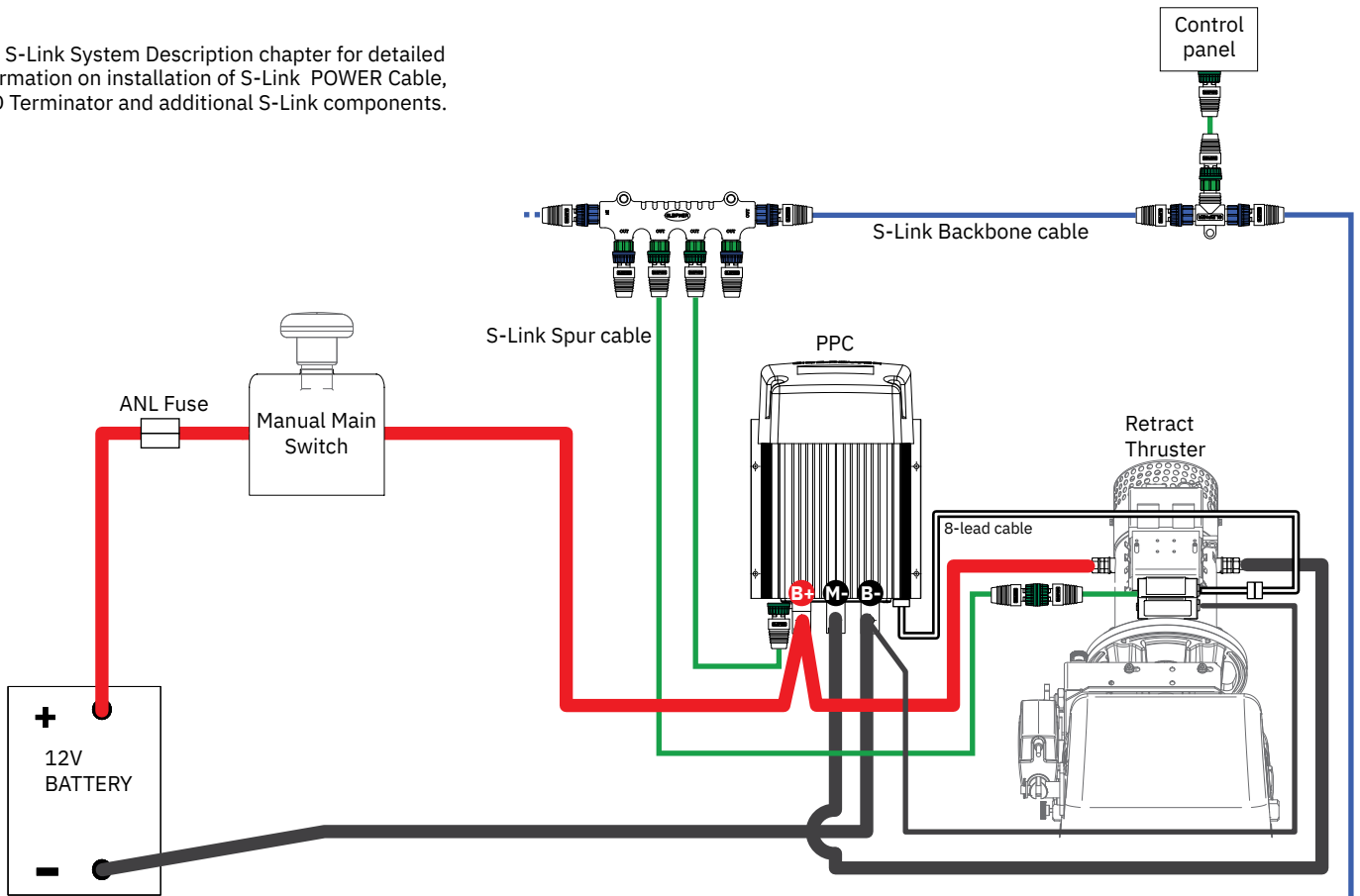
CAUTION
Do NOT use washers between lugs, this causes overheating and fire. Spring washers must be placed in the outer position before tightening nut.



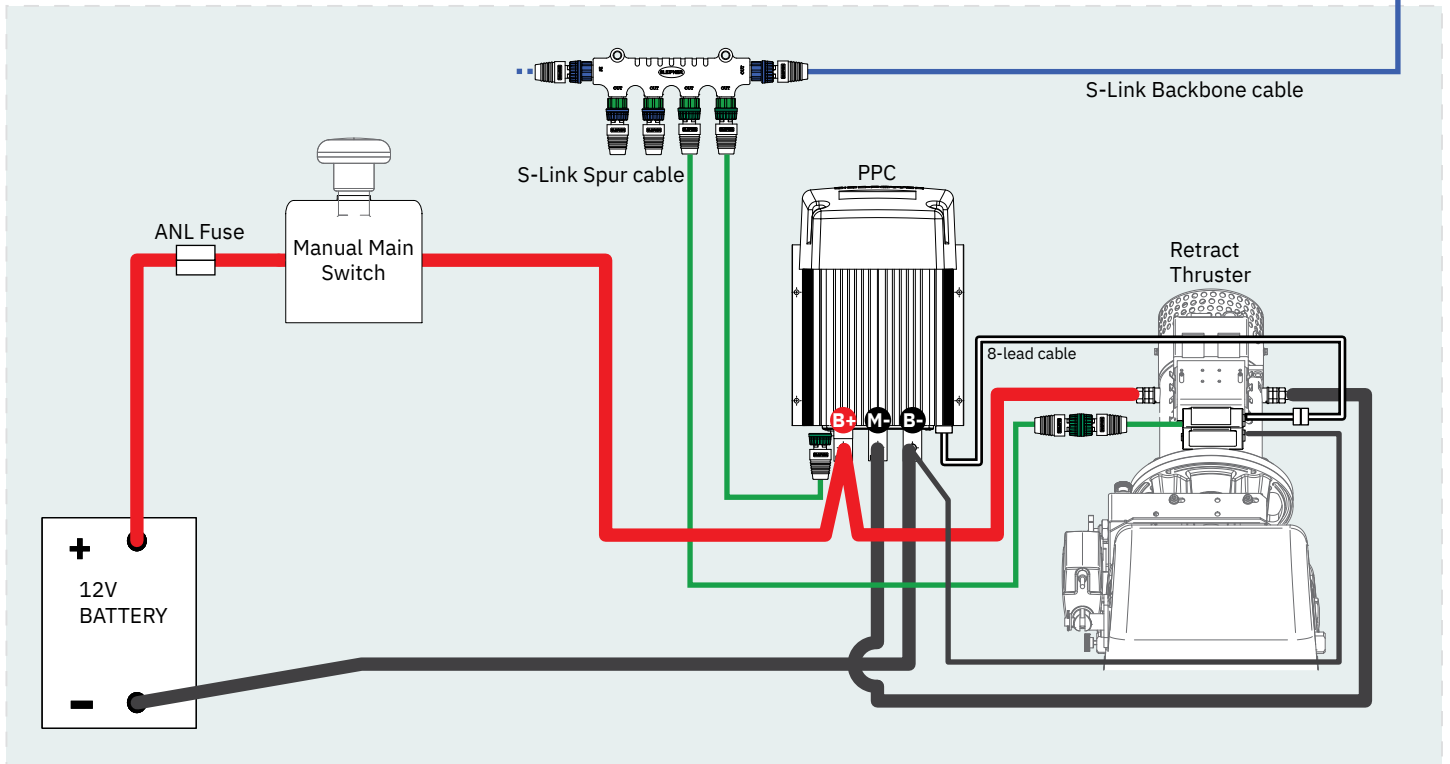
Manual Main Switch Wiring Diagram 12V Proportional Retract Thruster

The Top wiring diagram is for a single bow or stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



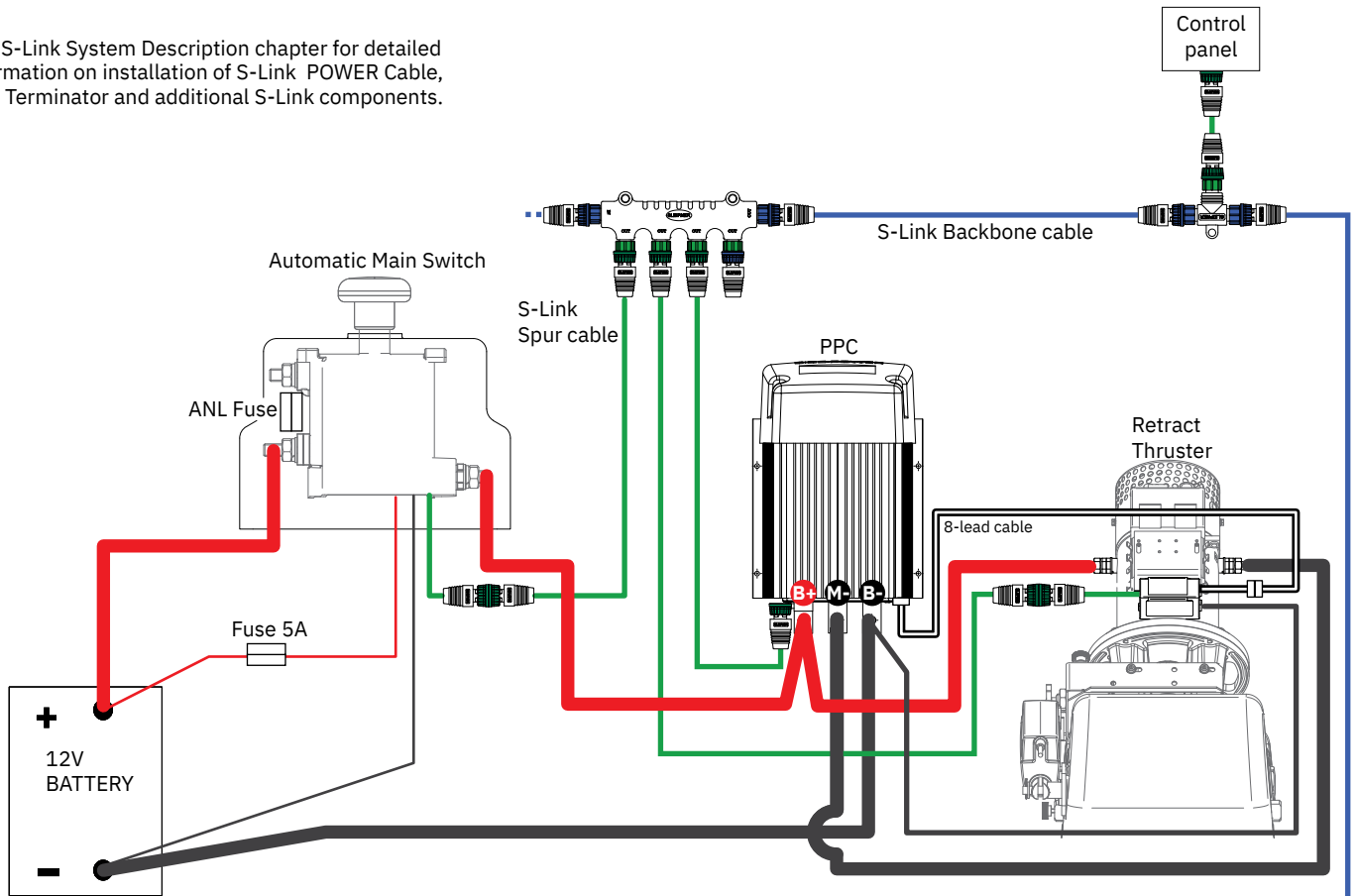
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



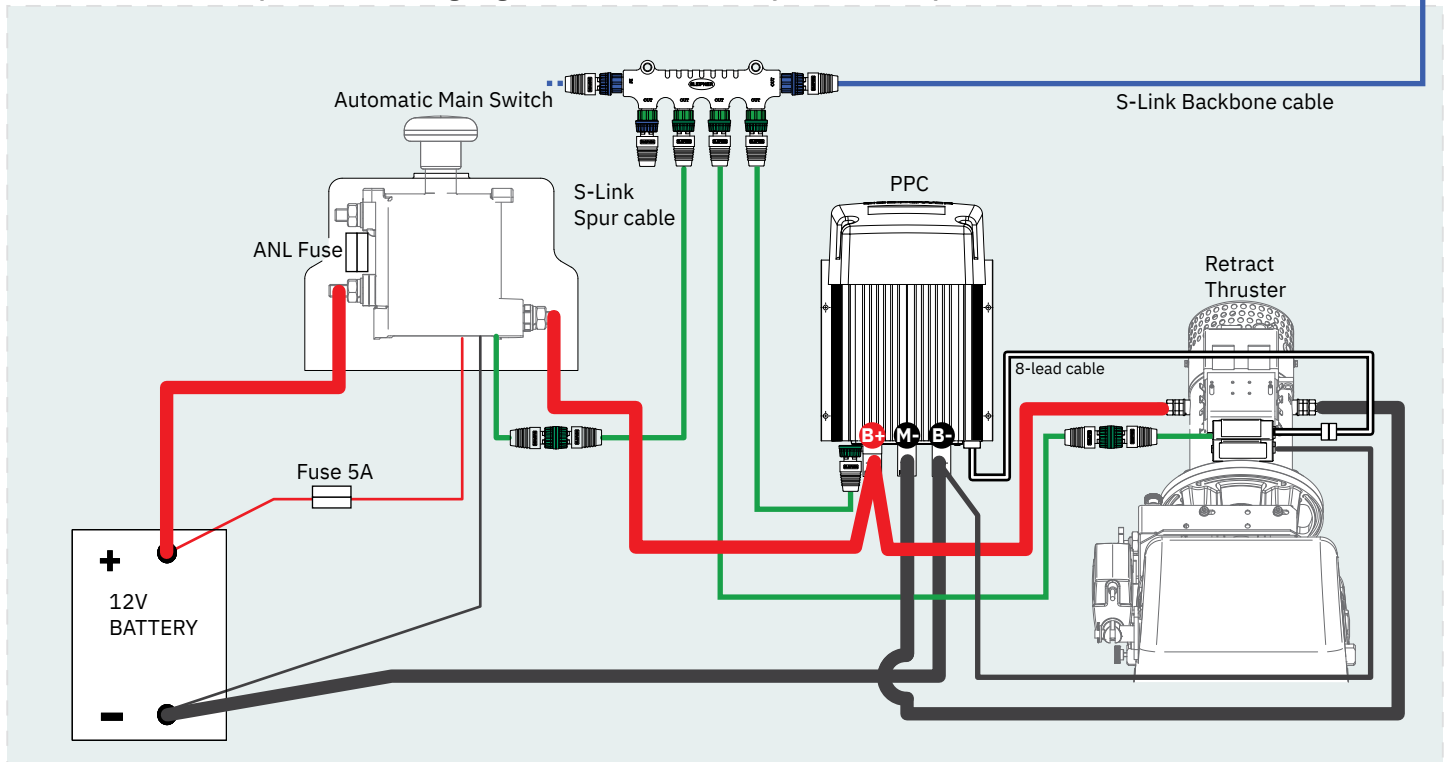
Automatic Main Switch Wiring Diagram 12V Proportional Retract Thruster

The Top wiring diagram is for a single bow or stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



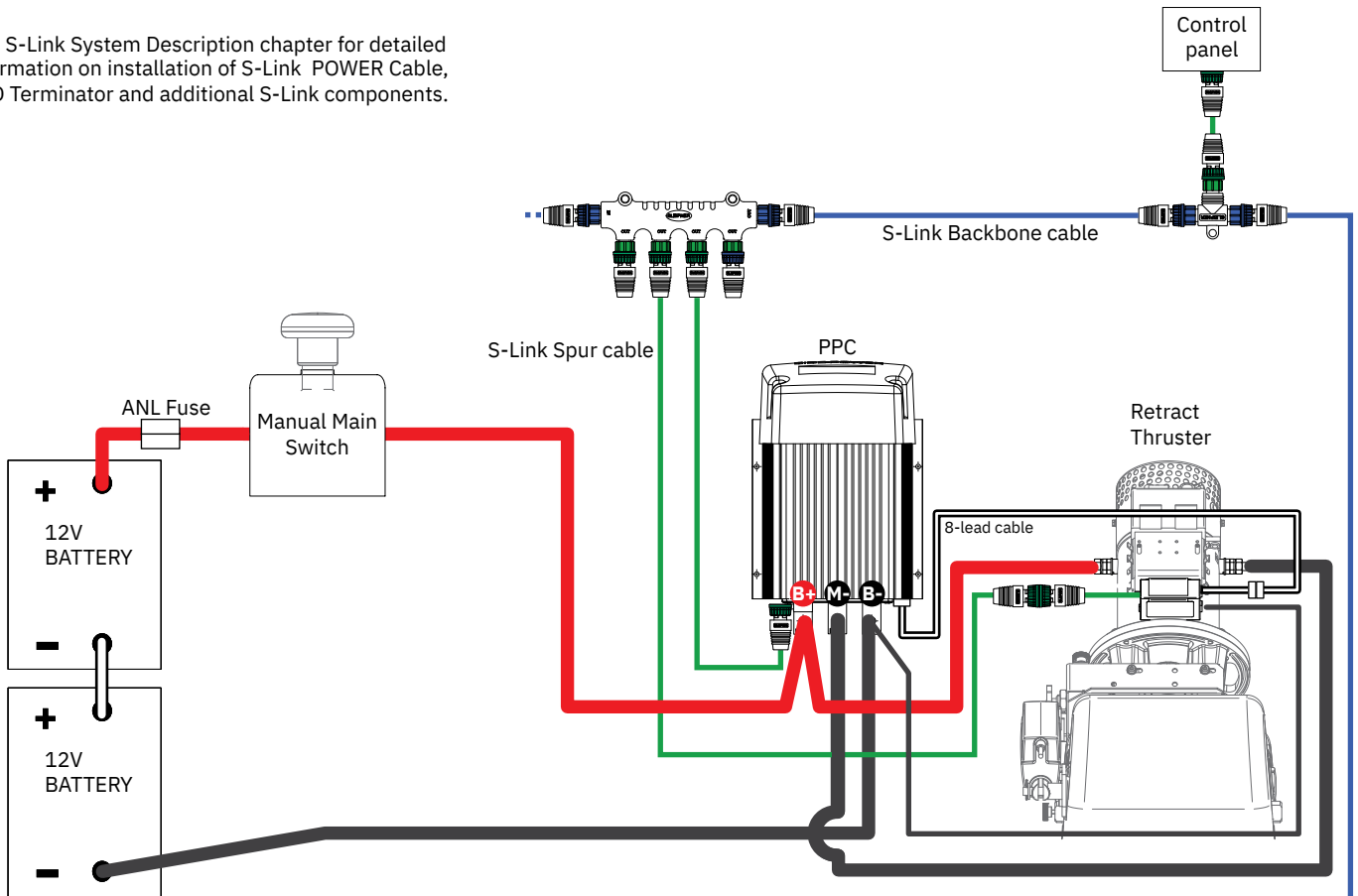
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



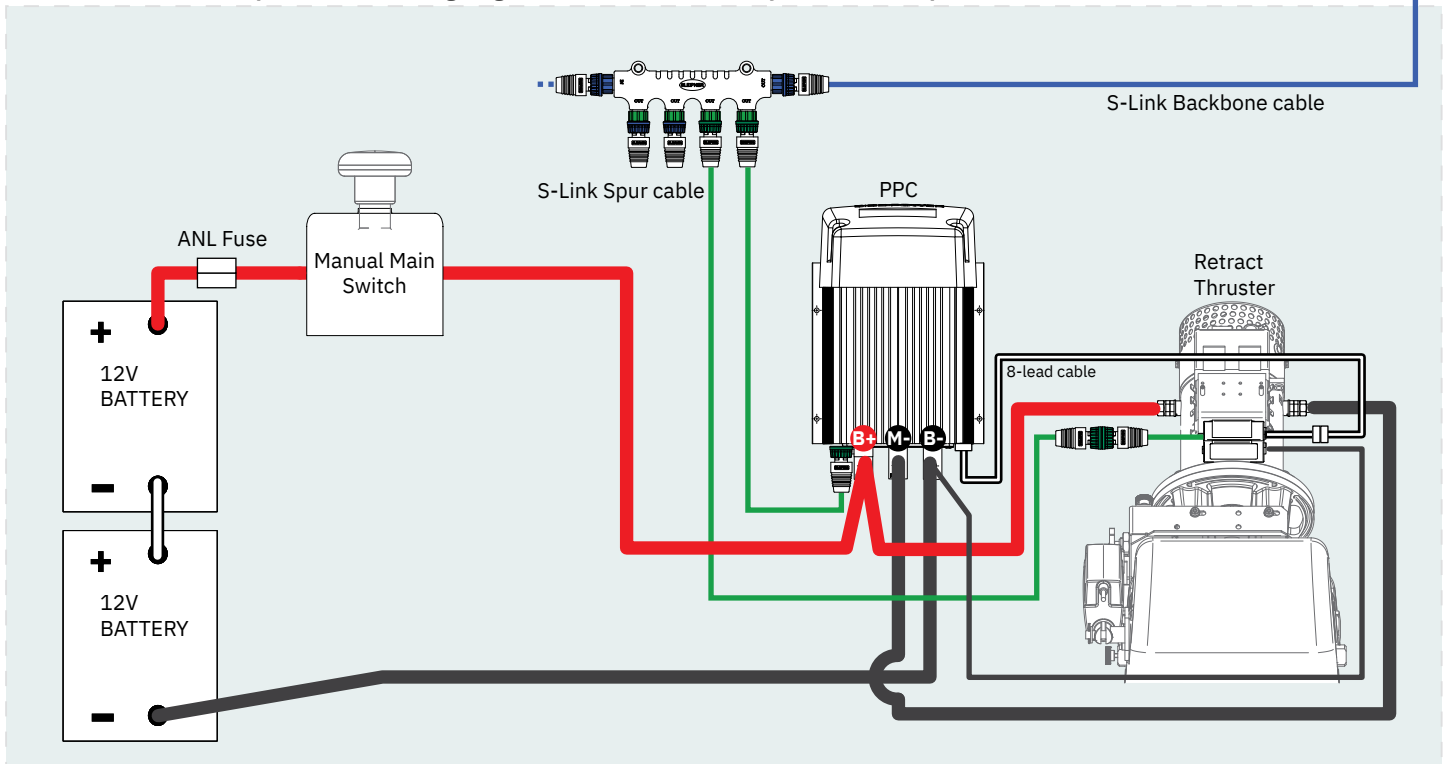
Manual Main Switch Wiring Diagram 24V Proportional Retract Thruster

The Top wiring diagram is for a single bow or stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



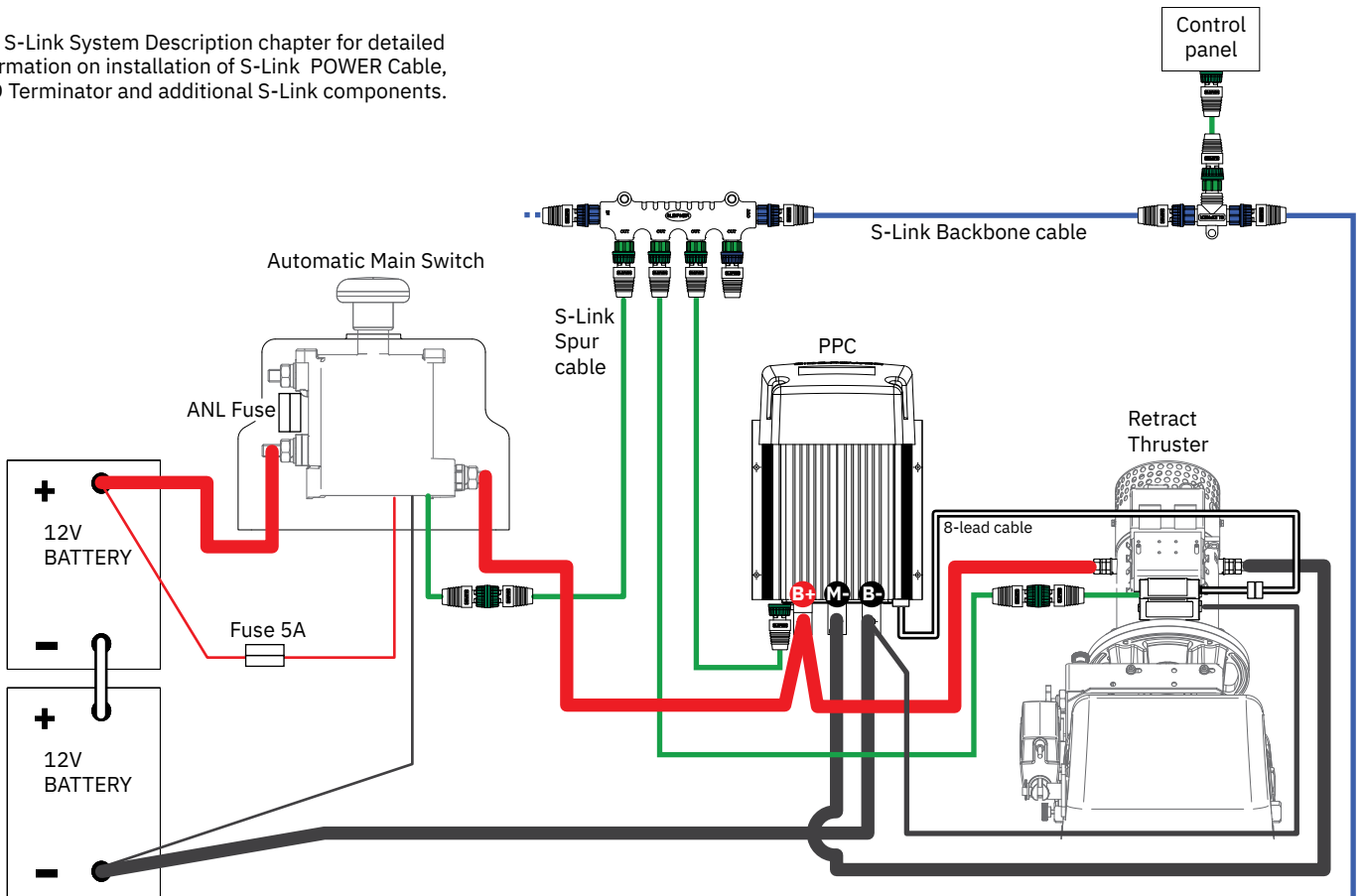
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



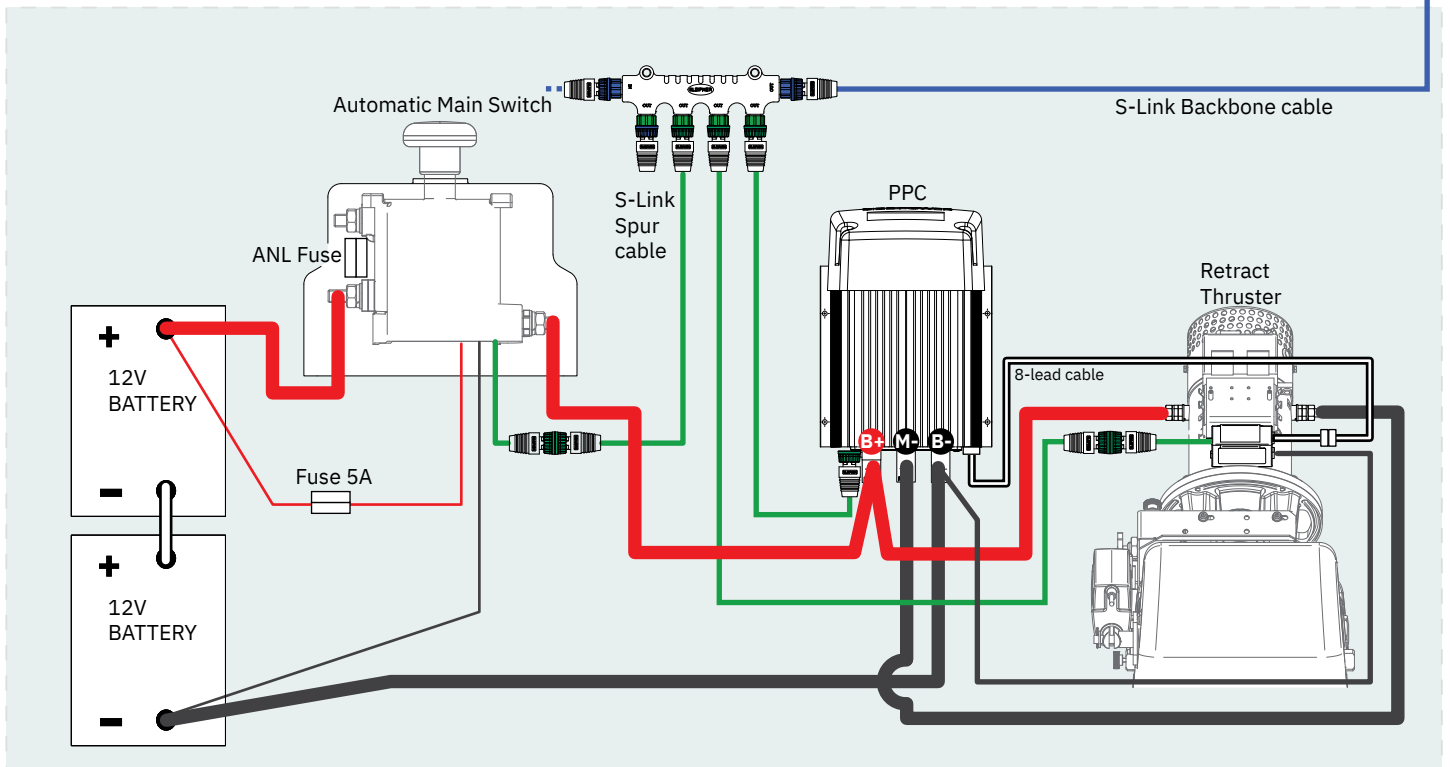
Automatic Main Switch Wiring Diagram 24V Proportional Retract Thruster

The Top wiring diagram is for a single bow or stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.

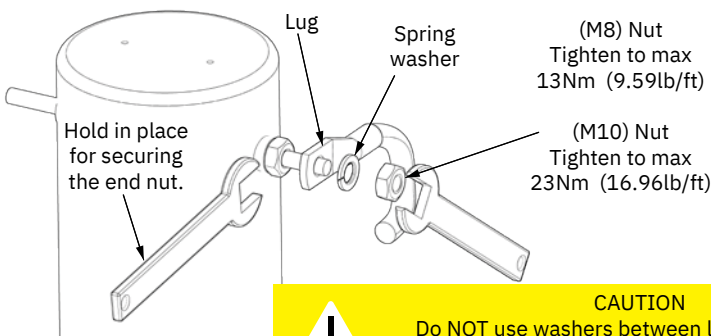


The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.

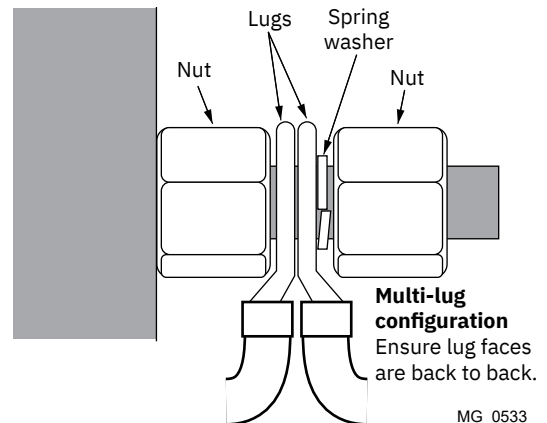


Model Size	System Voltage	Nominal current	*Min. battery CCA	Rec. fuse	Cross Section Guide for Power Cables												
					Unit	<7m total + & -		7-14m total + & -		15-21m total + & -		22-28m total + & -		28-35m total + & -		36-45m total + & -	
						Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.
20/110S	12V	150 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm ²	25	35	35	50	50	70	70	95	95	95	120	2 x 70
					AWG	3	2	2	1/0	1/0	2/0	2/0	3/0	3/0	3/0	3/0	2 x 4/0
25/110S	12V	200 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm ²	25	35	50	50	70	70	95	95	120	120	2 x 70	2 x 70
					AWG	3	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0
30/125S 30/140	12V	245 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm ²	35	50	50	70	70	95	95	120	120	2 x 70	2 x 70	2 x 95
					AWG	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0
40/125S 40/140	12V	315 A	DIN: 300 SAE: 570 EN: 520	ANL 250	mm ²	35	50	70	95	95	120	120	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120
					AWG	2	1/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0
50/140S	12V	370 A	DIN: 350 SAE: 665 EN: 600	ANL 325	mm ²	50	50	70	95	120	2 x 70	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	1/0	1/0	2/0	3/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
	24V	170 A	DIN: 175 SAE: 332 EN: 280	ANL 150	mm ²	25	25	25	35	35	50	35	50	50	70	70	70
					AWG	3	3	3	2	2	1/0	2	1/0	1/0	2/0	2/0	2/0
60/185S 60/140	12V	370 A	DIN: 350 SAE: 665 EN: 600	ANL 325	mm ²	50	50	70	95	120	2 x 70	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	1/0	1/0	2/0	3/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
	24V	170 A	DIN: 175 SAE: 332 EN: 280	ANL 150	mm ²	25	25	25	35	35	50	35	50	50	70	70	70
					AWG	3	3	3	2	2	1/0	2	1/0	1/0	2/0	2/0	2/0
80/185T	12V	530 A	DIN: 550 SAE: 1045 EN: 940	ANL 400	mm ²	70	70	120	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120	NA	NA	NA
					AWG	2/0	2/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0	NA	NA	NA
	24V	280 A	DIN: 300 SAE: 570 EN: 520	ANL 250	mm ²	35	35	35	50	50	70	70	95	95	120	120	2 x 95
					AWG	2	2	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0
100/185T	12V	740 A	DIN: 750 SAE: 1425 EN: 1320	ANL 500	mm ²	95	95	2 x 70	2 x 95	2 x 120	NA	NA	NA	NA	NA	NA	NA
					AWG	3/0	3/0	2 x 2/0	2 x 3/0	2 x 4/0	NA	NA	NA	NA	NA	NA	NA
	24V	340 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm ²	50	50	50	70	70	95	95	120	120	2 x 95	2 x 95	2 x 120
					AWG	1/0	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 4/0
120/215T	24V	420 A	DIN: 450 SAE: 855 EN: 760	ANL 325	mm ²	70	70	70	70	70	95	95	120	120	2 x 70	2 x 70	2 x 95
					AWG	2/0	2/0	2/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0
130/250T	12V	800 A	DIN: 750 SAE: 1425 EN: 1320	ANL 500	mm ²	95	95	2 x 95	2 x 95	2 x 120	2 x 120	NA	NA	NA	NA	NA	NA
					AWG	3/0	3/0	2 x 2/0	2 x 3/0	2 x 4/0	2 x 4/0	NA	NA	NA	NA	NA	NA
	24V	350 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm ²	50	50	50	70	70	95	95	120	120	2 x 70	2 x 95	2 x 95
					AWG	2	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0
150/215T	24V	610 A	DIN: 560 SAE: 1064 EN: 940	ANL 500	mm ²	70	70	95	95	120	120	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					2	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
170/250TC	24V	550 A	DIN: 560 SAE: 1064 EN: 940	ANL 400	mm ²	70	70	70	95	95	120	120	2 x 95	2 x 95	2 x 95	2 x 120	2 x 120
					AWG	2/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0
210/250TC	24V	500 A	DIN: 560 SAE: 1064 EN: 940	ANL 400	mm ²	70	70	70	95	95	120	120	2 x 70	2 x 70	2 x 95	2 x 95	2 x 120
					AWG	2/0	2/0	2/0	3/0	3/0	4/0	4/0	2 x 2/0	2 x 2/0	2 x 3/0	2 x 3/0	2 x 4/0
250/300TC	24V	610-670 A	DIN: 700 SAE: 1330 EN: 1170	ANL 500	mm ²	70	70	95	120	120	2 x 95	2 x 95	2 x 95	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	2/0	2/0	3/0	4/0	4/0	2 x 3/0	2 x 3/0	2 x 3/0	2 x 3/0	2 x 4/0	2 x 4/0	2 x 4/0
300/300TC	24*2	400-450A (48V)	DIN: 400 SAE: 760 EN: 680	ANL 325	mm ²	50	70	50	70	70	95	95	120	120	120	140	NA
	48V				AWG	1/0	2/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	4/0	4/0	

Motor lug connection



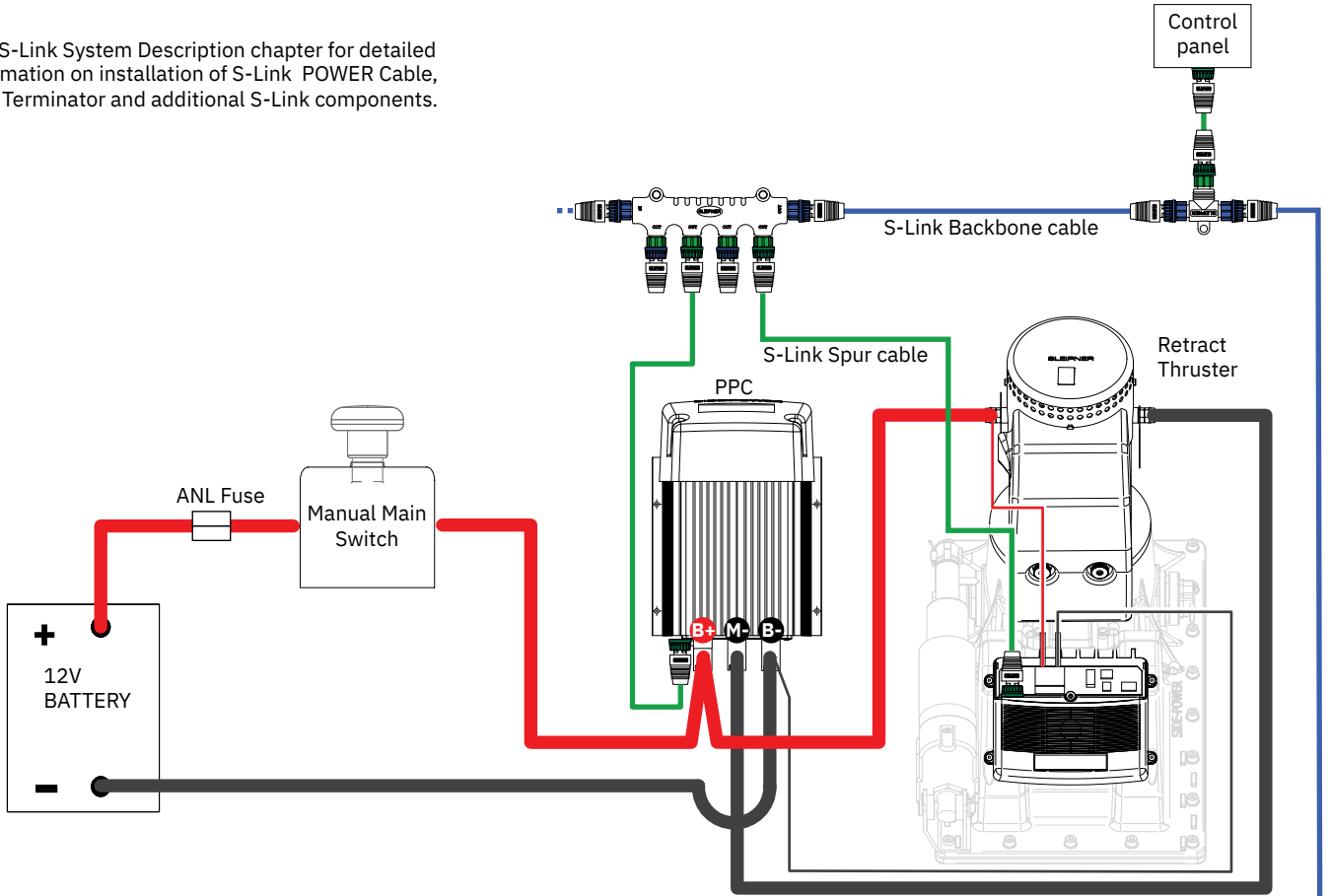
CAUTION
Do NOT use washers between lugs, this causes overheating and fire. Spring washers must be placed in the outer position before tightening nut.



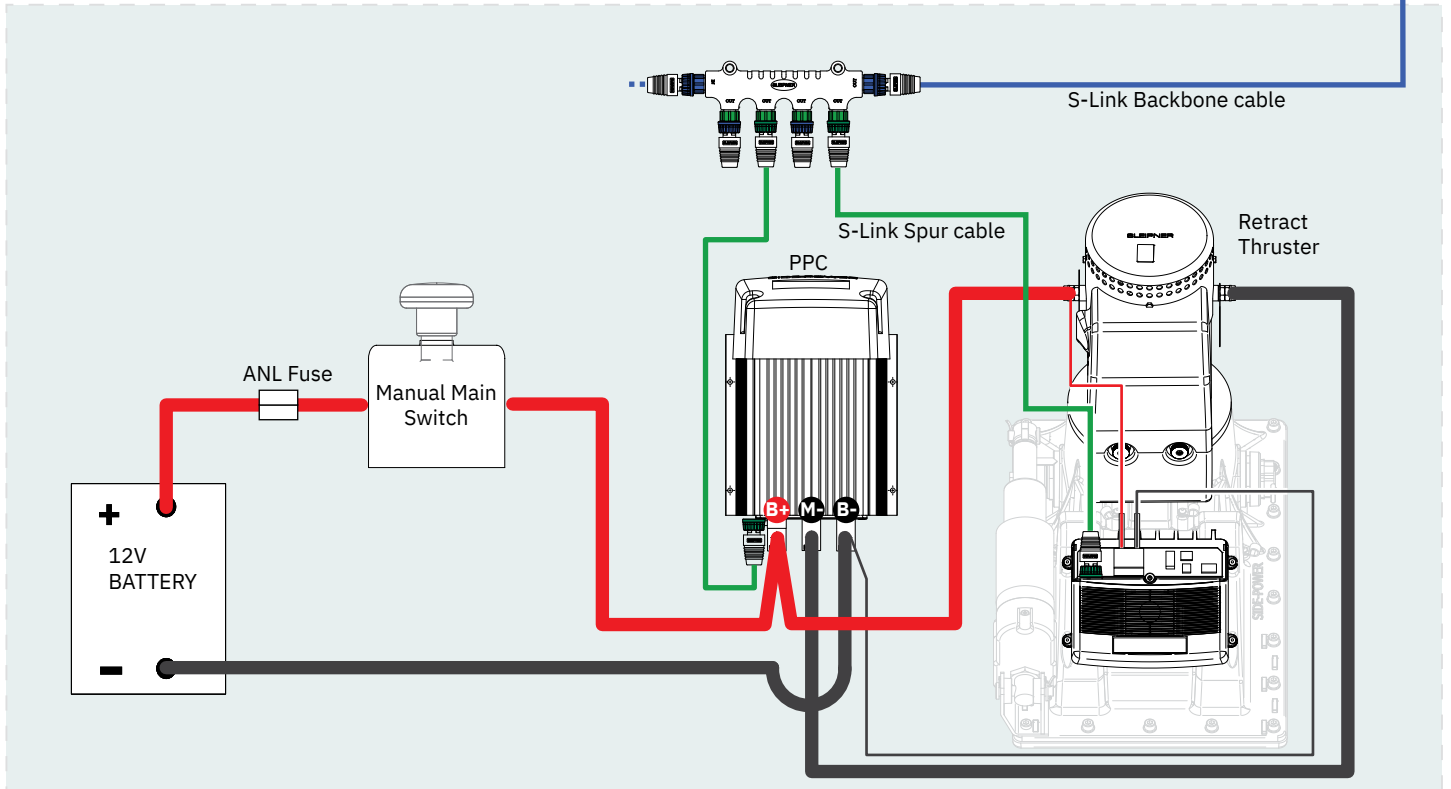
Manual Main Switch Wiring Diagram 12V Proportional Retract Thruster

The Top wiring diagram is for a single bow or stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



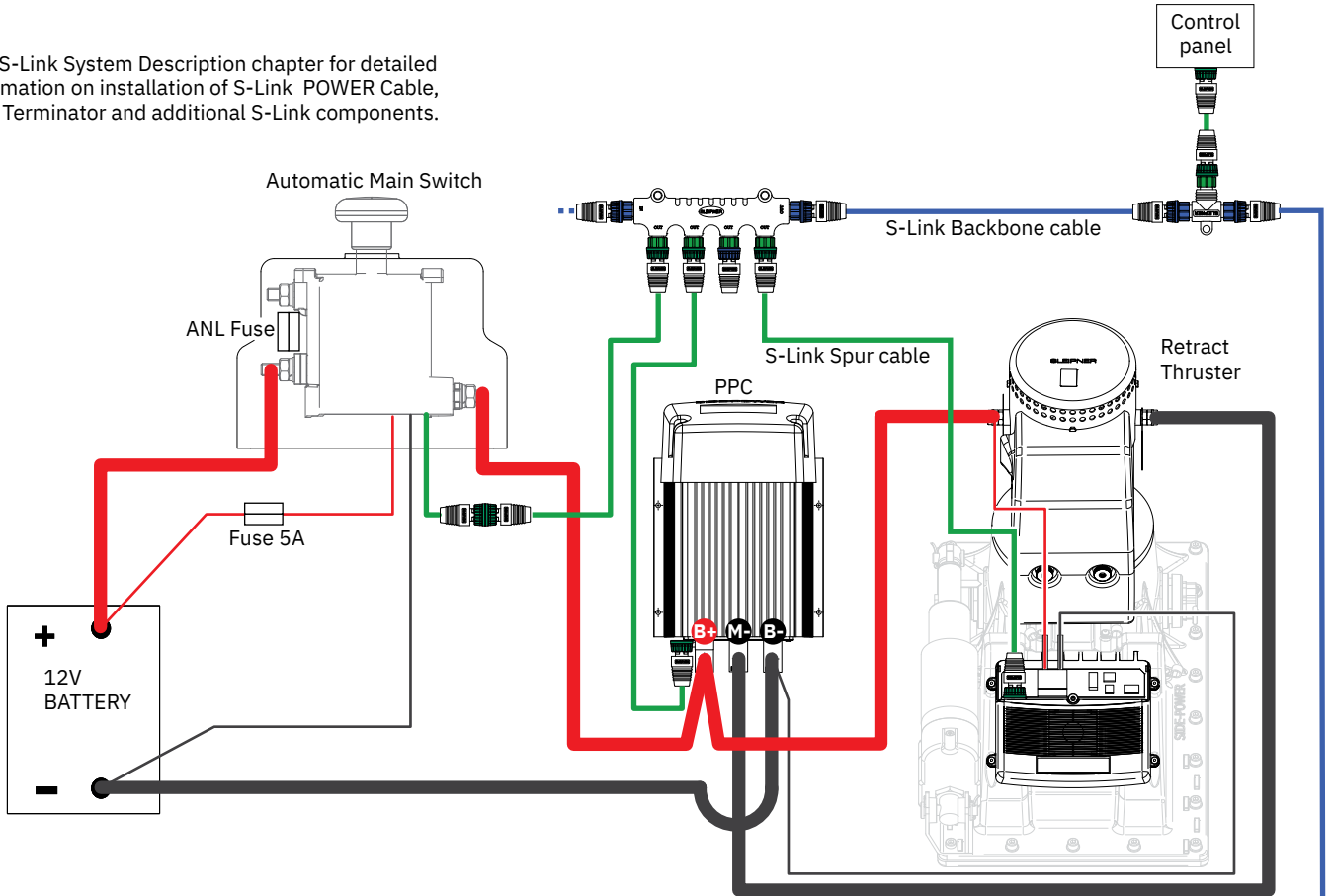
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



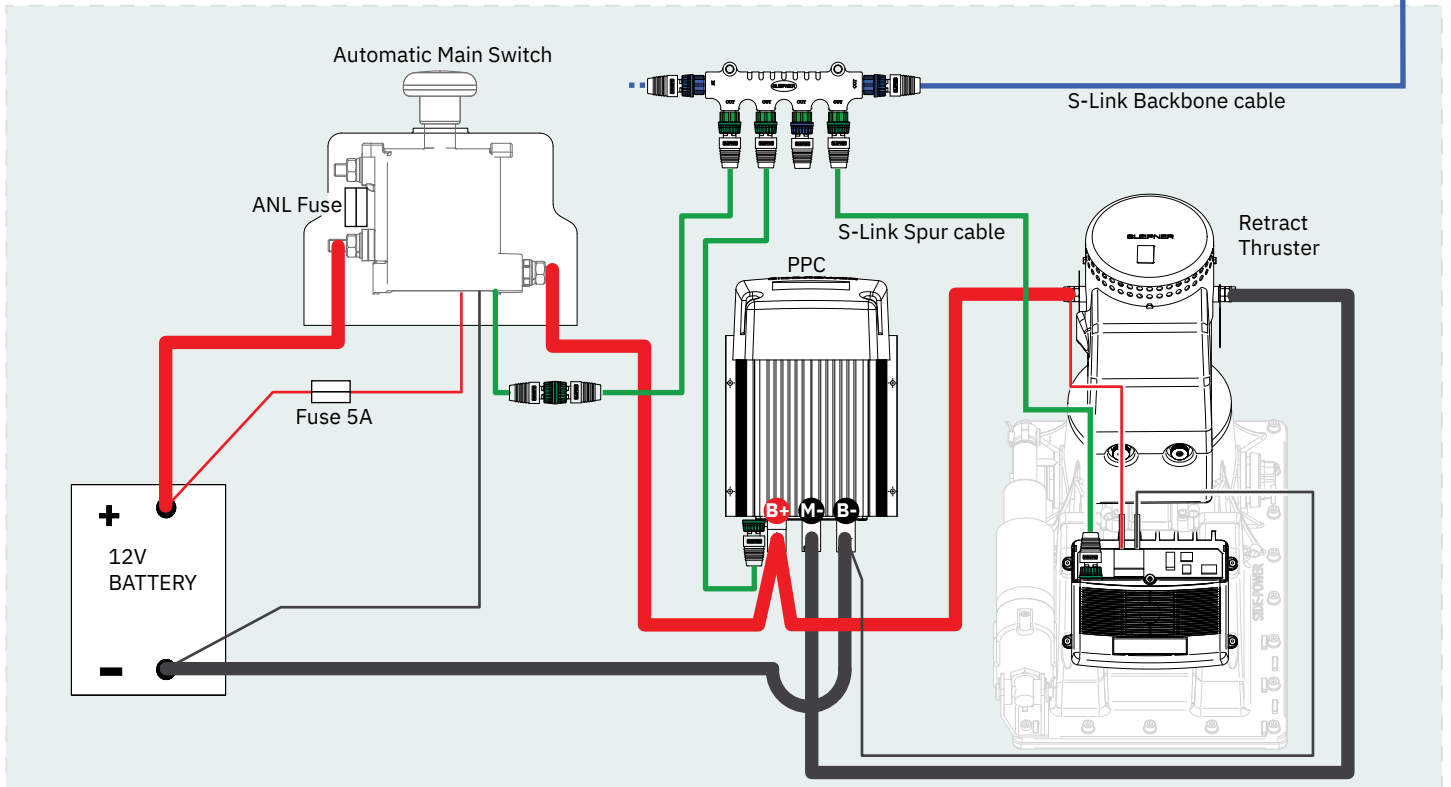
Automatic Main Switch Wiring Diagram 12V Proportional Retract Thruster

The Top wiring diagram is for a single bow or stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



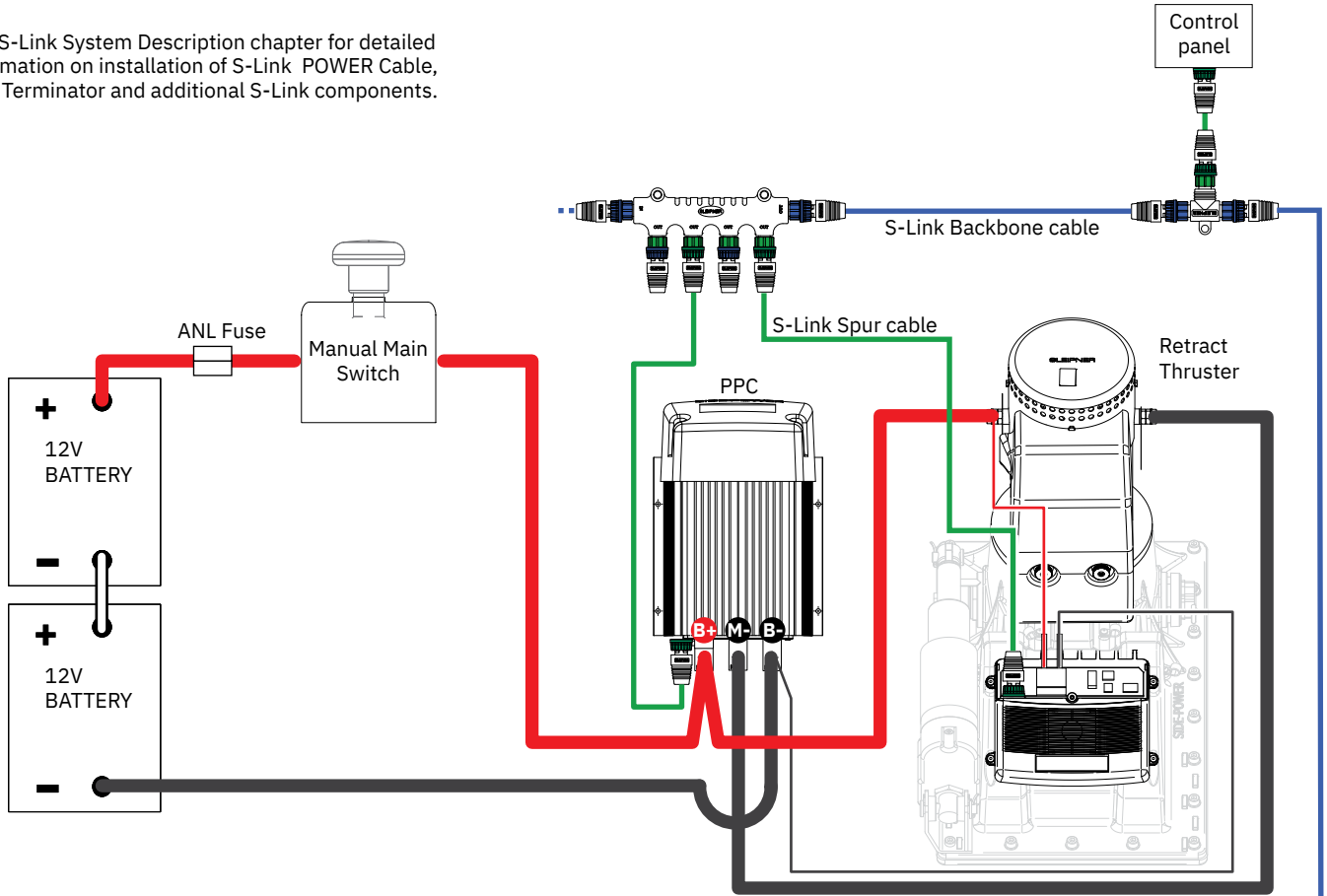
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



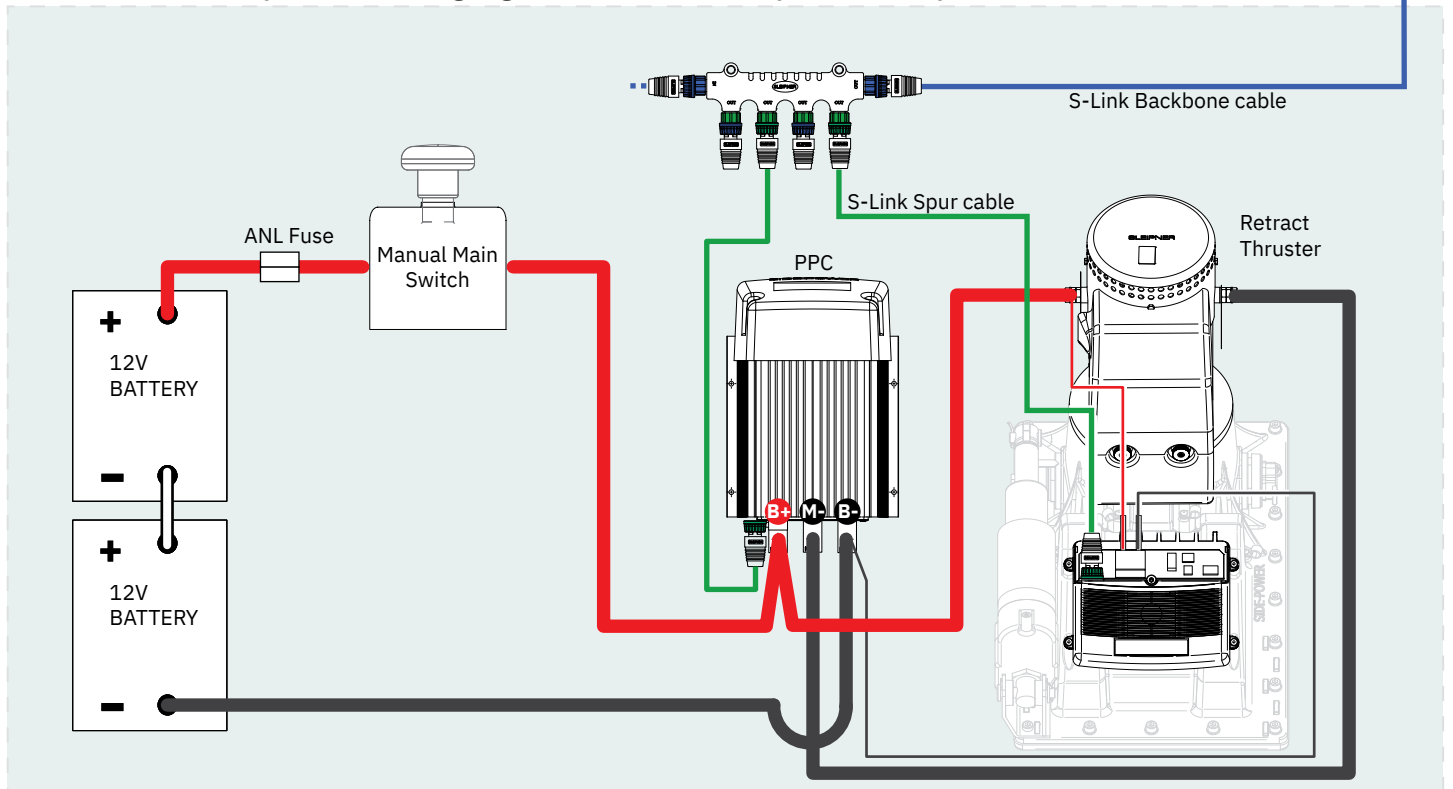
Manual Main Switch Wiring Diagram 24V Proportional Retract Thruster

The Top wiring diagram is for a single bow or stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



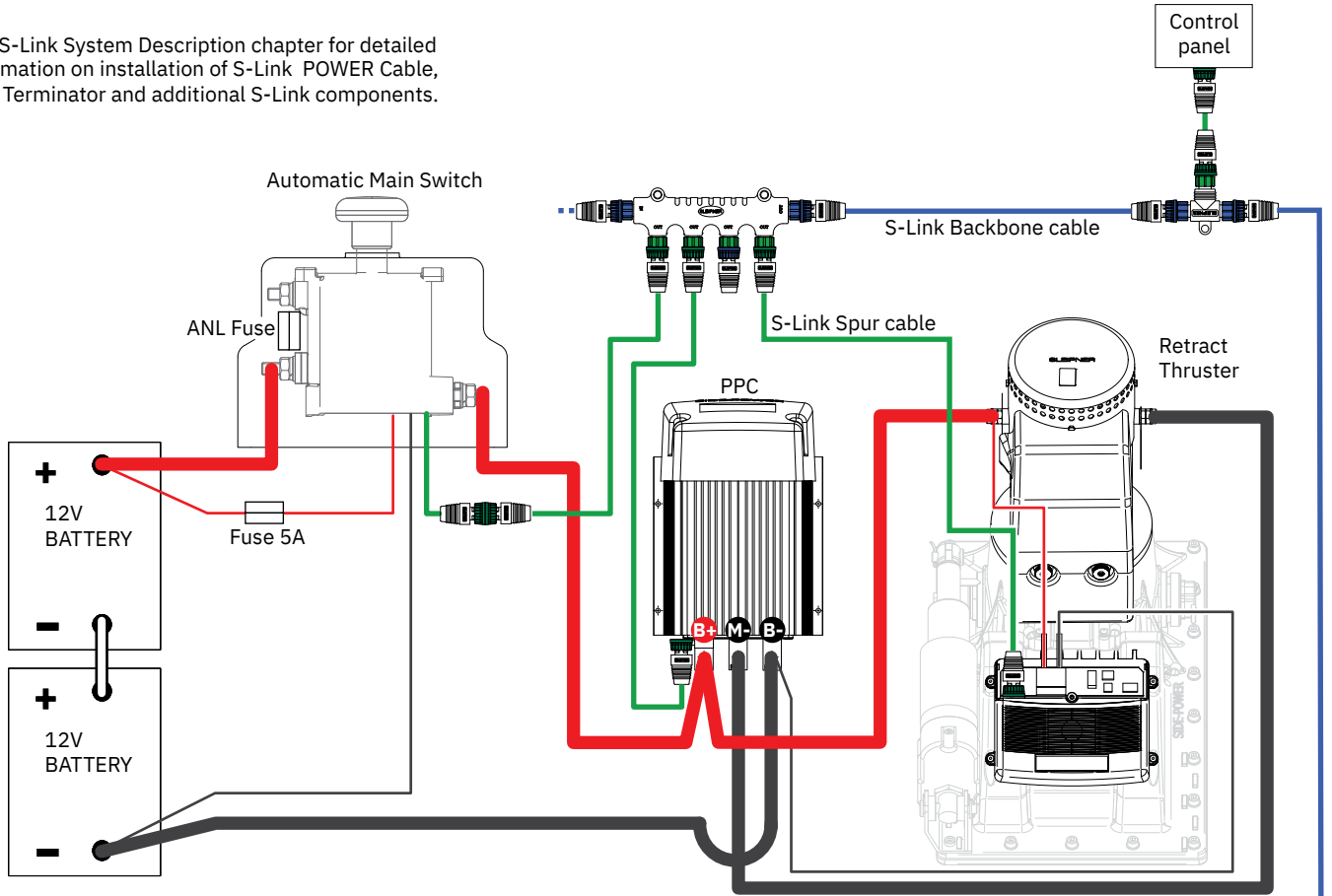
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



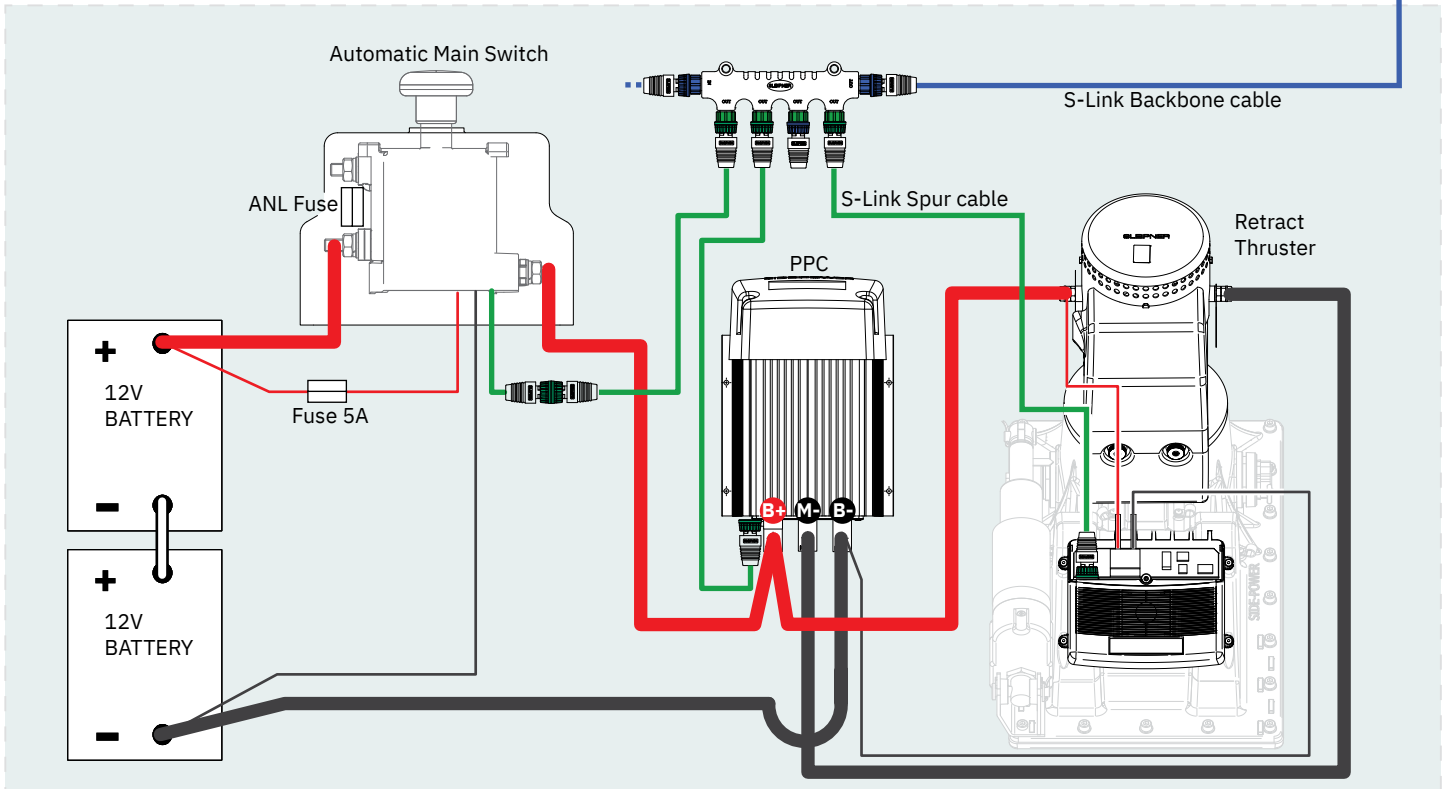
Automatic Main Switch Wiring Diagram 24V Proportional Retract Thruster

The Top wiring diagram is for a single bow or stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



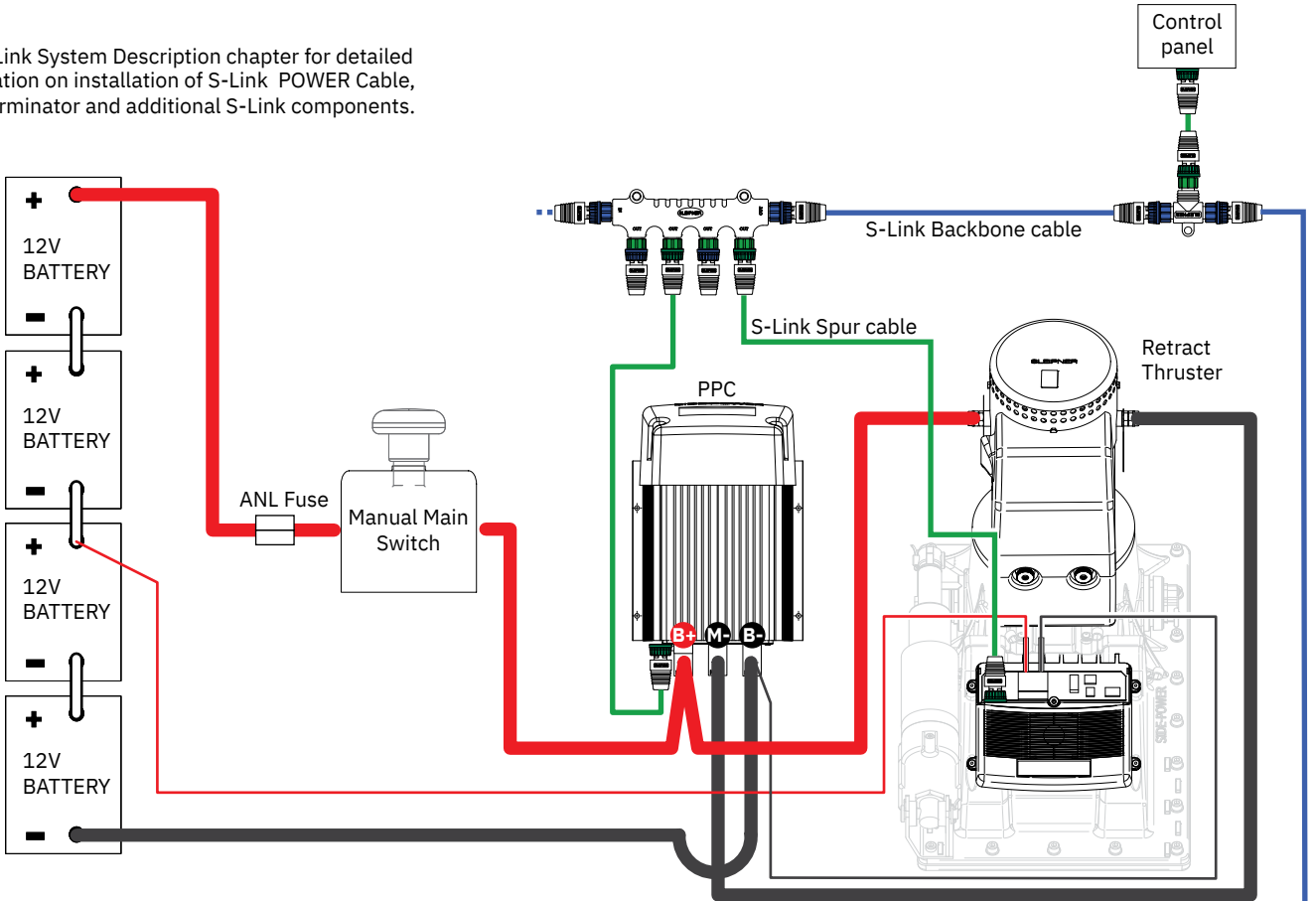
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



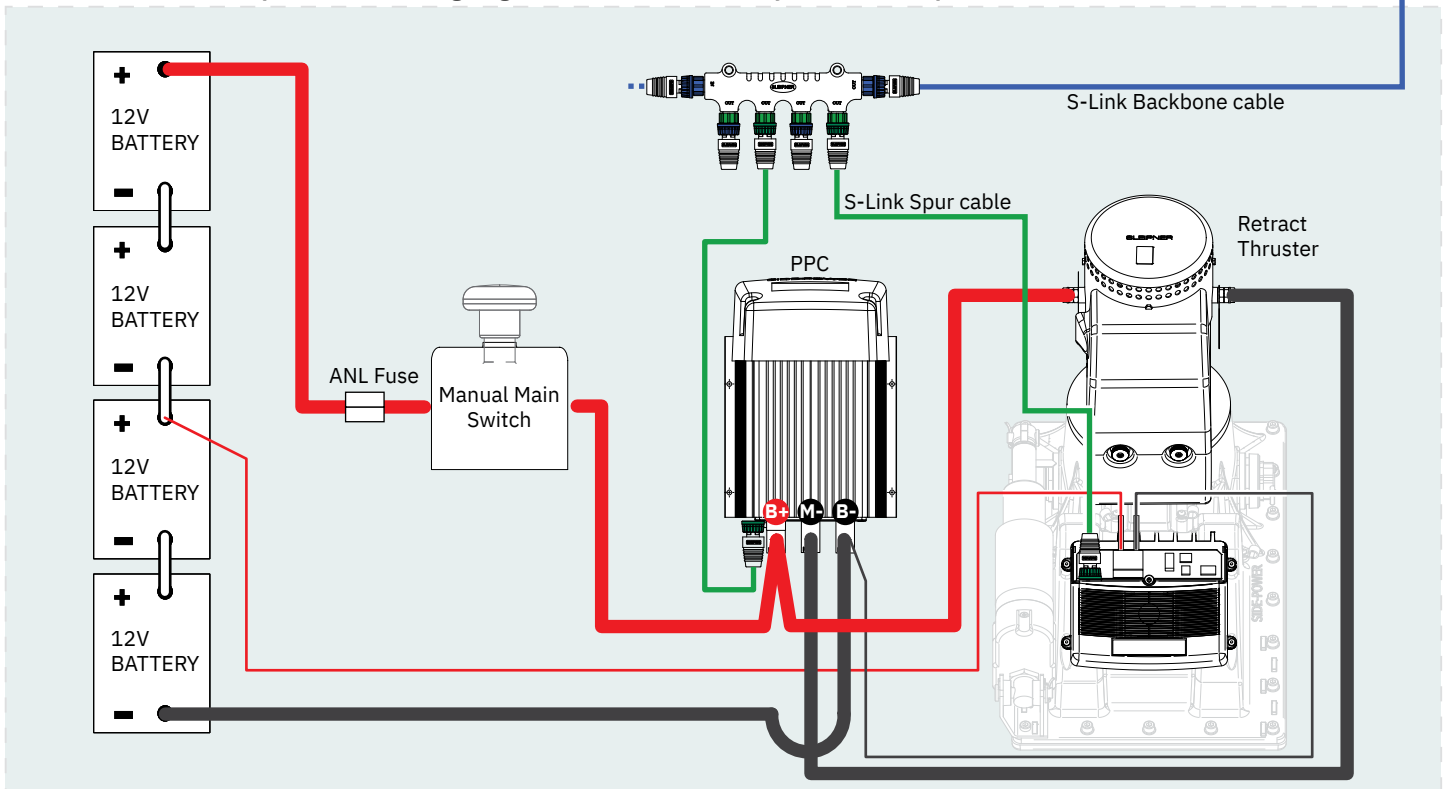
Manual Main Switch Wiring Diagram 48V Proportional Retract Thruster

The Top wiring diagram is for a single bow or stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



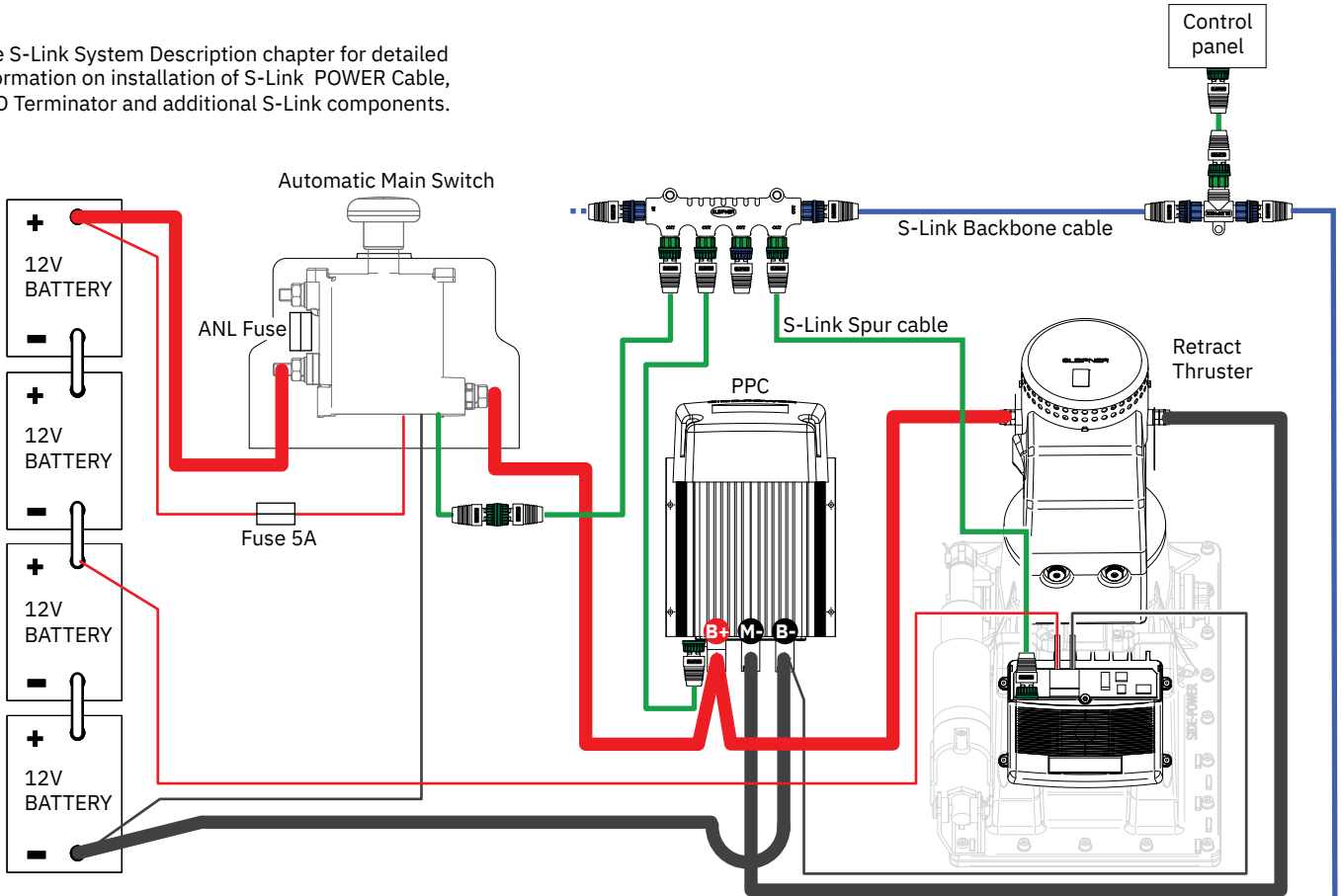
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



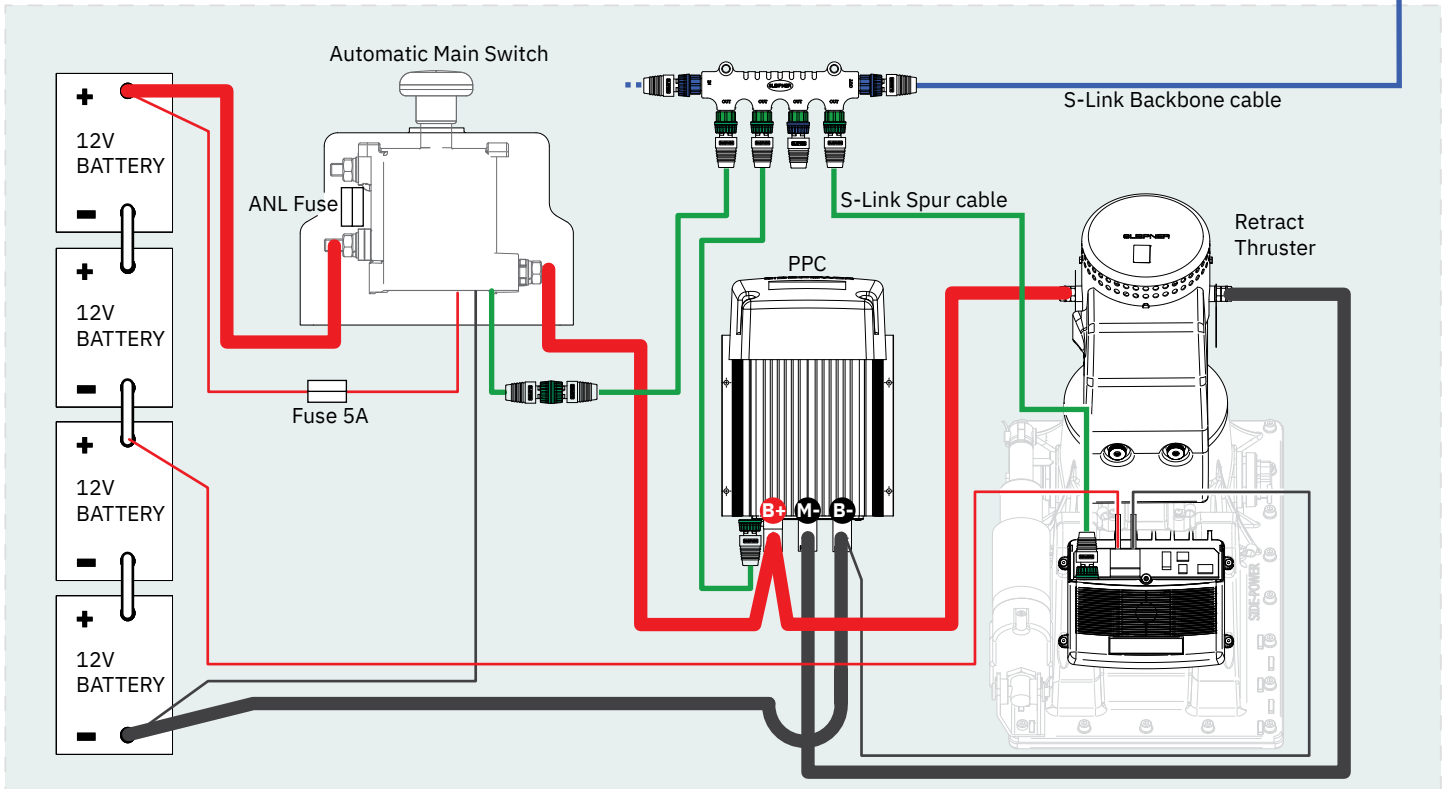
Automatic Main Switch Wiring Diagram 48V Proportional Retract Thruster

The Top wiring diagram is for a single bow or stern thruster system

See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.



The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



S-Link is a CAN-based control system used for communication between Sleipner products installed on a vessel. The system uses BACKBONE Cables as a common power and communication bus with separate SPUR Cables to each connected unit. Only one S-Link POWER cable shall be connected to the BACKBONE Cable. Units with low power consumption are powered directly from the S-Link bus.

Main advantages of S-Link system:

- Compact and waterproof plugs.
- BACKBONE and SPUR Cables have different colour coding and keying to ensure correct and easy installation. BACKBONE Cables have blue connectors and SPUR Cables have green connectors.
- Different cable lengths and BACKBONE Extenders make the system scalable and flexible to install.

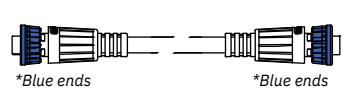
Installation of S-Link cables:

Select appropriate cables to keep the length of BACKBONE- and SPUR Cables to a minimum. In case of planned installation with total BACKBONE Cable length exceeding 100 meters please consult your local distributor. The S-Link cables should be properly fastened when installed to avoid sharp bend radius, cable chafing and undesired strain on connectors. Locking mechanism on connectors must be fully closed. To ensure long lifetime, cables, T-Connectors and Extenders should not be located so that they are permanently immersed in water or other fluids. It is recommended to install cables in such a way that water and condensation do not flow along the cables into the connectors. This can be done for example by introducing a u-shape bend before the cable enters the product connector.

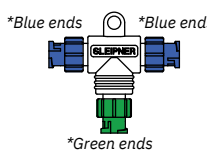
Ideally, the POWER Cable should be connected to the middle of the BACKBONE bus to ensure an equal voltage drop at both ends of the BACKBONE Cable. The yellow and black wire in the POWER Cable shall be connected to GND and the red wire connected to +12VDC or +24VDC.

To reduce the risk of interference, avoid routing the S-Link cables close to equipment such as radio transmitters, antennas or high voltage cables. The backbone must be terminated at each end with the END Terminator.

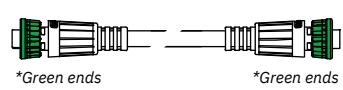
SPUR cables can be left unterminated to prepare for the installation of future additional equipment. In such cases, ensure to protect open connectors from water and moisture to avoid corrosion in the connectors.



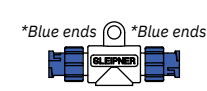
BACKBONE Cable
Forms the communication and power bus throughout a vessel. Available in different standard lengths.



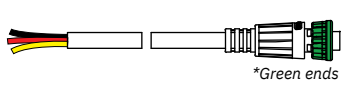
T-Connector
Used for connection of SPUR or POWER Cable to the BACKBONE Cable. One T-Connector for each connected cable.



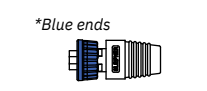
SPUR Cable
Used to connect S-Link compliant products to the backbone cable. One SPUR Cable must be used for each connected component, with no exceptions. Recommended to be as short as practically possible. Available in different standard lengths.



BACKBONE Extender
Connects two BACKBONE Cables to extend the length.

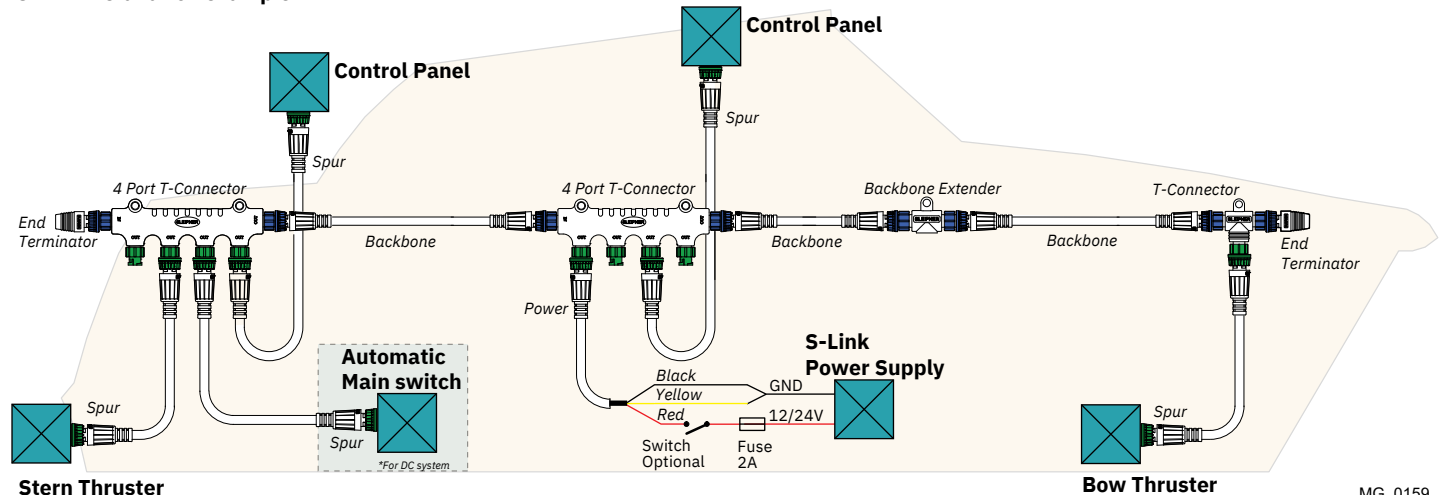


POWER Cable
Required in all installations for connection of BACKBONE Cable to a power supply and should be protected with a 2A fuse.



4-Port T-Connector
The 4-PORT T-connector allows multiple SPUR Cables to be connected. The 4-PORT T-connector comes with two sealing caps to protect unused ports.

S-Link installation example



For PPC setup follow your **Control Panel** installation guide.

Control panel installation

For **Control Panel** installation please refer to the Installation Guide accompanying the control panel to be installed.



List of Installed S-Link Devices

Fill in the type, location and serial numbers of the S-Link devices installed.
Keeping this as a reference will make the setup procedure easier!

S-Link device	Location	Serial number
(ie Thruster, AMS, PPC etc)	(Bow, Bow-STB, Stern, Stern-STB)	

For the latest fault codes scan the QR code below for quick access to our Fault code lookup database register.



Or visit our website via
www.sleipnergroup.com/support/fault-code-navigator
to download a print copy of the Sleipner product fault code register

Find your local professional dealer from our certified worldwide network for expert service and support. visit our website www.sleipnergrou.com/support

Product spare parts and additional resources

For additional supporting documentation, we advise you to visit our website www.sleipnergrou.com and find your Sleipner product.

Warranty statement

1. Sleipner Motor AS (The “Warrantor”) warrants that the equipment (parts, materials, and embedded software of products) manufactured by the Warrantor is free from defects in workmanship and materials for purpose for which the equipment is intended and under normal use and maintenance service (the “Warranty”).
2. This Warranty is in effect for two years (Leisure Use) or one year (Commercial and other Non-leisure Use) from the date of delivery/purchase by the end user, with the following exceptions:
 - (a) For demonstration vessels, or vessels kept on the water, the dealer is considered as the end user from 6 months after their launch of the vessel;
 - (b) The warranty period starts no later than 18 months after the first launch of the vessel.
 Please note that the boat manufacturer and dealer must pay particular attention to correct maintenance and service both by the products manuals as well as general good practice for the location the boat is kept in the period the boat is in their care. In cases where the 6 and 18 months grace periods for boat builders and dealers are passed, it is possible to obtain a full warranty upon inspection and approval of the warrantor or such representative.
3. Certain parts, classified as wearable or service parts, are not covered by the warranty. A failure to follow the required maintenance and service work as described in the product manual render all warranty on parts or components directly or indirectly affected by this void. Please also note that for some parts, time is also a factor separately from actual operational hours.
4. This Warranty is transferable and covers the equipment for the specified warranty period.
5. The warranty does not apply to defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion except for equipment specifically designed as waterproof.
6. In case the equipment seems to be defective, the warranty holder (the “Claimant”) must do the following to make a claim:
 - (a) Contact the dealer or service centre where the equipment was purchased and make the claim. Alternatively, the Claimant can make the claim to a dealer or service centre found at www.sleipnergrou.com. The Claimant must present a detailed written statement of the nature and circumstances of the defect, to the best of the Claimant’s knowledge, including product identification and serial nbr., the date and place of purchase and the name and address of the installer. Proof of purchase date should be included with the claim, to verify that the warranty period has not expired;
 - (b) Make the equipment available for troubleshooting and repair, with direct and workable access, including dismantling of furnishings or similar, if any, either at the premises of the Warrantor or an authorised service representative approved by the Warrantor. Equipment can only be returned to the Warrantor or an authorised service representative for repair following a pre-approval by the Warrantor’s Help Desk and if so, with the Return Authorisation Number visible postage/shipping prepaid and at the expense of the Claimant.
7. Examination and handling of the warranty claim:
 - (a) If upon the Warrantor’s or authorised service Representative’s examination, the defect is determined to result from defective material or workmanship in the warranty period, the equipment will be repaired or replaced at the Warrantor’s option without charge, and returned to the Purchaser at the Warrantor’s expense. If, on the other hand, the claim is determined to result from circumstances such as described in section 4 above or a result of wear and tear exceeding that for which the equipment is intended (e.g. commercial use of equipment intended for leisure use), the costs for the troubleshooting and repair shall be borne by the Claimant;
 - (b) No refund of the purchase price will be granted to the Claimant, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. In the event that attempts to remedy the defect have failed, the Claimant may claim a refund of the purchase price, provided that the Claimant submits a statement in writing from a professional boating equipment supplier that the installation instructions of the Installation and Operation Manual have been complied with and that the defect remains.
8. Warranty service shall be performed only by the Warrantor, or an authorised service representative, and any attempt to remedy the defect by anyone else shall render this warranty void.
9. No other warranty is given beyond those described above, implied or otherwise, including any implied warranty of merchantability, fitness for a particular purpose other than the purpose for which the equipment is intended, and any other obligations on the part of the Warrantor or its employees and representatives.
10. There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives based on this Warranty for injury to any person or persons, or damage to property, loss of income or profit, or any other incidental, consequential or resulting damage or cost claimed to have been incurred through the use or sale of the equipment, including any possible failure or malfunction of the equipment or damages arising from collision with other vessels or objects.
11. This warranty gives you specific legal rights, and you may also have other rights which vary from country to country.

Patents

At Sleipner we continually reinvest to develop and offer the latest technology in marine advancements. To see the many unique designs we have patented, visit our website www.sleipnergrou.com/patents

A series of horizontal dotted lines for taking notes, spanning the width of the page.

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Learn more about our products at
www.sleipnergroun.com



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