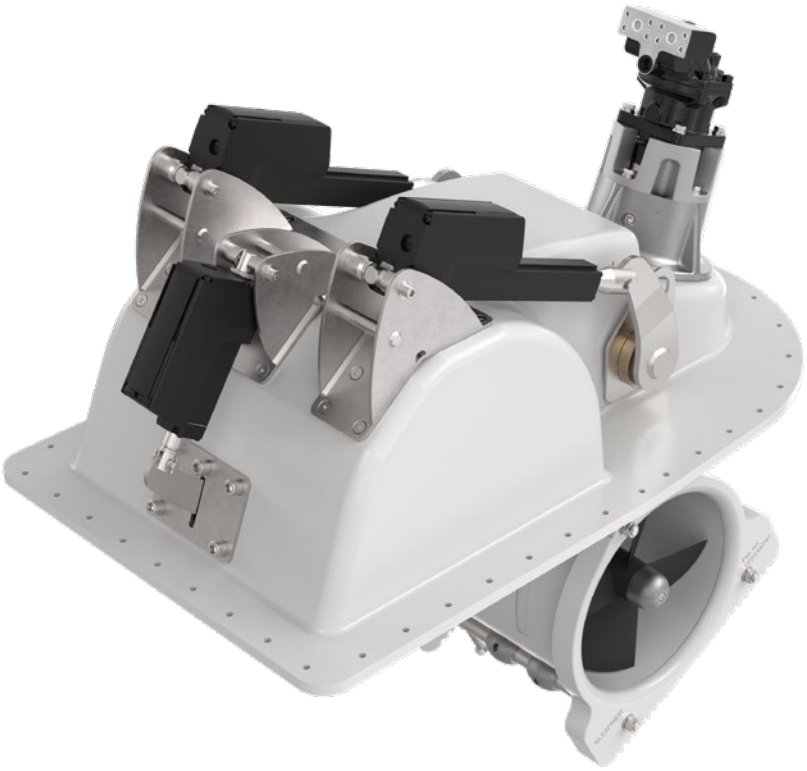
SLEIPNER

Ocean born. Tech bred.

Installation manual

SRHP650



DOCUMENT ID: 7530
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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.

MC_0800

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.

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.



MC_0627

WARNING

Failure to follow any considerations and precautions can lead to serious personal injury, death and/or damage your product. Failure to follow any considerations and precautions will render all warranties given by Sleipner Motor as VOID.

MC_0411

For retract thrusters

- The installation position of stern-mounted retract thrusters must not conflict with the water flow from the propulsion propeller.
  Note: Consult a naval architect for an exact position.

- Apply anti-fouling paint to the inside of the retractable thruster housing.
  Note: Do not paint the drive shaft.

MC_0474

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.

MC_0425

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.

MC_0009

For 650 retract thrusters

MC_0631

- Due to the weight of the retract system it is important to utilise the defined lifting lugs when installing the retract housing.

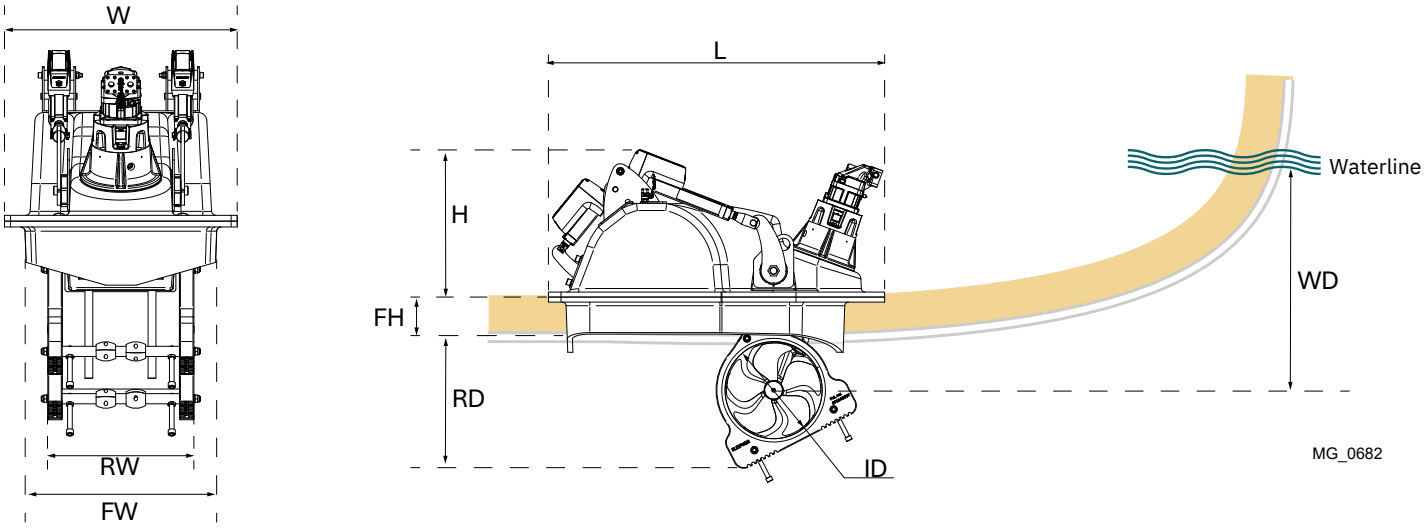
Sleipner S-Link™ Systems

- 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.

MC_0105

Dimension code	Dimension description	SRHP650	
		mm	inch
H	Height	587	23.1
L	Length	1340	52.8
W	Width	800	31.5
ID	Internal tunnel diameter	386	15.2
WD	Water depth	386	15.2
RD	Retract depth	355	14
RW	Retract width	548	21.6
FW	SRF flange width	651	25.6
FH	SRF flange height	148	5.8

MC_0624

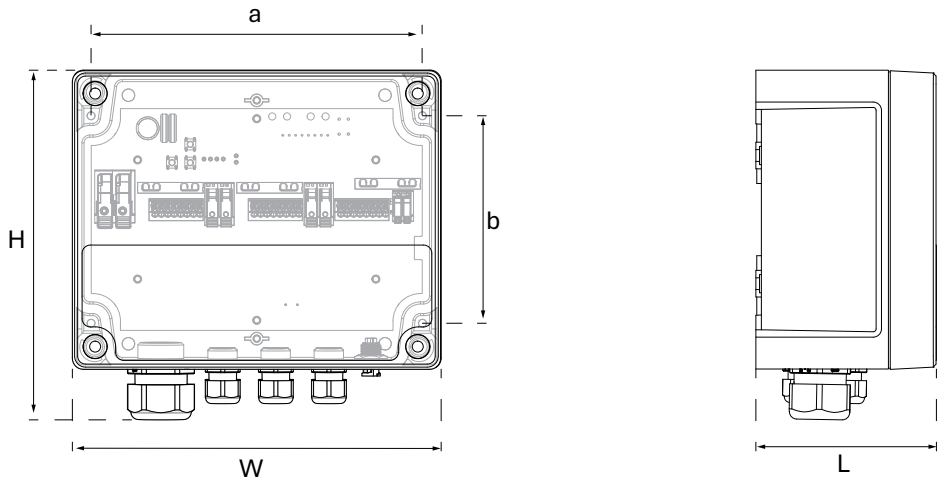


MG_0682

SRC-3 dimensions

Dimension code	Dimension description	SRC-3	
		mm	inch
H	Height	191	7.5
L	Length	98.4	3.9
W	Width	201.4	7.9
a	Wall mounting screw Holes	180.8	7.1
b	Wall mounting screw Holes	113.2	4.5

MC_0669



MG_0702

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

MC_0609

Product specifications

Product	Lubrication	Light Duty Thrust is kg	Heavy Duty Thrust is kg	Power Output kW / Hp	Weight kg / lbs	Maximum Operation Time
SRHP650	Gear oil API GL5 SAE 80W-90. Oil change	650	500	47 / 64	TBA	Continuous

MC_0625

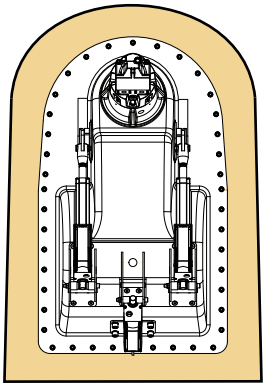
Flow and pressure specifications

Thruster model	Motor type		60 % Thrust		80 % Thrust		100 % Thrust	
			Flow	Pressure	Flow	Pressure	Flow	Pressure
SRHP650	BA40	L/min-Bar	76	187	88	250	NA	NA
		USG-PSI	20	49	23	66	NA	NA
	BA45	L/min-Bar	85	164	98	219	110	274
		USG-PSI	22	43	26	58	29	72
	BA50	L/min-Bar	95	154	110	205	123	256
		USG-PSI	25	41	29	54	32	68
	BA56	L/min-Bar	105	134	121	178	136	223
		USG-PSI	28	35	32	47	36	59

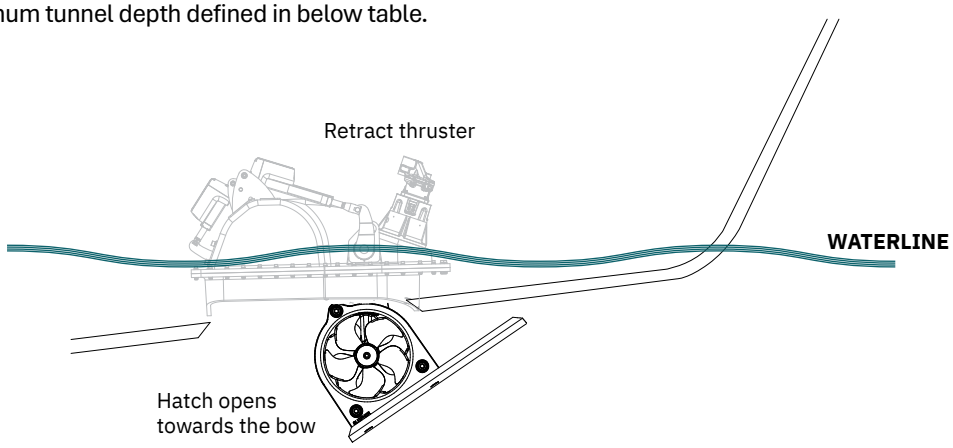
MC_0625

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.

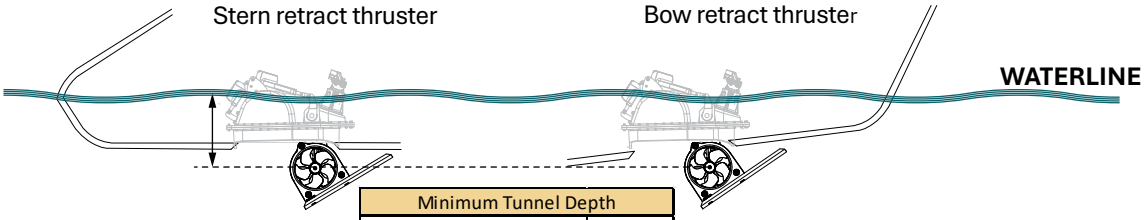


100mm of clear space around the thruster for moulding of the SRF flange.



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.



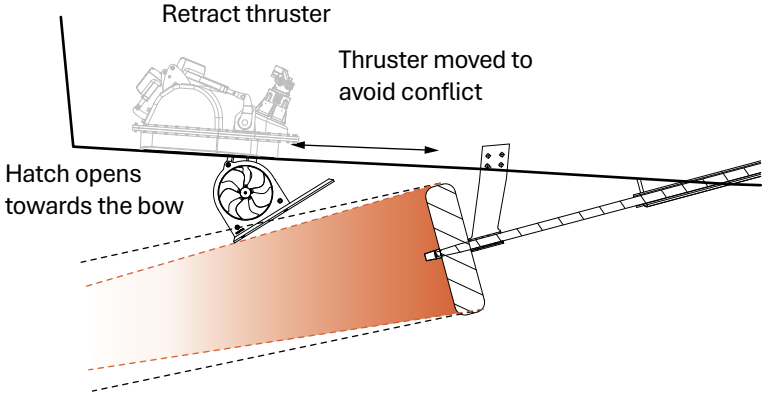
Minimum Tunnel Depth	
Retract system 80 to 100	185mm
Retract system 130 to 240	250mm
Retract system 250 to 300	300mm
Retract system 650	386mm

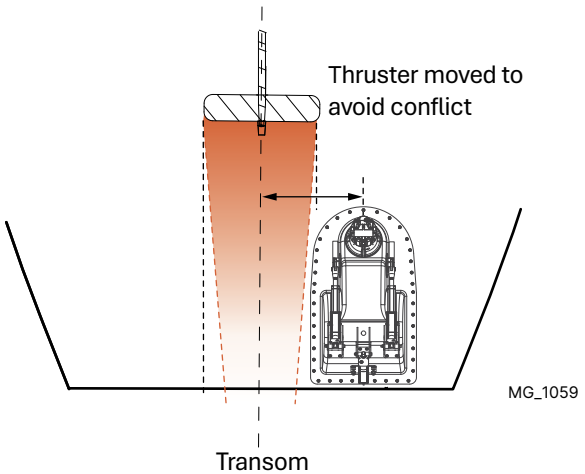
Bow installation

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.

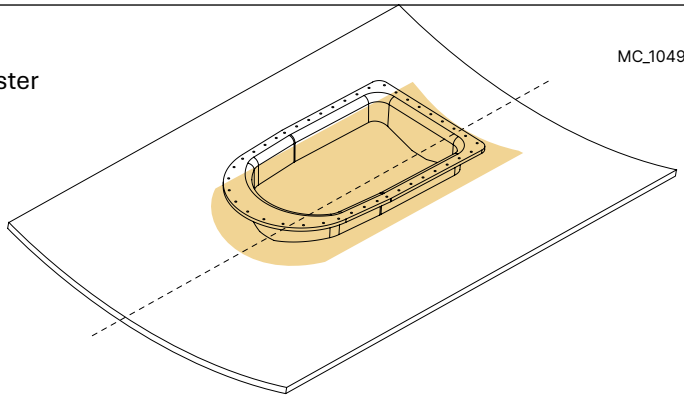
Stern installation

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.



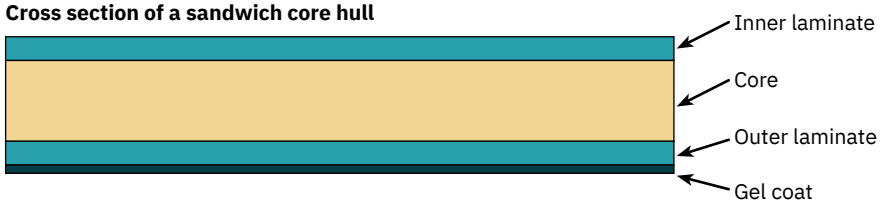


- Ensure to have a minimum of 100mm space around the thruster installation to have service access.
- Bow thrusters must be positioned on the boat center line.
- Stern thrusters can be positioned off the centre line.

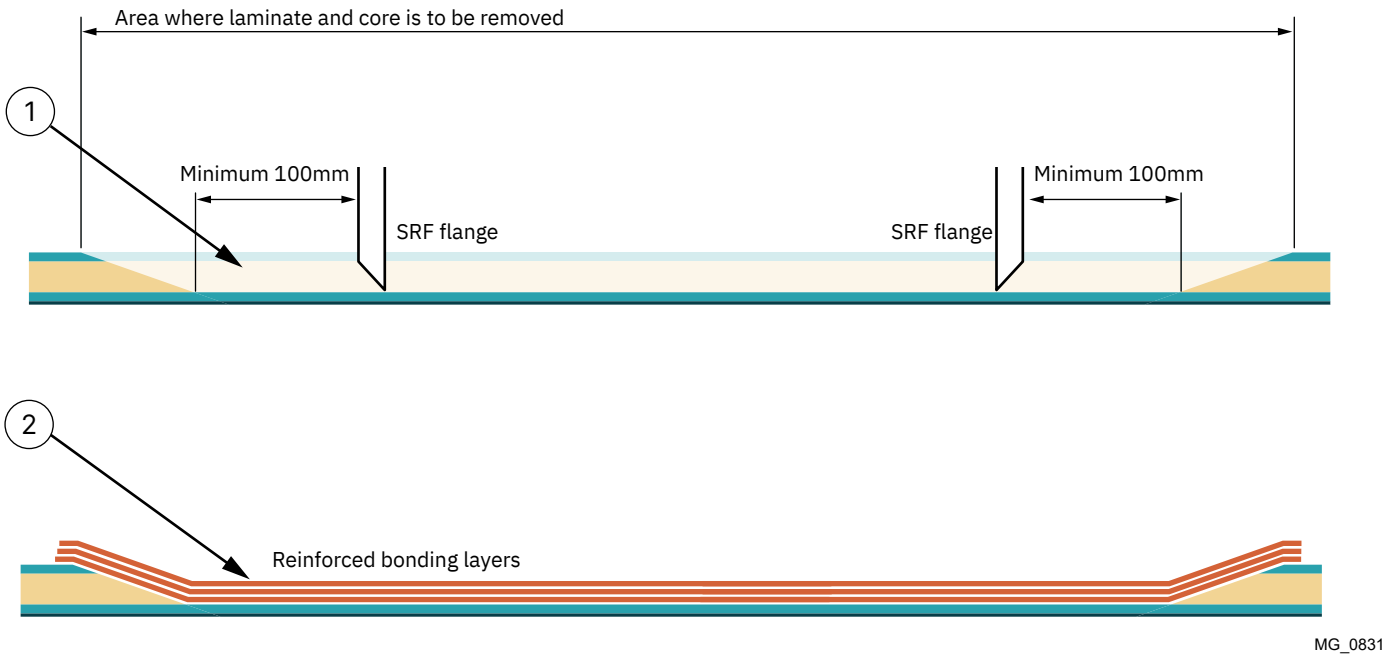


For vessels with sandwich hull construction, additional reinforcement of the area around the SRF flange is required.

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.

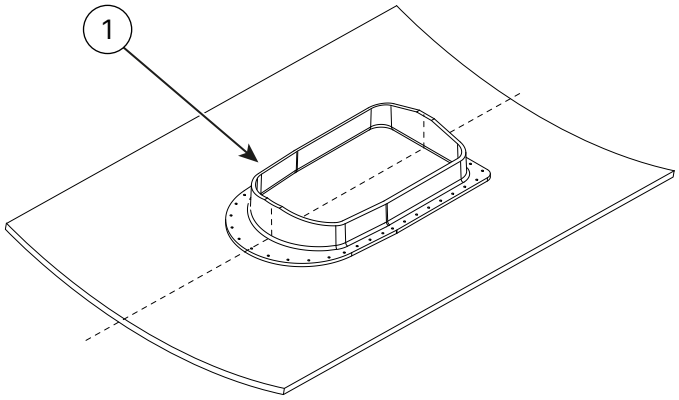


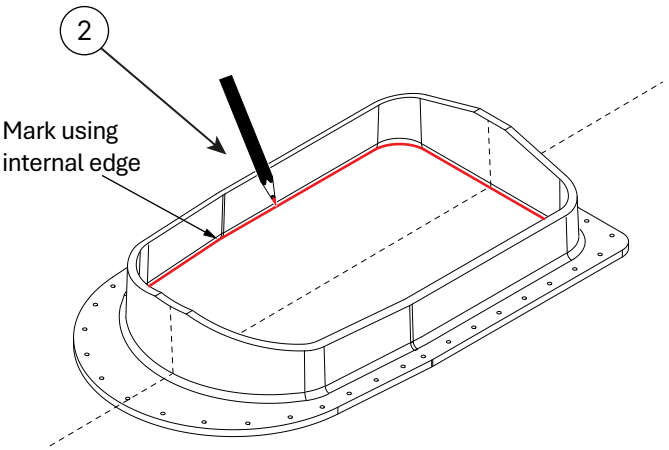
1. Flip the SRF flange upside down and position it at the identified installation location. MC_1037
   - For bow thrusters, this is usually symmetrical about the vessel centerline.
   - For stern thrusters, the position of the thruster may deviate from centerline.

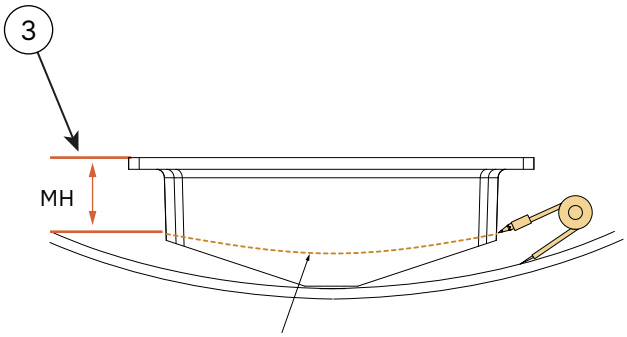
2. Use the internal edge to mark were to cut out the thruster hatch from the hull.

3. The SRF flange must be adapted so that the two longitudal 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.

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



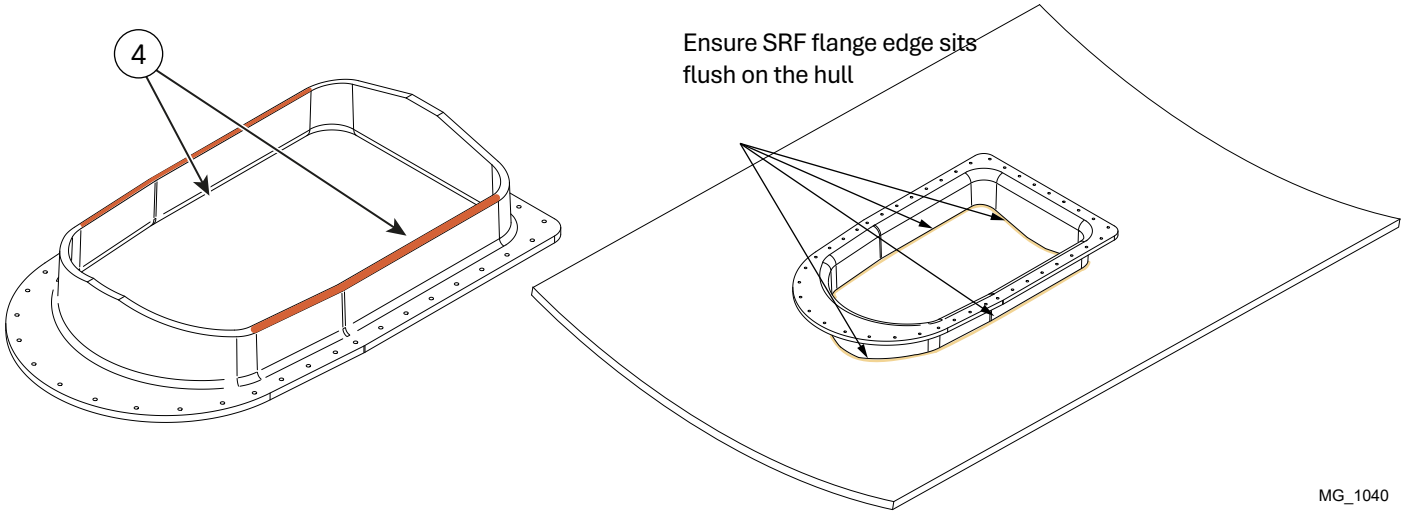




Important

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

-Ø185mm = 72mm
-Ø250mm = 98mm
-Ø300mm = 115mm
-Ø386mm = 148mm



MG_1040

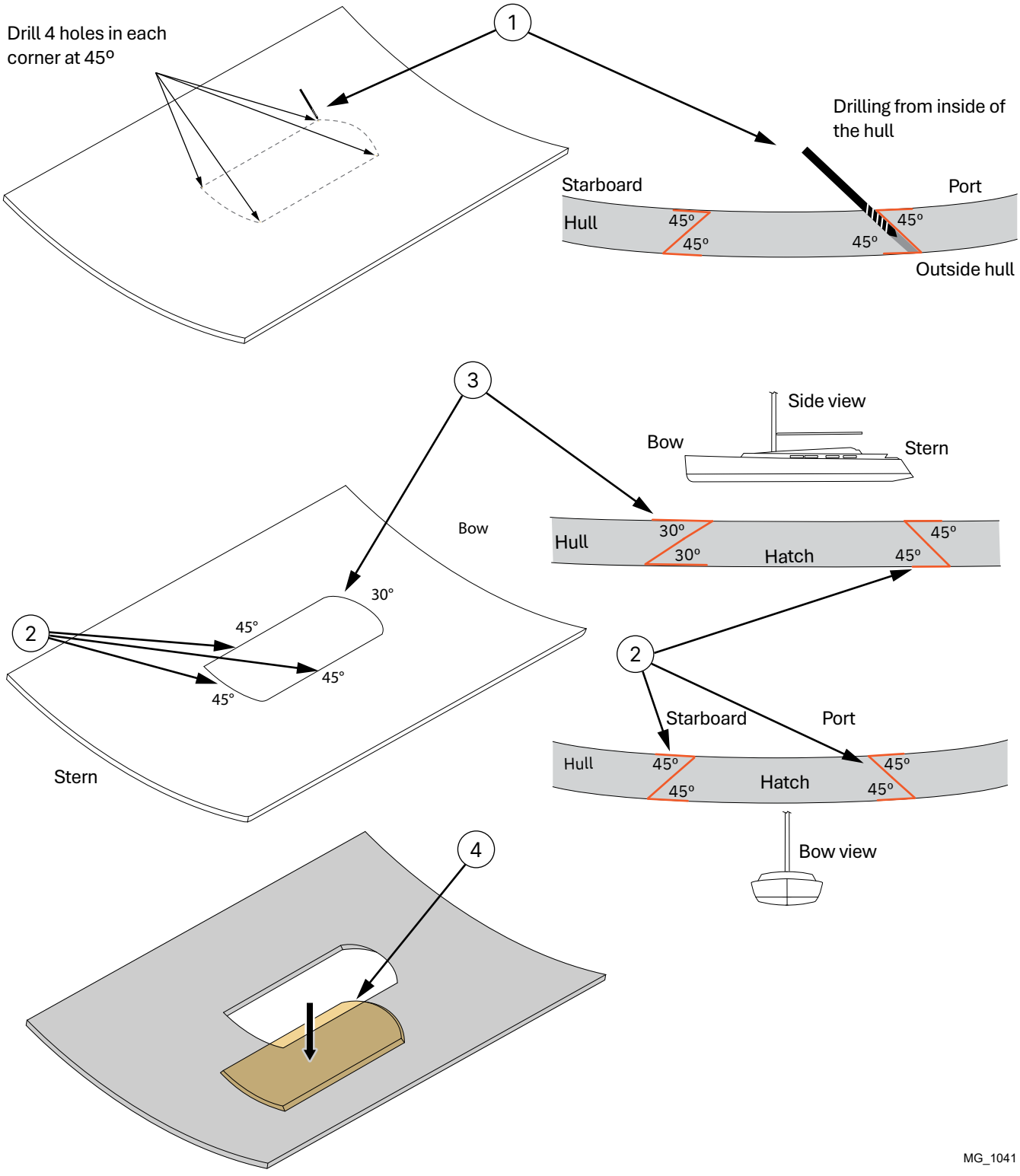
1. When cutting from inside, prepare for cutting by drilling 4 holes in each corner of the marked area at 45º angle inwards against the centerline.

2. The hatch opening must be cut at an angle of **45º** on starboard, port and stern sides.

3. Cut angle **30º** on the side facing the bow . This ensures that forces from water hitting the closed hatch is absorbed by the hull.

MC_0774

Note: It is of great importance that these cutting angles are correct. Otherwise the hatch will jam during opening.



MG_1041

Sleipner Retract Controller (SRC-3) has two operational modes, *Normal Operation* and *Service Mode*. MC_0676

Operating actuators and thrusters during installation with personnel or other objects in proximity could cause serious personnel injury and impose damage to the unit. Therefore, power should always be disconnected from the SRC-3 when working on the retractable thruster or in the vicinity of the retract installation.

As an additional safety precaution, the SRC-3 is delivered with *Service Mode* as default configuration. In *Service Mode* all operation of actuators and thrusters via control panels is disabled. The only operation allowed in *Service Mode* is manual control of actuators through the button interface of the SRC-3.

To enable operation from control panel the SRC-3 must be set to *Normal Operation*. To change between *Service Mode* and *Normal Operation* use the Select button on the SRC-3.

When SRC-3 is set to *Normal Operation*, turning a control panel ON will deploy the thruster, and conversely, turning a panel OFF will retract the thruster.

SRC-3 Fault reporting

In the event of a fault being detected by SRC-3 the FAULT LED will turn red, and thruster operation becomes suspended. Fault handling is slightly different in *Normal Operation* and *Service Mode*. MC_0676

Normal Operation
If an actuator over-voltage, under-voltage, or over-temp fault occurs, it will still be possible to deploy and retract the thruster by turning the control panel ON and OFF.

If a Motion OUT or Motion IN fault occurs, the SRC-3 will automatically try to retract the thruster before disabling all actuator operation until the fault is cleared.

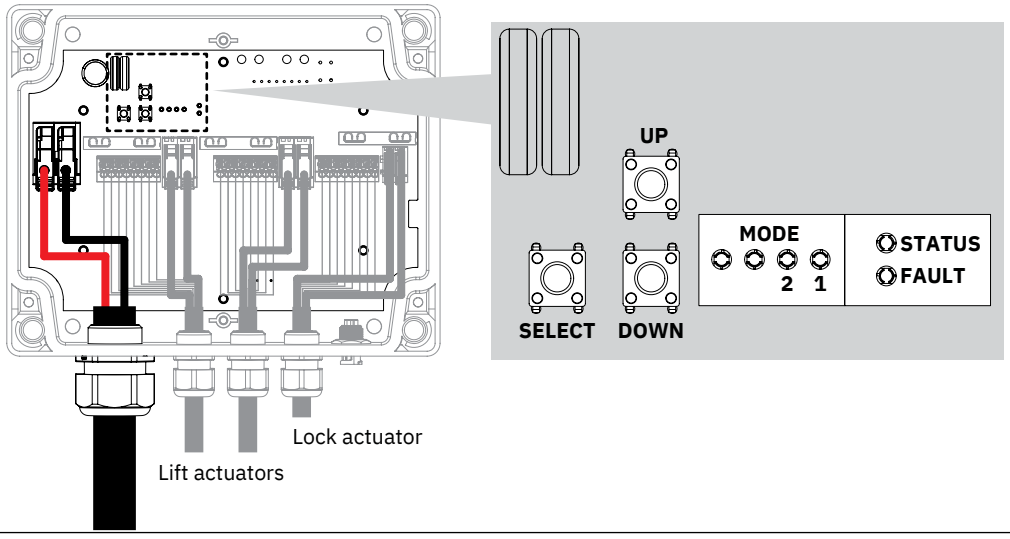
If any other fault occurs, actuator operation becomes suspended until the fault is cleared. See the control panel user manual for more information about fault handling.

Service Mode
Entering *Service Mode* is reported as a fault in the control panel, but since no actual fault has occurred in the SRC-3 the FAULT LED will not be constant ON, but will blink to indicate that manual actuator operation is possible. See *SRC-3 LED and Button Interface* chapter for detailed information.

SRC-3 LED and button interface

SRC-3 has six LEDs indicating status of the retract controller and three buttons for manual control. MC_0676

The location of the LEDs and buttons is shown in figure below.



The LEDs and buttons have different behaviour and functionality in *Service Mode* and *Normal Operation*. MC_0676
Regardless of which mode SRC-3 set to, all 6 LEDs are lit for one second during power up. This is to indicate that the LEDs are working, and that the firmware was initialized correctly.

A constant green Status LED indicates *Normal Operation*. If the Status LED is blinking green, the SRC-3 is not communicating with other deviceson the S-Link bus.

A blinking red FAULT LED indicates *Service Mode*. A constant red LED indicates that one or more faults have occurred, regardless of whether the SRC-3 is in *Service Mode* or *Normal Operation*.

The table below describes the LED behaviour for *Service Mode* and *Normal Operation*.

LED	Color	Service Mode	Normal Operation
STATUS	Green	OFF: Always OFF	ON: Power ok Blinking: Power ok, no S-Link communication
FAULT	Red	Blinking: In Service Mode and no fault detected ON: In Service Mode and fault detected	ON: SRC-3 is in a Fault State
MODE 4 - 1	Yellow	ON: In Service Mode and fault detected	ON: Identify fault types OFF: NO

Interpretation of the MODE LEDs depends on the status of the FAULT LED as described in table below.

Fault LED	MODE LED				Description
	4	3	2	1	
Blinking*	OFF	OFF	OFF	Blinking	Active menu option - Manual Operation
Blinking*	OFF	OFF	OFF	ON	Manual Operation selected
Blinking*	OFF	OFF	Blinking	OFF	Active menu option - Force Alignment
Blinking*	OFF	OFF	ON	OFF	Force Alignment of Lift Actuators selected
ON	ON	ON	ON	ON	Fault - No communication with Lift Actuator 1
ON	ON	ON	ON	OFF	Fault - No communication with Lift Actuator 2
ON	ON	ON	OFF	ON	Fault - No communication with Lock Actuator 1
ON	OFF	OFF	OFF	OFF	Fault – Check control panel to see fault code
OFF**	OFF	OFF	OFF	OFF	No Fault

**Only valid for Service Mode*
***Only valid for Normal Operation*

Functionality of Buttons During Normal Operation
Holding the *Select* button for 3 seconds will cause the SRC-3 to enter *Service Mode*. The UP and DOWN buttons serve no function during *Normal Operation*.

Functionality of Buttons in Service Mode
When the SRC-3 enters *Service Mode*, either during power up or by exiting *Normal Operation*, a navigation menu becomes activated. The MODE LEDs are blinking to indicate which of the two available menu options that is currently active:

- Manual Operation – MODE LED 1 blinks
- Force Alignment – MODE LED 2 blinks

The UP and DOWN buttons can be used to toggle between menu options. Selecting a menu option is done by pressing the *Select* button. When a menu option is selected the corresponding MODE LED will change from blinking to constant light. To return to the menu press the *Select* button again.

Selecting the menu option *Manual Operation* allows manual control of the lift actuators by using the UP and DOWN buttons. Pressing the DOWN button will deploy the thruster, pressing the UP button will retract the thruster.

The menu option *Force Alignment* enables automatic alignment of the two lift actuators using the UP and DOWN buttons. Pressing the UP button aligns with the least extended actuator and pressing the DOWN button aligns with the most extended actuator.

When the menu is active it is possible to enter *Normal Operation* by holding the *Select* button for 3 seconds.

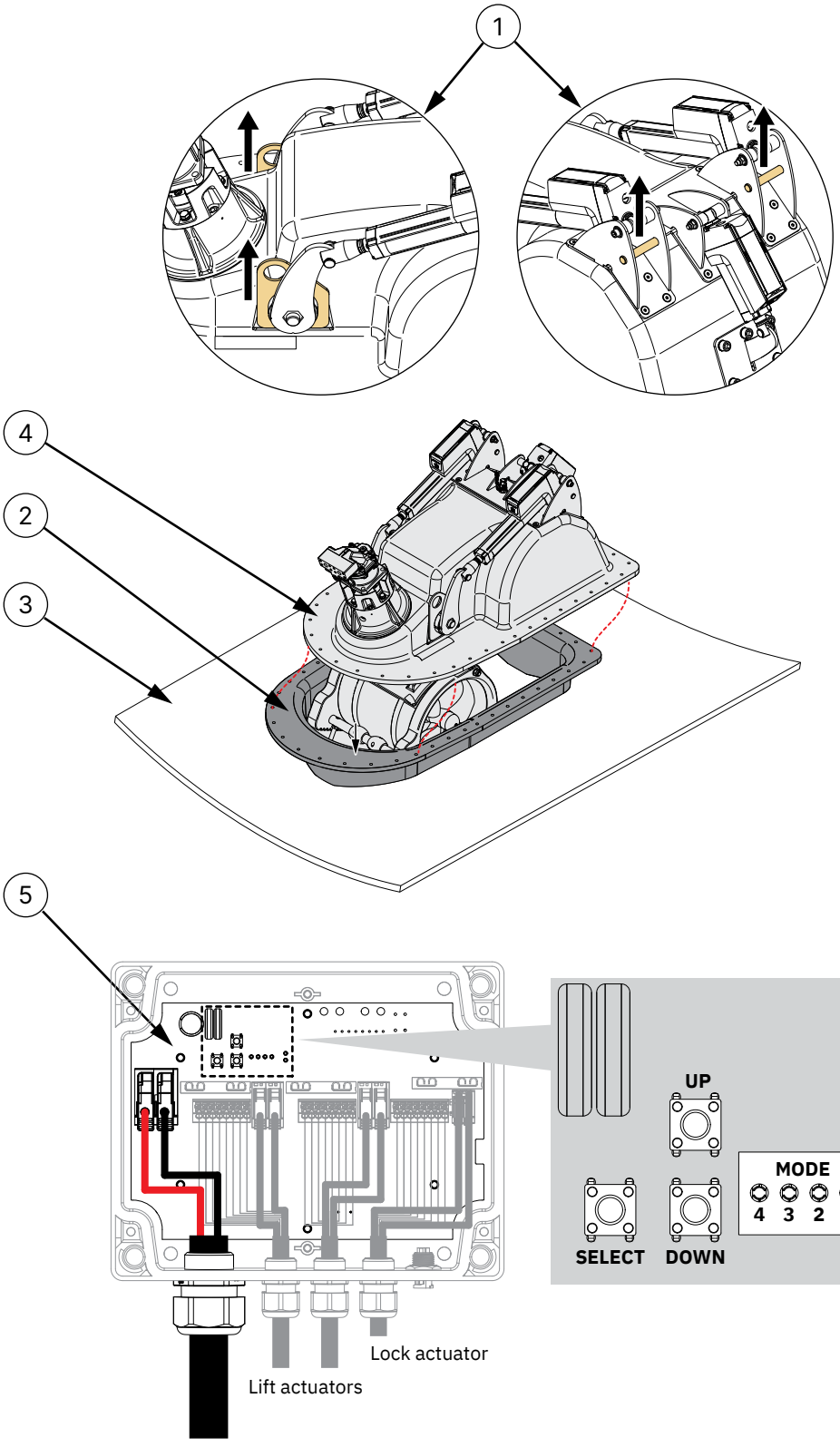
Perform a temporarily installation to verify that there is no mechanical conflict when deploying and retracting the thruster.

MC_0668

1. Use lifting lugs when handling the retract thruster.

2. Position the trimmed SRF flange in the correct position over the hatch cut-out **(Reference 3)** in the hull.

4. 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 inn correct position.



MG_0651

- Ensure that the SRF flange and the thruster housing are positioned correctly inside the hull. (See the previous topic).

1. 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. See also detail in the bubble.

2. Apply marks on the hull, at the edges of the used aid, on the side facing the center of the bolt holes.

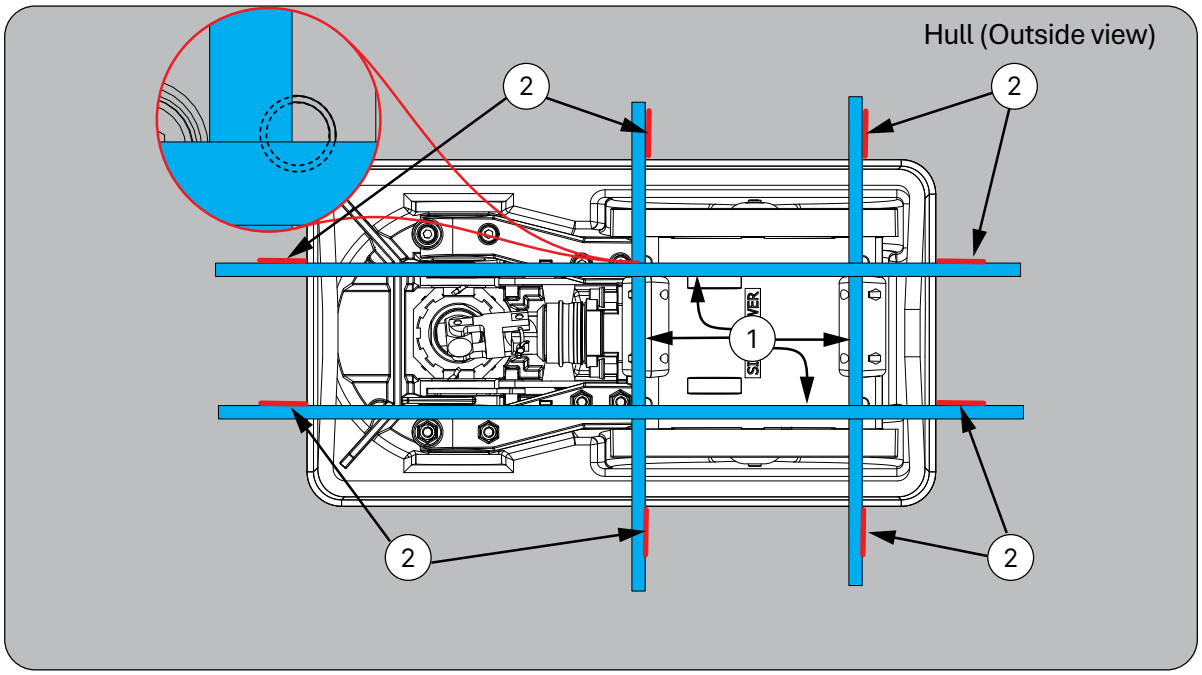
- Remove the adhesive tape (or other used aid).

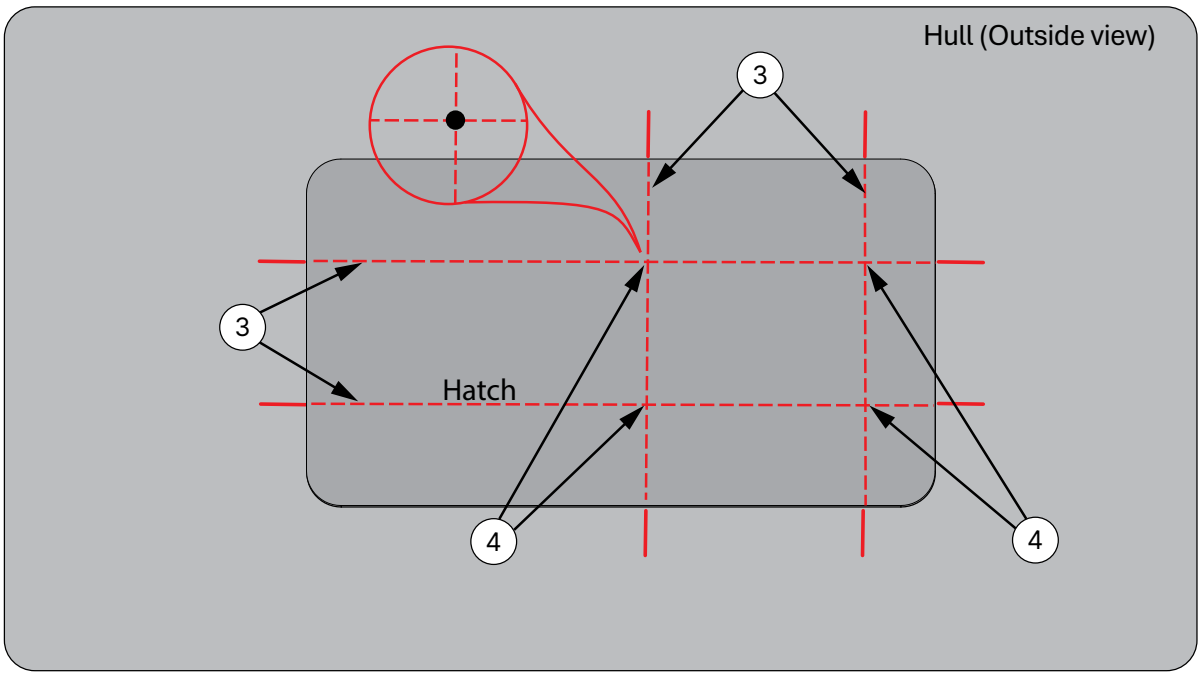
- Position the pre-cut hatch in the opening in the hull, and support it in its position.

3. Use a flexible ruler or similar to draw extended lines on the hatch, between the marks created on the hull.

4. 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.

MC_0776

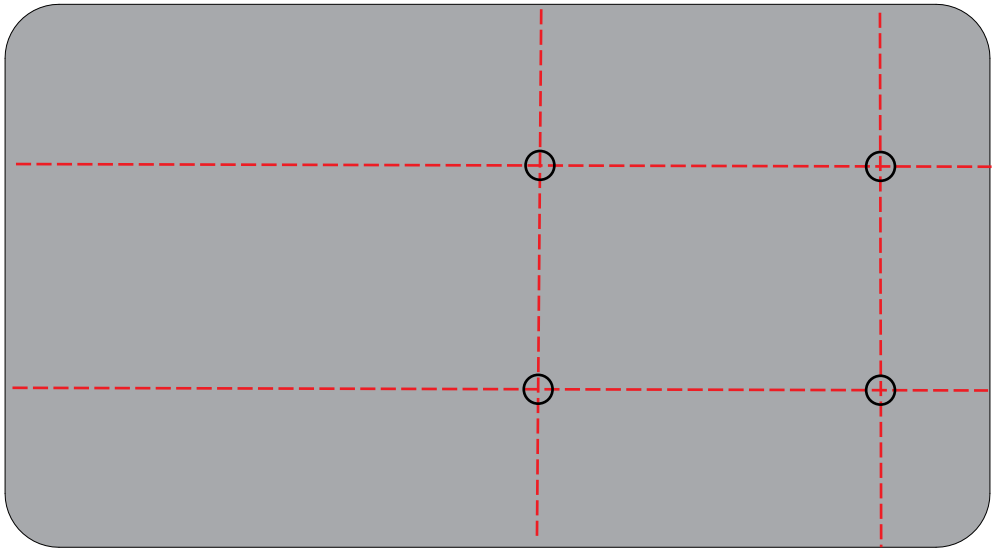




MG_0807

- Drill four Ø11mm holes in the center of each marking created in the previous step.
- It is recomended 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.

MC_0778



MG_0811

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

1. 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.
   Note: Ensure correct orientation for the thruster to open the hatch facing the bow. Remember attachment is for temporary checking of thruster operation only.

2. Ensure that the hatch is in proper place.

- Connect the prepared power supply cables from the thruster controller to a power supply.
  (NB: Refer to the label on actuators for correct voltage)

3. Press “DOWN” to extend the tunnel and check the hatch opens fully without touching the hull.

4. If the hatch is obstructed by the hull in the front, the SRF flange must be adapted so that the hatch does no longer touch the hull when in open position.

5. If necessary:
   Grind the front and side egdes of the flange a necessary amount to obtain space between the hull and the hatch.
   Note that the reference 5 illustration shows an excessive grind down in the shaded area to clarify the operation.

6. 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**.

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.

Note: 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.

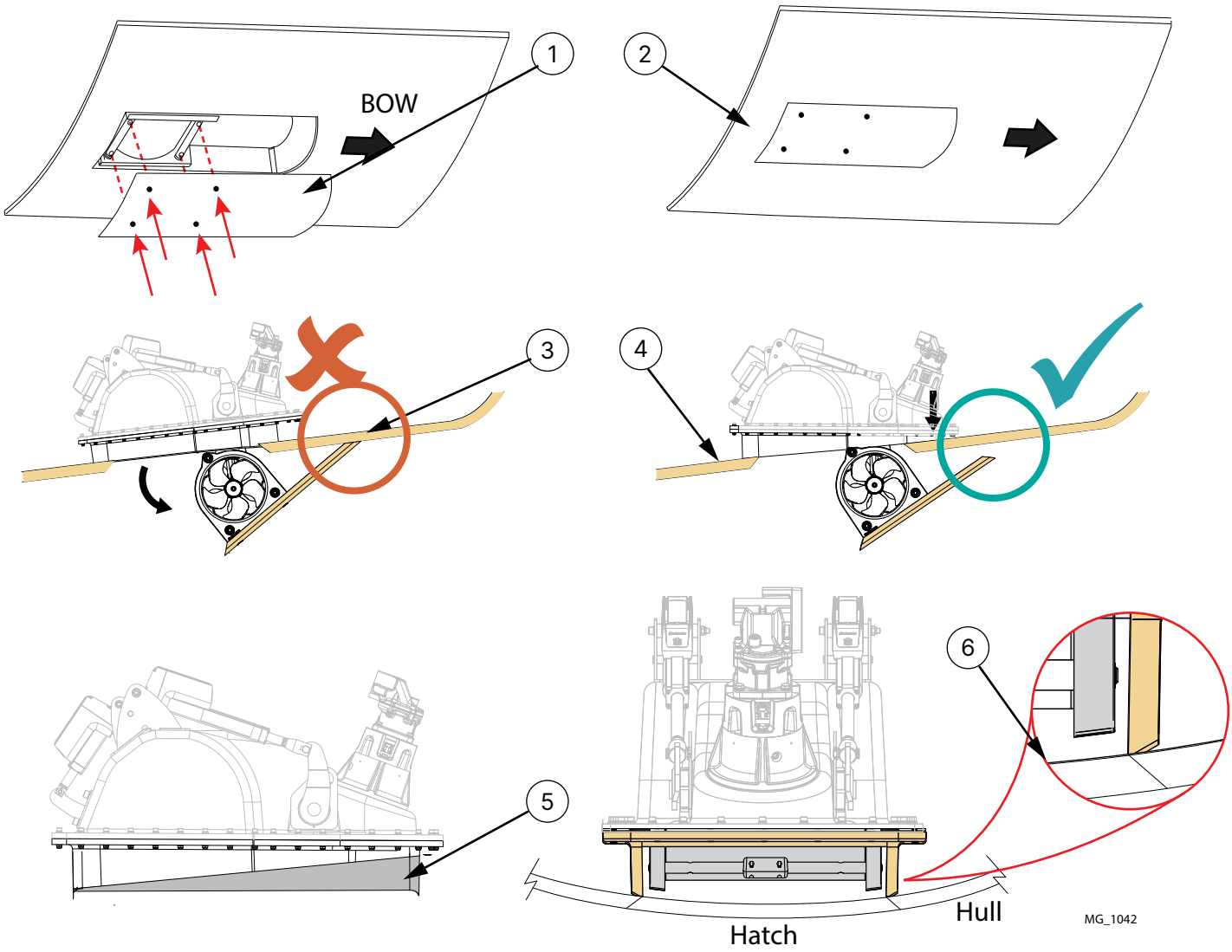
MC_1265

WARNING

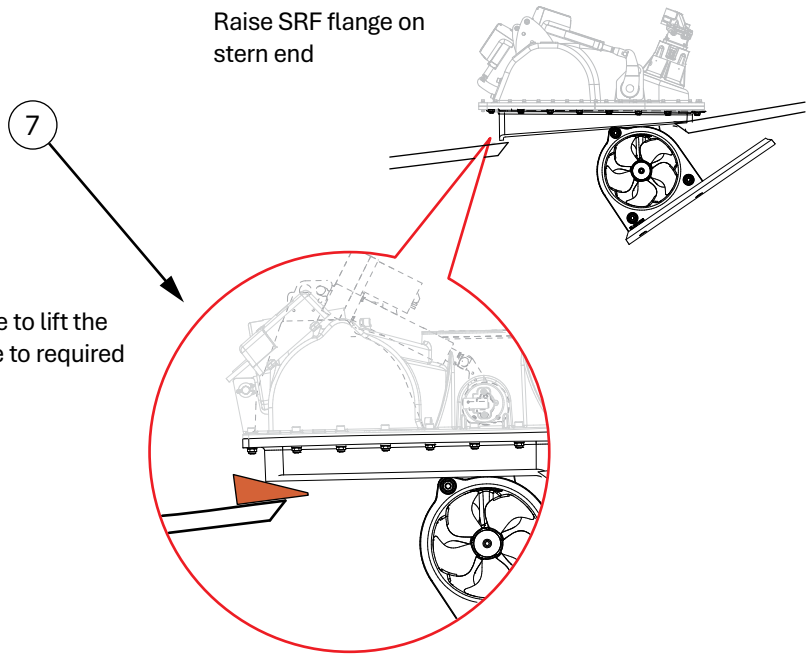
Accidental activation of the retract mechanism can cause serious injury due to the high-pressure force used for closing the hatch. IF operating the hatch during any work/ maintenance around or inside the retract hatch, USE CAUTION.



MC_0627



Raise SRF flange on stern end

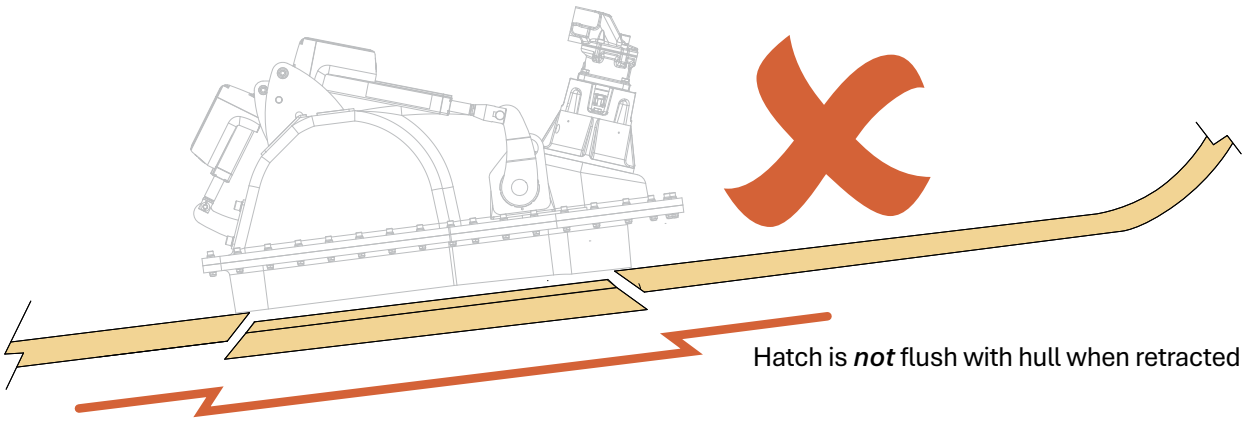


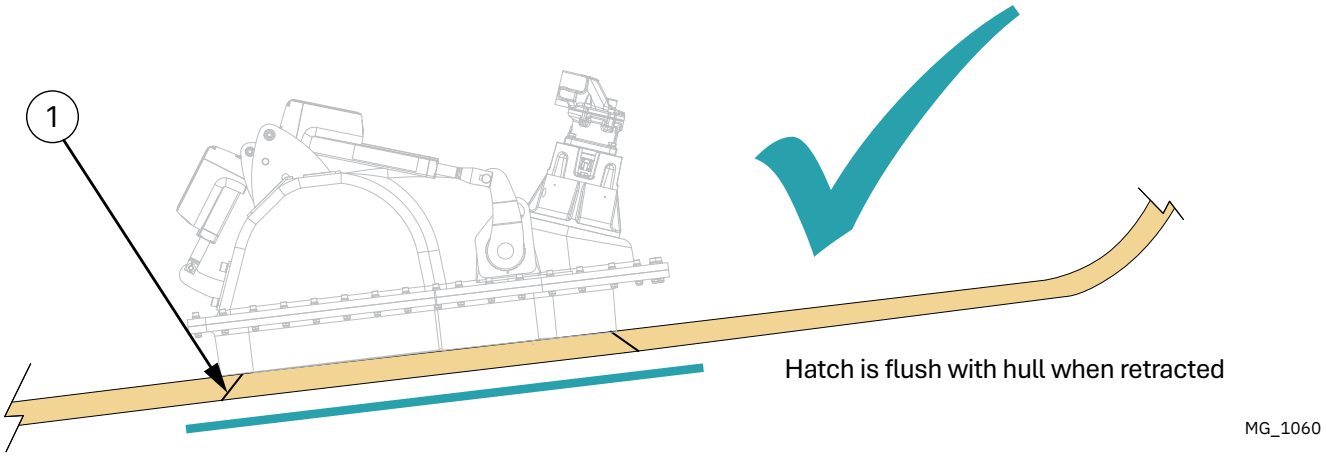
Use wedge to lift the SRF flange to required height

- Press “UP” to retract the tunnel. MC_1050

1. Ensure that the hatch is fitted in the hatch opening, and that the hatch is aligned flush with the hull at all edges.

- 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.





MG_1060

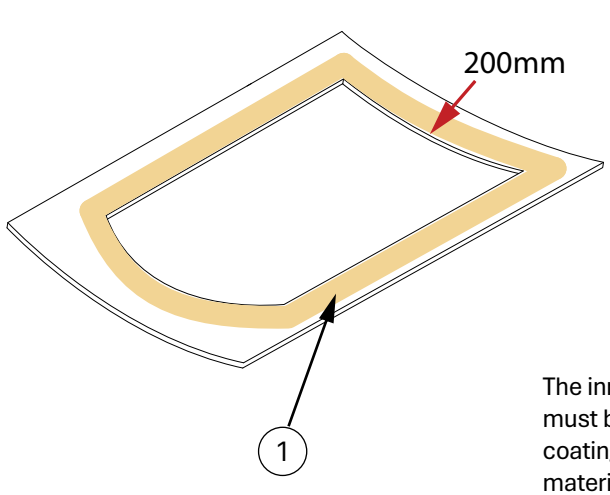
CAUTION

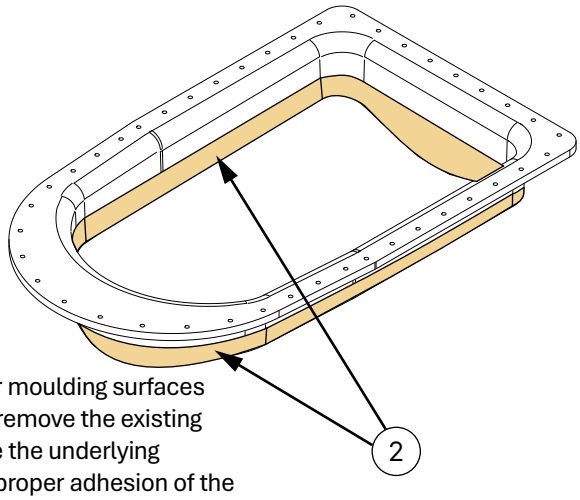
Before grinding of hull and SRF flange, precautions must be taken against grinding dust inside the boat. Surfaces to be moulded/bonded must be ground to remove coating and material to achieve sufficient adhesion.

1. Grind and smooth the surface around the inside of the hull opening to remove the gelcoat over a width of 200 mm.
2. Grind the inner and outer surfaces of the SRF flange to remove the gelcoat.
3. Apply a suitable adhesive to the inner surface of the hull around the opening and to the underside of the SRF flange.
   Apply sufficient adhesive to fill any gaps between the raised SRF flange and the hull.
   If wedges were used during the pre-installation procedure, reinstall them to ensure the correct height at 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.

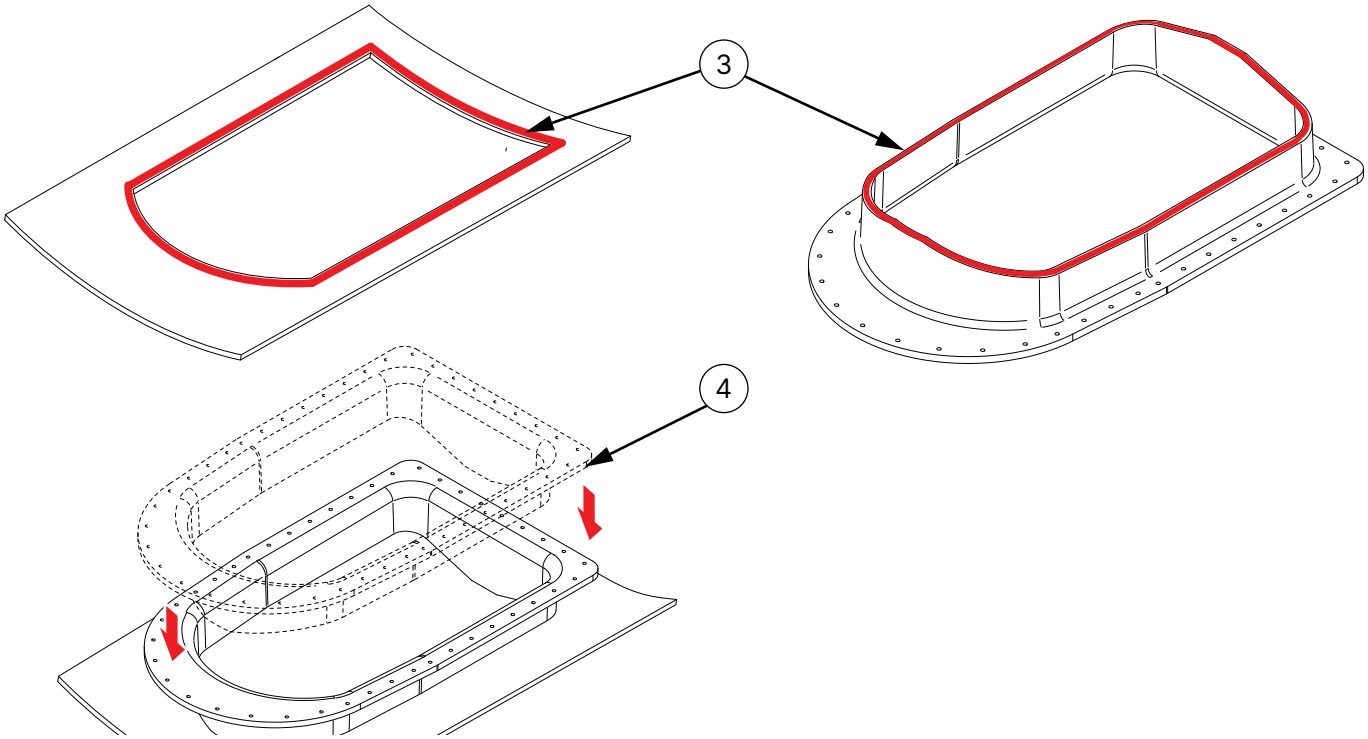
- After the SRF is positined correctly, remove the excessive glue before the hardening process starts.
- After the hardening process is finished, grind and smooth the glue joint.

MC_0782





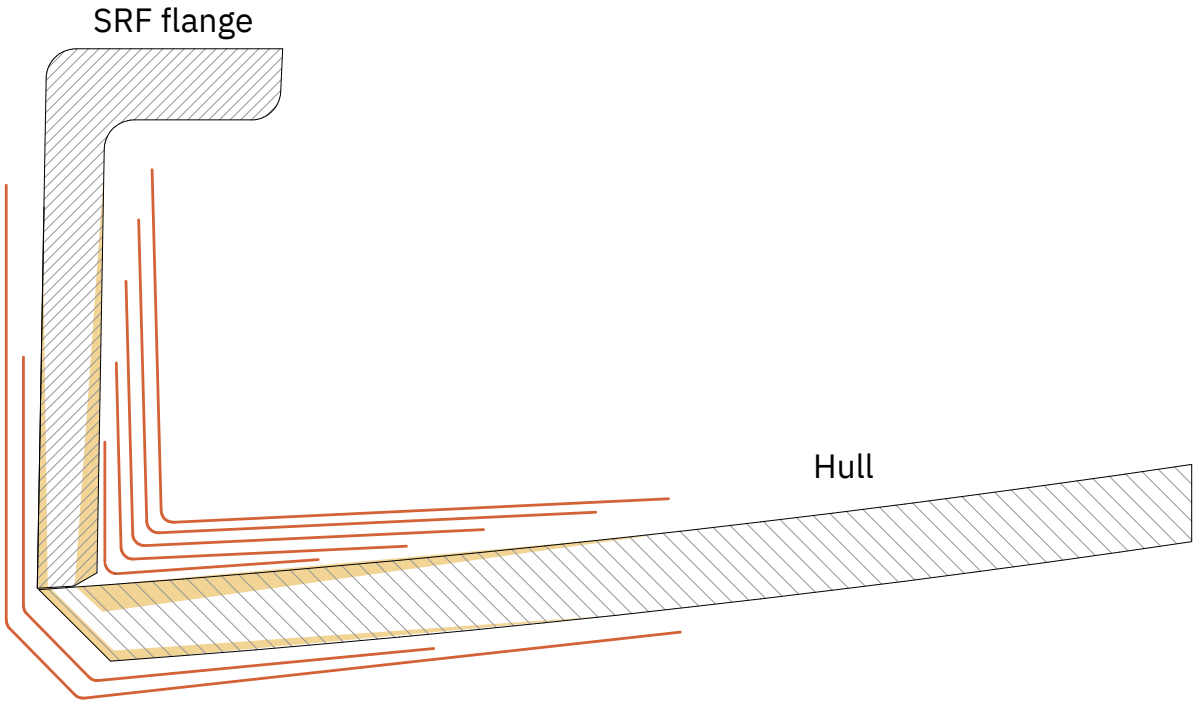
The inner and outer moulding surfaces must be ground to remove the existing coating and expose the underlying material, ensuring proper adhesion of the moulding.



- 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.

MC_0783

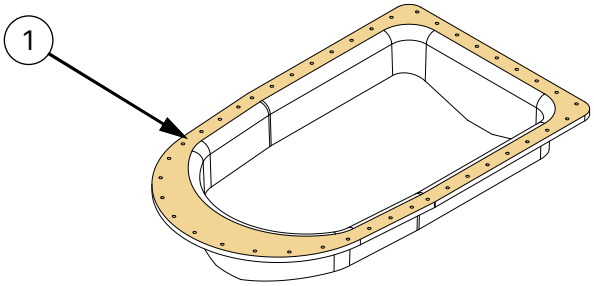
- When the laminated ares has cured properly, smooth all moulded surfaces and apply coating.
- Apply putty before coating if necessary.

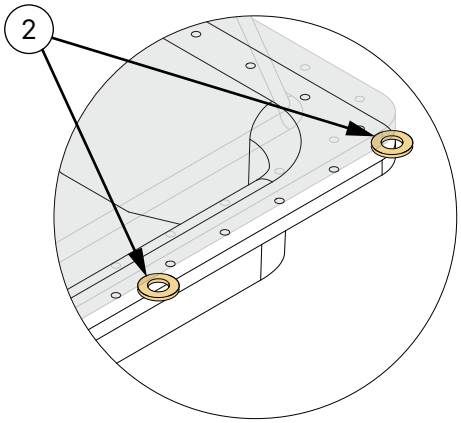


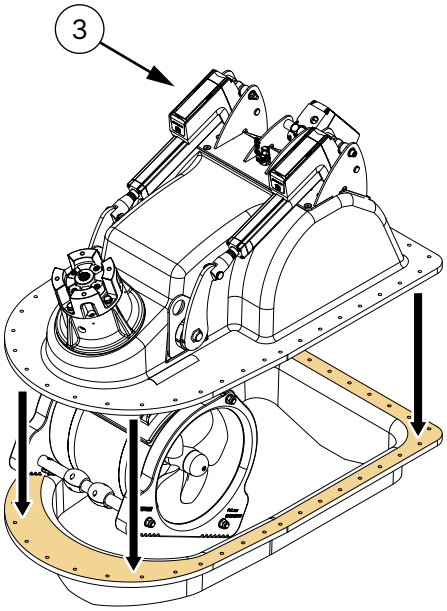
MG_0818

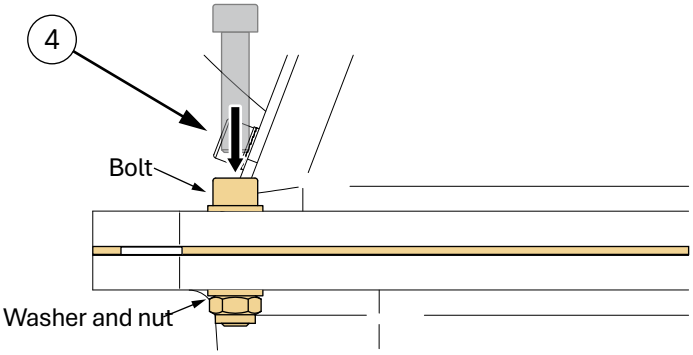
1. Apply MS Polymer or equivalent on SRF flange top surface to seal and avoid water leakage. Ensure that the polymer is applied over the entire surface of the flange as shown in the illustration.
   Note: Ensure that glue is compatible with the SRF flange and retract housing materials.
2. Place washers as spacers on the SRF flange corners.
   Note: This Allow the MS Polymer or equivalent to semi-cure without compression, improving water tight sealing.
3. Place the thruster housing on the SRF flange.
4. Insert and lightly fasten bolts to allow for the future removal of the washer spacers.
   - Allow the MS Polymer or equivalent to semi-cure and then remove the washers.
5. 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.
6. After assembly, apply a polymer sealant bead to the joint between the flange and the housing on the inside.

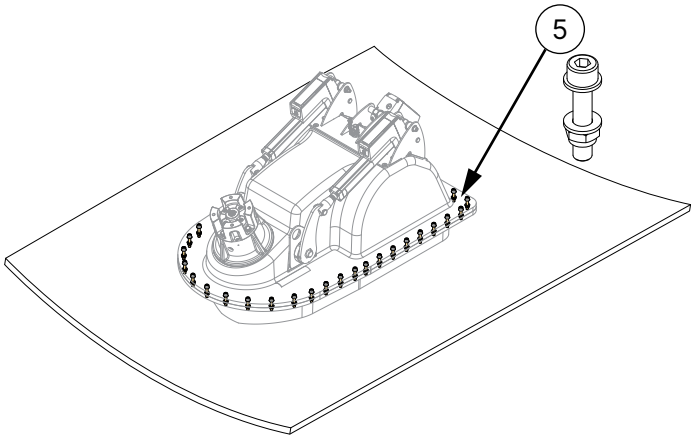
MC_1263

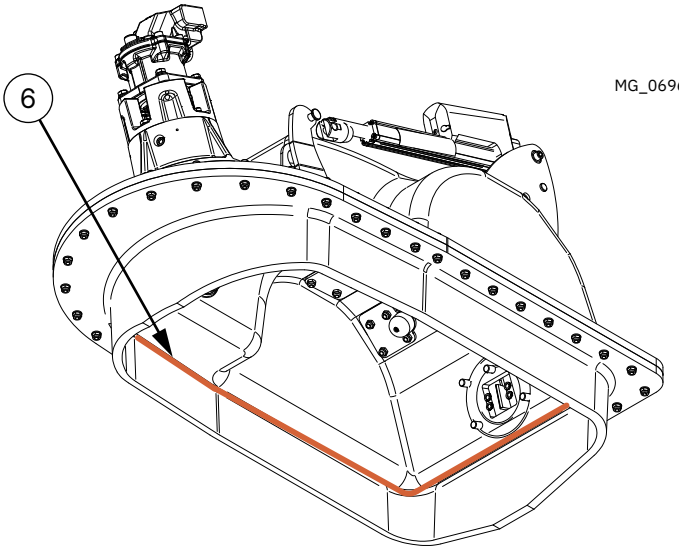












MG_0696

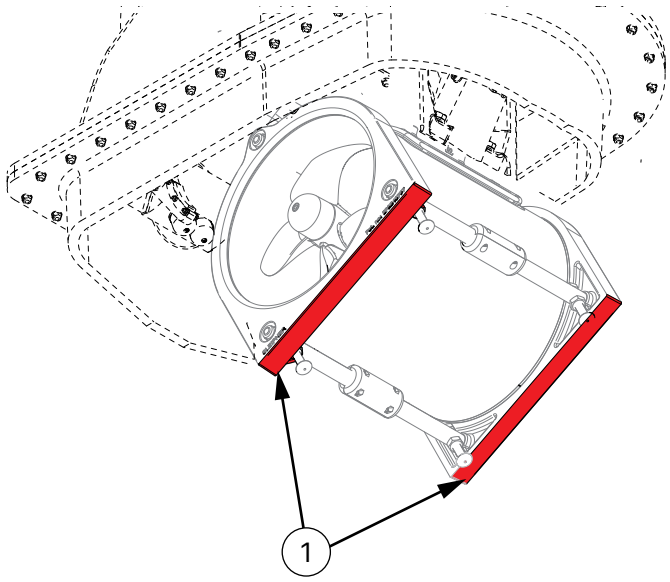
- Ensure that the thruster is in the outer position

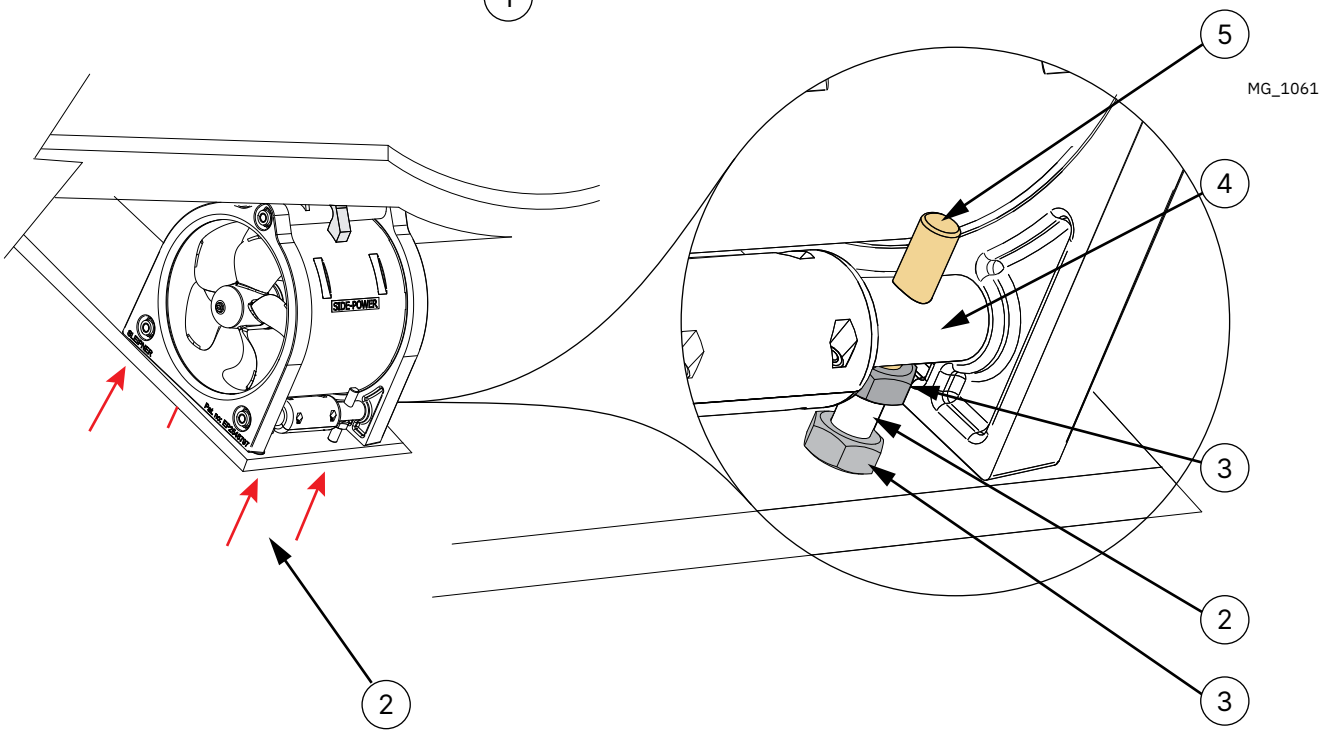
1. Apply glue on the twist ring facing the hatch.
2. Enter the hatch bolts through the hatch,
3. Enter the lock nuts on the bolt. Position the nuts close to the inside of the hatch, but do not tighten.
4. Enter the bolts in to the bolt holes in the thruster housing.
5. Bolt the hatch to the tunnel. Ensure the bolts do NOT conflict with the tunnel.
   Note: 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.

MC_0786

- 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.





MG_1061

- Lower down the thruster.

1. Apply a layer of aluminium or duct tape on hatch opening edges on the hull. This is for masking out for the adhesive in the next step.

2. Apply filler or equivalent to hatch edges in such amount that it will fill the gap between the hull and the hatch.

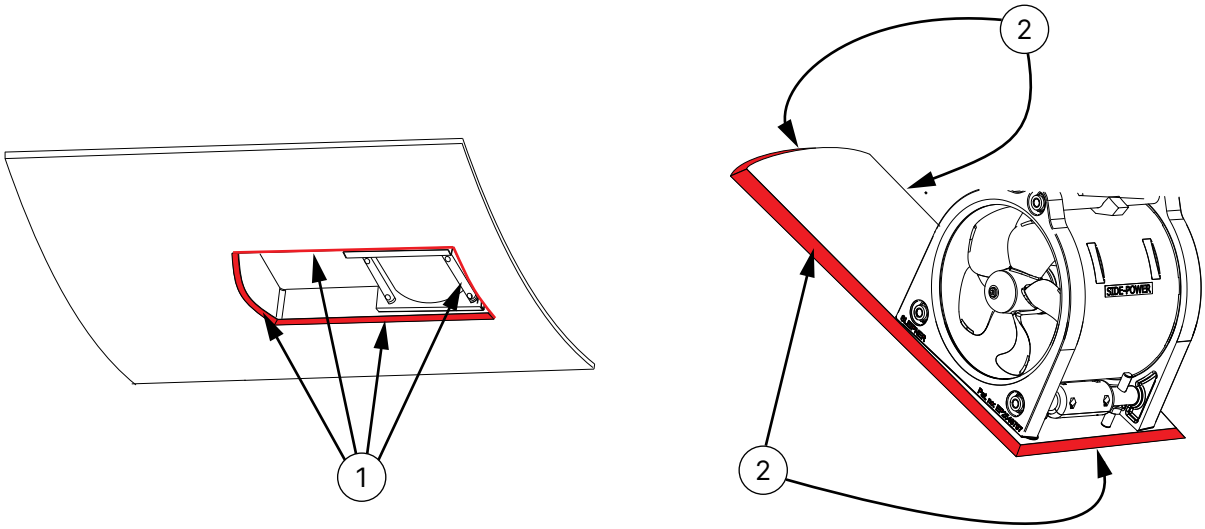
- Operate the thruster to “IN” position. Smooth out the filler and add more if needed. After curing time, grind and smooth the surface. Apply glue on twist rings contact surface.

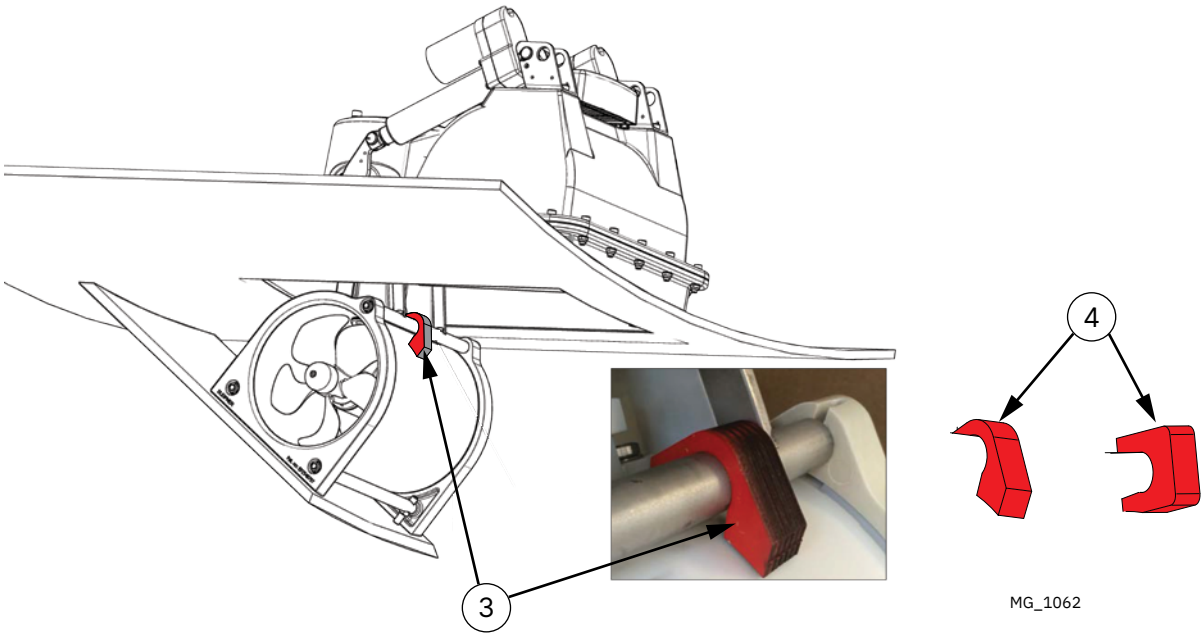
- Apply coating inside and outside of the hatch and on the hull to cover the fiberglass and filler.

3. Remove the red spacer block located above the tunnel.

4. **Note: Several types and numbers of spacer block may be used.**

MC_0788





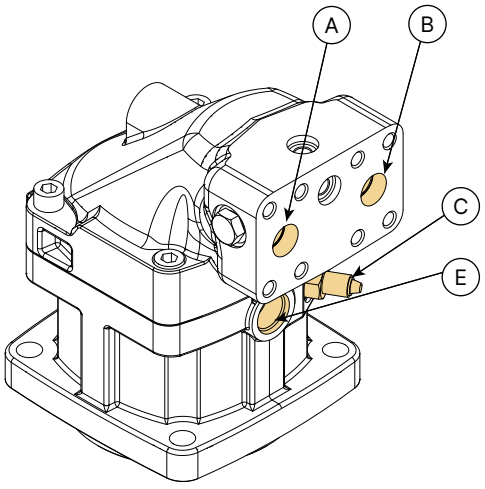
MG_1062

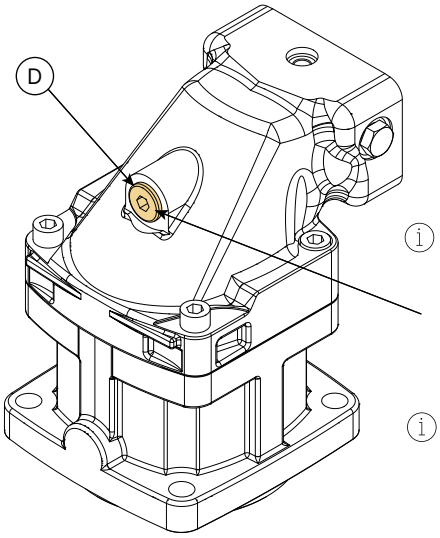
Follow the defined hose specifications and connect hydraulic hoses to the motor.

Motor type	Port A/B	Port Flange Threads	Drain Port
BA40	3/4” 6000 PSI SAE J518/ISO6162 Code 62	3/8” UNC-2B 20 deep	3/4” - 16 UNF
BA45	3/4” 6000 PSI SAE J518/ISO6162 Code 62	3/8” UNC-2B 21 deep	3/4” - 16 UNF
BA50	3/4” 6000 PSI SAE J518/ISO6162 Code 62	3/8” UNC-2B 20 deep	3/4” - 16 UNF
BA56	3/4” 6000 PSI SAE J518/ISO6162 Code 62	3/8” UNC-2B 21 deep	3/4” - 16 UNF
BA60	3/4” 6000 PSI SAE J518/ISO6162 Code 62	3/8” UNC-2B 22 deep	7/8” - 16 UNF
BA80	1” 6000 PSI SAE J518/ ISO 6162 Code 62	7/16-14 UNC-2B 19 deep	7/8”-14 UNF
BA90	1” 6000 PSI SAE J518/ ISO 6162 Code 62	7/16-14 UNC-2B 19 deep	7/8”-14 UNF
BA110	1 1/4” 6000 PSI SAE J518/ ISO 6162 Code 62	1/2-13 UNC-2B 19 deep	1 1/16-12 UNF
BA125	1 1/4” 6000 PSI SAE J518/ ISO 6162 Code 62	1/2-13 UNC-2B 19 deep	7/8”-14 UNF
BA160	1 1/4” 6000 PSI SAE J518/ ISO 6162 Code 62	1/2-13 UNC-2B 19 deep	7/8”-14 UNF
BA180	1 1/4” 6000 PSI SAE J518/ ISO 6162 Code 62	1/2-13 UNC-2B 19 deep	7/8”-14 UNF

MC_0657

BA - Hydraulic Motor





A) Port A
B) Port B
C) Speed sensor (optional)
D) Drain port 2
E) Drain port 1

ⓘ IMPORTANT
Always use the upper positioned drain port for optimal lubrication of the motor.

ⓘ Pre fill motor housing from the upper drain port with hydraulic oil before start-up

MG_0683

1. Plan the location of Sleipner Retract Controller (SRC-3) before starting with the electrical installation. Actuators are delivered with 5m cables. The SRC-3 must be mounted in a location that allows for connection of the actuator cables. Excessive cable lengths should be cut down to ensure an installation where the cables are properly laid out and fixated to avoid cable chafing and being caught in moving parts.

   Electrical products installed in gasoline engine spaces or other areas potentially exposed for explosive gases must be Ignition Protected. Products installed in such locations should conform to relevant standards, such as ISO 8846, SAE J1171 or UL 1500.

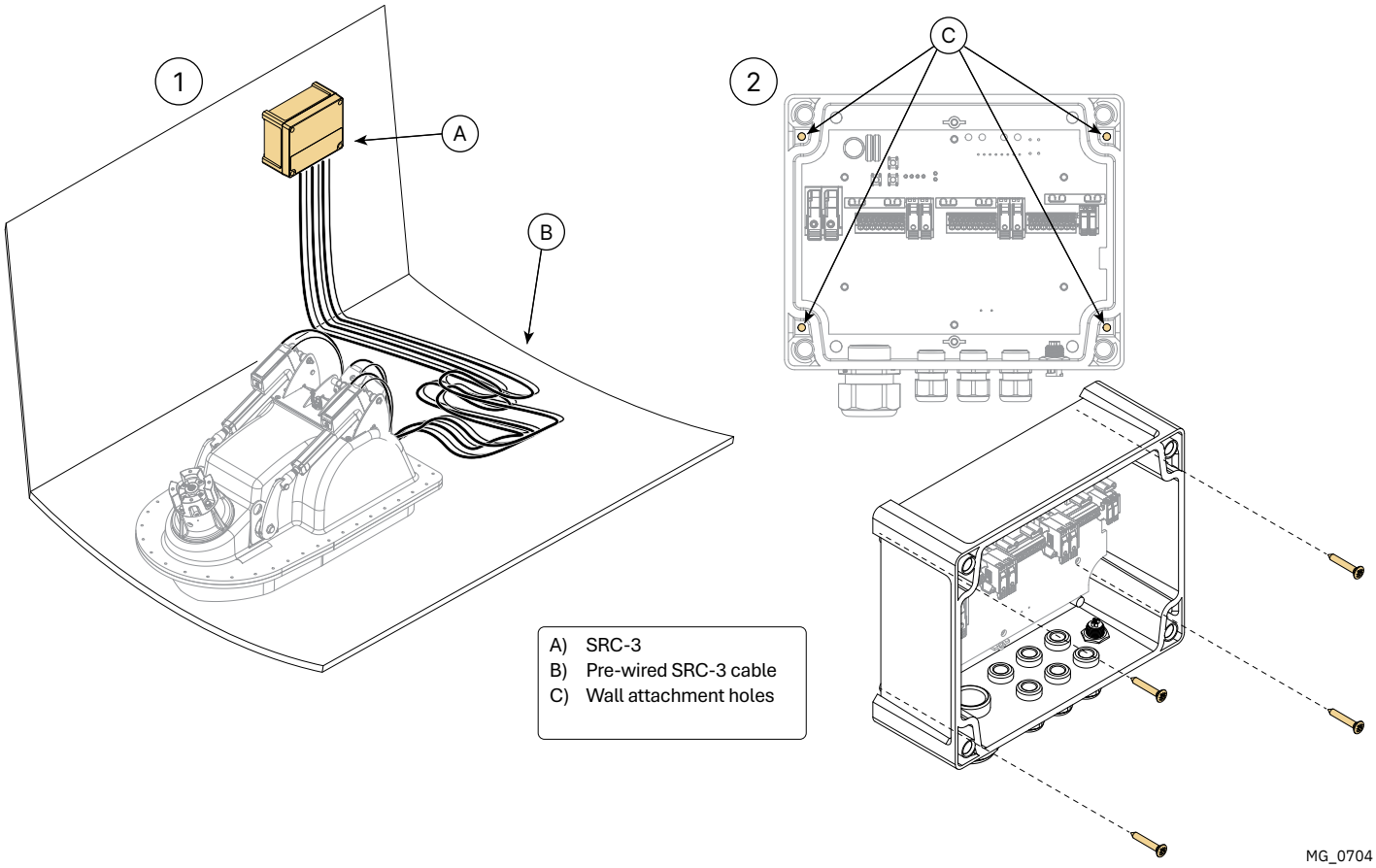
2. Install SRC according to instruction in chapter SRC-3 Installation.

SRC-3 installation

1. Install the SRC-3 close to the retract thruster, preferably on a vertical surface with cables facing down.
   Note: The SRC-3 is delivered pre-wired with 5m cables. After initial installation of the retract thruster the SRC-3 will require re-wiring after cutting the cables to the shortest required length.

2. Remove lid and use the four mounting holes to mount the SRC-3.

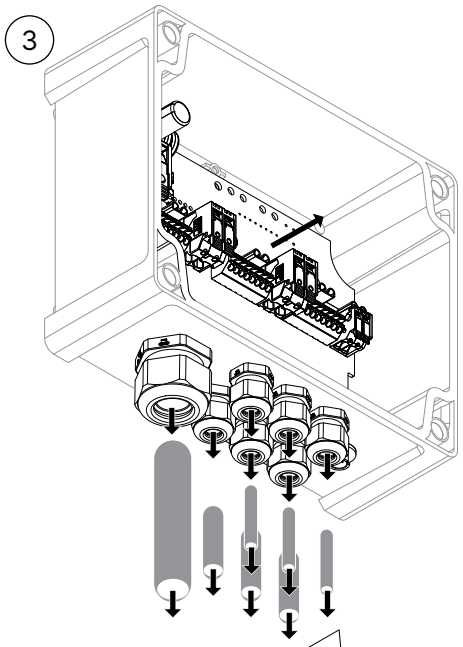
MC_0655

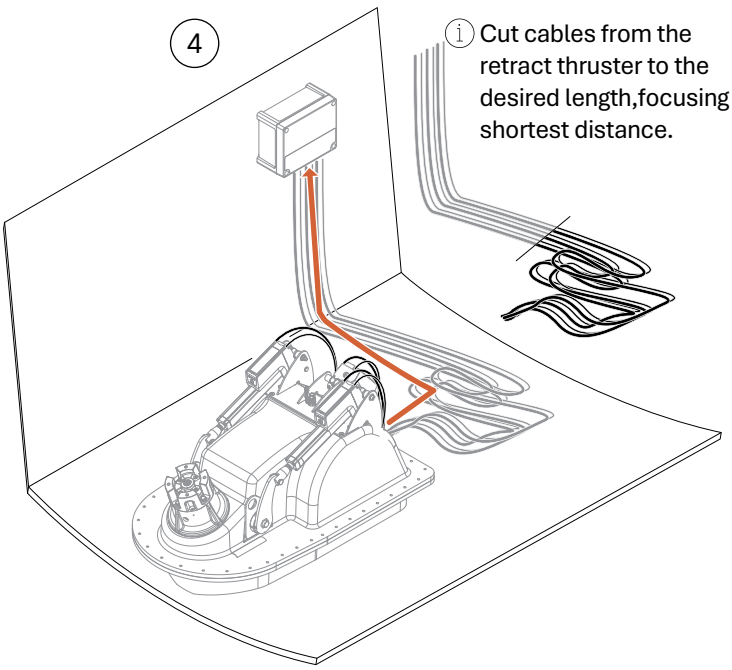


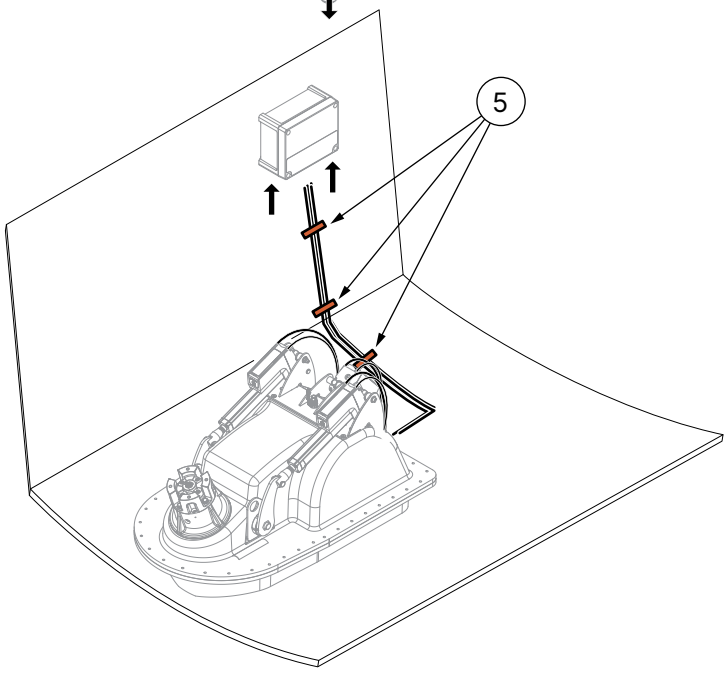
MG_0704

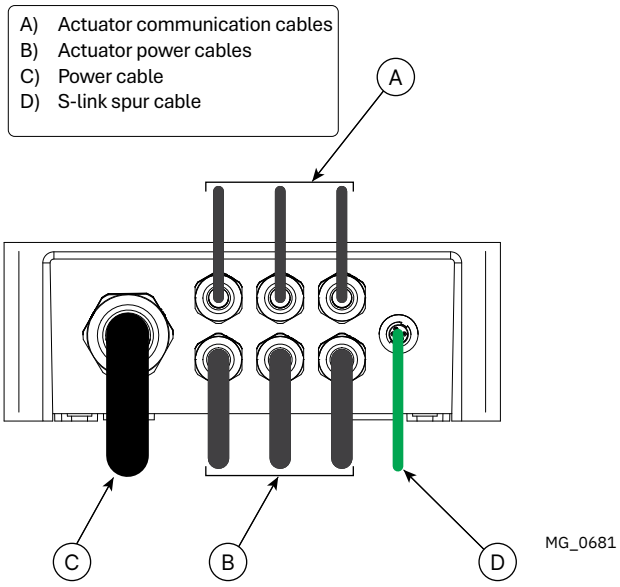
3. Remove all the pre-installed wiring connections and cables from the SRC-3 control box.
4. Plan the new wiring route from the retract thruster to the SRC-3 control box ***Note: Minimize the cable lengths as much as possible.*** Cut the cables at the SRC-3 control box end.
5. Secure the cable network route.

MC_0655





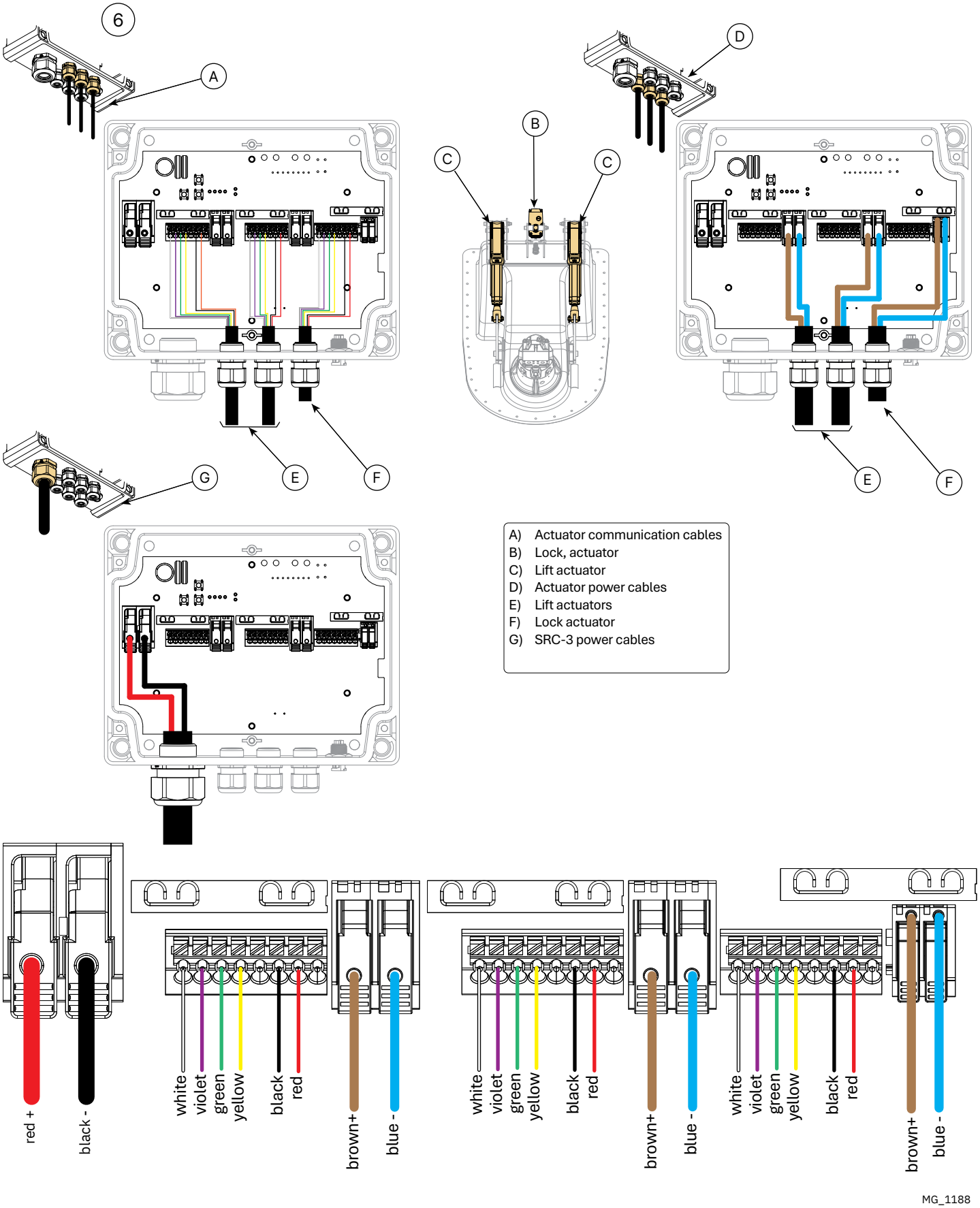




MG_0681

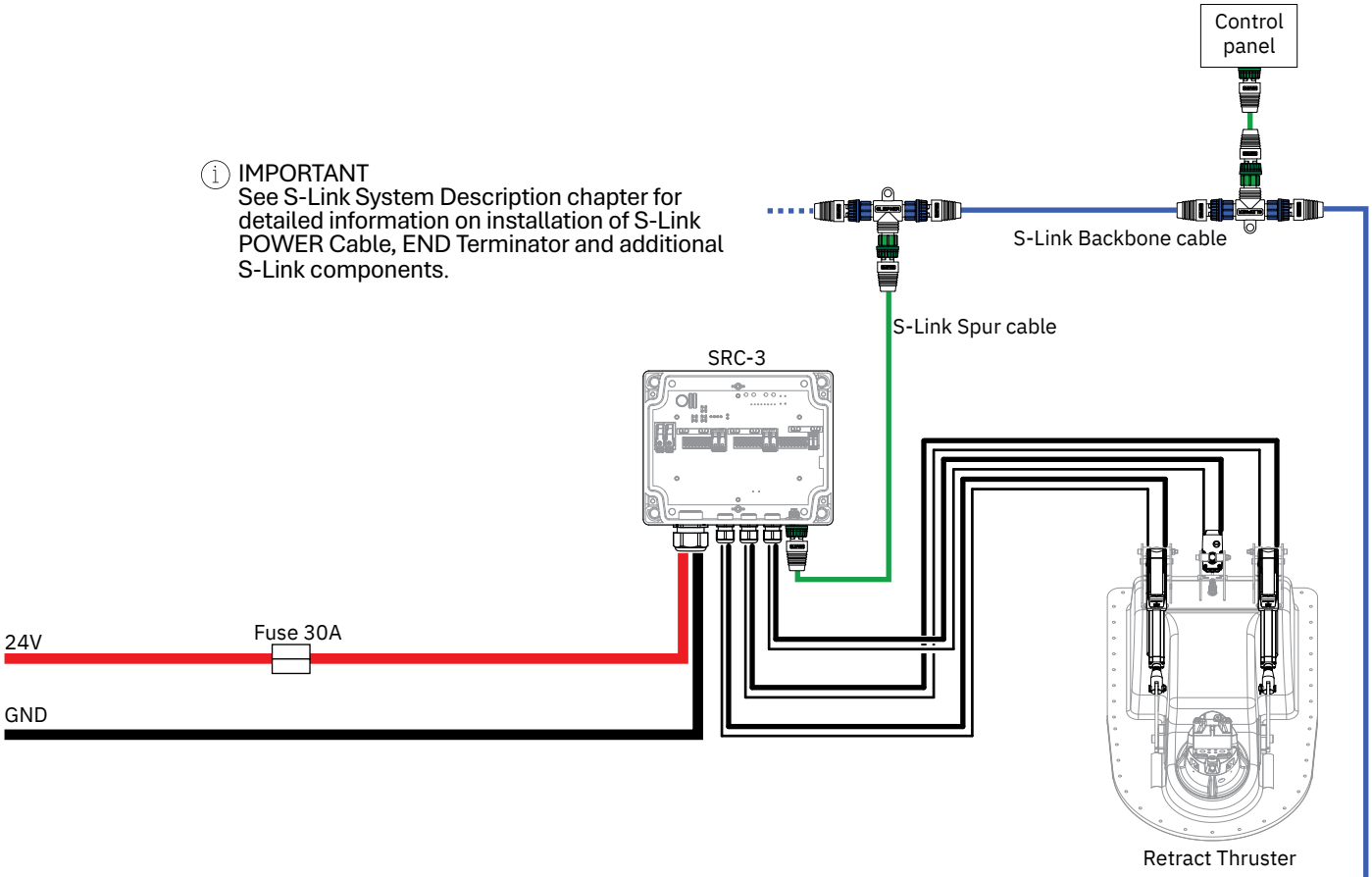
6. Insert the cables back into the control box. See figure for specification of cable entry into SRC-3 and location of actuator types..

MC_0655

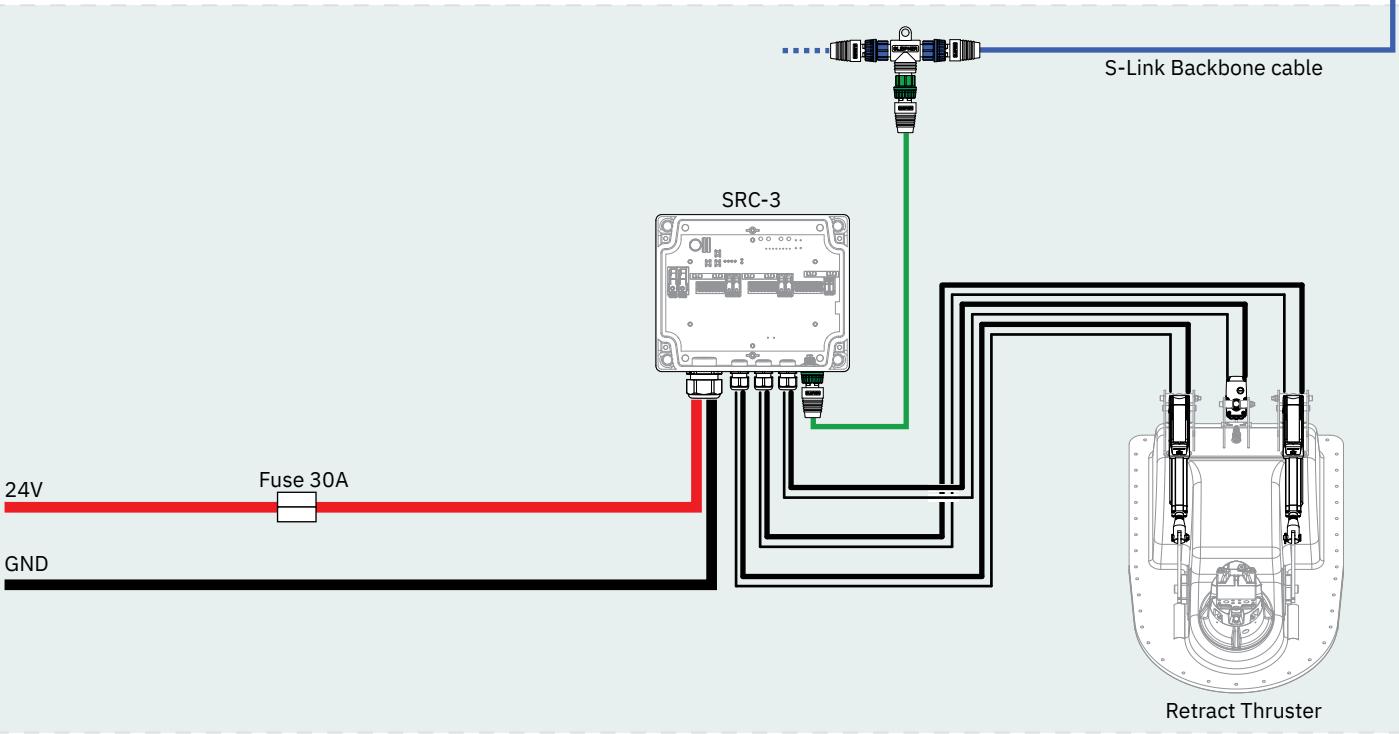


MG_1188

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_0625

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:

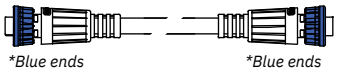
Select appropriate cables to keep the length of BACKBONE- and SPUR Cables to a minimum. In case of planned installation with total BACKBONE Cable length exceeding 100 meters please consult your local distributor. The S-Link cables should be properly fastened when installed to avoid sharp bend radius, 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.

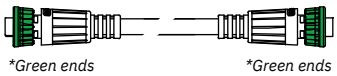
To reduce the risk of interference, avoid routing the S-Link cables close to equipment such as radio transmitters, antennas or high voltage cables. The backbone must be terminated at each end with the END Terminator.

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.

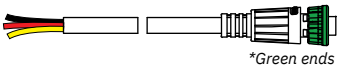
MC_0120



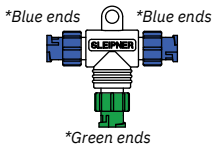
BACKBONE Cable
Forms the communication and power bus throughout a vessel. Available in different standard lengths.



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.



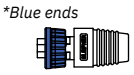
POWER Cable
Required in all installations for connection of BACKBONE Cable to a power supply and should be protected with a 2A fuse.



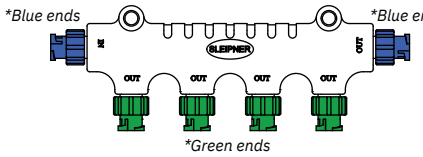
T-Connector
Used for connection of SPUR or POWER Cable to the BACKBONE Cable. One T-Connector for each connected cable.



BACKBONE Extender
Connects two BACKBONE Cables to extend the length.

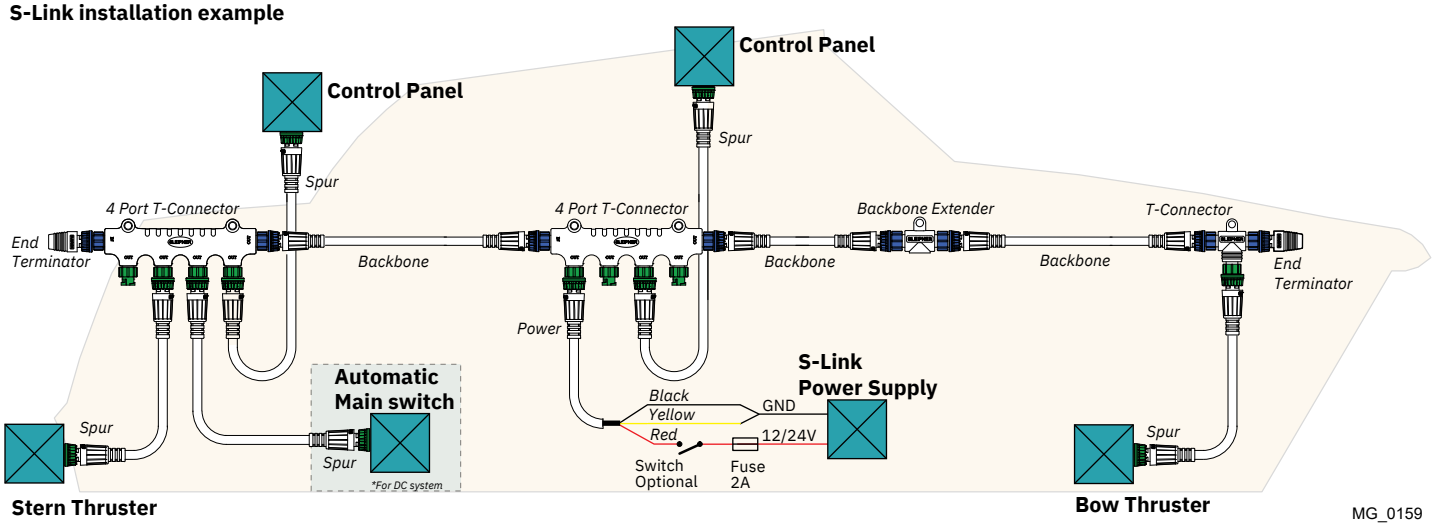


END Terminator
Must be one at each end of the BACKBONE bus.



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

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

Serivce and support

Find your local certified Sleipner dealer for expert service and support.

Scan the QR code or visit: sleipnergroup.com/support

Spare parts

Find spare parts and additional resources for your Sleipner product.

Scan the QR code or visit: sleipnergroup.com/spare-parts

Patents

Learn more about Sleipner's patented designs and technological innovations in the marine industry.

Scan the QR code or visit: sleipnergroup.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.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.

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CE Declaration of conformity (DoC)

We, the manufacturer:	**Sleipner Motor AS** Arne Svendsens gate 6-8, NO 1612 Fredrikstad, Norway
With ISO 9001 certificate:	1484-2007-AQ-NOR-NA, issued by DNV-GL
Declare that the product: **Product Description:** Retract thruster hydraulic **Model Number:** SRHP650	
Subject to installation, maintenance and use conforming to their intended purpose, is in conformity with the provisions of the following EU Directives: • Electromagnetic Compatibility (EMC) - Directive 2014/30/EU • Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) - Directive 2011/65/EU	
The product is designed to meet the standards and criteria outlined in:	**EMC** EN 60945:2002 IEC 60533:2015 **RoHS** EN 63000:2018

This declaration of conformity is issued under the exclusive responsibility of the manufacturer.

Fredrikstad, 1st of September 2023

Ronny Skauen, President and CEO



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SLEIPNER MOTOR AS

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N-1612 Fredrikstad

Norway

www.sleipnergroup.com

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