

Installation manual

Hydraulic retractable thruster models SRHP240, SRHP320

Installation Manual

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Warnings and safety

It is essential to read, understand, and follow all instructions, warnings, cautions, and procedures contained within this document. Failure to do so may result in serious injury, death, damage to property or equipment, product malfunction, and may affect warranty coverage.

Warnings and cautions requiring special attention are highlighted. Always read and understand the relevant safety information before using this product or performing any procedure described in this document.

**WARNING**

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury or damage to the product.

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General:

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

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WARNING

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.



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For retract thrusters:

- The installation position of stern-mounted retract thrusters must not conflict with the propulsion propellers or their 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.)

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For Sleipner thruster systems:

- Do not install the thruster system in any position that requires modification of hull stiffeners or stringers, as this may compromise hull integrity. Consult the boat builder if modification is absolutely necessary.
- Never operate the thruster out of water. The propeller may reach extremely high speeds and cause damage.
- Handle the thruster motor with care. Do not rest the motor on its drive shaft, as this may cause damage.

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

- 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.
- Sleipner S-Link™ system must be used for thruster control.

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Sleipner S-Link™ Systems

- Only Sleipner S-Link™ products or authorized third-party control equipment may be connected directly to the S-Link™ bus.
- Non-authorized third-party equipment must always be connected through a Sleipner interface product.
- Connecting unauthorized equipment directly to the S-Link™ bus will void all warranties for connected Sleipner products.
- If third-party control equipment is interfaced to the S-Link™ bus through a Sleipner interface product, at least one Sleipner control panel must be installed to enable efficient system diagnostics and troubleshooting.

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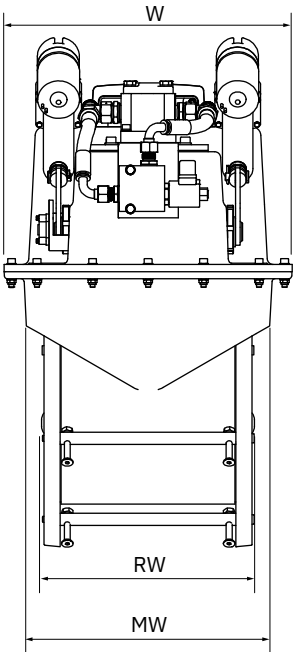
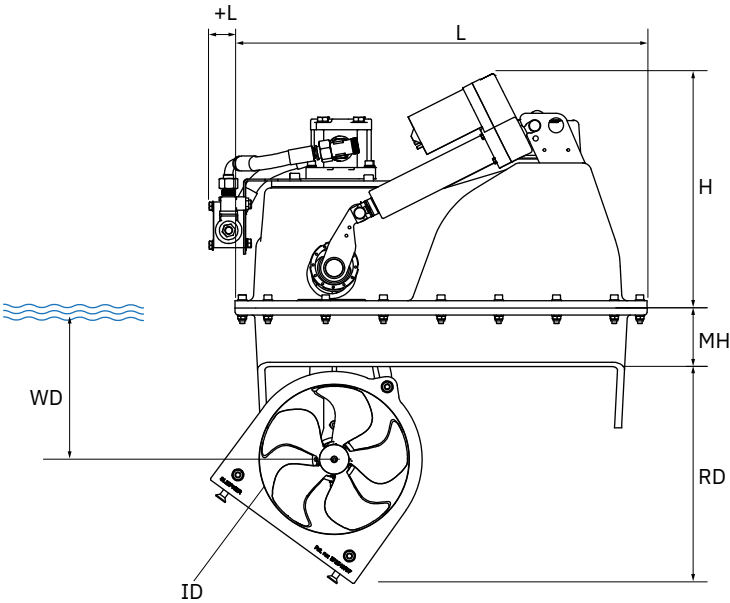


Do NOT remove the Red spacer block until the installation is completed.



Measurement code	Measurement description	SRHP240		SRHP320	
		mm	inch	mm	inch
H	Height	390	15.4	455	17.9
L	Length	688	27.1	843	33.2
+L	Additional Length	42	1.7	12	0.5
W	Width	481	18.9	580	28.8
ID	Internal Diameter	250	9.80	300	11.8
WD	Water Depth	250	9.80	300	11.8
RD	Retract Depth	361	14.2	445	17.5
RW	Retract Width	347	13.7	415	16.3
MW	Mould Width	414	16.3	477	18.7
MH	Mould Height	98	3.9		

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 CAUTION

Use sealants, adhesives or bonding material compatible with the materials of your vessels hull and Sleipner product. For information regards the material in Sleipner products, see table below.

Product		Resin
Housing	SR(P)80/100	Polyester
Flange	SRF-185-GRP	Polyester
Flange	SRF-250-GRP	Polyester
Flange	SRF-300-GRP	Polyester
Flange	SRF-386-GRP	Polyester

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Product specifications

Product	Lubrication	Light Duty Thrust is kg	Heavy Duty Thrust is kg	Power Output kW / Hp	Weight kg / lbs	Maximum Operation Time
SRHP240	Sealed - API GL-5 SAE 80W-90	240 kg / 529 lbs	220 kg / 440 lbs	14.9 kW / 20 hp	82 kg / 180.4 lbs	2-3min at 20°C ambient temperature
SRHP320	Sealed - API GL-5 SAE 80W-90	320 kg / 705 lbs	270 kg / 594 lbs	17.16 kW / 23.3 hp	105 kg / 231 lbs	

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Flow and pressure specifications

Thruster model	Motor type		60 %		80 %		100 %	
			Flow	Pressure	Flow	Pressure	Flow	Pressure
SRHP240	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

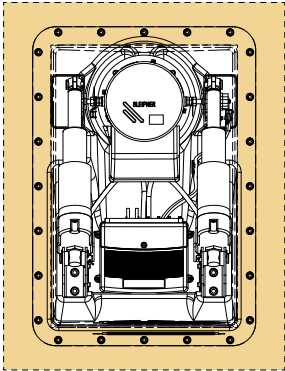
- 1) Max. thrust: 182kg
- 2) Max. thrust: 228kg

Thruster model	Motor type		60 %		80 %		100 %	
			Flow	Pressure	Flow	Pressure	Flow	Pressure
SRHP320	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

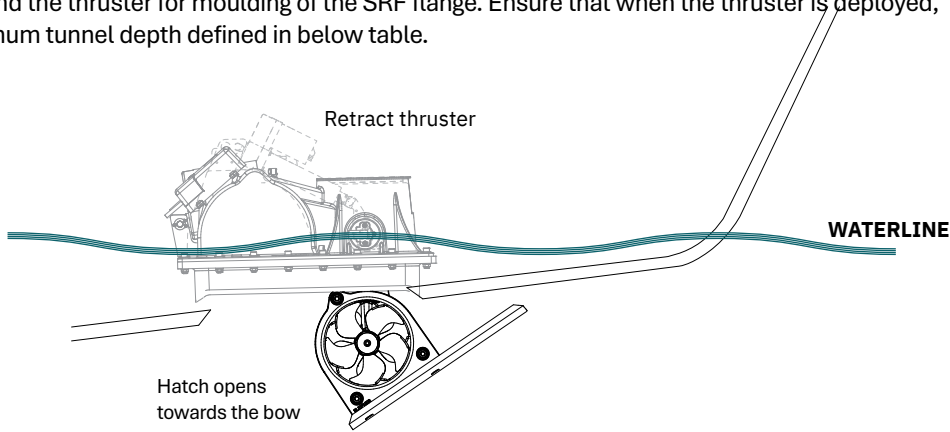
- 1) Max. thrust: 211kg
- 2) Max. thrust: 269kg
- 3) Max. thrust: 307kg

Retract Thruster

The thruster must always be installed so the hatch is opened towards the bow. Ensure enough space for the complete retract unit including room for installation of SRF flange and for future service.
Allow minimum 100mm 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.

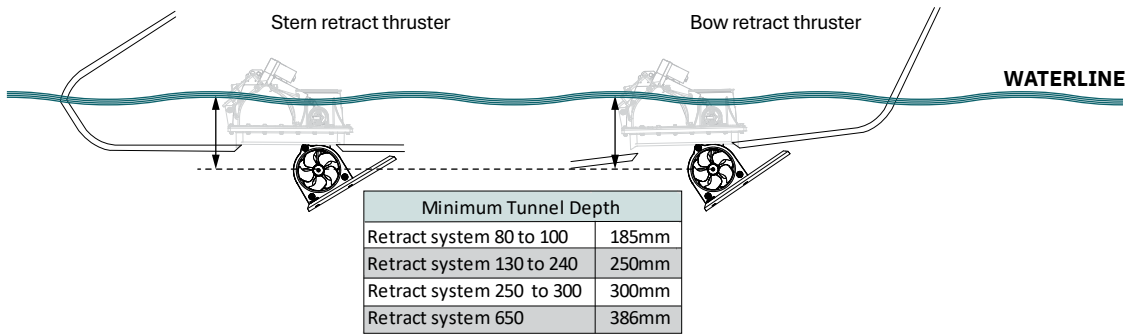


100mm of clear space around the thruster for moulding of the SRF flange.



Installing the thruster below the waterline as outlined is important for two reasons:

- Avoid drawing air from the surface which will reduce performance and increase noise levels.
- To get as much water pressure as possible to achieve maximum thrust.

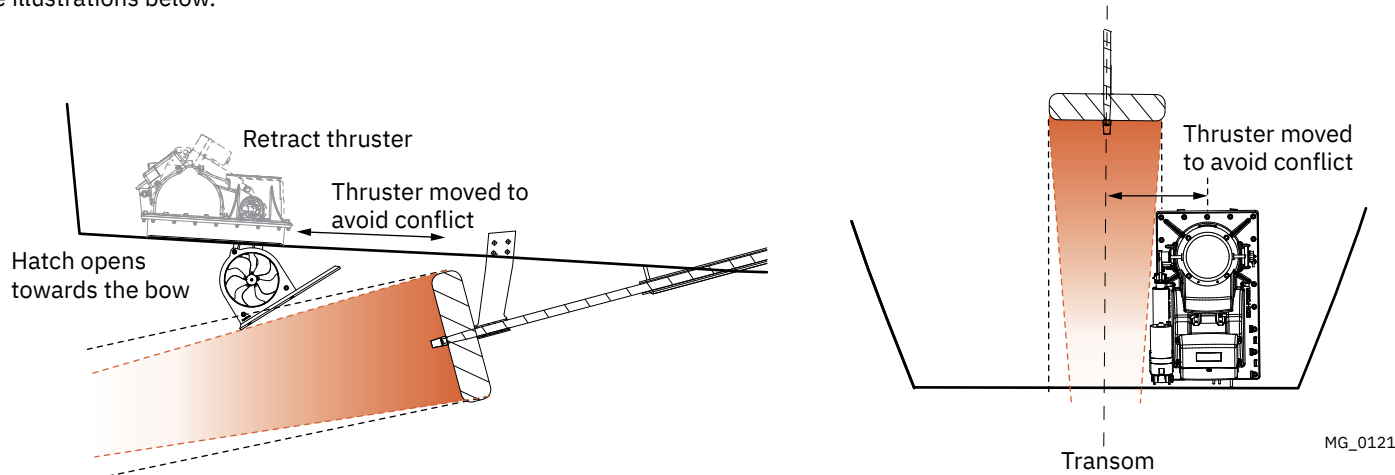


Bow installation

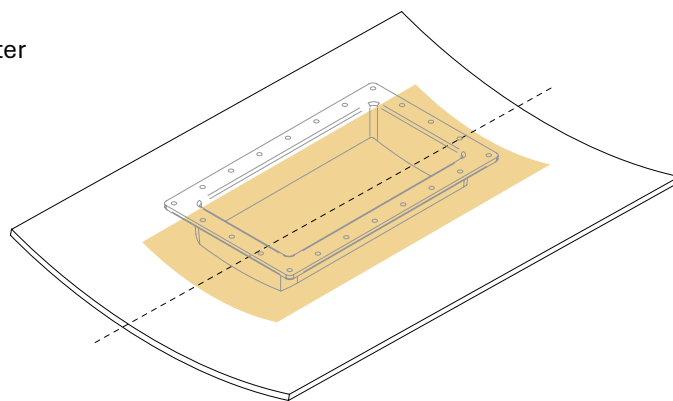
The thruster must be installed in the center line of the keel and as far forward as possible while following the minimum tunnel depth requirement.

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.
See illustrations below.



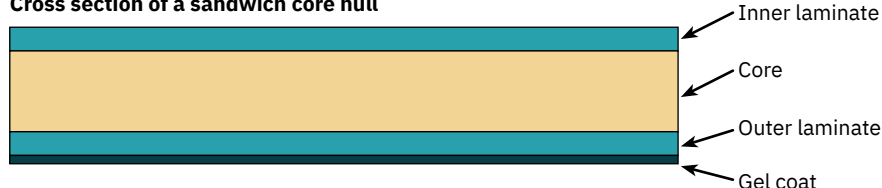
- Ensure to have a minimum of 100mm space around the thruster installation to have service access.
- Bow thrusters must be positioned on the boat center line.
- Stern thrusters can be positioned off the centre line.



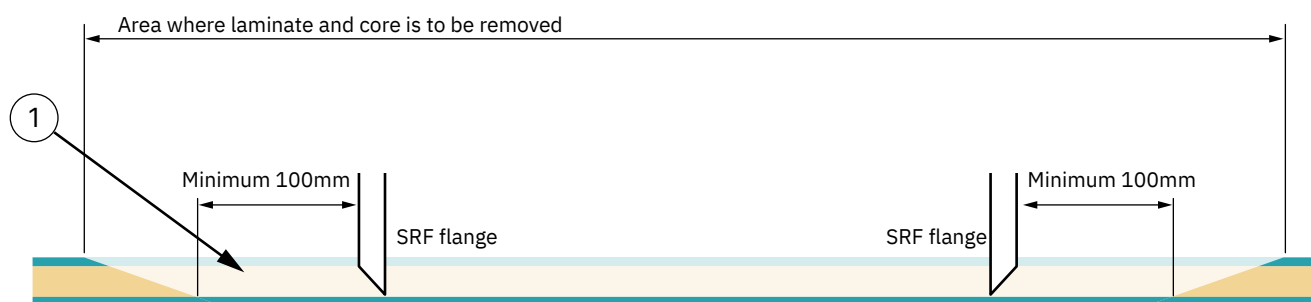
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For vessels with sandwich hull construction, additional reinforcement of the area around the SRF flange is required.

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.



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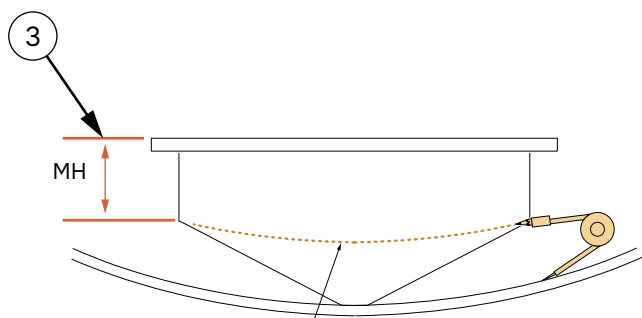
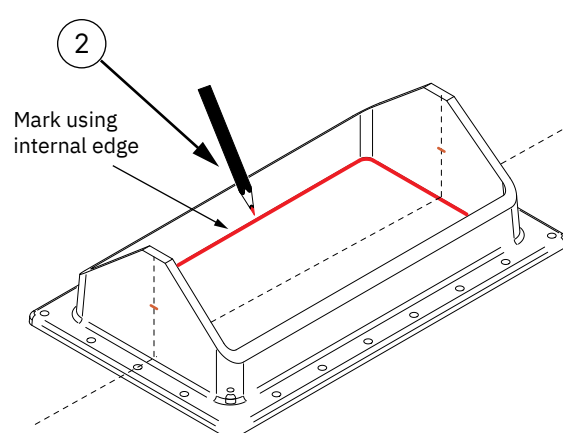
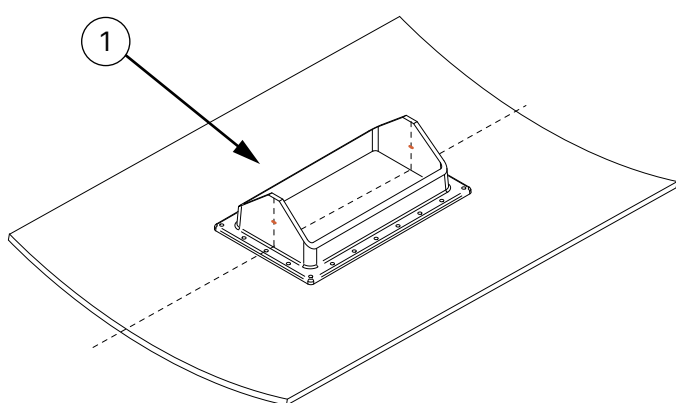
1. Flip the SRF flange upside down and position it at the identified installation location.
 - For bow thrusters, this is usually symmetrical about the vessel centerline.
 - For stern thrusters, the position of the thruster may deviate from centerline.
2. Use the internal edge to mark where to cut out the thruster hatch from the hull.
3. The SRF flange must be adapted so that the two longitudinal edges on the SRF flange run flush with the hull. To do so the SRF flange must be trimmed down to match the hull profile curvature. Use a suitable tool to mark the cutting line on the SRF flange.

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Important: The cutting line position must be according to the MH measurement for the actual thruster model. See table in topic "Thruster measurement".

For guidance or methods to transfer the hull profile to the SRF flange for cutting, consult a naval architect.

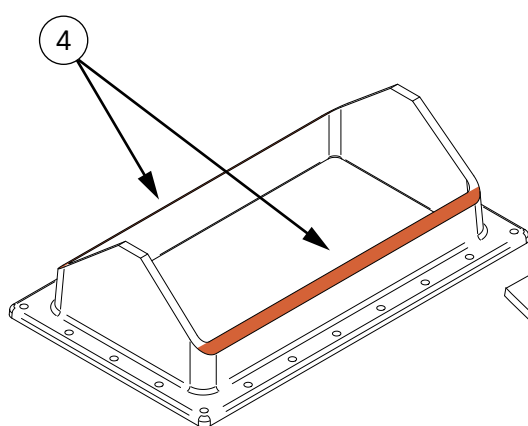
4. DO NOT cut the SRF flange length edge at this stage.



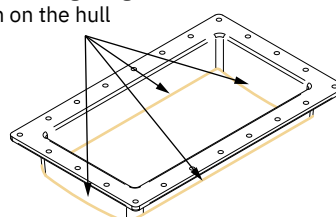
Important

The minimum SRF flange height is stated on the product measurement page (MH)

- Ø185mm = 72mm
- Ø250mm = 97mm
- Ø300mm = 115mm
- Ø386mm = 148mm



Ensure SRF flange edge sits flush on the hull

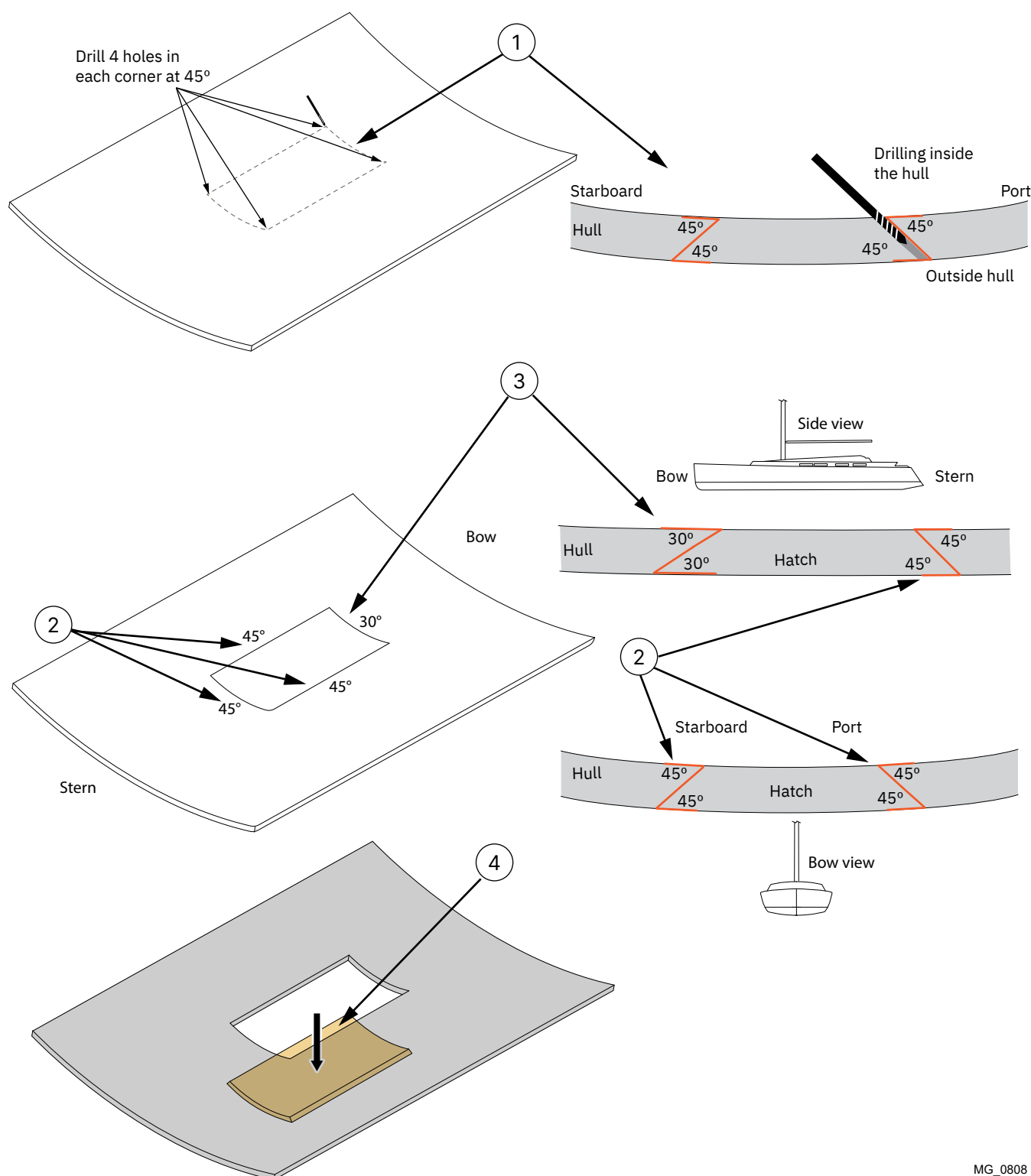


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1. When cutting from inside, prepare for cutting by drilling 4 holes in each corner of the marked area at 45° angle inwards against the centerline.
2. The hatch opening must be cut at an angle of 45° on starboard, port and stern sides.
3. Cut angle 30° on the side facing the bow. This ensures that forces from water hitting the closed hatch is absorbed by the hull.

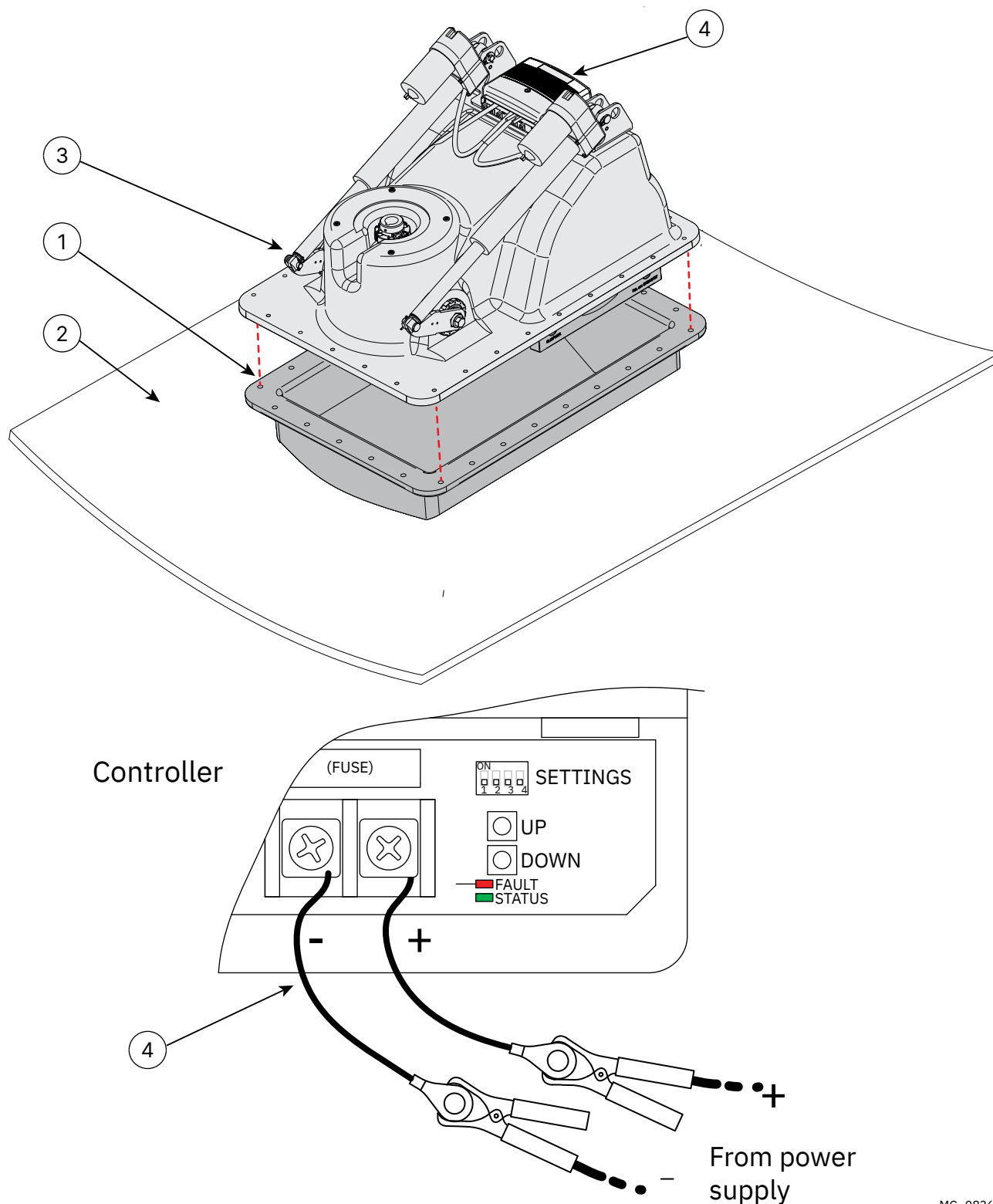
NOTE: It is of great importance that these cutting angles are correct. Otherwise the hatch will jam during opening. ^{MC_0774}
Use a suitable cutting tool able to be set to the desired angle, e.g. a jigsaw.

4. Remove the hatch from the hull. Prevent the hatch from falling down, ensure proper support to the hatch when cutting.



1. Position the trimmed SRF flange in the correct position over the hatch cut-out in the hull (**Reference 2**).
3. Install the thruster housing provisionally on the SRF flange, and secure it with 4 screws. Verify that the complete thruster assembly (SRF flange and thruster housing) is still in correct position.
4. Prepare two power supply cables from the retract controller. Do not connect to the power supply yet.

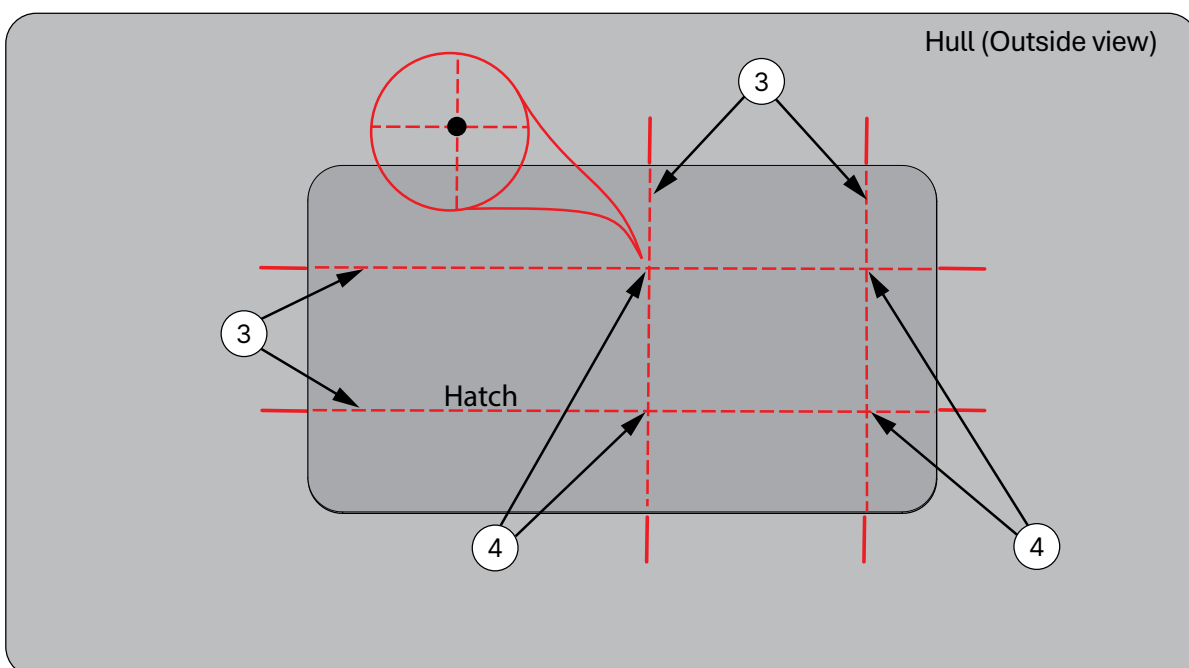
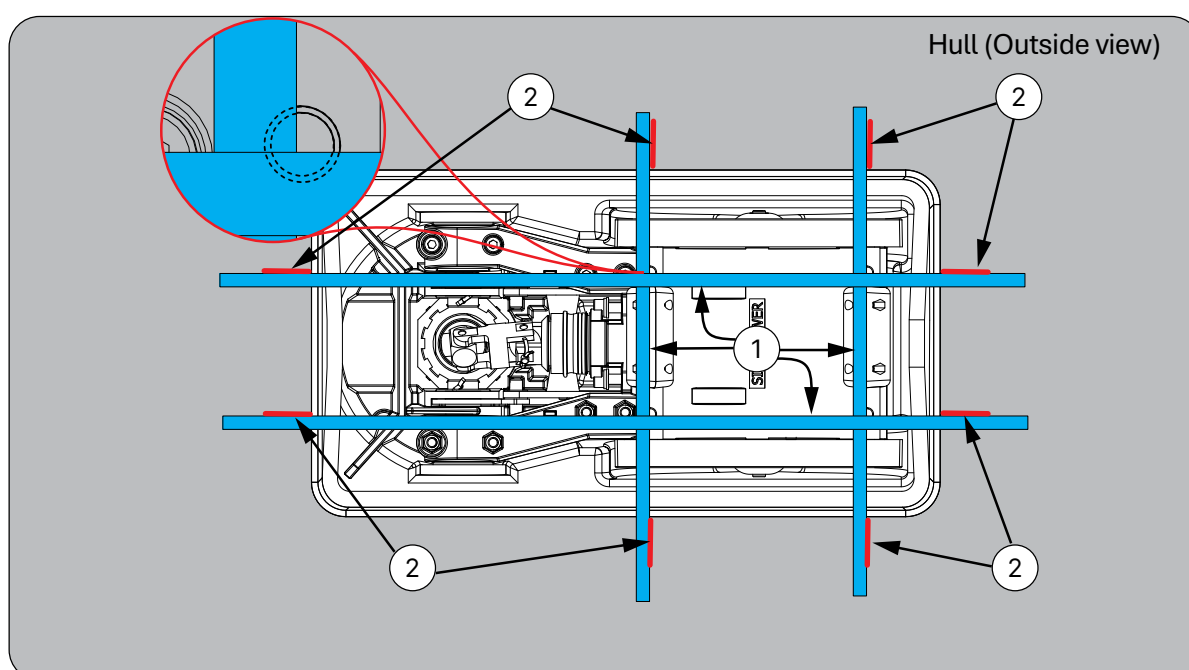
Tip: For some thruster models, the motor is mounted on the thruster housing when delivered. The pre- mount process may be



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- Ensure that the SRF flange and the thruster housing are positioned correctly inside the hull. (See the previous topic).
- Use a suitable aid, e.g. adhesive tape, straight edge, laser or other adequate aid to follow a straight line over the center of the hatch bolt holes, in two directions. (**Reference 1, and detail bubble**).
- Apply marks on the hull, at the edges of the used aid, on the side facing the center of the bolt holes. (**Reference 2**)
- Remove the adhesive tape (or other used aid).
- Position the pre-cut hatch in the opening in the hull, and support it in its position.
- Use a flexible ruler or similar to draw extended lines on the hatch, between the marks created on the hull. (**Reference 3**).
- The correct position of the hatch attachment holes are now in the intersection of the extended lines on the hatch. Make a mark in each intersection (**Reference 4**).

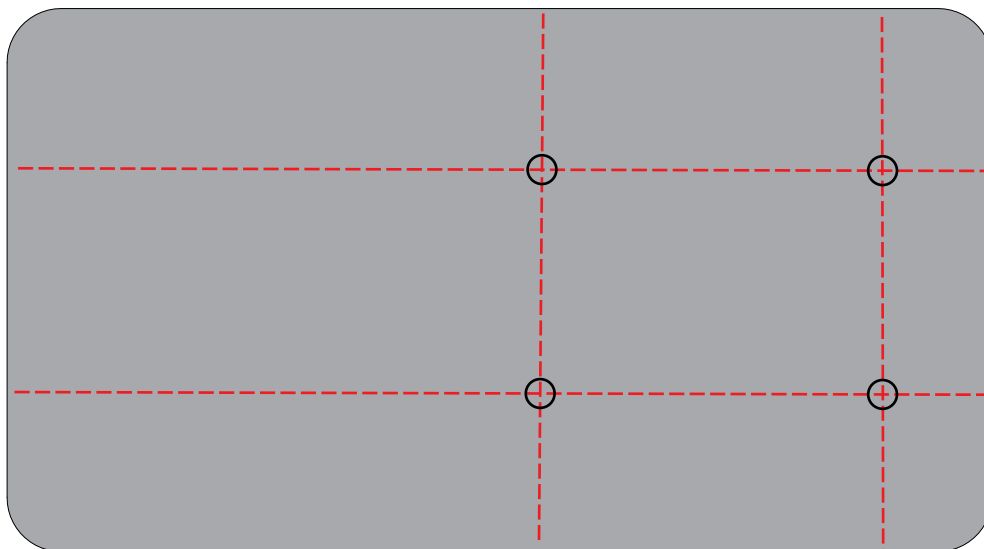
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- Drill four Ø11 mm holes in the center of each marking created in the previous step.
- It is recommended to use a pillar drill with a proper construction surface to ensure that the holes are drilled perpendicular to the hatch.
- Countersunk the holes after drilling.

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

- Temporarily attach the hatch to the thruster housing by using the M10 countersunk bolts through the drilled holes in the hatch and screw them in to the hatch bolt holes. **(Reference 1)**.
NOTE: Ensure correct orientation for the thruster to open the hatch facing the bow. Remember attachment is for temporary checking of thruster operation only.
 - Ensure that the hatch is in proper place **(Reference 2)**.
 - Connect the prepared power supply cables from the thruster controller to a power supply.
(NB: Refer to the label on actuators for correct voltage)
 - Set switch no. 4 on the DIP-switch marked “SETTINGS” to ON (Service mode).
NOTE: When the thruster is in Service Mode, the actuator can be moved beyond the calibration mark. Always observe the calibration mark during installation to ensure proper alignment.
 - 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, **(Reference 3)**, the SRF flange must be adapted so that the hatch does no longer touch the hull when in open position. **(Reference 4)**.
 - If necessary:
Grind the front and side edges of the flange a necessary amount to obtain space between the hull and the hatch **(Reference 5)**.
Note that the reference 5 illustration shows an excessive grind down in the shaded area to clarify the operation.
 - Ensure that there is a space between the twist ring and the hatch during the grinding process. **Do not allow this space to be zero. (Reference 6).**
- IMPORTANT**
- If the space between the hull and the hatch is not obtained by the grinding process alone, (still with a space between the twist ring and the hatch), the flange must in addition be lifted in the aft end. Use wedges to obtain the correct height **(Reference 7)**.
When correct position is obtained, mark the wedge positions, and note the distance between the flange and the hull.

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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.

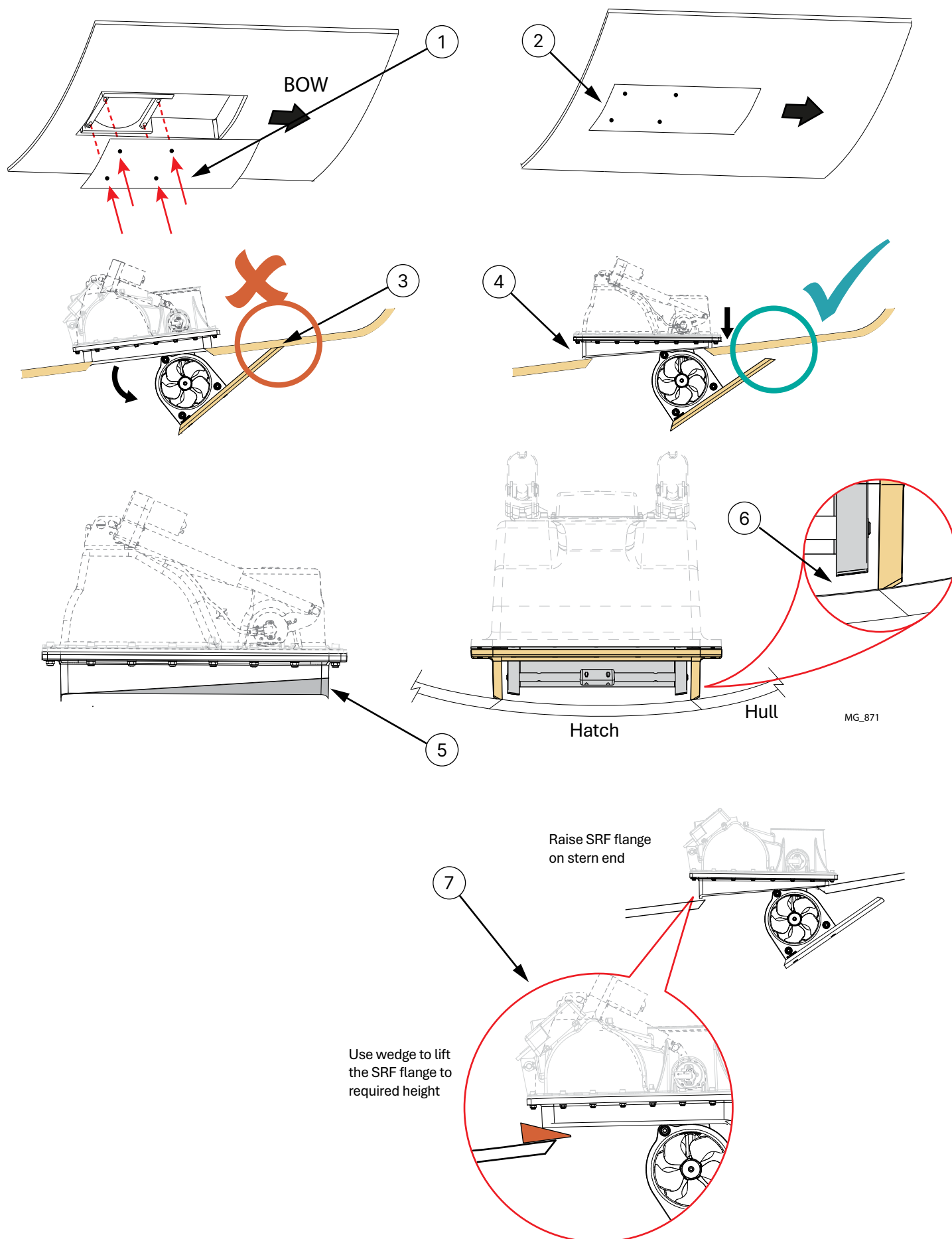


WARNING

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.

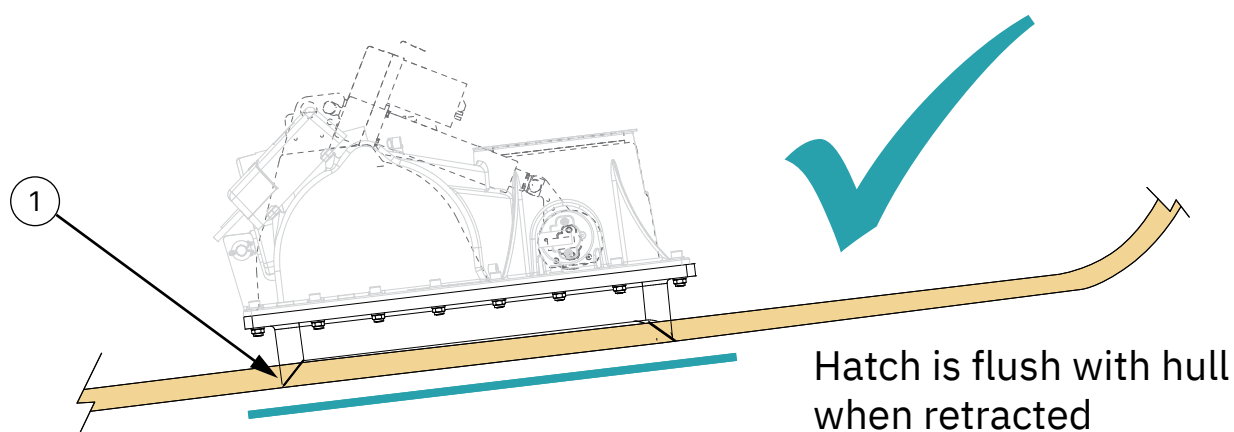
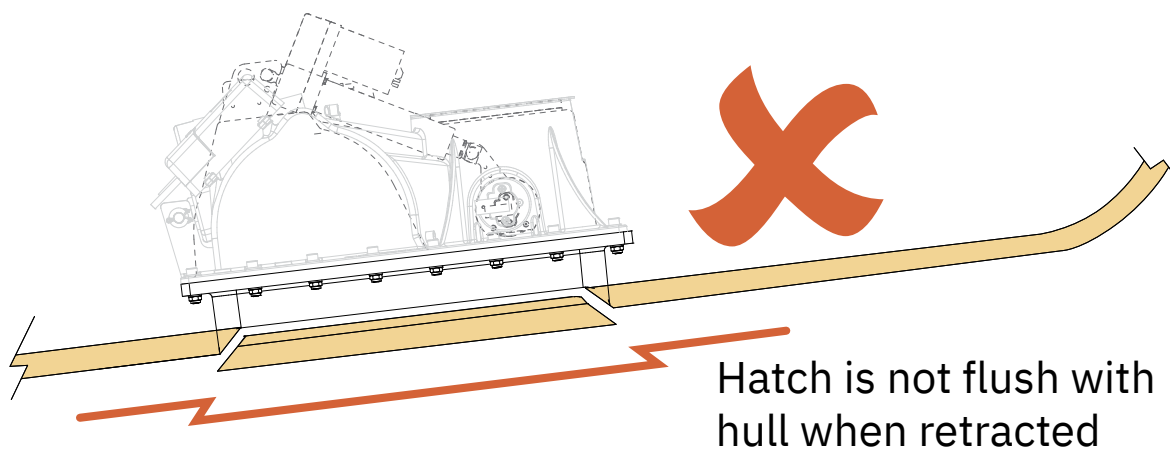


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- Press “UP” to retract the tunnel.
- Ensure that the hatch is fitted in the hatch opening, and that the hatch is aligned flush with the hull at all edges. (**Reference 1**).
- Ensure that there is pressure on all the contact surfaces between the hatch and the hull when the hatch is closed.
- If the hatch is not closing with pressure on all the contact surfaces, the entire SRF flange must be raised to obtain this.
- When the thruster is operating as required, ensure that the position of the SRF flange can be recreated by adding position marks and leveling measurements.
- Remove the thruster housing from the SRF flange.

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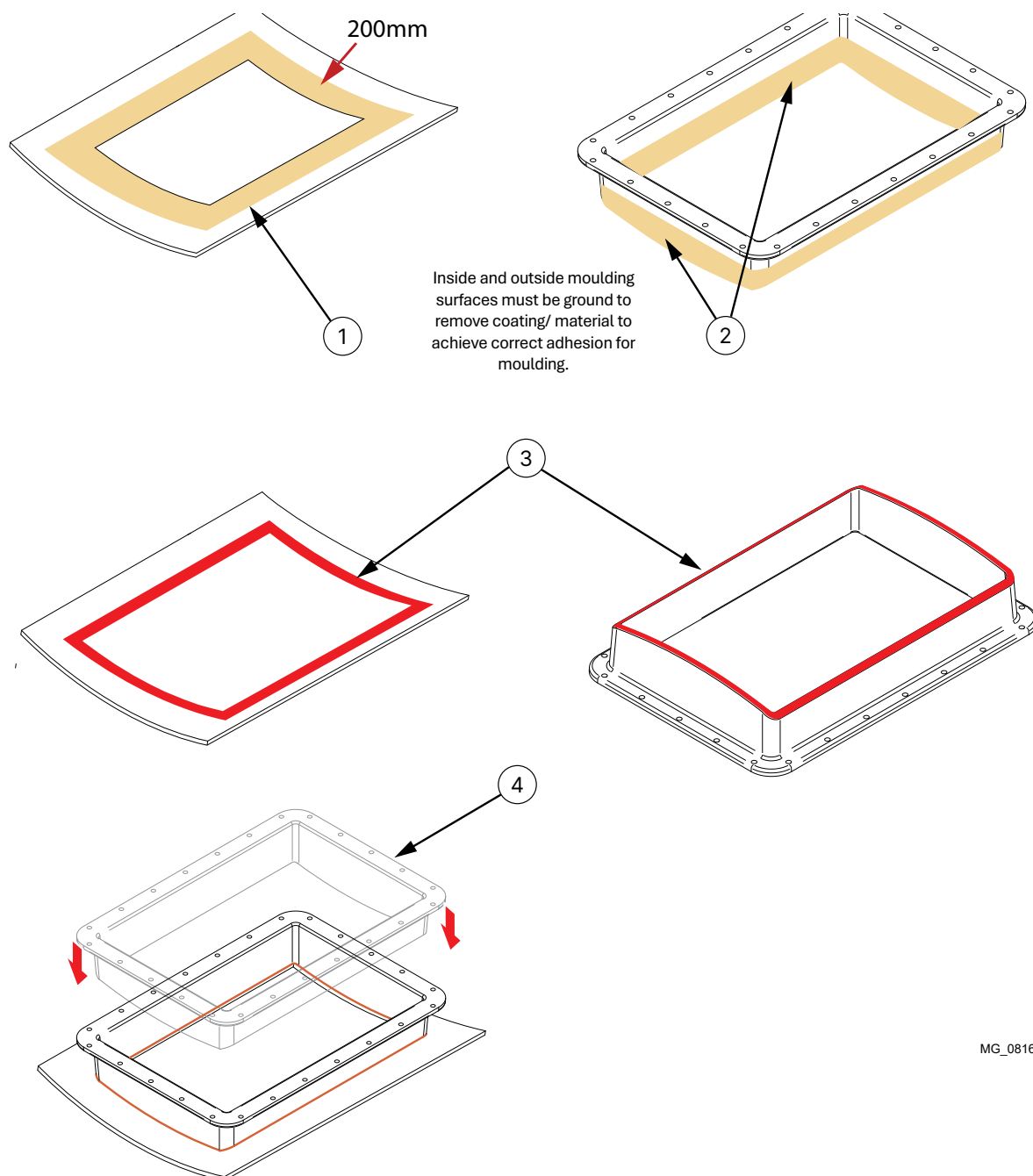
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⚠ CAUTION

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.

1. Grind and smooth the area inside the hull opening to remove the gelcoat. Remove the gelcoat in a width of 200mm.
 2. Grind the inside and outside of the SRF flange to remove the gelcoat.
 3. Apply appropriate glue / adhesive inside the hull opening and on the bottom of the SRF flange. Apply enough glue to fill the possible space between the raised SRF flange and the hull. Reinstall the wedges from the pre-install procedure if used to obtain the correct height in the aft end of the flange.
 4. Lower the SRF flange on to the hull, and position it according to the marks and measurement performed in the previous steps.
- After the SRF is positioned correctly, remove the excessive glue before the hardening process starts.
 - After the hardening process is finished, grind and smooth the glue joint.

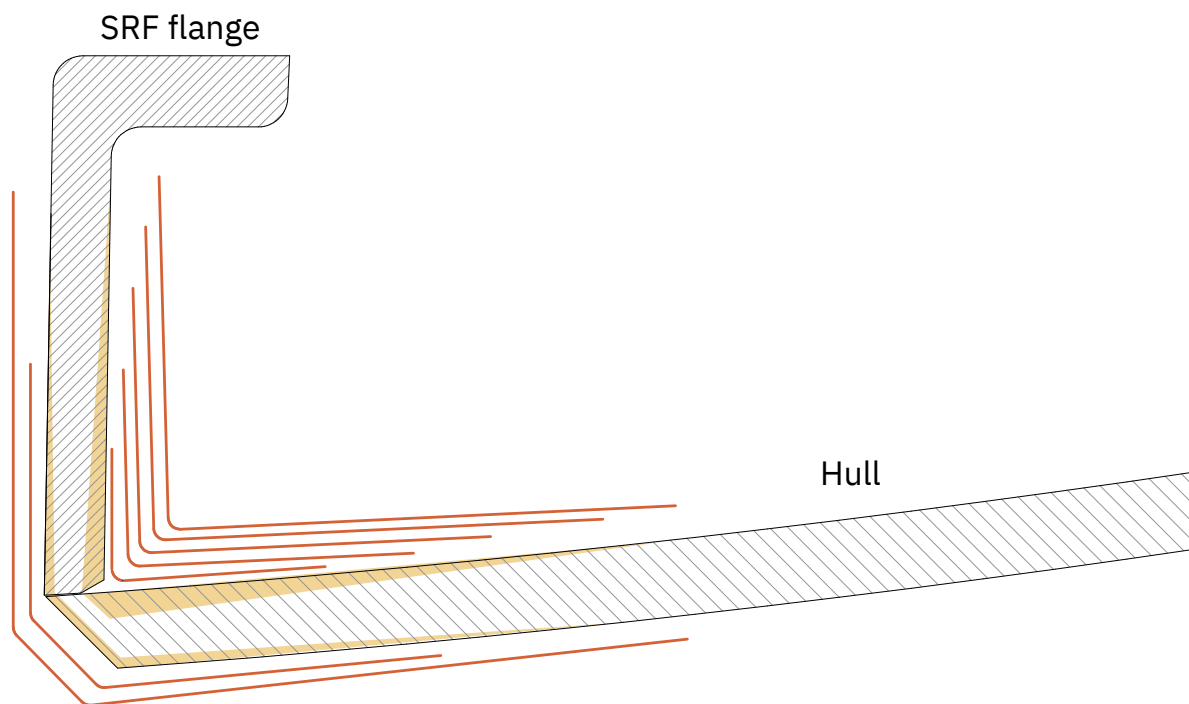
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- After the glue / adhesive has hardened completely, the inside and outside of the SRF flange and hull must be laminated. Apply several layers of fibreglass and ensure that the resin and fibreglass is compatible with hull and flange materials.
- When the laminated area has cured properly, smooth all moulded surfaces and apply coating.
- Apply putty before coating if necessary.

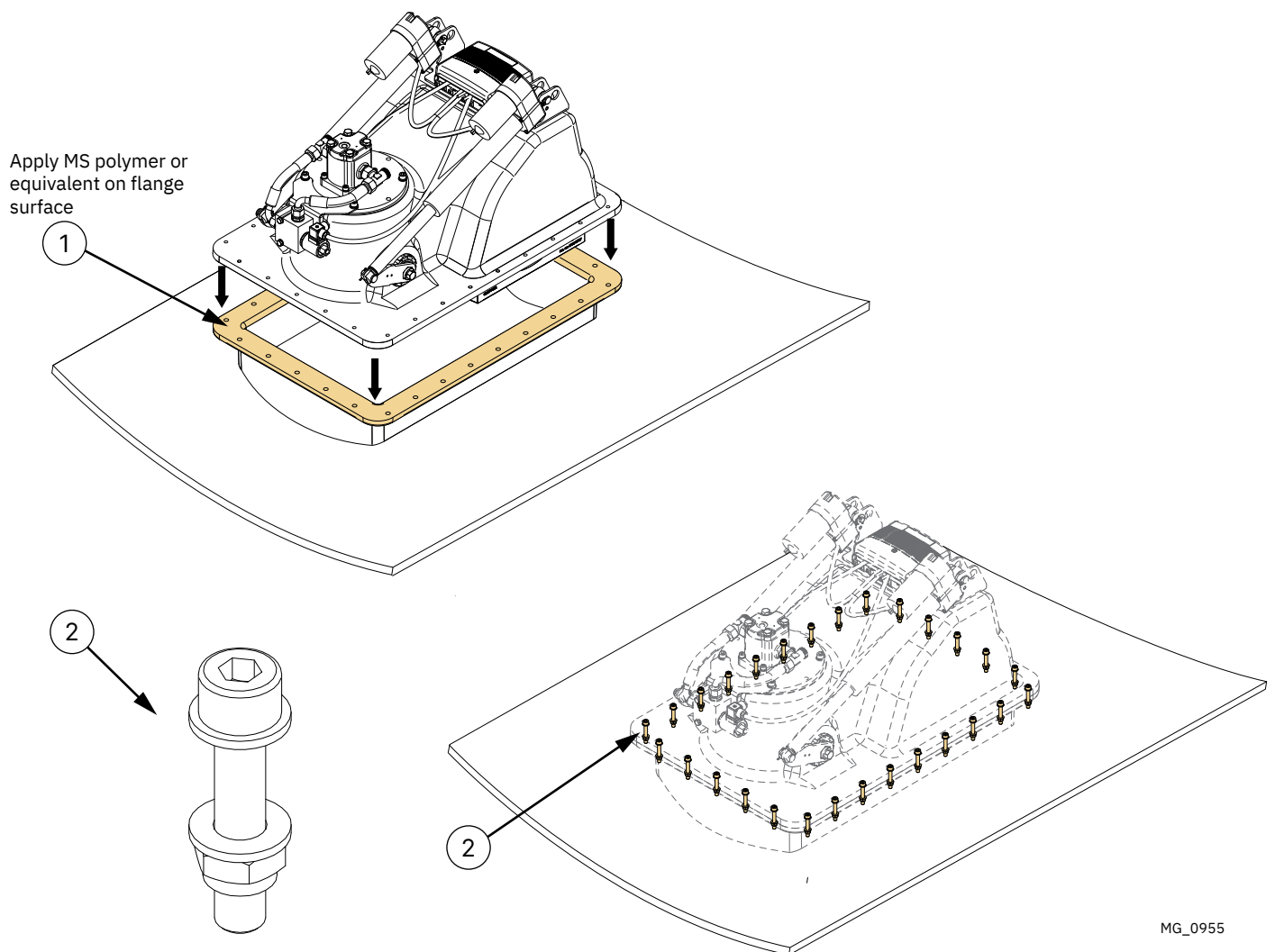
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- When the lamination process is completed, the thruster housing can be installed.
- Apply MS polymer or equivalent on the SRF flange surface (**Reference 1**).
- Lower the thruster housing down on the SRF flange.
- Install bolts, washers and nuts (**Reference 2**) in each mounting hole.
- **NOTE: It may be necessary to insert some of the bolts from the underside of the SRF flange with the nut then on the top to avoid conflict with the position sensor and actuator bracket.**
(For SR L&V 80 and 100 variants only).
- Tighten the bolts with a torque of 4Nm - 2,9lb/ft. Start with a corner bolt, then continue tighten the bolts in a cross pattern.

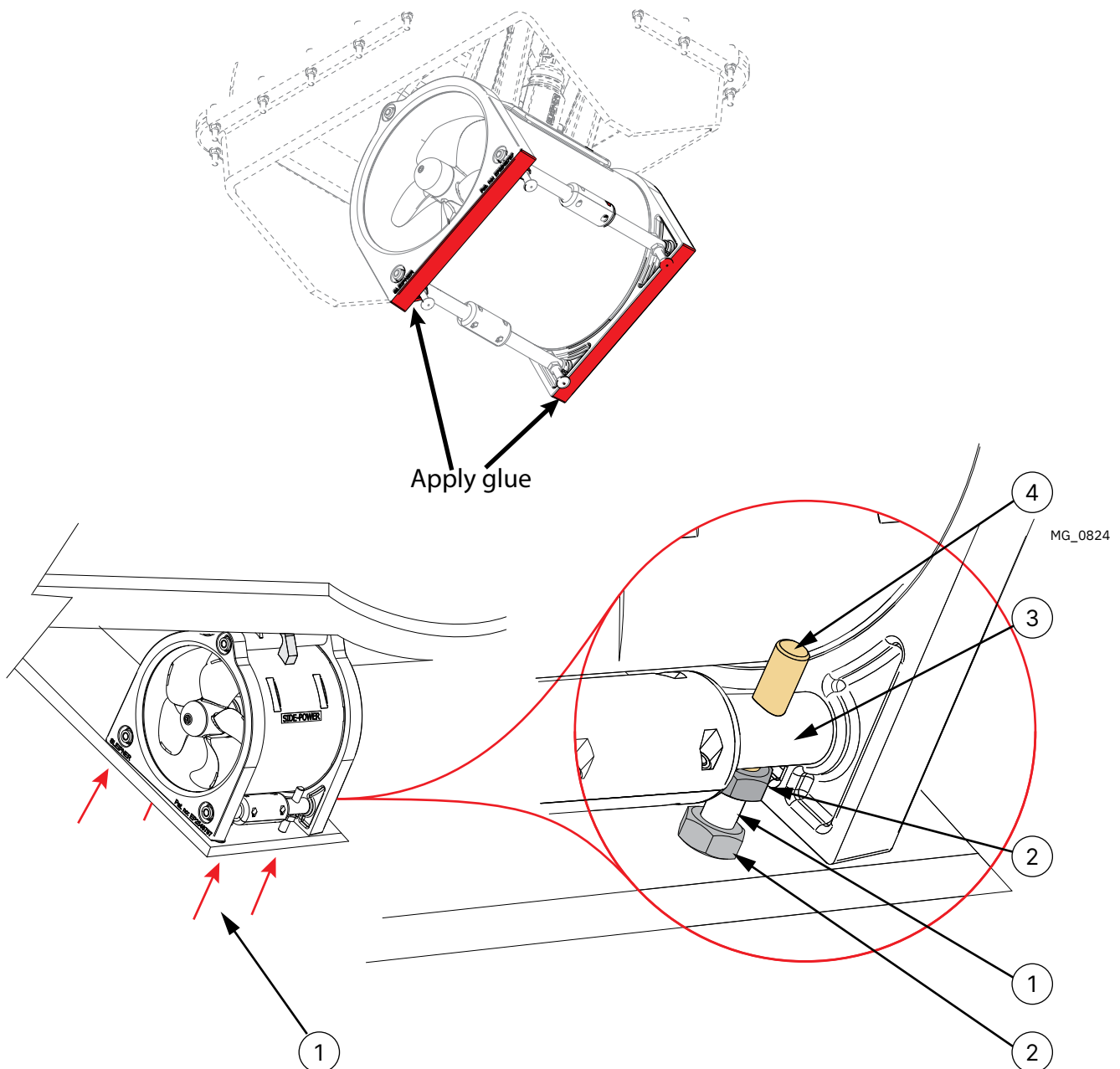
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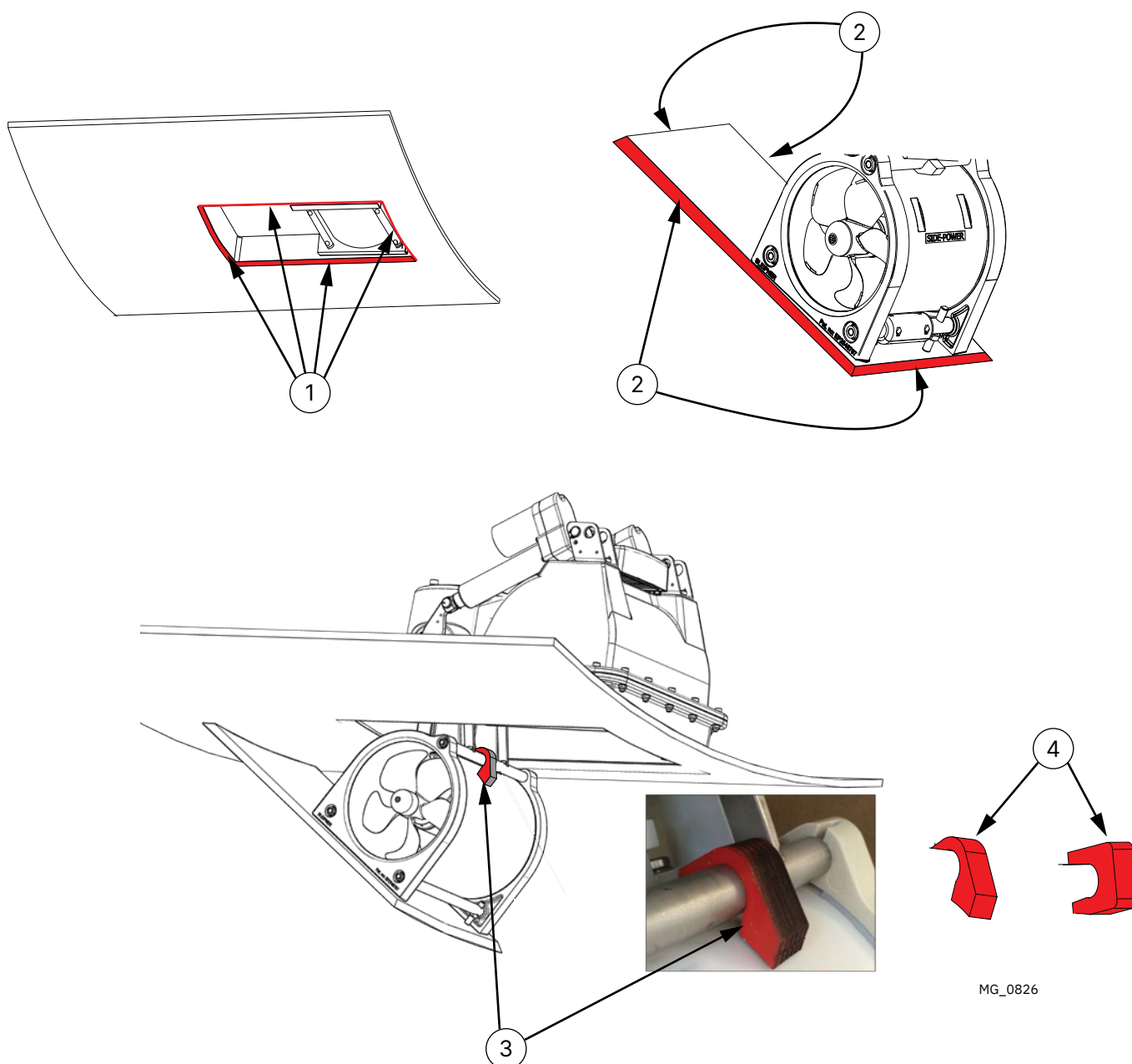
- Ensure that the thruster is in the outer position
- Apply glue on the twist ring facing the hatch.
- Enter the hatch bolts through the hatch, (**Reference 1**) and enter the lock nuts (**Reference 2**) on the bolt. Position the nuts close to the inside of the hatch, but do not tighten.
- Enter the bolts in to the bolt holes in the thruster housing (**Reference 3**).
- Bolt the hatch to the tunnel. Ensure the bolts do NOT conflict with the tunnel. (**Reference 4**).
(NB: Bolts can be cut, depending on hatch thickness.)
- When all four bolts are tightened so that the hatch is in tight connection to the twist rings, tighten the lock nuts (**Reference 2**) to the hatch and bolt holes in the tunnel housing respectively.
- Retract the thruster to verify that the movement is smooth, and that the hatch is in correct position when the thruster is in both open and closed position.

MC_0786



- Lower down the thruster.
- Apply a layer of aluminium or duct tape on hatch opening edges on the hull. **(Reference 1)**. This is for masking out for the adhesive in the next step.
- Apply filler or equivalent to hatch edges in such amount that it will fill the gap between the hull and the hatch. **(Reference 2)**.
- Operate the thruster to “IN” position. Smooth out the filler and add more if needed. After curing time, grind and smooth the surface. Apply glue on twist rings contact surface.
- Apply coating inside and outside of the hatch and on the hull to cover the fiberglass and filler.
- Remove the red spacer block located above the tunnel. **(Reference 3)**. Note: Several types and numbers of spacer block may be used. **(Reference 4)**.

MC_0788

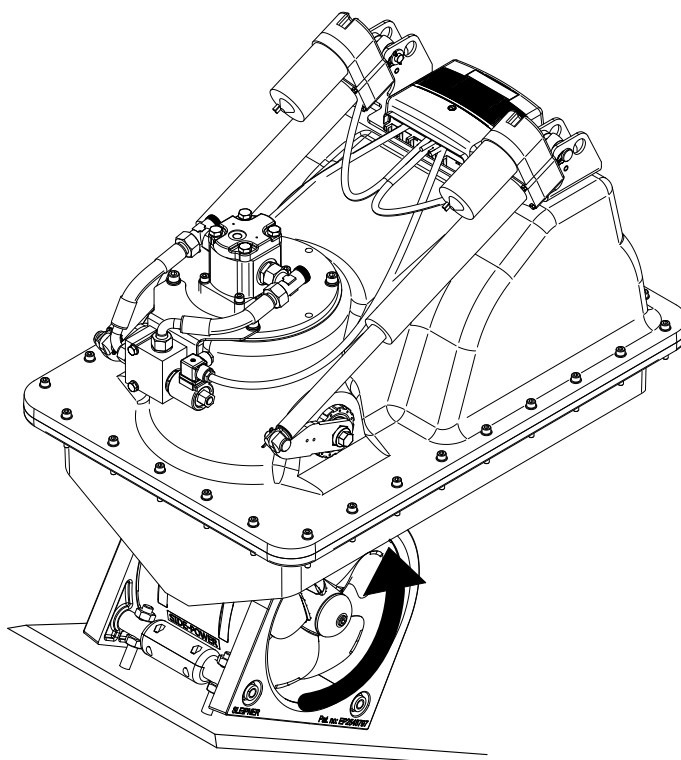


MG_0826

- 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.)**
- 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 retract control unit must be covered to avoid dust from installation / maintenance operation entering unit. Remove the cover when the installation work is completed.)

MC_0173

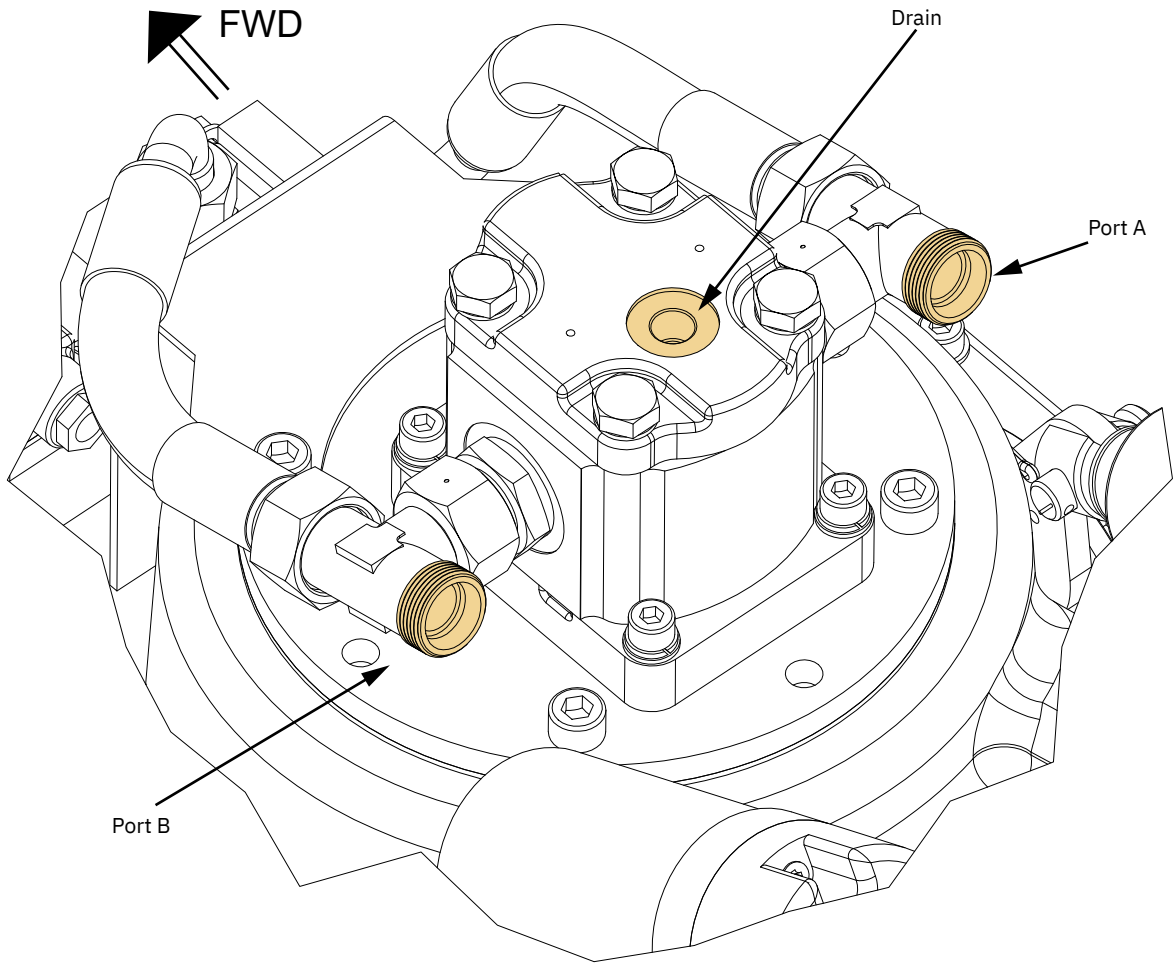


MG_0185

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

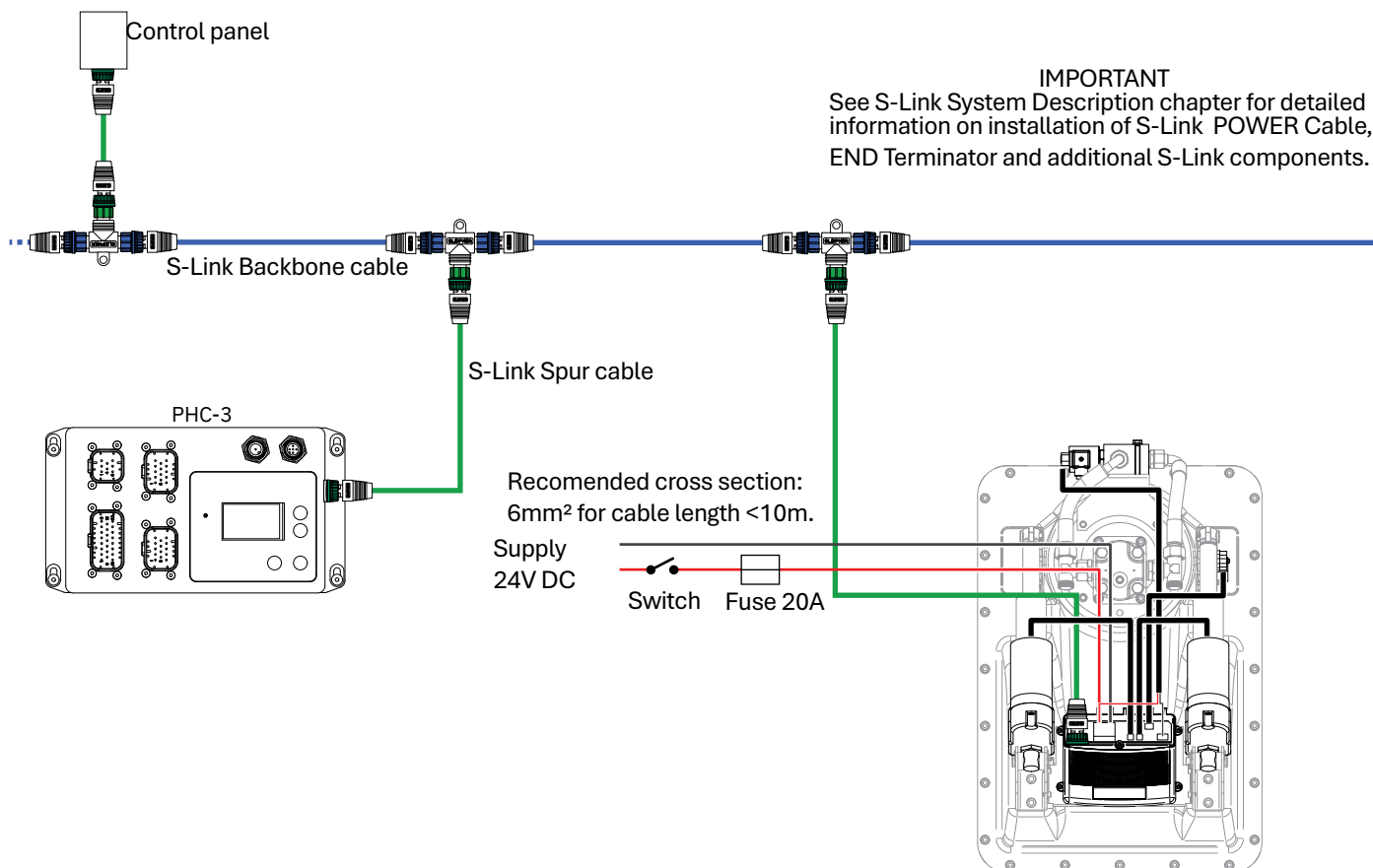
Motor type	Port A/B	Drain port
Models with gear motor	18L, Metric DIN 2353	1/4" BSP
Models with BA16 and BA19 motor	18L, Metric DIN 2353	9/16-18

MC_0172

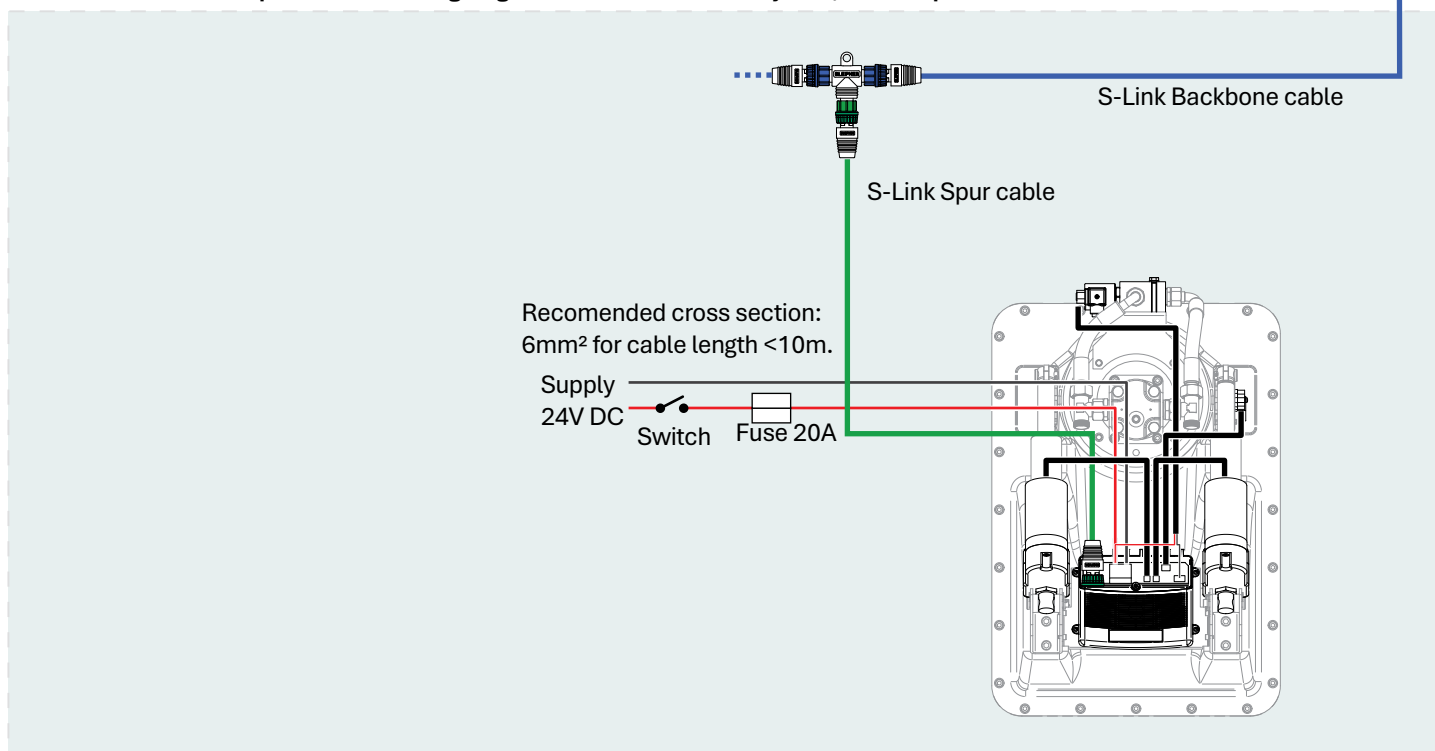


MG_0186

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

Main advantages of S-Link system:

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

Installation of S-Link cables:

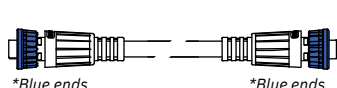
Select appropriate cables to keep the length of BACKBONE- and SPUR Cables to a minimum. In case of planned installation with total BACKBONE Cable length exceeding 100 meters please consult your local distributor. The S-Link cables should be properly fastened when installed to avoid sharp bend radius,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

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

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

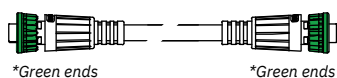
SPUR cables can be left unterminated to prepare for the installation of future additional equipment. In such cases, ensure to protect open connectors from water and moisture to avoid corrosion in the connectors.

MC_0120



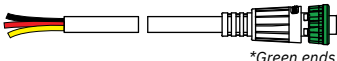
BACKBONE Cable

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



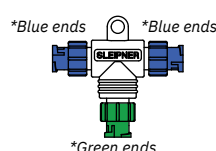
SPUR Cable

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.



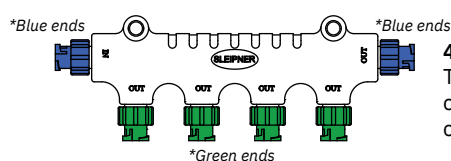
BACKBONE Extender

Connects two BACKBONE Cables to extend the length.



END Terminator

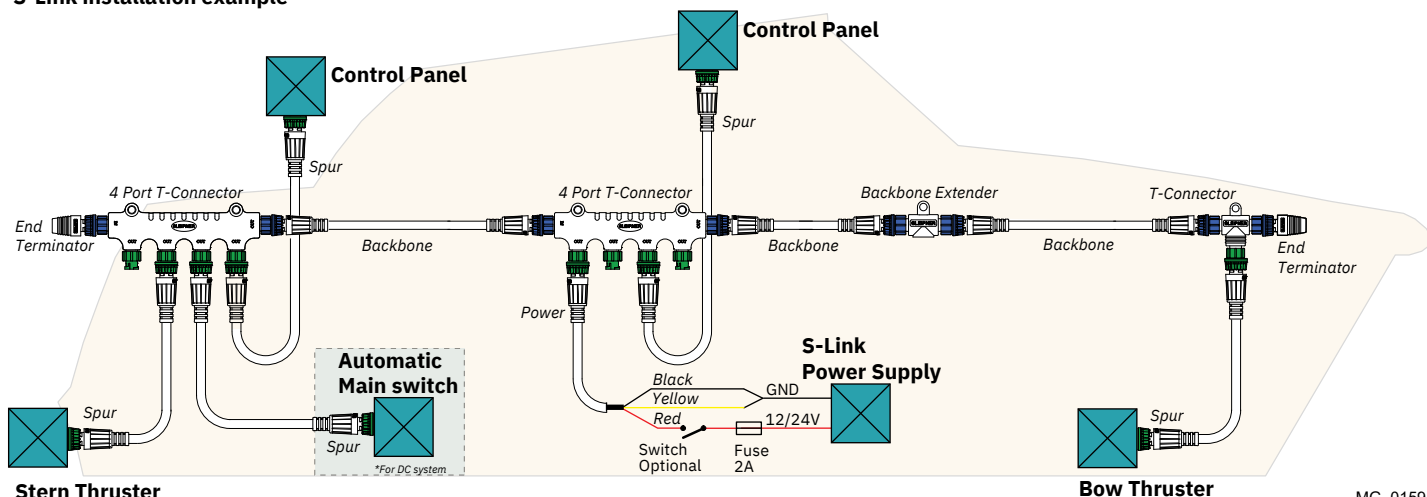
Must be one at each end of the BACKBONE bus.



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

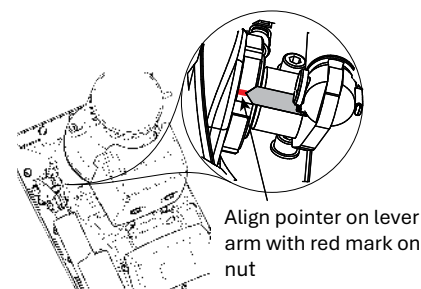
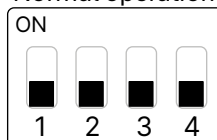


MG 0159

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

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

Normal operation



Calibrate drive shaft alignment

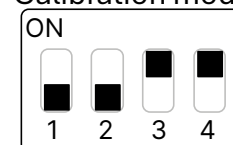
(Note: The drive shaft is correctly aligned when manufactured.)

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.
(Note: 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.

Service mode



Calibration mode



Actuator configuration

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).

(Note: 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

Configuration



LED indication

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:

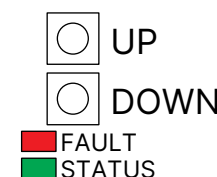
- Red light fast blinking: Dip-switch in an invalid position.
- Red light short flash every 2 seconds: Shaft not calibrated, or shaft calibrated out of range.

Continuous green light:

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

Flashing green light:

- No S-Link communication.



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

MC_0398



- ☐..... The bolts holding the gearleg 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 gearleg 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 is in position, and that its fastening 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.

MC_0033

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:

.....

.....

Introduction:

At Sleipner Group, we prioritize sustainability and encourage the repair and re-manufacturing of products to extend their life cycles. If disposal is necessary, please follow these guidelines to recycle and manage waste responsibly, ensuring our efforts align with environmental protection efforts.

Electric motors and electronics

- Disconnect from any power sources and dismantle them carefully.
- Recycle components through certified e-waste recycling centers that can adequately handle and recover electronic materials.
- Dispose of any non-recyclable electronic parts according to local environmental regulations.

Metals:

- Collect and sort metal parts for recycling as scrap metal.
- To increase recycling efficiency, ensure that metals are clean and free from non-metal attachments.

Plastics:

- Identify recyclable plastics based on local recycling guidelines.
- Remove any non-plastic components and clean them before recycling to improve the quality of the recycled material.

Hazardous materials:

- Correctly identify any hazardous substances within components, such as batteries or capacitors etc.
- Follow local regulations for the safe disposal of hazardous materials to prevent pollution and protect environmental health.

General disposal instructions:

- Consult local recycling programs to determine the acceptability of various materials.
- Use authorized disposal services to ensure compliance with environmental standards.

Safe disposal practices:

- Adhere to local laws and regulations for waste management to minimize environmental impact and ensure community safety.

This guide is designed to help reduce our products' environmental footprint through responsible end-of-life management. Please contact your local waste management supplier or our support team for more specific disposal information or further assistance.

MC_0848

Find your local certified dealer through our global network to receive expert service and support.
Visit our website for more information: www.sleipnergroun.com/support



Product spare parts and additional resources

For additional supporting documentation, visit our website at www.sleipnergroun.com and locate your specific Sleipner product.



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.sleipnergroun.com/patents



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.sleipnergroupp.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.

MC_1161

[illegible]



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Norway

www.sleipnergroupp.com

Made in Norway

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