SLEIPNER

Ocean born. Tech bred.

Installation Manual

For Hydraulic Thruster Models
SH2200

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REVISION: 2

Installation Manual

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Warnings and Safety

It is essential to follow all instructions within this document to avoid potential personal injury, death, or damage to existing products in the vessel, the vessel's hull integrity, and including this product during installation or operation. Failure to follow instructions within this document will render all warranties given by Sleipner Motor as VOID.

Warnings and situations requiring extra caution are outlined in the documentation. Take extra consideration when warnings are outlined.

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

CAUTION
Indicates a potentially 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.

For Sleipner thruster systems:

- Do not install the thruster system in any position that requires modification of hull stiffeners or stringers. This might jeopardize the hull integrity. Consult with the boat builder to see if this can be done safely if absolutely necessary.
- Never run the thruster out of water. The propeller will reach extremely high speed, damaging the thruster.
- The thruster motor must be handled with care. Do not rest the motor on its drive shaft, as its weight can damage it.

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

- Install an oil filter to keep the oil clean.
- Fit an oil cooler to ensure that the maximum oil temperature is below 75°C. Recommended operation temperature of hydraulic oil is 40-60°C.
- Hydraulic thrusters are supplied with hydraulic motors only.
- The installed hydraulic system is the responsibility of the fitter/ installer and must be within the limitations outlined in this manual to ensure no damage is caused to the thruster.
- The hydraulic valve must have flow and pressure limits that are either set within or can be adjusted to the limits of the thrusters capability.
- We strongly advise that a shock valve is fitted and set to 10% - 15% above the chosen maximum pressure set in the valve. This will prevent the system from being damaged if the propellers are blocked for any reason.
- Sleipner S-Link™ system must be used for thruster control.

For Sleipner S-Link™ systems:

- Only Sleipner S-Link™ products or authorized 3rd party control equipment can be directly connected to the S-Link™ bus. Non-authorized 3rd party equipment must always be connected through a Sleipner interface product.
- Any attempt to connect to the S-Link™ bus without an authorized 3rd party control equipment will void all warranties for the connected Sleipner products.
- If 3rd party control equipment is interfaced the S-Link™ bus through a Sleipner interface product, it is required to install at least one Sleipner control panel to enable efficient troubleshooting.

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Product dimensions

Measurement code	Measurement description	SH2200	
		mm	inch
ID(min)	Internal tunnel diameter	730	28,8
H	Total height	372	14.65
W	Width	902	35.51
L	Length	620	24.40
X	Motor height *	See *	
WD	Recomended water depth	1400	55
WD(min)	Minimum water depth	1100	43
TL(min)	Minimum tunnel length	1100	43
TL (recommended)	Recommended tunnel length	1500	59
T (min)	Minimum tunnel wall thickness	12	0,47
T (max)	Maximum tunnel wall thickness	30	0,98

* See the table i the topic “Hydraulic motor measurements” for the correct measurements for your selected motor.

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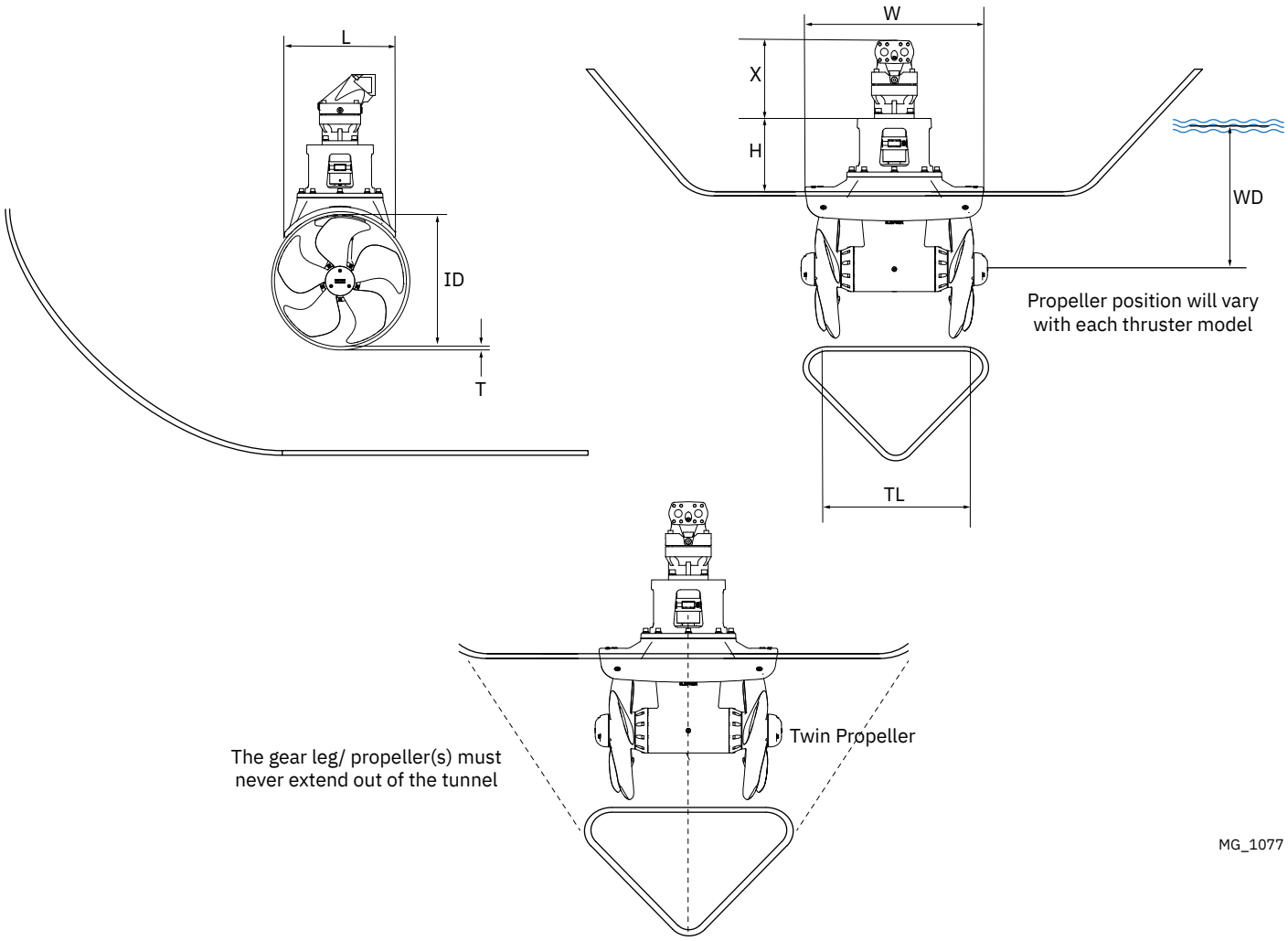

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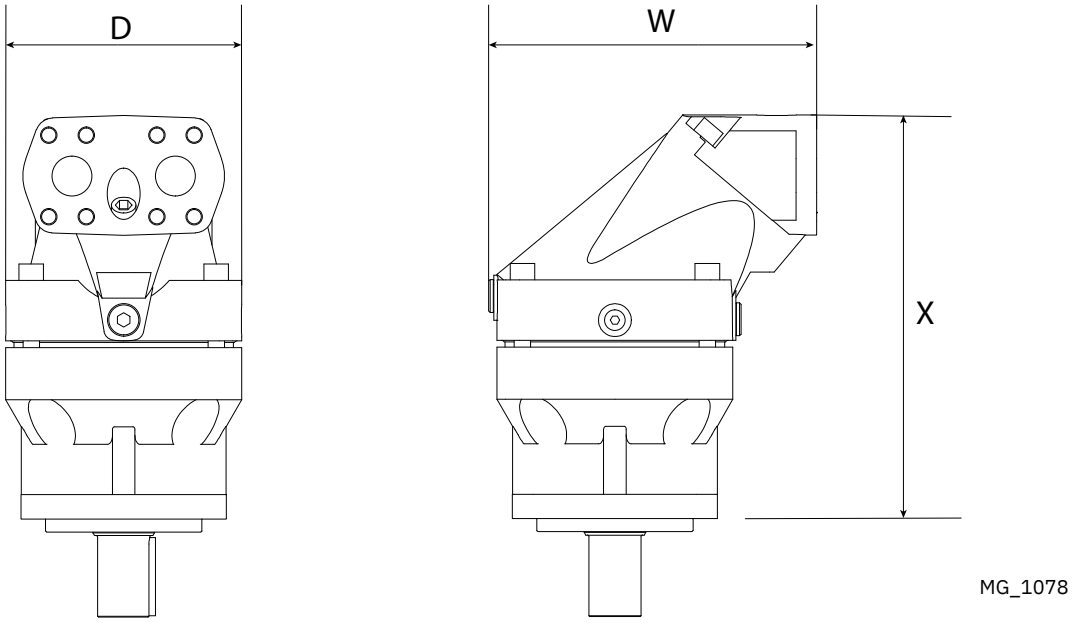
Hydraulic motor dimensions

Measurement code	Measurement description	BA200		BA250		BA355	
		mm	inch	mm	inch	mm	inch
X	Motor height	305	12,0	395	15,6	348	13,7
W	Motor width	283	11,1	315	12,4	367	14,4
D	Motor depth	2236	88,0	232	9,1	334	13,1

MC_1076



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Product Specifications

Product	Lubrication	Light Duty *) Thrust kg/lbs	Heavy Duty*) Thrust kg/lbs	Motor output power kW/Hp	Weight kg/lbs (Gear and motor assembly)	Duty type
SH2200	Gear oil: Meropa EliteSyn XM 150 Gravity feed, oil bath from header tank. On water oil change	2200 kg / 4850 lbs	2200 kg / 4850 lbs	138 kW / 188 Hp	441 kg / 972 lbs	Continous

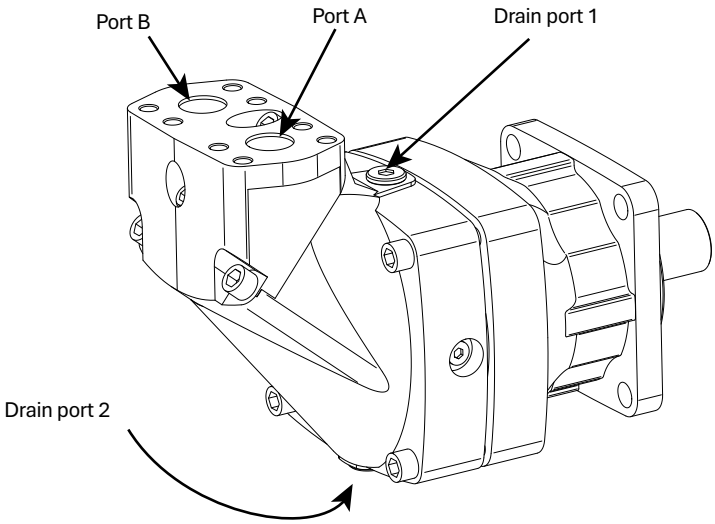
*) Nominal thrust without grids, and that the installation has been carried out in accordance with Sleipners recommendations.

Flow and Pressure Specifications

Thruster model	Motor type		60 %		80 %		100 %	
			Pressure	Flow	Pressure	Flow	Pressure	Flow
SH2200/730	BA200	L/min-Bar	219	184	292	213	n/a	n/a
		USG-PSI	57,9	48,7	77,2	56,3	n/a	n/a
	BA250	L/min-Bar	181	223	241	257	302	288
		USG-PSI	47,9	59,0	63,8	68,0	79,9	76,2
	BA355	L/min-Bar	123	334	156	385	206	431
		USG-PSI	32,5	88,4	41,3	101,9	54,5	114,0

MC_1069

BA motor



Pre fill motor housing with hydraulic oil before start-up

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

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Motor type	Port A/B	Port flange threads	Drain port	Weight kg/lbs
BA200	1.1/4" 6000 PSI SAE-J518/ISO6162 Code 62	M14x2	M22X1,5	66/145.5
BA250	1.1/2" 6000 PSI SAE-J518/ISO6162 Code 62	M16x2	3/4" BSP	77/170
BA355	1.1/2" 6000 PSI SAE-J518/ISO6162 Code 62	M16x2	M33X2	110/243

MC_1070

1. **Aim to install the thruster as far forward as possible**
   Due to the leverage effect around the boats' pivot point. The distance difference from the boat pivots' point to the thruster will determine the amount of real rotation power for the boat.

2. **Aim to install the thruster as deep as possible.**
   Deeper installations prevent air from being sucked into the tunnel from the surface, resulting in reduced thrust performance and increase noise levels during operation. Deeper installations increase water pressure for maximum efficiency from the thruster.

The tunnel depth is of great importance for optimal thrust. ***(Refer to product measurements to define your products recommended depth below the waterline.)*** The installer must make evaluations based on thruster performance, boat type and operating conditions. As a general recommendation, the position of the tunnel should not be a minimum of 1/4 of the diameter of the tunnel from the boat keel. ***(NB: This can be overlooked depending on the installation methods defined in this manual.)***

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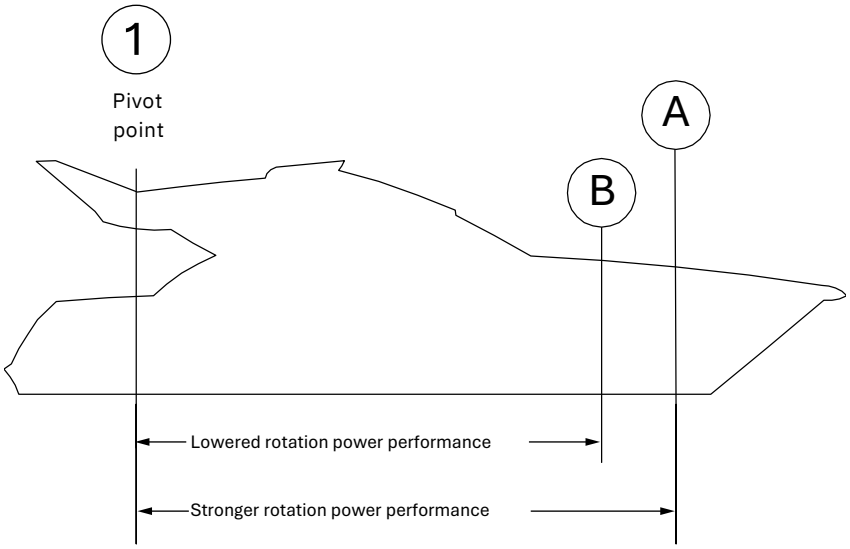
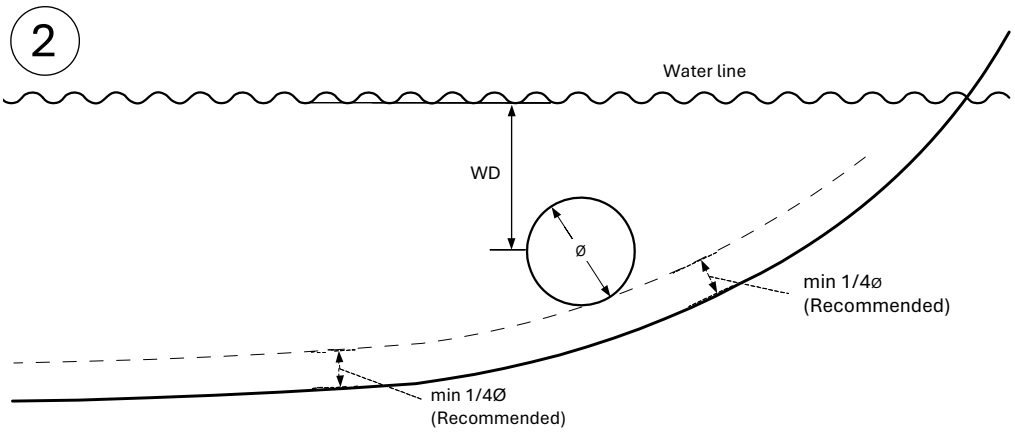




MG_0001

Optimal tunnel length
Achieving the correct tunnel length depends on many factors from the hull type, operation and environmental conditions. Tunnels should avoid being longer than 4 x the tunnel diameter as this will reduce thruster performance. ***(NB: Installing long length tunnels can flex/ bend over time and may require additional support. Consult with a naval architect.)***

1. Do not allow the variable length of the tunnel walls to vary in length excessively.
   EG. The top tunnel wall is x 4 longer than the bottom wall.

2. If the tunnel is too long, the friction inside will reduce the water speed and thereby the thrust.

3. If the tunnel is too short (typically only in the bottom section of the tunnel) cavitation problems can occur as water flow will not be able to "straighten" itself before reaching the propeller. This cavitation will reduce performance and increase noise during operation.

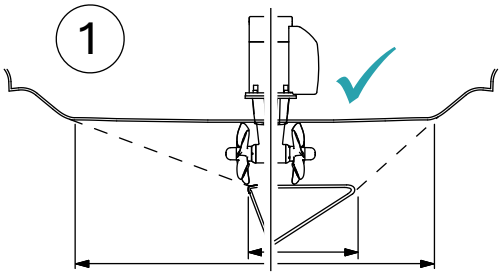
Thruster within the tunnel
It is important the propellers and the lower unit/ gearleg must be entirely inside the thruster tunnel. Propellers that protrude from the tunnel will not perform as intended.

4. **Standard Use**
   Tunnel length must be long enough to ensure the propellers are not extruding the tunnel. (***NB: Refer to product measurements to define your products recommended tunnel length.)***

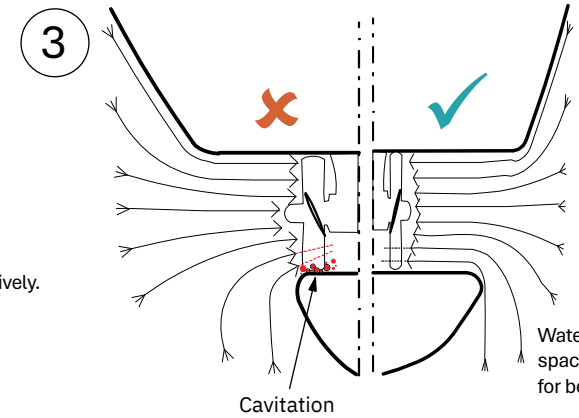
5. **Flat Bottom Hull**
   Tunnel lengths must be longer than the standard measurement outlined within the manual to ensure a circular vacuum is not created between the thruster and the bottom of the boat.

6. **High-Speed Boats**
   Tunnel lengths must be increased to protect the propeller from damage when crashing against the water surface during high-speed cruising. ***(NB:This can include the length of a spoiler)***

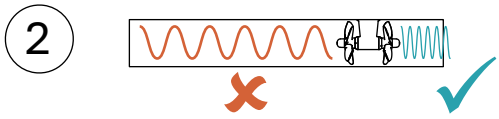
MC_1101



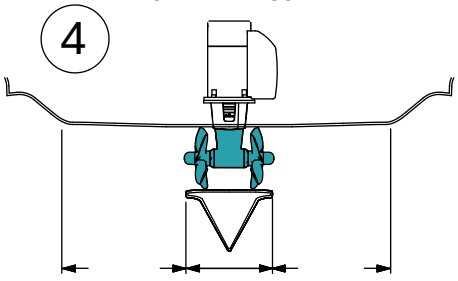
Do not allow the variable length of the tunnel walls to vary in length excessively.
EG. the top tunnel wall is x 4 longer than the bottom wall.



Water flow must have space to "straighten" itself for best performance.

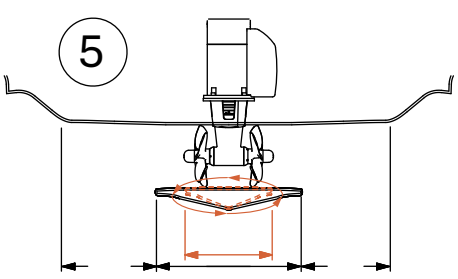


STANDARD USE



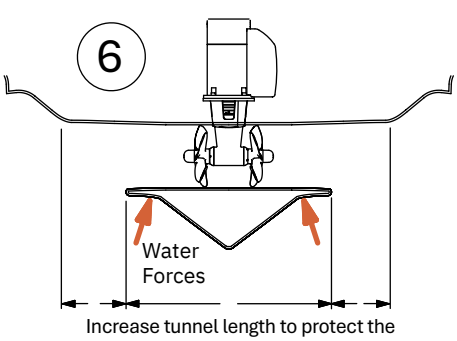
The gearleg/ propeller(s) must never extend out of the tunnel

FLAT BOTTOM HULL



Increase tunnel length to prevent a circular water vacuum cavity between the propeller and the hull of the boat.

HIGH-SPEED OPERATION



Increase tunnel length to protect the propeller from water forces when high-speed cruising.

MG_0048

1. A possible problem in sail boats or fast powerboats is that a non-rounded surface can generate drag from the back face of the tunnel, as it creates a “flat” area facing the flow of water.

   This problem can be solved in two different ways, depending on what is possible or easier to perform.

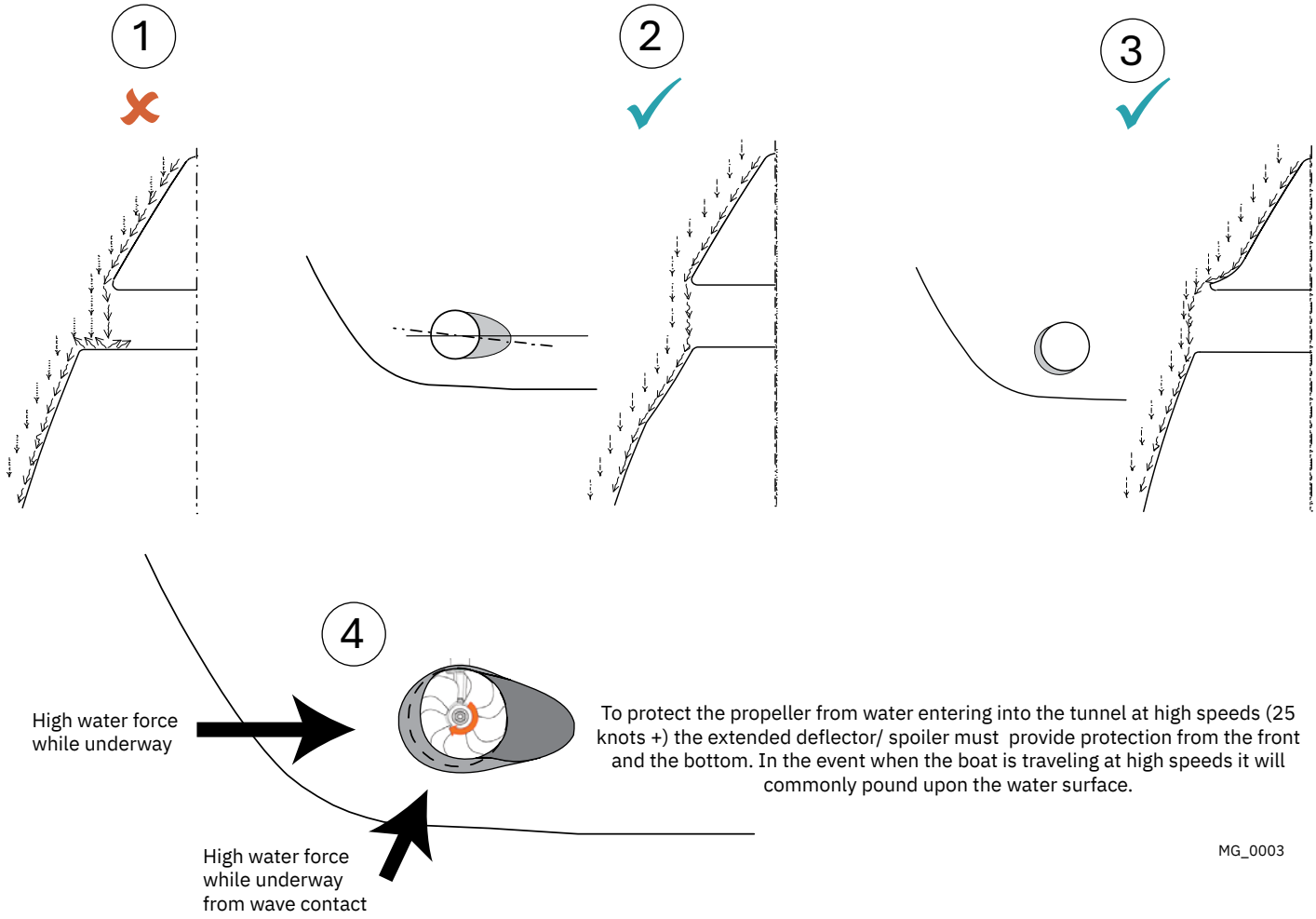
2. The best solution which generally reduces the most drag is to make a recess in the hull at the back of the tunnel. As the back face is removed water can flow freely past the tunnel entry. The depth and shape of this recess will depend on the boat and the angle facing up/ down aft of the tunnel insert. Normally it is angled slightly down because of the water flow on this area.

3. Making a deflector/ spoiler in front and underneath the tunnel can also reduce damage to the thruster and drag. The deflector/ spoiler will push the water flow out from the hull so water can pass by the back face of the tunnel. The shape and size of this deflector/ spoiler will depend on the hull shape. The easiest way of making the deflector/ spoiler is to retain a part of the lower forward area of the tunnel while installing the tube. Use this area as support to mould a soft curve/spoiler shape from the hull.

4. The thruster propeller can spin (passively) producing noise while sailing or cruising as water is forced through the tunnel. Water-flow directed through the tunnel at high speeds, during turning or as the boat bumps waves while underway can also damage the thruster.

(NB: As a rule, you should not see the back face of the tunnel when standing directly in front of the boat looking aft.)

MC1102



MG_0003

Rounded tunnel ends will maximise thrust and minimise noise and cavitation.

For best performance round the tunnel connection to the hull-side as much as possible. The minimum rounding has a radius of 10% of the diameter of the tunnel.

Significant advantages of a rounded tunnel over a sharp tunnel to hull connections are:

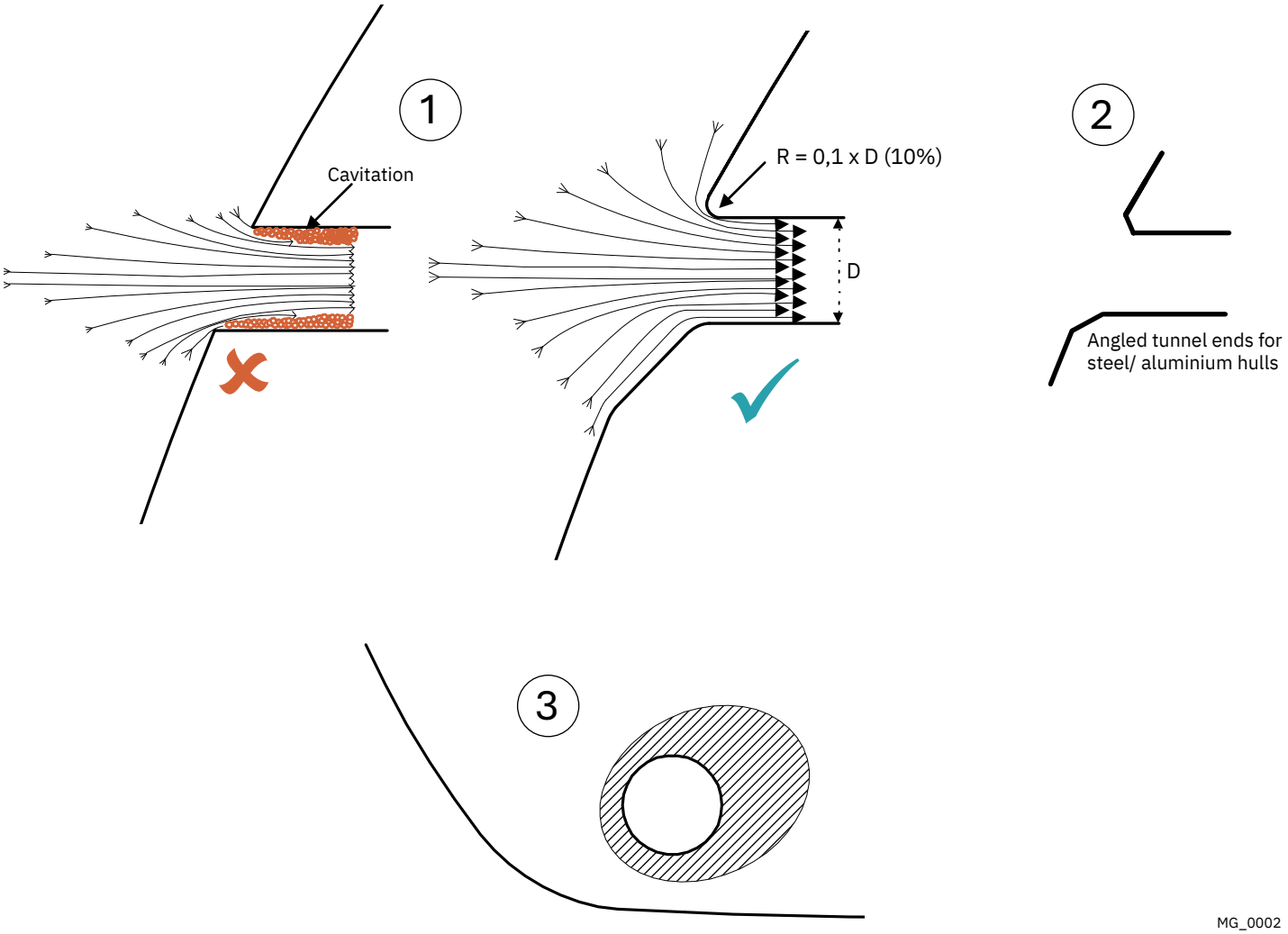
1. A rounded tunnel end will prevent the creation of turbulence/ cavitation created from a sharp tunnel end when water passes by the tunnel.
   - The turbulence/ cavitation will block the outer area of the tunnel and thereby reduces the effective tunnel diameter and thrust.
   - Turbulence/ cavitation on the propeller will lessen the thrusters performance and create excess noise.

2. For steel/ aluminium hulls angled tunnel ends also offer similar performance as a rounded connection.

3. A rounded tunnel end makes the thruster draw water from along the hull-side, creating a vacuum that will suck the boat sideways and thereby give additional thrust.
   - With a sharp tunnel end, the thruster will be unable to take water from along the hull-side, and you will not gain the desired vacuum and additional thrust. This “free” extra thrust in optimal installations be 30 - 40% of the total thrust.

(NB: A Sleipner thruster propeller does not produce cavitation at working speed. Therefore, any cavitation and cavitation noise in the tunnel will be caused during improper tunnel installation.)

MC_1103

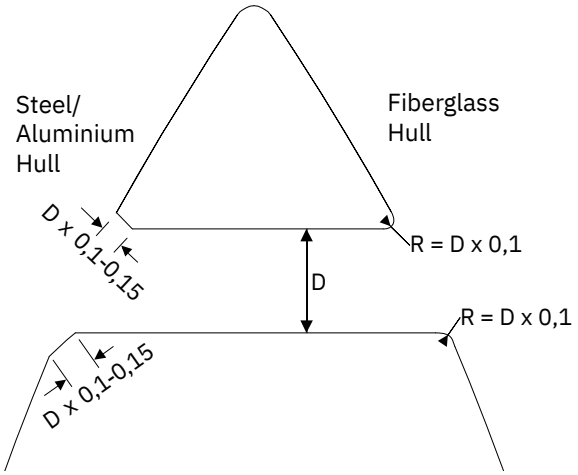


MG_0002

With tunnel installed and cast.

- Round the edges with a radius of 10% of the tunnel diameter.
- For steel/ aluminium hulls make a slope with a length of 10-15% of the tunnel diameter.
  (NB: If this is not possible, round the tunnel end as much as possible.)
- Coordinate with a ship designer to safeguard the structural strength of the hull when installing the tunnel.
- Follow the same method if making the deflector/ spoiler.

MC_1090



MG_1091

Important installation notice:

- Do not mount the thruster directly to the metal hull without galvanic isolation. Contact your dealer for purchasing the correct incl. installation instructions.
- Use only approved isolation components provided by Sleipner.
- Follow the installation instructions included with the isolation kit.

1. Mark the tunnel centreline and the boat's centreline.

2. Use the gasket or template (recommended) to mark the hole centres and double-check the measurements. The centre hole MUST be placed using the boat centreline as shown above. ***(NB: All holes must be in-line with the tunnels' centreline for correct installation, clearance between the propeller and the tunnel is minimal.)***

Truster model	Measurements									
	ØA		B		ØC		D		ØE	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
SAC/SH2200	160	6.30	130	5.12	26	1.02	50	1.97	37	1.46

MC_1000

3. Drill the main centre hole followed by the bolt holes. See dimensions in the table below.

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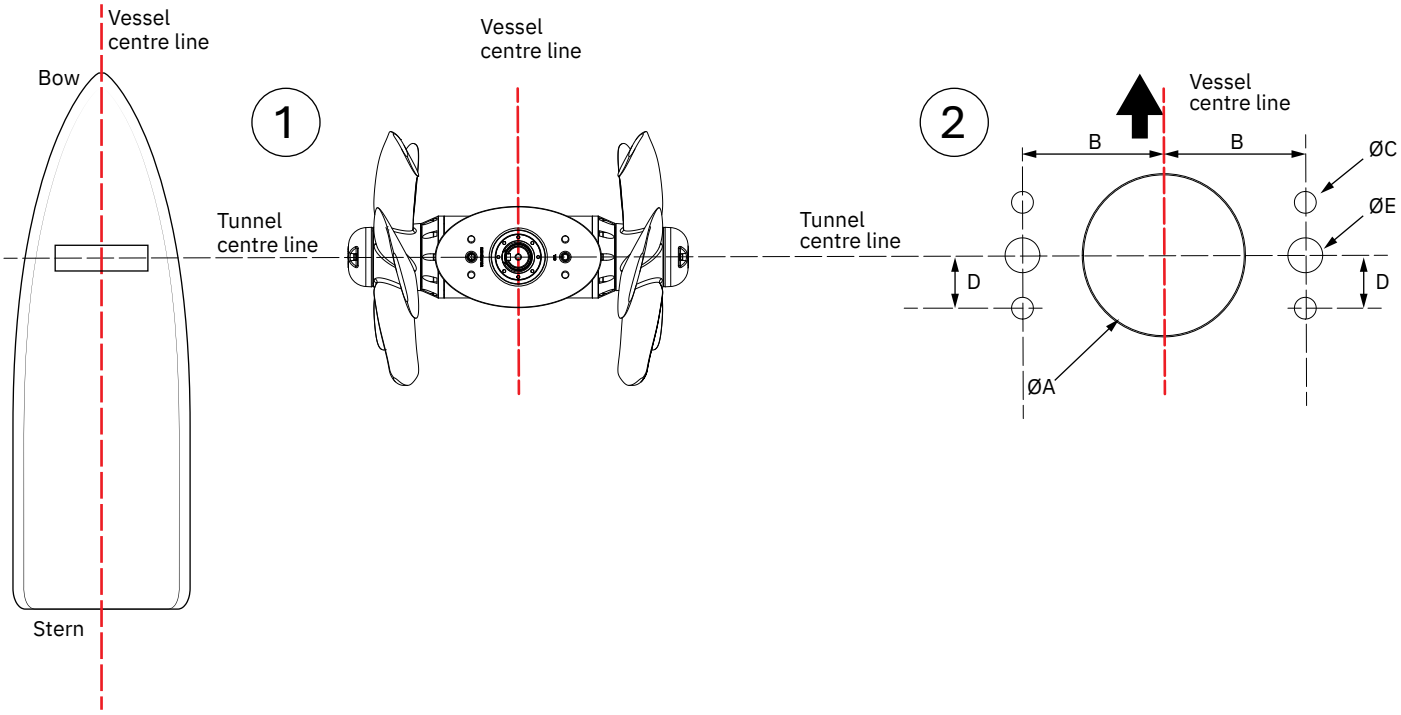

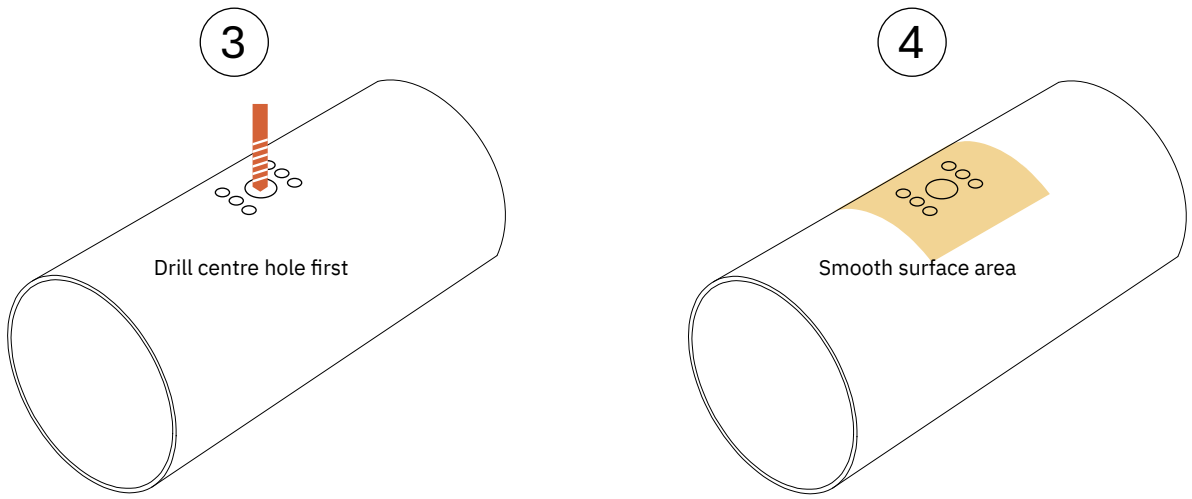

MG_0999

Important note:
- Gearleg will be marked with a dot indicating suction point orientation.
- Gearleg must be installed with suction point at the lowest position.
- For horizontal installation, gearleg might need to be flipped 180° to get suction at the lowest point.

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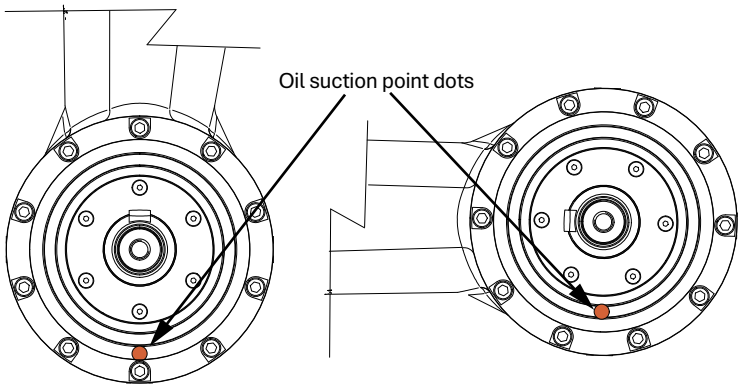


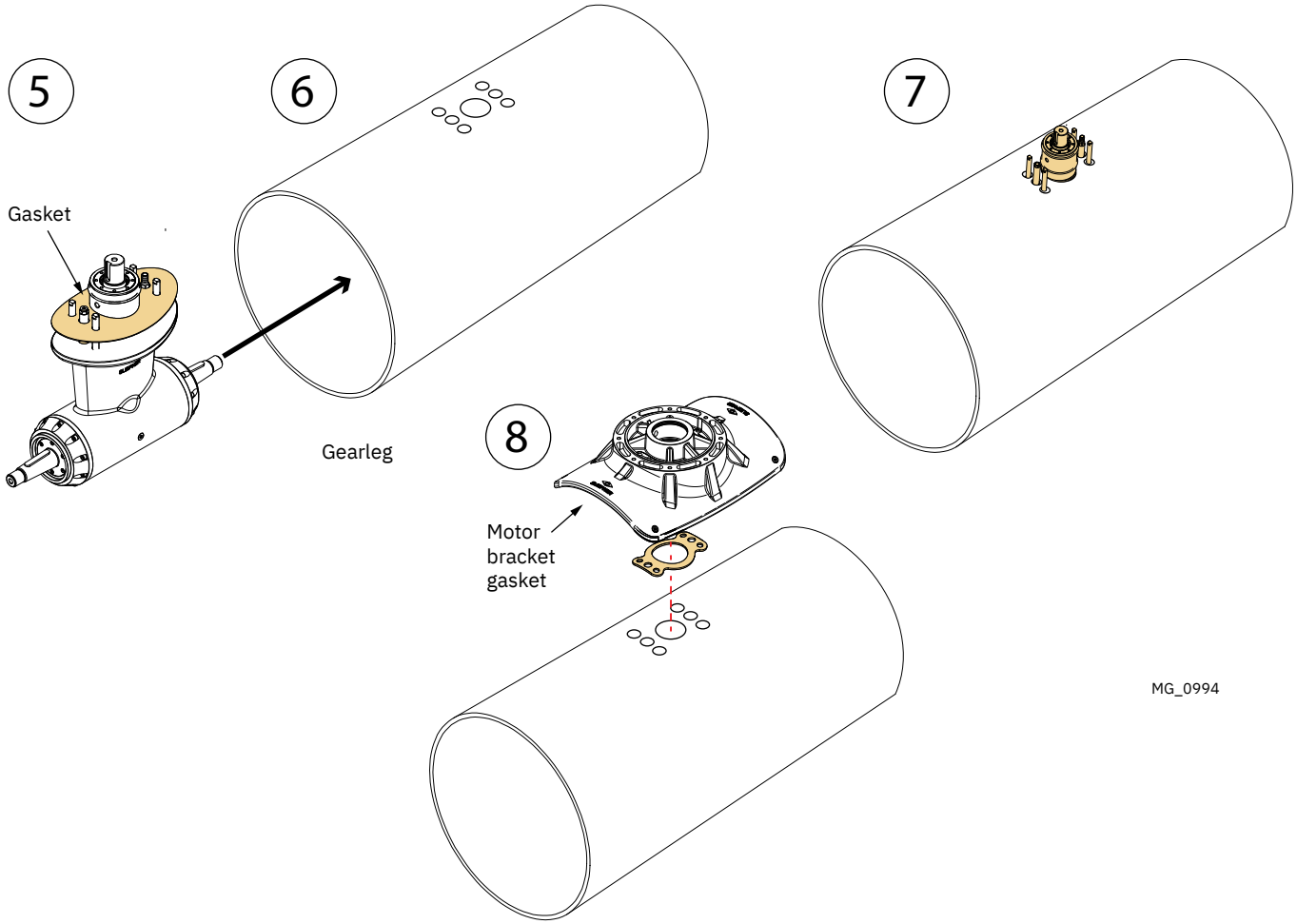
MG_1136

5. Apply an appropriate sealant to both sides of the gasket and place the gasket on the gearleg boss.
   See your sealant data sheet for the correct application process.)

6. Enter the gearleg in the tunnel.
   Note that there are threaded holes in both the propeller and the motor shafts, where the purpose is to enter an eye bolt for supporting the push and lift movement of the gearleg.

7. When the gearleg is in alignment with the predrilled holes in the tunnel, lift the gearleg to enter these holes.

8. Keep the gearleg in correct position by supporting it with a wood block or similar underneath.



MG_0994

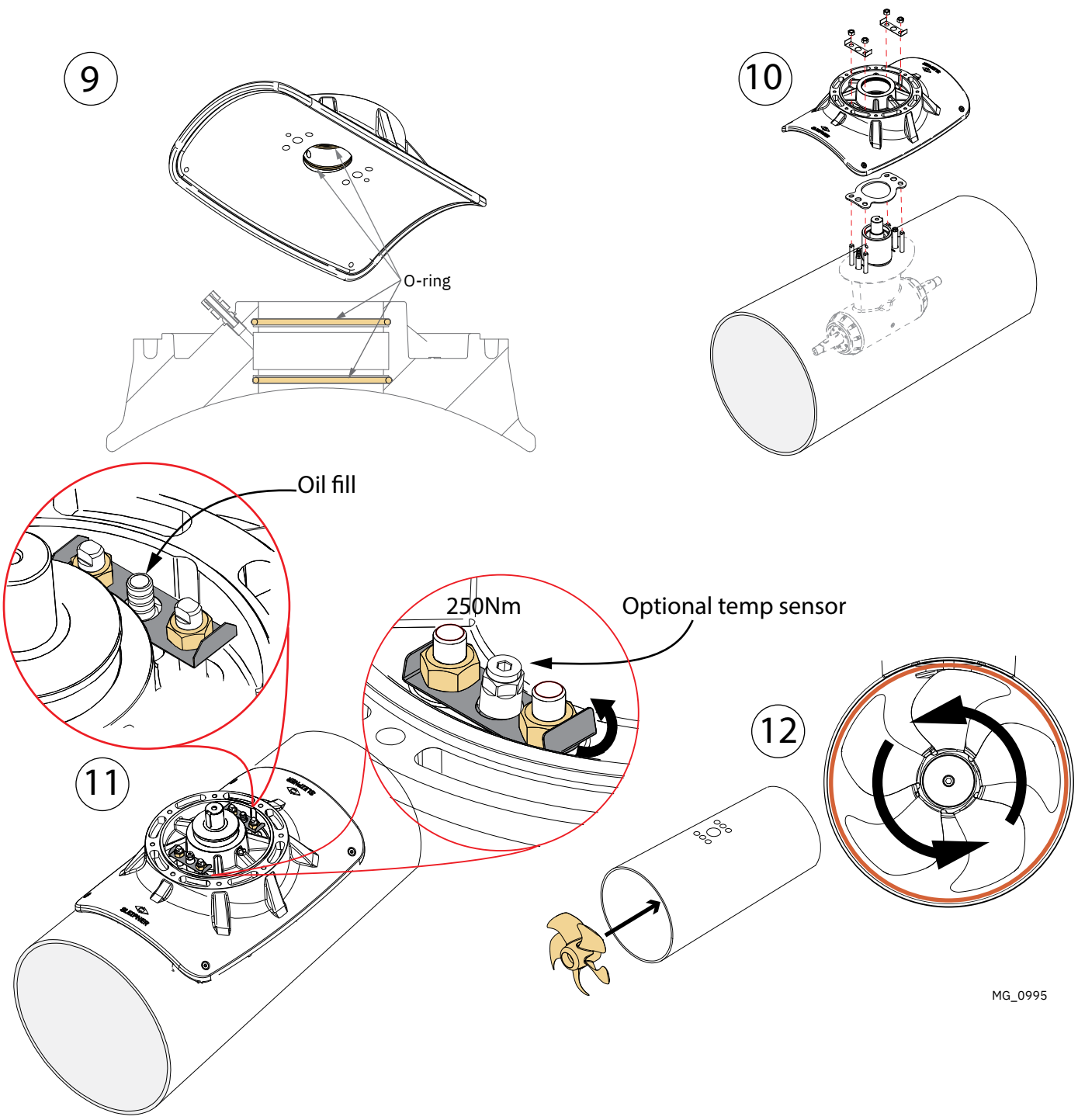
9. Apply oil or grease on the O-rings in the motor bracket before mounting it together with the gear house, to prevent damaging the O-rings during insertion. ***(NB: The gearleg neck and the inner surface of the motor bracket must remain clean.)***

10. Install the top motor bracket, the gasket and gearleg gently together.

11. Fasten the gearleg and the motor bracket with the bolts provided. Tighten to torque as shown.
Apply thread paste to the threads when entering to prevent the nut and bolt from seizing and get stuced.

12. Position the propeller onto the tapered shaft until it seats fully. Do not tighten or lock the propeller at this stage. Confirm that the propeller rotates unobstructed within the tunnel, ensuring adequate clearance and freedom of movement.

MC_1077

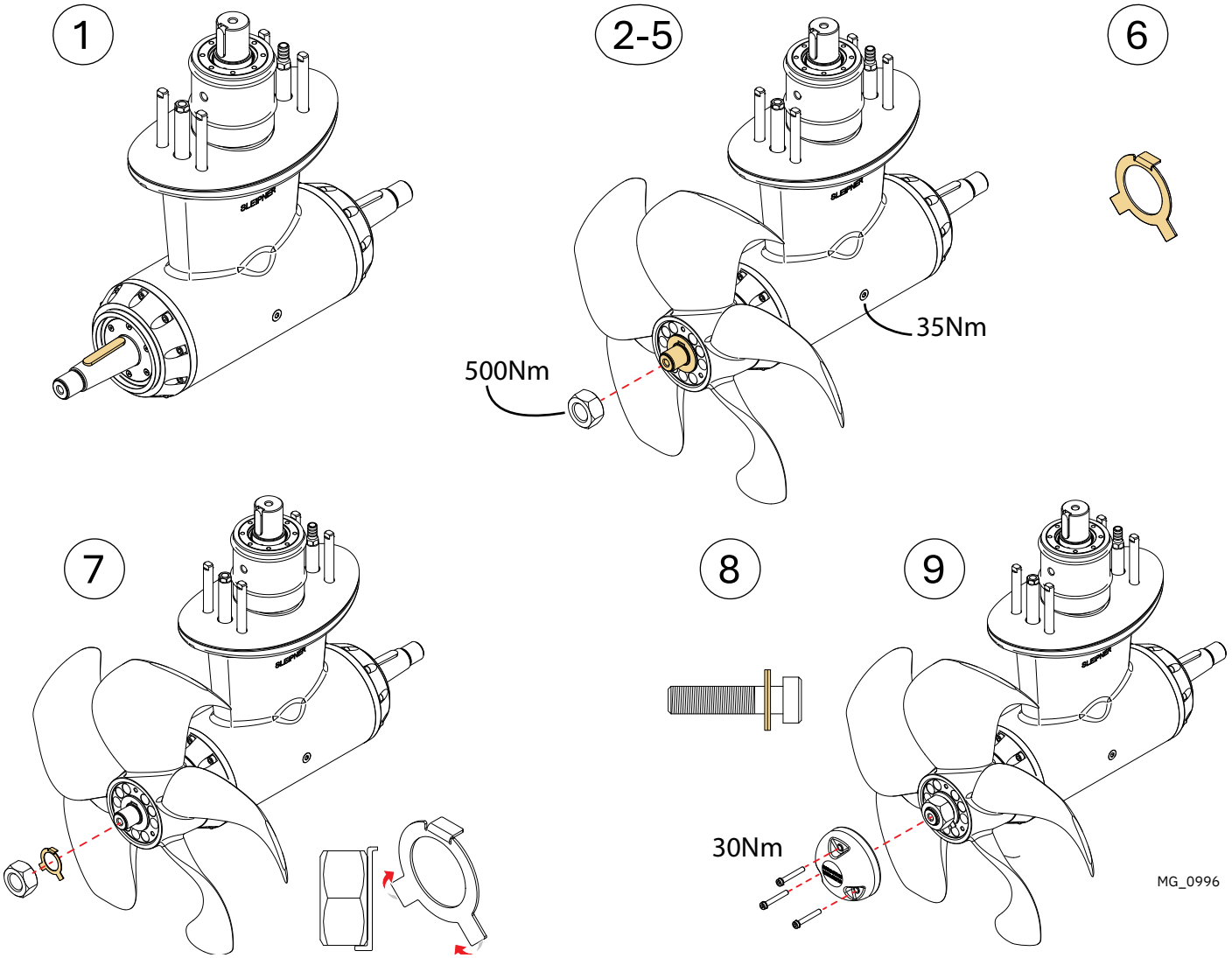


MG_0995

NOTE: Only install one of the propellers at this stage. The second propeller must be installed after the oil filling procedure.

1. Rotate the propeller shaft so the shaft key way is facing up. Remove the tape holding the parallel key in place on the propeller shaft.
2. Insert the propeller onto the propeller shaft until the propeller key aligns into the slot/ groove in the propeller. ***(NB: Installation requires almost no gap (approximately 1mm) between the propeller and the gearleg.)***
3. Apply waterproof grease only to the thread where the bolt will be fastened to achieve required torque tension. **Do NOT apply grease to the internal propeller core.**
4. Without the washer, fasten the propeller lock-nut to the required torque.
5. Remove the propeller lock-nut from the shaft.
6. Grease the washer surface facing the propeller lock-nut.
7. Insert the washer on the propeller shaft and re-fasten the propeller lock-nut to required torque tension. ***(NB: Ensure the washer tab is inserted into the slot/ groove in the propeller. Fold the tab washer over the nut after fastening).***
8. Attach the anode hub to the propeller shaft, and enter and tighten the bolt(s) holding the anode.

MC_1001



In order to to ensure a stable mechanical contact surface against the tunnel, the gap between the motor bracket and tunnel must be filled with an epoxy casting resin.

To achieve an optional filling of the gap, Sleipner recommend a epoxy resin filler.
One example may be **Sicomin SR CA 85 in combination with SD8701 hardener.**

Post curing may be required to achieve optimal mechanical strength. Refer to the datasheet for that process.

Ensure that the cast material data is within the specified values in the table below.

Recommended data and considerations for filler material							
	Initial viscosity	Pot life	Tg max onset	Tensile modulus	Flexion modulus	Compression yield	Charpy Resilience
Units	mPa.a	h	°C	N/mm²	N/mm²	N/mm²	kJ/m²
Value	<3000	>1	>60	>5000	>4000	>80	>7

It is four resin filler ports (**Reference 1**), and two bleed ports (**Reference 2**).

For vertical installations:
- Insert resin filler injector nozzles (**Reference 3**) in the four filler ports.
  To avoid spillage of fill material, it would be beneficial to attach a hose to the bleed ports to direct any excess away from the engine bracket.
  (**Reference 5**).
- Continue filling until the resin are visible in the bleed ports.
- Enter and tighten the screws in the bleed ports (**Tightening torque 28Nm**).
- Remove excessive filler that oozing out from the edges of the motor bracket. (**Reference 4**).
- When the resin filler has cured, remove the injector nozzles and enter and tighten the screws in the filler ports.
  (**Tightening torque 28Nm**).

For horizontal installations:
- Ensure that the vertical bleeding points (**Reference 2**) is closed.
- Insert resin filler injector nozzles (**Reference 3**) in the two lower filler ports.
- Add bleed hoses to the upper filling points (**Reference 5**).
- Continue filling until the resin are visible in the bleed ports (**Reference 5**)

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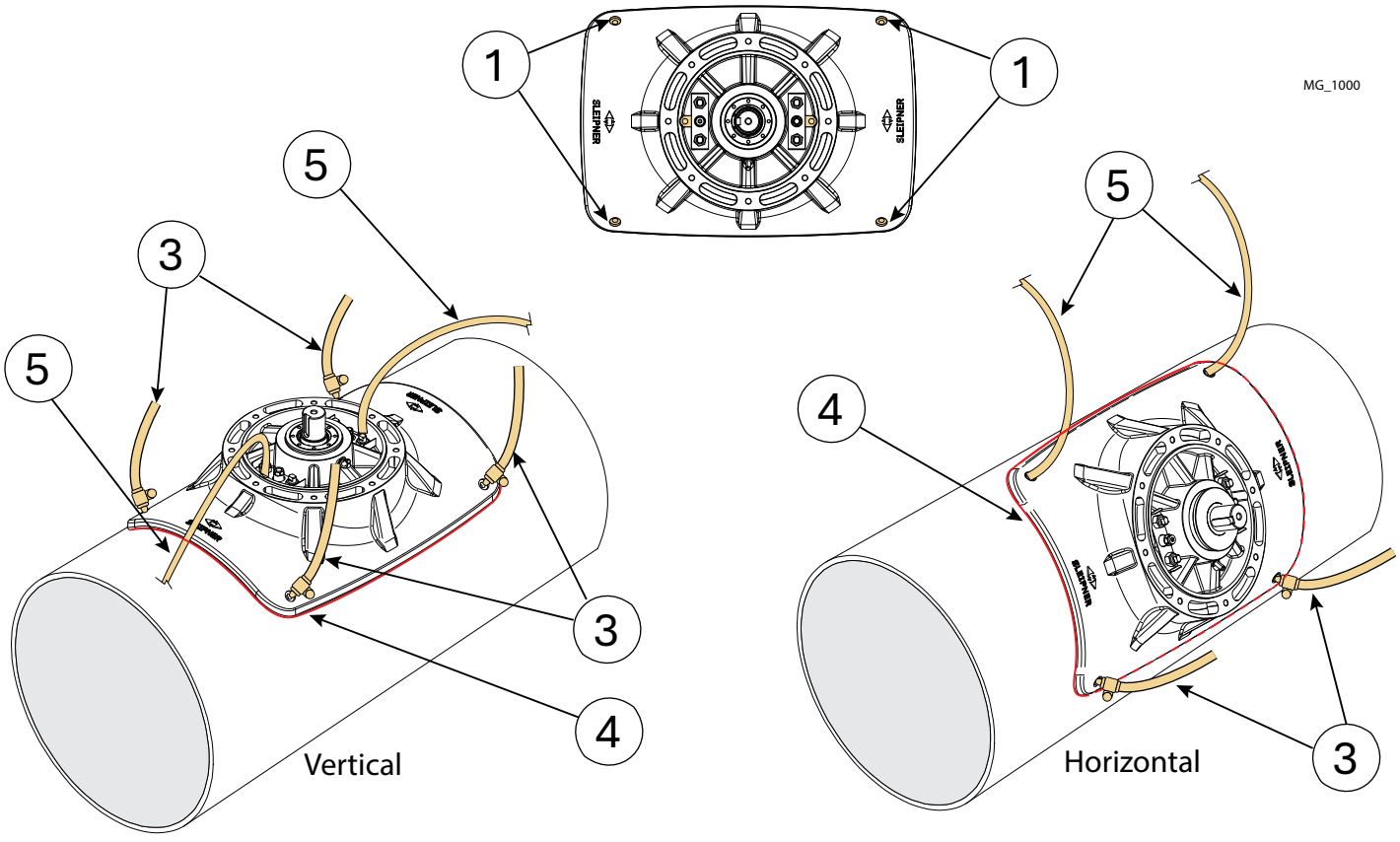
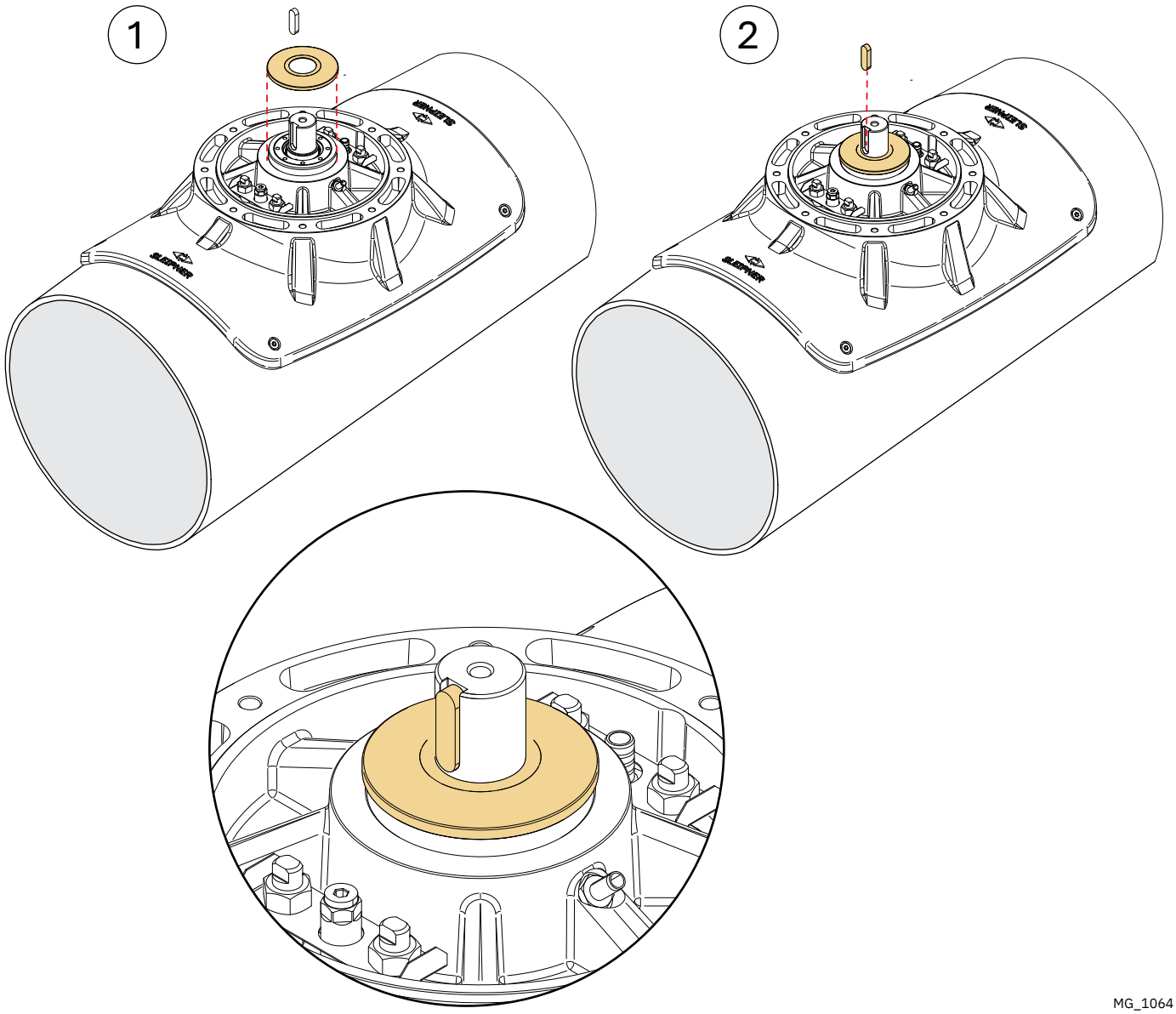
MG_1000



1. Insert the protection cover over the shaft and press it all the way down on the shaft.

MC_1060

2. Insert the paralell key into the keyway on the shaft and make sure it stays in place when installing the coupling in the next

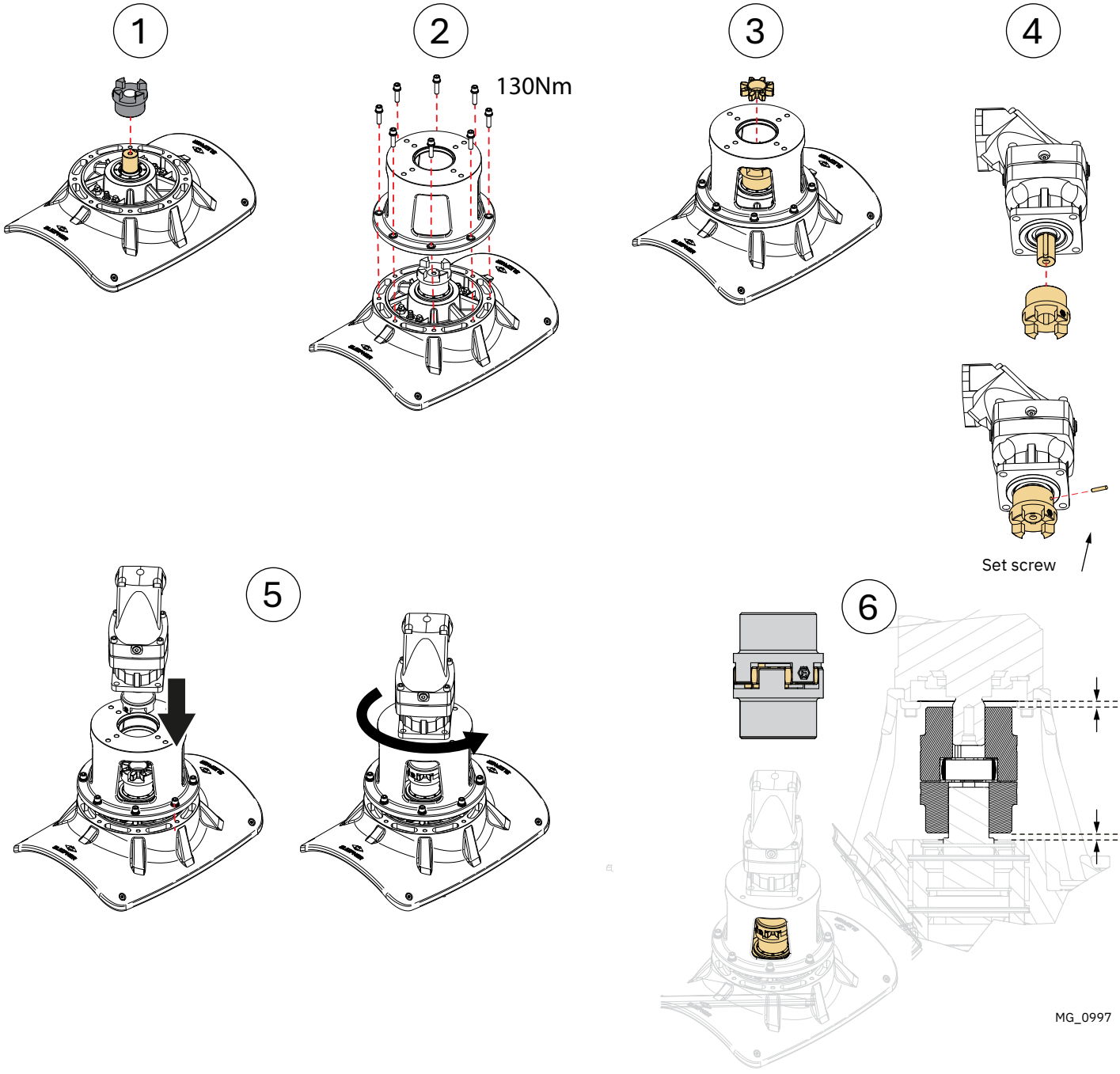


MG_1064

Refer to the graphic for correct tightening torques.

1. Apply seawater resistant grease on both motor shaft and gear leg shaft. Insert the lower coupling onto the key way of the gear leg shaft. Do not tighten at this stage. ***(NB: The motor can be placed in all directions on the motor bracket. However, ensure the hose terminals are accessible for connection installation later.)***
2. Mount the upper bracket to the lower bracket.
3. Place the rubber/ hard plastic spider onto the lower hub.
4. Insert the upper coupling hub onto the motor shaft and lightly tighten its set screw, ensuring it maintains its position but still can be moved on the shaft.
5. Place the motor onto the upper bracket ensuring both coupling hubs and spider engage. This can be achieved by rotating the motor on the bracket.
6. Through the bracket side openings adjust to centralise the flexible coupling between the gear leg and motor. Make sure that the two coupling halves have sufficient engagement to the motor and gear shafts.

MC_0114



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

7. Tighten the set screws the set screw through the side openings in the motor bracket.

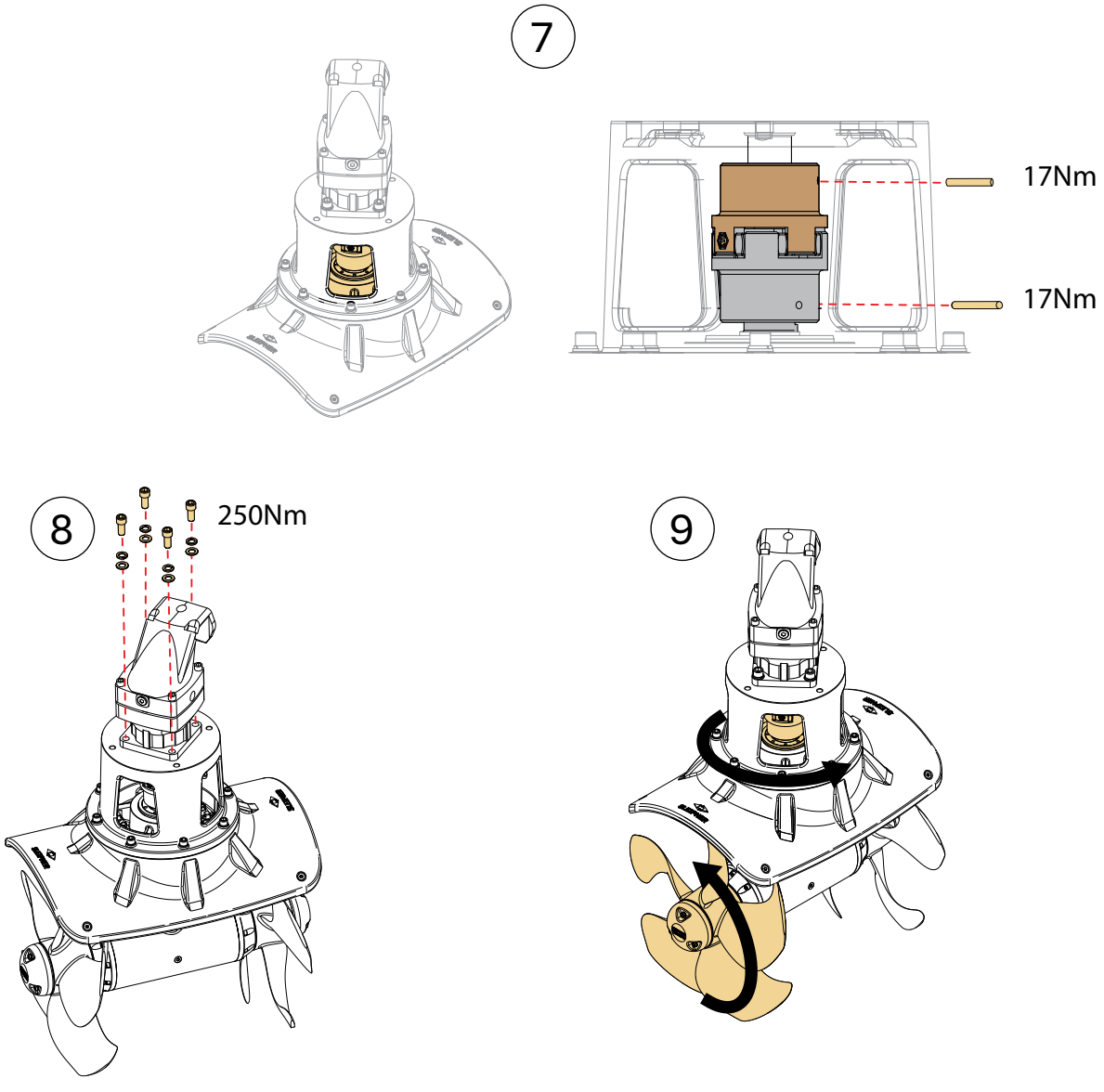
MC_0989

8. Enter and tighten the bolts and washers holding the motor to the motor bracket.

9. Rotate the propellers by hand to ensure the coupling assembly enguage both drive shafts. ***(NB: Rotating the propellers can be hard due to the gear reduction and the motor, however the propeller must be able to rotate via hand power.)***

CAUTION

The hydraulic motor must be covered to avoid dust from fabrication/ maintenance operation entering the motor hose pipes.



MG_0998

Oil type: Meropa EliteSyn XM 150
Oil volume including container: 10l
Install the oil container above the waterline by at least 20% of the distance from the waterline to the centre of the tunnel. This ensures enough overpressure for the oil in the gearleg.

Note the orientation of the bleed- and fill nipple on vertical versus horizontal installation.
- Install the oil tube from the oil container to the feed nipple on the motor bracket. Secure by fasten both the tube clamp screws.
- Install the bleed tube from the oil container to the bleed nipple on the motor bracket.
- ***(NB: Ensure the oil tube has no loops and forms an airlock to stop the oil flow. Ensure the oil tube angle is sufficient to allow oil to flow freely into the gearleg.)***

- Fill with **Meropa EliteSYN XM 150** gear oil. Two methods may be used:

1. Gravity Feed:
Allow the oil to flow naturally into the system using gravity.
- Open oil container valve, close fill valve
- Fill oil container, and re-fill until system is filled (about 10l)

This may take a long time due to narrow oil channels.

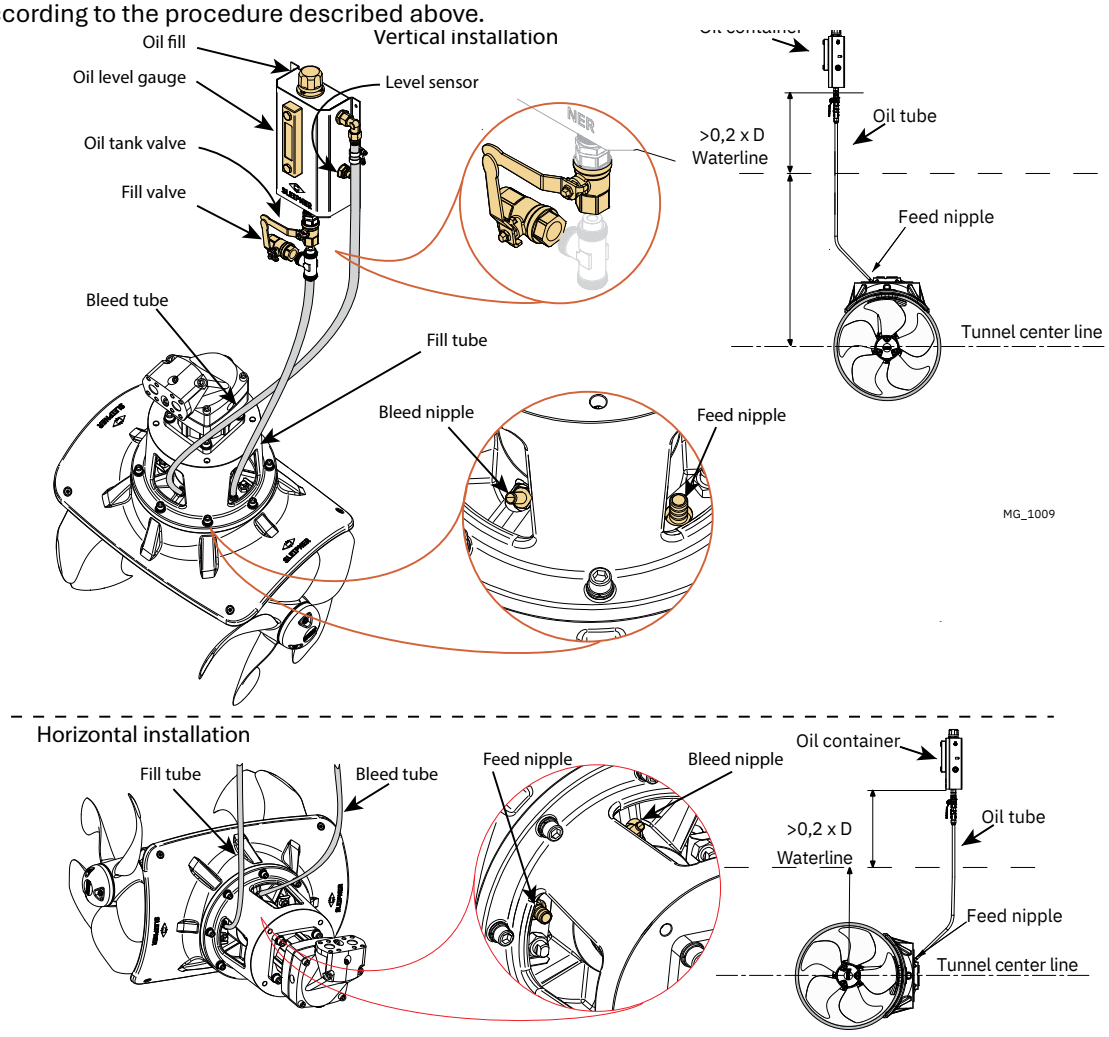
MC_1089

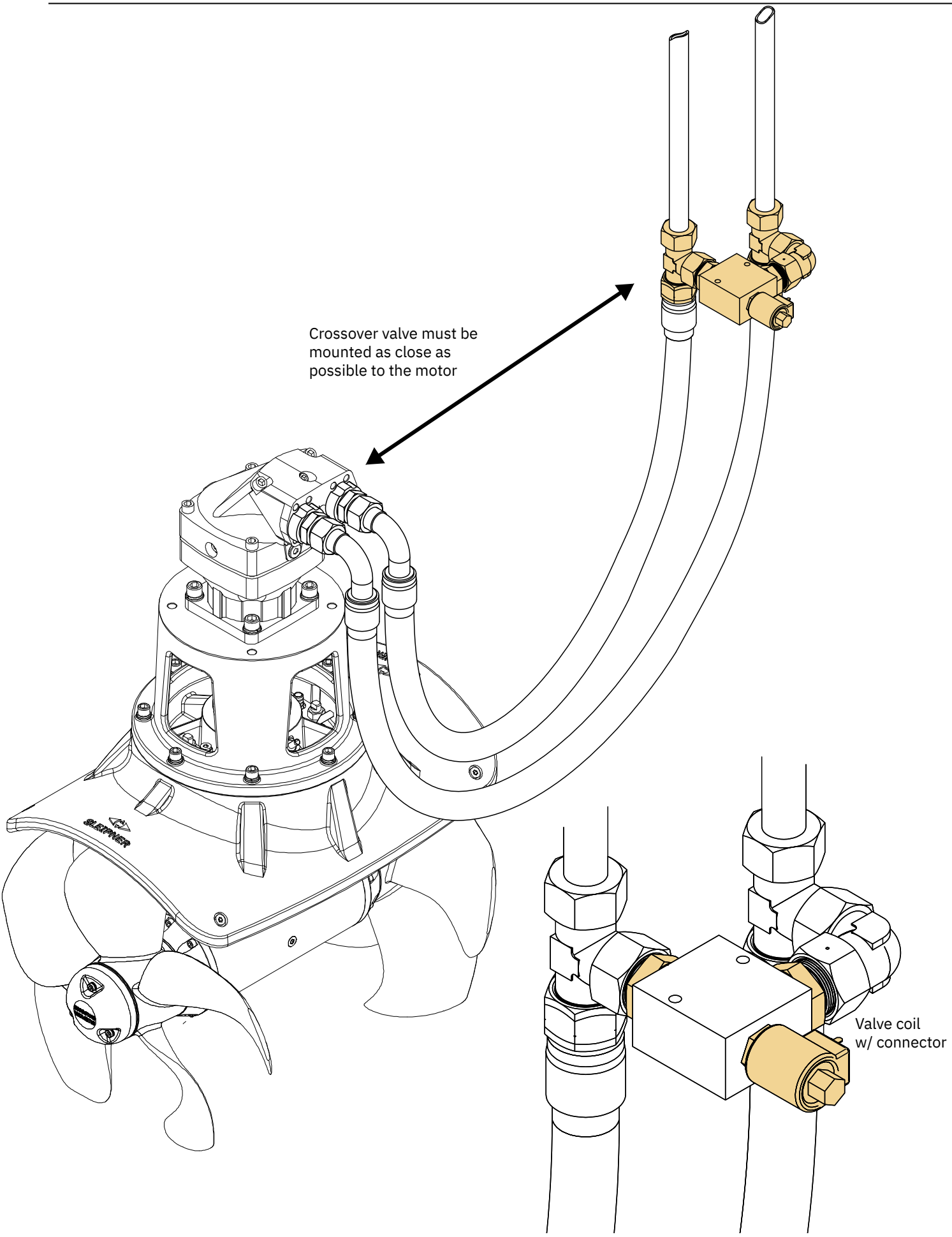
2. Pressure Feed:
- Connect a pressure assisted filling device to the fill valve. (3/8” BSPP). Close the oil container valve and open the fill valve. Apply pressure to the oil source to assist in filling.

Important: The applied pressure must not exceed 1 bar to avoid damage to the system or risk of leakage.
- Keep filling oil until the oil level has a correct and stable level in the oil container.
- When filling is completed, close the fill valve and open the oil container valve. Secure oil fill valve in closed position, and oil container valve in open position.

Oil drain and replacement

Procedure for draining and replacing the gear oil.
- Open the Fill valve. Keep the oil tank valve closed.
- Remove the oil by applying vacuum to the fill valve.
- Fill new oil according to the procedure described above.




Crossover valve must be mounted as close as possible to the motor
Valve coil w/ connector

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.

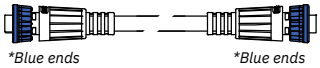
Installation of S-Link cables:

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.

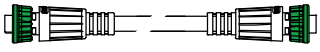
Ideally, the POWER Cable should be connected to the middle of the BACKBONE bus to ensure an equal voltage drop at both ends of the BACKBONE Cable. The yellow and black wire in the POWER Cable shall be connected to GND and the red wire connected to +12VDC or +24VDC.

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.

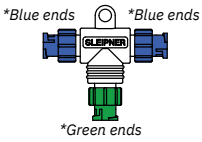


BACKBONE Cable
Forms the communication and power bus throughout a vessel. Available in different standard lengths.

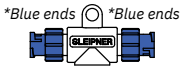


SPUR Cable
Used to connect S-Link compliant products to the backbone cable. One SPUR Cable must be used for each connected component, with no exceptions. Recommended to be as short as practically possible. Available in different standard lengths.

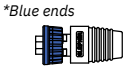
POWER Cable
Required in all installations for connection of BACKBONE Cable to a power supply and should be protected with a 2A fuse.



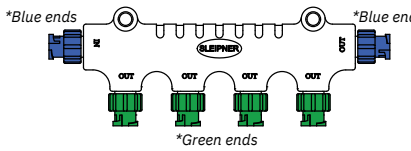
T-Connector
Used for connection of SPUR or POWER Cable to the BACKBONE Cable. One T-Connector for each connected cable.



BACKBONE Extender
Connects two BACKBONE Cables to extend the length.

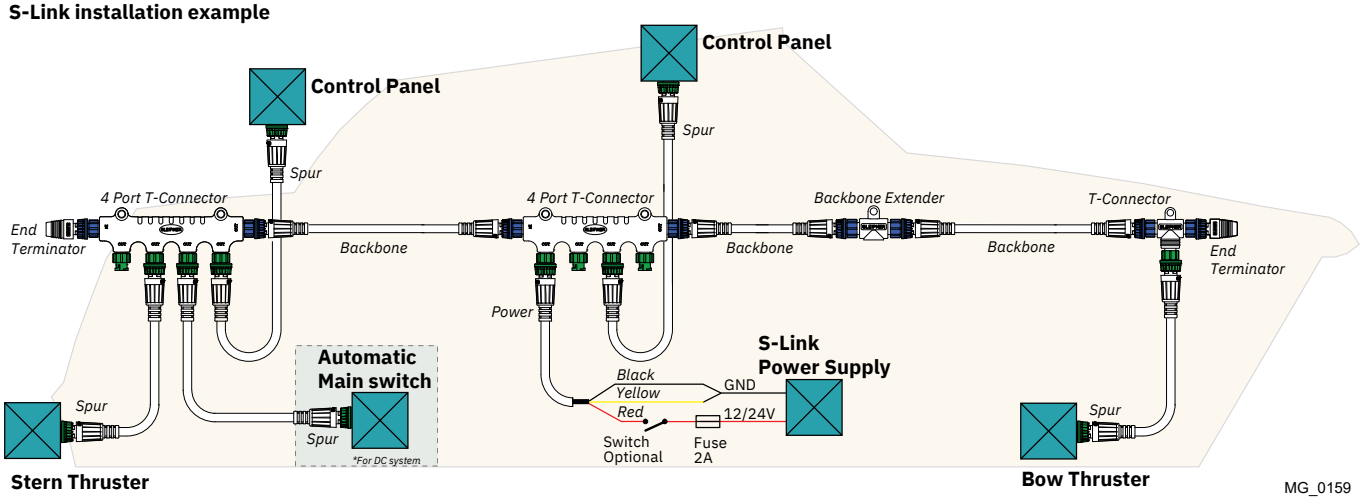


END Terminator
Must be one at each end of the BACKBONE bus.



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.

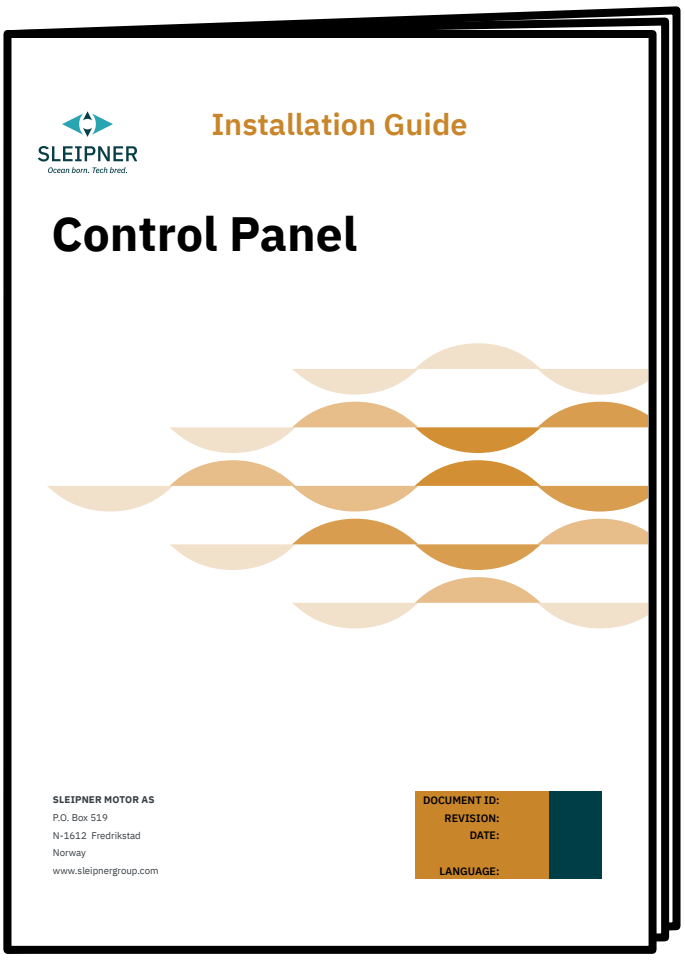
S-Link installation example



MG_0159

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

MC_0398N



☐..... Propeller is fastened correctly to the shaft.

☐..... Propeller turns freely in tunnel.

☐..... Lower-unit is filled with gear oil.

☐..... Oil-drain screw is tightened and the seal is working.

☐..... The anode bolt is tightened according to specifications, and that the anodesystem is working

☐..... Anti-fouling have been applied to the gear house and propeller but NOT on the anode or the gear house lid where the propeller is fastened.

☐..... Oil tank is fitted above the waterline as required and filled with gear oil.

☐..... Check drive direction.

☐..... The bolts holding the gear house and motor bracket together are tightened correctly.

☐..... The bolts holding the motor to its bracket are tightened correctly.

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

Signed: .....

Date: .....

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

Thruster type: .....

Serial number:.....

Date of delivery:.....

Correct drive direction as per control panel: .....

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

.....

.....

.....

Other comments by installer: .....

.....

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

Service and Support

Find your local professional dealer from our certified worldwide network for expert service and support. visit our website www.sleipnergroup.com/support

Product Spare Parts and Additional Resources

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

Warranty Statement

1. Sleipner Motor AS (The "Warrantor") warrants that the equipment (parts, materials, and embedded software of products) manufactured by the Warrantor is free from defects in workmanship and materials for purpose for which the equipment is intended and under normal use and maintenance service (the "Warranty").
2. This Warranty is in effect for two years (Leisure Use) or one year (Commercial and other Non-leisure Use) from the date of delivery/purchase by the end user, with the following exceptions;
   (a) For demonstration vessels, or vessels kept on the water, the dealer is considered as the end user from 6 months after their launch of the vessel;
   (b) The warranty period starts no later than 18 months after the first launch of the vessel.
   Please note that the boat manufacturer and dealer must pay particular attention to correct maintenance and service both by the products manuals as well as general good practice for the location the boat is kept in the period the boat is in their care. In cases where the 6 and 18 months grace periods for boat builders and dealers are passed, it is possible to obtain a full warranty upon inspection and approval of the warrantor or such representative.
3. Certain parts, classified as wearable or service parts, are not covered by the warranty. A failure to follow the required maintenance and service work as described in the product manual render all warranty on parts or components directly or indirectly affected by this void. Please also note that for some parts, time is also a factor separately from actual operational hours.
4. This Warranty is transferable and covers the equipment for the specified warranty period.
5. The warranty does not apply to defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion except for equipment specifically designed as waterproof.
6. In case the equipment seems to be defective, the warranty holder (the "Claimant") must do the following to make a claim:
   (a) Contact the dealer or service centre where the equipment was purchased and make the claim. Alternatively, the Claimant can make the claim to a dealer or service centre found at www.sleipnergroup.com. The Claimant must present a detailed written statement of the nature and circumstances of the defect, to the best of the Claimant's knowledge, including product identification and serial nbr., the date and place of purchase and the name and address of the installer. Proof of purchase date should be included with the claim, to verify that the warranty period has not expired;
   (b) Make the equipment available for troubleshooting and repair, with direct and workable access, including dismantling of furnishings or similar, if any, either at the premises of the Warrantor or an authorised service representative approved by the Warrantor. Equipment can only be returned to the Warrantor or an authorised service representative for repair following a pre-approval by the Warrantor's Help Desk and if so, with the Return Authorisation Number visible postage/shipping prepaid and at the expense of the Claimant.
7. Examination and handling of the warranty claim:
   (a) If upon the Warrantor's or authorised service Representative's examination, the defect is determined to result from defective material or workmanship in the warranty period, the equipment will be repaired or replaced at the Warrantor's option without charge, and returned to the Purchaser at the Warrantor's expense. If, on the other hand, the claim is determined to result from circumstances such as described in section 4 above or a result of wear and tear exceeding that for which the equipment is intended (e.g. commercial use of equipment intended for leisure use), the costs for the troubleshooting and repair shall be borne by the Claimant;
   (b) No refund of the purchase price will be granted to the Claimant, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. In the event that attempts to remedy the defect have failed, the Claimant may claim a refund of the purchase price, provided that the Claimant submits a statement in writing from a professional boating equipment supplier that the installation instructions of the Installation and Operation Manual have been complied with and that the defect remains.
8. Warranty service shall be performed only by the Warrantor, or an authorised service representative, and any attempt to remedy the defect by anyone else shall render this warranty void.
9. No other warranty is given beyond those described above, implied or otherwise, including any implied warranty of merchantability, fitness for a particular purpose other than the purpose for which the equipment is intended, and any other obligations on the part of the Warrantor or its employees and representatives.
10. There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives based on this Warranty for injury to any person or persons, or damage to property, loss of income or profit, or any other incidental, consequential or resulting damage or cost claimed to have been incurred through the use or sale of the equipment, including any possible failure or malfunction of the equipment or damages arising from collision with other vessels or objects.
11. This warranty gives you specific legal rights, and you may also have other rights which vary from country to country.

Patents

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

MC_0024

MC_0037

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Made in Norway