SLEIPNER
Ocean born. Tech bred.

Installation Guide

For Hydraulic Retractable *Thruster Models*
SRHV240, SRHV320

SLEIPNER MOTOR AS
P.O. Box 519
N-1612 Fredrikstad
Norway
www.sleipnergroup.com

DOCUMENT ID: 2933
REVISION: 9
DATE: 2023
LANGUAGE: EN
IM

Contents

Accidental activation of the retract mechanism can cause serious injury due to the high-pressure force used for closing the hatch. IF operating the hatch during any work/ maintenance around or inside the retract hatch, USE CAUTION.

MC_0411

CE

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

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 retract thrusters MC_0474

- Stern mounted retract thrusters must not be installed to conflict with propulsion propellers or its water trail. ***(NB: consult a naval architect for an exact position.)***
- Paint inside the retract housing with anti-fouling. ***(NB: Do not paint the drive shaft.)***

For thruster systems 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.
- Paint the gear leg and propellers with anti-fouling. ***(NB: Do not paint the anodes, sealing, rubber fittings or propeller shafts)***
- 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 without load. Operated at no load, the motor will reach extremely high speed, damaging the system.

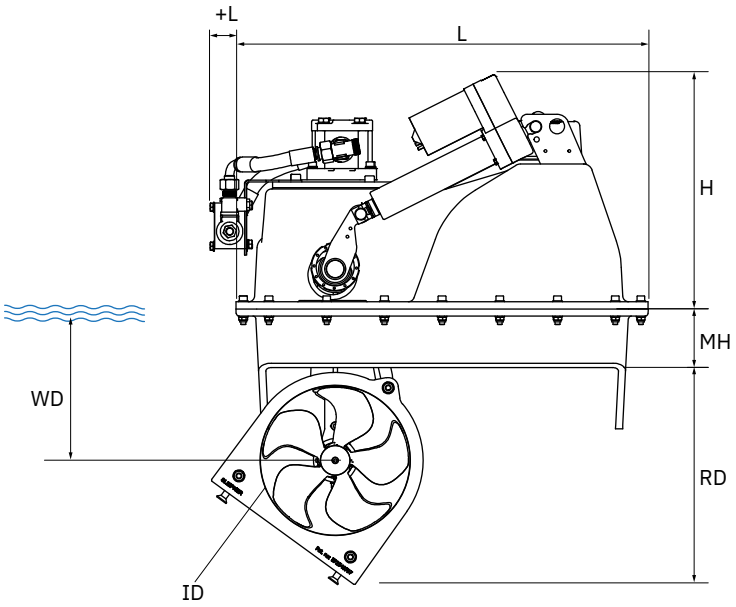
If an original Sleipner hydraulic system is NOT installed, please ensure the following: MC_0009

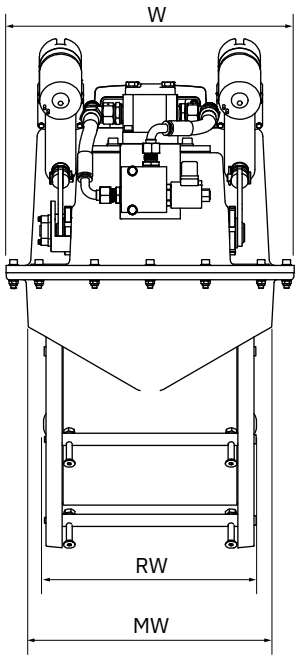
- Install an oil filter to keep the oil clean.
- Fit an oil cooler to ensure that the maximum oil temperature is below 75°C. Recommended operation temperature of hydraulic oil is 40-60°C.
- Hydraulic thrusters are supplied with hydraulic motors only.
- The installed hydraulic system is the responsibility of the fitter/ installer and must be within the limitations outlined in this manual to ensure no damage is caused to the thruster.
- The hydraulic valve must have flow and pressure limits that are either set within or can be adjusted to the limits of the thrusters capability.
- We strongly advise that a shock valve is fitted and set to 10% - 15% above the chosen maximum pressure set in the valve. This will prevent the system from being damaged if the propellers are blocked for any reason.
- Install a device to ensure the drive direction cannot be suddenly changed, as this can severely damage the gear leg. ***(NB: Use a electric control system or a valve that ensures minimum 1 second delay when changing drive direction.)***

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

Product Measurements

Measurement code	Measurement description	SRH 240	
		mm	inch
H	Height	390	15.4
L	Length	688	27.1
+L	Additional Length	42	1.7
W	Width	481	18.9
ID	Internal Diameter	250	9.80
WD	Water Depth	250	9.80
RD	Retract Depth	361	14.2
RW	Retract Width	347	13.7
MW	Mould Width	414	16.3
MH	Mould Height	98	3.9



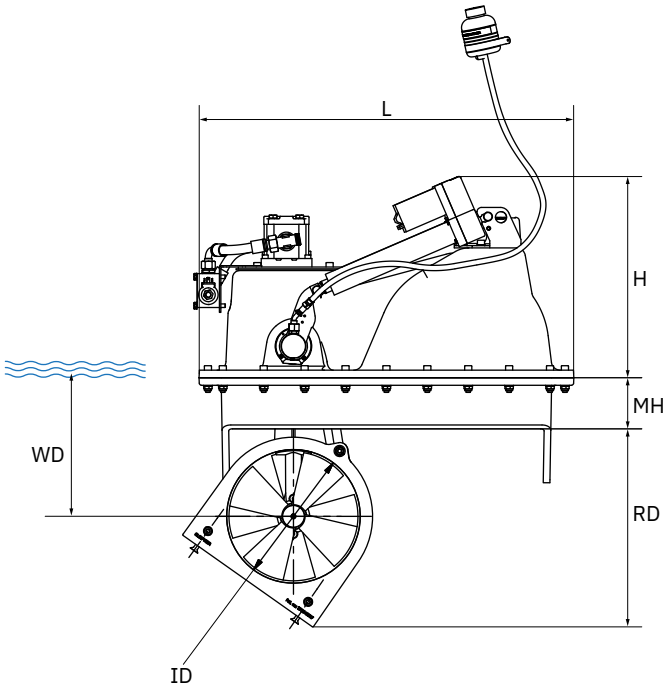


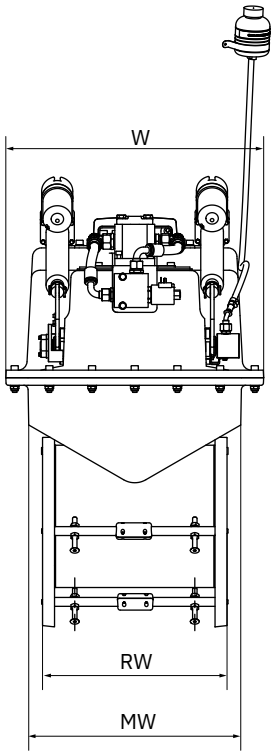
MG_0422

Product Measurements

MC_0364

Measurement code	Measurement description	SRH 320	
		mm	inch
H	Height	455	17.9
L	Length	843	33.2
W	Width	580	22.83
ID	Internal Diameter	300	11.8
WD	Water Depth	300	11.8
RD	Retract Depth	445	17.5
RW	Retract Width	415	16.3
MW	Mould Width	480	18.9
MH	Mould Height	115	4.5





MG_0421

Hull Specifications

MC_0609

Use sealants, adhesives or bonding material compatible with the materials of your vessels hull and Sleipner product.

Product Specifications

MC_0169

Product	Lubrication	Light Duty Thrust is kg	Heavy Duty Thrust is kg	Power Output kW / Hp	Weight kg / lbs	Maximum Operation Time
SH240	Sealed - Oil bath from tank EP-90	240 kg / 529 lbs	220 kg / 440 lbs	14.9 kW / 20 hp	13.5 kg / 29.76 lbs	Continuous
SH320	Sealed - Oil bath from tank EP-90	320 kg / 705 lbs	270 kg / 594 lbs	17.16 kW / 23.3 hp	17.16 kg / 37.83 lbs	

Flow and Pressure Specifications

MC_0169

			60 %		80 %		100 %	
Thruster model	**Motor type**		**Flow**	**Pressure**	**Flow**	**Pressure**	**Flow**	**Pressure**
SH240	U,G,P 8	L/min-Bar	19.1	217	21.4	275	21,4	275[1)]
		USG-PSI	5.05	3147	5.65	3988	5.65	3988[1)]
	U,G,P 10	L/min-Bar	23.8	174	27.5	232	30	275[2)]
		USG-PSI	6.29	2523	7.23	3364	7.93	3988[2)]
	U,G,P 11	L/min-Bar	26.2	158	30.2	211	33,8	264
		USG-PSI	6.9	2291	8.0	3060	8.9	3828
	U,G,P 14	L/min-Bar	33.1	124	38.2	166	42.7	207
		USG-PSI	8.7	1798	10.1	2407	11.3	3002
	U,G,P 16	L/min-Bar	38.1	109	44.0	145	49.2	181
		USG-PSI	10.1	1581	11.6	2103	13.0	2625
	U,G,P 19	L/min-Bar	45.1	92	52.1	122	58.3	153
		USG-PSI	11.9	1334	13.8	1769	15.4	2219

1) Max. thrust: 182kg
2) Max. thrust: 228kg

			60 %		80 %		100 %	
Thruster model	**Motor type**		**Flow**	**Pressure**	**Flow**	**Pressure**	**Flow**	**Pressure**
SH320	U,G,P 11	L/min-Bar	23.8	249	24.9	274	24.9	274[1)]
		USG-PSI	6.29	3611	6.58	3973	6.58	3973[1)]
	U,G,P 14	L/min-Bar	30.1	196	34.7	261	35.6	274[2)]
		USG-PSI	7.95	2842	9.17	3785	9.41	3973[2)]
	U,G,P 16	L/min-Bar	34.6	171	39.9	229	43.7	274[3)]
		USG-PSI	9.14	2480	10.54	3321	11.55	3973[3)]
	BA 16	L/min-Bar	33.8	172	39.0	230	43.6	287
		USG-PSI	8.93	2494	10.30	3335	11.52	4162
	U,G,P 19	L/min-Bar	41.0	144	47.3	193	52.9	241
		USG-PSI	10.83	2088	12.50	2799	13.98	3495
	BA 19	L/min-Bar	40.1	145	46.3	194	51.8	242
		USG-PSI	10.59	2103	11.44	2813	13.69	3509
	U,G,P 23	L/min-Bar	49.4	121	57	162	63.8	202
		USG-PSI	13.05	1755	15.06	2349	16.86	2929

1) Max. thrust: 211kg
2) Max. thrust: 269kg
3) Max. thrust: 307kg

Connection of Hydraulic Hose to Motor

MC_0172

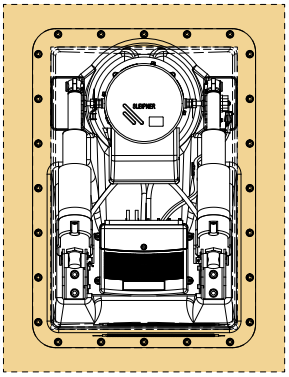
Follow the defined hose specifications to connect hydraulic hoses to the motor.

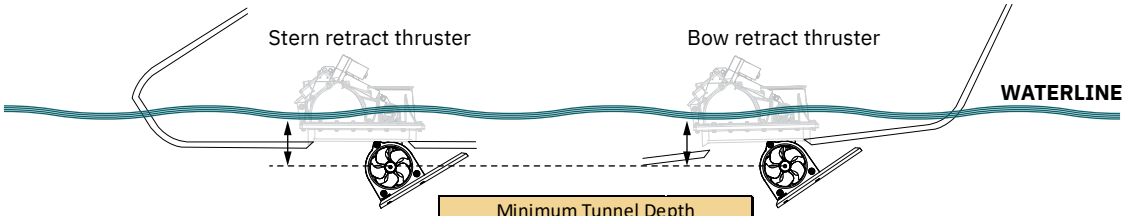
Motor type	Port A/B	Drain Port
G16	22L, Metric DIN 2353	1/4” BSP
G19	22L, Metric DIN 2353	1/4” BSP
G23	22L, Metric DIN 2353	1/4” BSP

Positioning of the Retract Thruster

Retract Thruster
Ensure enough space for the complete retract unit including room for installation of SRF flange and for future service. Allow 100 mm of clear space around the thruster for moulding of the SRF flange. Ensure that when the thruster is deployed the depth of the propeller exceeds the minimum tunnel depth defined in below table.

Installing the thruster below the waterline as outlined is important for two reasons:
1. Avoid drawing air from the surface which will reduce performance and increase noise levels.
2. To get as much water pressure as possible to achieve maximum thrust.

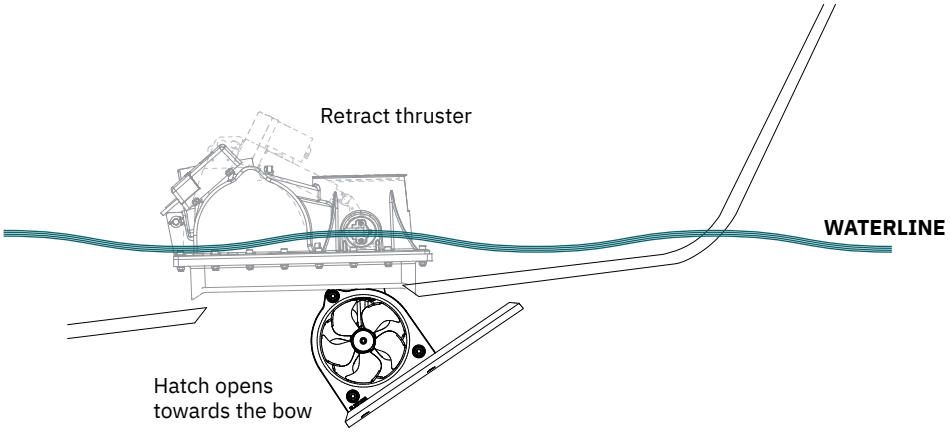




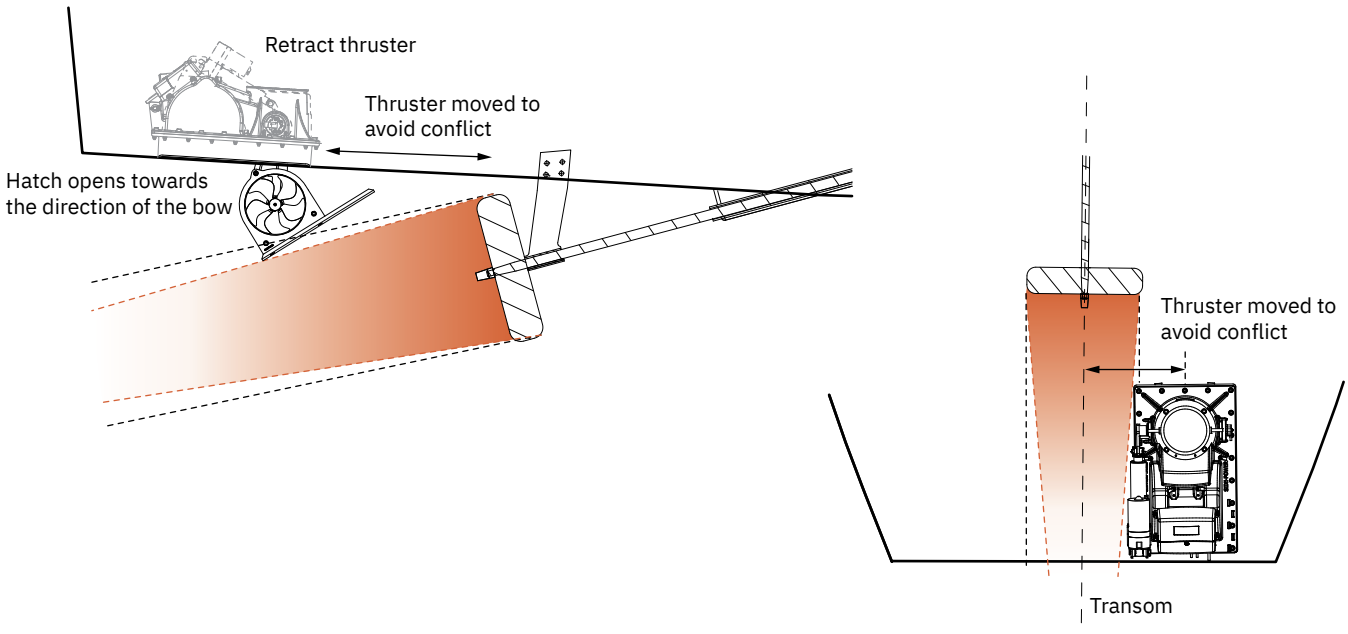
100 mm of clear space around the thruster for moulding the retract frame.

Minimum Tunnel Depth	
Retract system 80 to 100	185 mm
Retract system 130 to 240	250 mm
Retract system 250 to 300	300 mm
Retract system 650	386 mm

Bow installation
The thruster must be installed in the center line of the keel and as far forward as possible while following the minimum propeller water depth requirement. The thruster must always be installed so the hatch is opened towards the bow.



Stern installation
To avoid conflict between the thruster and propulsion propellers, trim tabs or rudders the stern installation can be offset from the keel center line.



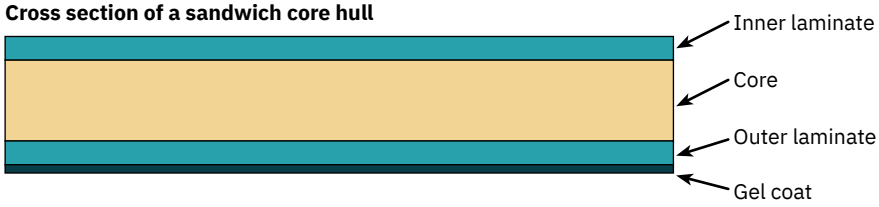
MG_0121

Preparing a Sandwich Hull for Retract Systems

MC_0067

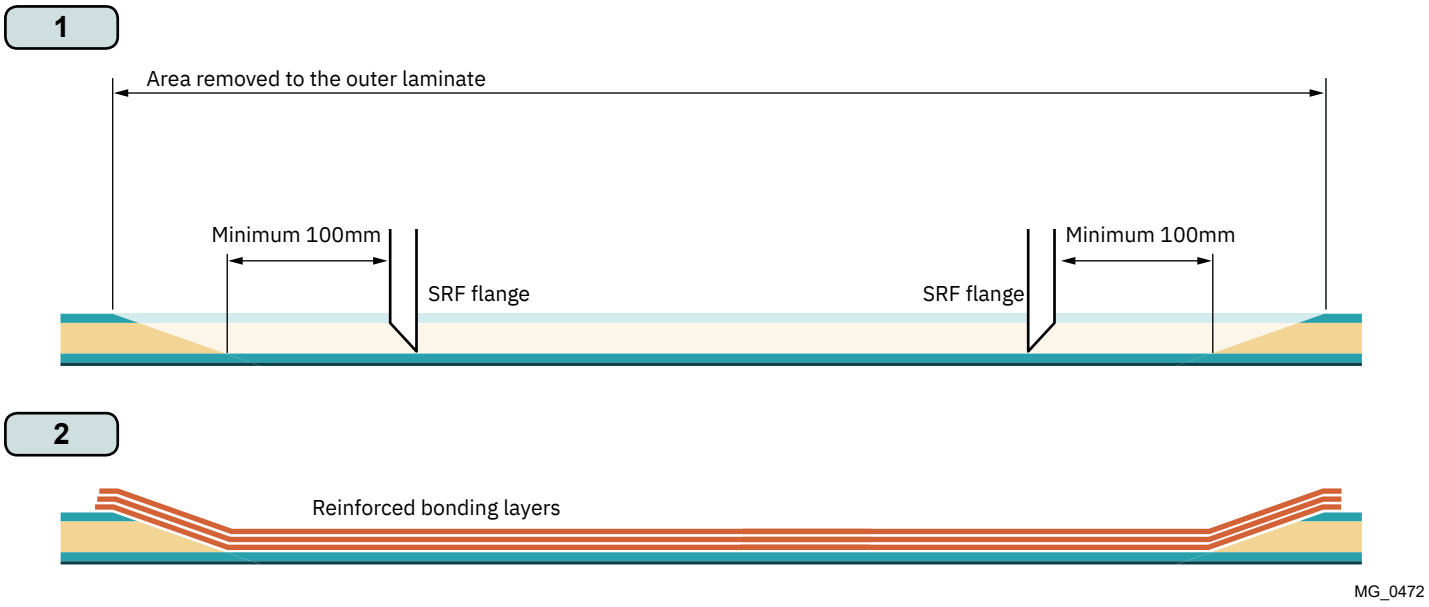
For vessels with sandwich hull construction, additional reinforcement of the area around the SRF flange is required.

Cross section of a sandwich core hull



1. To achieve maximum strength and bonding in the area around the installation of the SRF flange remove the inner laminate and core material to expose the outer laminate. Remove enough area for a 100mm (minimum) clearance surrounding the SRF flange.

2. Reinforce the area by applying several bonding layers to strengthen the hull for the operation of the retract thruster.



MG_0472

Marking and Trimming of SRF Flange

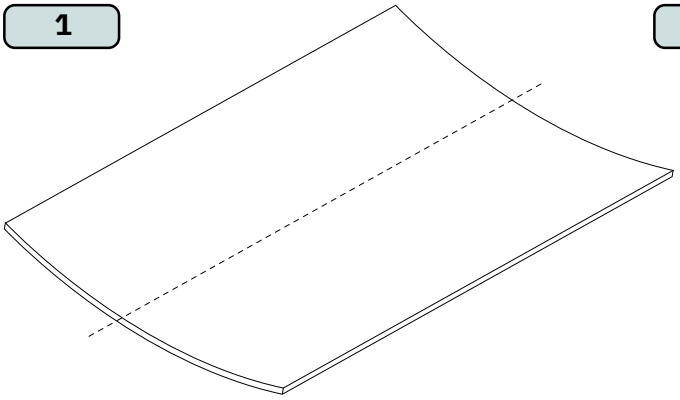
MC_0068

1. Identify the location of the thruster considering space required for installation, operation and future maintenance.

2. Flip the SRF flange upside down and position it at the identified installation location. Use the internal edge to mark the hull for cutting the thruster hatch.

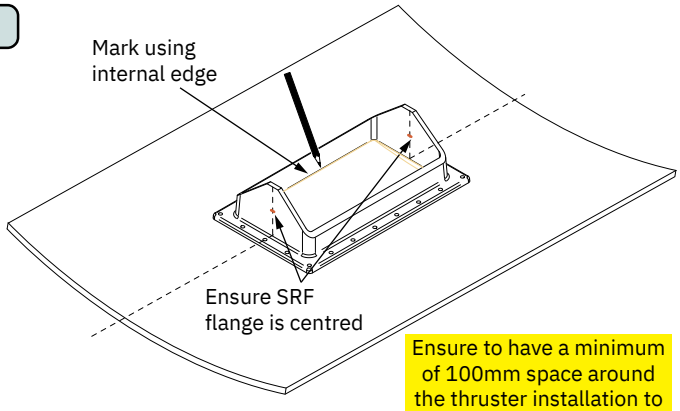
3. The SRF flange must sit so the two side rails run flush with the hull. To do so the SRF flange must be trimmed down to match the hull profile curvature. ***(NB: For guidance or methods to transfer the hull profile to the SRF flange for cutting, consult a naval architect. DO NOT cut the SRF flange length edge.)***

1



Bow thrusters must be positioned on the boat centre line.
Stern thrusters can be positioned off the centre line.

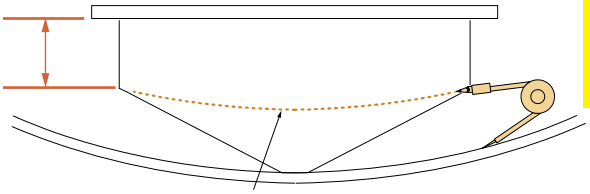
2



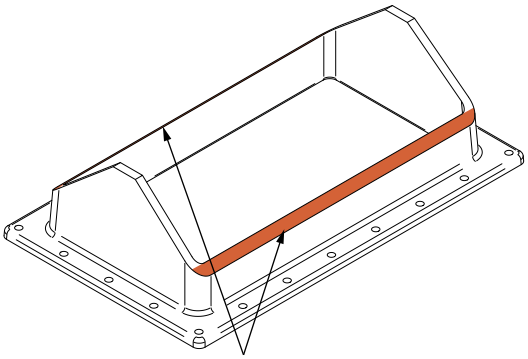
Ensure to have a minimum of 100mm space around the thruster installation to have service access

3

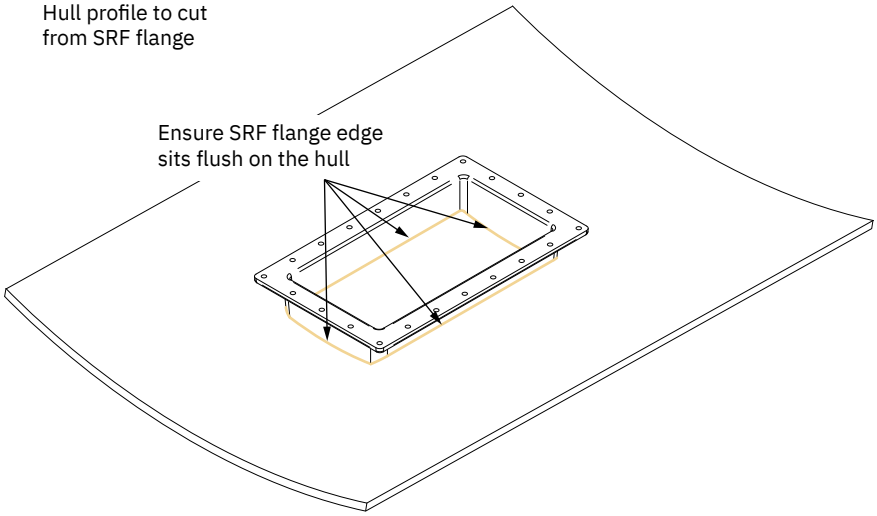
Important
The minimum SRF flange height is stated on the product measurment page (MH)
-Ø185mm = 72mm
-Ø200mm = 97mm
-Ø300mm = 115mm
-Ø386mm = 147.5mm



For guidance or methods to transfer the hull profile to the SRF flange for cutting, consult a naval architect. DO NOT cut the SRF flange length edge.



WARNING
DO NOT cut the SRF flange length edge

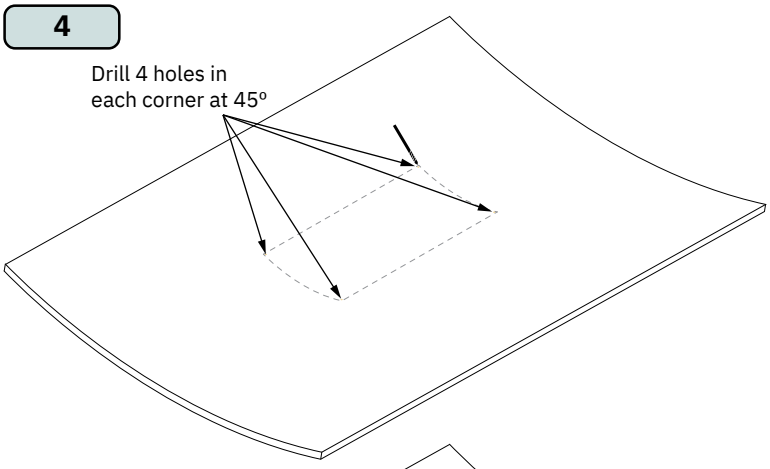


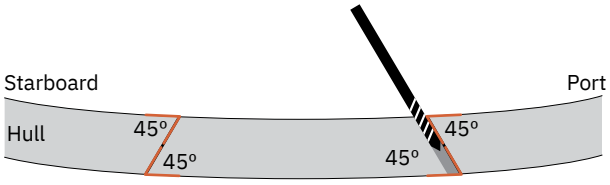
MG_0117

4. Prepare for cutting the hatch door. Drill 4 holes at a 45° angle towards the starboard and port side. ***(NB: Cutting the hatch from outside the hull the 4 drill hole from the internal marked corners will aid in determining the hatch profile from the outside.)***

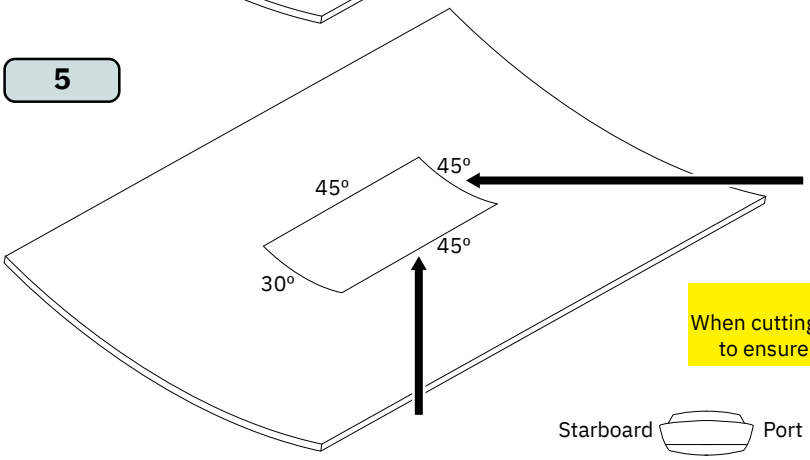
5. The hatch opening must be cut at an angle of 45° on three sides and 30° on the side facing the bow. This ensures that forces from water hitting the closed hatch is absorbed by the surrounding hull. ***(NB: Use a suitable cutting tool able to be set to the desired angle.)***

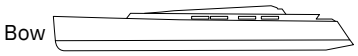
4

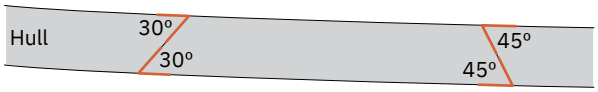




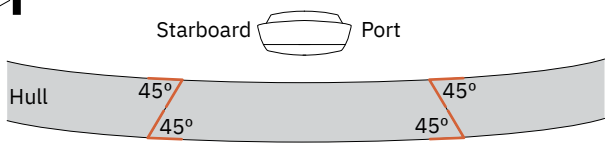
5

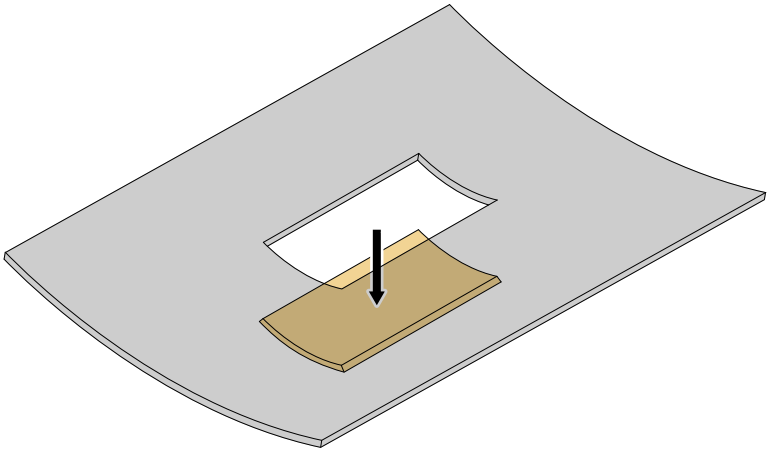






Important
When cutting use a suitable guide tool to ensure correct cutting angles.





MG_0724

Installation Pre-check

MC_0068

Temporarily set up the complete installation to ensure no conflicts during the final operation of the thruster.

1. Use epoxy filler in the 4 corners of the SRF flange and set it over the hatch. Attach the retract housing retract flange with 4 corner screws to hold. Use polyester or resin to attach the hull hatch to the retract unit. ***(NB: Ensure correct orientation for the thruster to open the hatch facing the direction of water flow. Remember attachment is for temporary checking of thruster operation only.)***

2. Temporarily connect DC cables ***(NB: Refer to the label on actuators for correct voltage)*** to the cables on the terminals on the controller. Set switch no. 4 on the DIP-switch marked "SETTINGS" to ON. Deploy thruster and remove the red distance part located above the tunnel.

3. Press "DOWN" to extend the tunnel and check the hatch opens fully without touching the hull. If the hatch is obstructed by the hull in the front, lift the aft end of the SRF flange maintaining the reference height in front - until the hatch clears the hull when opened.

4. Press "UP" to retract the tunnel. Ensure when the hatch is closed extra pressure is on the contact surface between the hatch and the hull only. If the hatch is not closing with pressure on the contact surfaces the entire SRF flange must be raised.

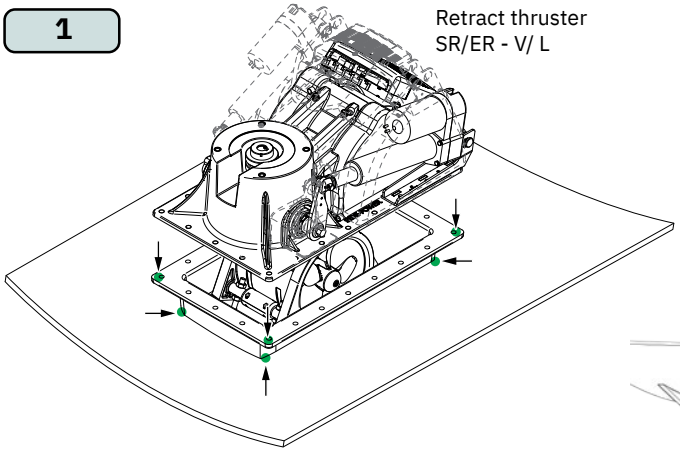
IMPORTANT

The hatch contact edges and the hull contact edges MUST work as the mechanical end stop. During cruising, slamming forces from the water must be absorbed by these areas, not the thruster.

Accidental activation of the retract mechanism can cause serious injury due to the high-pressure force used for moving the hatch. IF operating the hatch during any work/ maintenance around or inside the retract hatch, USE CAUTION.

After all, pre-checks are completed the retract system can be installed.

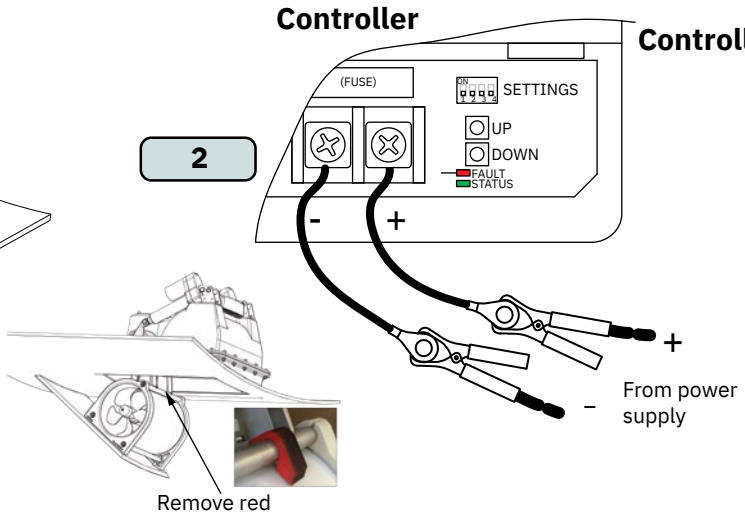
1



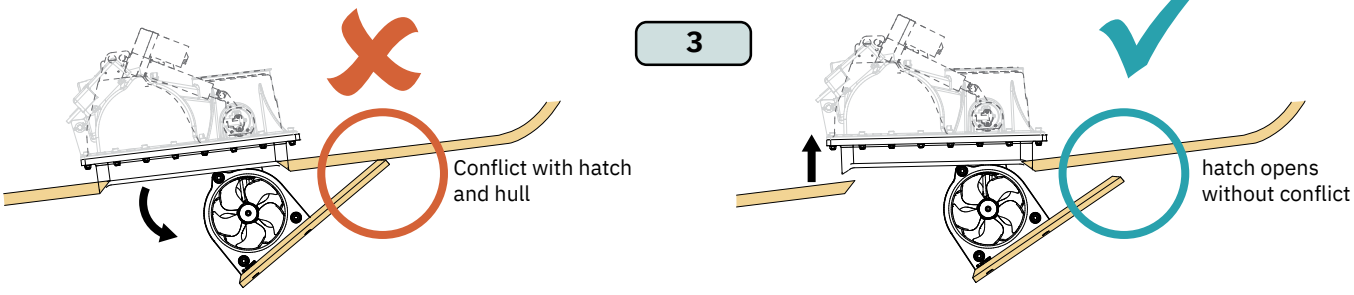
Retract thruster
SR/ER - V/ L

Apply polyester or resin to corner areas to temporally hold the retract unit in place

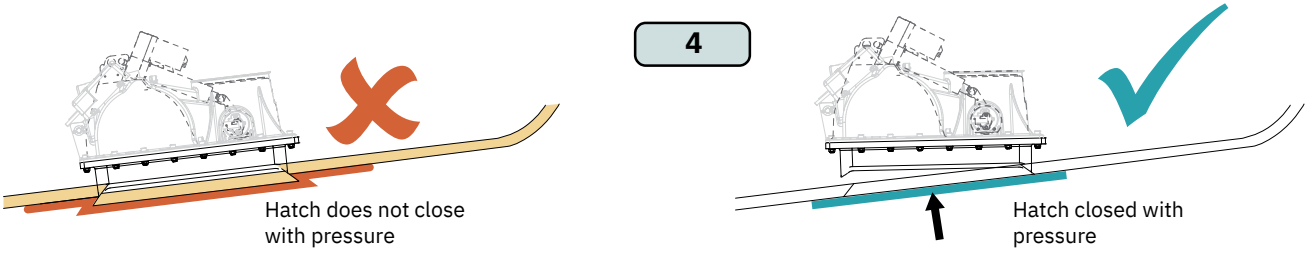
2



3



4



MG_0118

Required Modifications After Pre-check

MC_0068

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

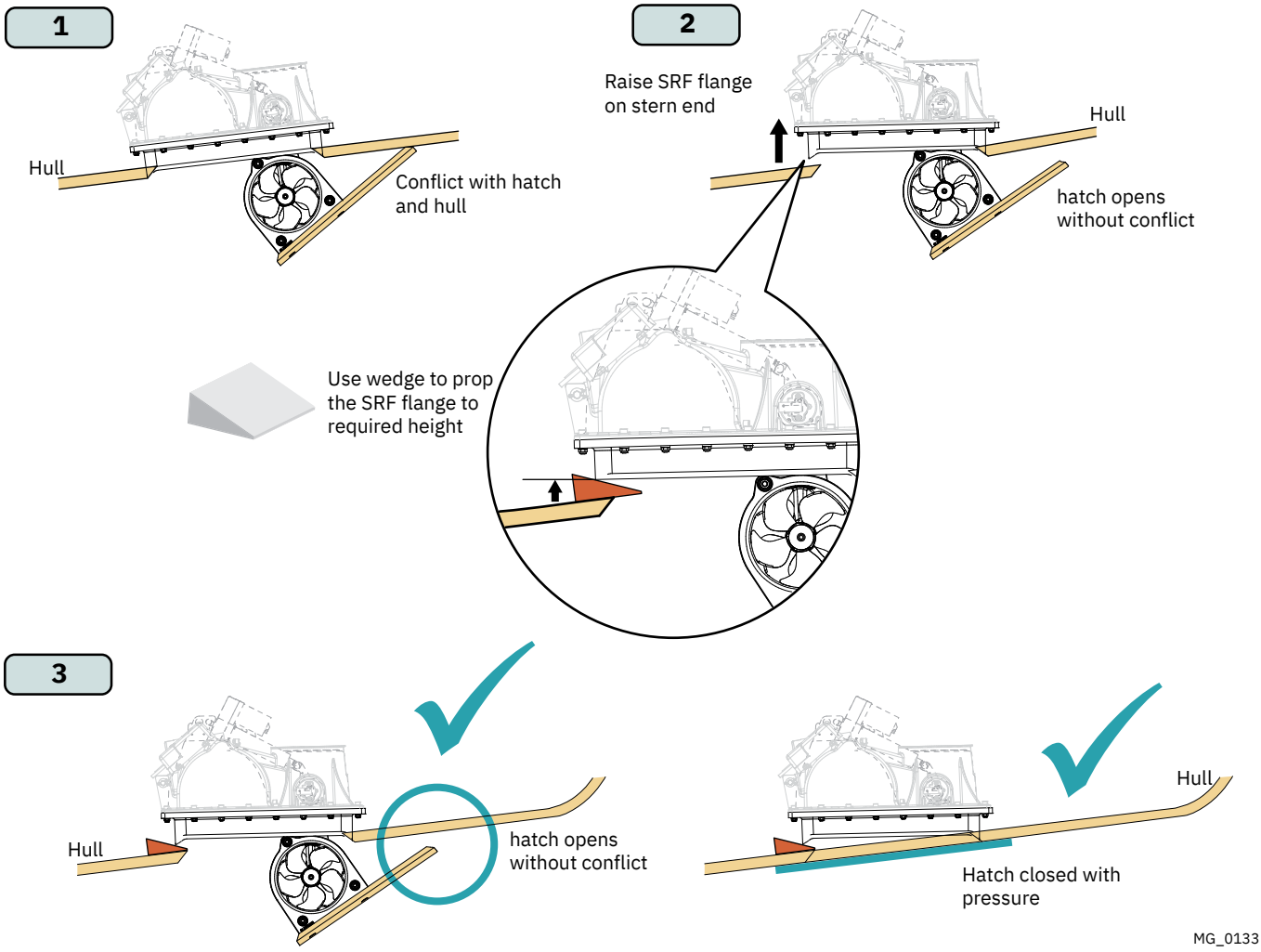
To increase the space between the hatch and the hull the entire SRF flange and motor must be raised at the stern end.

1. With the hatch in the open position raise the stern end of the SRF flange and motor until the appropriate clearance is achieved. ***(NB: continue to raise the stern height until this is obtained.)***

2. Use a wedge to keep the thruster stable.

3. Open and close the hatch to ensure:
   - Clearance between the hull and hatch when the thruster is open
   - Hatch closes flush with the hull with full contact between hatch and hull.

4. Record the height and keep the wedges in place and secure the position of the SRF flange with epoxy filler in the corners.



MG_0133

SRF Flange Installation

MC_0068

Start the laminating with a strong attachment point in each corner between the hull and the outside of the lower unit. Use epoxy and fibreglass cutting or similar, which laminating material is the boat builders responsibility.

1. Before grinding of hull and SRF flange, precautions must be taken against grinding dust inside the boat. Surfaces to be moulded/ bonded must be ground to remove coating and material to achieve sufficient adhesion.

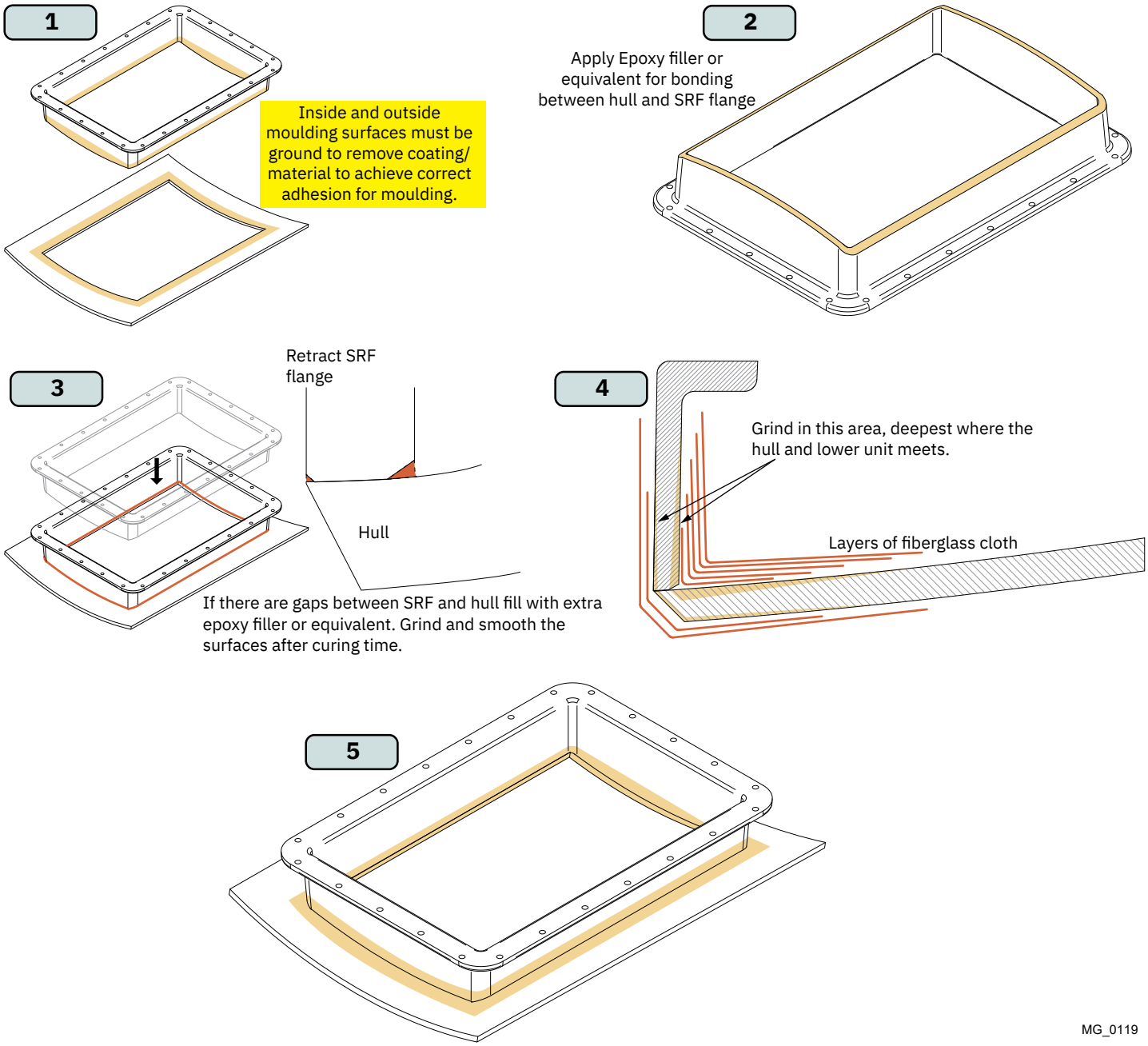
2. Apply epoxy filler or equivalent on bottom edges of SRF flange or on the hull for bonding between connection surfaces. Ensure the filler is compatible with hull materials.

3. Place the SRF flange into position ensuring the correct orientation. If there are gaps between SRF and hull, fill with extra epoxy filler or equivalent. Grind and smooth the surfaces after curing time.

4. Laminate the inside and outside of the SRF flange to the hull by applying several layers of fibreglass and ensure that the resin and fibreglass is compatible with hull materials.

5. After curing time, smooth all moulded surfaces and apply coating. Apply putty before coating if necessary.

Once the coating has cured the retract housing can be installed.



MG_0119

Motor House Installation

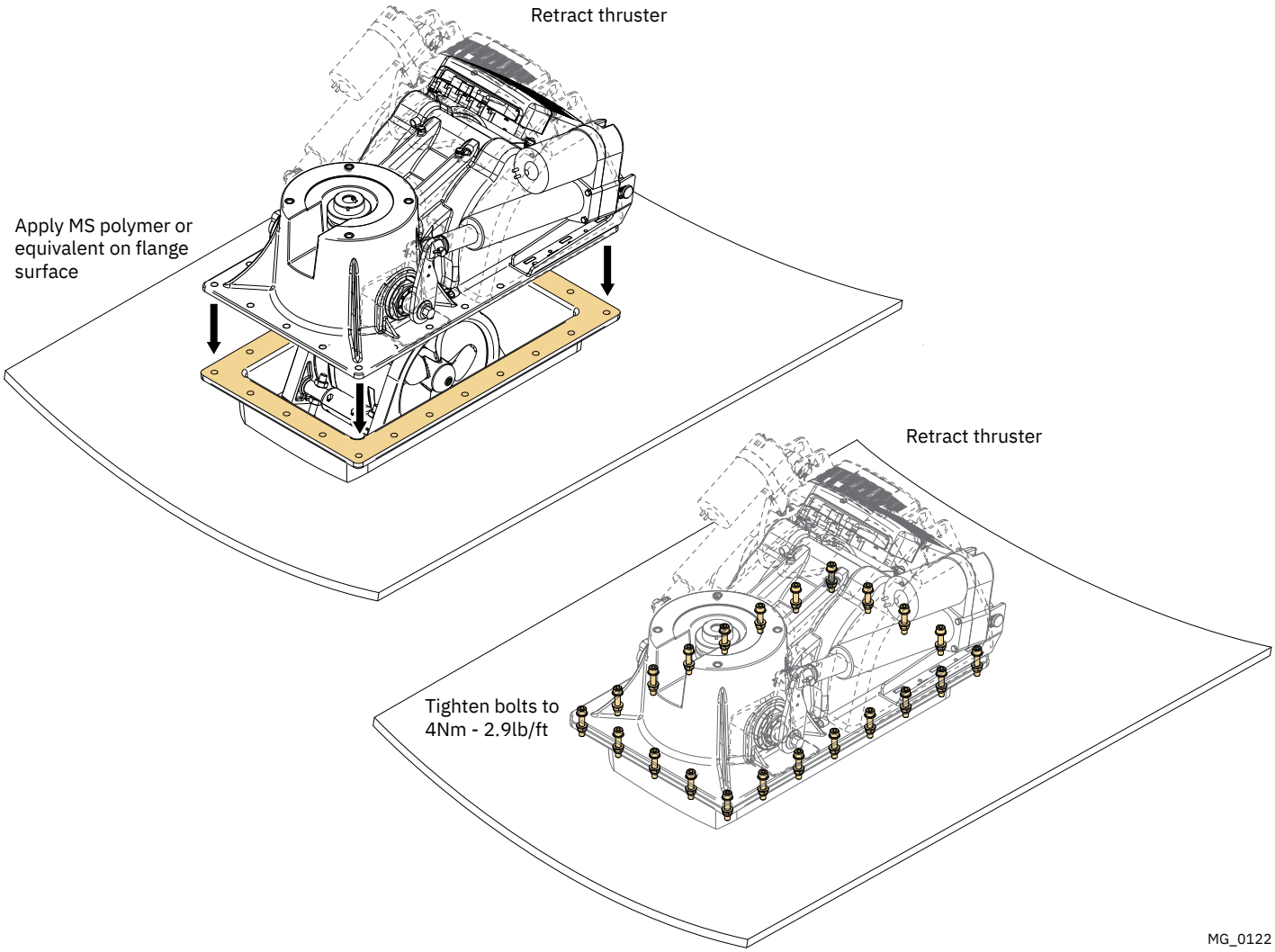
MC_0068

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

1. Apply MS Polymer or equivalent on SRF flange top surface to seal and avoid water leakage. ***(NB: Ensure that glue is compatible with SRF and thruster case materials.)***

2. Place the upper thruster Housing down on the SRF flange.

3. Insert and fasten bolts. Start with the 4 corner bolts followed by the remaining to required torque.



MG_0122

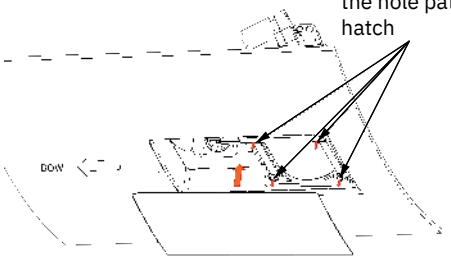
Hatch Installation

MC_0068

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

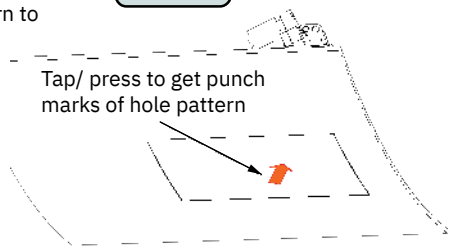
1. Fit pin bolts to the lower tunnel rods. The ends of the bolts must be sharp to create marks in the hatch. The pin bolts must be at the correct height so the hatch will fit in its inner position.
2. Place hatch in its inner position, then press or tap with a hammer to create punch marks inside of the hatch.
3. Drill 4 marked holes and countersink the outer hull side. ***(NB: drill holes vertical to the hatch surface.)***
4. Temporary fit the hatch to the tunnel rings. Ensure the bolts do NOT conflict with the propeller tunnel. ***(NB: Bolts can be cut, depending on hatch thickness.)***
5. Apply a layer of aluminium or duct tape on hatch opening edges on the hull. Apply Epoxy filler or equivalent to hatch edges to create a perfect seal connection between hatch and hull.
6. Operate the thruster to "IN" position. Smooth out the filler and add more if needed. After curing time, grind and smooth the surface.
7. Unscrew and remove hatch to smooth off excessive material before coating the hatch.
8. Apply epoxy glue or similar on to tunnel rings contact surface, so the hatch will be secured properly. Now re-install hatch in its correct position. Tighten bolts so hatch will fit properly.
9. Apply coating inside and outside of the hatch and on the hull.

1



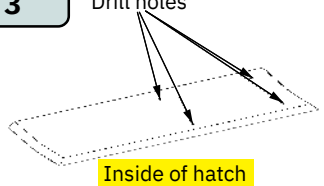
Pin bolts with sharp ends to punch mark the hole pattern to hatch

2



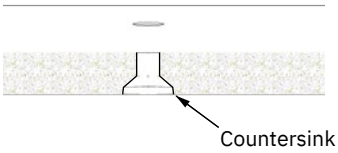
Tap/ press to get punch marks of hole pattern

3



Drill holes

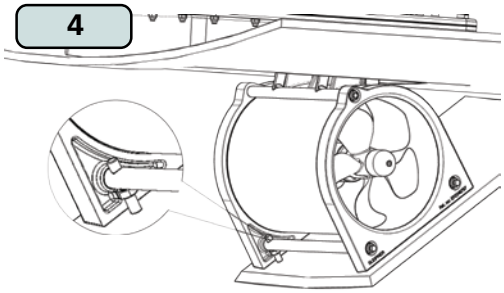
Inside of hatch



Countersink all 4 holes

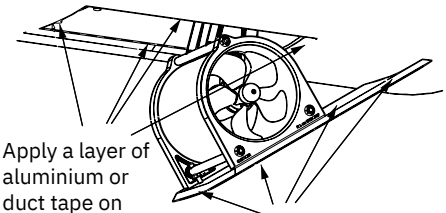
Outside of hatch

4



Ensure to adjust the hatch bolts so they do NOT conflict the tunnel. Bolts must be tightened firmly.

5

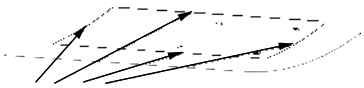


Apply a layer of aluminium or duct tape on hatch opening edges

Apply filler on hatch edges

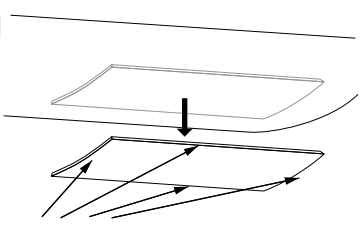
6

Run the tunnel IN with filler on hatch edges



Smooth out filler and add more if needed. After curing time grind and smoothen the surface

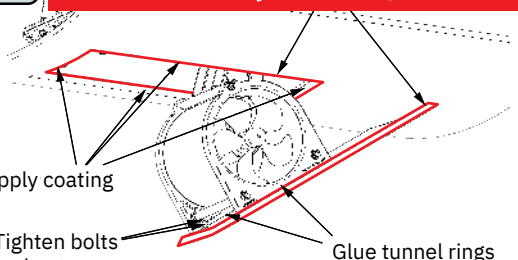
7



Unscrew and remove hatch to smooth off excessive material before coating the hatch.

8

The hatch contact edges and the hull contact edges MUST work as the mechanical end stop. During cruising, slamming forces from the water must be absorbed by these areas, not the thruster.



Apply coating

Tighten bolts and nuts

Glue tunnel rings to hatch before tightening bolts

MG_0129

Motor to House Installation

MC_0173

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

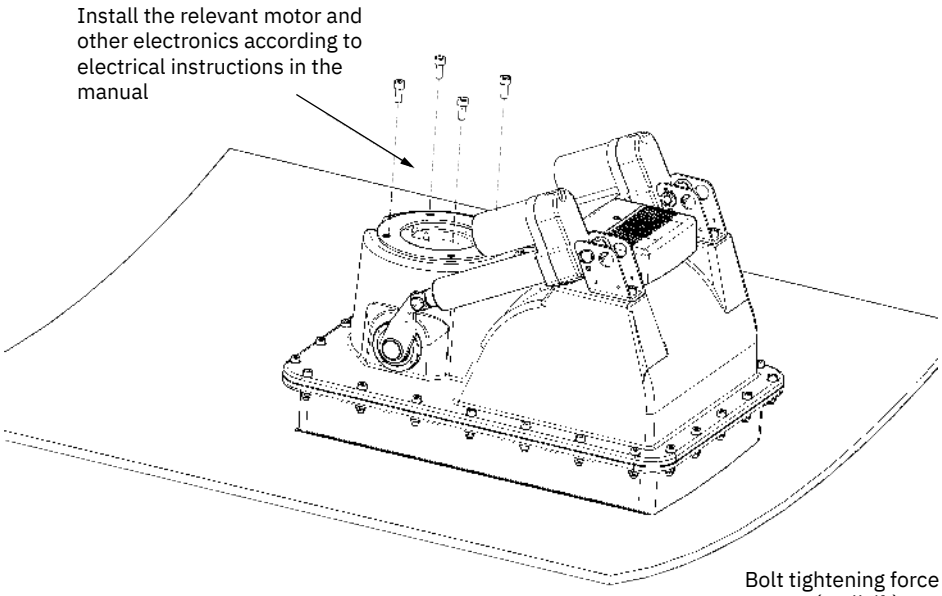
1. Install the motor onto the motor bracket ensuring both the couplings and the drive shafts have locked together. The motor must be installed with the solenoid facing the control box. ***(NB: depending on your coupling you may need to wiggle the motor into place. Ensure the connection couplings are engaging correctly. Ensure the motor cable terminals are accessible for electrical installation later.)***

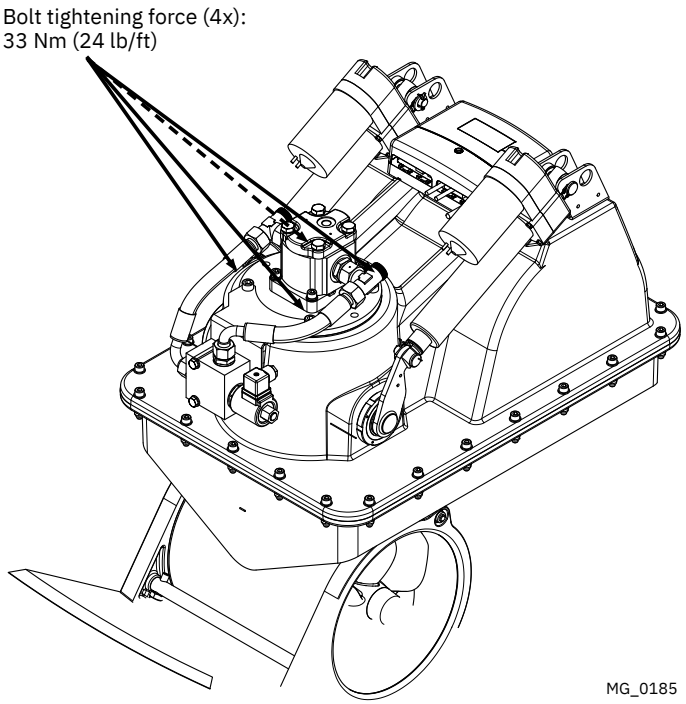
2. Fasten the bolts holding the motor to the motor bracket with the above torque.

3. Check the drive shafts engage by rotating the propeller. It is required the propeller can rotate via hand power. ***(NB: Rotating the propellers can be hard because of the gear reduction and the motor.)***

4. Apply the gear leg and propeller with anti-fouling designed for propellers. Do not apply to the propeller drive shaft, the anodes or the end of the gear leg facing the propellers.

(NB: The motor must be covered to avoid dust from fabrication/ maintenance operation entering the motor or the solenoids. After fabrication maintenance operations have ceased the cover must be removed before operating the thruster.)





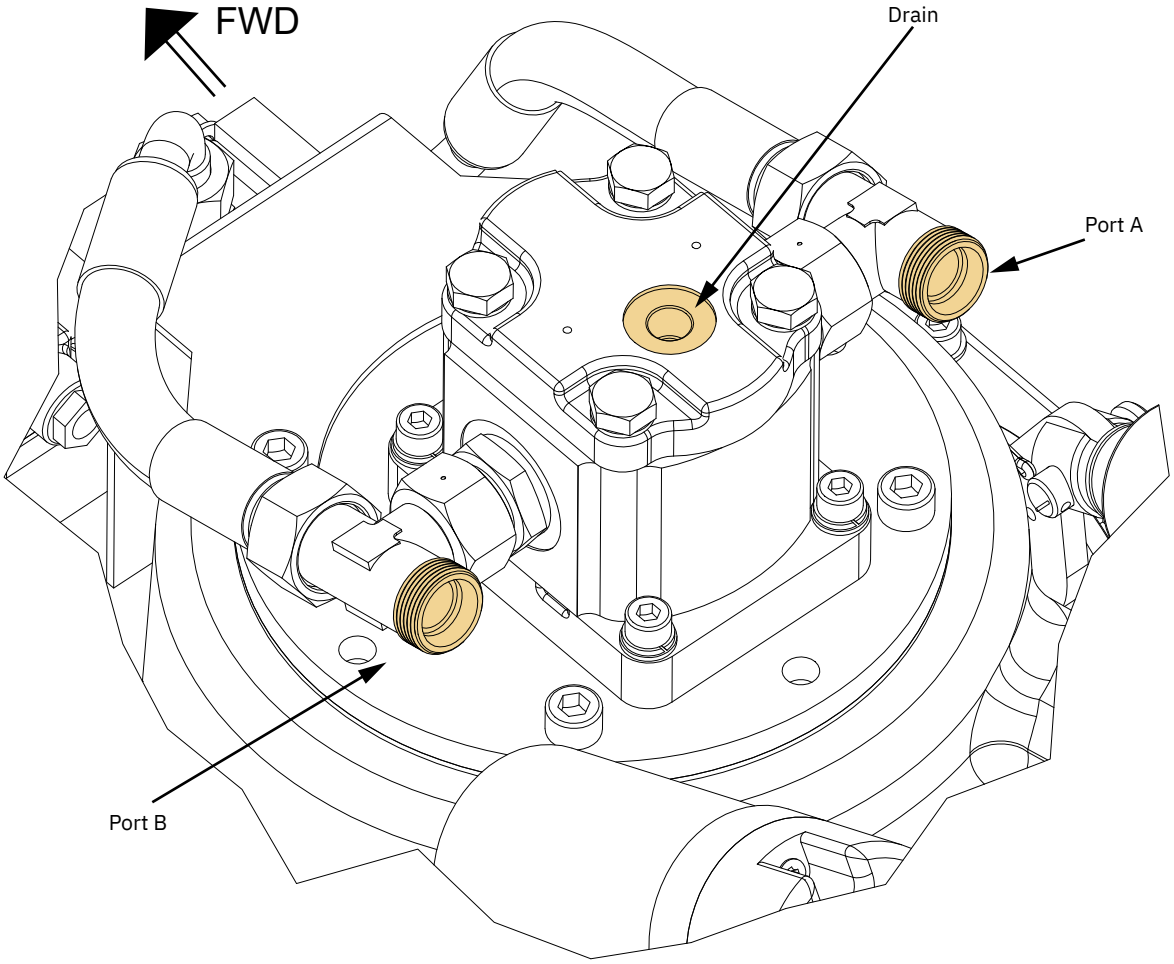
MG_0185

Connection of Hydraulic Hose to Motor

MC_0172

Follow the defined hose specifications to connect hydraulic hoses to the motor.

Motor type	Port A/B	Drain Port
G16	22L, Metric DIN 2353	1/4” BSP
G19	22L, Metric DIN 2353	1/4” BSP
G23	22L, Metric DIN 2353	1/4” BSP



MG_0186

Oil Tank Installation

MC_0023

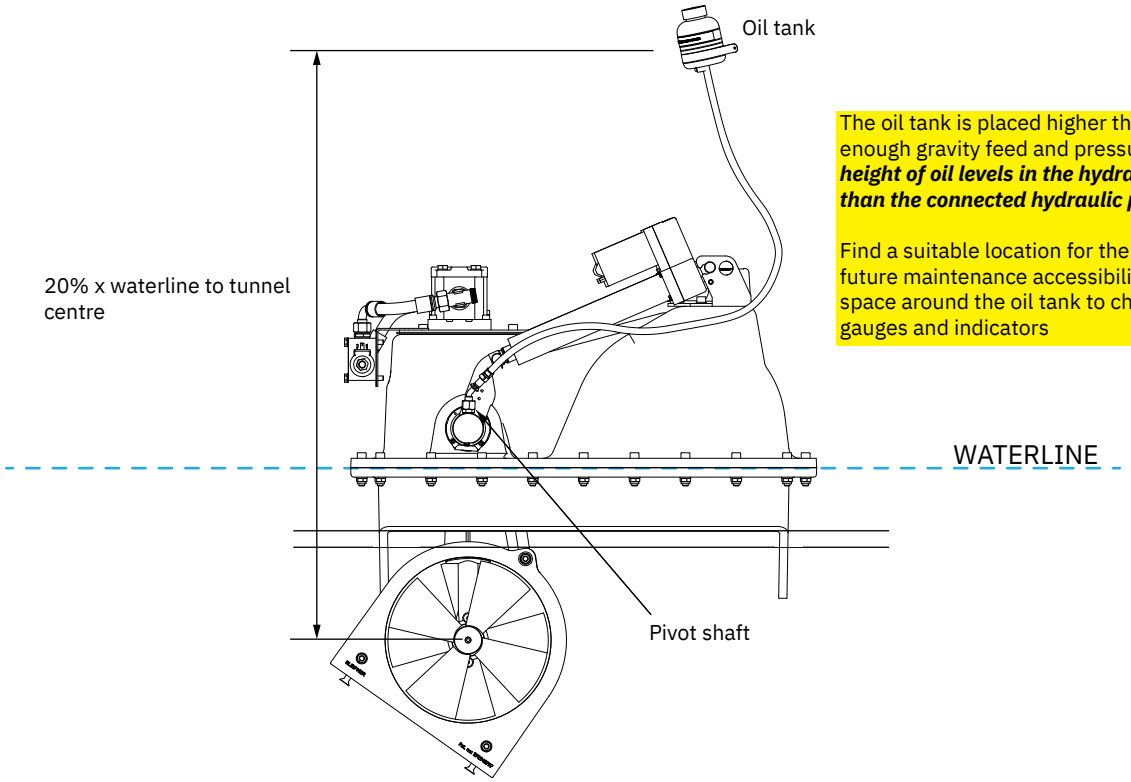
!** Please refer to the graphic for special considerations relating to your model **!

1. Install the oil container above the waterline by at least 20% of the distance from the waterline to the centre of the tunnel. This ensures enough overpressure for the oil in the gear leg.

2. Install the oil tube from the oil container to the feed nipple on the motor bracket. Fasten both the tube clamp screws. ***(NB: Ensure the oil tube has no loops and forms an airlock to stop the oil flow. Ensure the oil tube angle is sufficient to allow oil to flow freely into the gear leg.)***

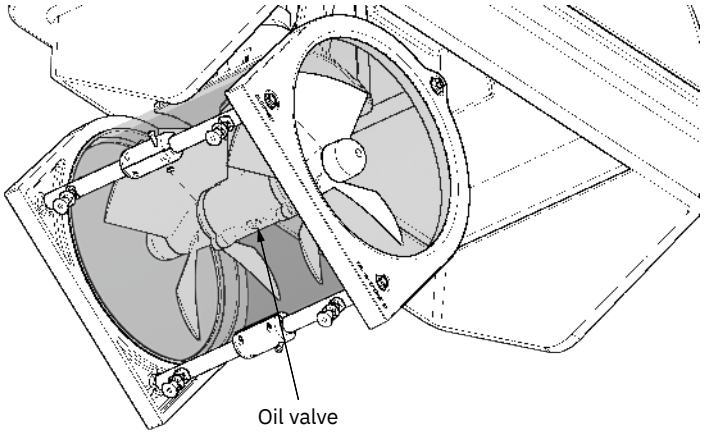
3. Fill the oil container with the same gear oil used in the gear leg. The oil container works as an indicator to ensure oil is in the gear leg at all times.

(NB: Fill and drain the gear leg simultaneously while replacing the oil to ensure the system is never empty.)



The oil tank is placed higher than the pumps to ensure enough gravity feed and pressure for feed ports. ***(NB: The height of oil levels in the hydraulic tank should be higher than the connected hydraulic pumps.)***

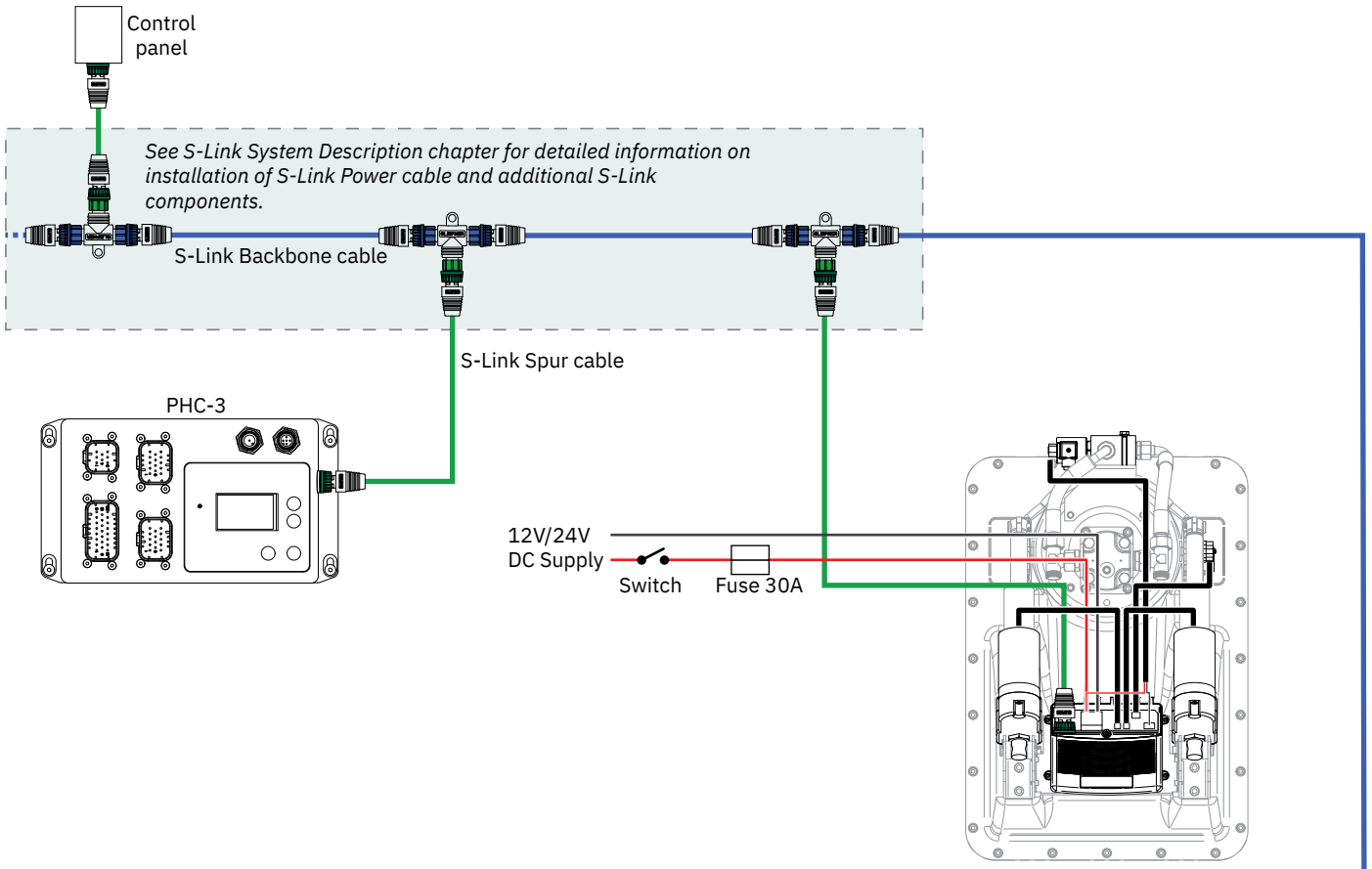
Find a suitable location for the hydraulic tank installation for future maintenance accessibility. There must be enough space around the oil tank to change filters, fill oil and inspect gauges and indicators



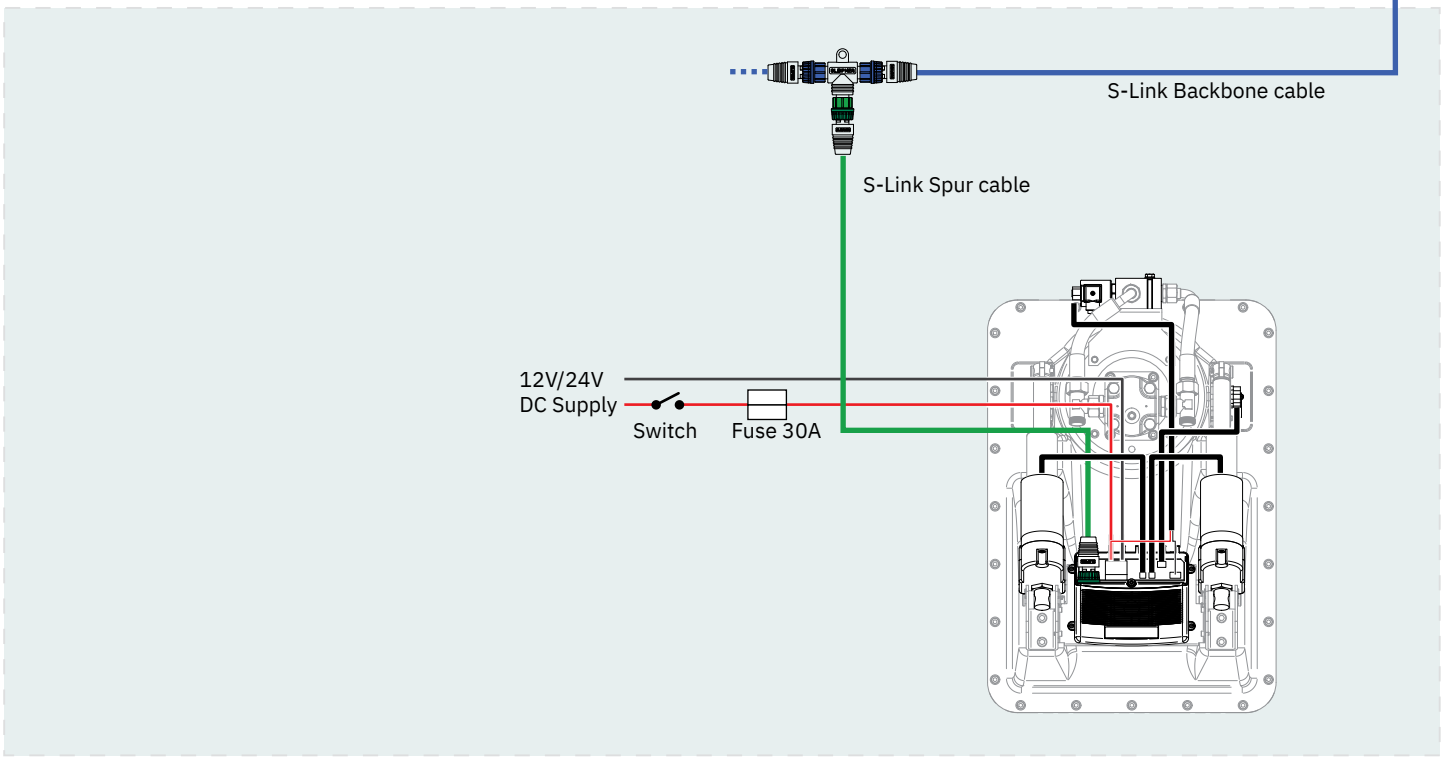
MG_0184

Wiring Diagram Hydraulic 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_0725

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.

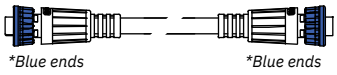
Installation of S-Link cables:

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.

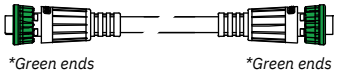
The POWER Cable should ideally be connected around the middle of the BACKBONE bus to ensure an equal voltage drop at each end of the BACKBONE Cable. The yellow and black wire in the POWER Cable shall be connected to GND and the red wire connected to +12VDC or +24VDC.

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.

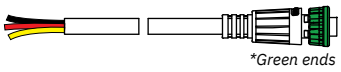
SPUR cables can be left unterminated to prepare for the installation of future additional equipment. In such cases, ensure to protect open connectors from water and moisture to avoid corrosion in the connectors.



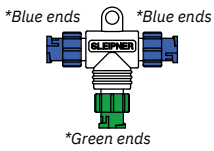
BACKBONE Cable
Forms the communication and power bus throughout a vessel. Available in different standard lengths.



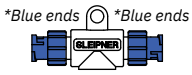
SPUR Cable
Used to connect S-Link compliant products to the backbone cable. One SPUR Cable must be used for each connected component, with no exceptions. Recommended to be as short as practically possible. Available in different standard lengths.



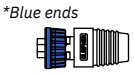
POWER Cable
Required in all installations for connection of BACKBONE Cable to a power supply and should be protected with a 2A fuse.



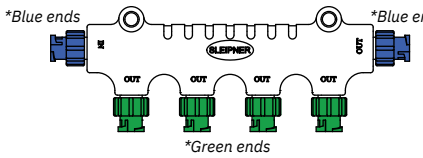
T-Connector
Used for connection of SPUR or POWER Cable to the BACKBONE Cable. One T-Connector for each connected cable.



BACKBONE Extender
Connects two BACKBONE Cables to extend the length.

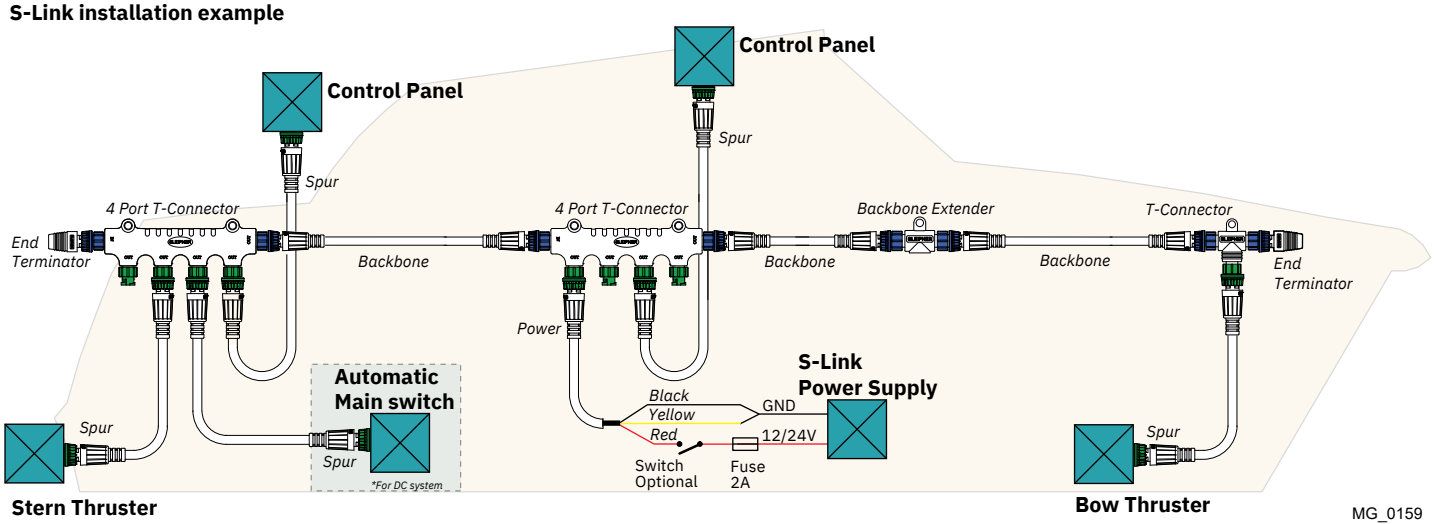


END Terminator
Must be one at each end of the BACKBONE bus.



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

Check drive shaft alignment

MC_0069

IMPORTANT

Before the thruster motor is operated, check the drive shaft alignment is completely straight when it reaches the end position form the control panel operation:

1) Connect power to thruster and S-link system.
2) Sett DIP-switch on the controller to 0000.
3) Turn on the panel. (The drive shaft deploys.)
4) The actuator lever arm is set to alignment marking on the nut
5) If marks align, turn panel off. Drive shaft retracts.
6) If the marks do not align, proceed to calibrate drive shaft.

Calibrate drive shaft alignment

MC_0069

(NB: The drive shaft is correctly aligned when manufactured)

1) With dip-switches select 'Service Mode'.
2) Align the arrow on the actuator arm with the calibration mark, using the UP/DOWN buttons.
3) With dip-switches select 'Sensor Calibration Mode'.
4) Press and hold both UP and DOWN buttons until STATUS LED light up green.

(NB: If FAULT LED light-up red, then the calibration is out of position (wrong align mark).

5) With dip-switches select 'Operation Mode', thruster retracts.

Actuator Configuration

MC_0069

Dip-switch number 1 & 2 configures the actuator(s).
No.1 set to OFF when the retract has two actuators.
No.1 set to ON when the retract only has one actuator.
No.2 set to OFF when the retract does not have P8 type actuator(s).
No.2 set to ON when the retract has the P8 type actuator(s).
If dip-switch no.2 is set to ON and the actuator gives a rattling noise when the door closes, then there probably is not P8 actuator(s) and dip-switch no.2 needs to be set to OFF.
The actuator is a P8 type:
-If the actuator has a plastic cap at the back where you can adjust the actuator manually.
-If it is marked with a sticker with P8
-If the manufacturer label says P8

LED Indication

MC_0069

Continuous red light:

Motor over-temp, Controller over-temp, Controller no communication, Motor relay failure, Low battery voltage, Position sensor failure, No power to actuators, Retractable unit failure, Temp sensor open circuit.

Flashing red light:

Red light fast blinking: Dip-switch in an invalid position.
Red light short flash every 2 seconds: Shaft not calibrated, or shaft calibrated out of range.

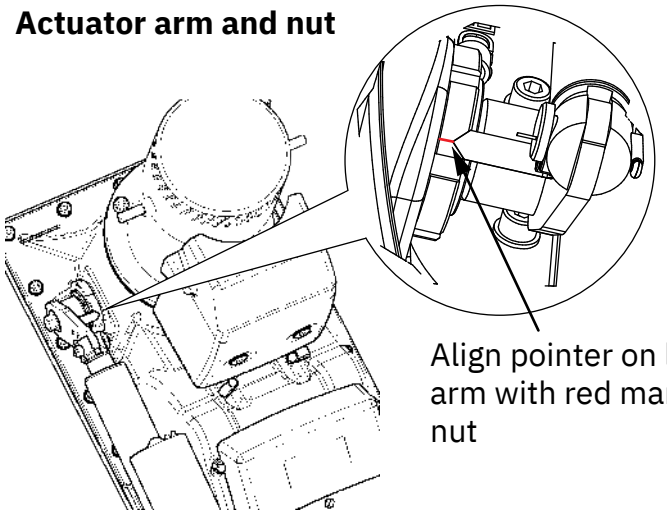
Continuous green light:

Normal mode, Service mode (actuators operated by UP/DOWN buttons).
Re-calibrated "down"-position.

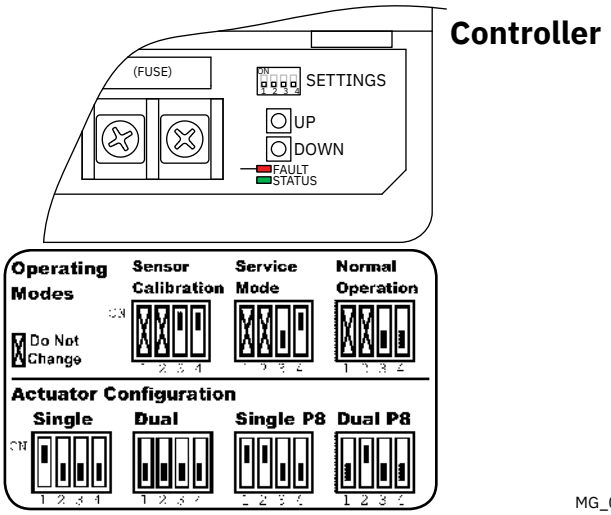
Flashing green light:

No S-Link communication.

Actuator arm and nut



Controller



MG_0108

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

[]..... The bolts holding the gear leg and main bracket together 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.

[]..... 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 terminal on the motor with an ohm meter.

[]..... Anti-fouling has been applied to the gear leg and propeller but NOT anodes, sealing/ rubber fittings or propeller shafts.

[]..... Propeller is fastened correctly to the shaft.

[]..... Propeller turns freely in tunnel.

[]..... The anode and/ or holding screw is tightened well with thread glue.

[]..... Check the boat for potential water leakage around installation areas.

[]..... Correct drive direction as per control panel.

[]..... User Manual is supplied to the owner.

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

Signed: .....

Date: .....

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: .....

.....

.....

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

MC_0024

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.sleipnergroup.com/patents

Learn more about our products at www.sleipnergroup.com

SLEIPNER
Ocean born. Tech bred.

SLEIPNER GROUP
P.O. Box 519
N-1612 Fredrikstad
Norway
www.sleipnergroup.com

Made in Norway CE

MC_0030