



Installation Guide

For Vector Fin Stabiliser Systems

**STABILISER
SPS60E, SPS80E**

VECTOR FINS

V³900, V³1100, V³1400, V³1700



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Responsibility of the Installer

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 installer's 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 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.
- To accommodate for future service and inspection requirements, ensure appropriate access to Sleipner products during the installation planning phase.

General Installation Consideration and Precaution Guidelines

For stabiliser systems

Please follow this general guide for steps to prepare and plan your installation process:

- Find the best possible position of the actuators and fins based on the information provided in the sections about:
 - Safety and General precautions Measurements.
 - Fin positioning, taken other systems into consideration (water trail not affecting propulsion system, exhaust system not interfering with fins etc.).
 - Hull forces
- Ensure that it is space to do the reinforcement of the hull if required
- Service access

Plan the installation of the electrical parts including the control panel and wiring runs based on the information in the manual.

Your Sleipner representative will be able to help make an educated decision for what is the best solution for your boat and your preferences. Before starting the installation, the Sleipner representative can ensure that you are not installing parts and products that will not meet your expectations. Sleipner Motor AS is a manufacturing company of marine equipment and not a Naval Architectural company & therefore take no responsibility regarding the installation of our products onto seagoing vessels.

This includes any requirement for the vessels:

- Hull reinforcement.
- Change in the vessel's stability.
- Dynamic performance.
- Weight and moment.
- Noise proofing.
- Watertight integrity after installation during normal operations or in the event of a collision.

It is the responsibility of the installer/boat builder to determine hull reinforcement requirements, ensuring that sufficient strengthening measures are in place & the vessel's hull will withstand & maintain watertight integrity in the event of a collision of our product, impacting an object when the vessel is underway.

The stabilizer product includes heavy parts. Ensure suitable lifting and support equipment is available during installation & removal to prevent material damage or personnel injury.

During yacht lifting operations:

- Ensure the stabilizer fins are in the locked/neutral position.
- Lifting personnel are informed that stabilizer fins are installed preventing the danger of snagging the lifting slings & damage to the yacht, its equipment or injury to personnel.

Yacht transportation overland with road vehicles may require the removal of the stabilizer fins. Please contact Sleipner representatives for instruction procedures.

For electric eVision stabiliser systems

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WARNING

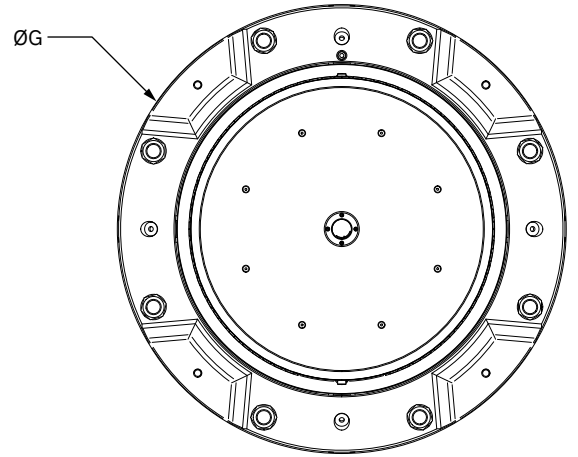
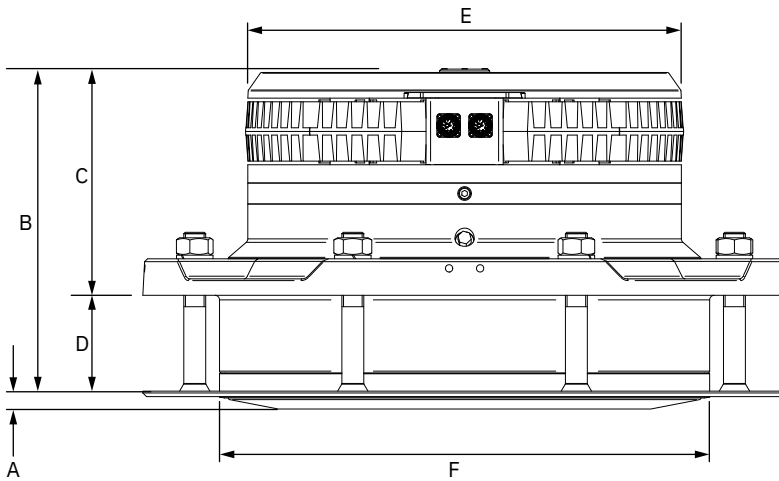
Ensure electrical power is switched off before any servicing work is carried out on the stabilizer system.

With power, the Stabilizer systems with 'at anchor' function installed & 'Auto' selected can suddenly operate & move without warning.

Actuator Dimension

MC_0711

Dimension code	Dimension descriptions	SPS60E		SPS80E	
		mm	inch	mm	inch
A	Actuator height outside the hull	16.8	0.6	20	0.8
B	Total actuator height	236	9.3	349	13.7
C	Actuator height inside the hull	172	6.8	249	10
D	Hull thickness (sealant included)	60	2.4	105	4.1
ØE	Diameter of the actuator Motor	350	13.8	475	18.7
ØF	Diameter of the actuator through the hull	408	16	537	21
ØG	Diameter of the actuator base plate	564	22.2	705	28
Weight (kg / lbs)		118	260.1	296	653

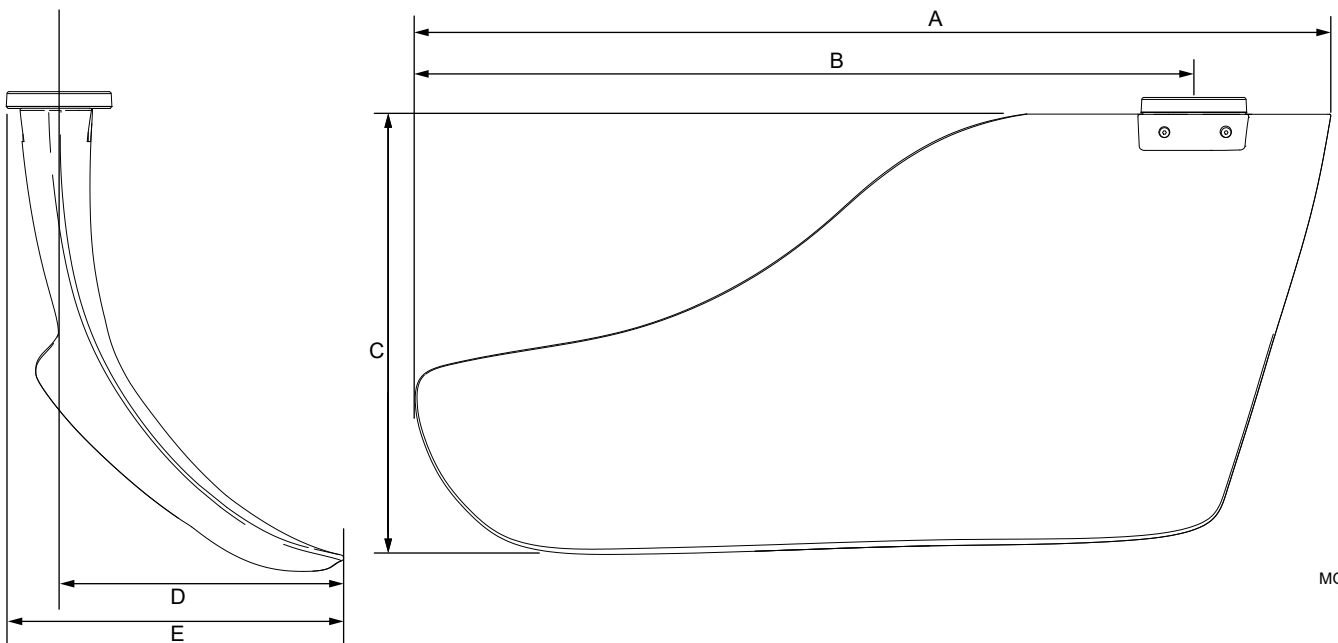


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Fin Dimension

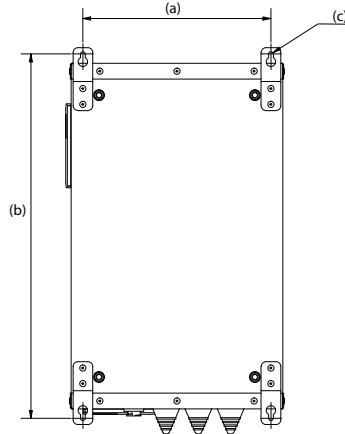
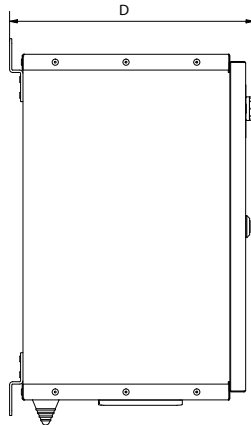
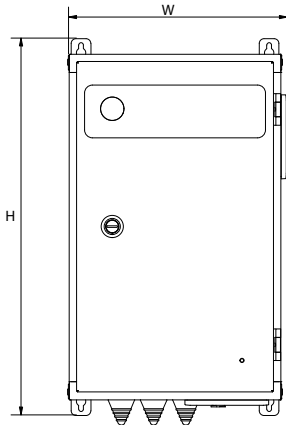
MC_0712

Dimension code	Dimension descriptions	V³ 900		V³ 1100		V³ 1400		V³ 1700	
		mm	inch	mm	inch	mm	inch	mm	inch
A	Total fin length	TBA	TBA	1750	68.9	TBA	TBA	2260	89
B	Fin length to centre connection	TBA	TBA	1490	58.7	TBA	TBA	1920	76
C	Total fin height	TBA	TBA	850	33.5	TBA	TBA	1090	43
D	Fin width from centre connection	TBA	TBA	520	20.5	TBA	TBA	670	26
E	Total fin width	TBA	TBA	600	23.6	TBA	TBA	770	30
Vector Fin m²		TBA		1.1		TBA		1.7	



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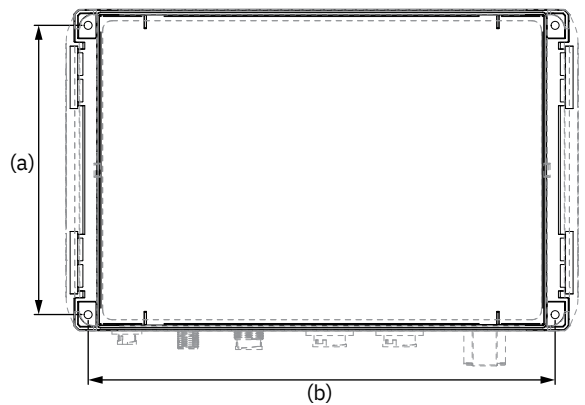
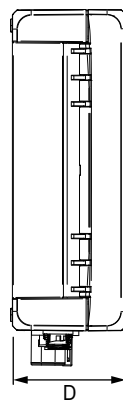
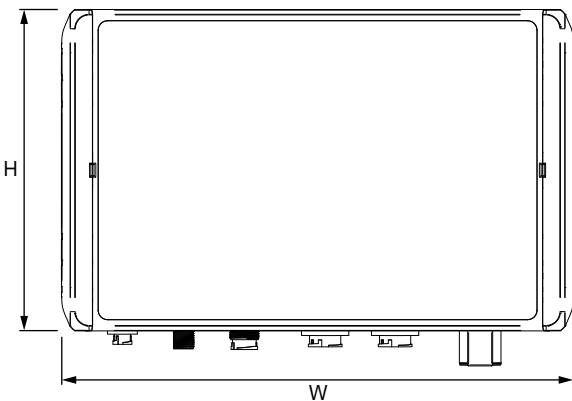
Dimension code	Dimension descriptions	eFD	
		mm	inch
H	Height	479	18.85
W	Width	278	10.94
D	Depth	311	12.24
(a)	Mounting hole height	463	18.22
(b)	Mounting hole width	239	9.41
(c)	Mounting hole diameter	6	0.24



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SCU Dimension

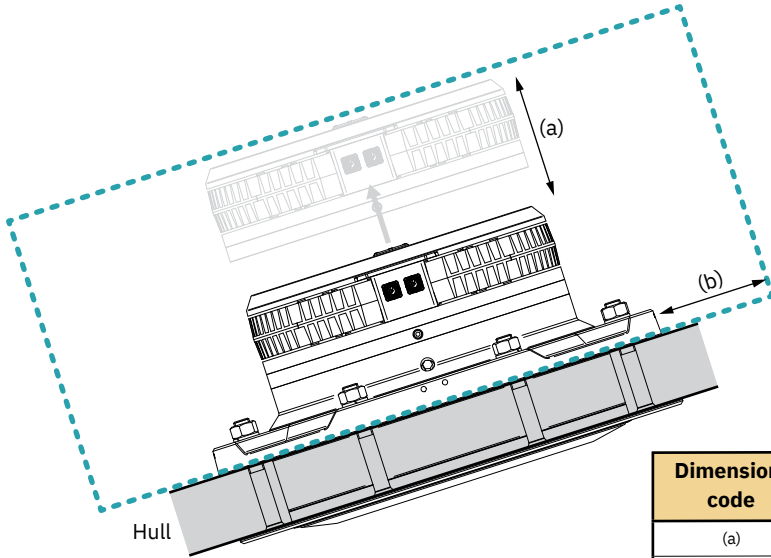
Dimension code	Dimension descriptions	SCU	
		mm	inch
H	Height	170	7
W	Width	271	11
D	Depth	60	2
(a)	Mounting hole height	153	6
(b)	Mounting hole width	247	9.7



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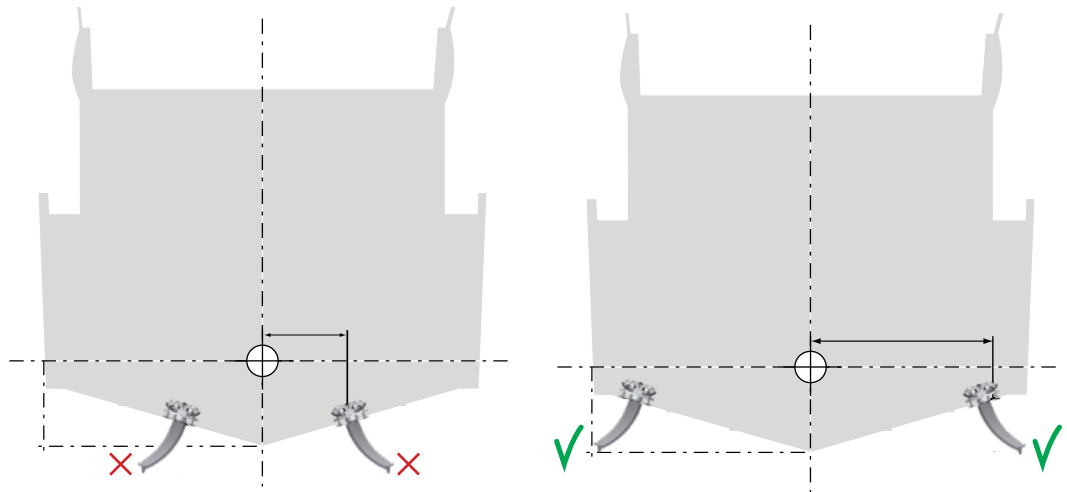
IMPORTANT

Consider and plan the positioning of the actuator for future service and appropriate area for cooling the electric motor. The ambient temperature is 40°C. The motor has temperature sensor and system will reduce power to avoid exceeding maximum allowed temperature.

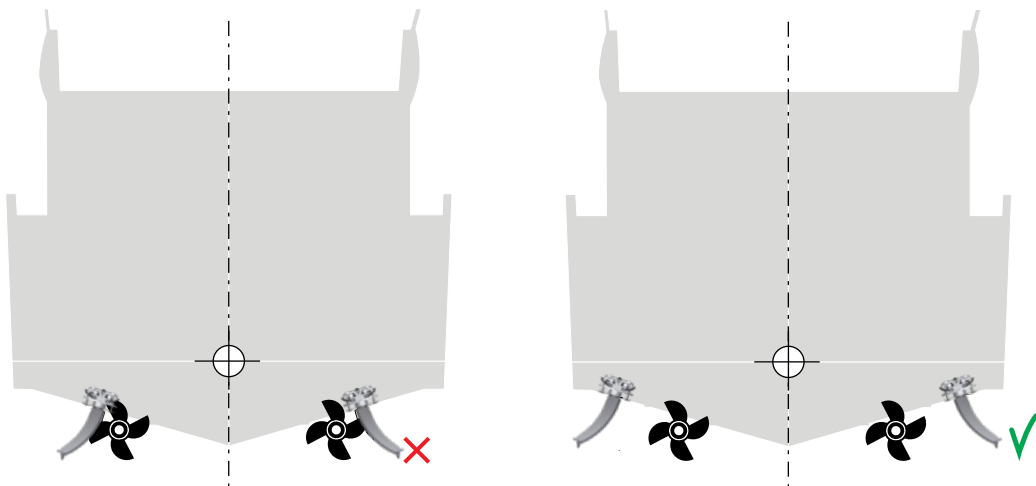


Dimension code	Dimension descriptions	SPS60E		SPS80E	
		mm	inch	mm	inch
(a)	Free space for motor replacement	185	7	250	10
(b)	Base plate tooling clearance	50	2	50	2

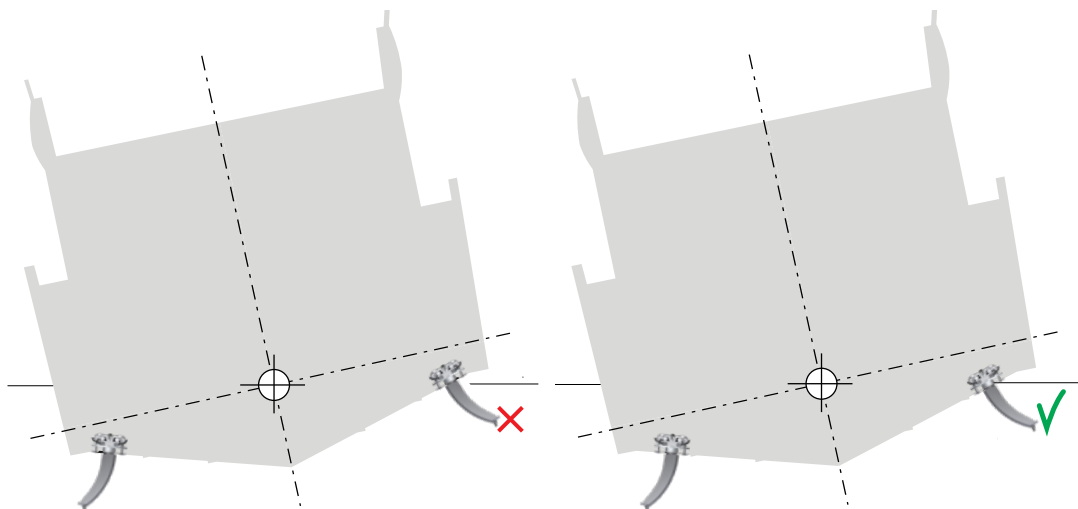
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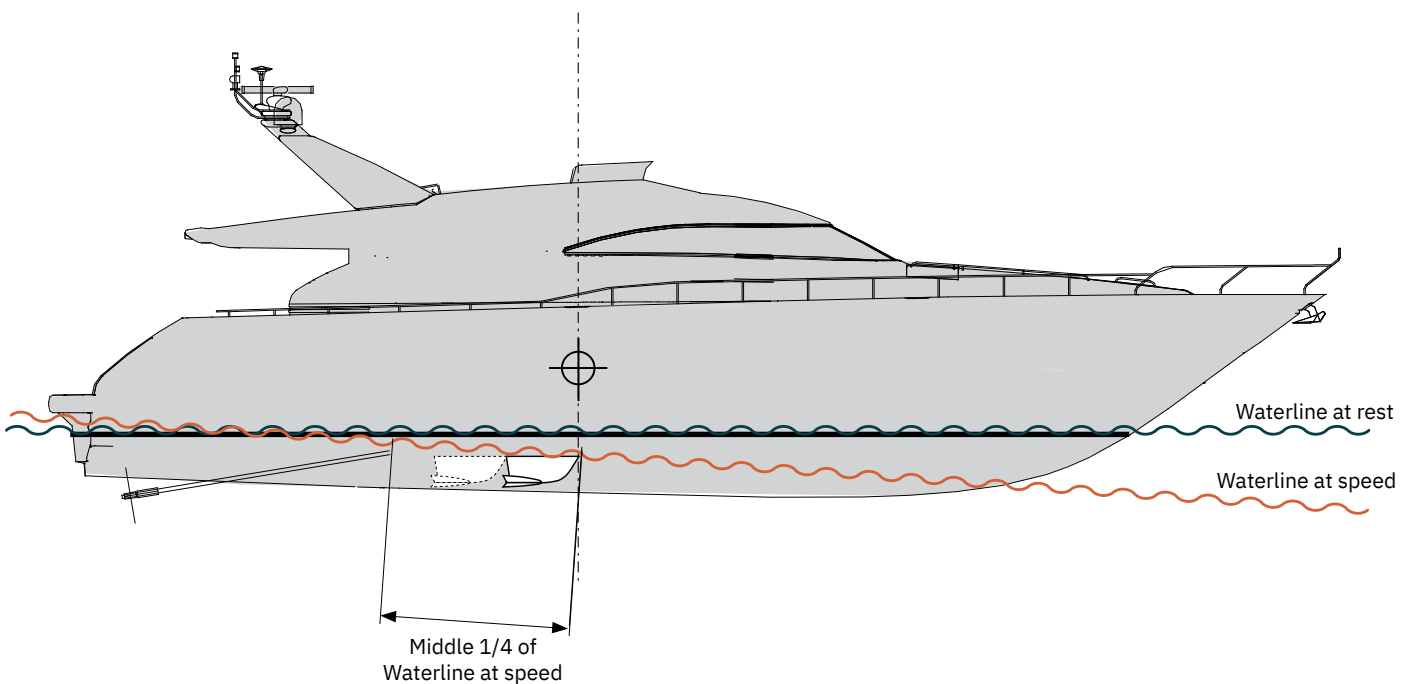
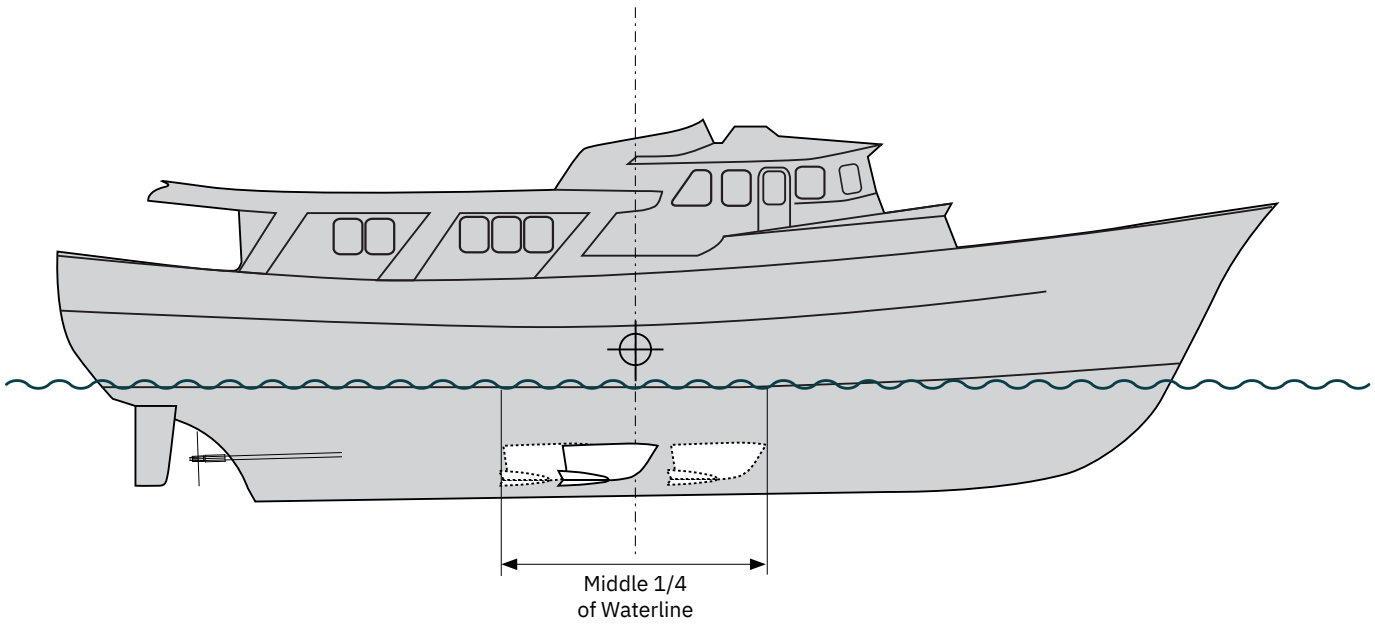
Fins should not extend outside the beam or below the keel when in neutral position.



Fins should be placed as far outboard as possible, and NOT in-line with the propellers, to ensure avoiding possible disturbance of the water flow to the props which in the worst case can cause vibrations / cavitation.



No part of the fin should be above water level during normal roll motion/under normal sea conditions.



To avoid unwanted influences on the steering characteristics, the fins should be placed close to the vessel longitudinal centre of gravity (LCG)
 - If unknown, this is usually a little aft of 50% of the waterline length.

For high speed vessels, the fins should be placed with trailing/leading edge within middle 1/4 of waterline length at speed and not in front of the LCG.

For vessels with top speed under 15 knots, fin may be placed within the middle 1/4 of waterline length.

IMPORTANT

These are general guidelines and some hull types might allow for an installation position outside of this recommendation.

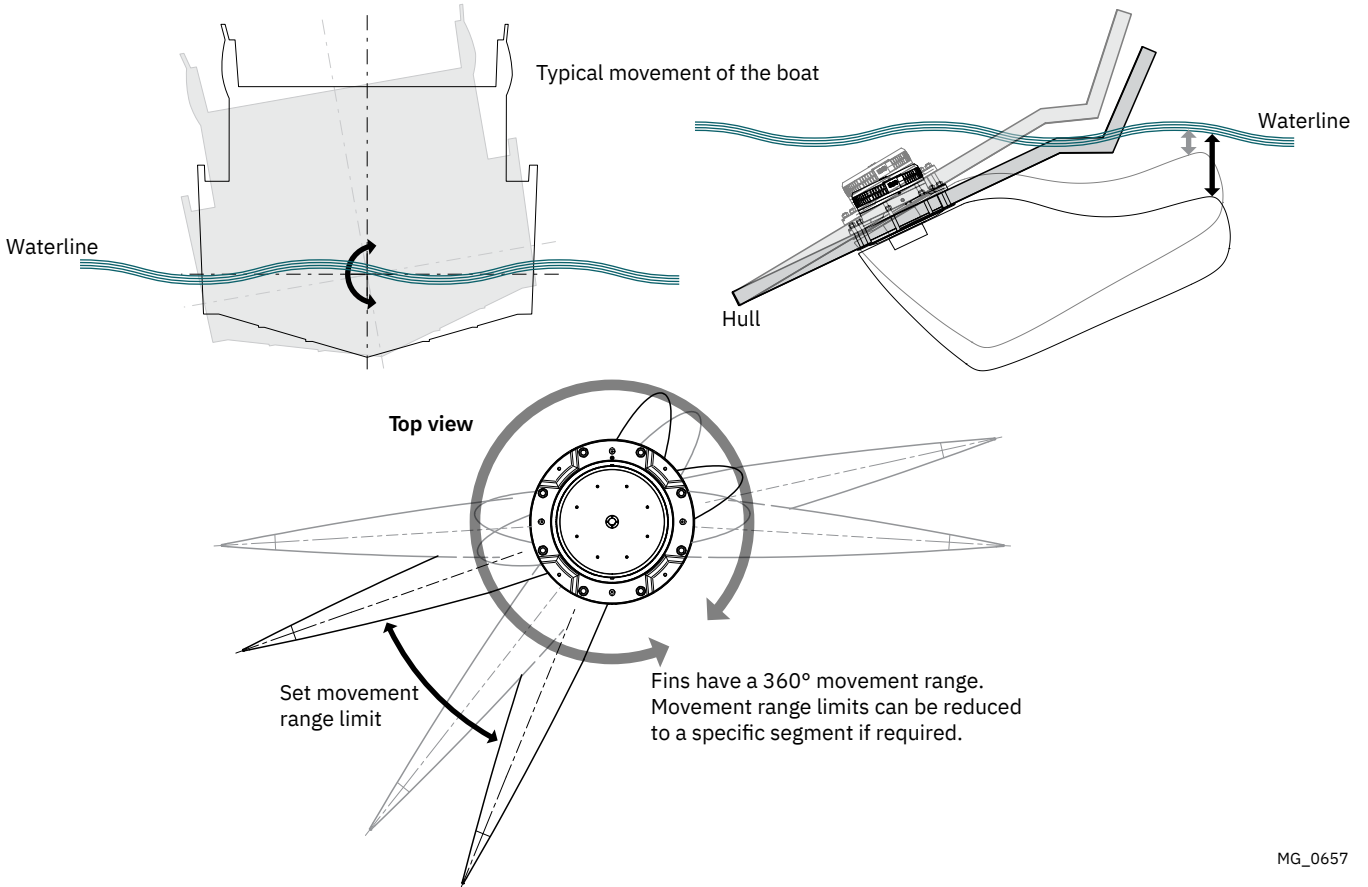
Transversal fin positioning of Vector Fins™

With Vector fins™ it is a priority to push the fins as far outboard as possible to achieve the most leverage for the fins forces unlike standard fins.

Finding the best position for the fin and actuator positioning often is related to the inside configuration and space that is required for proper installation.

General Rules:

–Push the actuators as far as possible outboard, keeping at least 22 degrees of outboard stroke as a minimum. It is also acceptable installing the fins further inboard if inside configuration/ access to inside parts of actuators is required. **(NB: Performance will be reduced slightly due to less leverage arm for the stabilizing force applied by the fins.)**

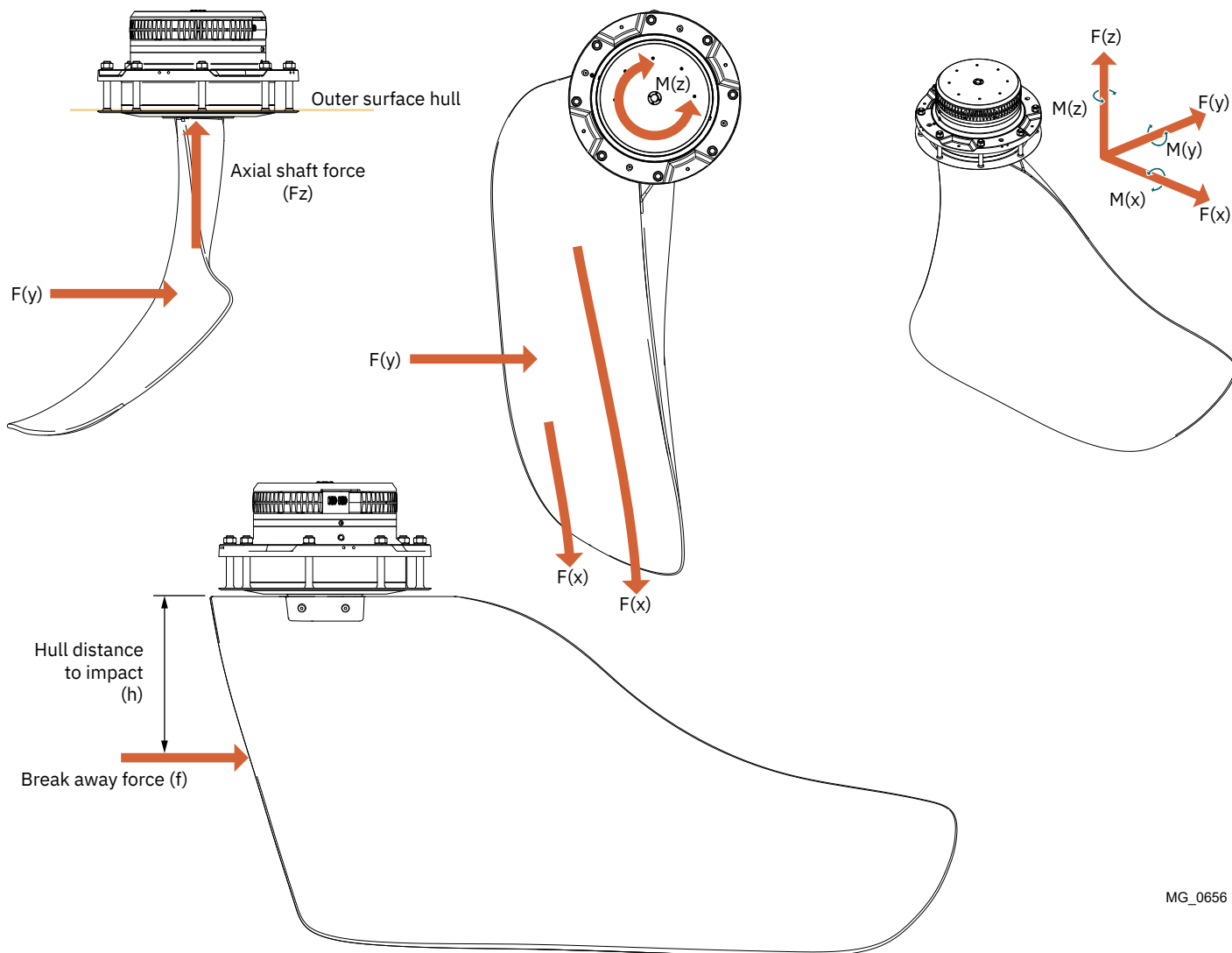


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All calculated values are normalised, determined by equilibrium considerations and also that various coefficients are inaccurate as hull design etc will affect the actual fin effect.

Dynamic effects such as jumps/impacts with waves, back flow closing of valve etc could further increase the hull/shaft loads. Therefore all dimensioning should account for this by using a safety factor.

Sleipner curved Vector Fin design comes with additional benefits in hull safety. Any impact with the ground will not only bend the shaft backwards and outward, allowing the fin to break away with less stress on the hull.



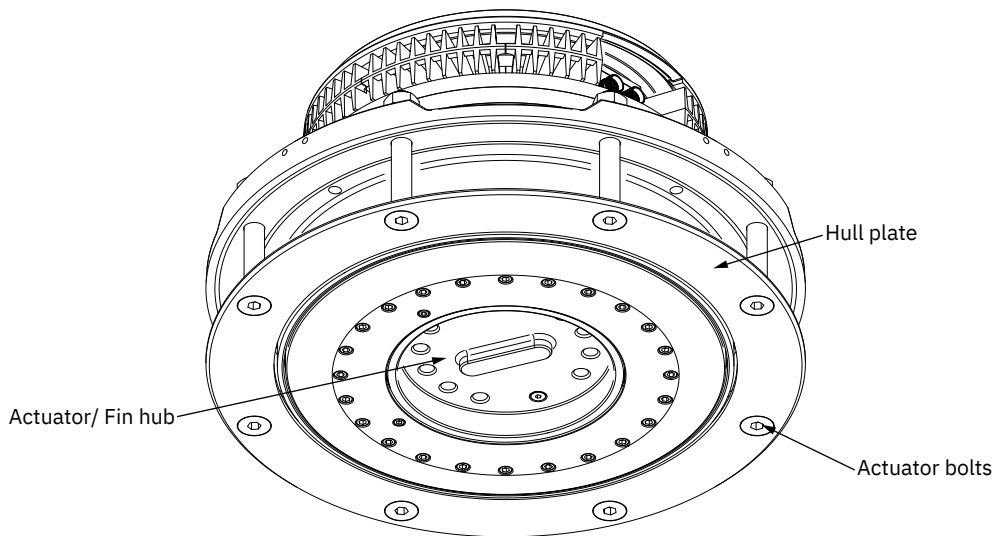
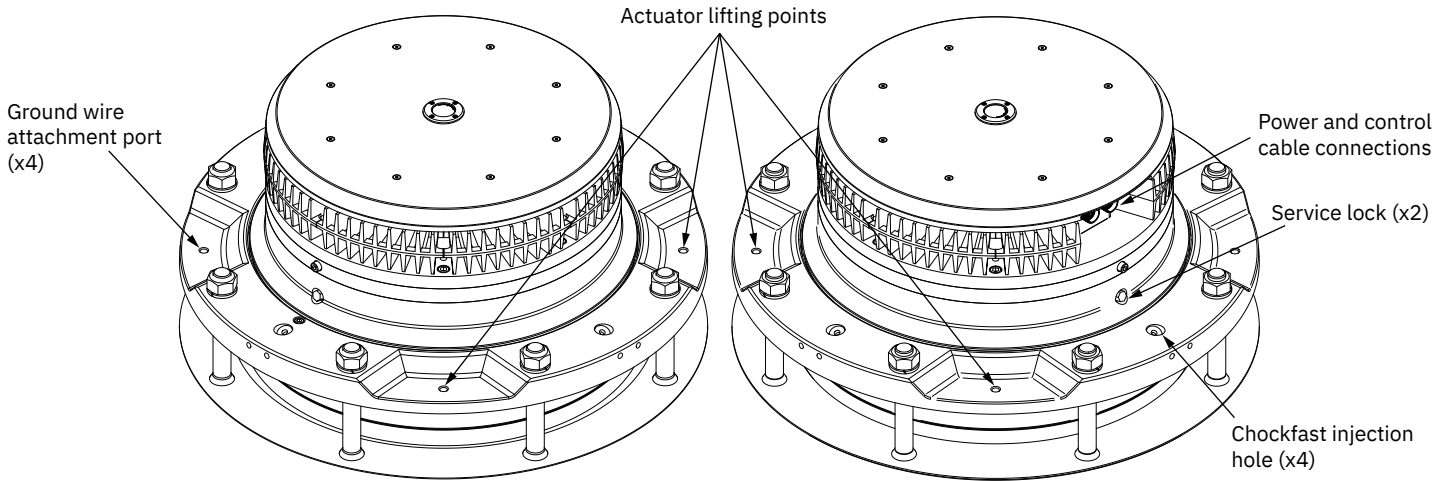
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Hull structural forces

SPS 60E							
Structural requirements V³ 1100		Values to be considered individually				Break away impact force	
Speed	Max bending moment (kNm)	Mx (kNm)	My (kNm)	Mz (kNm)	Fz (kNm)	h (mm)	f (kN)
20	18	16	8	3	20	500	84
30	25	22	9	3	26	500	84

SPS 80E							
Structural requirements V³ 1700		Values to be considered individually				Break away impact force	
Speed	Max bending moment (kNm)	Mx (kNm)	My (kNm)	Mz (kNm)	Fz (kNm)	h (mm)	f (kN)
20	37.3	33	17.8	5.5	44	700	143
30	55	45	25	5.5	55	700	143

Actuator Components



MG_0644

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

WARNING

When modifying the hull to is important to seek recommendations from a naval architect. Details for Reinforcing/ strengthening the hull for the stabilizer installation must be in accordance with a naval ships architects recommendations.

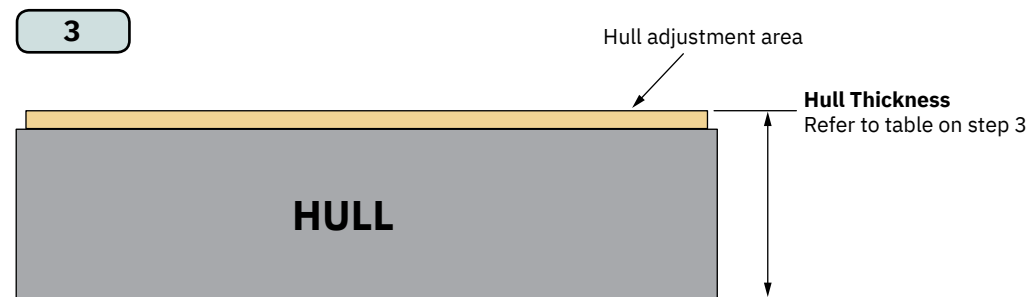
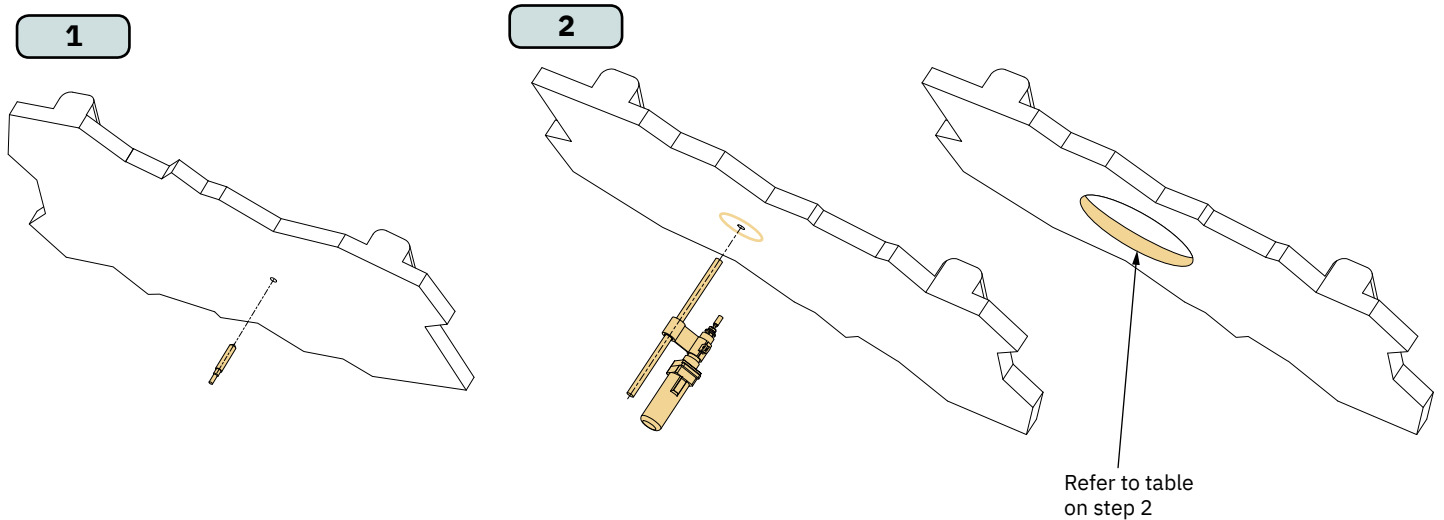
Define the optimal position of the stabilizer fins.

1. Drill a pilot hole at the fin shaft centre line position externally through the yachts hull.
2. Using the pilot hole as centre line mark and cut hole from inside the boat using a suitable cutting Jig & tool.

Through Hole Dimensions	SPS60E		SPS80E	
	mm	inch	mm	inch
Minimum	417.5	16.5	550	21.7
Recommended	422	16.6	555	21.9
Maximum	431	17	567	22.3

3. Adjust the surrounding hull to the above thickness (Sealant included) and ensure that the internal and external surfaces are parallel and flat.

Hull Thickness	SPS60E		SPS80E	
	mm	inch	mm	inch
Minimum <i>(Ensures secure sealing between the hull and actuator)</i>	55	2.2	97	3.8
Recommended/ Target	60	2.4	105	4.1
Maximum <i>(Avoids the risk of applying sealant between the fin hub and actuator)</i>	62	2.4	107	4.2



MG_0665

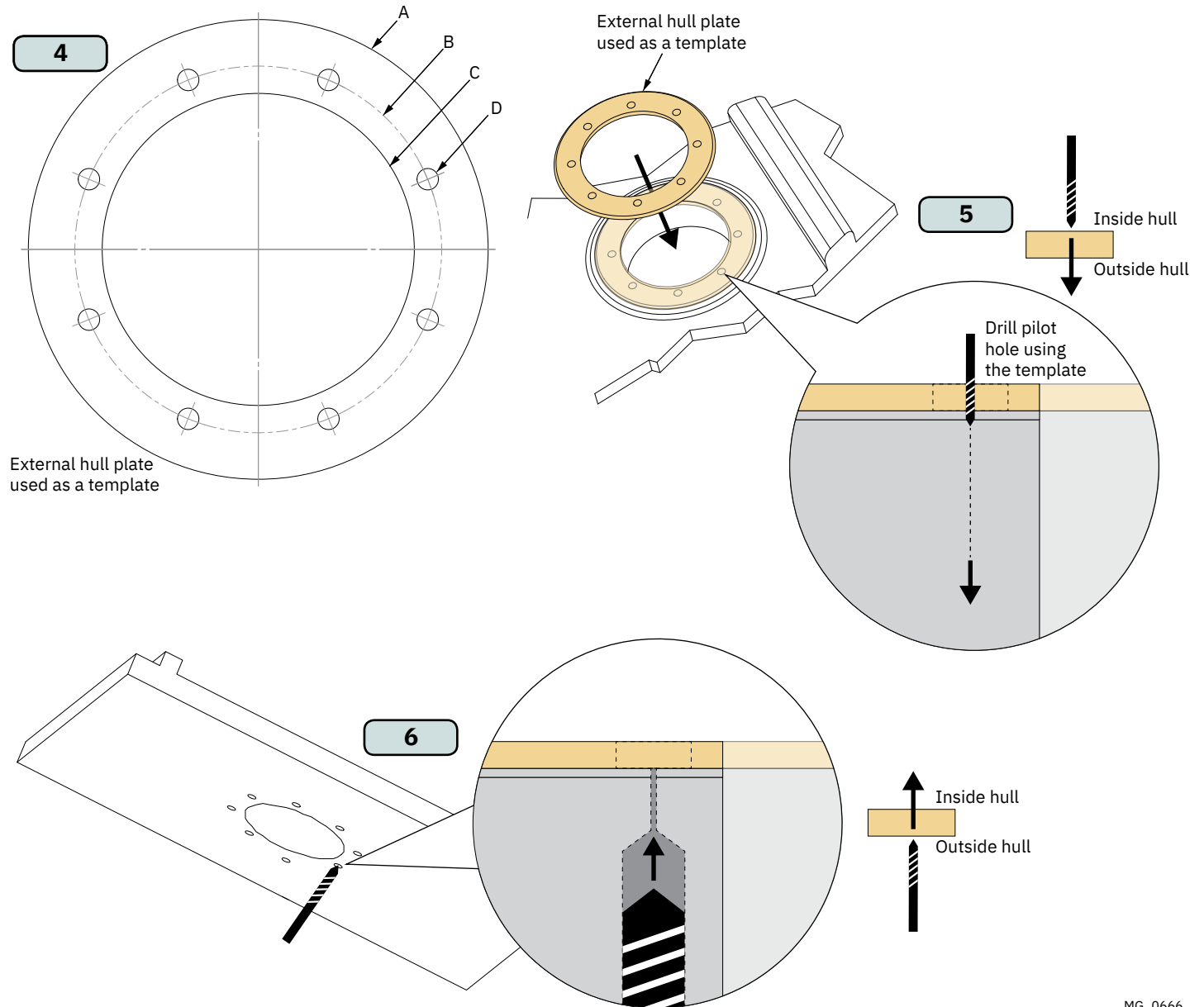
! Please refer to the graphic for special considerations relating to your model !

4. Mark the positions of the holes for the securing bolts. **(NB: Use the external hull plate as a template.)**

Dimension code	Dimension description	SPS60E		SPS80E	
		mm	inch	mm	inch
ØA	Hull plate external diameter	545	21.5	712	28
ØB	Hole positional diameter	504	19.8	640	25.2
ØC	Hull plate internal diameter	431	17	567	22.3
ØD	Hull plate hole diameter	21	0.8	25	1

5. Drill a pilot hole using the external hull plate as a guide. **(NB: Drill pilot hole from inside the hull.)**

6. Complete the drilling to the defined hole diameter required. **(NB: Drill final hole from outside the hull.)**

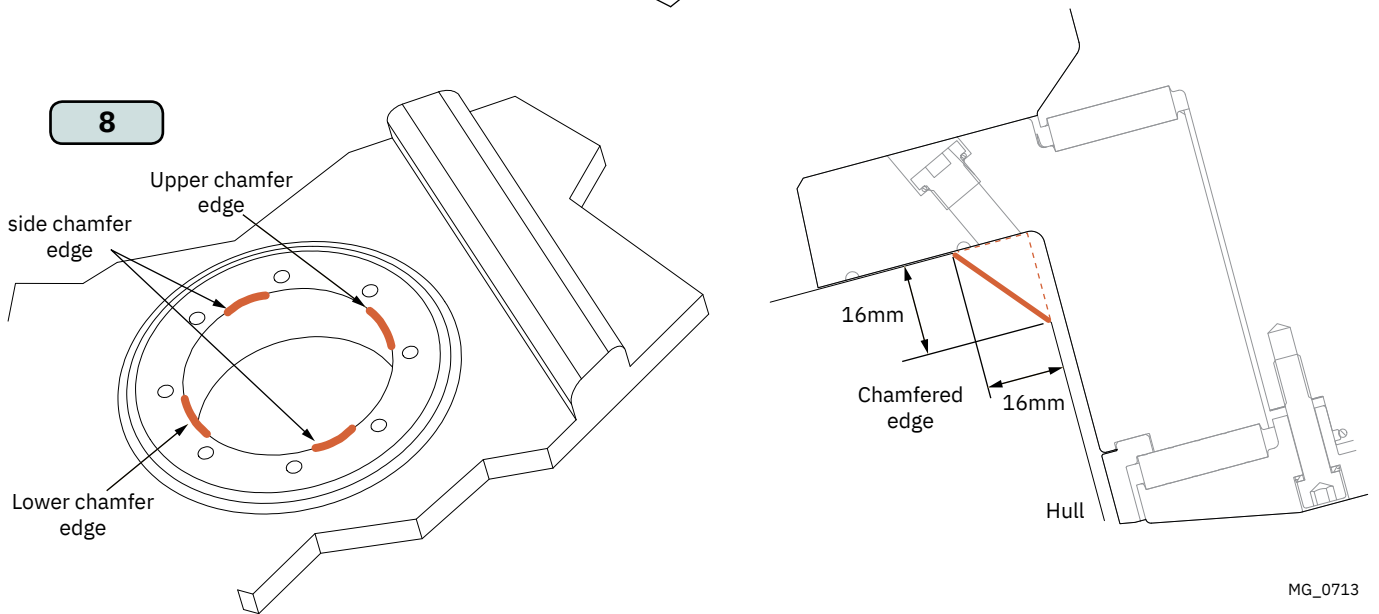
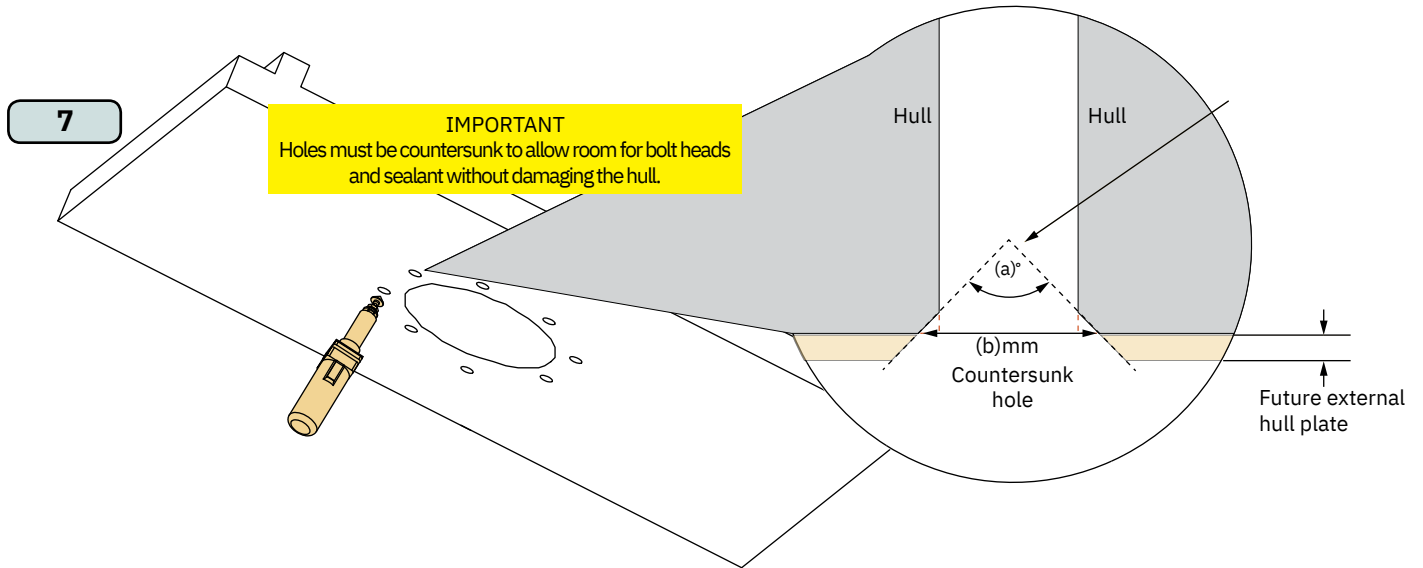


MG_0666

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

- Countersunk all holes to allow space for bolt heads and sealant without damaging the hull.
- At the area inside the vessel where the 4 chockfast injection ports are, create a chamfered edge. **(NB: The chamfer is to ensure an open area for the future injection of chockfast orange.)**

	a°	b
SPS60	60°	25.5mm
SPS80	60°	33.5mm



MG_0713

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

MOUNTING OF THE STABILIZER ACTUATOR ASSEMBLY

NOTE:

- **Steps 9-17 must be finalized within the cure time of the watertight sealant being used. Step 18 can be initiated only after the sealant is cured.**
9. Apply watertight sealant to the mating surface of the hull and the actuator inside the boat. Do not apply watertight sealant around the bolt holes or inner chamfered edge. *(NB: Sealant must be compatible with hull material. A naval architect/Boat builder must confirm this.)*
 10. Lower the Stabilizer Actuator Assembly into the hulls actuator hole. *(NB: Use the actuator lifting eyes to thread lifting slings combined with a mechanical support to assist in a controlled lowering of the actuator.)*

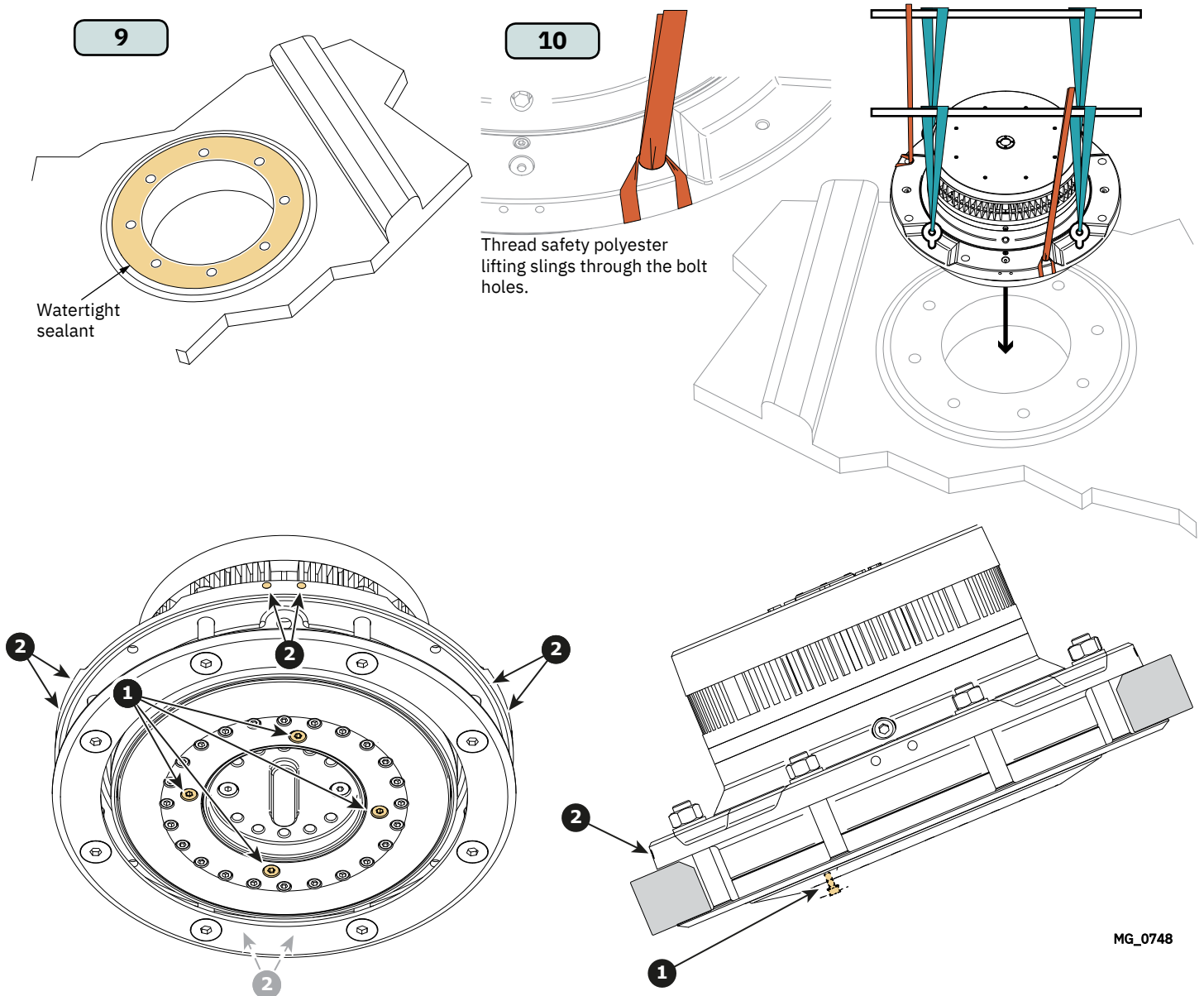
IMPORTANT NOTES:

- **Ensure that at least one of the oil drainage holes are at the lowest point of the installation angle. (Reference 1).**
- **Ensure that the condensation drain holes (Reference 2) are not covered by sealant or other material. Condensation on the actuator will flow into the void between the motor and hull assemblies, and must drain out through these holes. The condensation drain holes must always be at the actuators lowest point.**

The condensation drain holes are always positioned straight above the oil drain hole, and there are four sets of oil- and condensation drain holes with a mutual offset of 90 degrees between the sets.

WARNING

Use a mechanical support to lower the actuator into position, as an actuator can weigh approx 300kg. Attach two safety slings through the bolt hole and remove just before lowering the actuator into its final position. Ensure at least one of the four oil drainage holes is at the lowest of the installation angle.



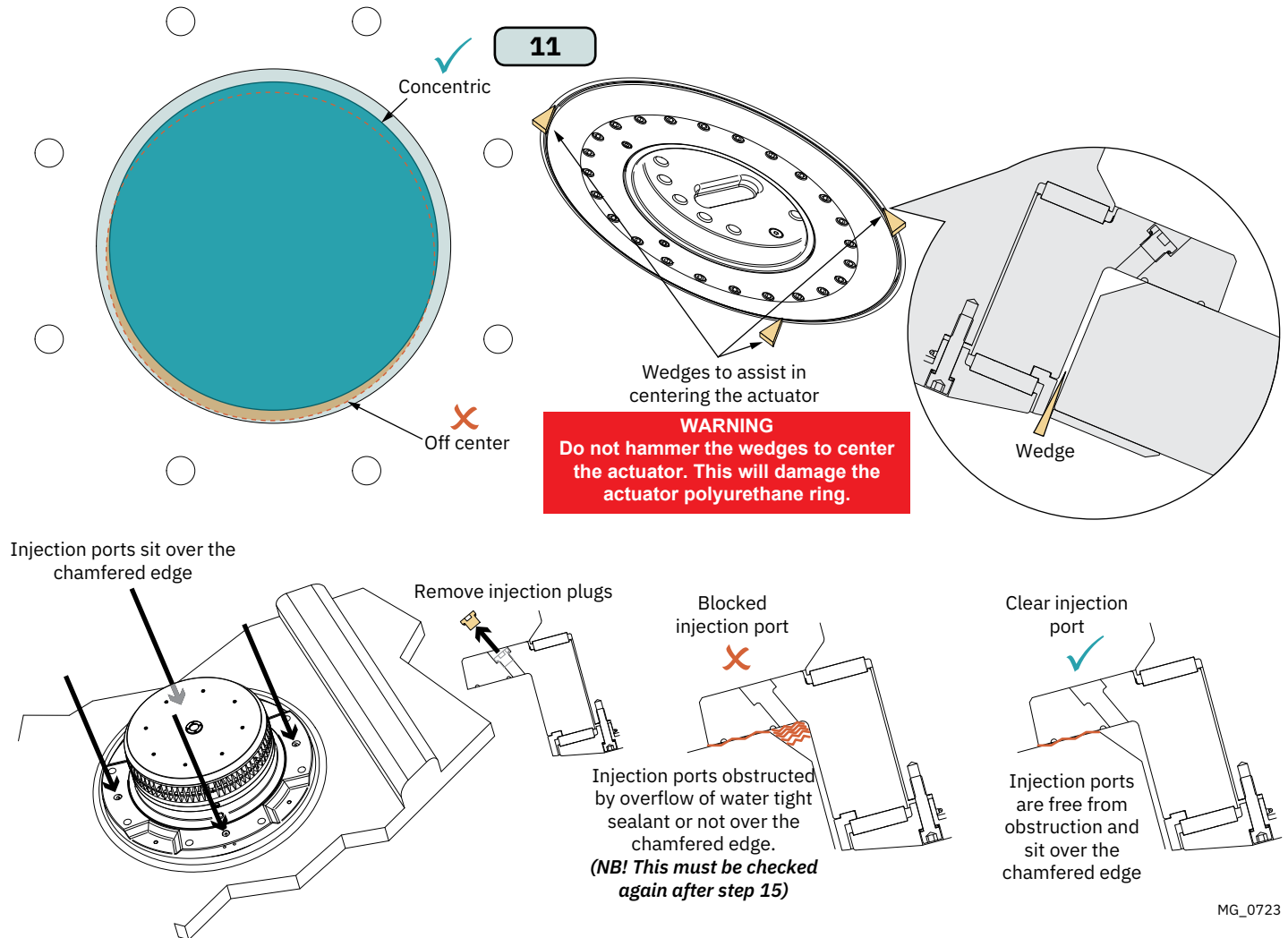
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! Please refer to the graphic for special considerations relating to your model !

MOUNTING OF THE STABILIZER ACTUATOR ASSEMBLY

11. Ensure the actuator shaft core sits concentric to the hole. Ensure the 4 chockfast injection ports are over the chamfered edge and not obstructed. **(NB: Remove the injection port plugs to inspect the actuator sits over the chamfered edge and is clear from obstruction for the injection process.)**

Do not throw away injection plugs as they are needed later during installation!

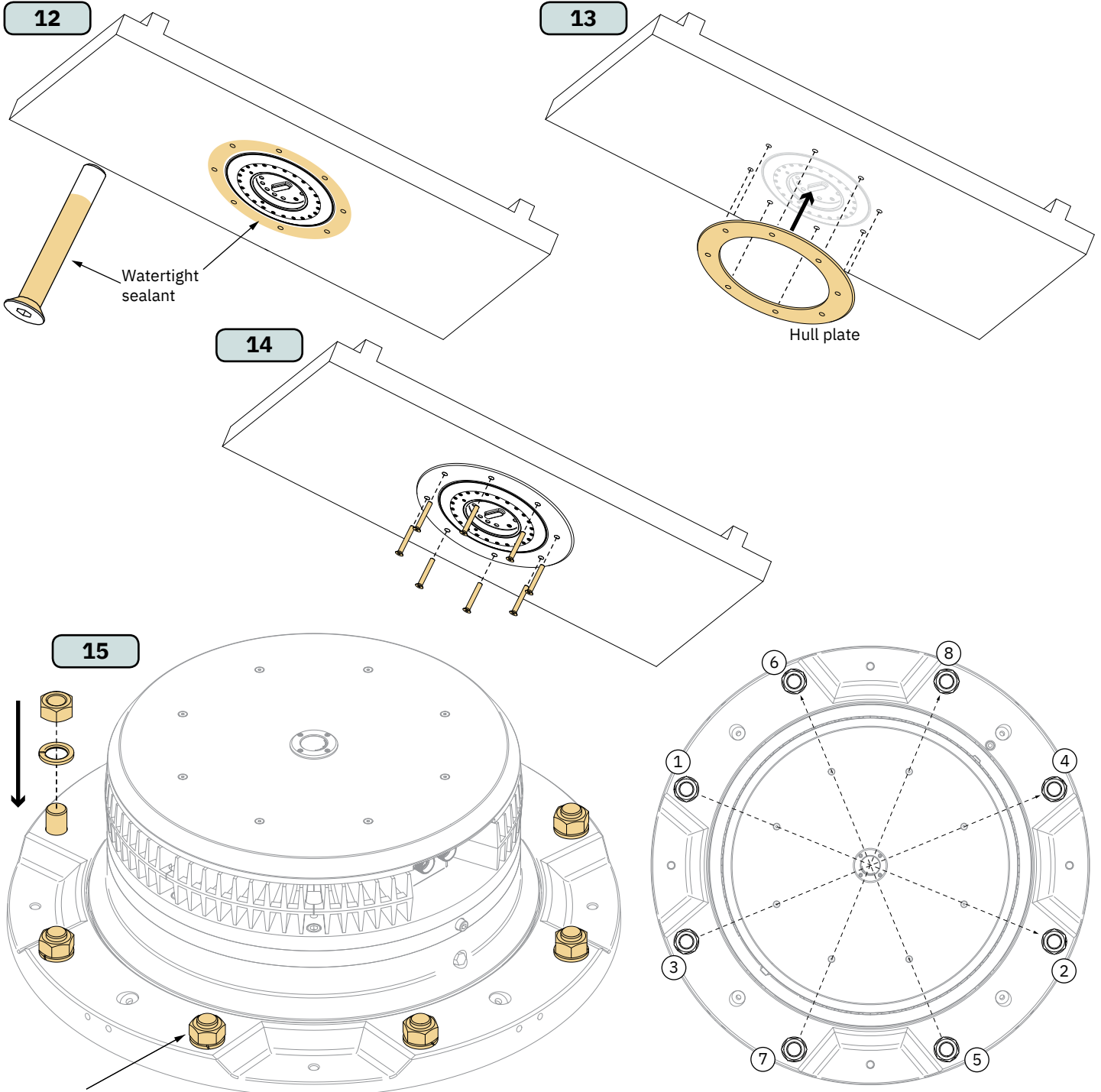


MG_0723

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

MOUNTING OF THE STABILIZER ACTUATOR ASSEMBLY

12. Apply watertight sealant to the Hull plate, can also be applied directly on the hull. Additional apply sealant on the bolt countersunk area to achieve proper sealing between bolt head, Hull plate and to the plate securing bolts.
13. Place the Hull plate over the Stabilizer shaft & onto the external hull mounting surface.
14. Insert actuator bolts with watertight sealant to the Hull plate.
15. Tighten & torque load the securing bolt nuts with washers in two stages following the defined number order to avoid misalignment.
 Stage 1: Fasten each bolt to the defined tightening vaule and order.
 Stage 2: Fasten each bolt to the defined tightening vaule and order.



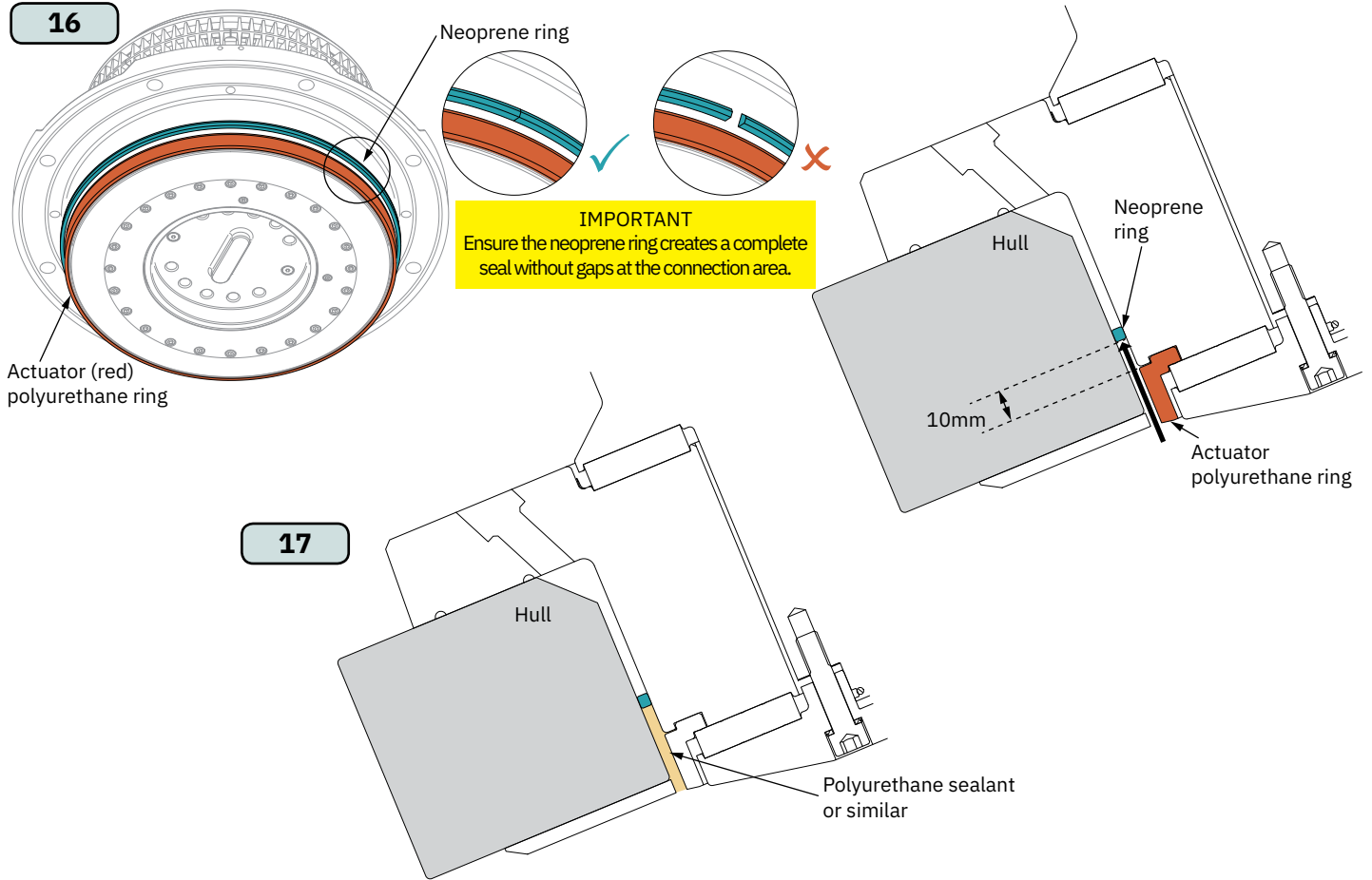
Tighten	SPS60E	SPS80E
Stage 1	30Nm	30Nm
Stage 2	160Nm	250Nm

IMPORTANT
Fasten bolts diagonally to avoid misalignment

WARNING
To prevent galling, add grease to the nut threads and fasten slowly.

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

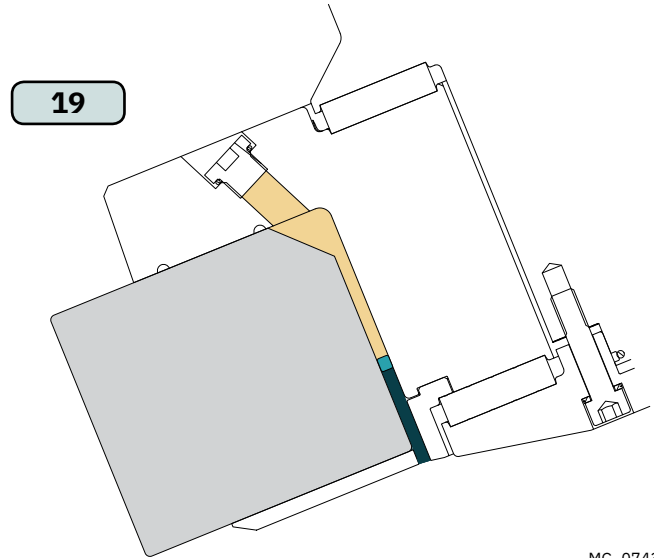
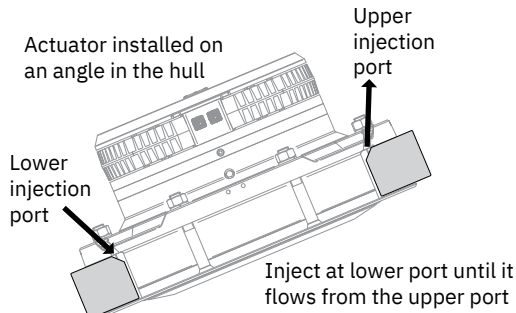
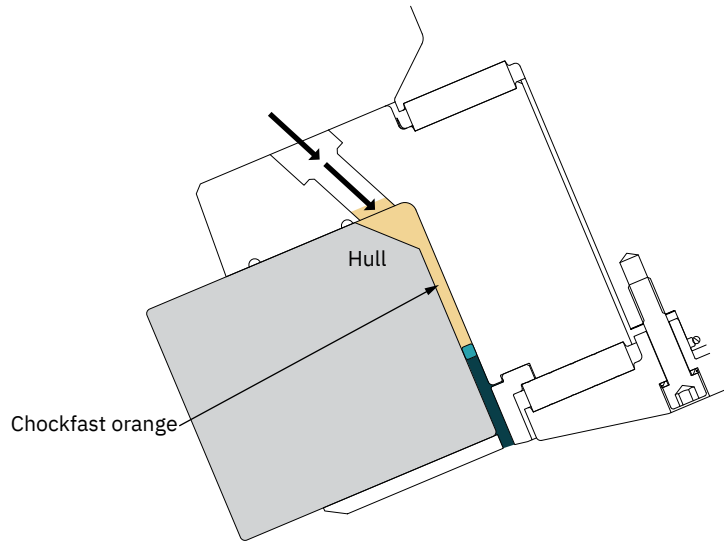
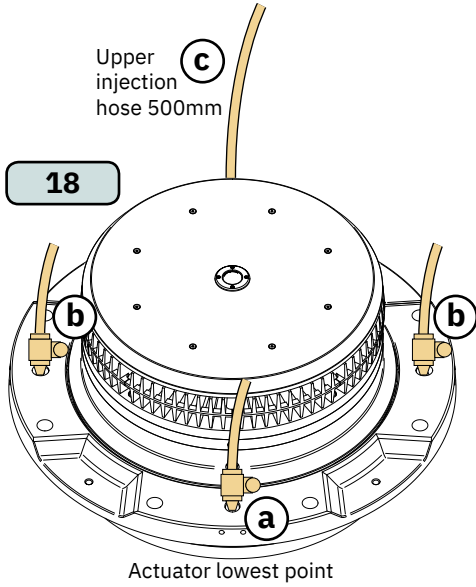
16. Clean away any overflowed watertight sealant if necessary and seal the lower gap with a neoprene string. Push the neoprene string 10mm past the actuator polyurethane ring. **(NB: The polyurethane ring is identifiable as a red ring on the lower actuator. Sleiipner supply 2 different neoprene rings in delivery. Choose the ring that achieves the closest to 30% compression)**
17. Fill the lower void with polyurethane sealant or similar to create a create a water tight seal between the hull and the actuator. Sealant must be completely cured before proceeding to the next step.



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

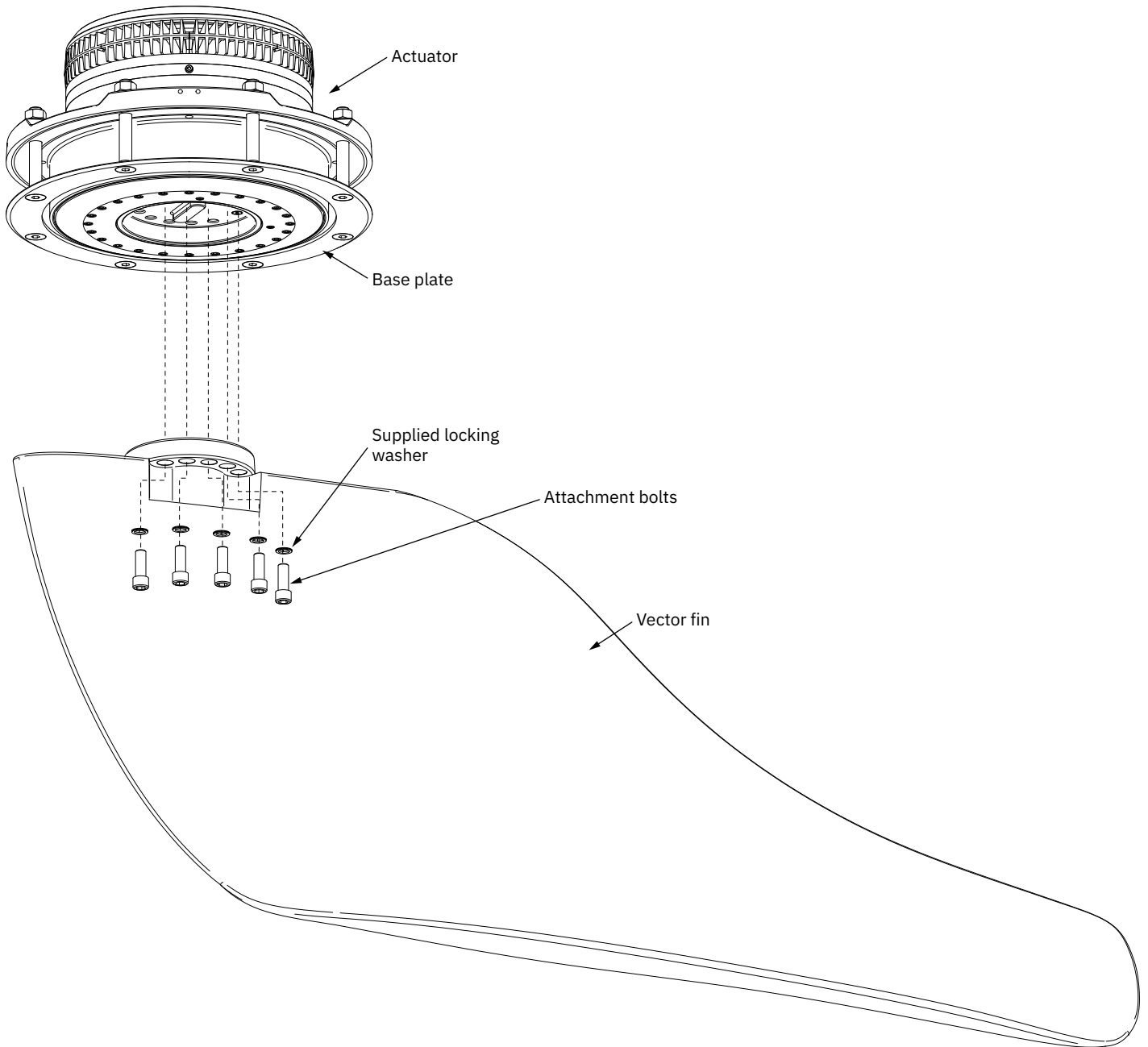
18. Inject Chockfast orange, EpoCast or Steel Blue through the lower chockfast injection holes on the actuator base plate. Inject chockfast until it flows out of the upper. **(NB: Commonly the actuator is installed on a slight angle. The lower injection port is defined as lowest port on the base plate.)**
 - a. Press the filler compound/ chockfast into the lowest point.
 - b. When clean filler compound/ chockfast without bubbles comes out of drain port 1 and 2, close the drain ports.
 - c. Continue filling until a small reservoir forms in the last (top) drain to allow flow back during the cure time process. **(NB: Recommend hose length is 500mm for the upper injection hose to allow flow back during the curing process.)**
19. After the filler compound has hardened, remove all four hoses and insert injection plugs.



WARNING
After injection is complete. Remove all remaining compound containers from the vessel due to fire risk. (exotherm curing process)

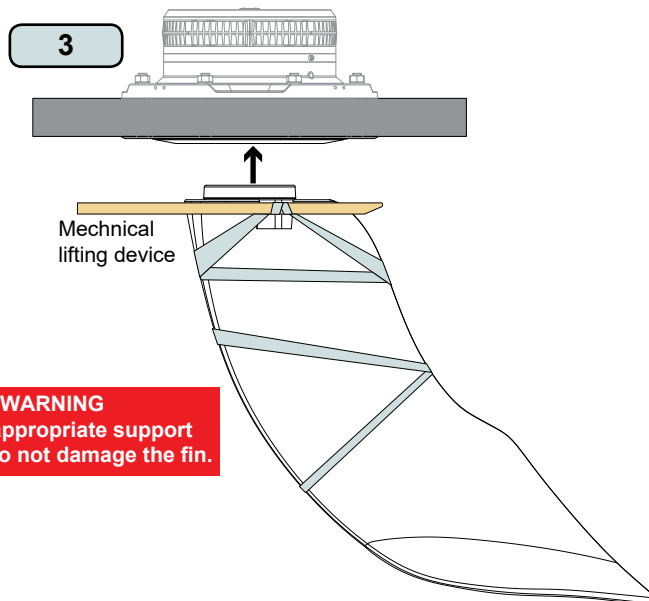
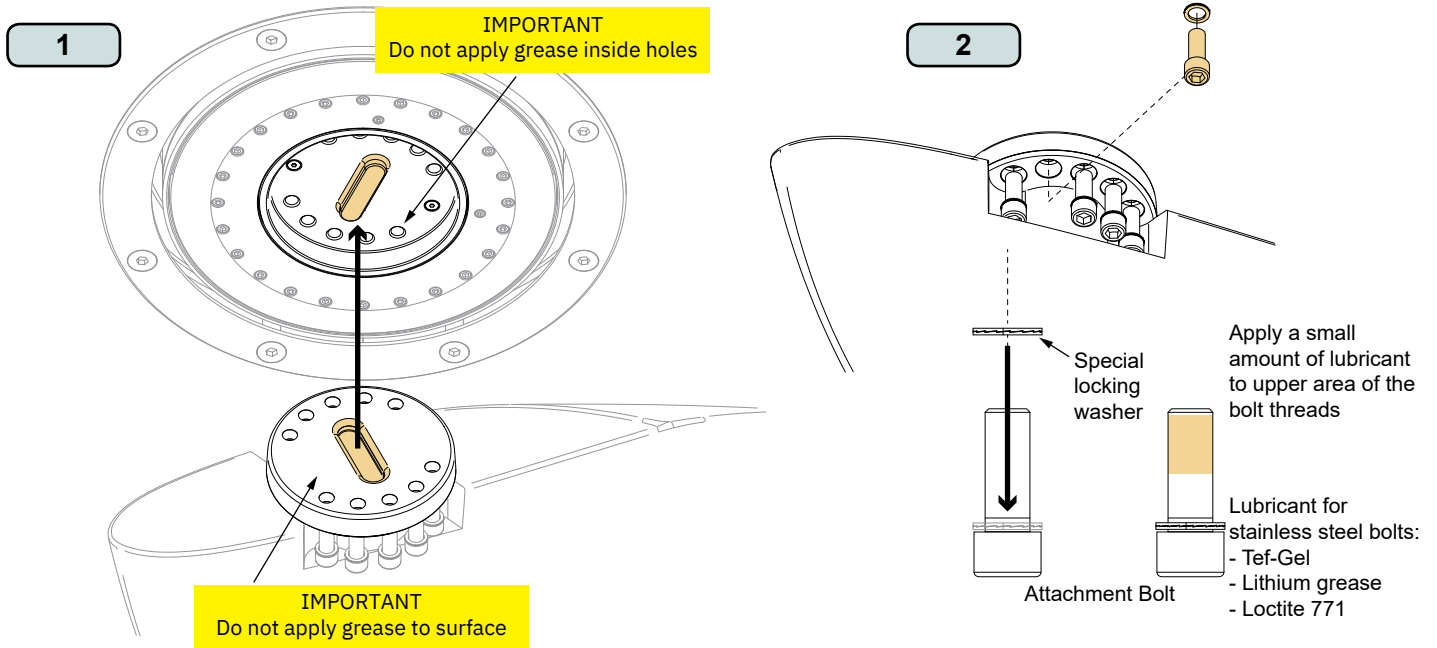
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Fin Components



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

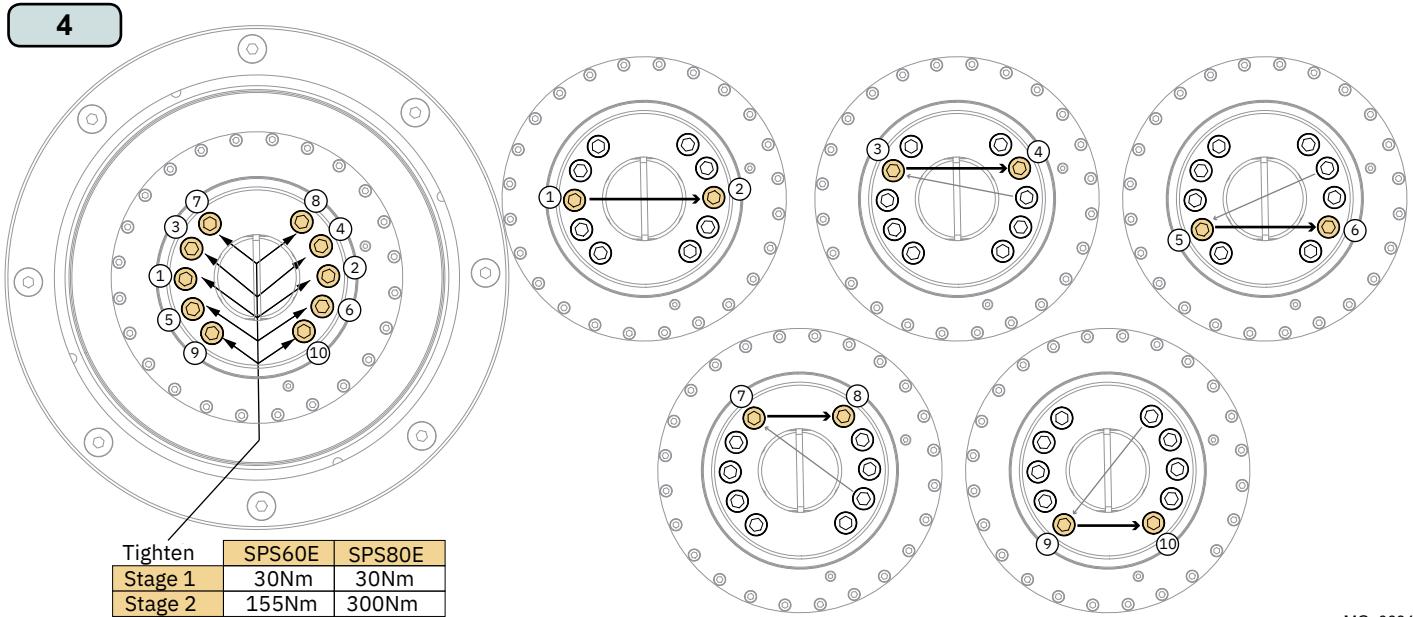
1. Align tongue and groove on the fin and the fin hub. **(NB: Do not apply grease to the bolt holes or the surface plate of the fin.)**
2. Place the locking washer to each bolt and apply a small amount of lubricant to the bolt threads. Insert the 10 attachment bolts to the fin.
3. Lift the fin into position.



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

4. Tighten & torque load the 10 attachment bolts in two stages following the defined number order.
 Stage 1: Fasten each bolt to the defined tightening value and order.
 Stage 2: Fasten each bolt to the defined tightening value and order.

5. Attached shaft covers.



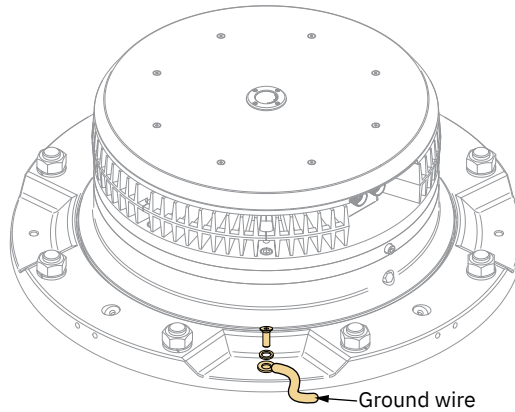
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1. Plan the installation

The installation should be planned according to available cable length and placement recommendations for the different components. A system overview is shown in the Wiring Diagram chapter.

2. Connect Actuator ground wire

Connect a ground wire from the vessel's main bonding/ anode system to each actuator.



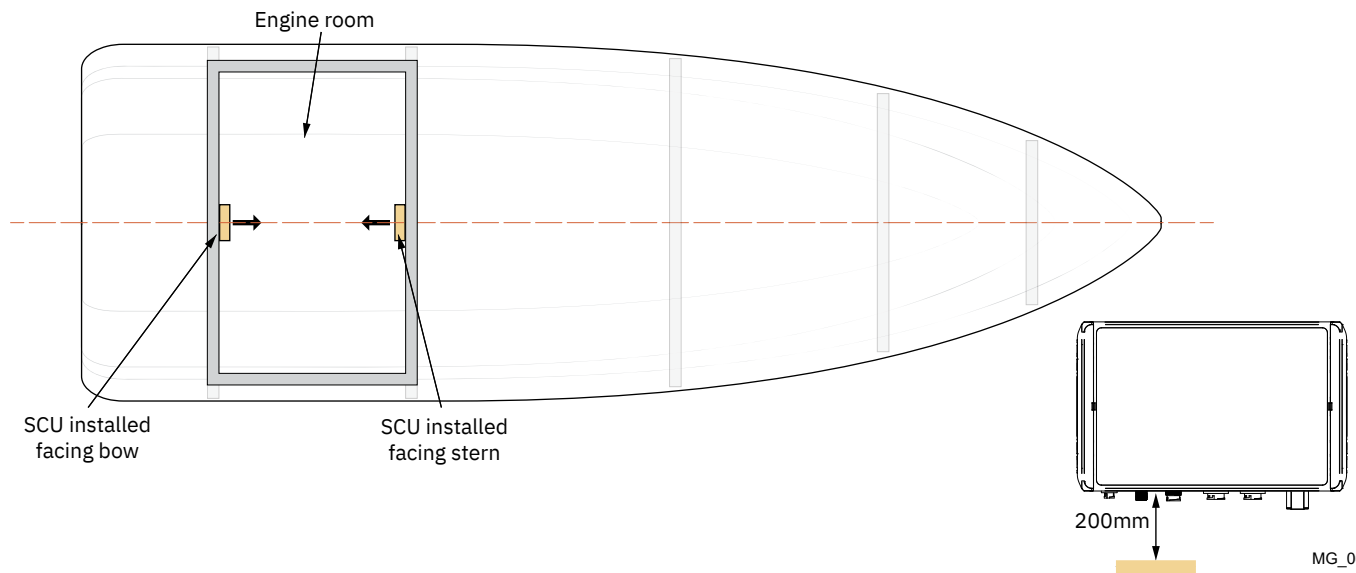
MG_0691

3. Stabilizer Control Unit (SCU)

The motion sensor used by the stabilisation algorithm is located inside the SCU. It is important to mount the SCU to a stable surface perpendicular to the keel, preferably on a bulkhead and as central as possible in the boat. A typical location is the forward or aftward engine room bulkhead. During system configuration it is specified in the control panel if the SCU is mounted facing bow or stern. The SCU must be installed with the connectors facing down and clearance for cables bend radius. The cable to be used between the SCU and the actuator is available in several predefined lengths, with a maximum length of 30-meters. The location of the SCU must be selected so that it is in reach of the eFD or SPS40E actuator with one of the available cable lengths.

Connect the supplied SCU Power Cable between connector X1 on SCU and a 24V DC supply protected with a 15A fuse. It is recommended to have a dedicated switch on the 24V supply to the SCU to enable a complete shut-down of the system.

Connect an S-Link spur cable between connector X2 on SCU and a T-Connector on the S-Link back bone cable.



MG_0673

SCU Cable Installation

SCU cable

Connect the actuator on starboard side to connector X5 on SCU and connect actuator on port side to connector X6 on SCU.

Cables for connection of stabilizer system are available in the following standard lengths shown in the table:

Order number	Length
151370-040	4m
151370-070	7m
151370-100	10m
151370-150	15m
151370-200	20m
151370-250	25m
151370-300	30m

1. SPS Electronic Fin Drive (eFD)

The eFD is supplied with 2.5 meter long encoder- and power cables for connection to the actuator. Mount the eFD in proximity of the actuator to ensure that the cables can be connected.

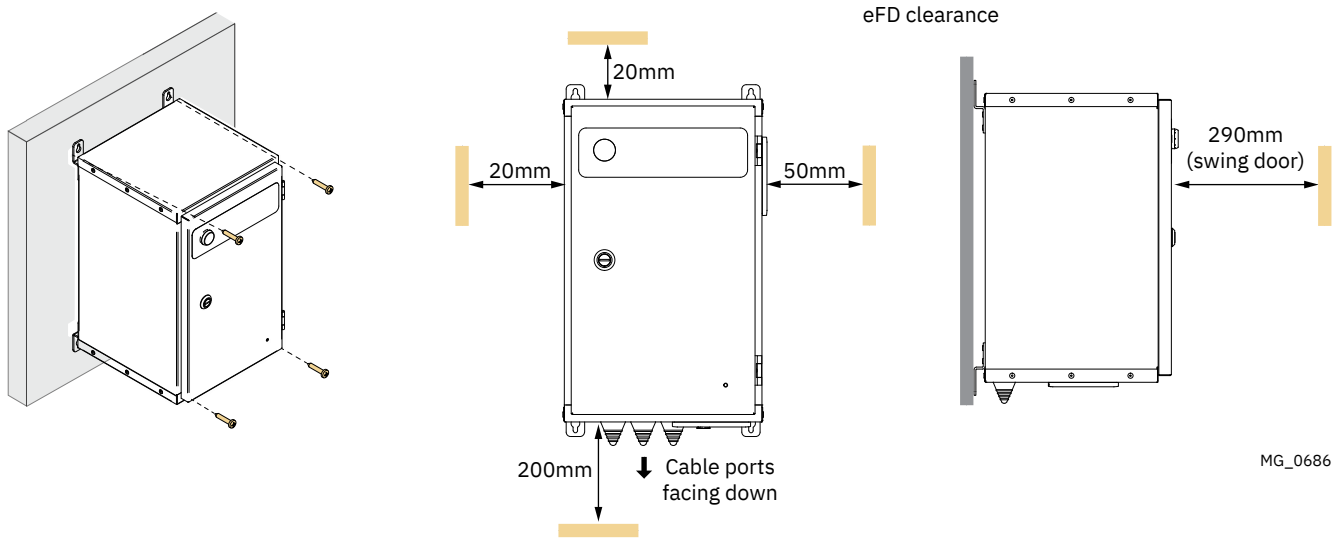
Use four screws with a maximum diameter of 6mm and a maximum head diameter of 12mm to fasten the eFD. First fasten the screws for the top brackets, hook on the eFD and then fasten the screws for the bottom brackets. When the eFD is held in place by the top and bottom screws, tighten all screws to ensure the eFD is securely mounted.

The eFD should be mounted with the cables pointing down and clearance for air circulations, opening of the door and cable bend radius. See sketch below for required clearance.



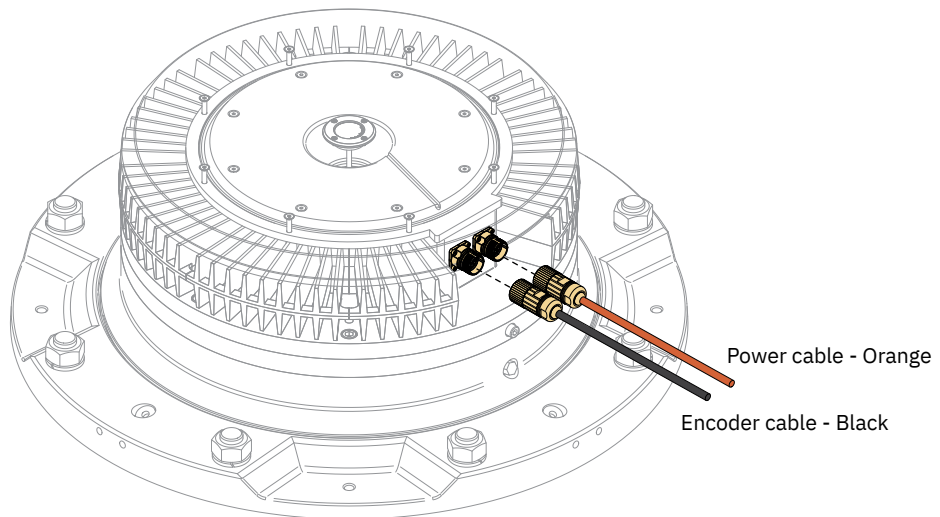
Warning. High system voltage present.
Electrical installation must be performed by authorized personnel.

MG_0869



MG_0686

Connect the encoder- and power cable to the actuator.



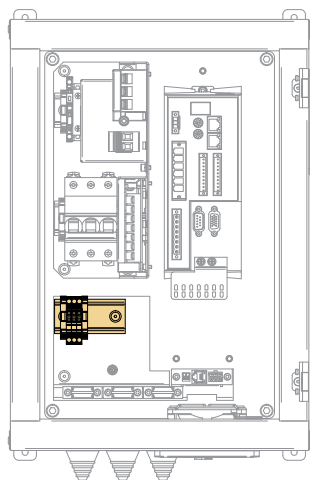
MG_0677

Each eFD should have a separate power supply cable with a dedicated fuse as shown in the Wire Diagram chapter. AC supply wire size and fuse rating should be chosen according to table below.

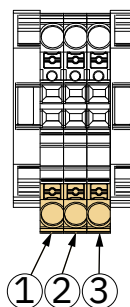
eFD	Supply Voltage	Supply Phases	Supply Current Peak	Supply Current Average	Recommended Wire Size	Recommended Fuse Rating
eFD-60-230-1-K	230V 50Hz	1+N	TBA	TBA	TBA	TBA
eFD-80-400-3-K	400V 50Hz	3+N	11A	5.5A	2.5mm ²	16A

To get access to the power supply terminals of the eFD, open the lid by rotating the lock handle. Connect AC supply to the eFD according to instructions below.

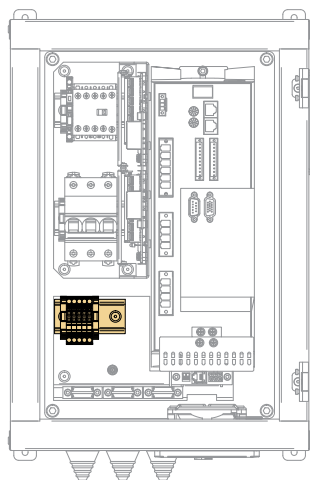
eFD-60-230-1-K



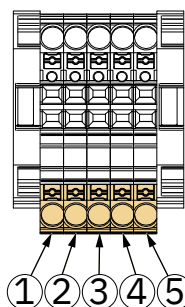
Terminal	Signal	Description
1	L	Line
2	N	Neutral
3	PE	Protective Earth



eFD-80-400-3-K



Terminal	Signal	Description
1	L1	Line 1
2	L2	Line 2
3	L3	Line 3
4	N	Neutral
5	PE	Protective Earth



MG_0674

SCU Cable Installation

MC_0718

SCU cable

Connect the actuator on starboard side to connector X5 on SCU and connect actuator on port side to connector X6 on SCU.

Cables for connection of stabilizer system are available in the following standard lengths shown in the table:

Order number	Length
151370-040	4m
151370-070	7m
151370-100	10m
151370-150	15m
151370-200	20m
151370-250	25m
151370-300	30m

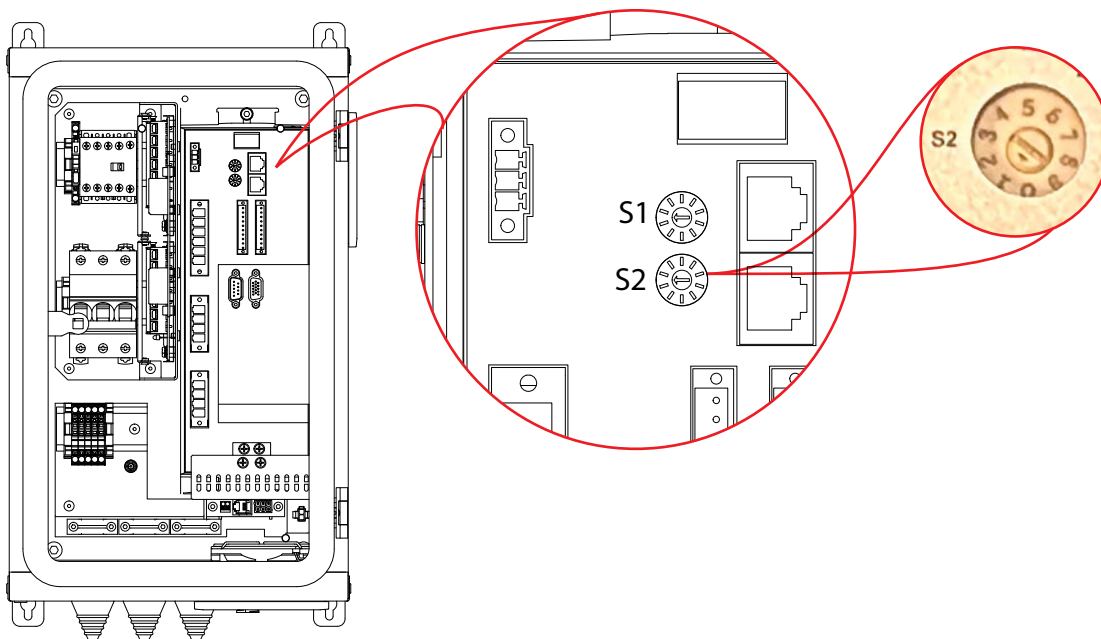
The eFD units in the complete stabilizer system must be configured as port and starboard eFD.

This configuration is selected by the S2 switch on the driver module inside the eFD cabinet.

Use a small flat screwdriver to operate the switch, and turn it so that the small arrow on the switch points towards the correct position.

- Set S2 switch to position “1” for the starboard stabilizer
- Set S2 switch to position “2” for the port stabilizer.

The S2 location is shown in the illustration below.



MG_0867

1. Control panel

Install control panel according to instructions in the Installation Guide accompanying the control panel.

2. GPS receiver

SCU requires speed data from a GPS to operate the stabilizers. GPS signal must be interfaced through the S-Link Gateway (GW-1).

A GPS can be interfaced either through the NMEA 0183- or the NME 2000 port on GW-1. See GW-1 user manual, document number 3057, for detailed information on connection of GPS and installation.

If using NMEA 2000 GPS input, ensure that signal is available at all times when stabilizer operation is required.

If using NMEA 0183 it is recommended to power the GPS from GW-1. If GPS is installed with dedicated power supply the GPS must always be powered when S-Link power is turned on.

Connect GW-1 to S-Link as shown in the Wiring Diagram chapter.

The GPS antenna should be installed where it can get a clear view of the sky and not be in the shadow of obstructions.

3. Reverse detection

To ensure proper operation and avoid damage the fins must be put in centre position when the vessel transmission is set in reverse for astern movement. The SCU offers three solutions for reverse detection. Ensure to select SCU-KIT order number according to desired reverse detection solution.

Revers Detection	SCU order number	Comment
NMEA 2000	SCU-KIT-2F-NMEA	GW-1 included for NMEA 2000 and GPS integration.
Pressure switches	SCU-KIT-2F-TD	Two pressure switches for Twin Disk transmission included. GW-1 included for GPS integration.
	SCU-KIT-2F-ZF	Two pressure switches for ZF transmission included. GW-1 included for GPS integration.
Reverse solenoid interface	SCU-KIT-2F-SO	Reversing Solenoid Interface included. GW-1 included for GPS integration.

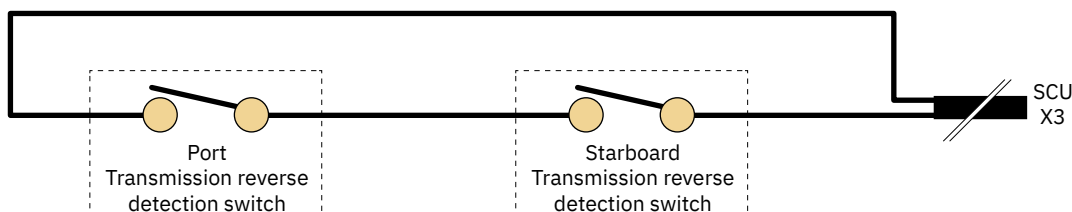
NMEA 2000

If main engine transmission PGN127493 is available on NMEA 2000, this bus can be connected to GW-1 and the PGN made available for the SCU.

Pressure switches

For some types of engines, pressure sensors can be installed on the main engine transmission. The drive direction can be monitored by detecting the pressure level in the gearbox control. Sensor port position can vary between different transmission models. Please contact engine supplier for instructions.

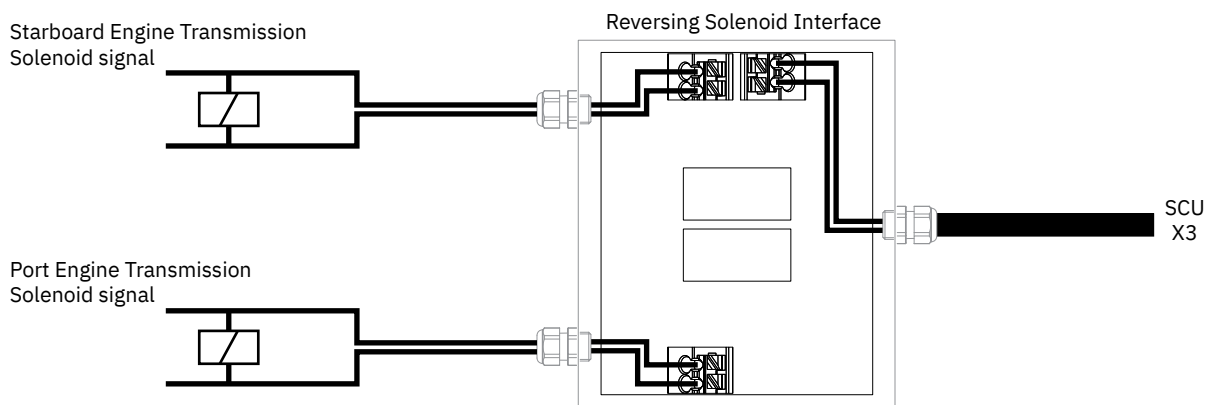
Both switches shall be connected in series and connect to connector X3 on SCU by using the supplied Reverse Detection Cable. An open switch is interpreted as transmission is put in reverse.



MG_0687

Reverse solenoid interface

For vessels not having available ports for pressure switches, connecting to 24V transmission solenoid signals could be an option. The solenoid signals must be connected to the Reversing Solenoid Interface box and the Reverse Detection Cable shall be connected between connector X3 on SCU and the Reversing Solenoid Interface box.

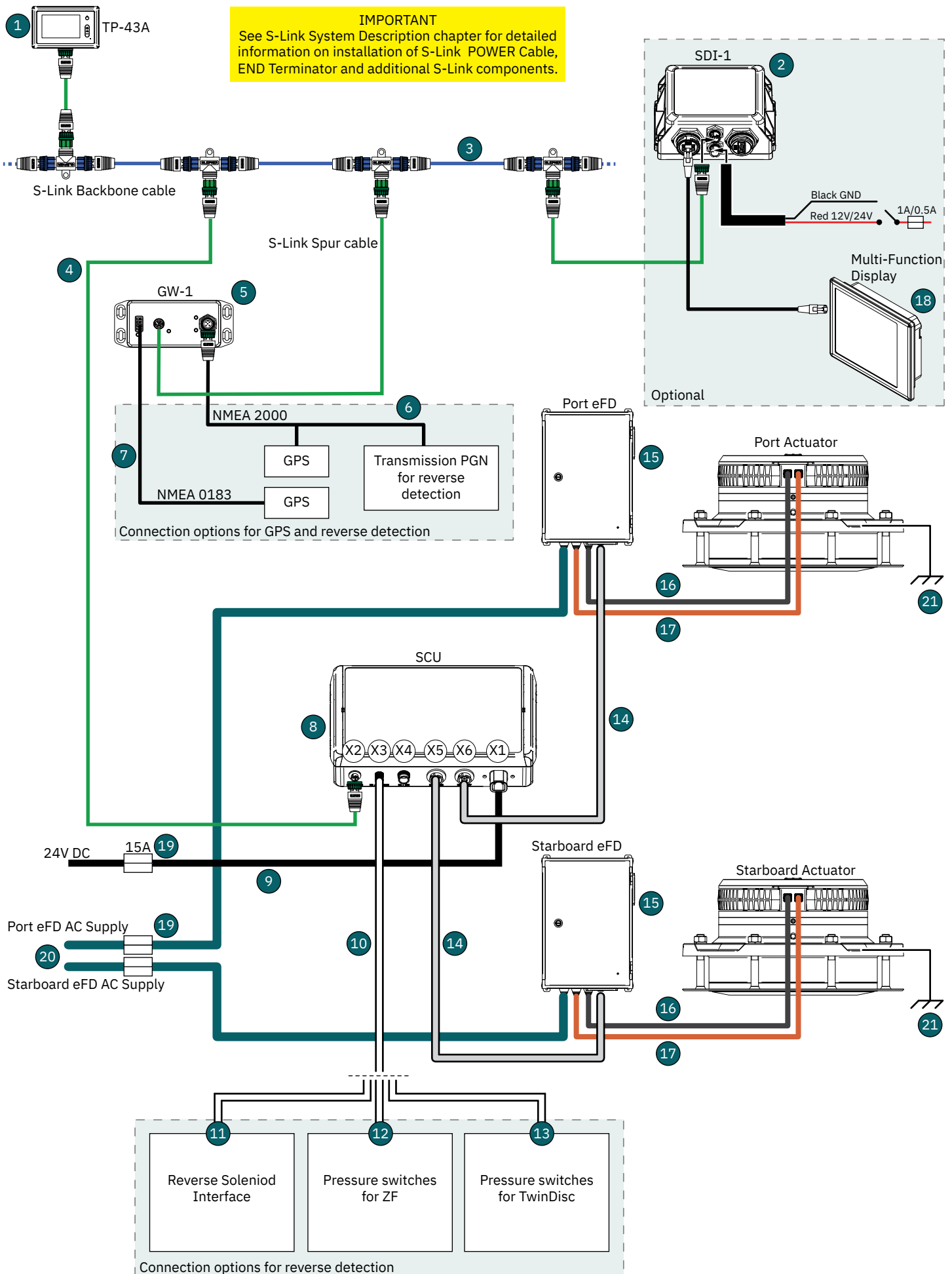


MG_0685

4. S-Link

See the S-Link System Description chapter for detailed information on the installation of the S-Link Power cable, END Terminator and additional S-Link components.

Wiring Diagram for SPS60E & SPS80E



IMPORTANT
See S-Link System Description chapter for detailed information on installation of S-Link POWER Cable, END Terminator and additional S-Link components.

Reference Number	Item Number	Description
1	TP-43A	Stabilizer control panel. Included in all SCU-kits
2	SDI-1	S-Link Display Interface. Optional. Can be used for monitoring and configuration of thrusters and stabilizer
3	S-Link Backbone cable	Available in different lengths
	6 1320-0,2M	S-Link™ backbone control cable 0,2m
	6 1320-2M	S-Link™ backbone control cable 2m
	6 1320-4M	S-Link™ backbone control cable 4m
	6 1320-7M	S-Link™ backbone control cable 7m
	6 1320-10M	S-Link™ backbone control cable 10m
	6 1320-15M	S-Link™ backbone control cable 15m
	6 1320-20M	S-Link™ backbone control cable 20m
4	S-Link Spur cable	Available in different lengths
	6 1321-0,4M	S-Link™ spur control cable 0,4m
	6 1321-1M	S-Link™ spur control cable 1m
	6 1321-3M	S-Link™ spur control cable 3m
	6 1321-5M	S-Link™ spur control cable 5m
	S-Link	Other available S-Link components
	6 1328	S-Link™ spur power cable 2,5m
	6 1322	S-Link™ backbone extender
	6 1326	S-Link™ T-connector
	6 1403	S-Link™ 4-Port T-connector
	6 1327	S-Link™ terminator
5	GW-1	S-Link™ gateway Included in all SCU-kits
6	NMEA 2000 Network	Not supplied by Sleipner Used for GPS connection and/or reverse detection by NMEA engine control.
7	321714	GPS-receiver for S-Link™ Gateway NMEA 0183 GPS for speed data to Stabilizer system, cable 9m.
8	SCU-12	DMC SCU 2-fin Included in all SCU-kits
9	151371-025	SCU Power Cable 2.5m Included in all SCU-kits
10	151375-100	SCU Reverse Detection Cable 10m Included in SCU-KIT-2F-SO, SCU-KIT-2F-ZF and SCU-KIT-2F-TD
11	151380	Reversing Solenoid Interface w/dual relays Included in SCU-KIT-2F-SO
12	321270	Pressure switch 1/4" 0.1-1 bar NC Included in SCU-KIT-2F-ZF
13	321272	Pressure switch 1/4" 1-10 bar NC Included in SCU-KIT-2F-TD
14	SCU cable	Available in different lengths Different length on port and starboard side can be used.
	151370-040	SCU-FCU cable 4m
	151370-070	SCU-FCU cable 7m
	151370-100	SCU-FCU cable 10m
	151370-150	SCU-FCU cable 15m
	151370-200	SCU-FCU cable 20m
	151370-250	SCU-FCU cable 25m
	151370-300	SCU-FCU cable 30m
15	EFD-75-400-3-K	SPS Electric Fin Drive 400VAC 3 phase. One for port and one for starboard actuator.
16	Encoder cable	Encoder cable 2.5m Connected to eFD by Sleipner.
17	Power cable	Actuator power cable 2.5m Connected to eFD by Sleipner
18	Multi-Functional Displays	Not supplied by Sleipner Optional. MFDs can be used for monitoring and configuration of thruster and stabilizer systems when connected to SDI-1. TP-43A is always required.
19	Fuse	Not supplied by Sleipner Fuses for SCU and eFD power cables.
20	eFD power cable	Not supplied by Sleipner For voltage supply to eFD.
21	Ground wire	Not supplied by Sleipner For connection between vessel's main bonding system and actuator.

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

Main advantages of S-Link system:

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

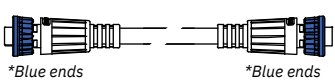
Installation of S-Link cables:

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

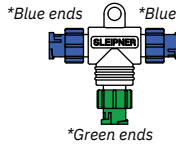
The POWER Cable should ideally be connected around the middle of the BACKBONE bus to ensure an equal voltage drop at each end of the BACKBONE Cable. The yellow and black wire in the POWER Cable shall be connected to GND and the red wire connected to +12VDC or +24VDC.

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

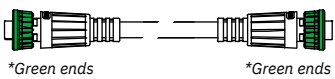
SPUR cables can be left unterminated to prepare for the installation of future additional equipment. In such cases, ensure to protect open connectors from water and moisture to avoid corrosion in the connectors.




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



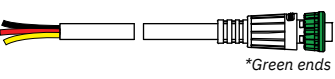
T-Connector
Used for connection of SPUR or POWER Cable to the BACKBONE Cable. One T-Connector for each connected cable.



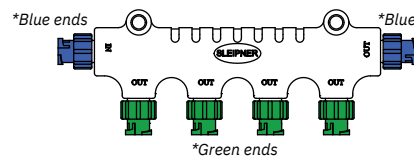
SPUR Cable
Used to connect S-Link compliant products to the backbone cable. One SPUR Cable must be used for each connected component, with no exceptions. Recommended to be as short as practically possible. Available in different standard lengths.



BACKBONE Extender
Connects two BACKBONE Cables to extend the length.

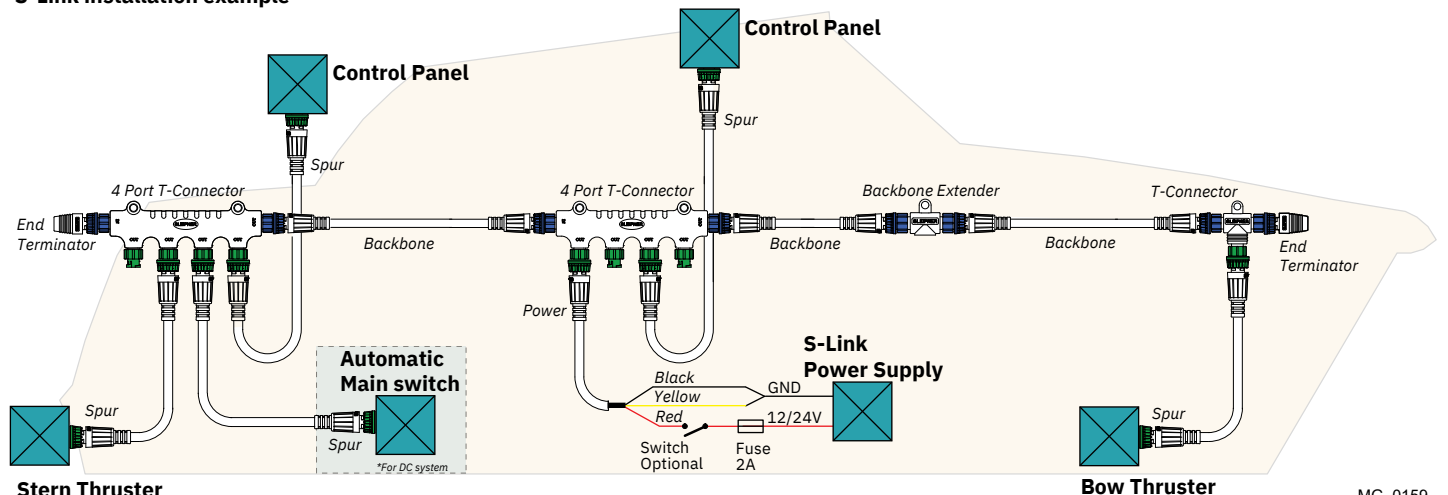


POWER Cable
Required in all installations for connection of BACKBONE Cable to a power supply and should be protected with a 2A fuse.



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



Fin Location Label

After final installation of the fins place the Fin Location Labels to appropriately identify the location of the fins underwater.

Safety Labels

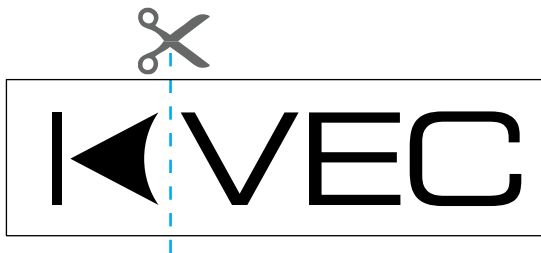
To ensure crane operators and swimmers are aware of the fin's location and operation area, please mount the safety labels on the hull



Adjustable length, fits all Sleipner Vector Fins™.

For application, get your ✂ and follow instructions in the manual.

Use scissors to cut the end arrow symbols on the label.



Place the label to the hull and place the end arrow labels to cover the length of the stabiliser fin.



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

Product Spare Parts and Additional Resources

For additional supporting documentation, we advise you to visit our website www.sleipnergrouper.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.sleipnergrouper.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.sleipnergrouper.com/patents

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