

Installation Guide

For DC External Electric Thruster Models
SX35, SX50



SLEIPNER AS

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Norway

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Products

SM908124 | SX35/140-12V-50MM - SX35/140 -12V -50mm w/Controller
 SM908126 | SX50/140-12V-150MM - SX50/140 - 12V-150mm w/Controller
 SM908127 | SX50/140-12V-50MM - SX50/140 - 12V -50mm w/Controller
 SM908123 | SX35/140-12V-150MM - SX35/140 - 12V -150mmw/Controller
 SM908125 | SX35/140-12V-OEM02 - SX35/140 - 12V -OEM02 w/Controller

DECLARATION OF CONFORMITY

MC_0020



Sleipner Motor AS
 P.O. Box 519, Arne Svendsensgt. 6-8
 N-1612 Fredrikstad, Norway

Declare that this product with accompanying standard control systems complies with the essential health and safety requirements according to:

DIRECTIVE 2013/53/EU
 DIRECTIVE 2014/30/EU
 DIRECTIVE 2014/35/EU

It is the installers responsibility

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Follow all health and safety laws in accordance with their local outlined regulations/ classification rules.

Before installation, it is important that the installer reads this guide to ensure necessary acquaintance with the product.

The recommendations made in this manual are guidelines ONLY, and Sleipner Motor AS (Sleipner) strongly recommend that before installation, advice is obtained from a naval architect familiar with the particular vessel and regulations/ classifications.

This manual is intended to support educated/ experienced staff and is therefore not sufficient in all details for professional installation. *(NB: These instructions are only general instruction. If you are not skilled to do this work, please contact professional installers for assistance.)*

All electrical work must be done by a licensed professional.

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

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Installation Considerations and Precautions

MC_0071

- Do not install the thruster in a position where you need to cut a stiffener/ stringer/ support for the hull integrity without checking with the boat builder this can be done safely.
- Contacts/ plugs or other joints in the control 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 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 propellers.
- Keep installation within advised measurements. The entire surface is hard coated seawater resistant aluminium. Do not damage/penetrate the coat.
- The external stern 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 stern thruster assembly does not disturb the water flow under the hull. At higher speeds, if the thruster is installed to 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.

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Thruster Installation Considerations and Precautions

MC_0257

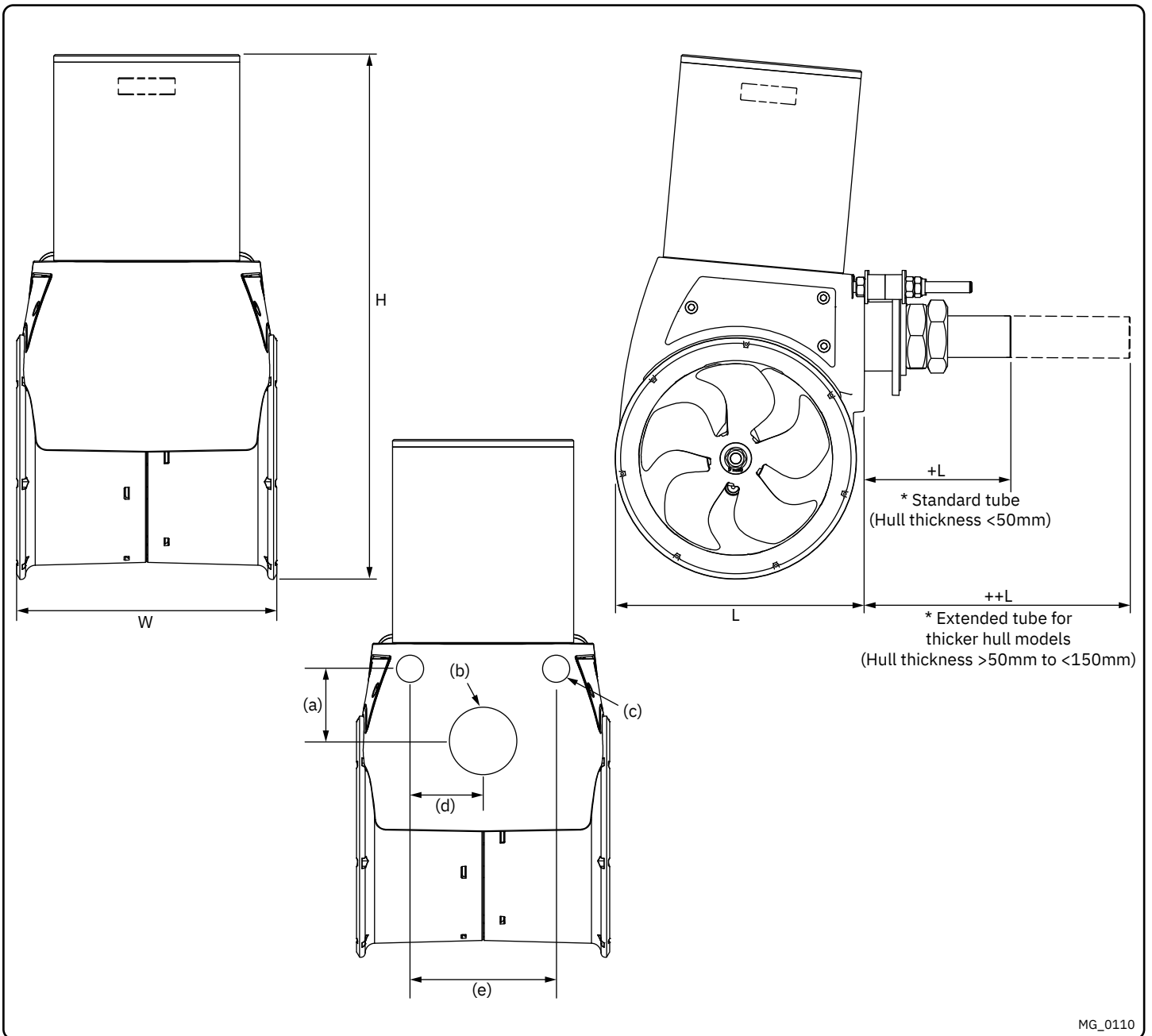
Before installation, it is important that the installer reads this guide to ensure necessary acquaintance with this product.

- The electro motor must be handled with care. Do not lift it by internal cable connections, main terminals or placed down on the drive shaft.
- The thruster power supply circuit must include the recommended sized fuse and a battery isolation switch.
- Never run the thruster out of water.
- It is important to follow the guidelines in this manual. Failure can result in severe damage to the thruster.

NEVER

Disassemble any part of the Ignition Protected stern thruster assembly. Tampering with the Ignition Protected stern thruster assembly or any attempt to disassemble anything on this thruster assembly inside the boat can cause an explosion with severe consequences. If there is a problem with your Ignition Protected stern thruster, please contact your dealer.

MC_0267



MG_0110

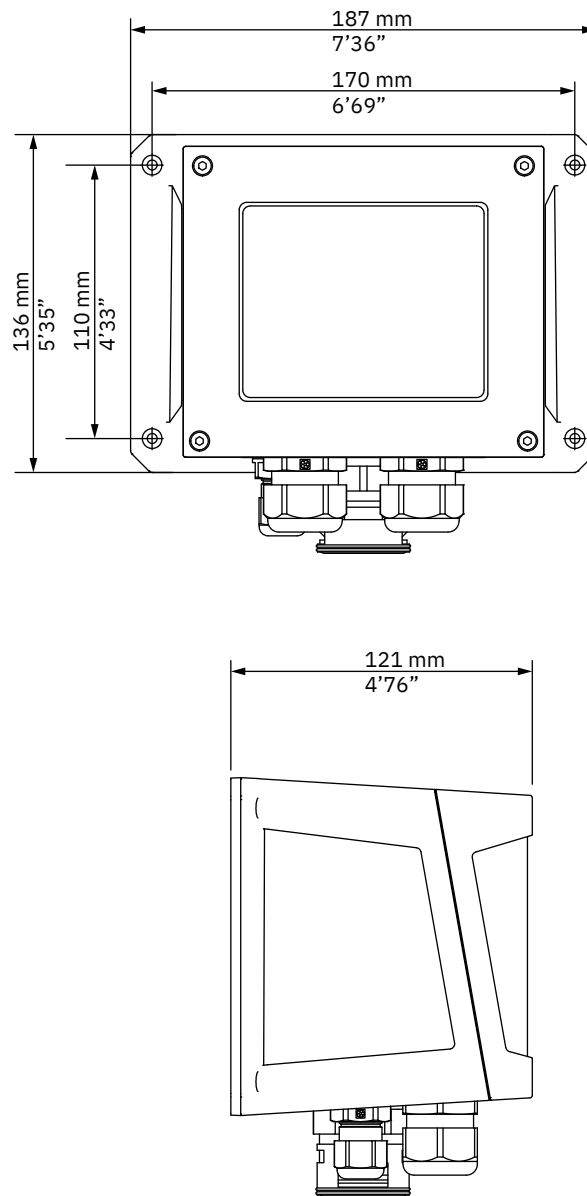
EN **Thruster Measurements** **MC_0239**

Measurement code	Measurement description	*35 12v		*50 12v	
		mm	inch	mm	inch
H	Motor Height	374	14.72	374	14.72
W	Width	183	7.20	183	7.20
L	Length	171	6.7	171	6.7
+L	Standard tube length	108	4.3	108	4.3
++L	Extended tube length for thicker hulls	276	10.9	276	10.9
(a)	Height of support bolts from tube	35.8	1.4	35.8	1.4
(b)	Main tube diameter	50	2	50	2
(c)	Support bolts diameter	18	0.7	18	0.7
(d)	Distance of support bolts from tube	65	2.6	65	2.6
(e)	Distance of support bolts	130	5.1	130	5.1

*Valid for SX & SXP

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)	15.3 kg * 33.73 lbs	15.3 kg * 33.73 lbs

- 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, galvanically 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.



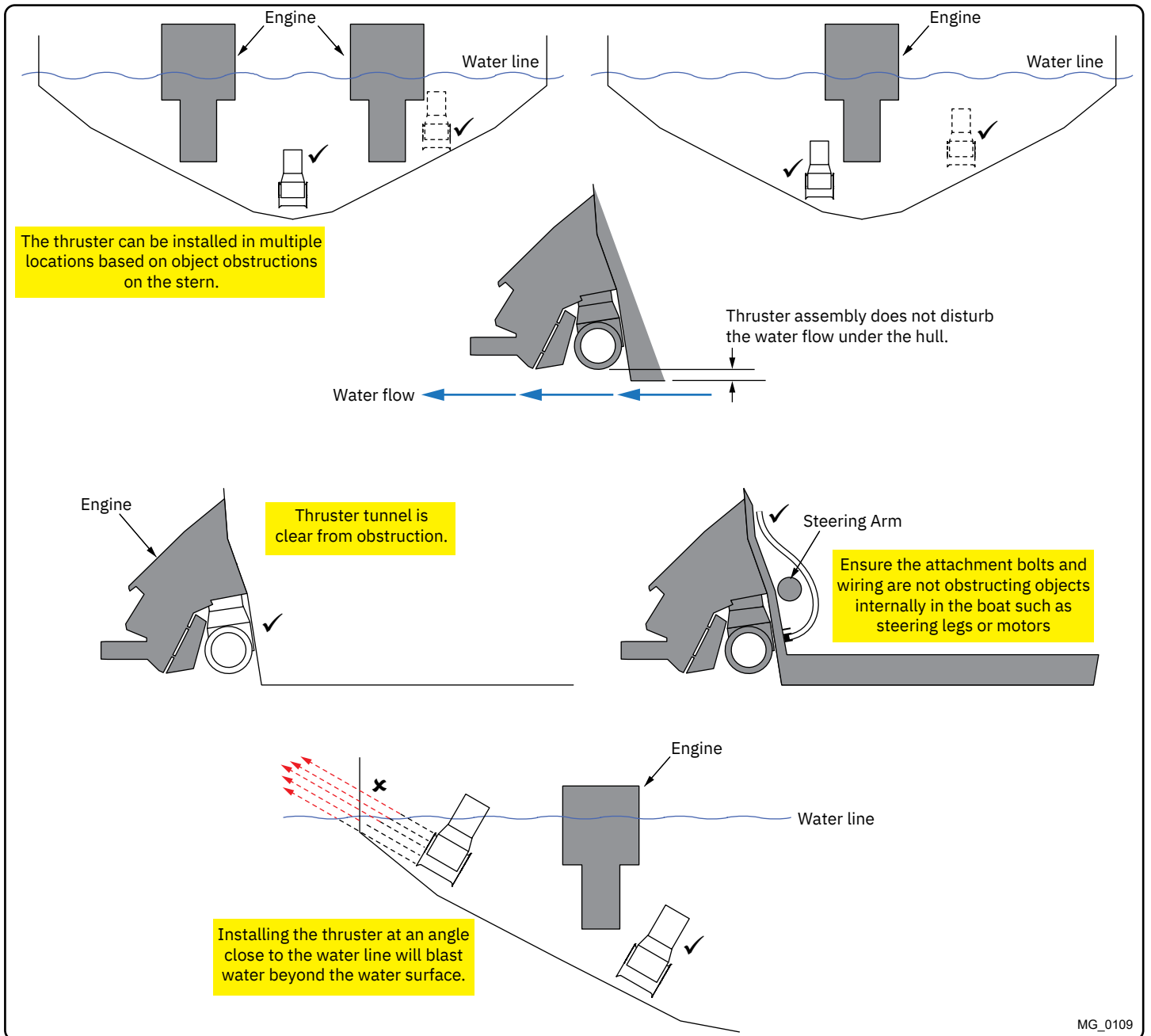
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Control Box Technical Specifications

MC_0082

	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



MG_0109



Positioning the stern thruster

MC_0072

For best performance, the thruster must be installed as deep on the stern as possible and the thrusters water flow must not obstruct any objects.

The thruster should be installed as deep under the waterline as possible for two reasons:

1. So it does not suck air from the surface which will reduce performance and increase noise levels.
2. To receive maximum efficiency and thrust.

The thruster must be installed to ensure the propulsion water flow must not be obstructed by other objects. Objects that obstruct the water flow will greatly reduce the thrust output.

Position

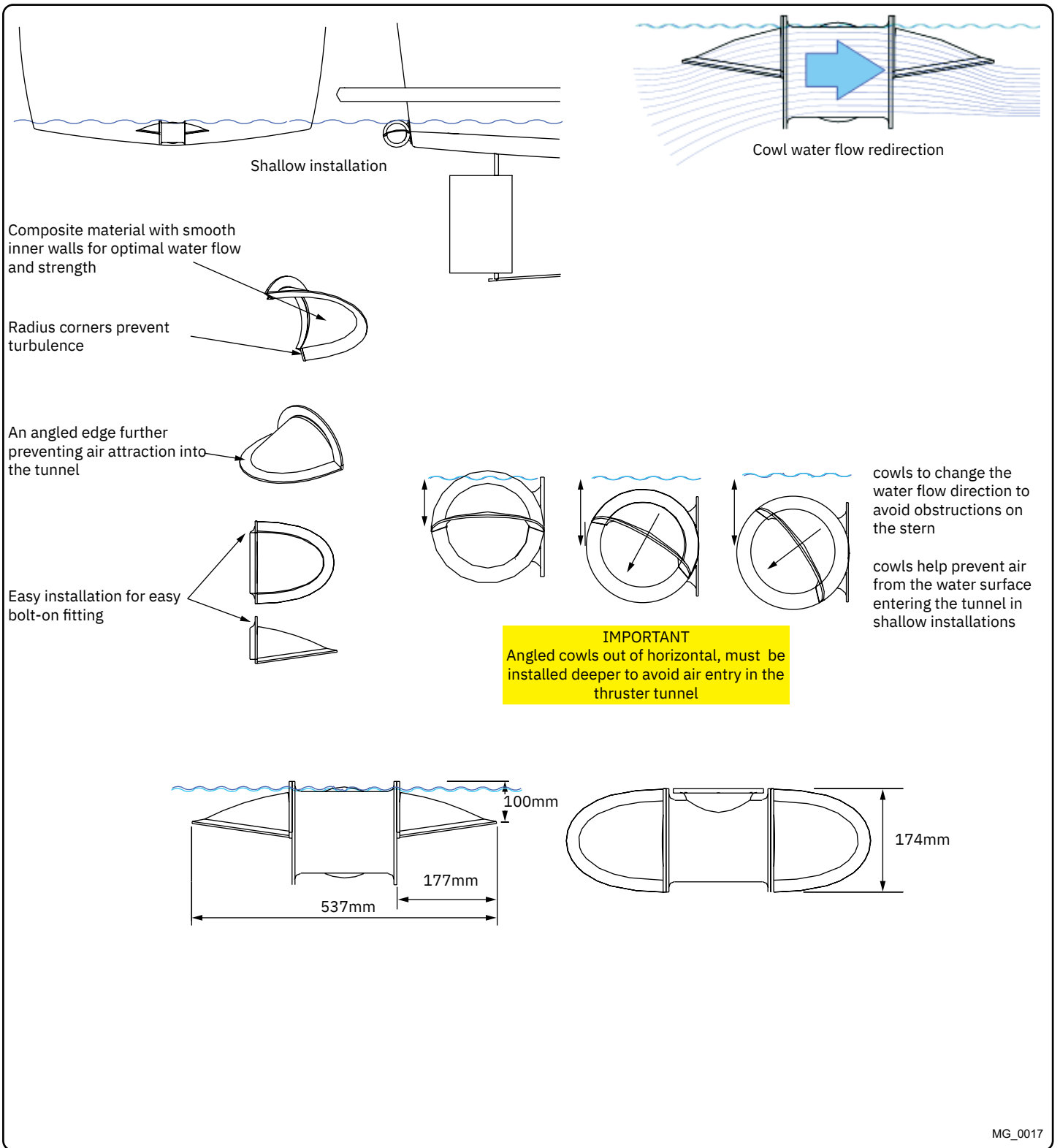
The thruster can be installed in multiple locations on the boat transom. Installing the thruster slightly off centre will not affect the overall effectiveness of the thruster. Installing the thruster off centre may be required to avoid any obstructions externally or internally on the vessel.

Ensure that the external stern thruster assembly does not disturb the water flow under the hull. At higher speeds, if the thruster is installed too low can cause damage to the thruster, additional drag and unwanted water splashing.

Alignment

The thruster can be installed at a slight angle if required for the water flow to avoid obstructions. These obstructions can include propellers systems, trim tabs or the hull. The average force the thruster propels water is 5-7 meters per sec, therefore angled installations must be as deep as possible under the water to minimise spray breaking beyond the water surface. **(NB: install the thruster at an angle only if no other suitable location can be found.)**

Max hull thickness 50mm include spacer



EN **Stern Thruster Cowls/ Grids** **MC_0072**

Installing a stern thruster cowl for stern thrusters that will allow installations in boats with shallow drafts or due to other obstructions on the stern. These can include obstacles such as trim tabs, jets or surface drive propeller systems where shallow installation of a stern thruster is the only option.

Cowls:
Designed to aid in water redirection and reduce air entering the tunnel in shallow installations.

Grid's:
Designed to protect the thruster from objects while in use.

IMPORTANT
Install the cowls/ grids before mounting the tunnel to the SX thruster.

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MC_0038

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- We advise painting the gear house and propellers with anti-fouling. **(NB: Do not paint the 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 propellers.
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Thruster Installation Considerations and Precautions

MC_0257

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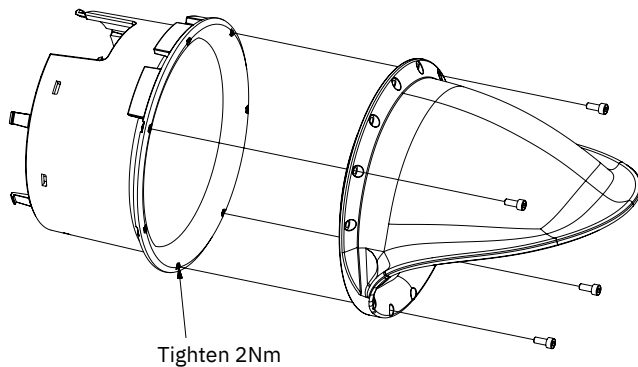
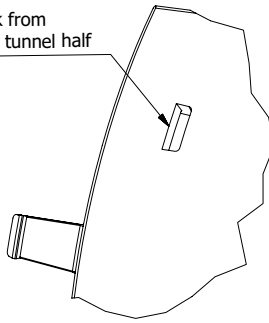
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- It is important to follow the guidelines in this manual. Failure can result in severe damage to the thruster.

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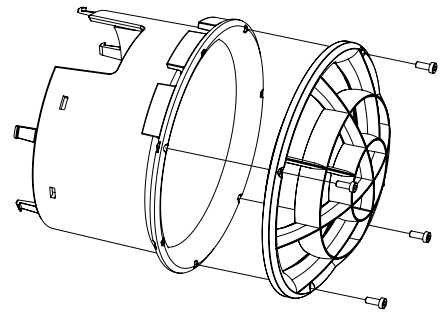
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MC_0267

Snaplock from
opposite tunnel half



Tighten 2Nm



MG_0145

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Grids or Cowls assembly

MC_0074

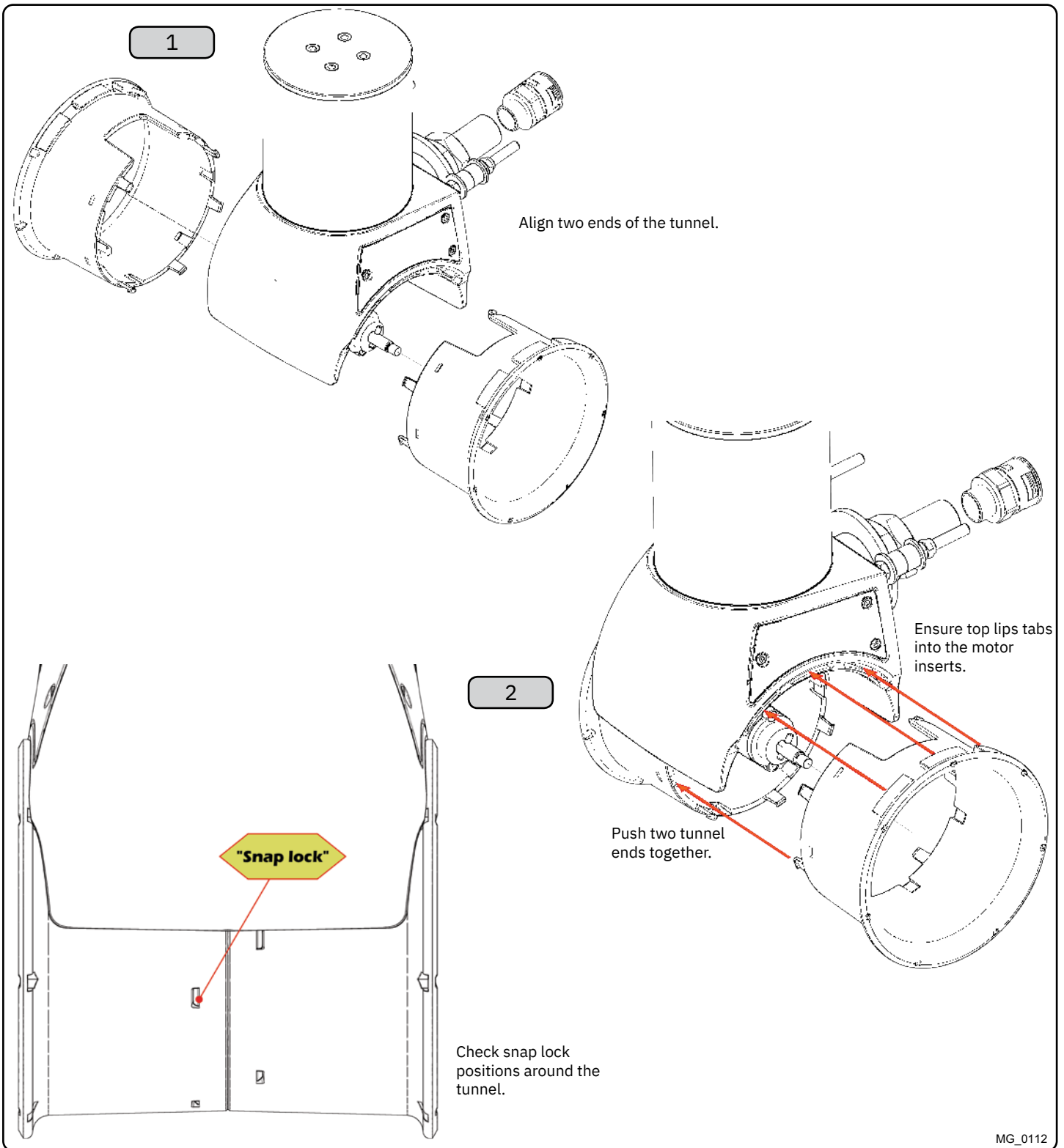
1. Attach the cowls or grids with included bolts and washers. **(NB: Ensure the appropriate twist of the cowl to direct water away from obstacles)**
2. Attach the completed tunnels.

For retrofit

1. Remove propeller and the old tunnel. **(NB: the tunnel is not designed to be removed non-destructively. Break off the snap locks between the tunnel half ends by pushing a small screwdriver through the holes from the outside.)**
2. Follow the above installation process.

IMPORTANT

Remember the tunnel can not be removed without being destroyed.

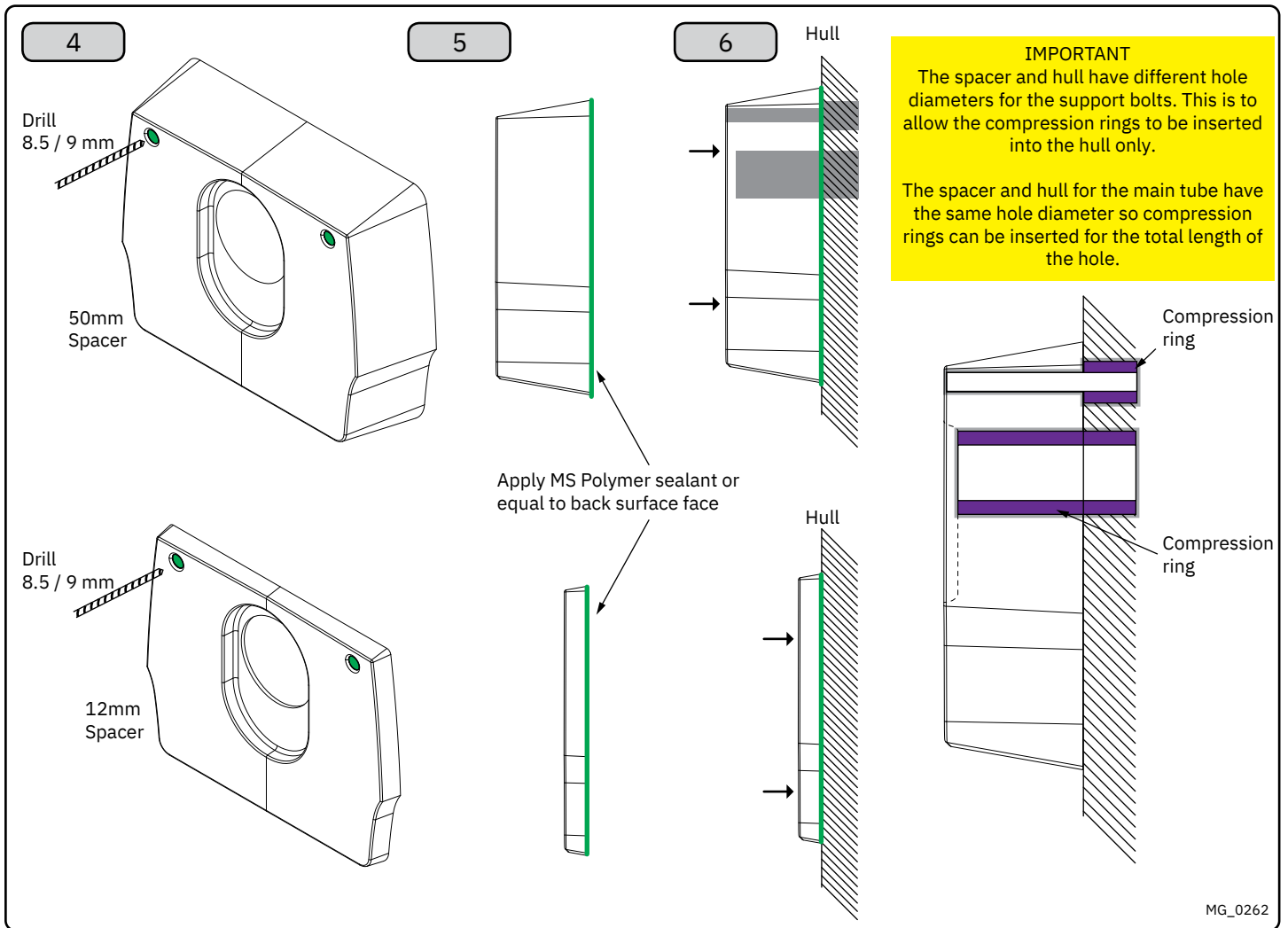


EN **Tunnel Installation** MC_0074

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

1. Ensure grids or cowls are installed if in use.
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.



EN **SX Spacer** MC_0074

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

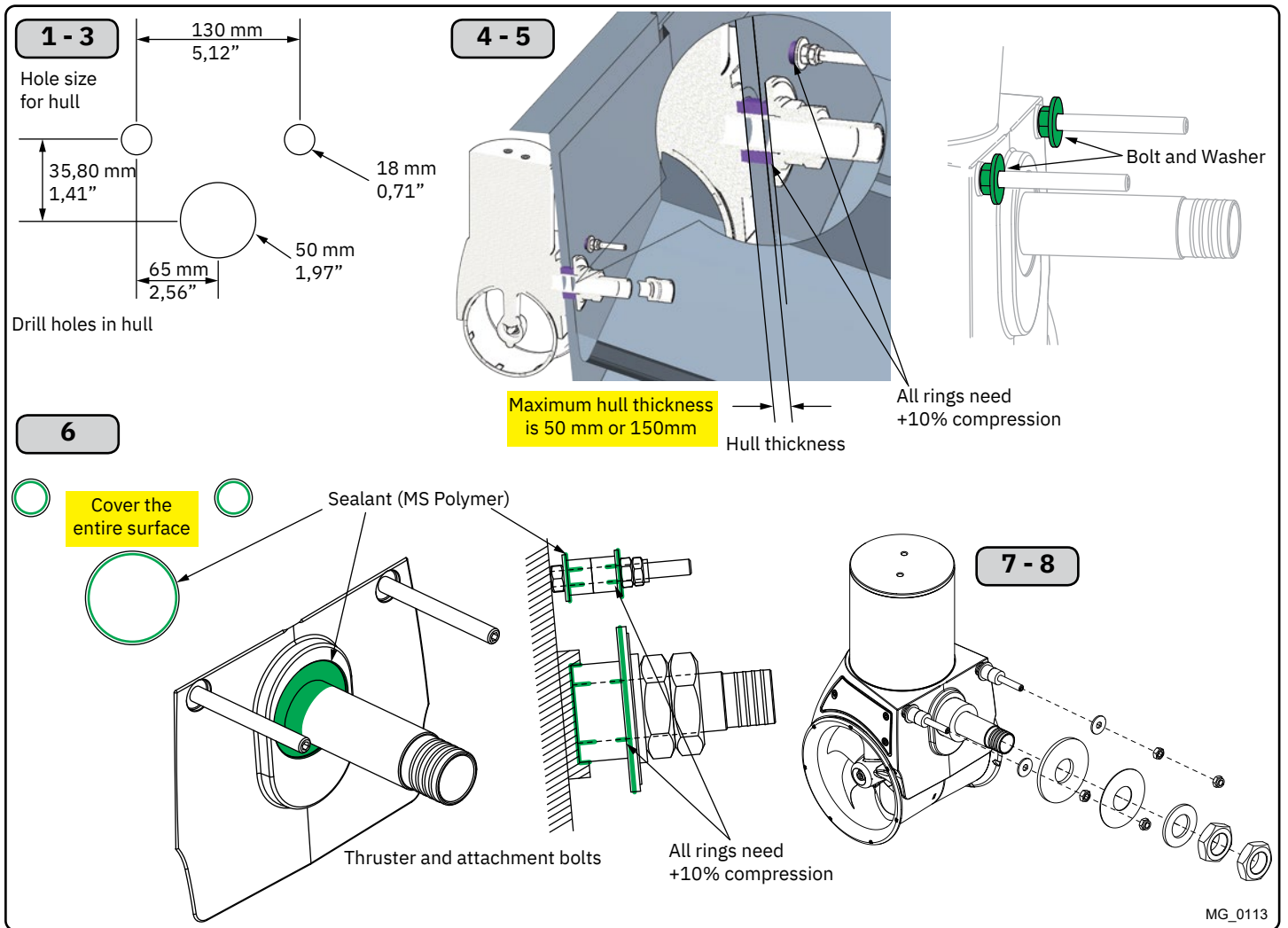
Follow the installation of the SX thruster in the **Motor Installation** to step 3. see next page

1. Define the location to install the thruster. **(NB: Ensure the thruster does not protrude past the transom profile on any side and there is no obstruction to the thrusters water flow. Also, check internally the thruster will not obstruct any objects.)**
2. Mark the locations of the three drill holes using the defined measurements in this manual or from a template. **(NB: Maximum hull thickness is 50mm including optional spacer or 150mm for extended hull thickness models.)**
3. Drill main hole, then two support bolt holes. Clean the area from dust for installation of the thruster. **(NB: Hull holes must be drilled first before attaching the spacer as the top support holes are larger than the spacers.)**

4. Drill out the two support bolt holes in the spacer.
5. Apply MS Polymer sealant or equal to the back surface face of the spacer.
6. Place the spacer to the hull.

Continue the installation of the SX thruster from step 4 in the **Motor Installation**.

IMPORTANT
If using the 50mm spacer ensure you have the extended tube SX model.



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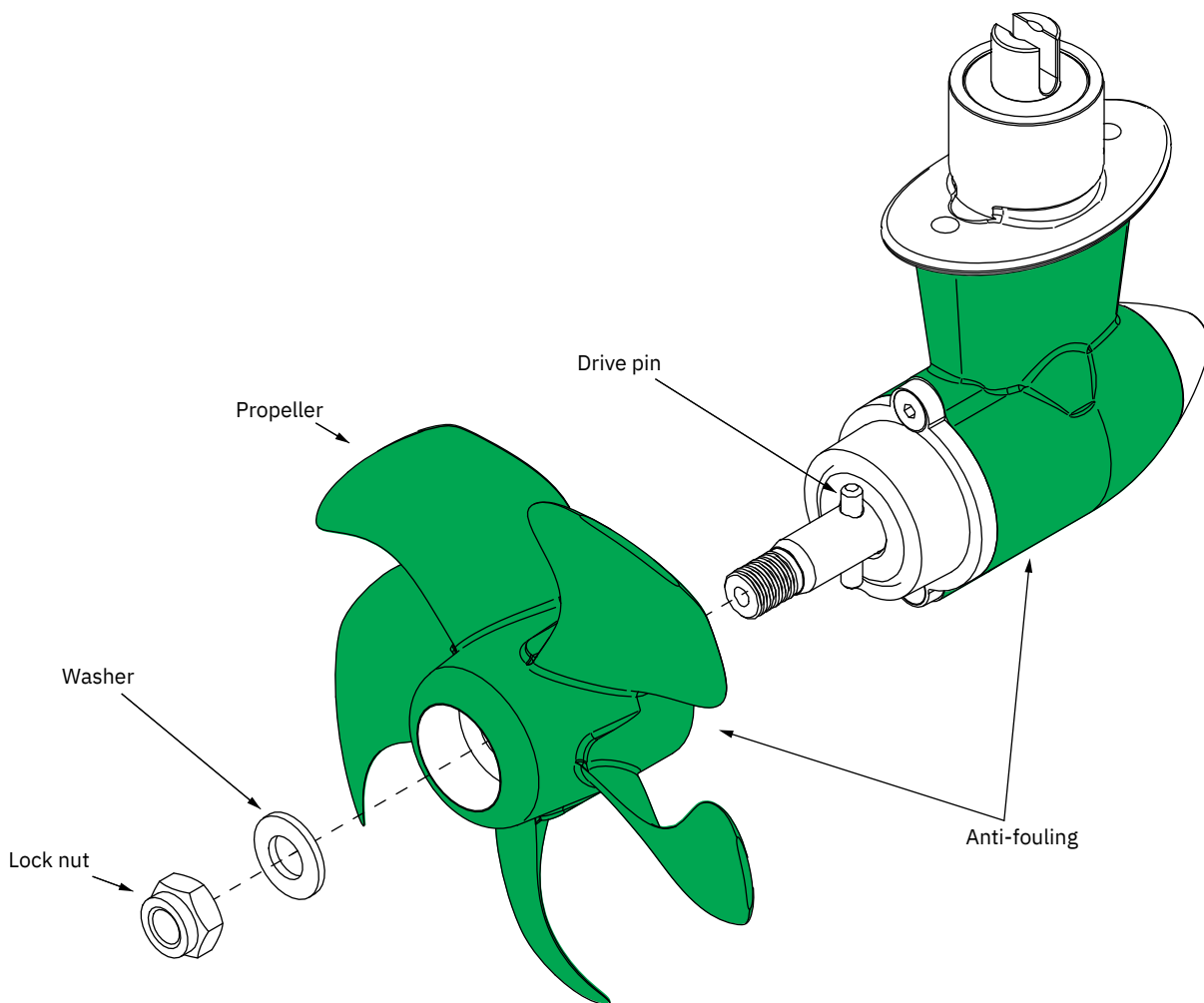
Motor Installation

MC_0074

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

1. Define the location to install the thruster. **(NB: Ensure the thruster does not protrude past the transom profile on any side and there is no obstruction to the thrusters water flow. Also, check 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.)**
2. Mark the locations of the three drill holes using the defined measurements in this manual or from a template. **(NB: Maximum hull thickness is 50mm including optional spacer or 150mm for extended hull thickness models.)**
3. Drill main hole, then two support bolt holes. Clean the area from dust for installation of the thruster.
4. Install a bolt and washer to ensure top bolts contact surface area is level with the main tube. Temporarily place the thruster through the holes to ensure correct fitting. Using the cable leads from the thruster define the location within the vessel for the installation of the control box. **(NB: If using a spacer the support bolt and washer are not required.)**
5. 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 10% compression.)**
6. The thruster assembly must sit flush on the transom. Grind and sand the area if required to ensure a secure fit. **(NB: Use caution when grinding/ sanding surfaces as to not remove too much fibreglass.)**
7. Ensure both bolts and washers to the support bars on the thruster are attached.
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.)**
8. Insert the thruster with compression rings into the hole.
9. Fasten the thruster

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_0054

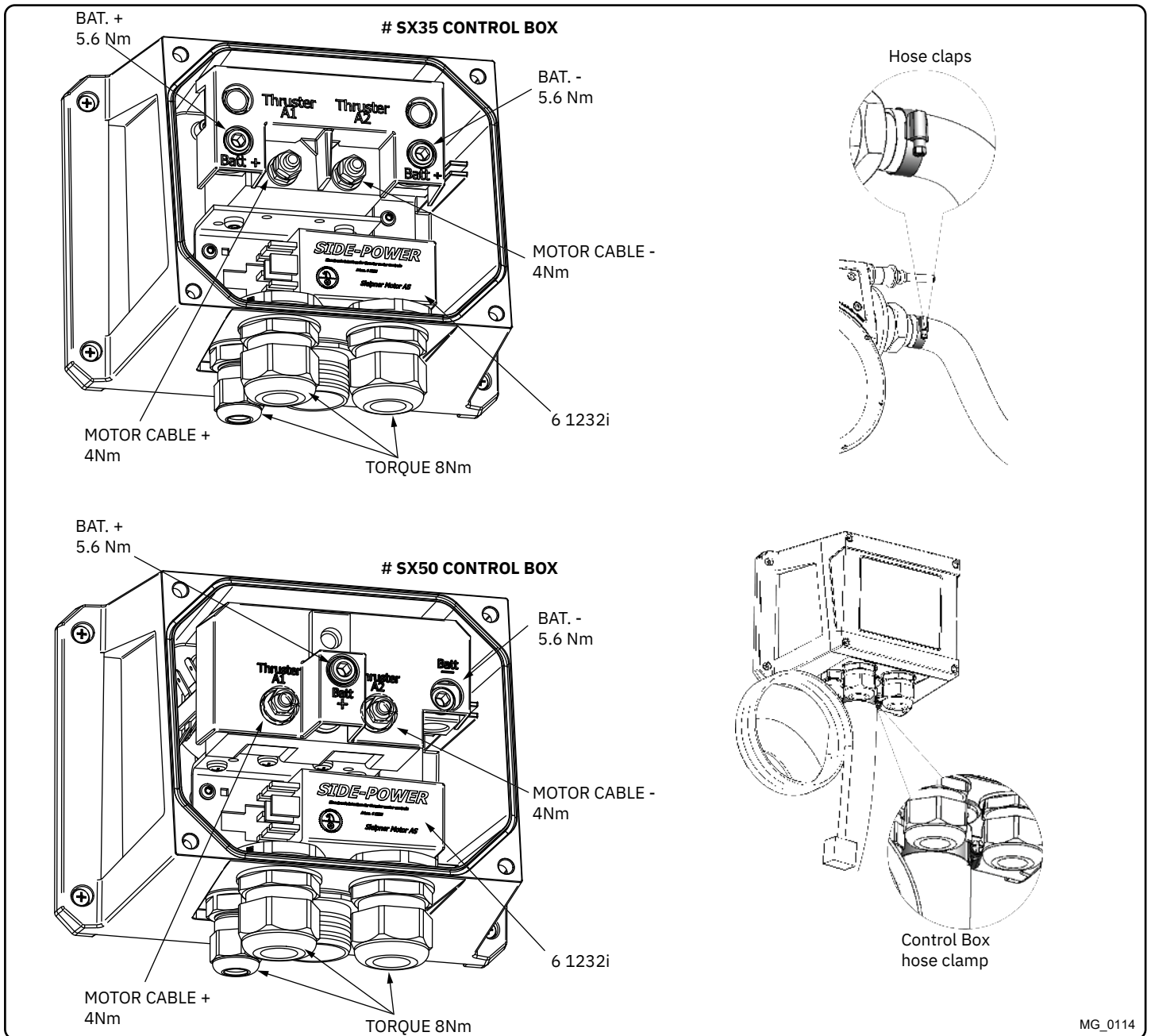
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Propeller Installation

MC_0016

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

1. Centre the drive pin and Insert the propeller onto the shaft spine. 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.



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Control Box Installation

MC_0075

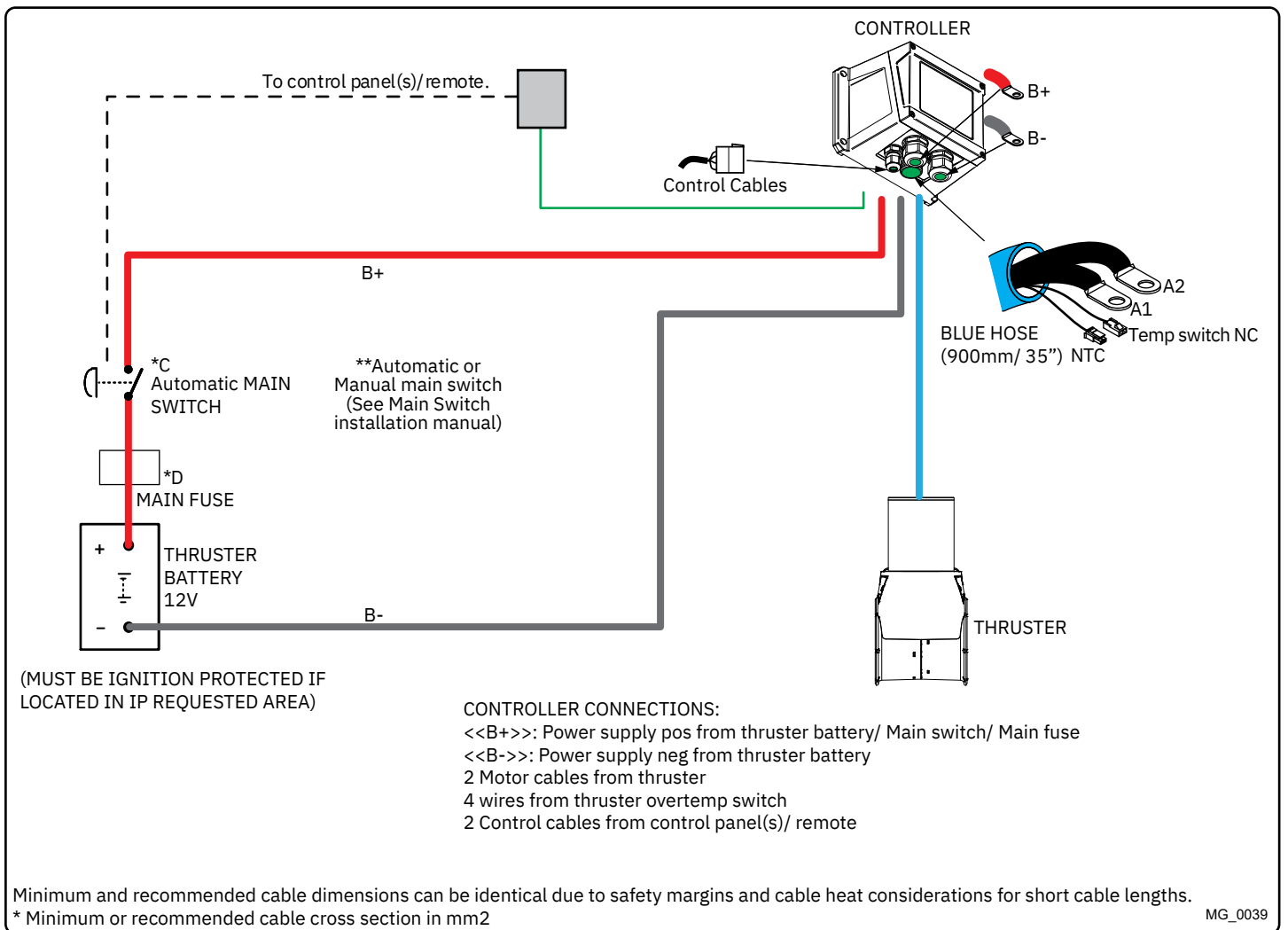
! Please refer to the graphic for special considerations relating to your model !

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.



EN Thruster Electrical Installation MC_0035

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

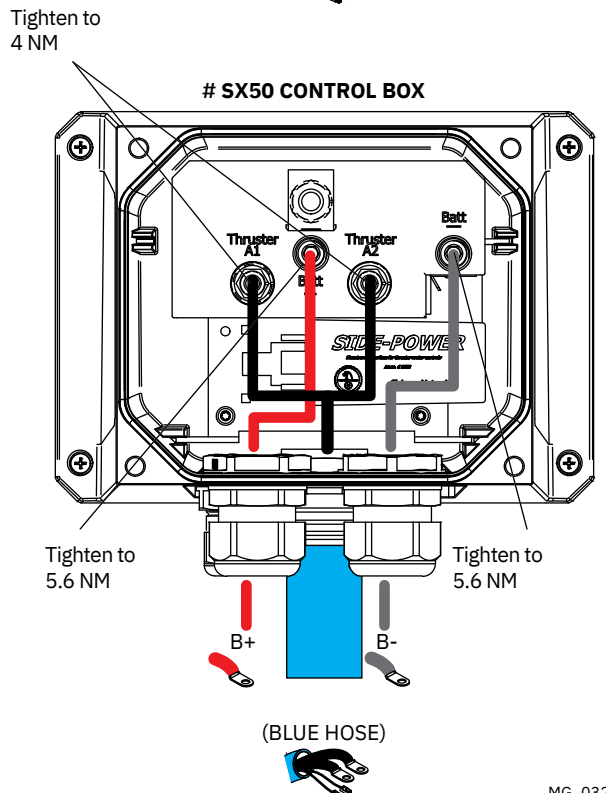
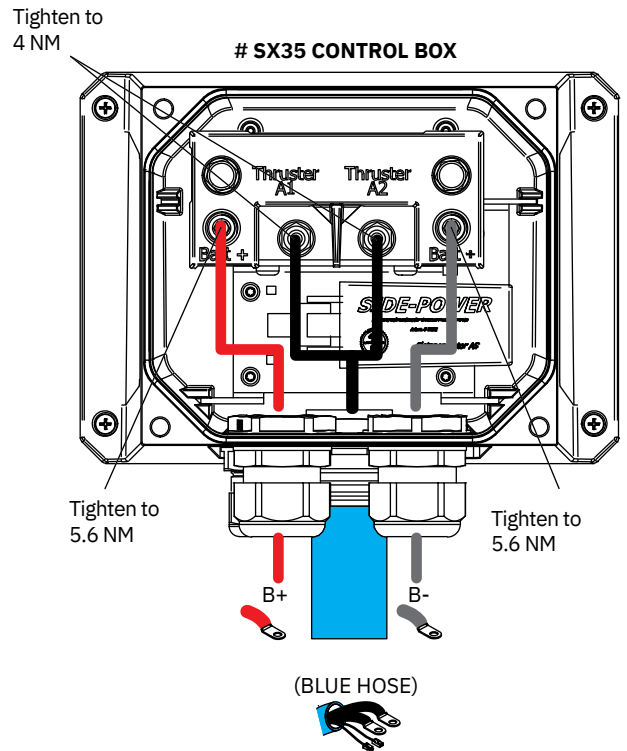
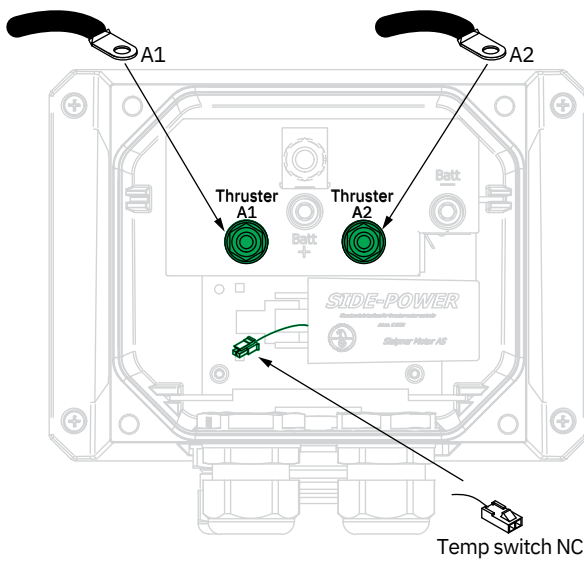
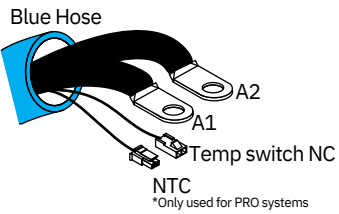
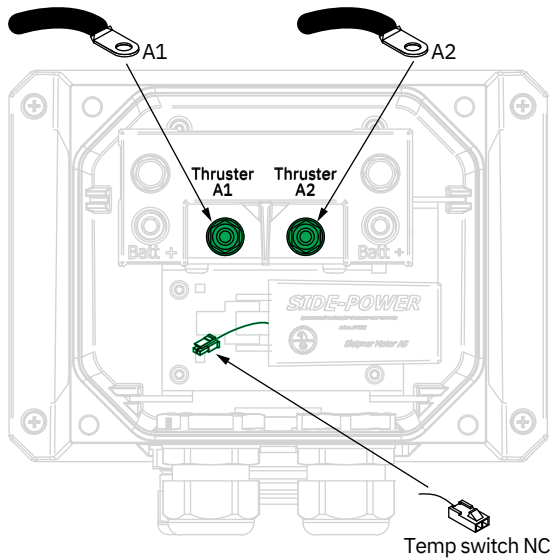
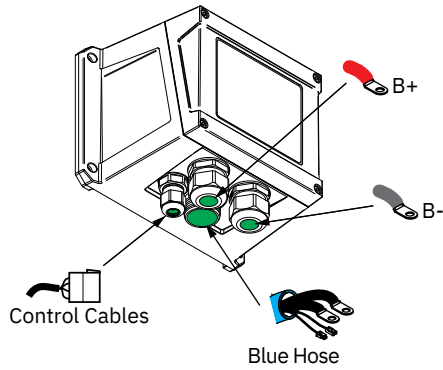
1. Information of electrical table. *see next page*
 - All power cable lengths represent the total length of the combined (+) and (-) cables.
 - Battery capacity is stated as minimum cold crank capacity, (CCA).
 - Use slow blow rated fuses to hold stated Amp-Draw for min. 5 minutes.
 - Consider the AMP hours (Ah) for your specific duty cycle.
2. 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).
3. 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)

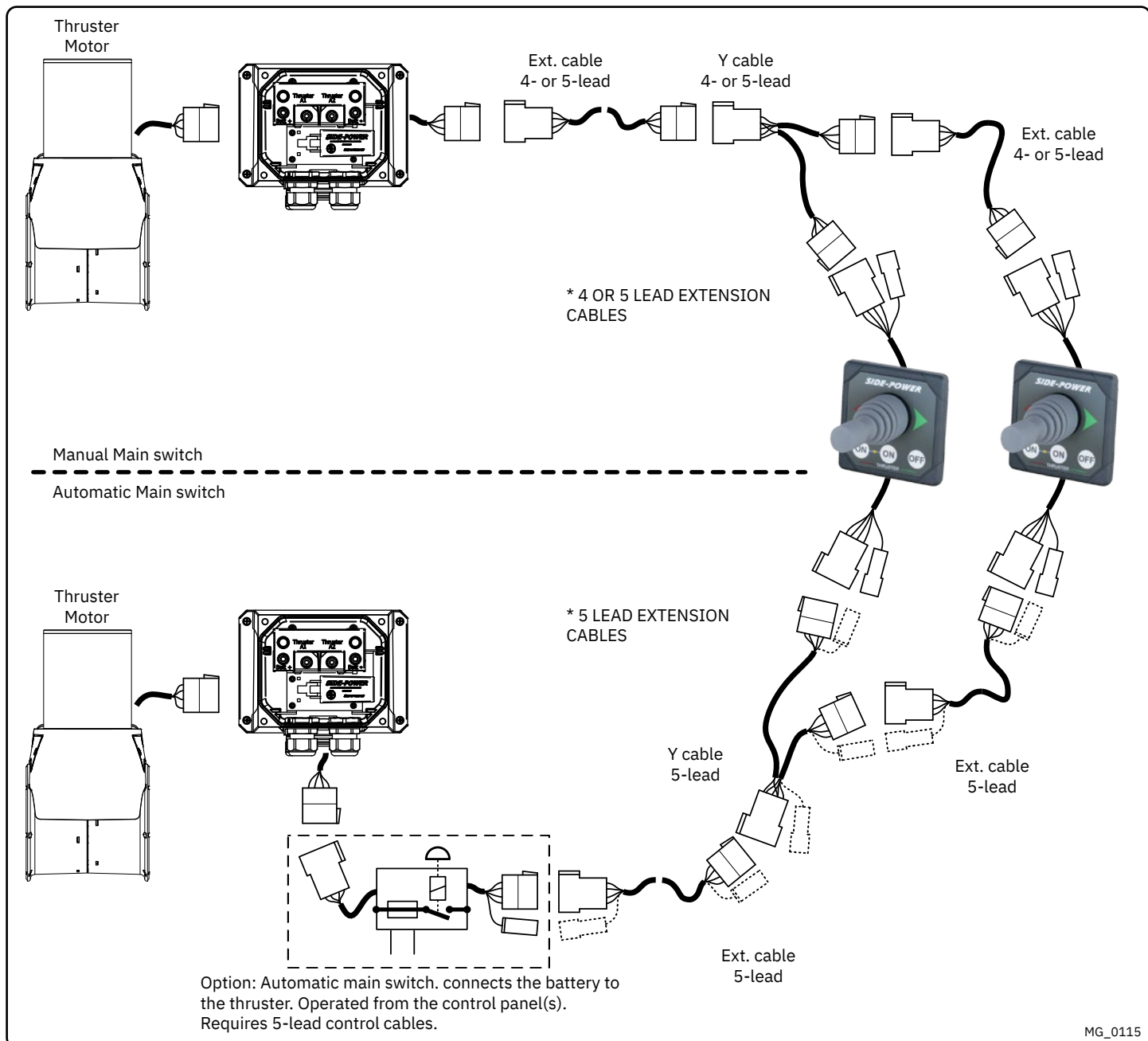
5. Cable lugs must have adequate electrical and mechanical isolation and fitted with cable lug covers.
6. Fasten cables to the required torque.

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.

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.	Min.
						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	50	50	70	70	95	120	120	120	120	2 x 70	2 x 95
*35/140	12 V	245 A	DIN: 200 SAE: 380 EN: 330	ANL 150	AWG	2	1/0	1/0	2/0	2/0	3/0	4/0	4/0	4/0	2 x 2/0	2 x 3/0	2 x 3/0
						50	50	70	120	120	2 x 70	2 x 95	2 x 95	2 x 120	2 x 120	2 x 4/0	2 x 4/0
*50/1400	12 V	370 A	DIN: 350 SAE: 665 EN: 600	ANL 325	AWG	1/0	1/0	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	2 x 4/0
						25	25	35	35	50	50	50	50	70	70	70	70
	24 V	170 A	DIN: 175 SAE: 332 EN: 280	ANL 150	AWG	3	3	2	2	1/0	2	1/0	1/0	2/0	2/0	2/0	2/0



EN

Control Panel Cable Installation

MC_0041

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

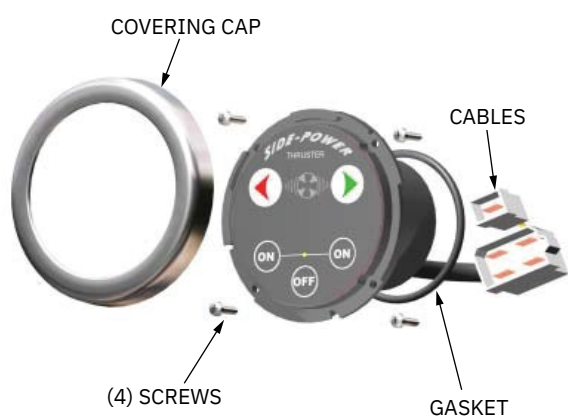
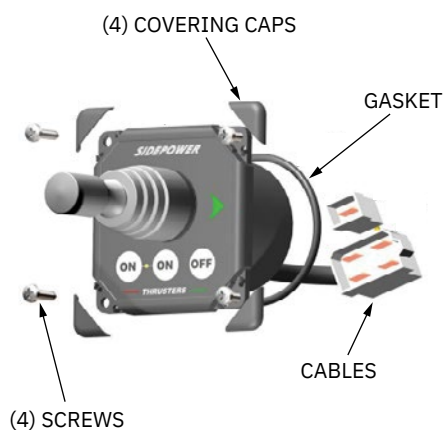
- All Sleipner control panels can be used in any combination.
- All control panels can be installed using:
 - Y-connectors - for standard on/off
 - T-connectors - for S-link proportional power system.

(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.

Example of control panels



MG_0026

EN

Control Panel Installation

MC_0042

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

Find a suitable location for the control panel where it does not obstruct or is obstructed by other devices. Install the control panel on a flat surface where it is easy to use.

1. Use the supplied cut-out template to mark the area to remove on your control dash.
2. Cut out the area per template for the control panel. **(NB: If the front surface around your cut out is jagged or chipped, use a sealant to assist the gasket.)**
3. Place the gasket to the back face of the panel
4. Plug cables into the connectors at the rear of the control panel.
5. Insert the control panel in place and fasten screws.
6. Insert the control panels covering caps.

- 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.sleipnergroun.com/support

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

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.sleipnergroun.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.

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

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