

Installation Guide

For DC External POD Electric Thruster Models
SX35POD, SX50POD



SLEIPNER AS

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DOCUMENT ID: 6398

REVISION: II

DATE: 2021

LANGUAGE: EN

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Contents

Installation Manual

Responsibility of the Installer	3 - 4
Thruster Measurements	5
Thruster Specifications.....	6
Technical Specifications	6
Control Box Technical Specifications.....	7
Positioning of the SX with Hydrodynamical Cover.....	8
Grids or Cowls Assembly.....	9
Tunnel Installation.....	10
Hydro pod Modification	11
Hydro pod Installation.....	12
Propeller Installation.....	13
Control Box Installation.....	14
Thruster Electrical Installation.....	15 - 16
Electrical Specifications	17
Control Panel Cable Installation	18
Control Panel Installation	19
Pre-delivery Checklist	20
Service and Support.....	21
Product Spare Parts and Additional Resources.....	21
Warranty Statement.....	21

Products

SM150536 | SXPOD-35/50-50MM - Hydropod complete kit for in water flow configuration



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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.

General Installation Considerations and Precautions for Thrusters

MC_0425

- Do not install the thruster in a position where you need to cut a stiffener/ stringer/ support that may jeopardise the hull integrity without checking with the boat builder this can be done safely.
- We advise painting the gear house and propellers with anti-fouling. **(NB: Do not paint the anodes, sealing, rubber fittings or propeller shafts)**
- Do not finish the inside of the tunnel with a layer of gel-coat/ topcoat or similar. There is only room for a thin coat of primer and two layers of anti-fouling between the tunnel and the props.
- Never run the thruster out of water.
- The electro/ hydraulic motor must be handled with care. Do not place down the motor on the drive shaft.

General Installation Considerations and Precautions for Electric Thrusters

MC_0031

- The thruster must NOT be installed in compartments that require ignition proof electric equipment. If necessary, make a separate compartment. **(NB: Ignition Protected systems are tested to be installed in areas with possible explosive gases in accordance with ISO 8846)**
- When installing the thruster electro motor in small compartments, ensure the compartment is well ventilated to allow for cooling of the electro motor.
- If the height of the room you are installing the thruster is limited, the thruster can be installed horizontally or at any angle in-between.
 - If the electro motor is positioned more than 30 degrees off vertical, it must be supported separately.
 - Beware of keeping installation within advised measurements. No part of the propeller or gear house must be outside the tunnel.
- Do not install the thruster in a position where you need to cut a stiffener/ stringer/ support that may jeopardise the hull integrity without checking with the boat builder this can be done safely.
- The electro motor, components and cables must be mounted so they remain dry at all times.
- We advise painting the gear house and propellers with anti-fouling. **(NB: Do not paint the anodes, sealing, rubber fittings or propeller shafts)**
- Do not finish the inside of the tunnel with a layer of gel-coat/ topcoat or similar. There is only room for a thin coat of primer and two layers of anti-fouling between the tunnel and the props.
- Don't install the electro motor close to easily flammable objects or equipment as it will reach over 100°C before the temperature switch is activated.
- Do not store items close to the thruster motor. Any loose items near the thruster motor is a potential fire hazard and can cause undesired short-circuiting.
- Do not lift it by internal cable connections, main terminals.
- The thruster power supply circuit must include the recommended sized fuse and a battery isolation switch.

General Installation Considerations and Precautions for DC Electric Motors

MC_0426

- The electro motor will generate some carbon dust so any storage compartments must be separated from the thruster to prevent nearby items becoming dusty/ dirty. **(NB: IP version motors generate dust but are enclosed.)**

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

General Installation Considerations and Precautions for SX Thrusters

MC_0427

- The external thruster assembly and controller unit are ignition protected and can be installed in areas with the chance of explosive gases in accordance to ISO 8846 and ABYC c1500. (Certification pending)
- Ensure that the external thruster assembly does not disturb the water flow under the hull. At higher speeds, if the thruster is installed too low it can cause damage to the thruster and/ or add additional drag and unwanted water splashing.
- The recommended minimum tunnel depth from the water surface is 140mm (5,51') to the centre of tunnel diameter. Place the Thruster as deep as possible for better performance and reduced noise.
- When installing the thruster ensure it does not foul existing equipment inside the boat like motor bedding etc.
- If able ensure that stern-drives/ trim-tabs do not interfere with the water flow from the thruster as this can reduce the thrust effectiveness considerably. We recommend the use of our Sleipner cowls to enhance the performance and allow installation in shallow draft boats. Sleipner cowls will also minimise the effect if stern-drives/ trim-tabs obstruct the thruster.
- Ensure there is enough space both inside and outside the transom of the boat and the thruster does not get in conflict with existing equipment inside the boat like steering links etc. **(NB: It is possible to mount the tunnel offset from the boat's centre line if necessary.)**
- Heat protection cut off is calculated from the thruster motor. To avoid cable overheating do not install place the volt cables from the thruster to the control box near any heat sources.

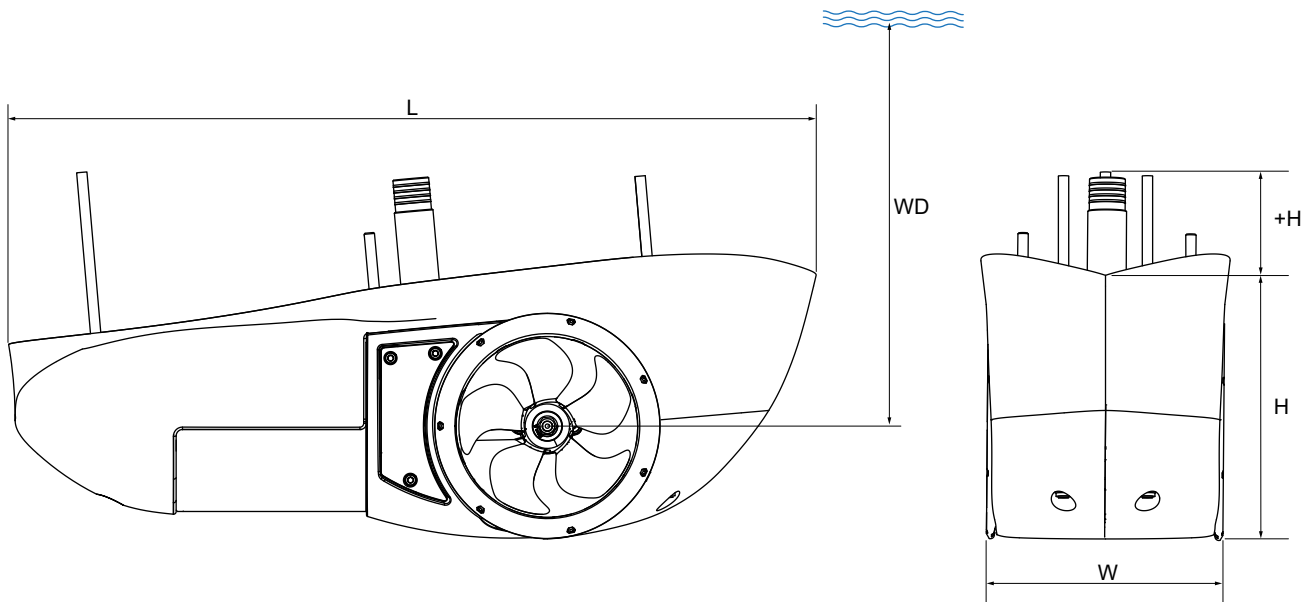
General User Considerations and Precautions for IP Systems

MC_0007

NEVER Disassemble any part of the Ignition Protected assembly. Tampering with the Ignition Protected assembly will cause it to lose this safety feature. If there is a problem with your Ignition Protected motor, please contact your dealer.

Measurement code	Measurement description	*35 12v		*50 12v	
		mm	inch	mm	inch
H	Mould Height	180	7,08	180	7,08
+H	Tube Height	183	7,20	183	7,20
W	Width	183	7,2	183	7,2
L	Length	630	24,8	630	24,8

*Valid for SX & SXP



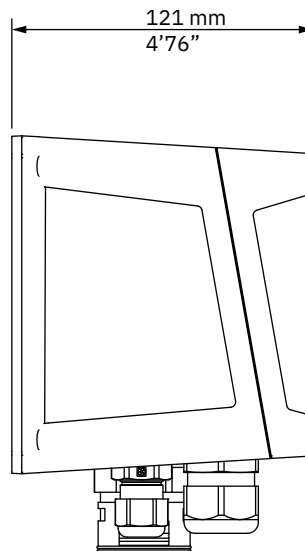
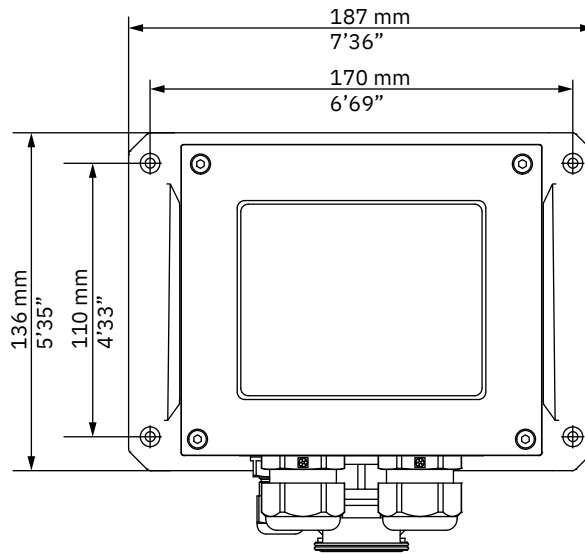
MG_0080

Description	* 35	* 50
Available DC System (v)	12v	12v
Thrust 12v or 24v (kg * lbs)	43 kg * 94 lbs	62 kg * 136 lbs
Thrust 10.5v or 21v (kg * lbs)	35 kg * 77 lbs	50 kg * 110 lbs
Typical Boat Size (m * ft)	6m - 10m * 19ft - 32ft	8m - 11m * 27ft - 37ft
Propulsion System	Single	Single
Power (kw * Hp)	1.8kw * 2hp	2.8kw * 3.75hp
Weight (kg * lbs)	19.3 kg * 42.55 lbs	19.3 kg * 42.55 lbs

Technical Specifications

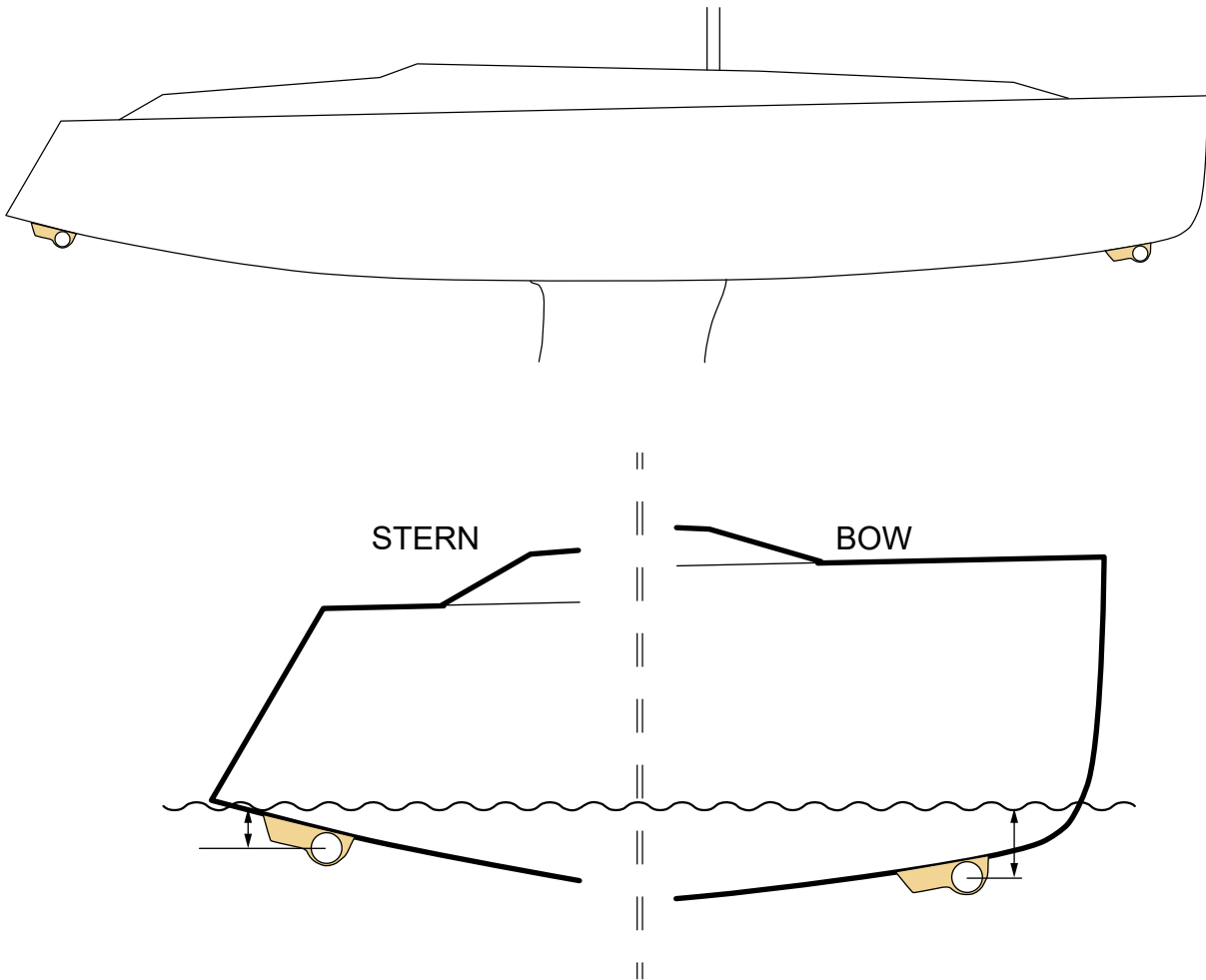
- Motor:** Custom made reversible DC-motor.
- Gear house:** Seawater resistant aluminium. Ball-bearing and ceramic axial seals at propeller shaft and a combination of ball bearing/ slide bearing at drive shaft. (Pre-filled and sealed for life)
- Motor bracket:** Seawater resistant aluminium, galvanization insulated from the motor.
- Tunnel:** Hydrodynamic fibreglass reinforced snap on composite.
- Propeller:** 5-blade skewback "Q-prop" propeller, fibreglass reinforced composite.
- Batteries:** Minimum recommended battery capacity (cold crank capacity by DIN/SAE standard)
Contact a battery supplier for more information.
- Max. Use:** 2 - 3 min. duty cycle at 20°
- Safety features:**
- Electronic time-lapse device protects against sudden change of drive direction.
 - The electric thermal cut-off switch in electro motor protects against overheating (auto-reset when electro motor cools down).
 - Original SLeipner panels shut off automatically 6 minutes after last use.
 - Original SLeipner panels use child-safe double ON buttons.
 - An integrated microprocessor monitors solenoids, reduce wear and risk of solenoid lock-in.
 - Auto-stop of the thruster occurs when an undesirable solenoid lock-in occurs or when continuous operation cut-off timer exceeds 3 minutes.

	SX35	SX50
Operation volts:	12v.	12v
Max Current:	250A	380A
Duty Cycle:	S2.	S2
Max ambient temp:	50°C	50°C
Min ambient temp:	-25°C	-25°C
Power supply cable:	35 - 70mm ² / AWG 2 - 00	35 - 70mm ² / AWG 2 - 00
Mount direction :	Any	Any

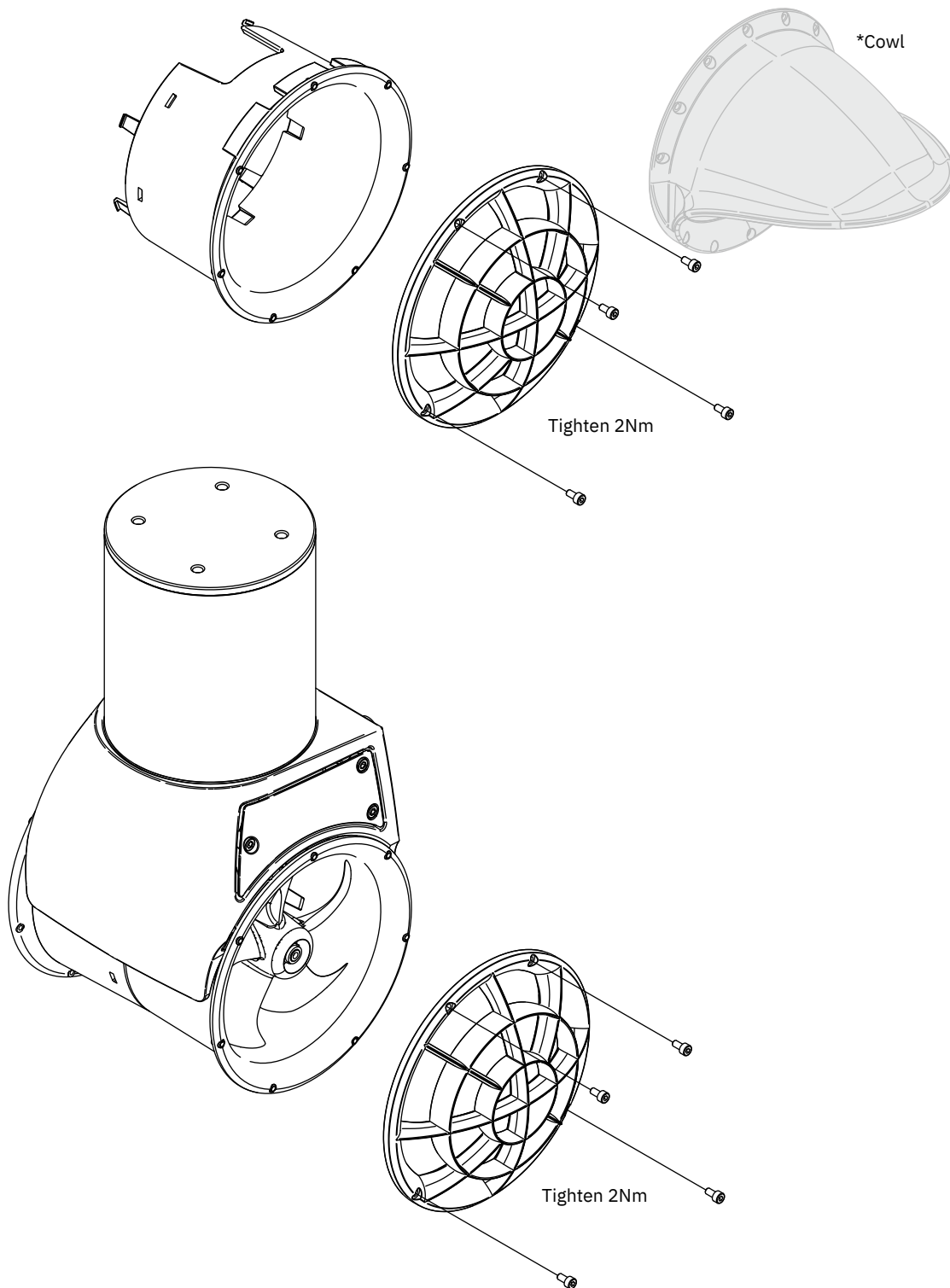


Aim to install the thruster as far forward/ Aft as possible

Due to the leverage effect around the boats' pivot point. The relative distance difference from the boat pivots' point to the thruster will determine the amount of real thrust for the boats, rotation.



1. Attach the cowls or grids with included bolts and washers. **(NB: If installation of the cowls ensure the appropriate twist of the cowl to direct water away from obstacles)**



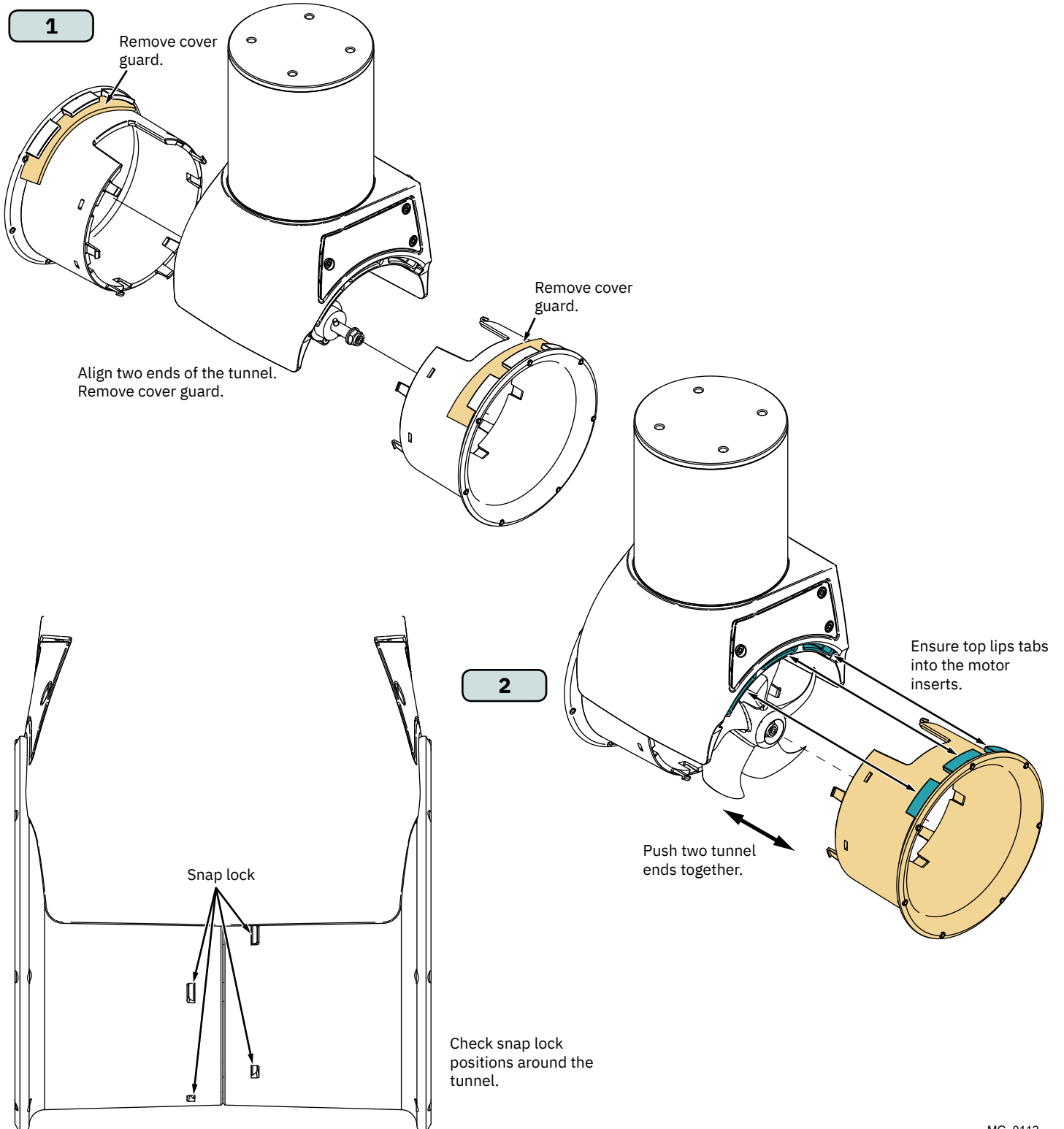
MG_0145

! Please refer to the graphic for special considerations relating to your model !

1. Ensure to remove the plastic cover guard on the tunnel.
2. Connect both ends of the tunnel to the thruster motor. All hooks must be completely interlocked making the inside of the tunnel smooth. **(NB: Ensure tunnel moulding around the gear leg and tunnel top align.)**

IMPORTANT

Ensure all snap-lock positions are correctly connected into place.



MG_0112

! Please refer to the graphic for special considerations relating to your model !

Define the location to install the thruster. **(NB: Ensure internally the thruster will not obstruct any objects. Ensure cables internally do not obstruct any objects. Do not place cables or control box close to high heat radiating parts EG. Turbo/ exhaust manifolds etc.)**

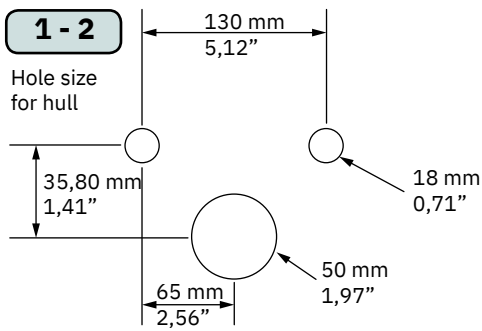
1. Mark the locations of the three drill holes for the SX thruster using the defined measurements or from a template to the hull. (NB: Maximum hull thickness is 50mm.)
2. Drill main hole for the cable tube, then two support bolt holes.
3. Place the SX thruster into the Hydro pod mould.
4. Place the hydro-pod with the SX thruster on the hull. Use the pre-drilled holes to guide the assembly to the desired location. **(NB: The SX thruster in the Hydro pod will ensure no flexing of the mould will occur)**
5. Modify the Hydro pod mould to match the hull profile of the boat. Aim to obtain both the front and back tips of the mould sit flush to the hull. Follow the below instructions depending on the modification required:

A) Trim the wings of the hydro pod to match the hull profile. **(NB: Excessive heat caused by the cutting method can cause the mould to melt in the worked area.)**

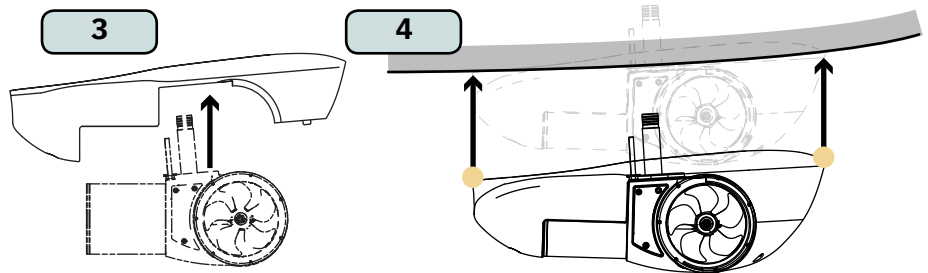
OR

B) Determine to use appropriate filler to fill the gap between the hydro pod and the hull. **(NB: Do not fill gaps at this stage if required.)**

IMPORTANT
Do not trim past/off the end grooves or centre groove line at a distance of 5mm.

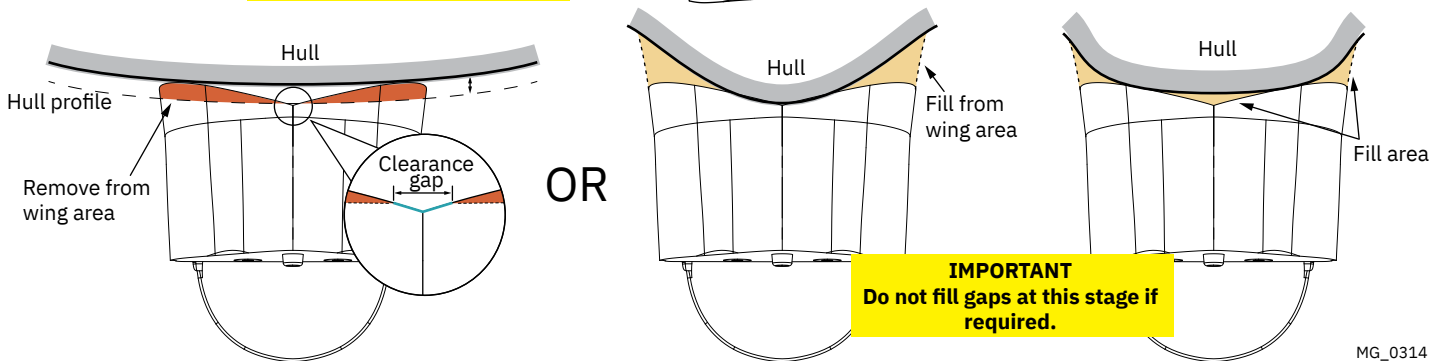


Drill holes in hull



5

IMPORTANT
Do not trim past/off the end grooves or centre groove line at a distance of 5mm.



MG_0314

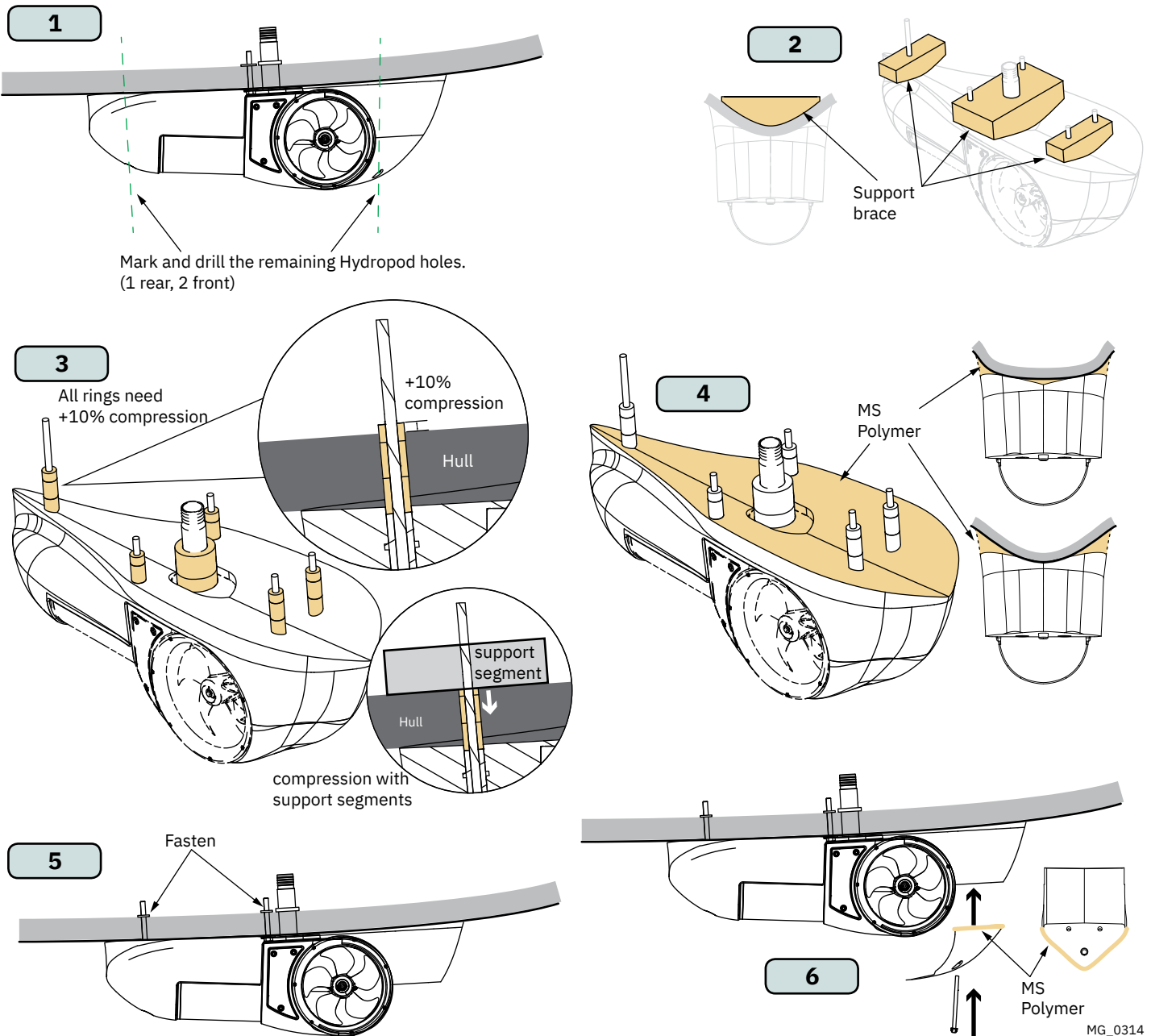
! Please refer to the graphic for special considerations relating to your model !

- Temporarily fasten the Hydro pod to the hull using the SX thruster bolts. Mark the remaining Hydro pod holes (1 rear, 2 front) and drill holes. Clean the area from dust for installation of the thruster. **(NB: Tightening the Hydro pod can reduce the gap between the mould and the hull from compression. Note this when if required to add MS Polymer to fill gaps.)**
- Make support segments based on the hull profile for the bolt and tube fasteners.
- Check the length of the compression rings. Compression rings must be longer than hull thickness to allow for compression (NB: Cut compression sealants to length top achieve 15% compression.)
- Apply a sealant (MS Polymer) to:
 - the inside surface of the cut-out holes on the hull.
 - To the surface of the washer to the thread and
 - in the recess of the main tube to the thread.
 - 1cm deep inside all compression ring.
 place all compression rings to bolt threads.

(NB: Ensure ample sealant (MS Polymer) around the bolts and centre tube for a watertight fitting.)
- Place the Hydro pod to the hull without the nose cap. Fasten the Hydro pod via the SX thruster and back hydro pod securing bolt. **(NB: Wipe away MS Polymer that has been pushed out from the compression of the Hydro pod to the hull.)**
- Place the Hydro pod nose cap and fasten nose cap securing bolt

IF: required to fill gaps between the Hydro pod and the hull use an appropriate amount on the Hydro pod mould to achieve this.

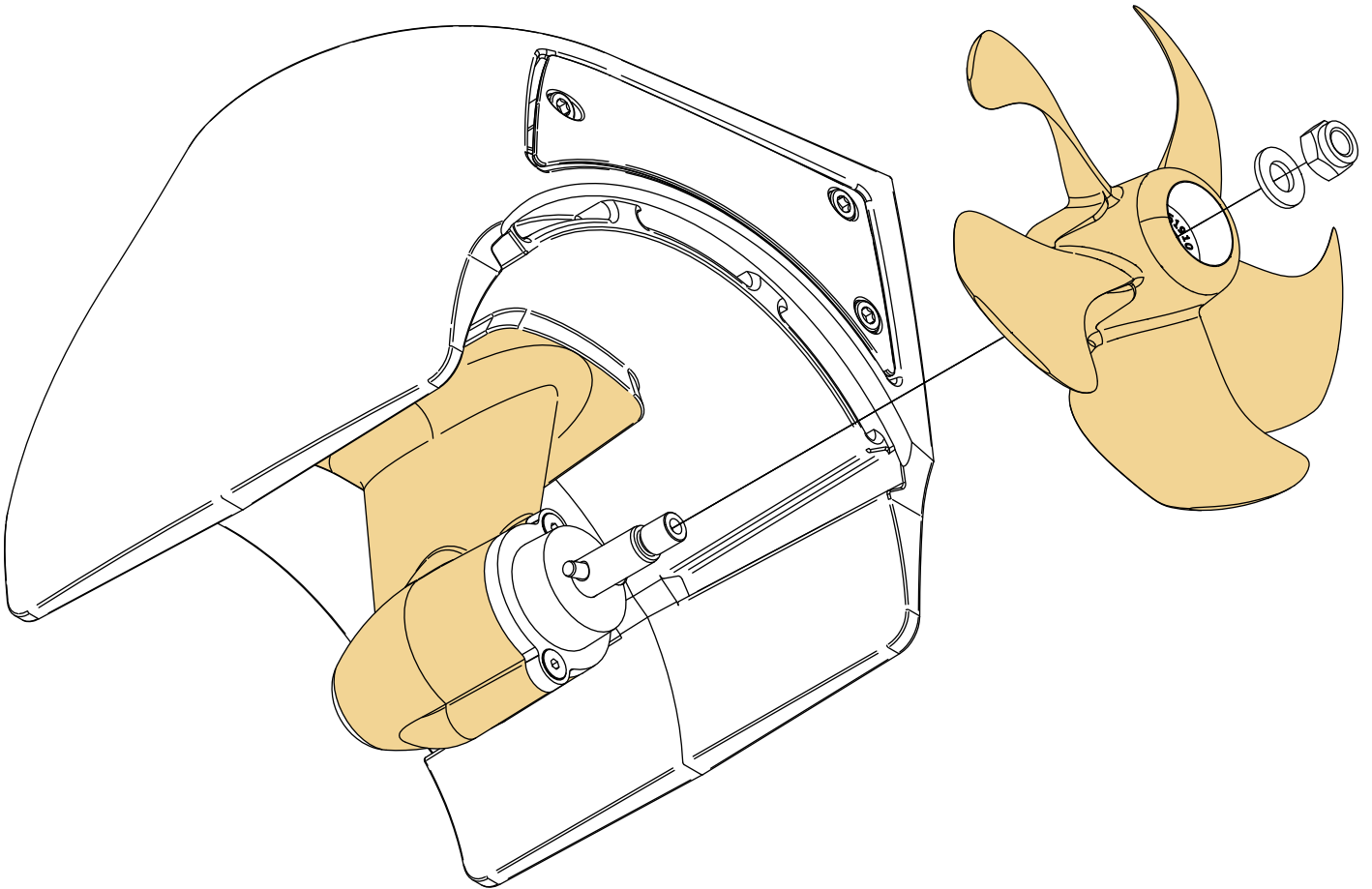
For installations in high corrosive environments (saltwater) the exposed aluminium parts of the thruster must be coated with an epoxy primer before antifouling or/and use.



MG_0314

! Please refer to the graphic for special considerations relating to your model !

1. Centre the drive pin and Insert the propeller onto the shaft spline. Rotate the propeller until the drive pin aligns with the internal slot in the propeller.
2. Insert the washer to the end of the shaft spline. Tighten with the propeller lock-nut.
3. Apply anti fouling to the gear leg and propeller. Do not apply anti fouling to any rubber elements of the gear leg or anodes.



MG_0478

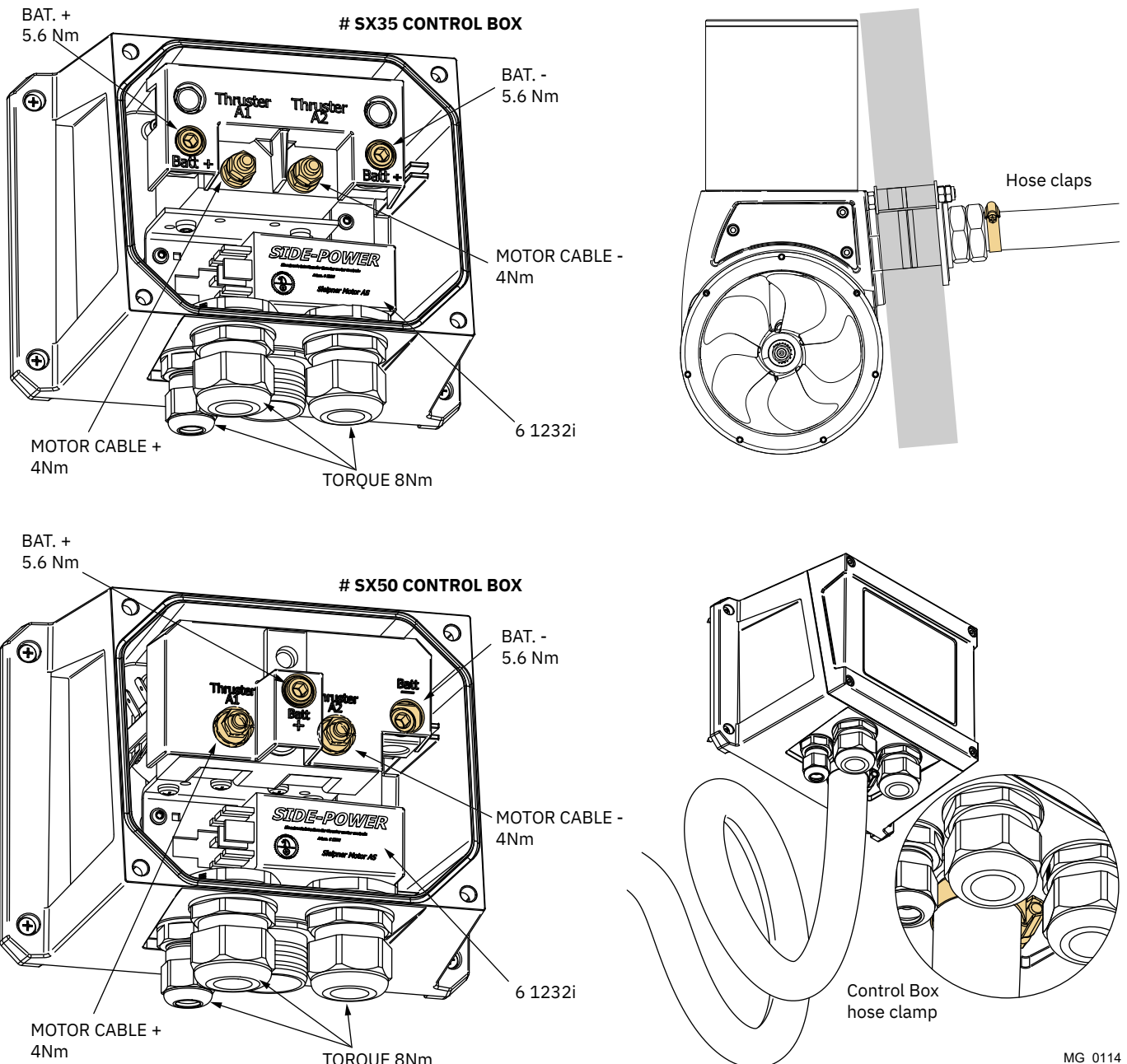
! Please refer to the graphic for special considerations relating to your model !

The control box is the central component that can be connected to several other control panels. The control box can be mounted in any orientation, preferably with cables facing down. **(NB: The control box must be positioned within 0,75 meters from the thruster assembly with the provided cables and not near any object that radiate high temperatures.)**

1. Define the location to install the control box. **(NB: Ensure cables will not obstruct any objects.)**
2. Mark the locations of the four drill holes and drill the holes.
3. Attach cables to the control box **(NB: the control box internal components can be removed via its attachment screws for easier installation using thick battery cables.)**
4. Tighten hose clamps in order to ensure Ignition Protection as illustrated.
5. Fasten the control box to the hull.

IMPORTANT

It is the installers full responsibility to follow instructions and ensure total Ignition Protection.



MG_0114

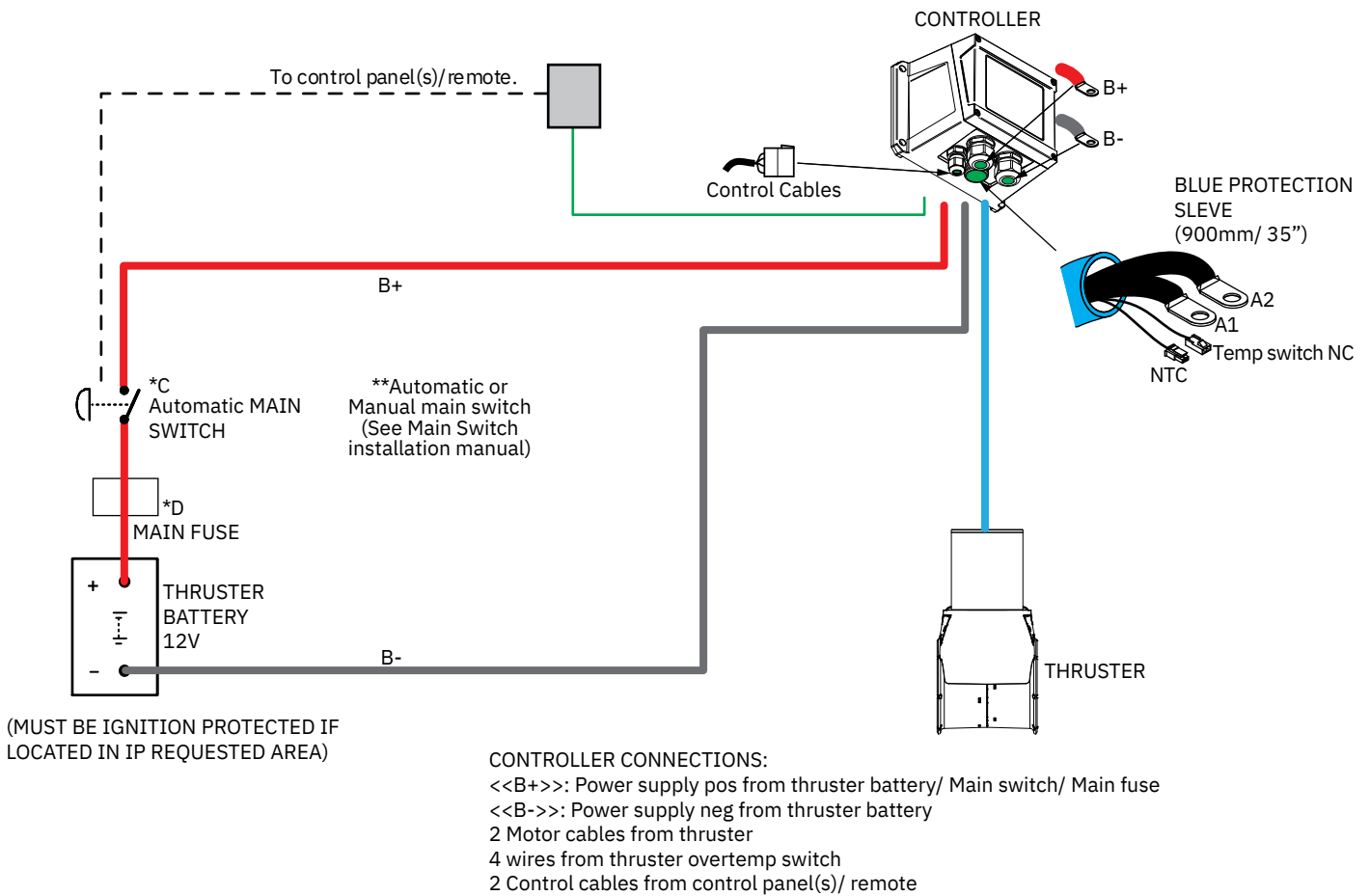
! Please refer to the graphic for special considerations relating to your model !

- Information of electrical table. *see next page*
 - All power cable lengths represent the total length of the combined (+) and (-) cables.
 - Battery capacity is stated as minimum cold crank capacity, (CCA).
 - Use slow blow rated fuses to hold stated Amp-Draw for min. 5 minutes.
 - Consider the AMP hours (Ah) for your specific duty cycle.
- Use appropriate sized cables and batteries with high cranking capacity to feed the thruster. The actual voltage at the motor while running the thruster decides the motors output RPM and thrust. Use larger cables and stronger batteries for better results.
 - See electrical specifications for advised minimum cables and batteries (CCA).
- Connect the battery supply to the control unit (PPC).
 - Install a main manual/ automatic switch from the positive lead terminal on the battery PPC unit). The main switch must be accessible to turn off the thruster independently from the rest of the electrical operation of the vessel when not on-board or in emergencies. **(NB: It is advised to install a fuse on the positive cable for protection against short-circuiting of the main cables. The fuse should ensure no voltage decrease, slow-blow and sized to take the amperage draw for at least 5 minutes.)**
 - A circuit breaker can be used instead of the fuse and main power switch If the functionality is the same.

(NB: For Ignition Protected installations remember to use ignition protected fuses and switches if fitted in areas that require this feature. Ensure to follow your national regulations)

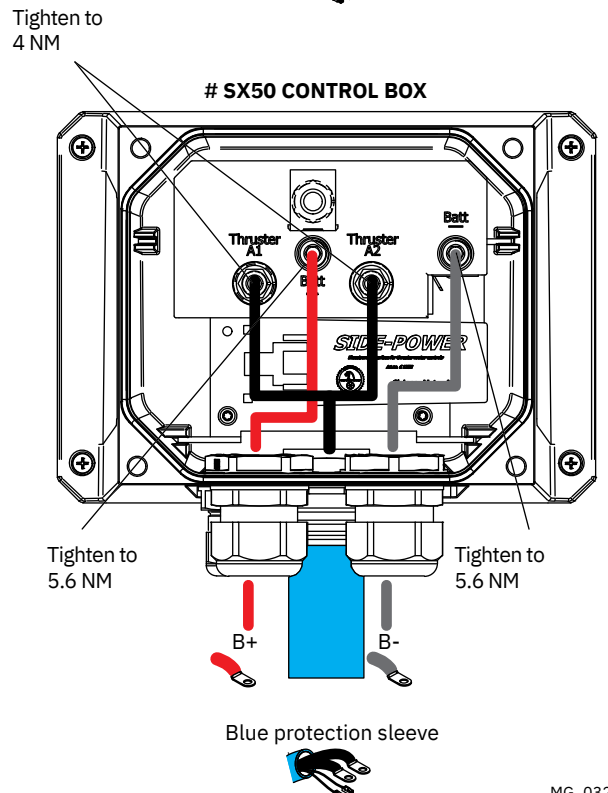
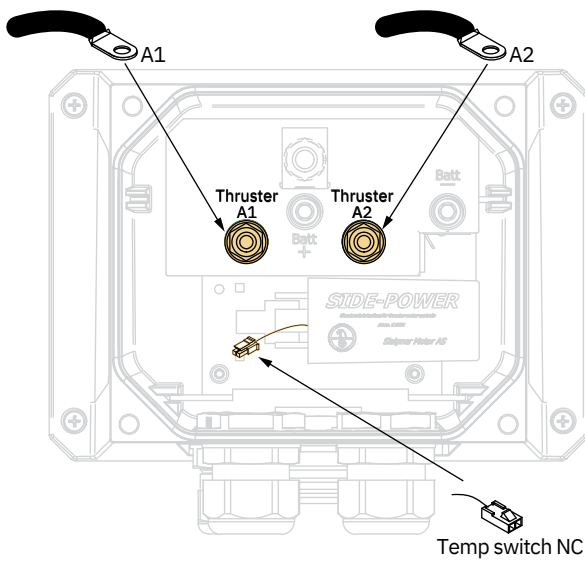
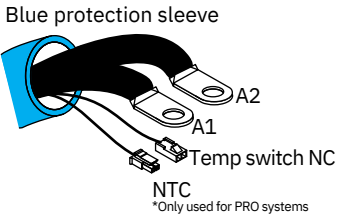
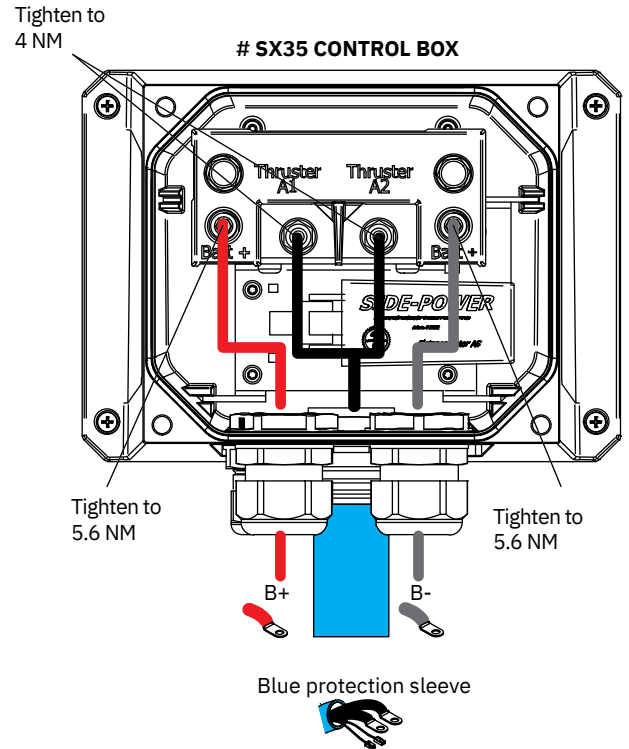
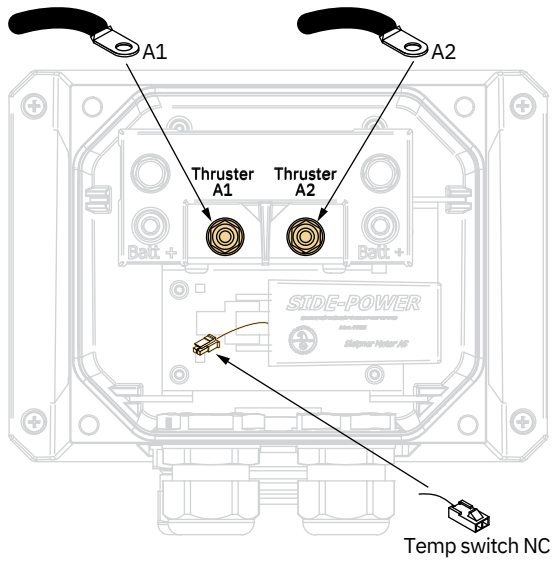
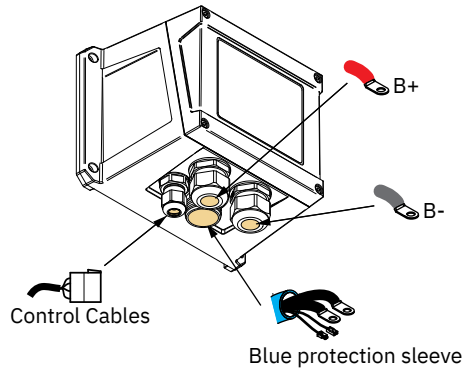
- Cable lugs must have adequate electrical and mechanical isolation and fitted with cable lug covers.
- Fasten cables to the required torque.

WARNING
 Check the following with the main switch is set to off :
 After all electrical connections have been completed check with an ohm meter that there is no electrical connection between
 1. electro-motor flange and the positive terminal on the motor
 2. electro-motor flange and the battery negative terminal on the motor
 If unsure contact skilled personnel.



Minimum and recommended cable dimensions can be identical due to safety margins and cable heat considerations for short cable lengths.
 * Minimum or recommended cable cross section in mm²

Thruster Electrical Installation



Model Size	System Voltage	Nominal current draw	Min. battery CCA	Rec. fuse	<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.
					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
*35/140	12 V	245 A	DIN: 200 SAE: 380 EN: 330	ANL 150	mm2	50	70	70	95	120	120	120	120	120	2 x 70	2 x 95
					AWG	1/0	1/0	2/0	3/0	4/0	4/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0
*50/1400	12 V	370 A	DIN: 350 SAE: 665 EN: 600	ANL 325	mm2	50	70	95	120	120	2 x 95	2 x 70	2 x 95	2 x 120	2 x 120	2 x 120
					AWG	1/0	2/0	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	2 x 4/0
24 V	170 A		DIN: 175 SAE: 332 EN: 280	ANL 150	mm2	25	25	35	50	50	50	50	70	70	70	70
					AWG	3	3	2	2	1/0	1/0	1/0	1/0	1/0	2/0	2/0

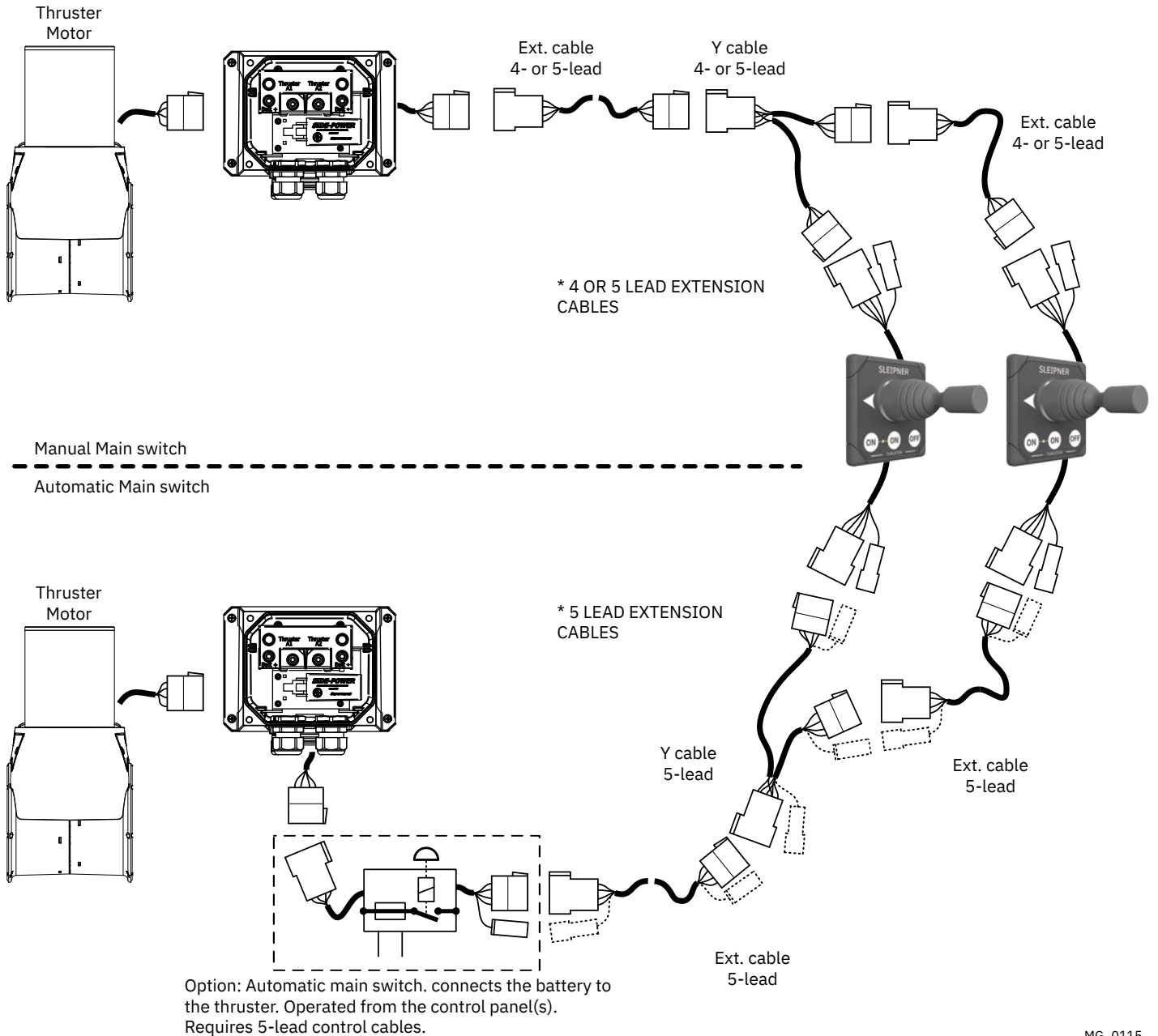
! Please refer to the graphic for special considerations relating to your model !

- All Sleipner control panels can be used in any combination.
- All control panels can be installed using:
 - Y-connectors - for standard on/off
 - T-connectors - for S-Link proportional power system.

(NB: If two or more control panels are operated at the same time in opposite directions, the electronic control box will stop the thruster until it receives a single signal or thrust in one direction.)

- Sleipner on/off equipment it is entirely “plug & play” and require no additional configuration setup.

See the Control panel manual for more information.



For **Control Panel** installation please refer to the supplied manual in your Sleipner product delivery



- Propeller is fastened correctly to the shaft.
- Propeller turns freely in tunnel.
- Primer and anti-fouling have been applied to the gear house and propeller but NOT on the anode or the gear house lid where the propeller is fastened.
- Correct drive direction as per control panel.
- The bolts holding the thruster are tightened correctly.
- The bolts holding the motor to its bracket are tightened correctly.
- All electrical connections are clean, dry and tight, and the correct cable, fuse and main switch size.
- No water leakage around hull penetrated studs
- Check that there is no electrical connection between the electro motor body and positive terminal on the motor, and between the electro motor body and the negative (A1) terminal on the motor with an ohm meter.

The thruster has been installed as per the instructions in this manual and all points in checklist above have been controlled.

Signed:

Date:

Extra pre-delivery tests by installer / yard who does not use other quality control systems !

Thruster type:

Serial number:.....

Date of delivery:.....

Correct drive direction as per control panel:

The compartment for the thruster has been isolated from general bilge water and has no obvious or suspected risks for flooding:

.....
.....
.....

Other comments by installer:

.....
.....
.....

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 the purpose for which the equipment is intended and under normal use and 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 purchase by the end user (for demonstration vessels, the dealer is deemed as end user).
3. This Warranty is transferable and covers the equipment for the specified warranty period.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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

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