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Installation Guide

For Proportional Power Controller (PPC)
*PPC*520, PPC820, PPC840

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Contents

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Products
PPC520 - PRO™ power control unit, PPC520
PPC820 - PRO™ power control unit, PPC820
PPC840 - PRO™ power control unit, PPC840

MC_0020

Failure to follow the considerations and precautions can cause serious injury, damage and will render all warranties given by Sleipner Motor as VOID. MC_0411

Responsibility of the Installer MC_0038

The installer must read this document to ensure necessary familiarity with the product before installation.

Instructions in this document cannot be guaranteed to comply with all international and national regulations. It is the responsibility of the installer to follow all applicable international and national regulations when installing Sleipner products.

The recommendations given in this document are guidelines ONLY, and Sleipner strongly recommends that advice is obtained from a person familiar with the particular vessel and applicable regulations.

This document contains general installation instructions intended to support experienced installers. If you are not skilled in this type of work, please contact professional installers for assistance.

If required by local regulation, electrical work must be done by a licensed professional.

Appropriate health and safety procedures must be followed during installation.

Faulty installation of Sleipner products will render all warranties given by Sleipner Motor AS.

Ensure appropriate access to Sleipner products during installation planning for service, inspection and component replacement.

General Installation Consideration and Precaution Guidelines MC_0440

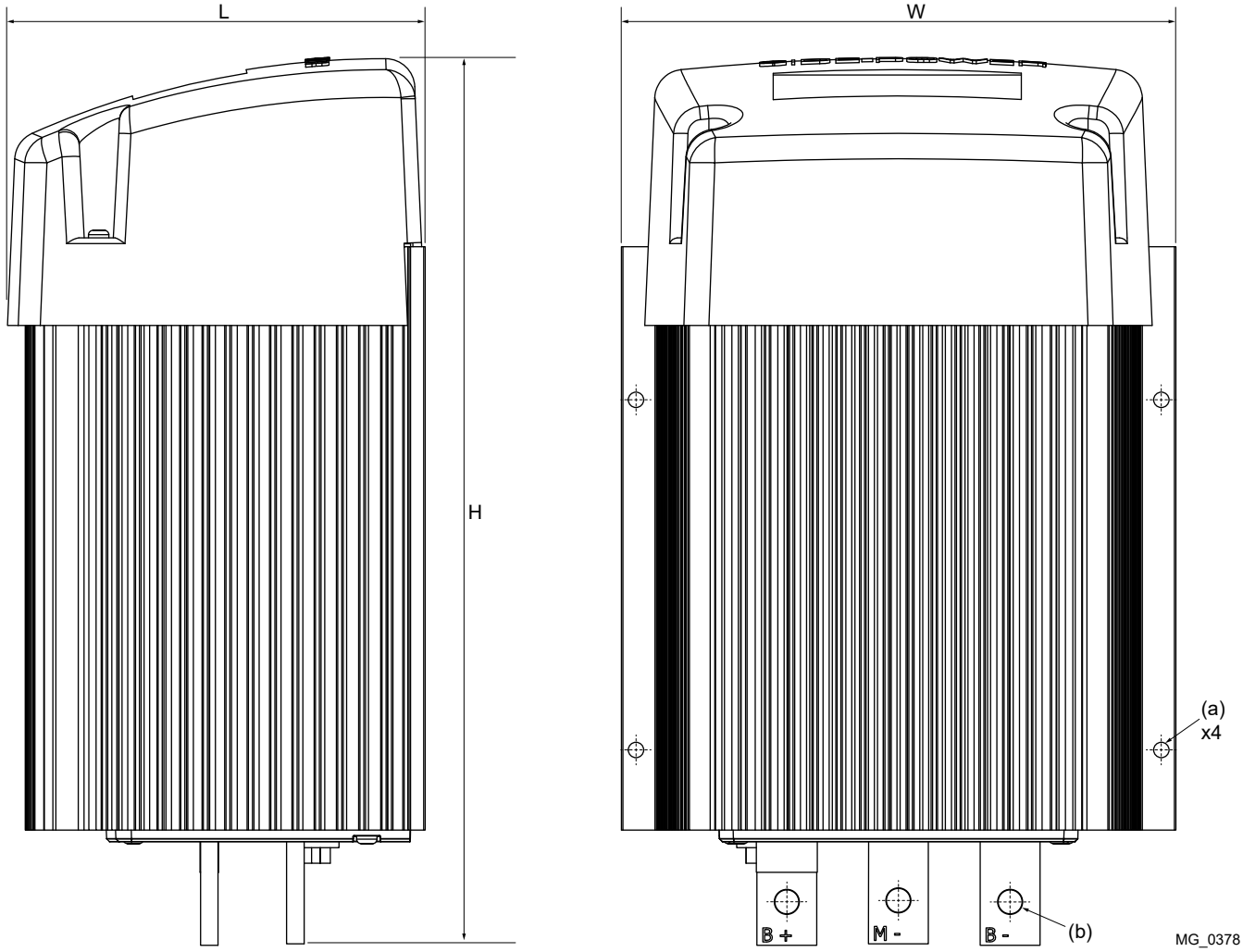
For PPC systems MC_0342

- 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.

When installing an S-Link™ system connect ONLY original Sleipner S-Link™ products or other authorized control equipment directly to the S-Link™ bus. Connecting non-authorized third-party equipment, it must always be connected through a Sleipner supplied interface product. Any attempt to directly control or connect into the S-Link™ control system without a designated and approved interface will render all warranties and responsibilities of all of the connected Sleipner products. If you are interfacing 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. MC_0105

PPC Measurements

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



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.

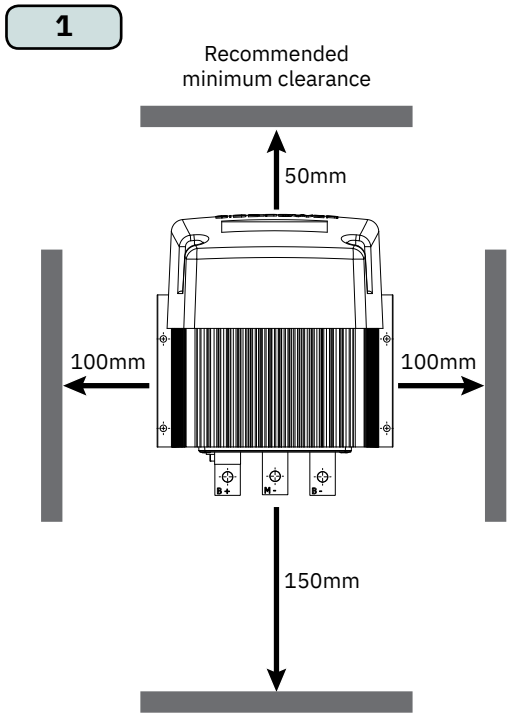
Sleipner offers both manual main switches and Automatic Main Switches (AMS). Sleipner AMS is controlled by the control panel in addition to the option of manual operation. Turning on the control panel does also turn on the automatic main switch. When the control panel is turned off the automatic main 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.

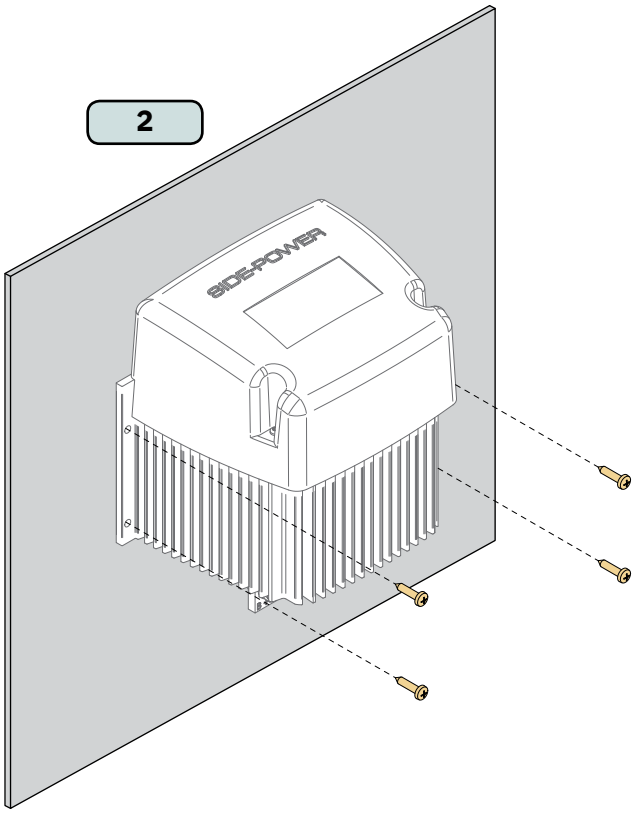
After all electrical connections have been completed, turn off main switch and check the following with an ohmmeter:
1. There is no electrical connection between electro-motor flange and the positive terminal on the motor.
2. There is no electrical connection between electro-motor flange and the negative terminal on the motor.
If unsure contact skilled personnel.

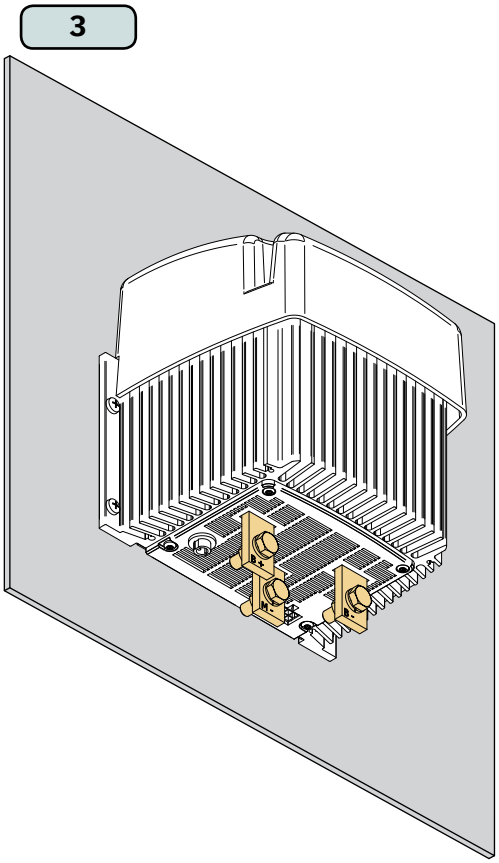
1. The Proportional Power Controller (PPC) is designed to be wall mounted. It should be installed in a dry and well-ventilated compartment and following the clearance recommendation shown in figure below. The PPC can become hot during operation and the recommended minimum clearances are to allow for ventilation.

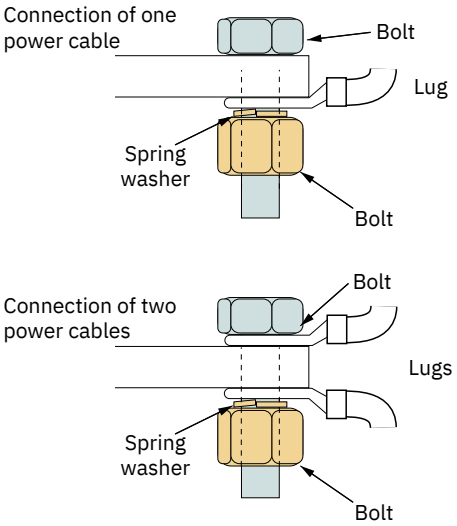
2. Attach the PPC using the four attachment screws.

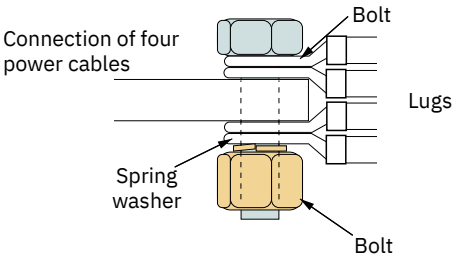
3. Attach the power cables to the PPC according to instruction in figure below. Ensure that the cables do not obstruct any other objects and not placed near any object that radiate high temperatures. For complete system wiring configuration refer to the wiring diagram chapter and the *S-Link System Description* chapter.











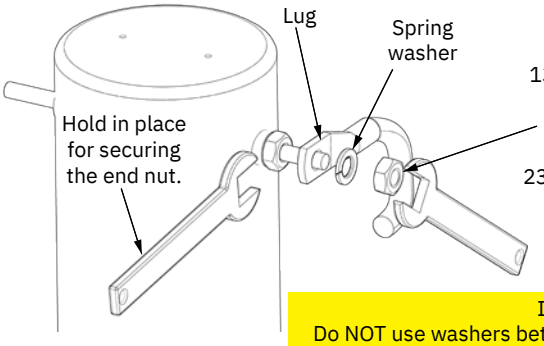
MG_0532

Electrical Reference Guide

MC_0044

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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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			
	24V	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	12V	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							
	24V	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
120/215T	24V	420 A	DIN: 450 SAE: 855 EN: 760	ANL 325	mm²	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	mm²	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						
	24V	350 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm2	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	

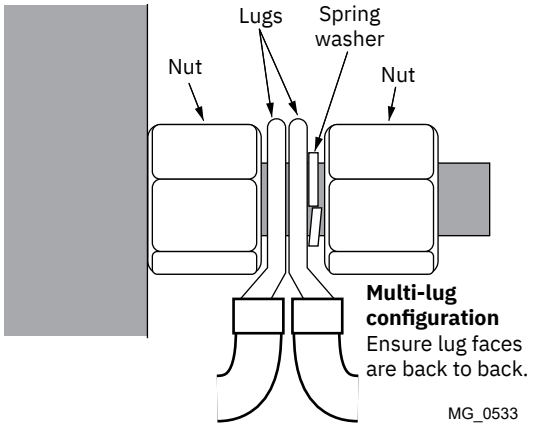
Motor Lug Connection



(M8) Nut
Tighten to max
13 Nm (9.59 lb/ft)

(M10) Nut
Tighten to max
23 Nm (16.96 lb/ft)

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

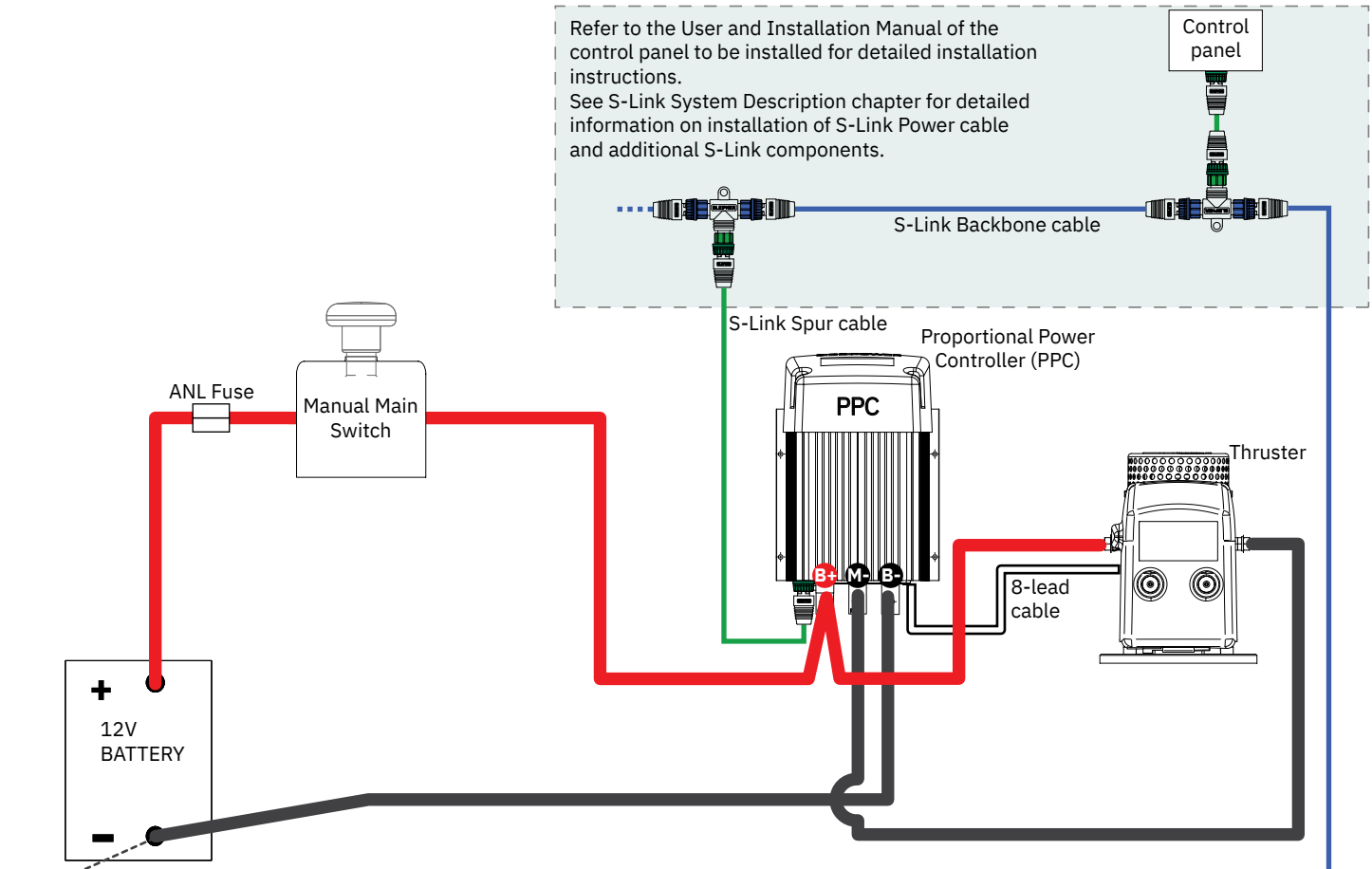


Multi-lug configuration
Ensure lug faces are back to back.

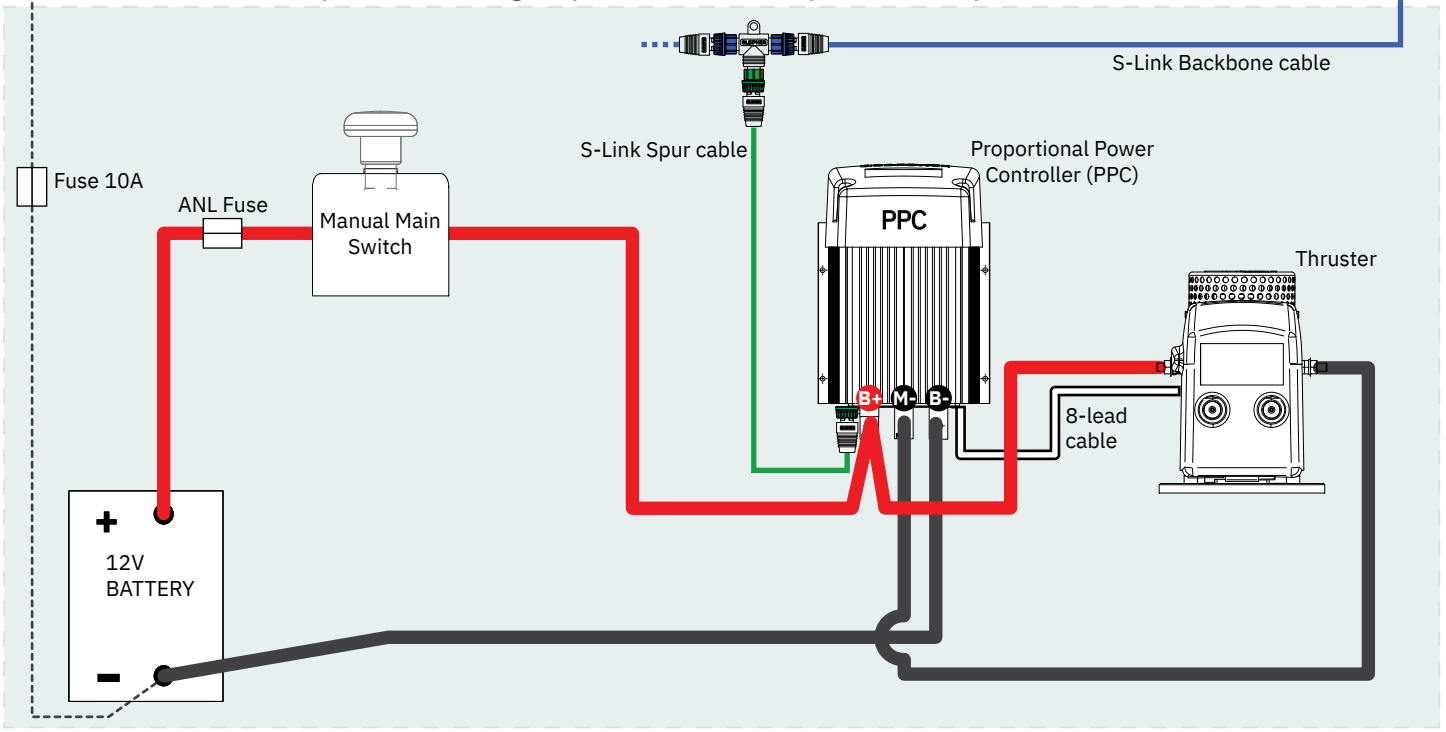
MG_0533

Manual Main Switch Wiring Diagram 12V S-Link Thruster

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



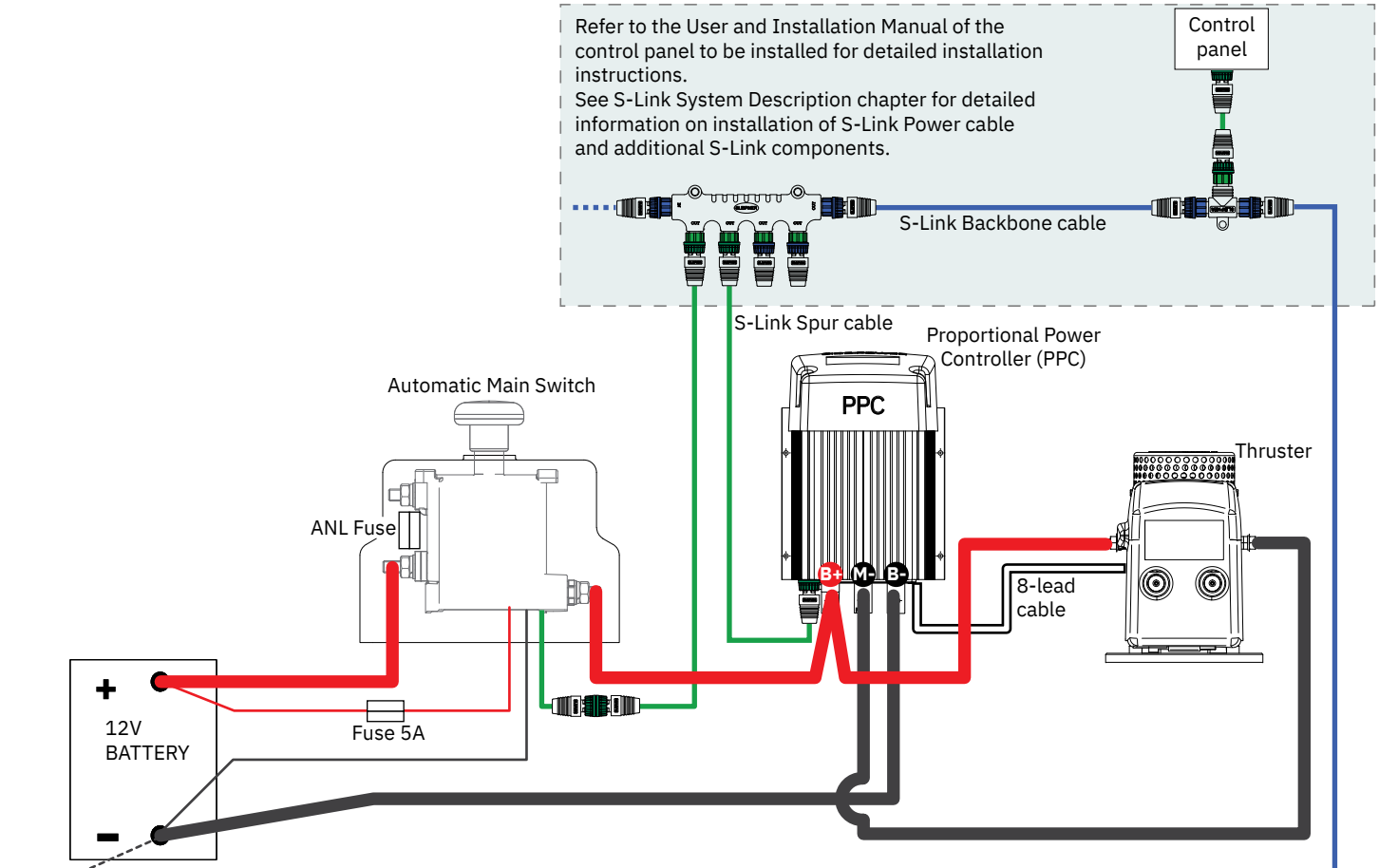
The top and bottom wiring setup is for a dual thruster system, For example bow and stern.



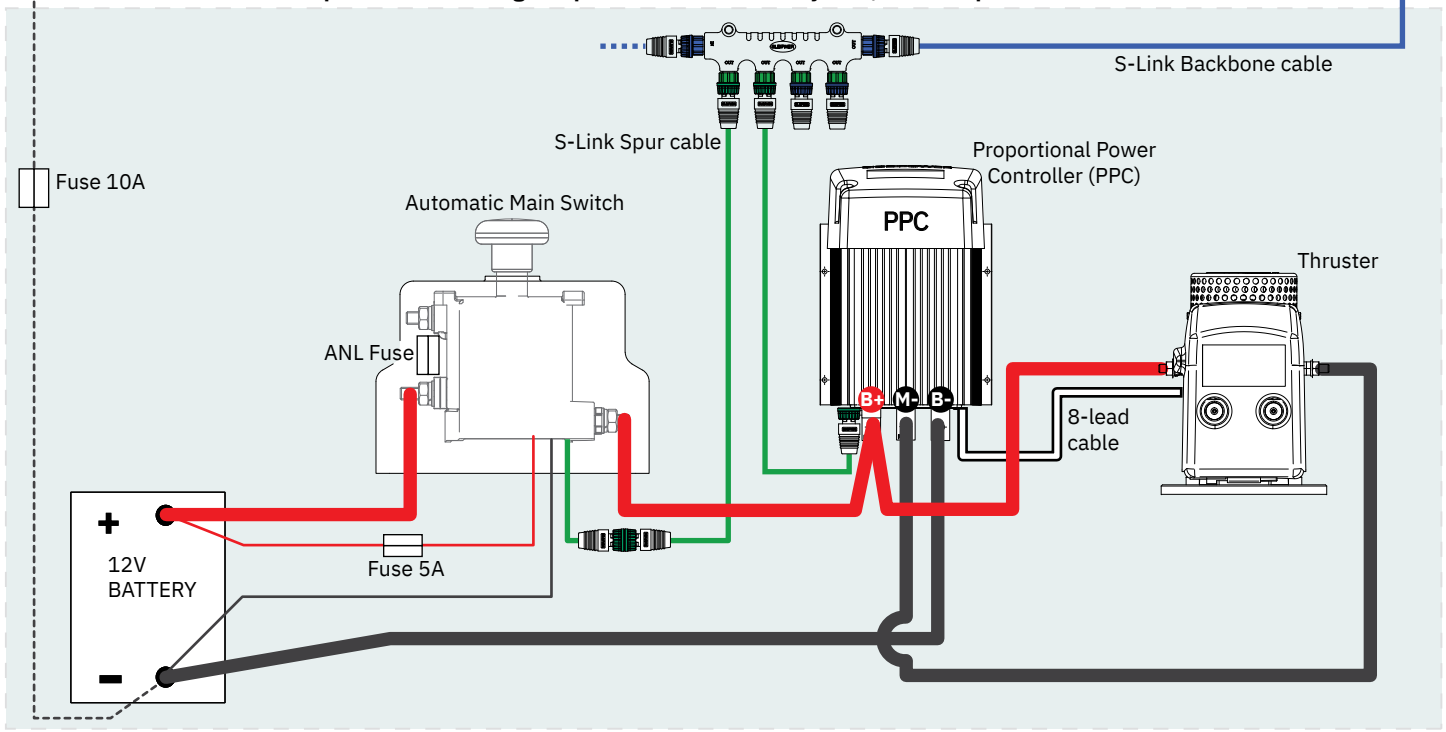
MG_0594

Automatic Main Switch Wiring Diagram 12V S-Link Thruster

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



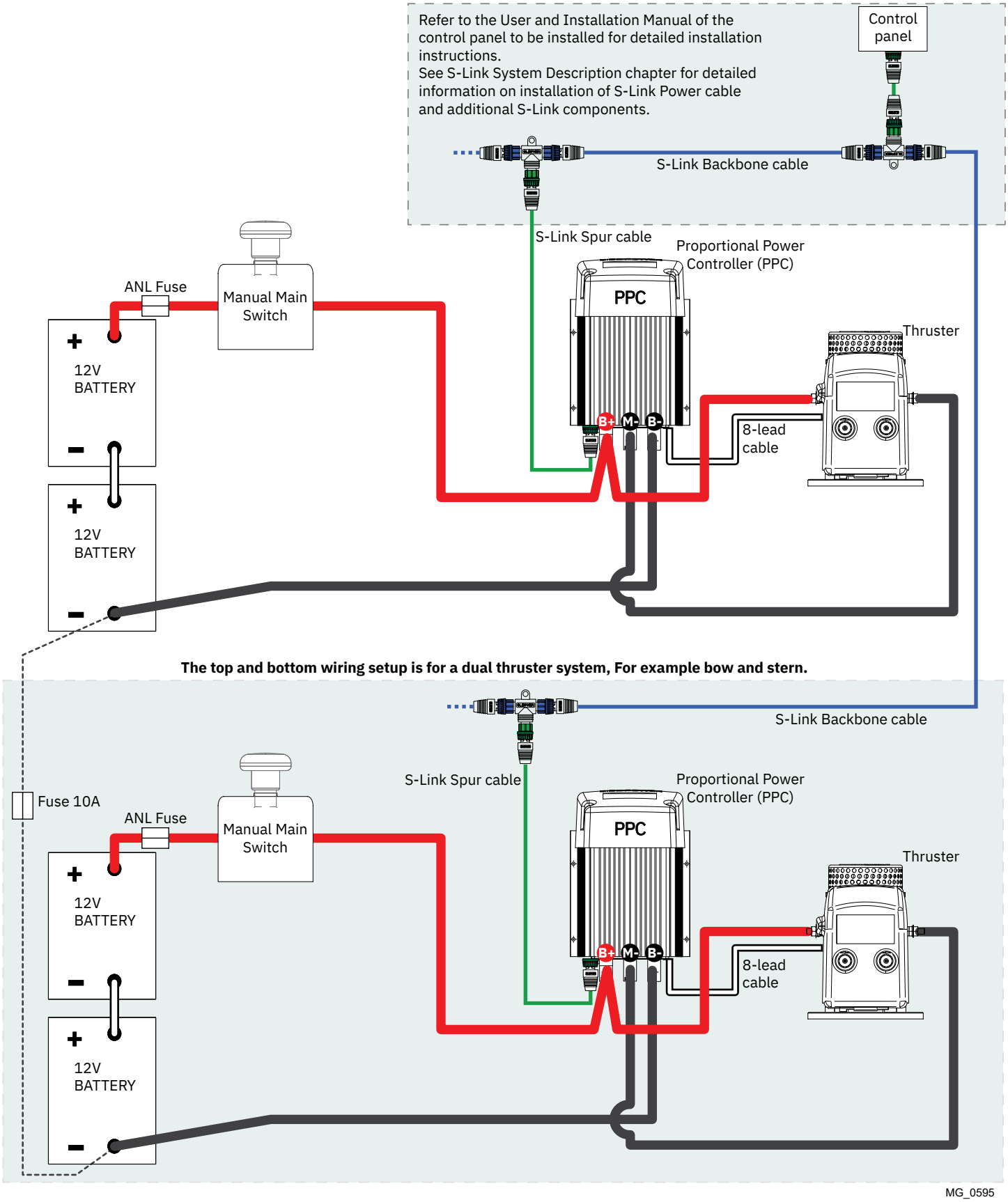
The top and bottom wiring setup is for a dual thruster system, For example bow and stern.



MG_0561

Manual Main Switch Wiring Diagram 24V S-Link Thruster

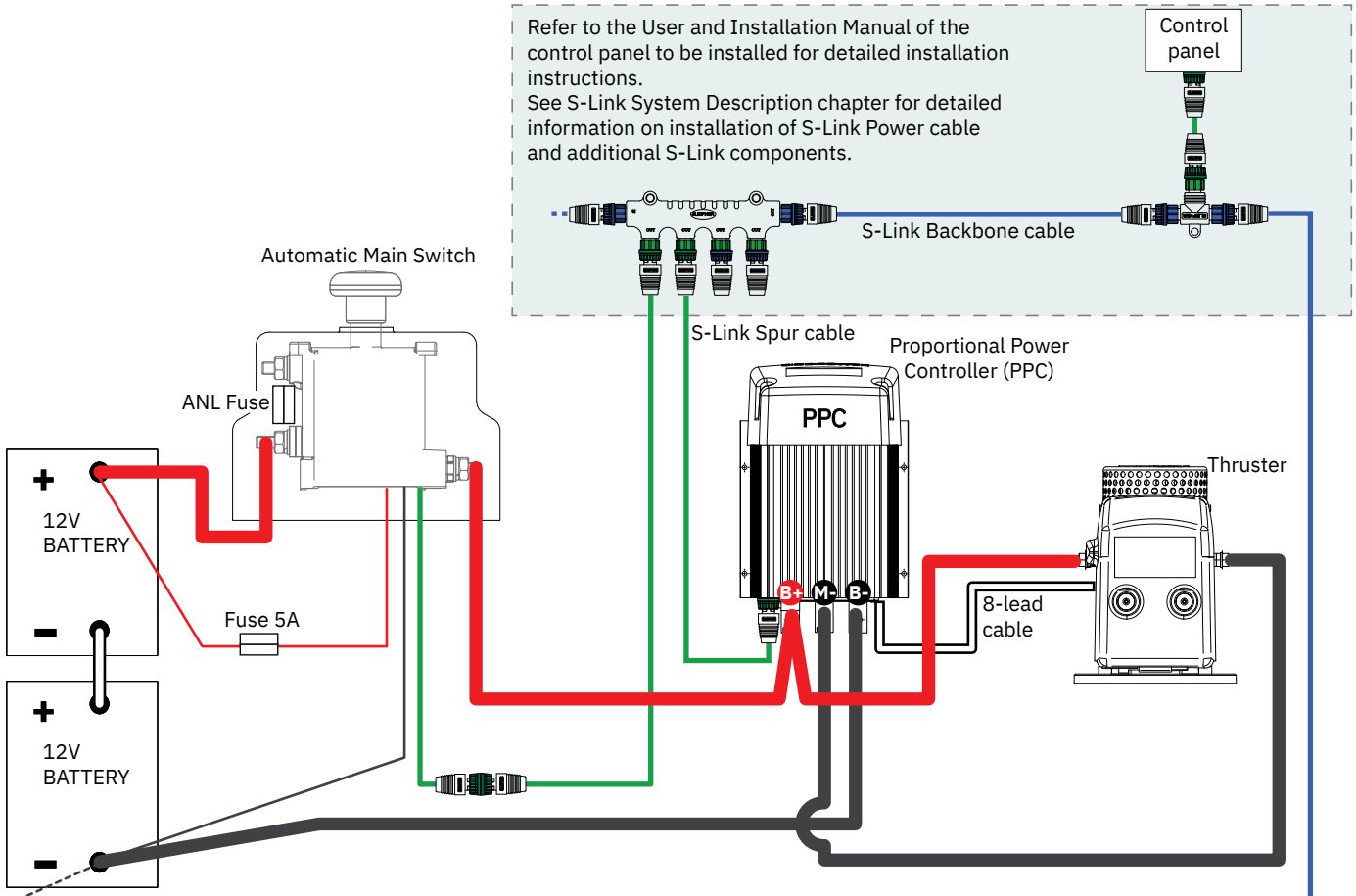
The Top wiring setup is for a single bow OR stern thruster system



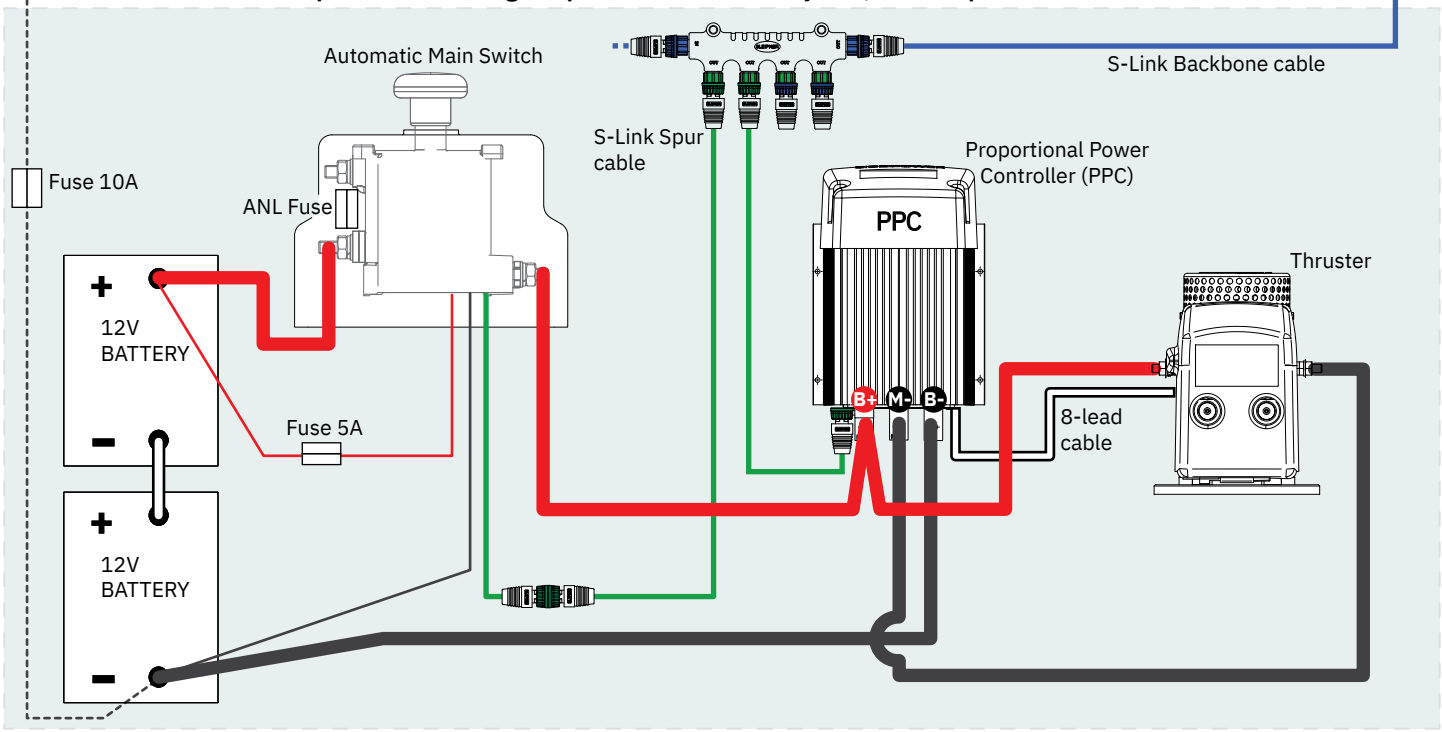
MG_0595

Automatic Main Switch Wiring Diagram 24V S-Link Thruster

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



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



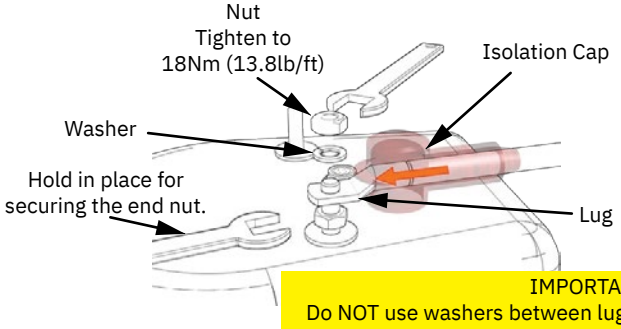
MG_0596

Electrical Reference Guide

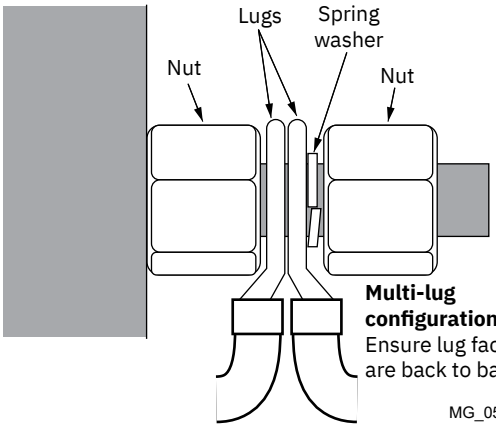
MC_0044

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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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			
	24V	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	12V	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							
	24V	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
120/215T	24V	420 A	DIN: 450 SAE: 855 EN: 760	ANL 325	mm²	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	mm²	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						
	24V	350 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm2	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	

Product Lug Connection Configuration



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

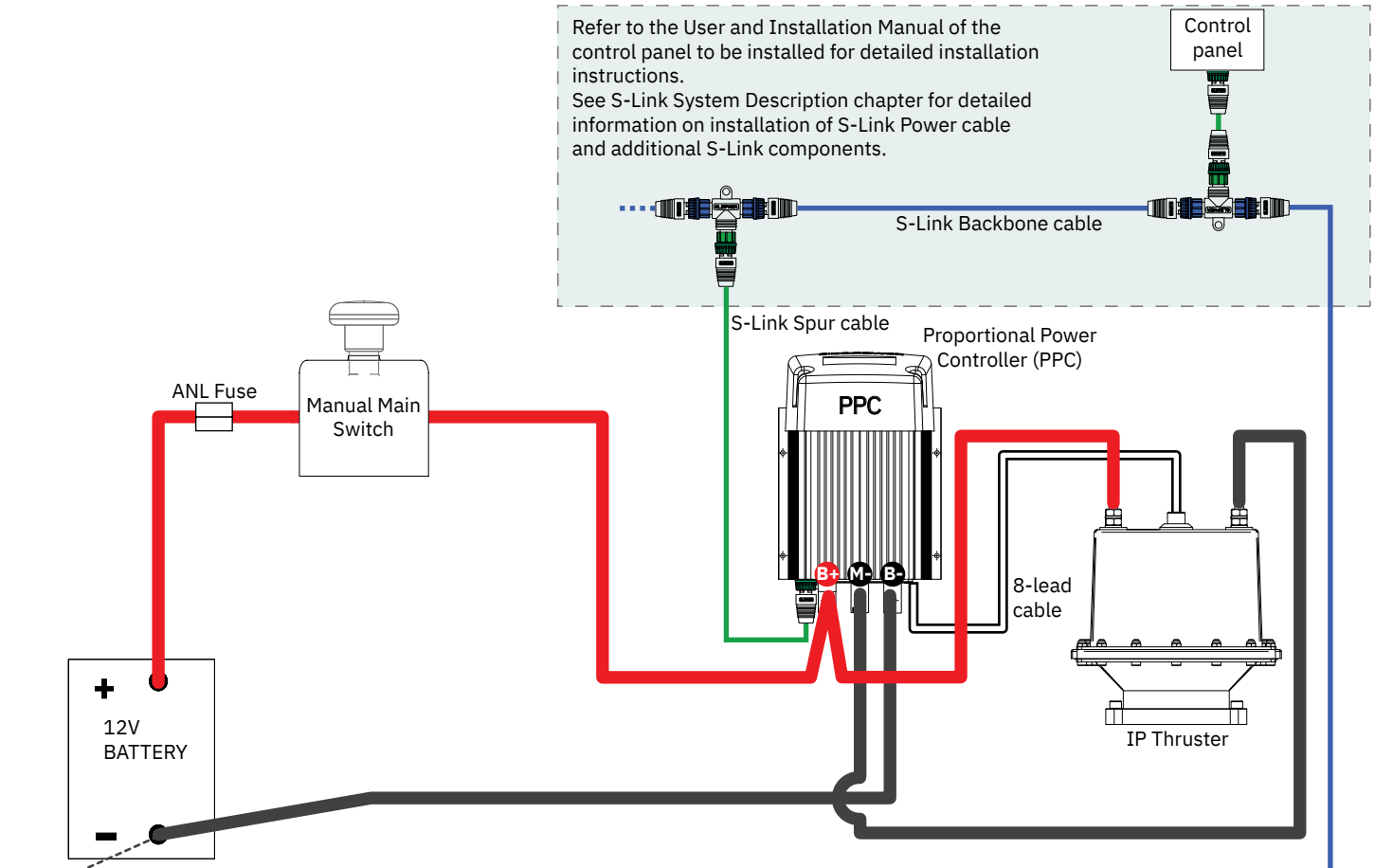


Multi-lug configuration
Ensure lug faces are back to back.

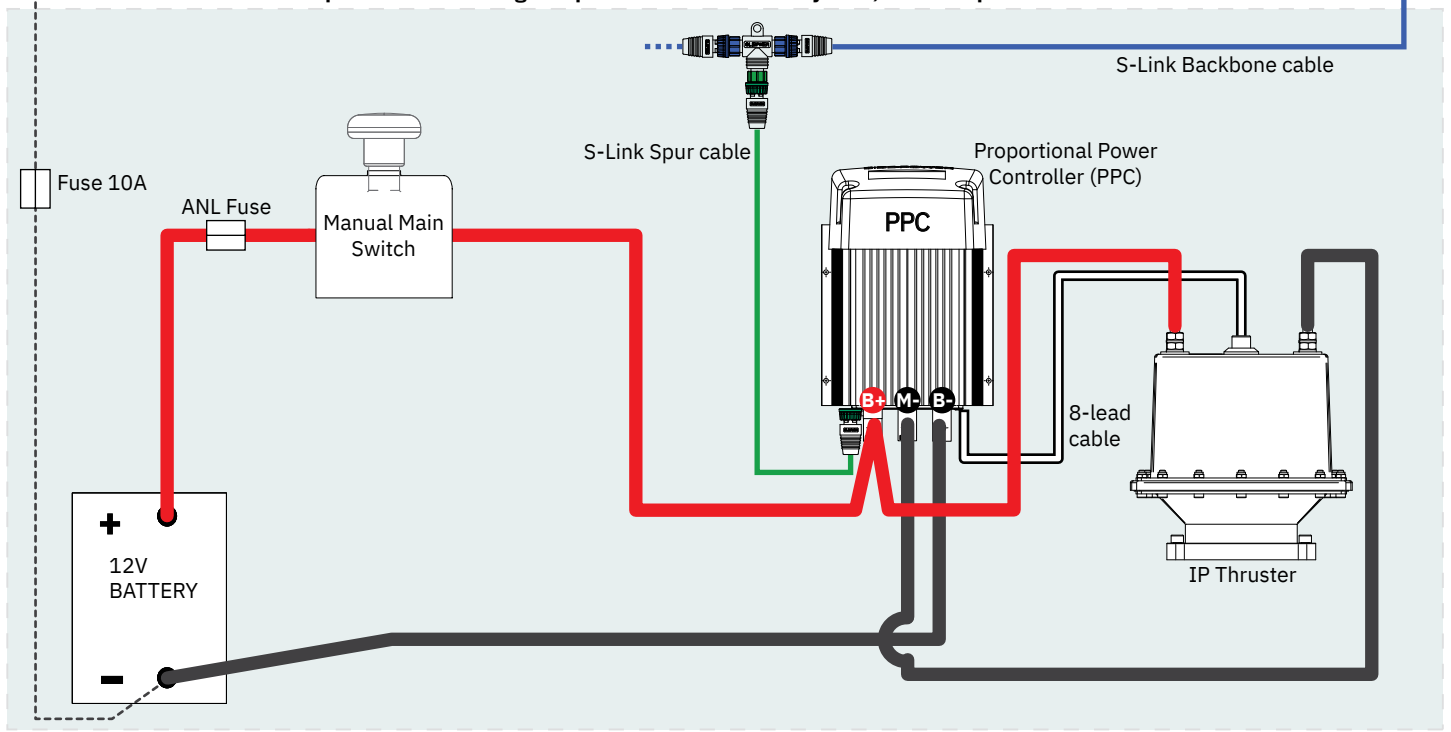
MG_0535

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

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



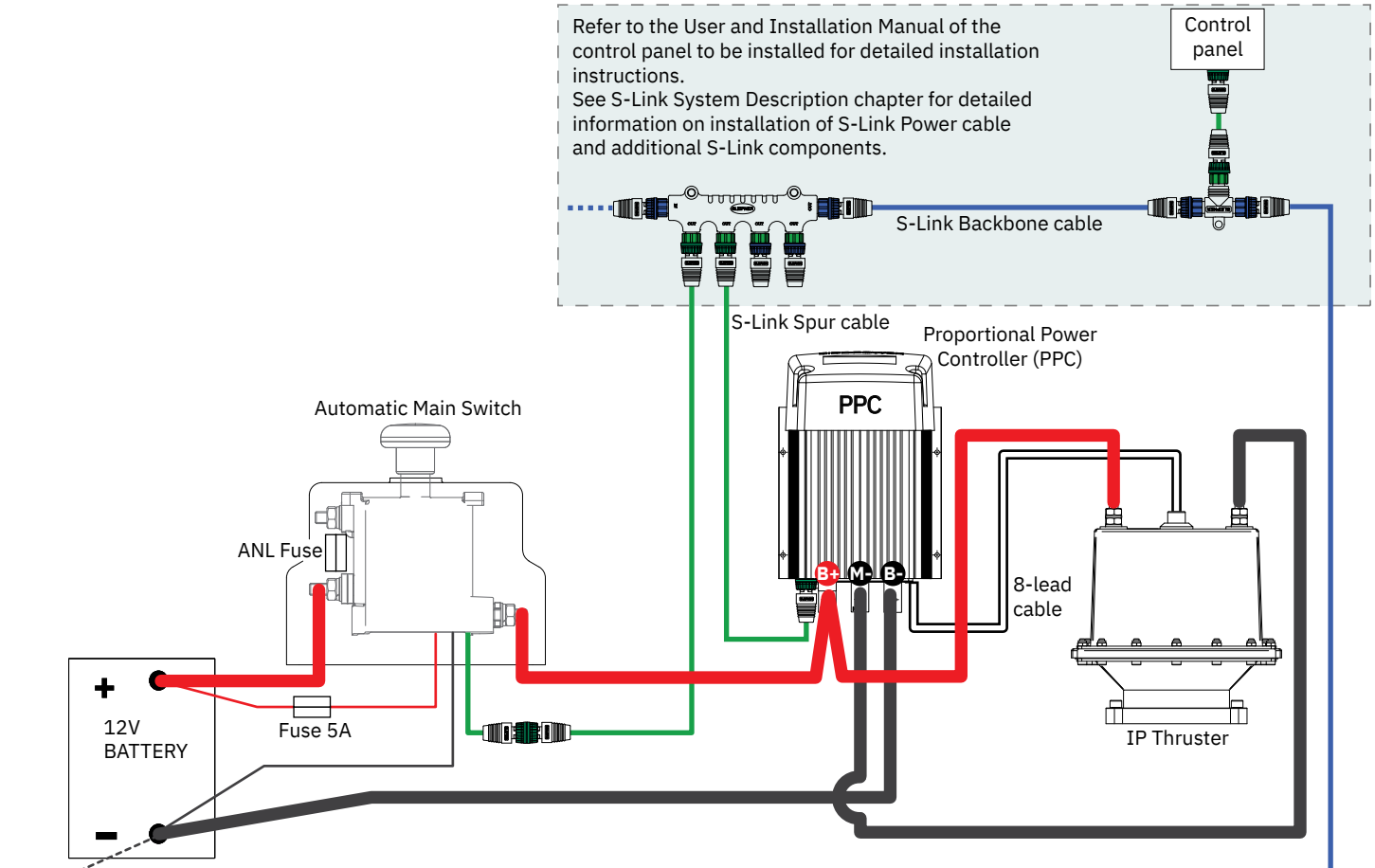
The top and bottom wiring setup is for a dual thruster system, For example bow and stern.



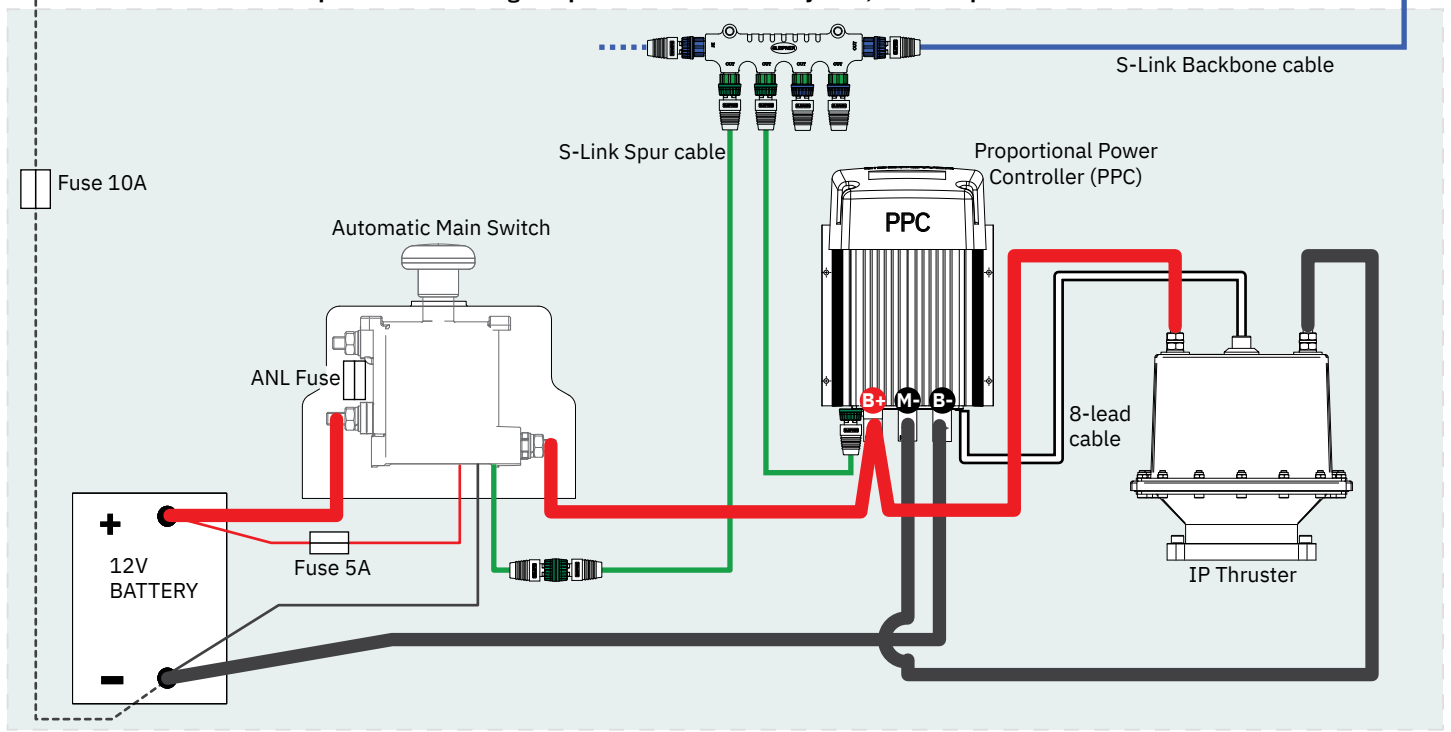
MG_0597

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

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



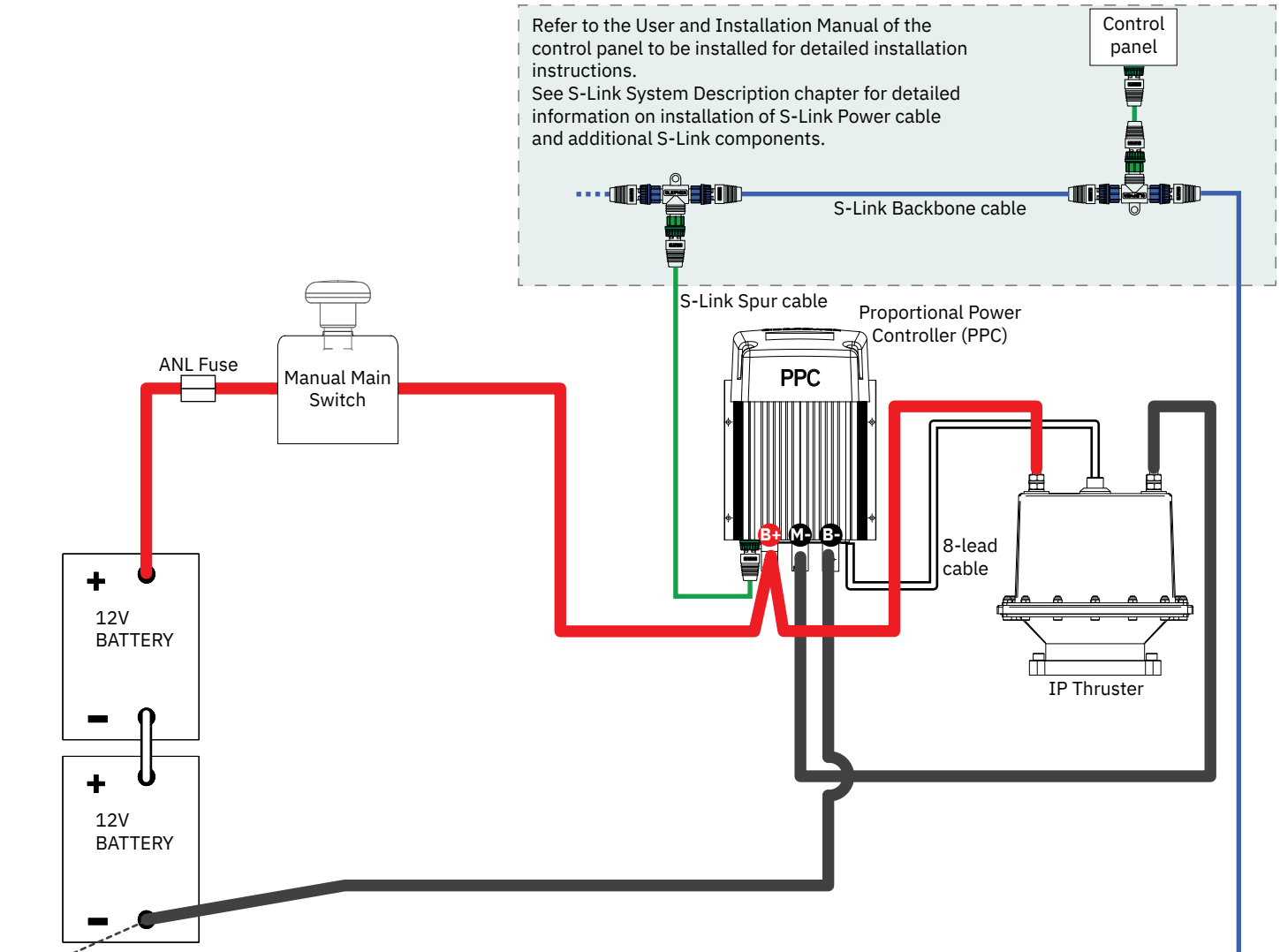
The top and bottom wiring setup is for a dual thruster system, For example bow and stern.



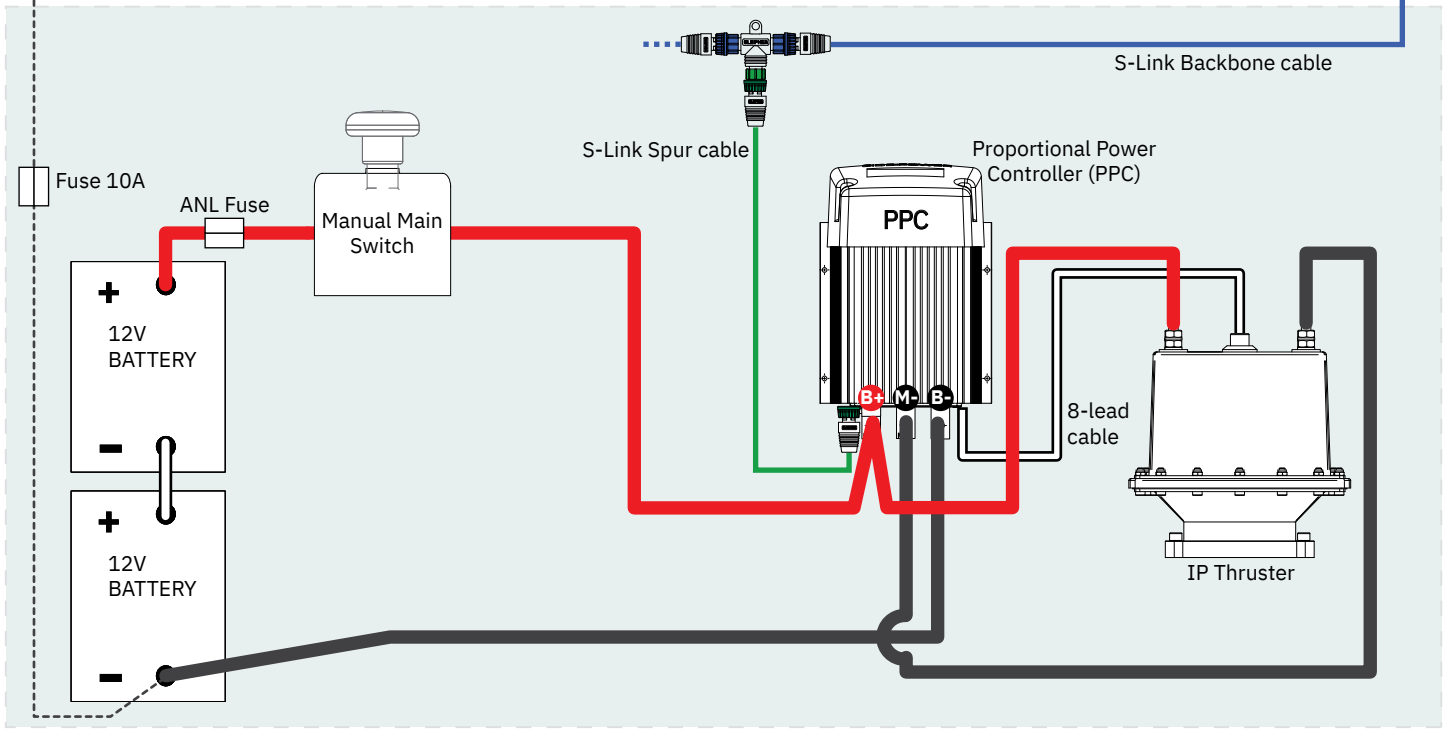
MG_0560

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

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



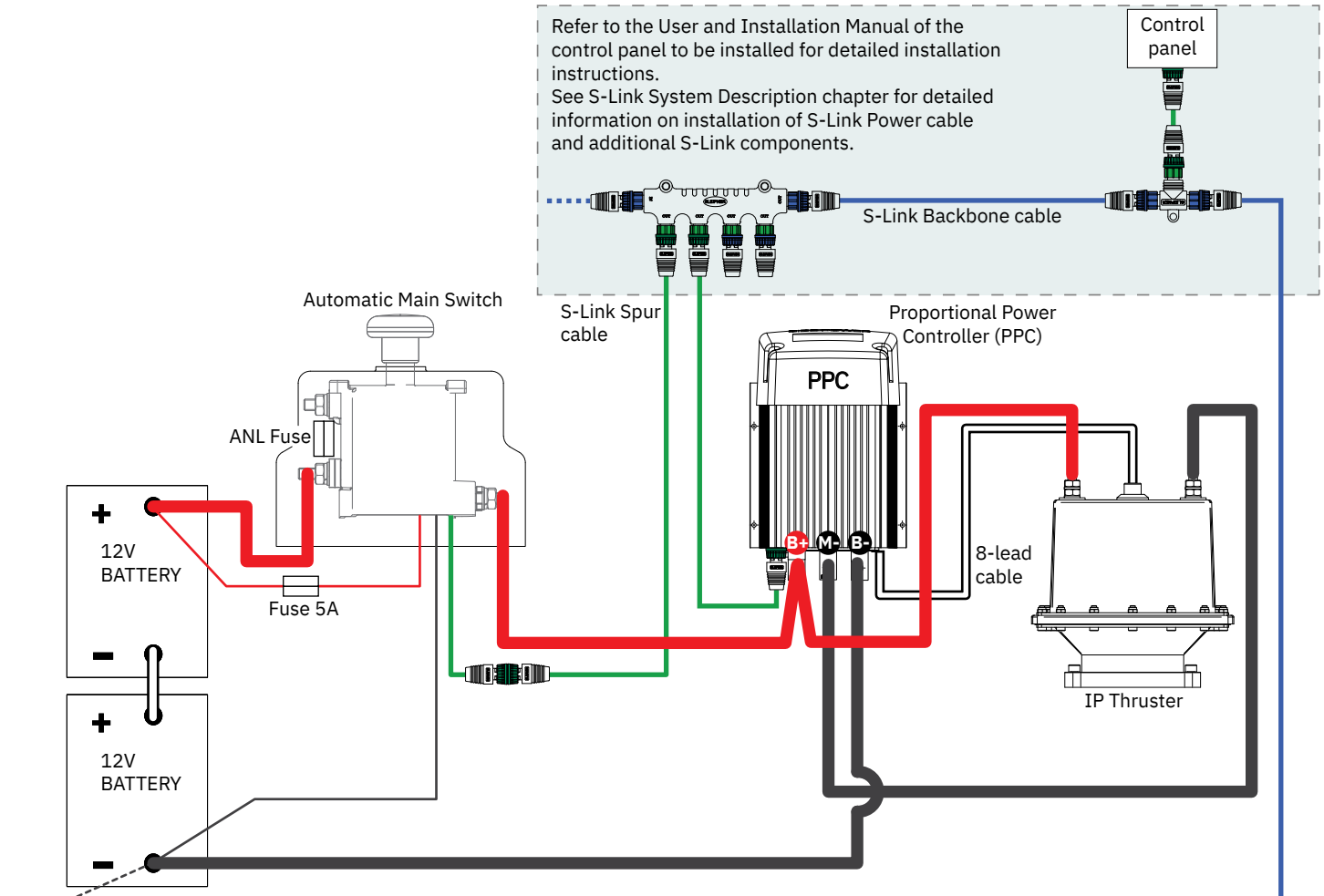
The top and bottom wiring setup is for a dual thruster system, For example bow and stern.



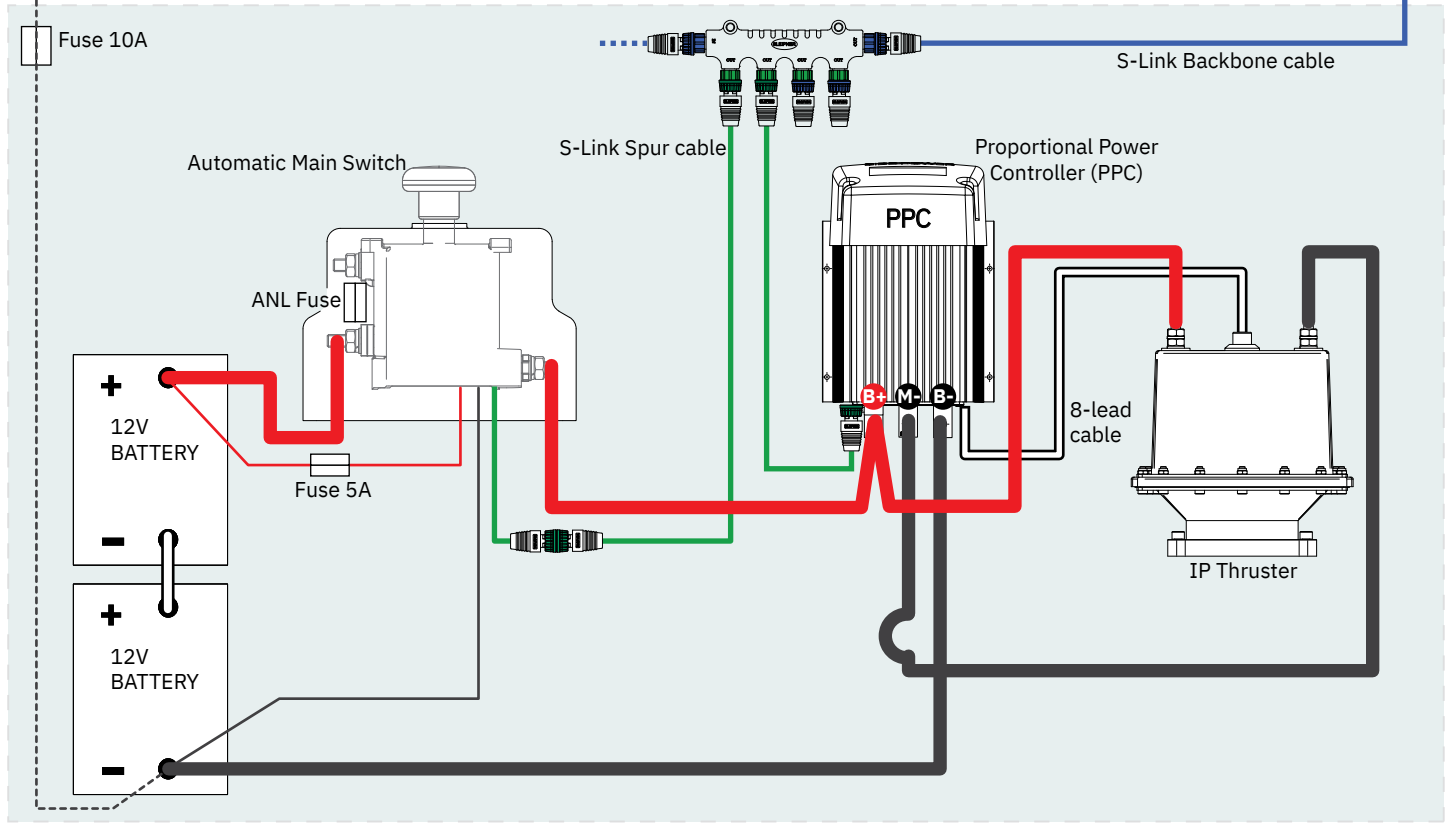
MG_0598

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

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



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



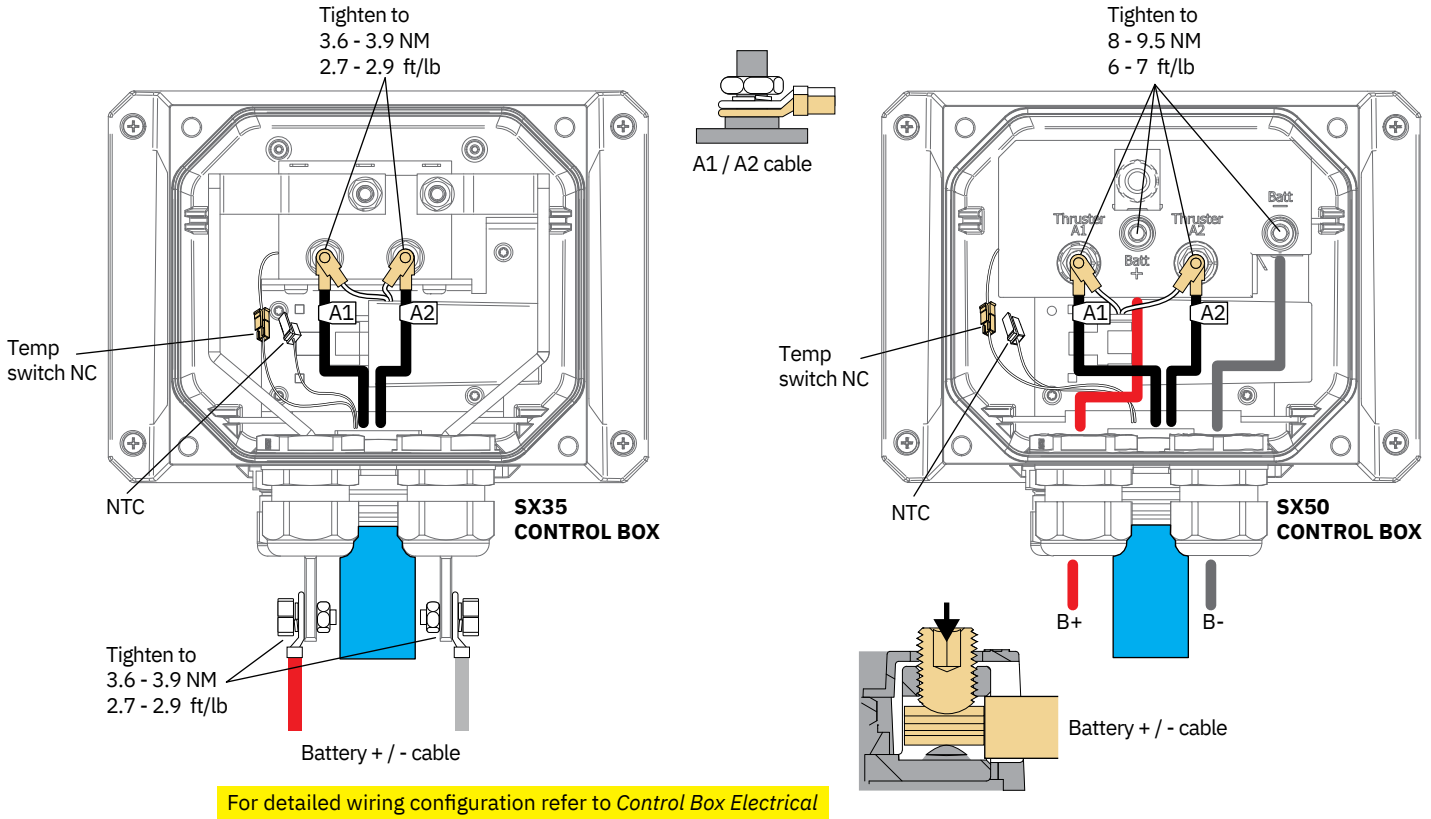
MG_0599

Electrical Reference Guide

MC_0077

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	mm²	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	mm²	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



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

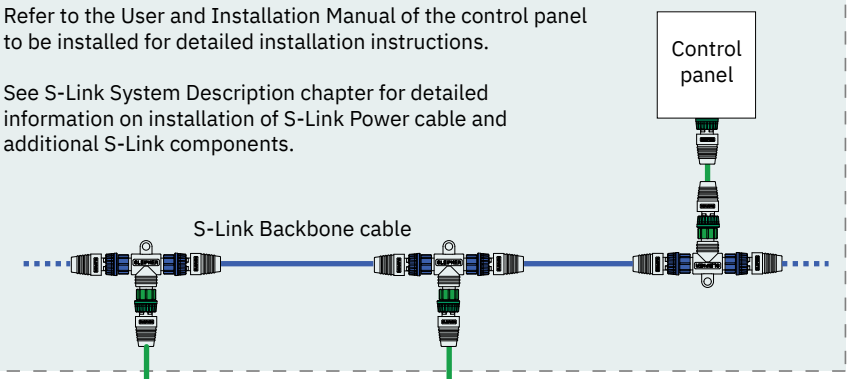
MG_0536

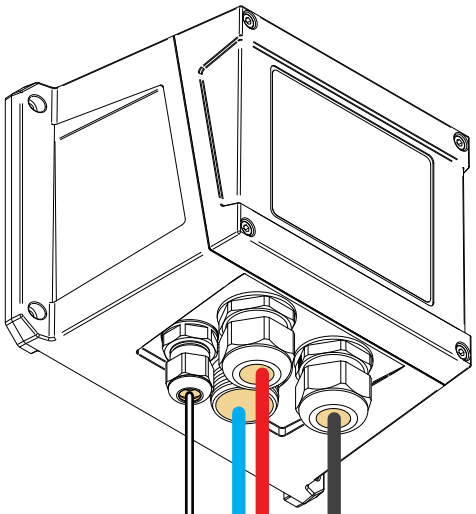
Automatic Main Switch Wiring Diagram 12V S-Link SXP Thruster

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

Refer to the User and Installation Manual of the control panel to be installed for detailed installation instructions.

See S-Link System Description chapter for detailed information on installation of S-Link Power cable and additional S-Link components.

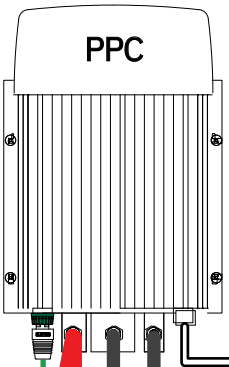




S-Link Spur cable

S-Link Spur cable

Proportional Power Controller (PPC)



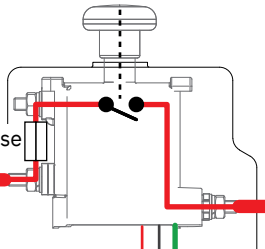
8-lead cable

M-

B+

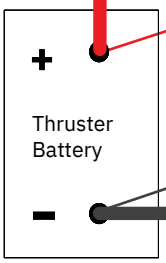
SX Thruster Hose

*Automatic Main Switch



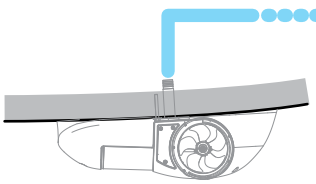
B+

Fuse 5A

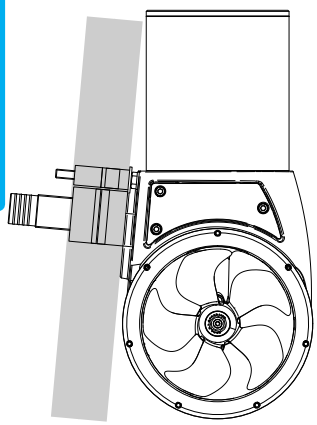


B-

SXP Thruster



SXP Thruster variant with POD



*Automatic Main Switch can be replaced by a fuse holder and manual main switch.

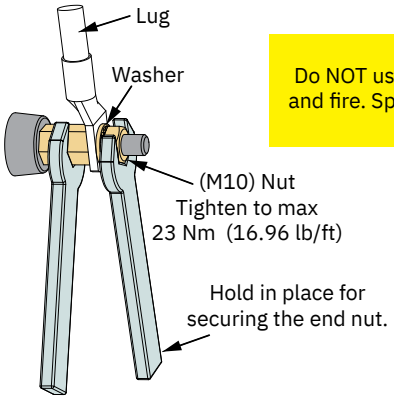
MG_0126

Electrical Reference Guide

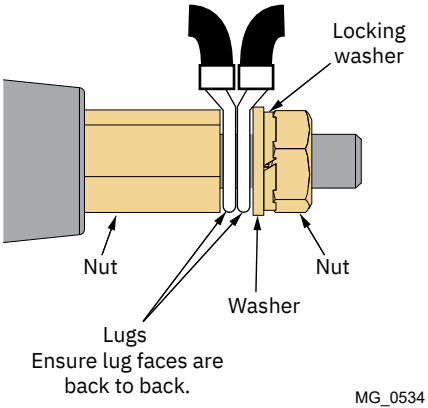
MC_0468

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	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			
	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							
	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



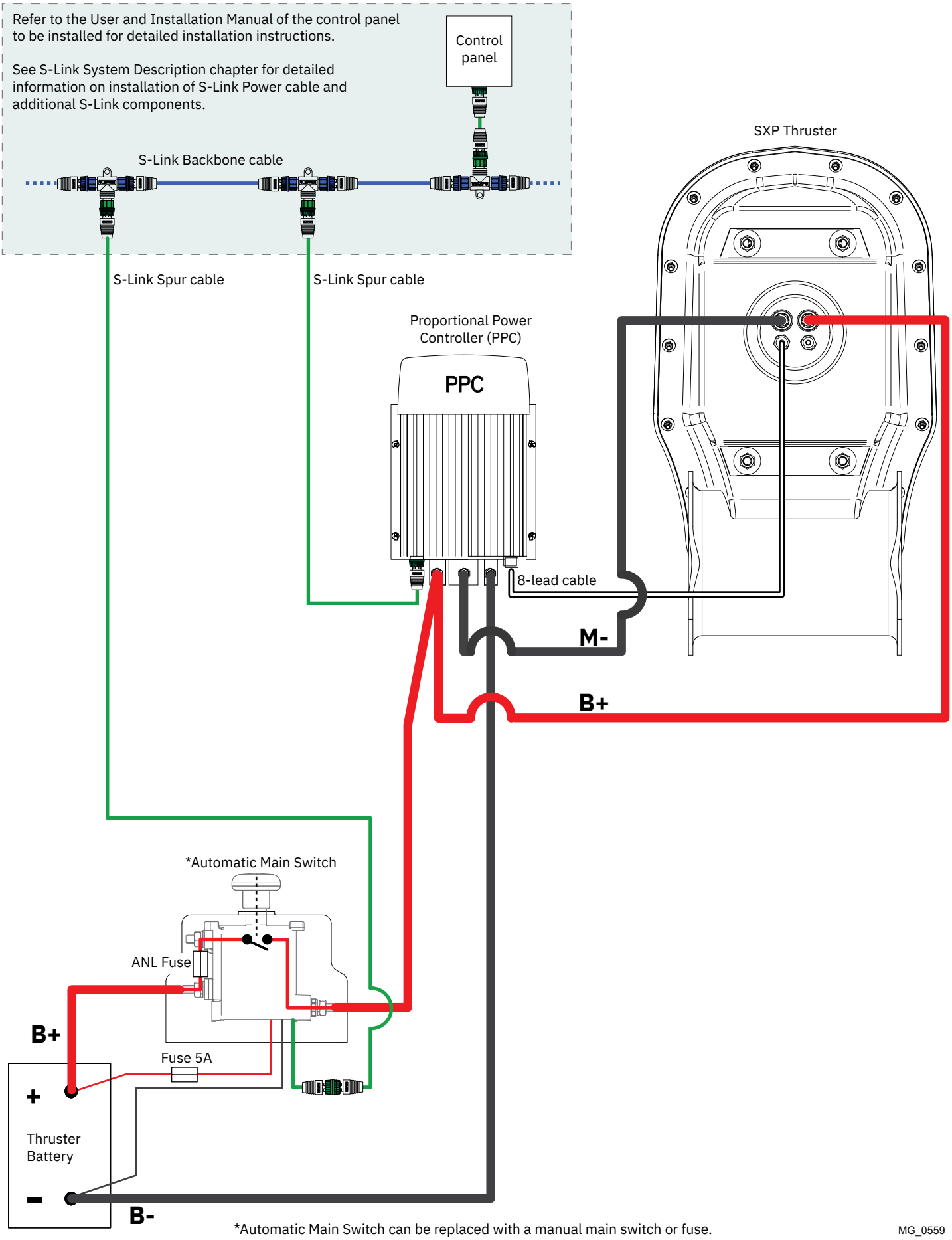
IMPORTANT
Do NOT use washers between lugs, this causes overheating and fire. Spring washers must be placed in the outer position before tightening nut.



MG_0534

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

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



*Automatic Main Switch can be replaced with a manual main switch or fuse.

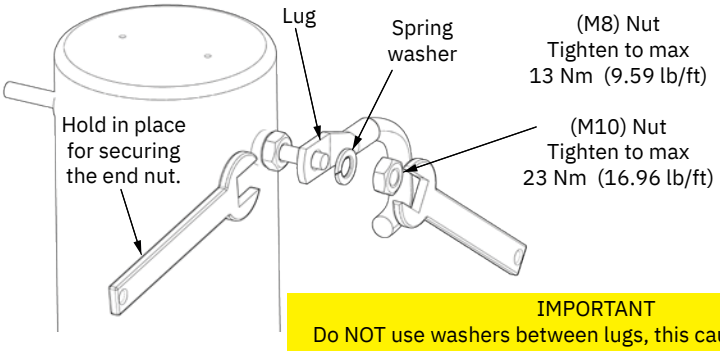
MG_0559

Electrical Reference Guide

MC_0475

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	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			
	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							
	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

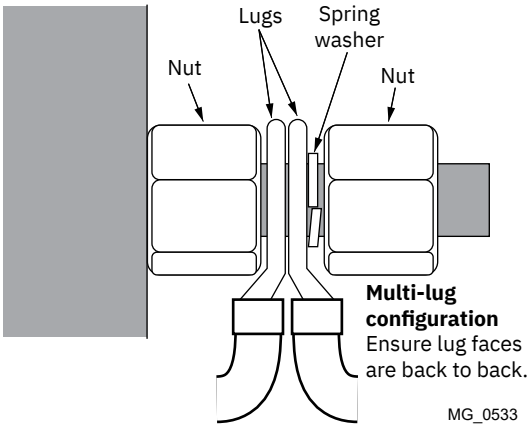
Motor Lug Connection



(M8) Nut
Tighten to max
13 Nm (9.59 lb/ft)

(M10) Nut
Tighten to max
23 Nm (16.96 lb/ft)

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

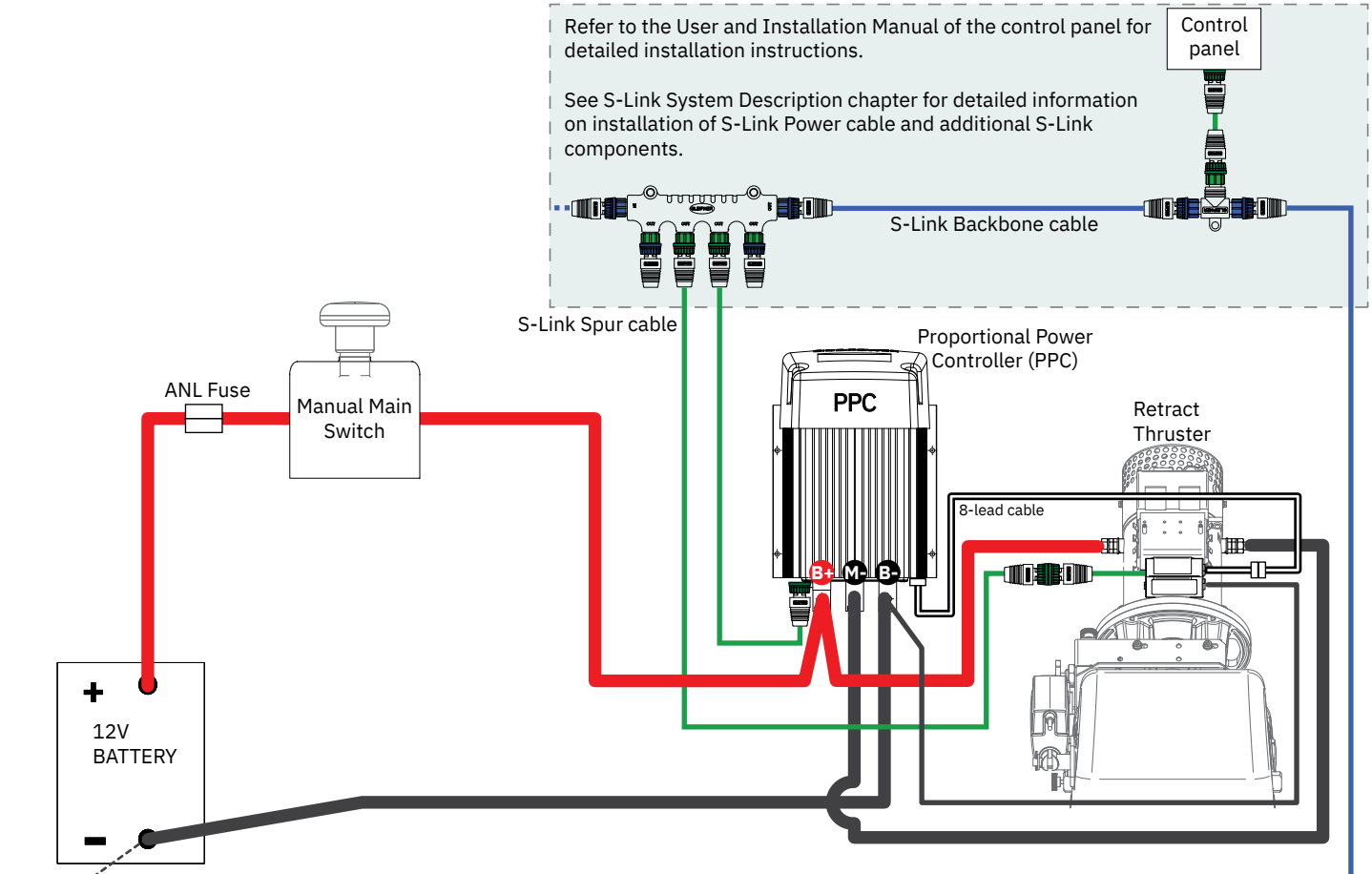


Multi-lug configuration
Ensure lug faces are back to back.

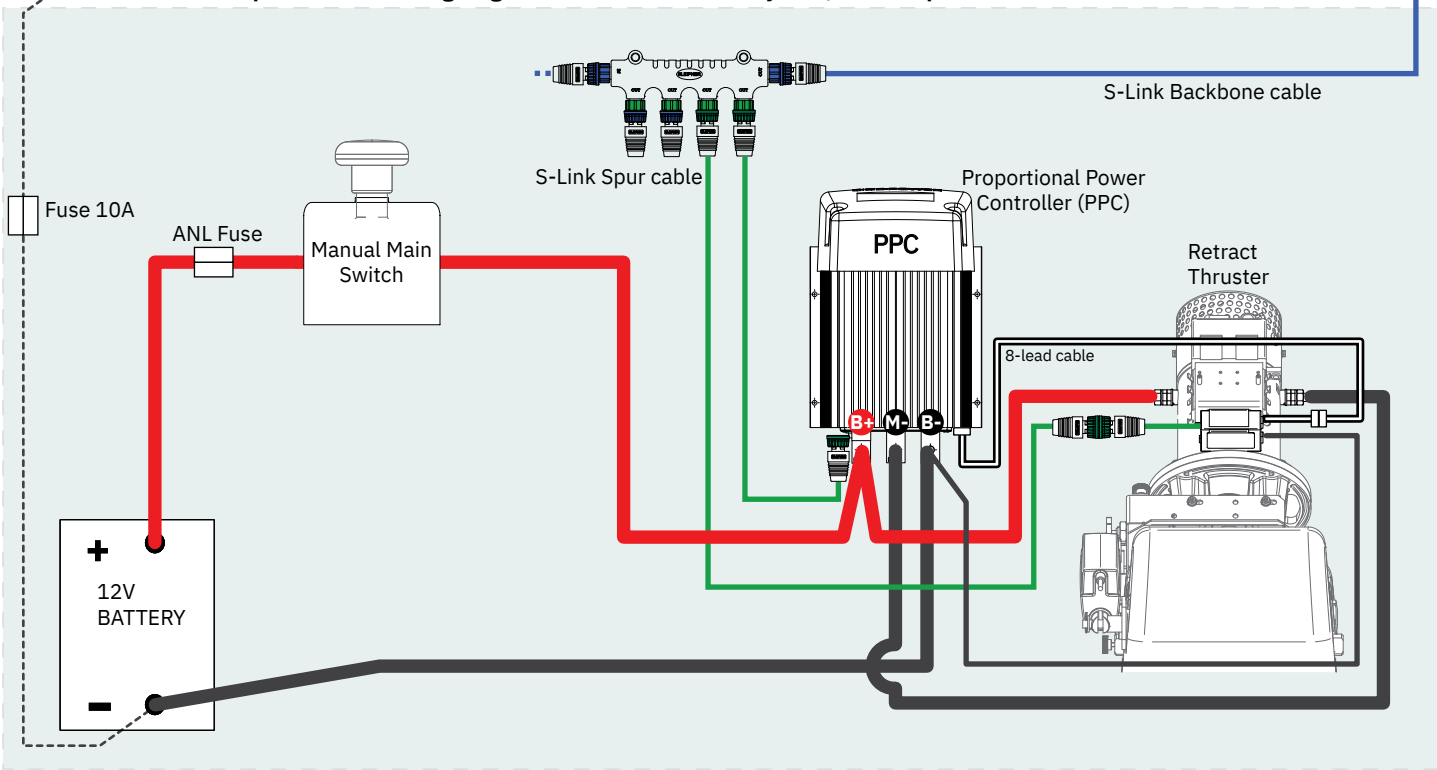
MG_0533

Manual Main Switch Wiring Diagram 12V Proportional Retract Thruster

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



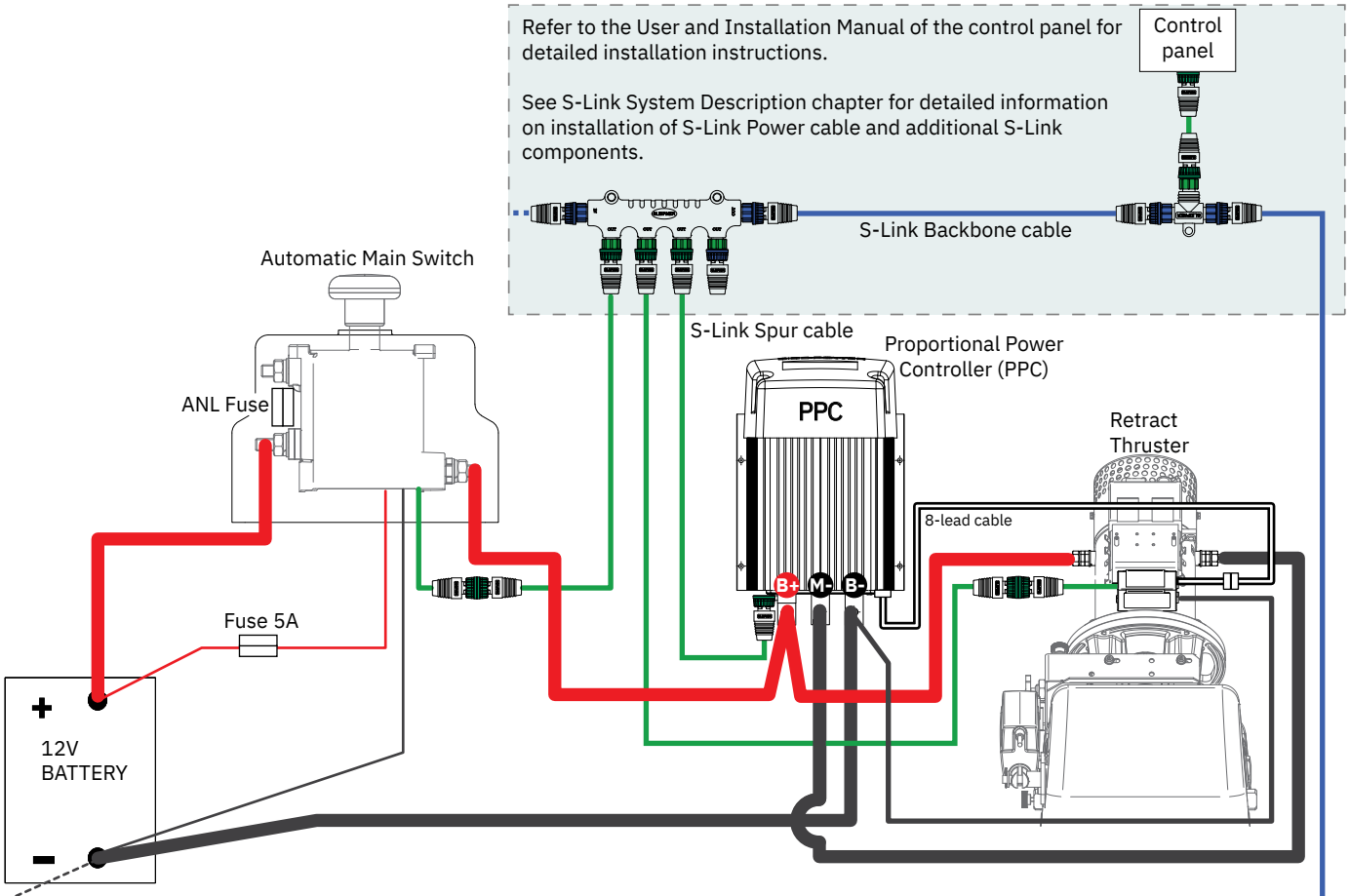
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



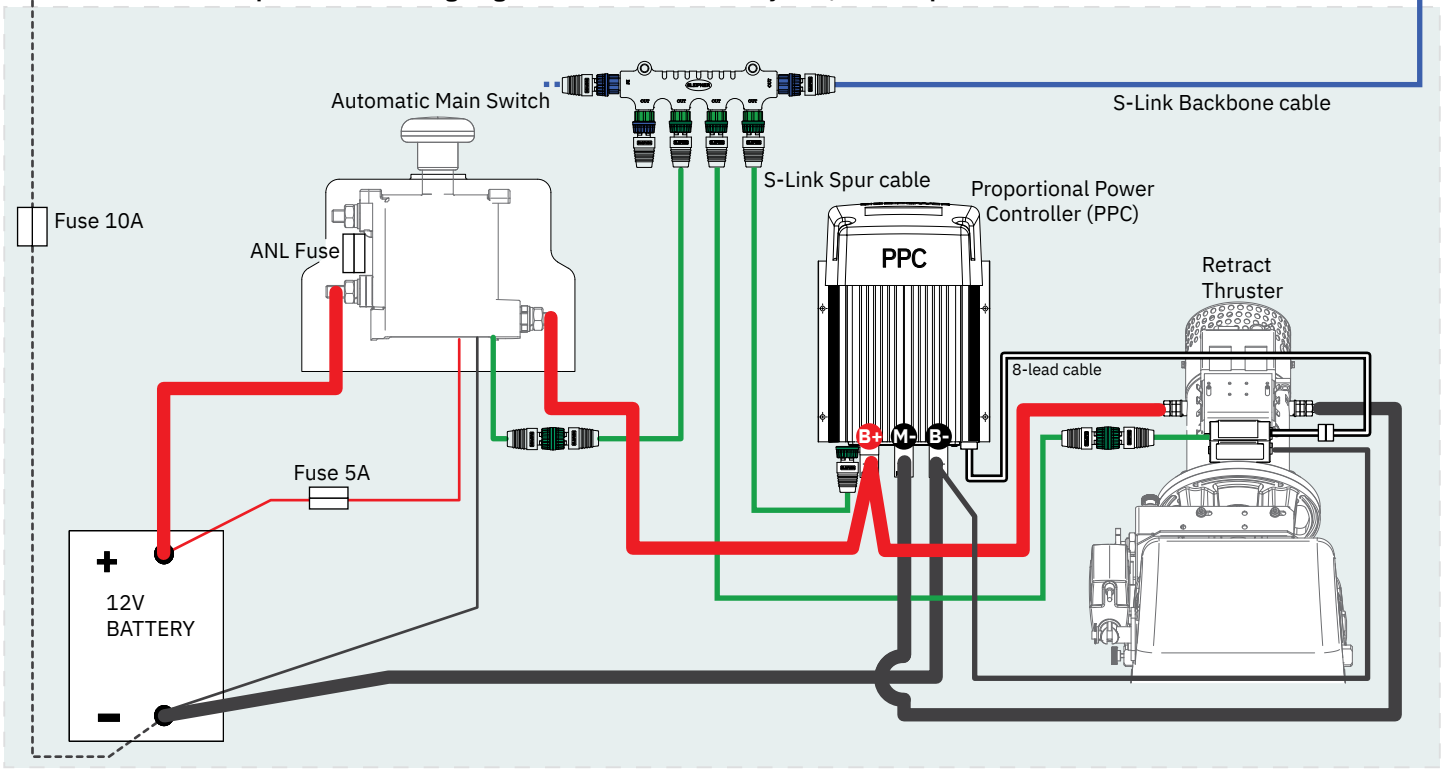
MG_0609

Automatic Main Switch Wiring Diagram 12V Proportional Retract Thruster

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



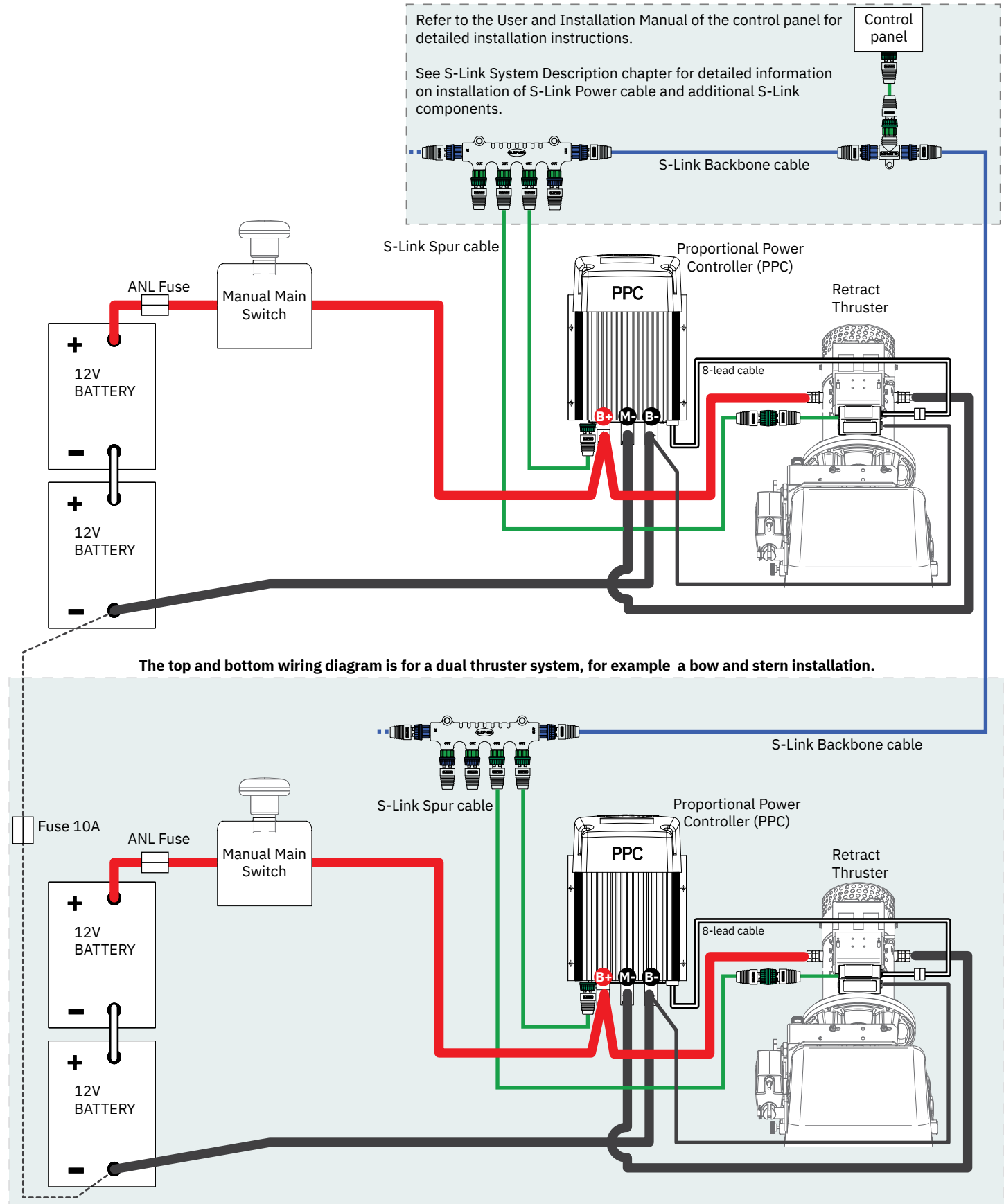
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



MG_0550

Manual Main Switch Wiring Diagram 24V Proportional Retract Thruster

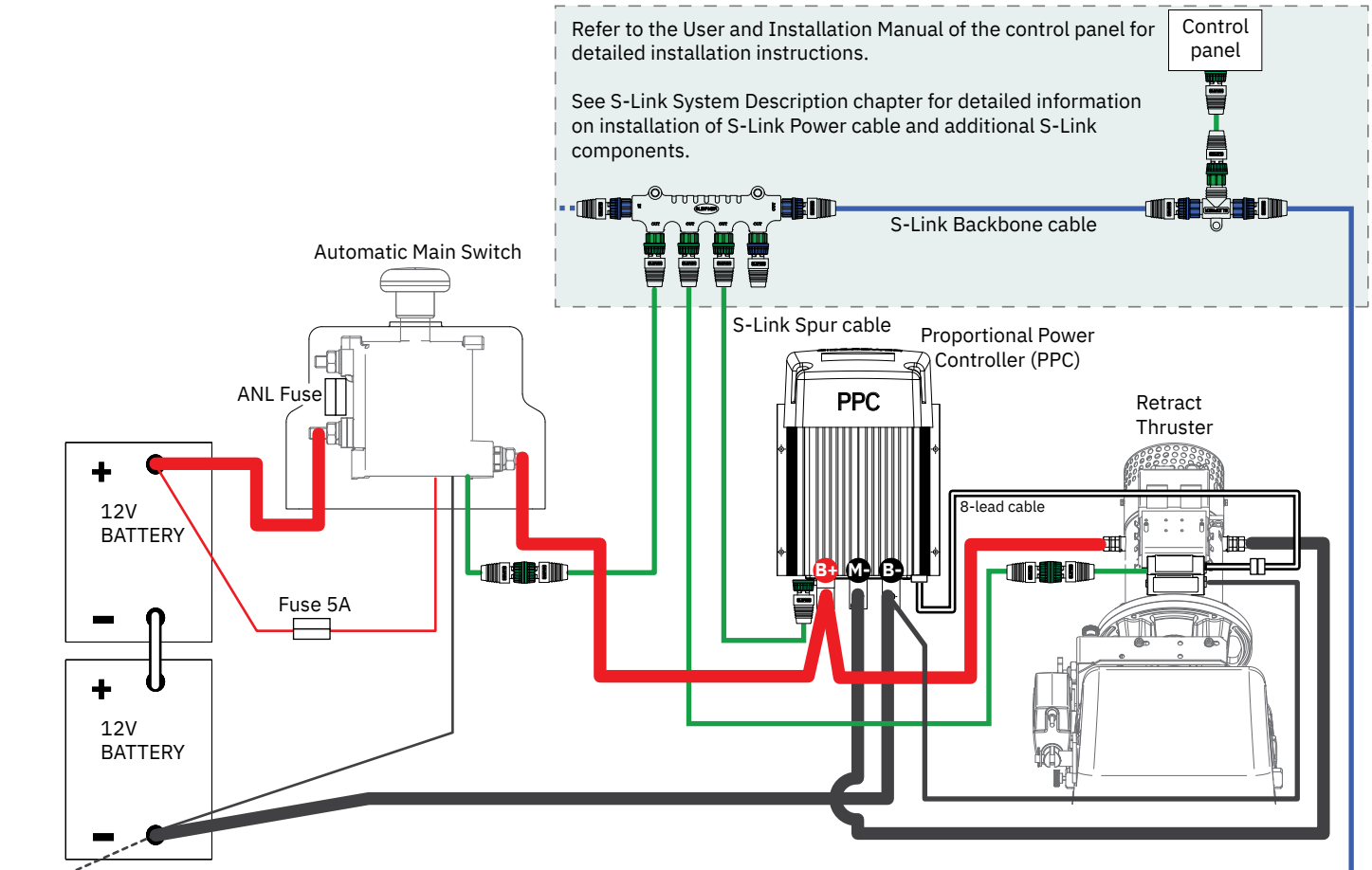
The Top wiring diagram is for a single bow or stern thruster system



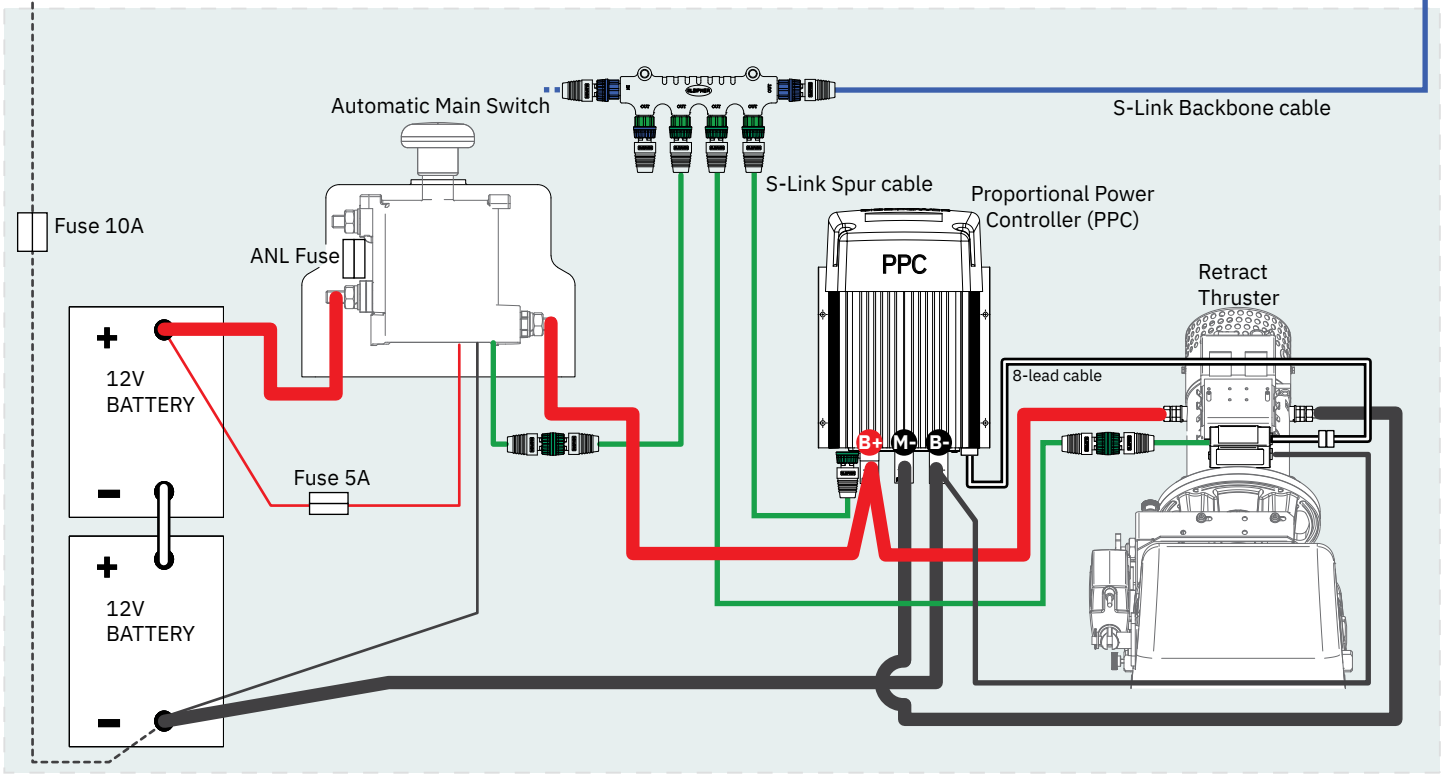
MG_0608

Automatic Main Switch Wiring Diagram 24V Proportional Retract Thruster

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



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



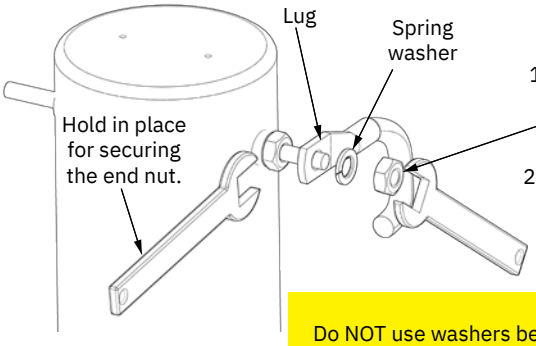
MG_0607

Electrical Reference Guide

MC_0044

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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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			
	24V	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	12V	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							
	24V	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
120/215T	24V	420 A	DIN: 450 SAE: 855 EN: 760	ANL 325	mm²	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	mm²	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						
	24V	350 A	DIN: 400 SAE: 760 EN: 680	ANL 325	mm2	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	mm²	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	mm²	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	mm²	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	mm²	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	mm²	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	

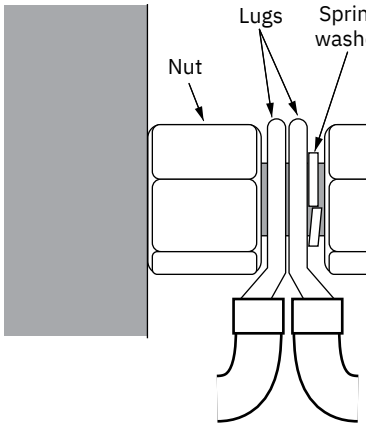
Motor Lug Connection



(M8) Nut
Tighten to max
13 Nm (9.59 lb/ft)

(M10) Nut
Tighten to max
23 Nm (16.96 lb/ft)

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

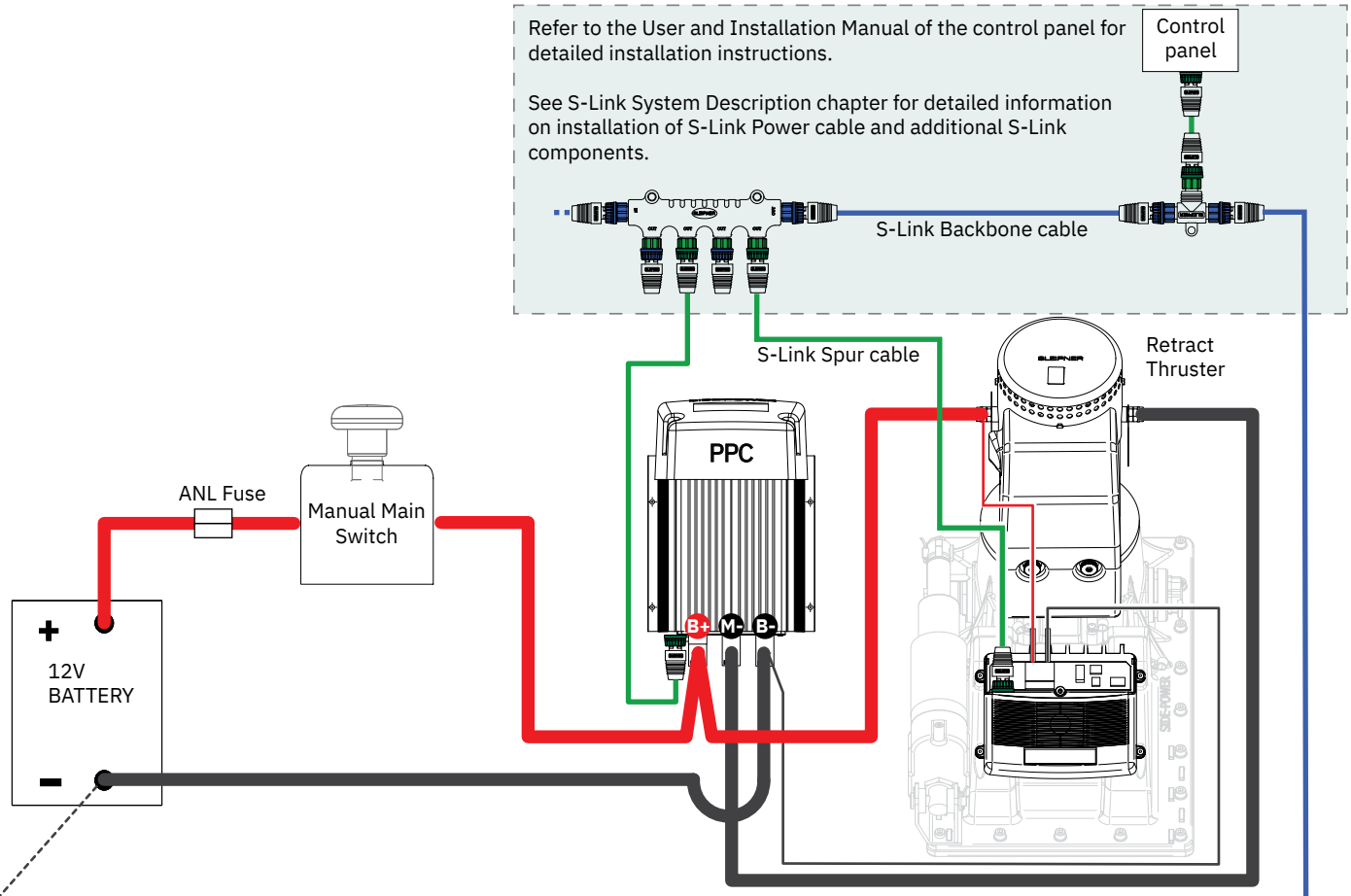


Multi-lug configuration
Ensure lug faces are back to back.

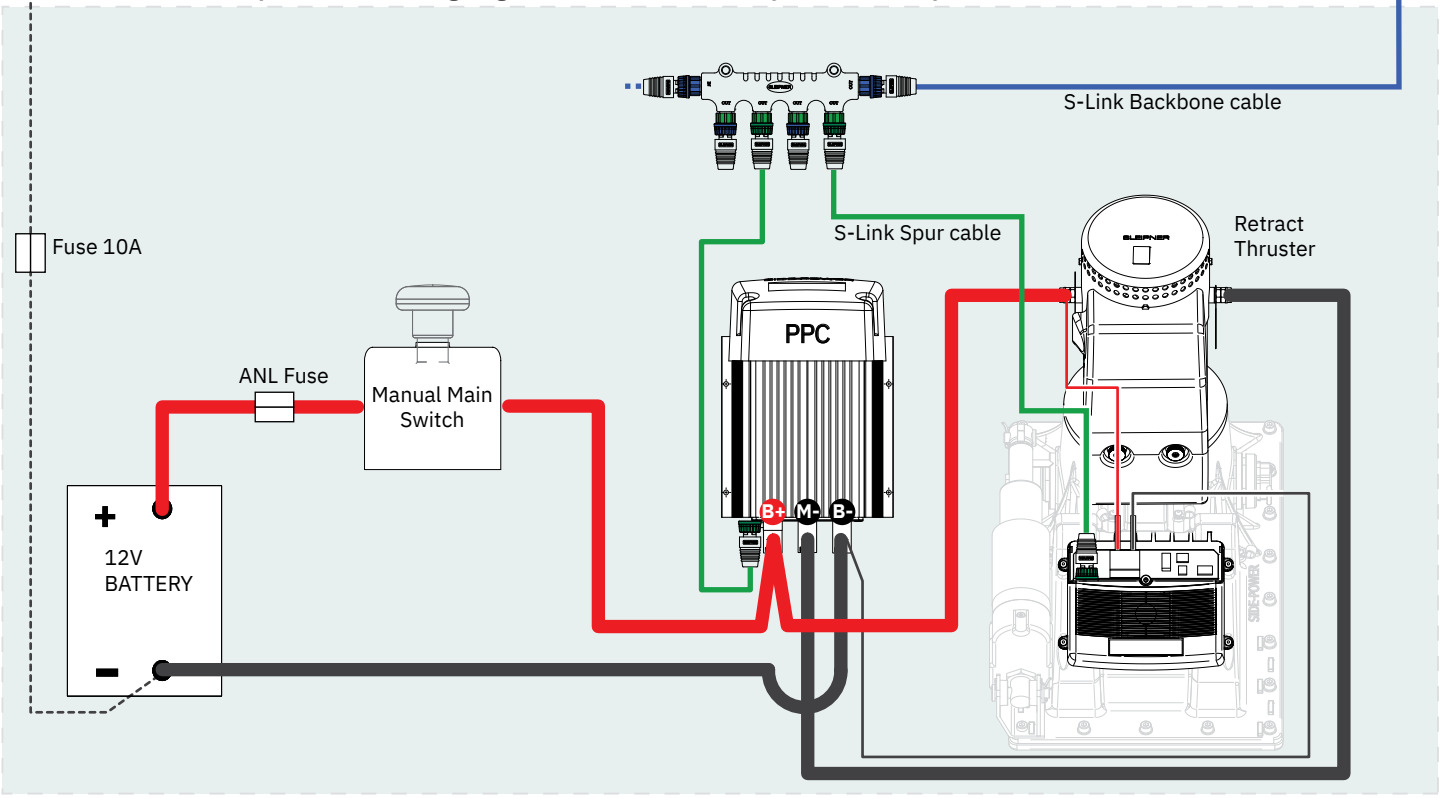
MG_0533

Manual Main Switch Wiring Diagram 12V Proportional Retract Thruster

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



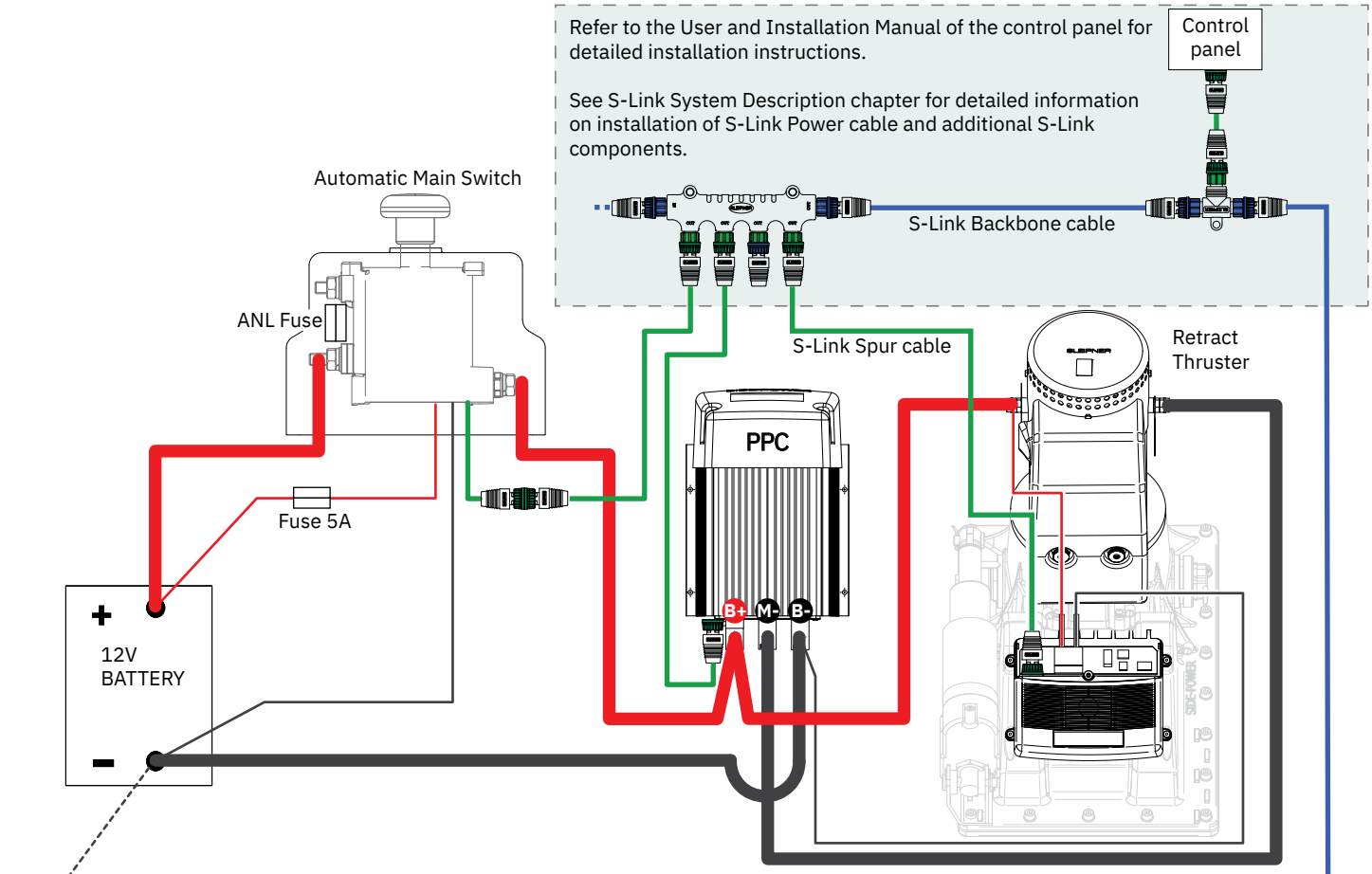
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



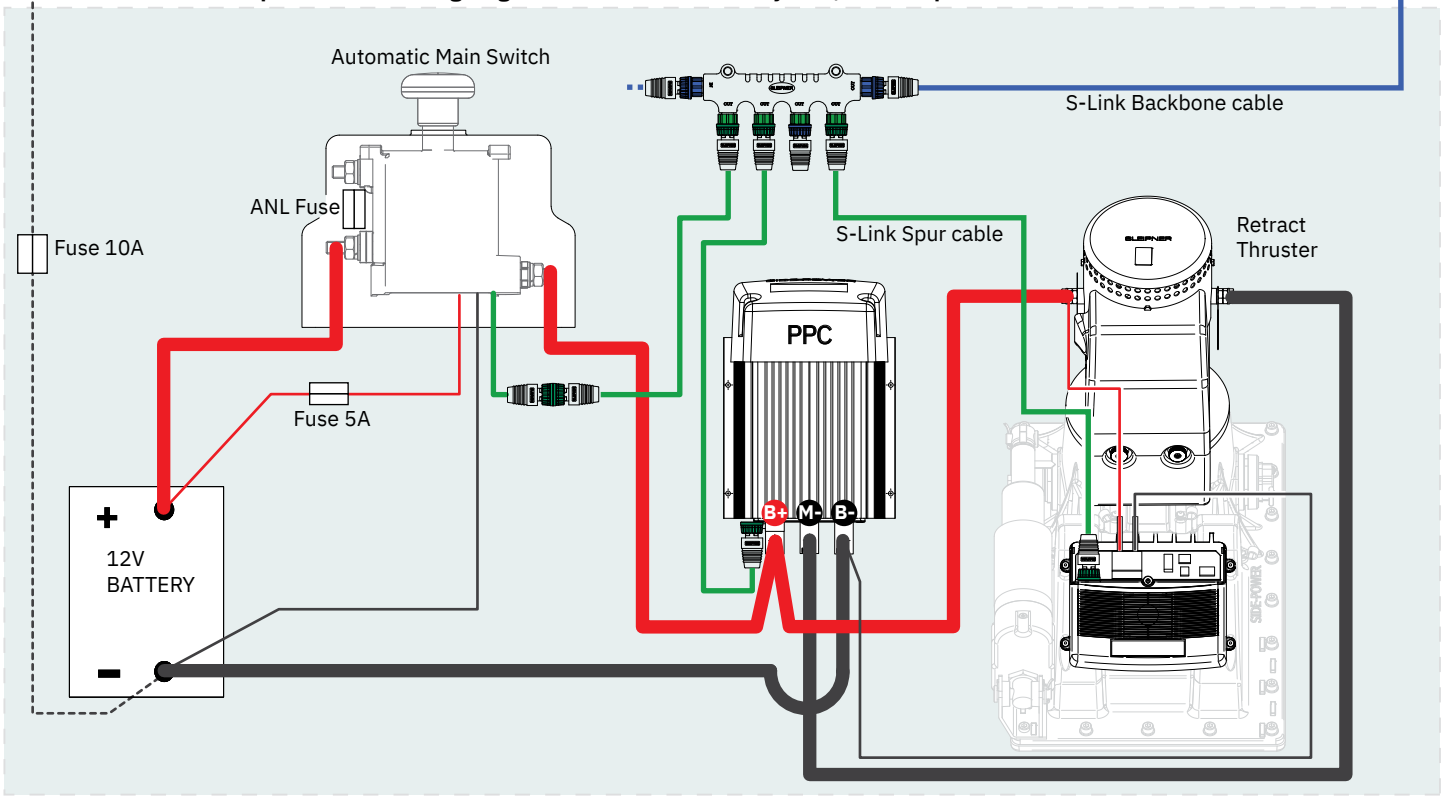
MG_0631

Automatic Main Switch Wiring Diagram 12V Proportional Retract Thruster

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



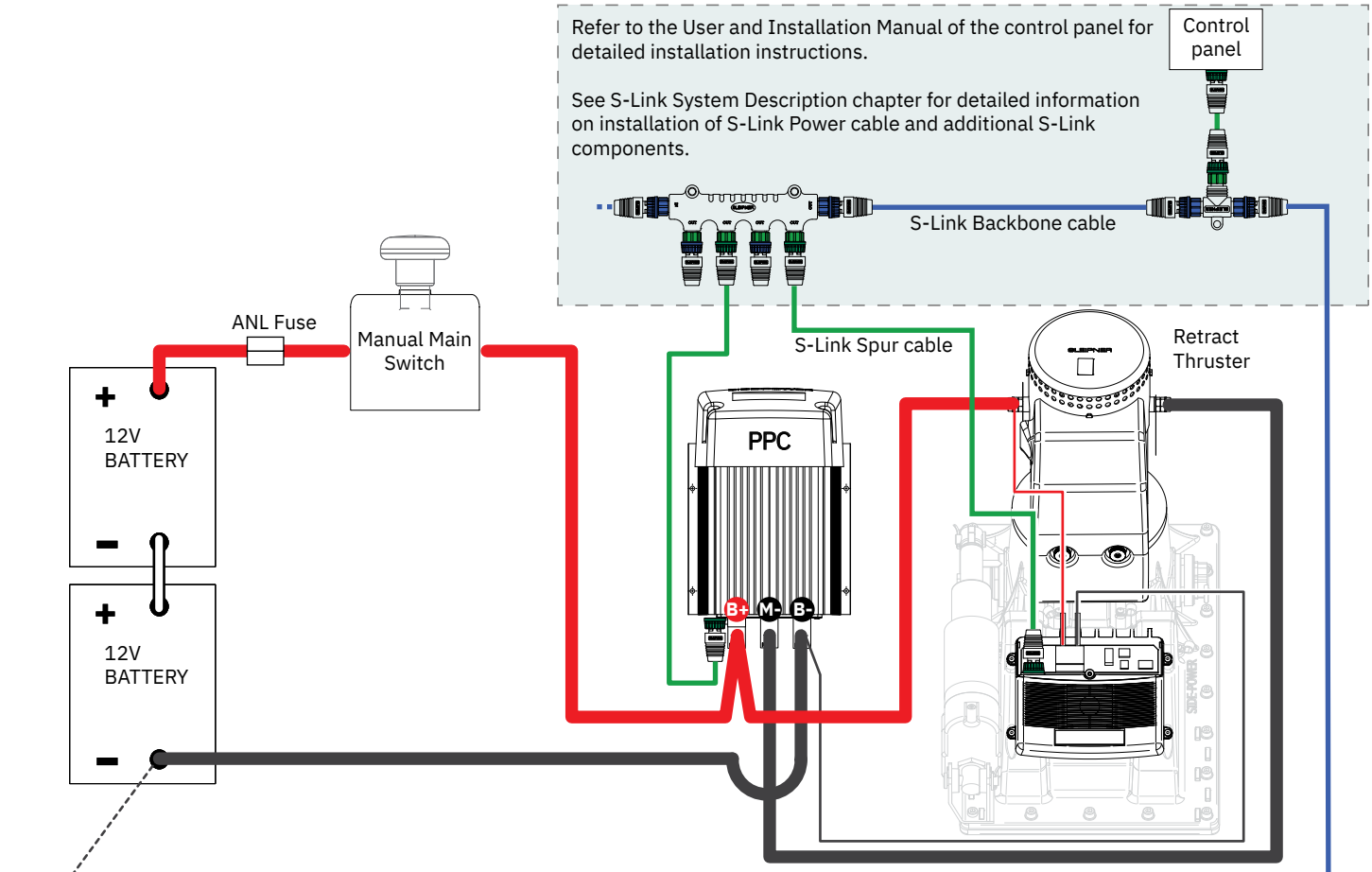
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



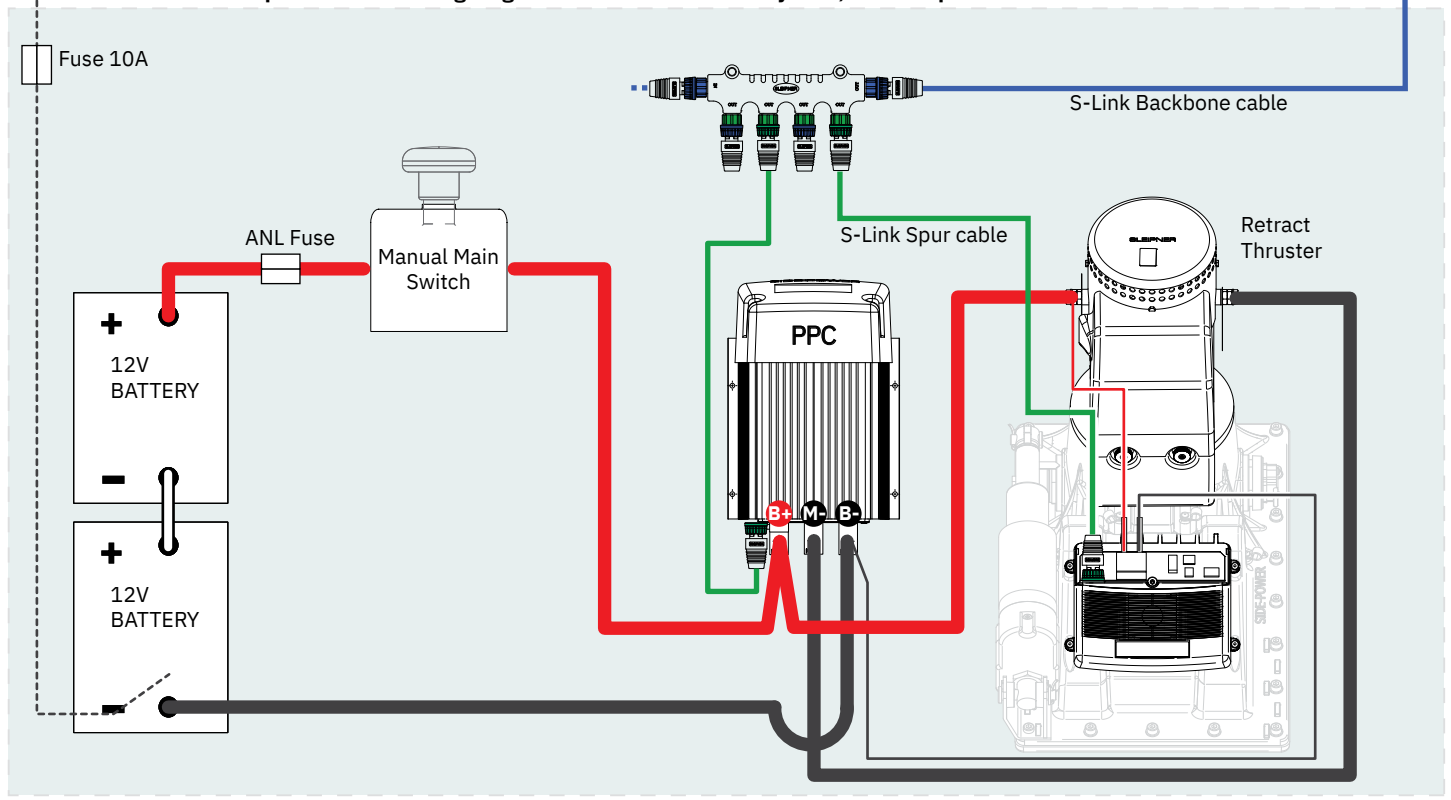
MG_0555

Manual Main Switch Wiring Diagram 24V Proportional Retract Thruster

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



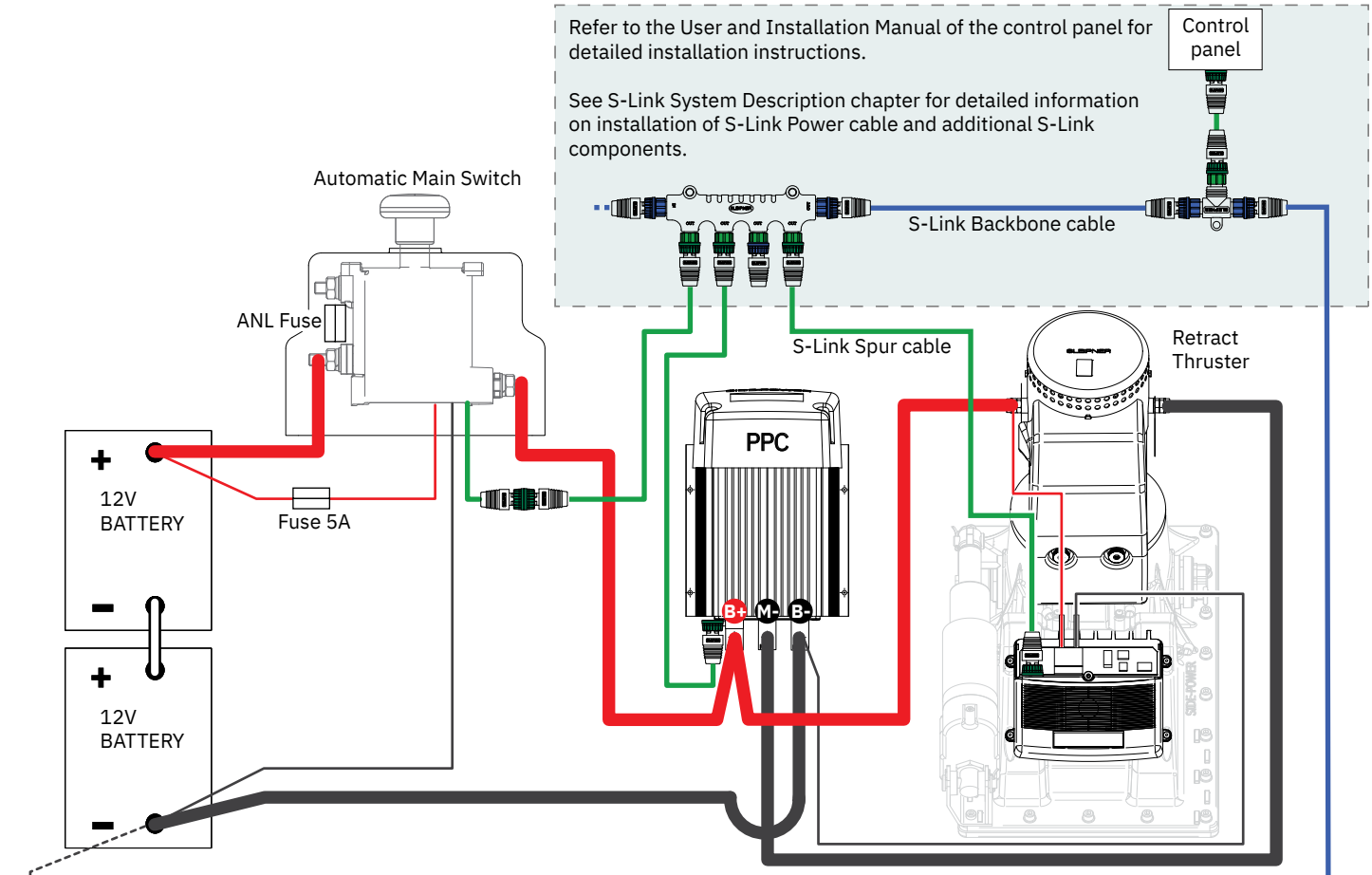
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



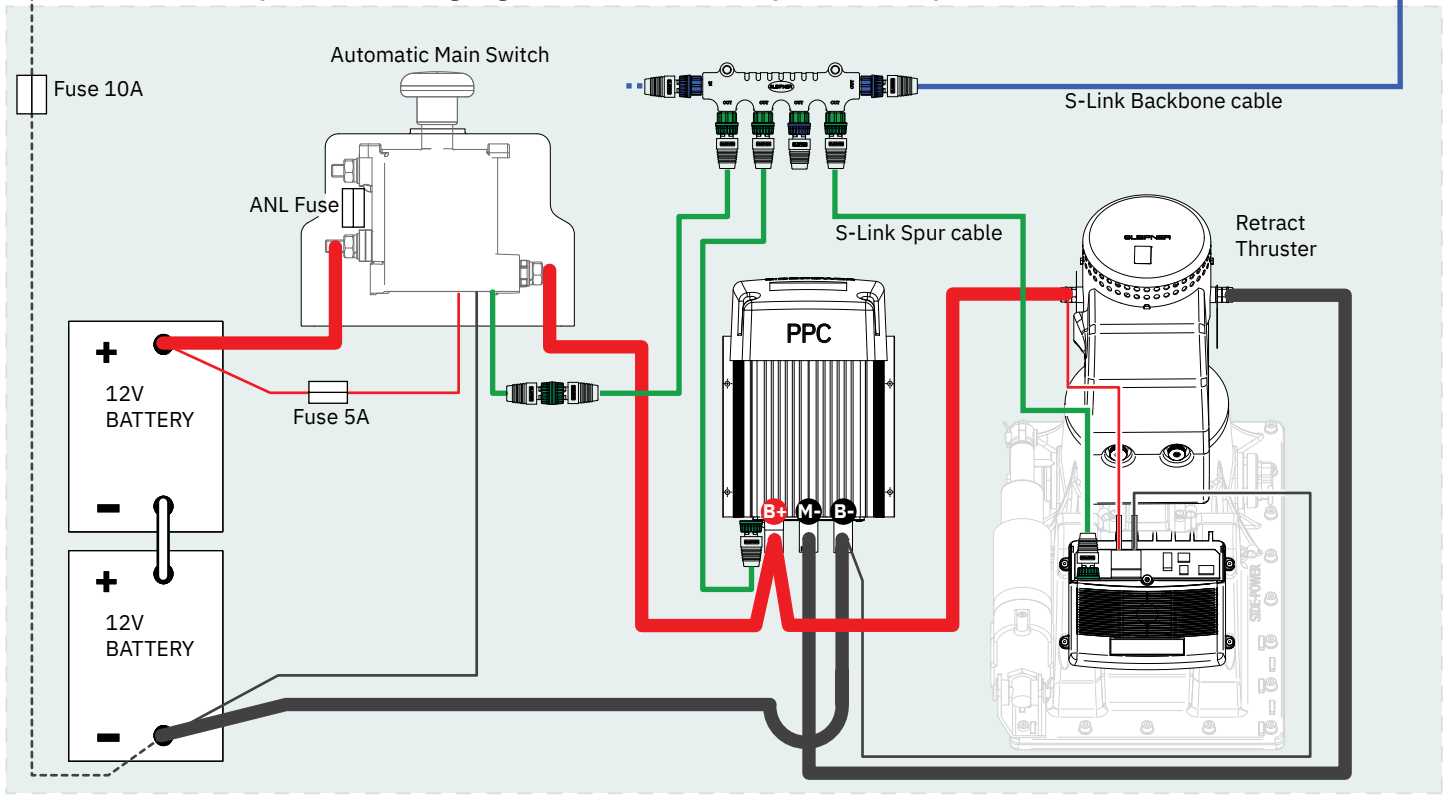
MG_0632

Automatic Main Switch Wiring Diagram 24V Proportional Retract Thruster

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



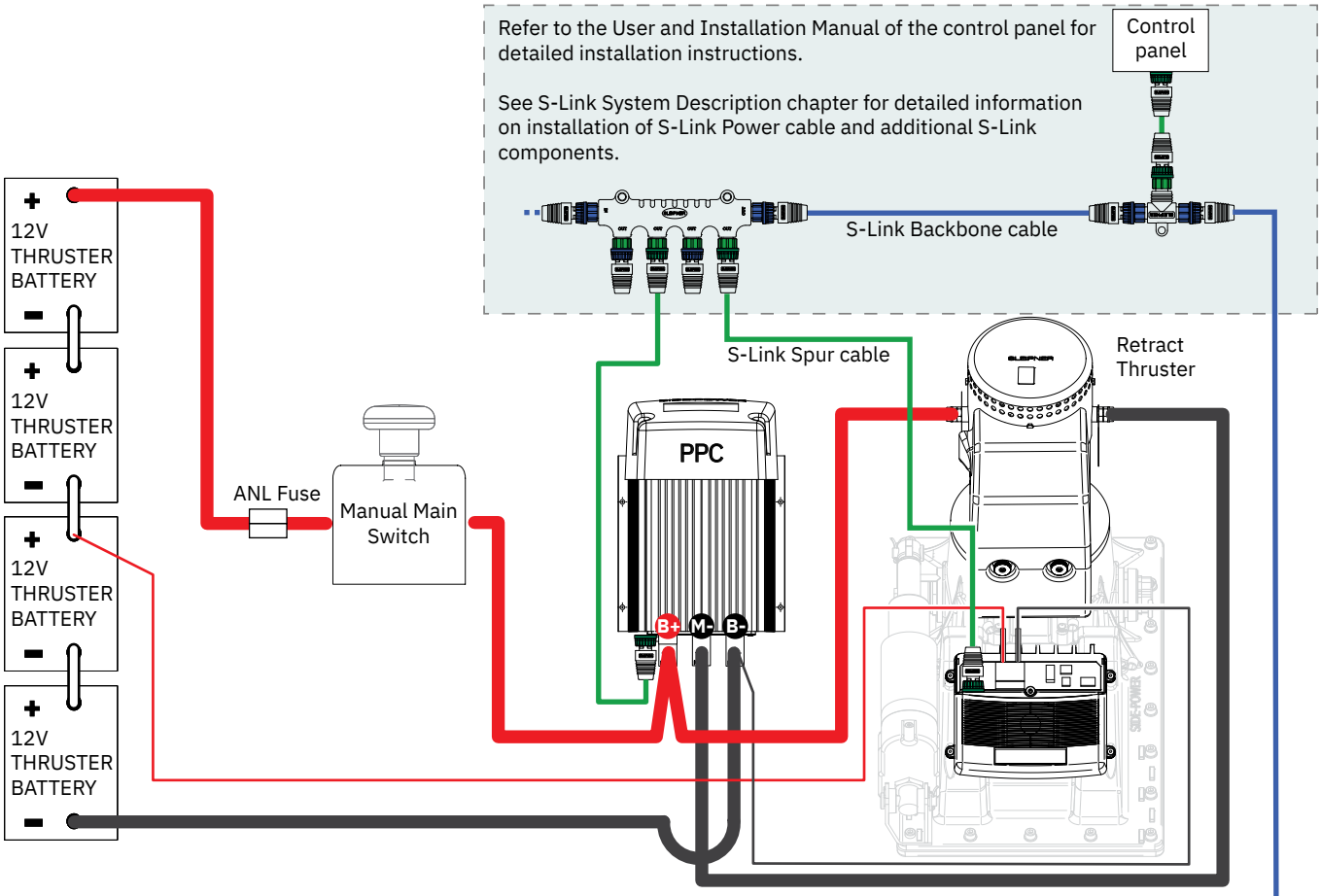
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



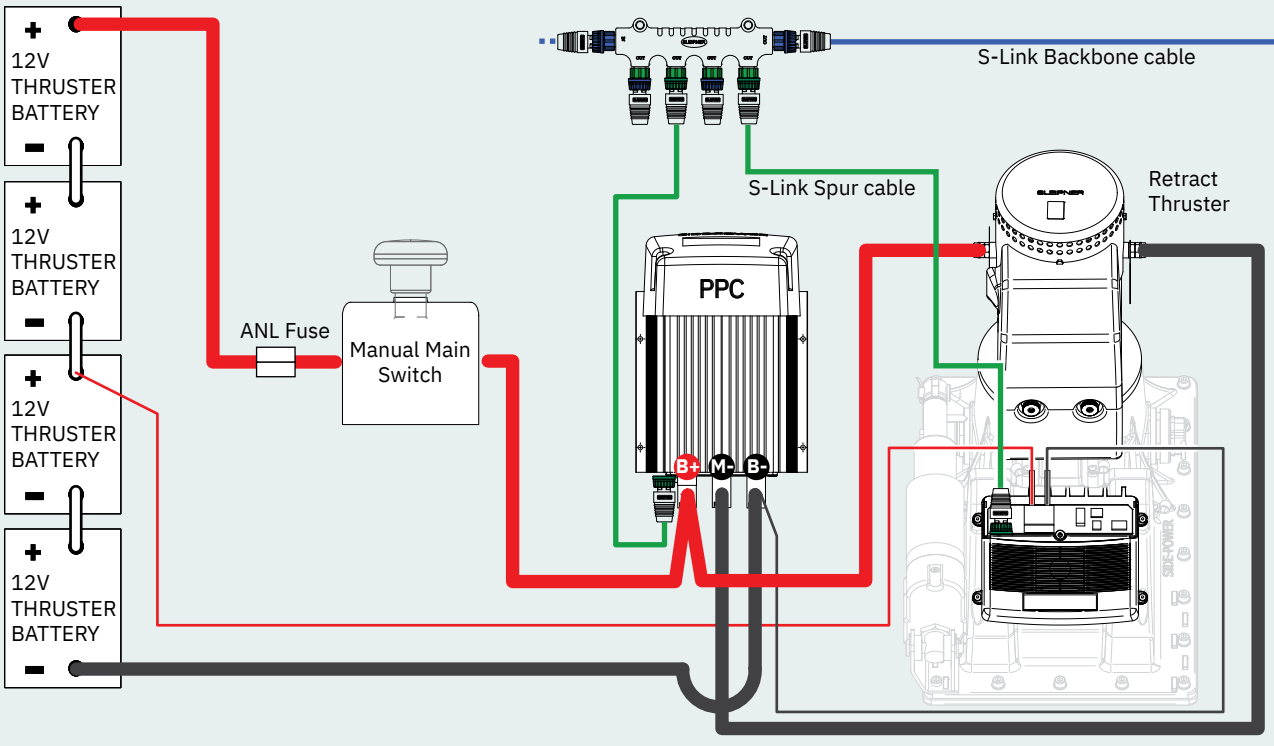
MG_0633

Manual Main Switch Wiring Diagram 48V Proportional Retract Thruster

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



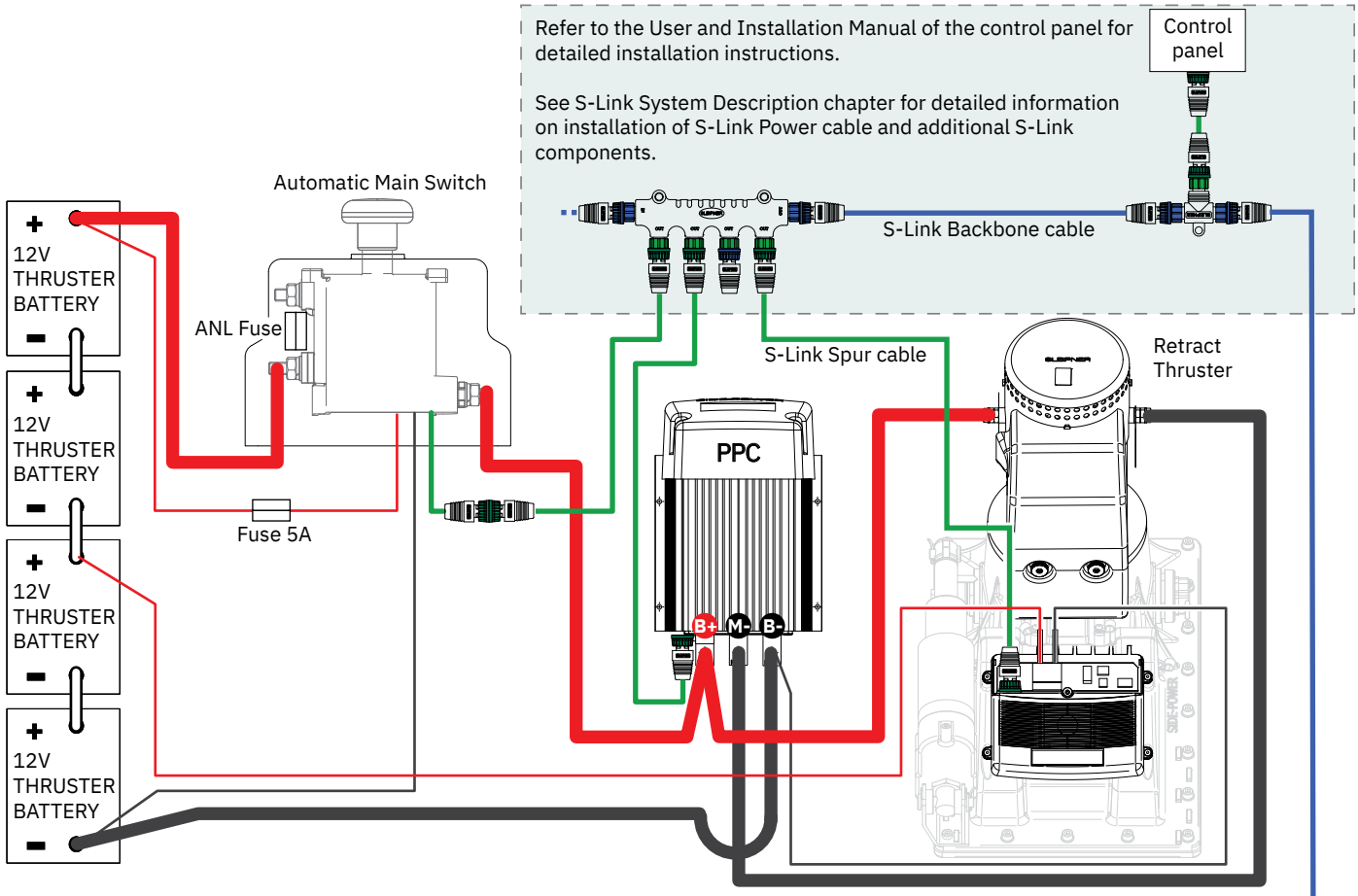
The top and bottom wiring diagram is for a dual thruster system, for example a bow and stern installation.



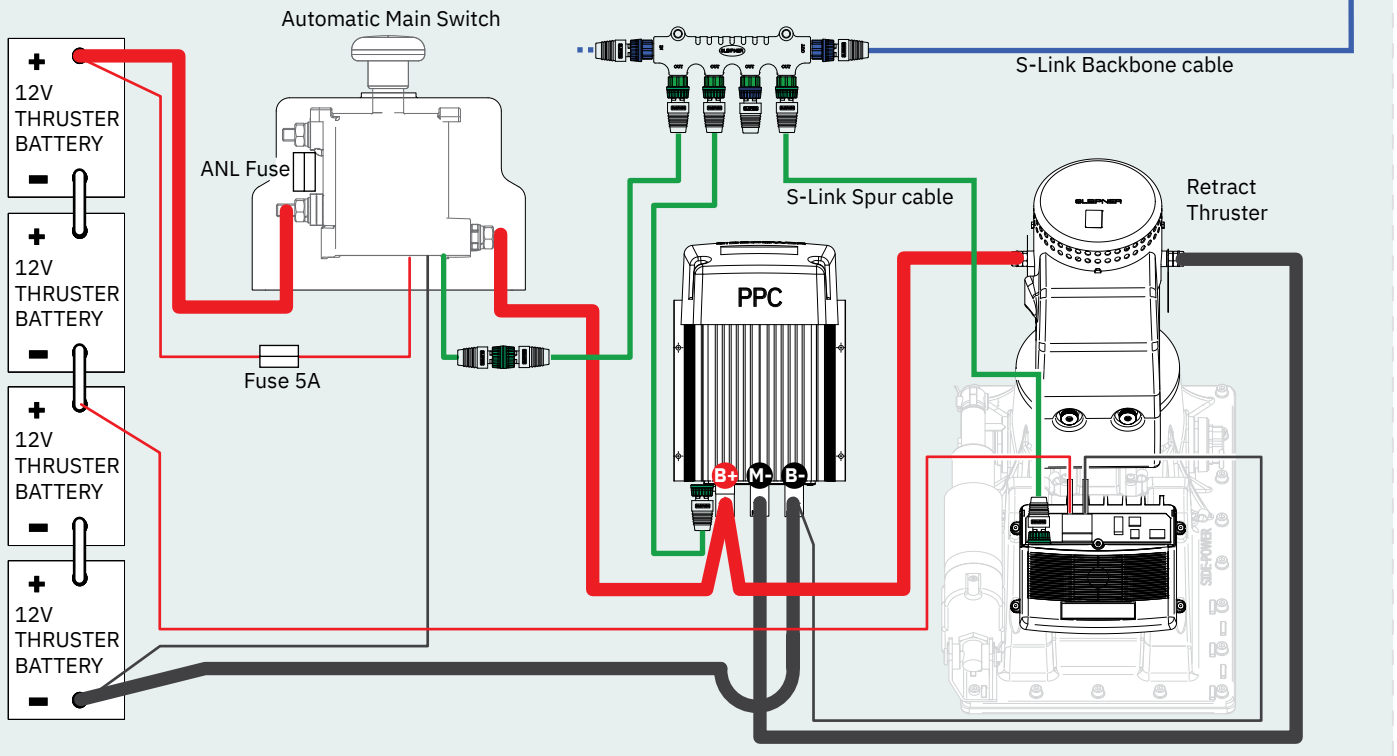
MG_0709

Automatic Main Switch Wiring Diagram 48V Proportional Retract Thruster

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



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



MG_0610

S-Link System Description

MC_0120

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.

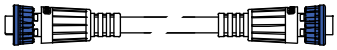
Installation of S-Link cables:

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 also recommended to install cables such that water and condensation do not run along the cables and into the connectors.

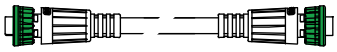
The POWER Cable should ideally be connected around the middle of the BACKBONE bus to ensure an equal voltage drop at each end of the BACKBONE Cable. The yellow and black wire in the POWER Cable shall be connected to GND and the red wire connected to +12VDC or +24VDC.

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.

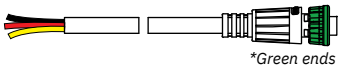
SPUR cables can be left unterminated to prepare for the installation of future additional equipment. In such cases, ensure to protect open connectors from water and moisture to avoid corrosion in the connectors.



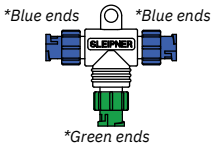
BACKBONE Cable
Forms the communication and power bus throughout a vessel. Available in different standard lengths.



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.

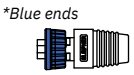


POWER Cable
Required in all installations for connection of BACKBONE Cable to a power supply and should be protected with a 2A fuse.

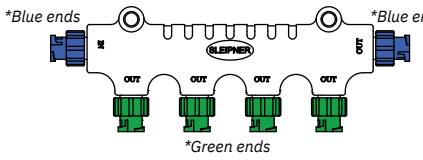


T-Connector
Used for connection of SPUR or POWER Cable to the BACKBONE Cable. One T-Connector for each connected cable.

BACKBONE Extender
Connects two BACKBONE Cables to extend the length.

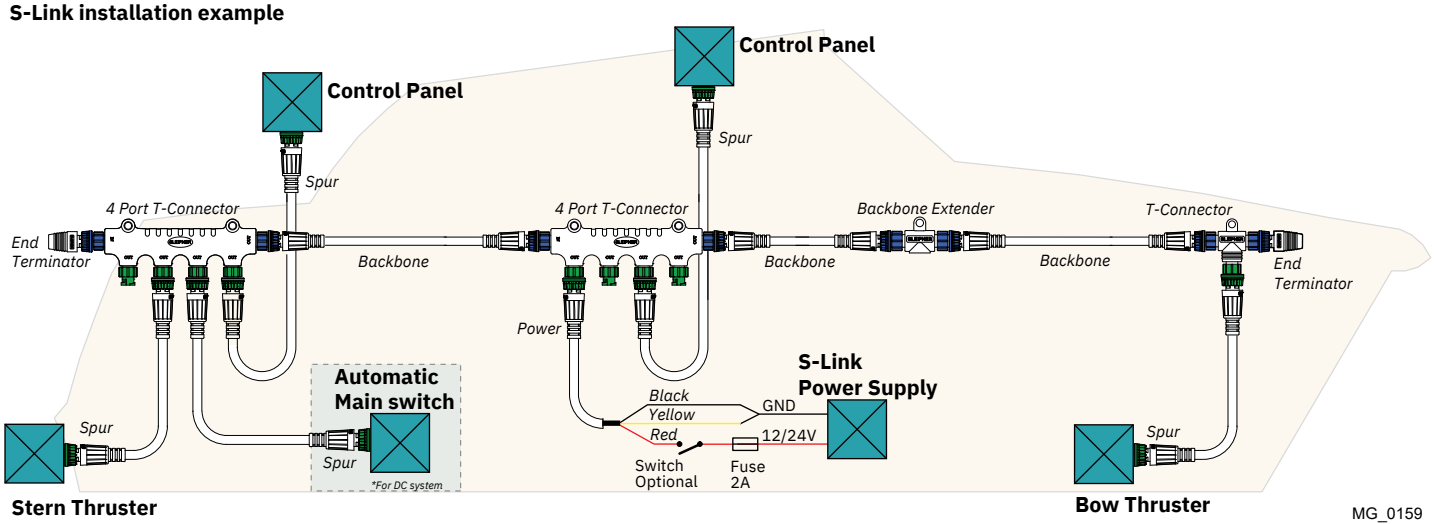


END Terminator
Must be one at each end of the BACKBONE bus.



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



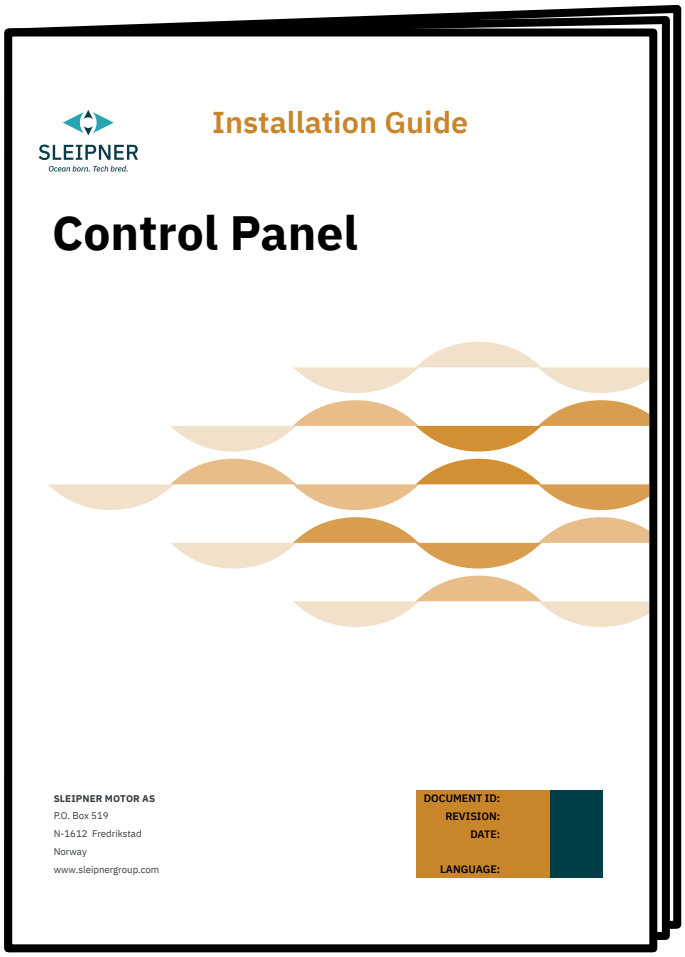
MG_0159

PPC Setup MC_0590

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

Control Panel Installation MC_0398

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



List of Installed S-Link Devices

MC_0102

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)	

PPC Fault Codes

Fault Code	Fault Name	Fault Description	Action
10000.0.11	Motor Temp - Level High	Motor temperature is higher than 120C/248F	- Motor must cool down to below 110C/230F
10000.0.13	Motor Temp - Open Circuit	Motor temperature sensor open circuit	-Check for open circuit on the temperature sensor on the motor
10000.0.16	Motor Temp - Short Circuit	Motor temperature sensor short circuit	-Check for short circuit on the temperature sensor on the motor
10001.0.13	Motor Thermo Switch - Open Circuit	Thermoswitch input is activated	-Motor needs to cool down before operated again -If motor is not warm then check for thermoswitch open circuit or wrong setup
10100.0.11	Device Cooling Fin Temp - Level High	PPC controller temperature is higher than 80C/176F	-PPC must cool down to below 45C/113F
10200.0.10	System Voltage - Level Low	Low motor voltage when motor is running. 12V thruster below 8.0V 24V thruster below 12.0V	-Reset or power OFF, wait 30sec and power ON the PPC -Recharge thruster battery
20000.0.73	IPC - Contact Before Energized	IPC error, motor relay fault before energized	-Turn off thruster battery main switch. -Thruster must be serviced by authorized personnel
20000.200.70	IPC Starboard No Contact Energized	IPC error, motor relay no contact when energized to starboard side	-Turn off thruster battery main switch. -Thruster must be serviced by authorized personnel
20000.201.70	IPC Port No Contact Energized	IPC error, motor relay no contact when energized to port side	-Turn off thruster battery main switch. -Thruster must be serviced by authorized personnel
30000.200.51	Thruster Solenoid Starboard Current High	Motor starboard contact fault	-Check motor contact connections -Check for short circuit -Check for dead relay
30000.201.51	Thruster Solenoid Port Current High	Motor port contact fault	-Check motor contact connections -Check for short circuit -Check for dead relay
30100.0.51	Thruster Motor Current - Current High	Motor current too high	-Reset or power OFF, wait 30sec and power ON the PPC -Check groining on the propeller -Check obstacles in the thruster tunnel -If not resolved, thruster must be serviced by authorized personnel
30100.0.52	Thruster Motor Current - Current Critical	Motor current critical high	-Reset or power OFF, wait 30sec and power ON the PPC -If not resolved, thruster must be serviced by authorized personnel
30300.0.19	Cooling Fan Speed - Under Limit	Cooling fan stopped or running to slow	PPC must be serviced by authorized personnel

Service and Support

MC_0024

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

Product Spare Parts and Additional Resources

MC_0024

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

Warranty statement

MC_0024

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.sleipnergroup.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

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