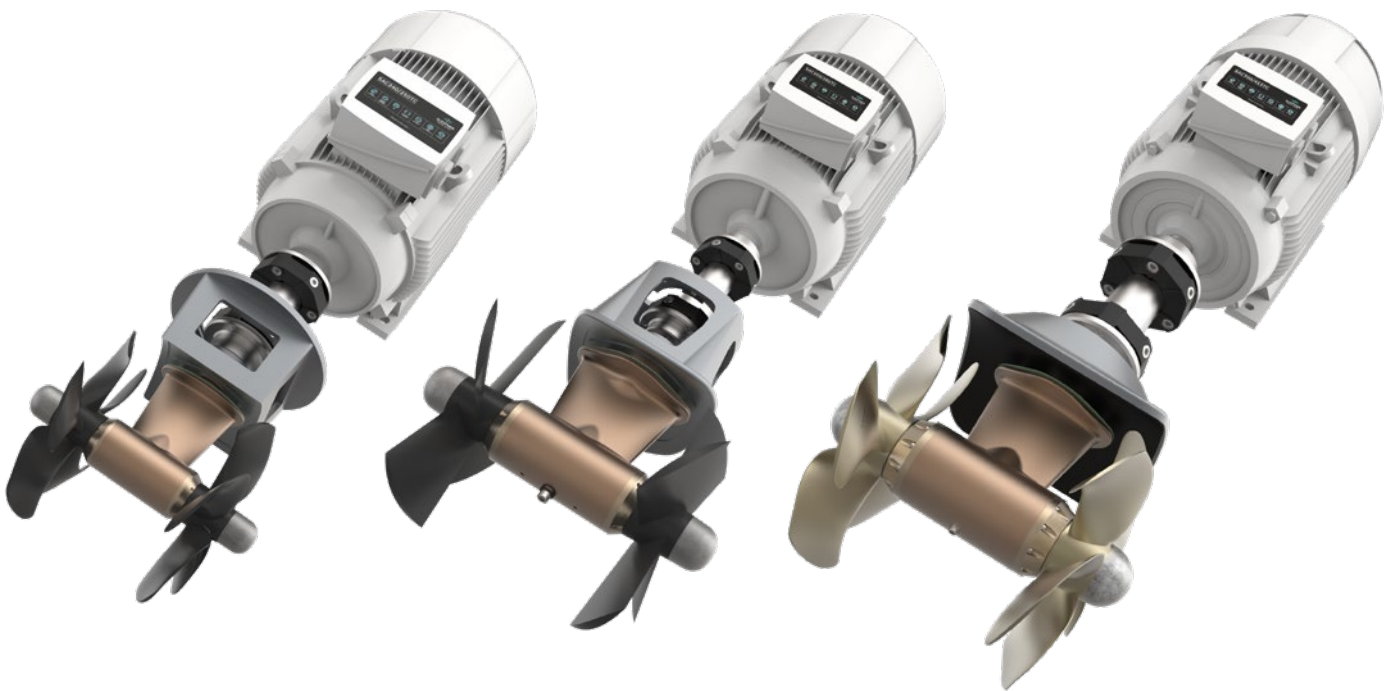


Keep this
manual onboard!



User Manual

For Thruster Models
AC Electric



DOCUMENT ID: 6054

REVISION: I3

DATE: 2024

LANGUAGE: EN

U
M

Contents

User Manual

General Operation Considerations and Precautions Guidelines	3
User operation	4
Proportional control	4
Proportional control panel.....	5
Maintenance.....	6 - 8
Variable frequency drive	6
PDC-301 Load Sharing	8
Basic troubleshooting	9
Advanced troubleshooting.....	9
Seasonal checklist.....	10
Product Specifications	11
Service and Support.....	12
Product Spare Parts and Additional Resources.....	12
Warranty Statement.....	12

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

MC_0411

For the operation of Sleipner thrusters systems:

MC_0418

- When not in use or when leaving the boat, turn the control device off.
- When leaving the boat, always turn off the main power switch for the thruster.
- Never run the thruster while out of water.
- Stop running the thruster and turn it off if the thruster stops giving thrust while running. Running the thruster for more than a few seconds without resistance from the propeller can cause severe damage to the thruster drive components.
- The thruster will not run if two conflicting directions are input in two control panels simultaneously.
- If you notice any faults with the thruster, switch it off to avoid further damage.
- The purpose of the thruster is to manoeuvre or dock the vessel. Forward or reverse speed must not exceed 4 knots when operated.



WARNING

Never use thrusters close to objects, persons, or animals in the water. The thruster will draw objects into the tunnel, as well as the rotating propellers. Contact with the rotating propellers will cause severe injuries and damage to the thruster.

Turn off the main power switch before touching any part of the thruster. An incidental start while touching moving parts can cause serious injuries.

Always plan on how to avoid damage to persons or other objects if the thruster stops giving thrust for while manoeuvring.

For the operation of AC electric thrusters

MC_0907

- Know the location of the main switch, which disconnects the thruster from all power sources in case of serious malfunction.
- The electric motor, components, contacts/ plugs or other joints in the control cables must be mounted to remain dry.
- Any loose items near the thruster motor can cause problems with electrical wiring coming loose and short-circuiting.



CAUTION

Never store items (e.g. equipment, sails, ropes etc.) in the same compartment as the thruster. When the thruster runs for an extended period, it can reach high temperatures and will cause damage to nearby items or cause a fire.

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

The following is an operation guide to ALL Sleipner control products. Ensure to familiarise yourself with the functionality and operation of your specific control device.

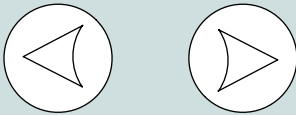


WARNING

Take time to practice operation in open water to become familiar with the thruster and to avoid damages to your boat or people.

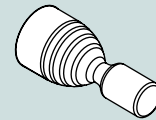
General operation

1. Turn on the main power switch for the bow thruster. *(NB: Always turn off the main power switch when not on-board.)*
2. Turn on the control panel by pushing the/ both "ON" button(s) on the original Sleipner panel simultaneously.
Turn off the control panel by pushing the "OFF" button
3. To turn the bow/ stern in the desired direction:



Button control panels

For button control, push the button in the corresponding direction you wish the bow/ stern to move.



Joystick control panels

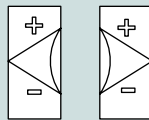
For joystick control, move the joystick in the direction you wish the bow/ stern to move.

(NB: If equipped for proportional control move the joystick equivalent to the amount of thrust you intend to receive.)

For other controls like foot switches or toggle-switches please refer to that products user manual for detailed operational use.

Hold functionality

If equipped with 'hold' functionality push the button in the corresponding direction you wish the thrusters to engage a holding pattern:



Hold Button

+ or -

Will increase or decrease the holding force output of the thrusters

Operating a combined bow and stern thruster

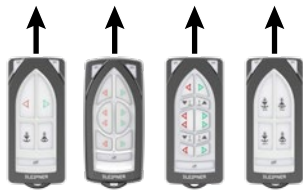
The combination of a bow and stern thruster offers total manoeuvrability to move the bow and the stern separately from each other or in unison. This enables the boat to move sideways in both directions or turn the boat around a 360° axis while staying stationary.

Remote controls



CAUTION

The remote control design reflects the vessel for orientation guidance. Be aware of the remote control orientation during operation.



Remote control orientated with the vessel



Remote control orientated opposite to the vessel

Drift

Depending on the sideways speed of the bow/ stern, you must disengage the control device shortly before the vessel is in the desired position.

(NB: Be aware the boat will continue to move after disengaging the thruster control.)



CAUTION

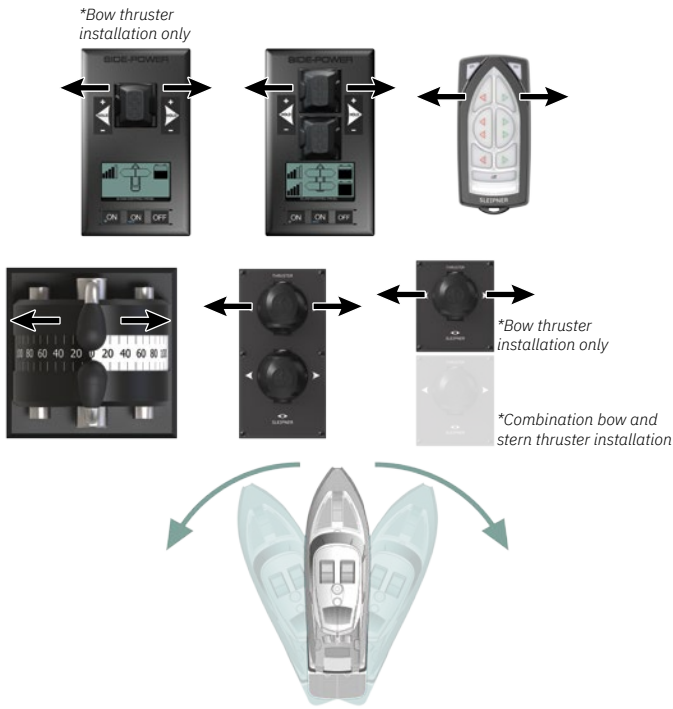
At any significant cruising speed (+1-2 kn) the side thruster will have little effect to steer the vessel.

Proportional Control Panel

Activating the bow thruster

Using your control device/ panel press the button or move the joystick in the direction you intend to turn the boat. Ensure to use the control device/ panel designated for the bow thruster.

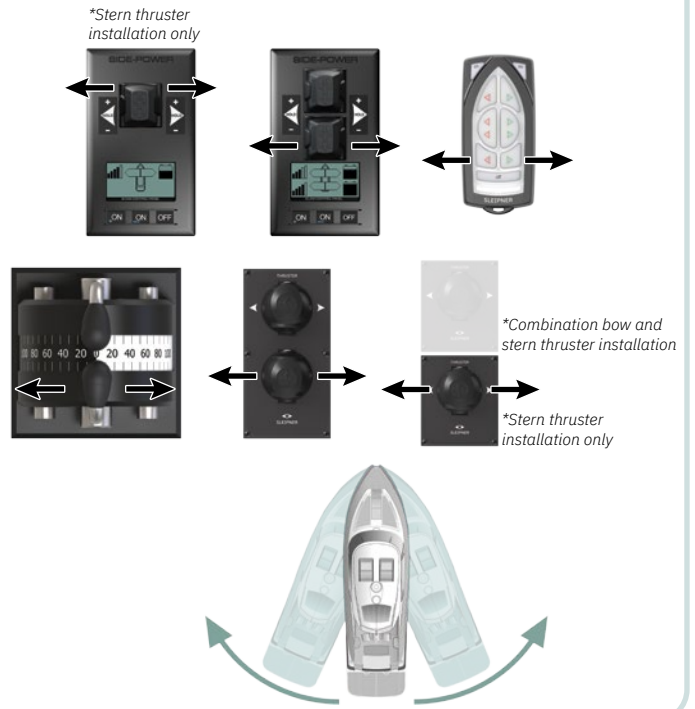
*Control panel example



Activating the stern thruster

Using your control device/ panel press the button or move the joystick in the direction you intend to turn the boat. Ensure to use the control device/ panel designated for the stern thruster.

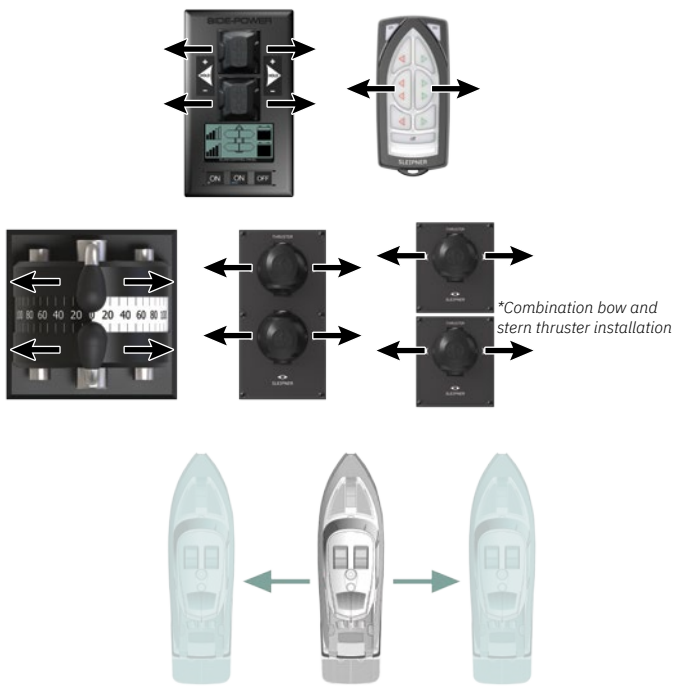
*Control panel example



Activating full sidwards maneuverer

Using your control device/ panel press both buttons or move the joysticks in the same direction you intend to move the boat. Requires both a bow and stern thruster to perform.

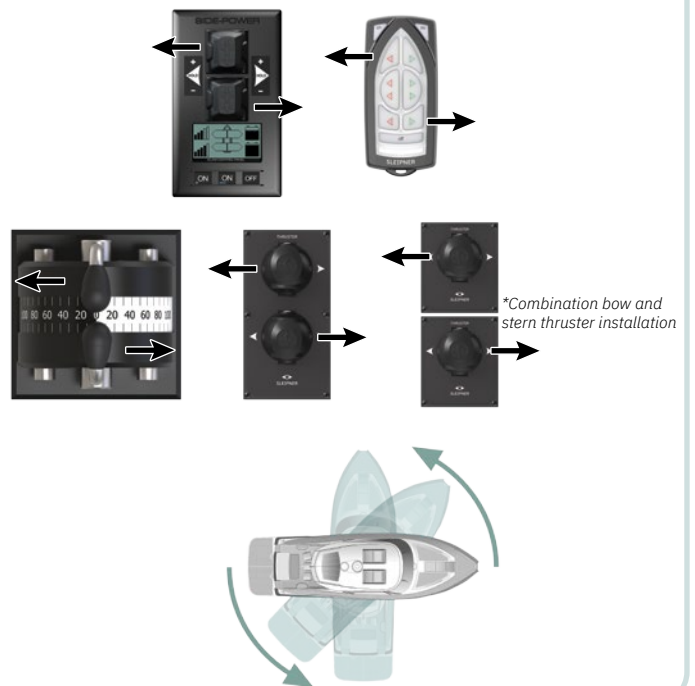
*Control panel example



Activating stationary spin to rotate the boat on its axis

Using your control device/ panel press both buttons or move the joysticks in opposing directions. Requires both a bow and stern thruster to perform.

*Control panel example



For additional information on your control panel or device refer to your control devices user manual

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

As a part of the seasonal service of your Thruster before every season, always check that:

In Water

- The area around the thruster inside the boat is clean and dry. Ensure there are no signs of water/oil leaks.
- All electrical connections are clean and fastened firmly.

Out of Water

- Check the propeller(s) or tunnel for any damage for example impact damage.
- The propeller(s) is fastened securely to the gear leg.
- Check all components of thruster are fastened securely.
- Clean the tunnel and gear leg from marine growth.
- Paint the propeller and gear leg with anti-fouling before every season to keep it clean from sea growth. **(NB: Never paint the anode, sealing or propeller shaft. Ensure paint does not enter the space between the propeller and the gear leg.)**
- Change the anode before every season, or when half the anode has eroded. Always use a sealant or thread glue on the holding screw to ensure that it does not fall off.
- (IF) your product uses an external oil tank, ensure the oil level remains the same.
- (IF) using an Ignition Protected thruster and there is a problem with your motor, please contact your dealer.

Gear Leg Oil Change

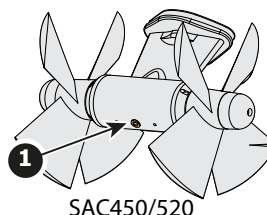
There must always be oil in the oil reservoir. Refill if necessary with gear oil API GL-5, SAE 80W-90

IMPORTANT

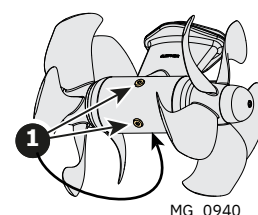
Drain oil after first 50 hours of runtime, then with 500 hours runtime intervals. Refill with GL-5 gear oil if needed.
Change the gear oil a minimum of every second year. Check the gear oil quality in the guardhouse every time the boat is out of the water.

Draining the gear leg oil

1. Remove cap from the external oil reservoir.
2. Unscrew lower oil drain plug. **(Reference 1)** SAC450/520 has only one drain plug. (Three drain ports was introduced medio 2021, except for SAC450 and SAC520)
 - Ensure that the oil is drained to a suitable container. Avoid spilling of oil.
 - The oil will drain out from the gear leg.
3. When the oil flow stops, ensure that the external reservoir is empty



SAC450/520



MG_0940

Filling the gear leg oil

1. Attach oil filling equipment to the lower oil drain hole.
2. Pump oil until the oil level in the reservoir is correct. **(NB: Refer to chart for gear leg oil volume)**
3. Remove oil filling equipment.
4. Insert and tighten the lower oil drain plug.
5. Re-check the oil level in the external oil reservoir, and put on the reservoir cap.

SAC model	360/400/700	450/520	750-1400
Port threads from 2021	M10x1	M12x1,75	M12x1,5
Port threads until medio 2021	M8x1,25	M12x1,75	M12x1,75

Gear Leg Oil Volume

SAC Model	360, 400	450, 520	700	750, 900, 1100	1300, 1400
Oil Volume	0,4L	0.76L	1L	3.3L	3.7L

Variable Frequency Drive

The variable frequency drive, delivered as part of the SAC thruster kit, is preconfigured and tuned for the specific thruster and motor. No additional setup is required after installation.

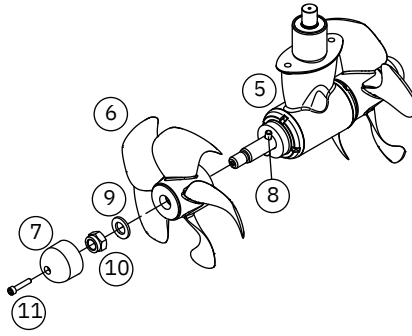
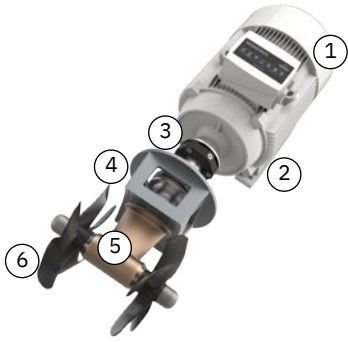
Maintenance

See own manual for VFD

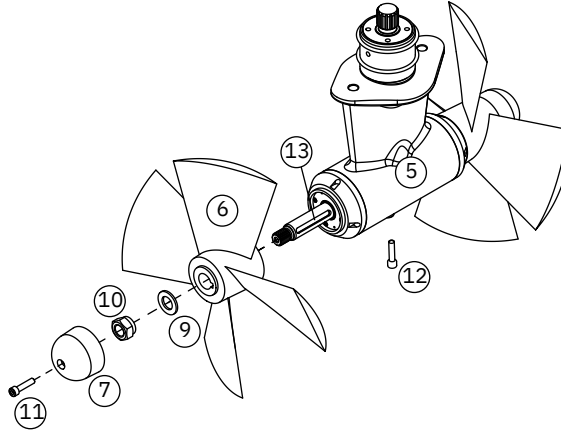
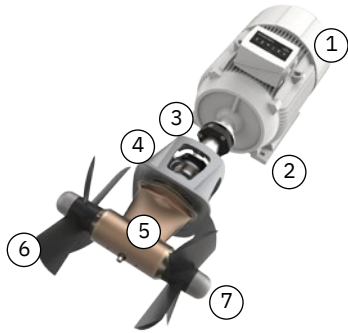
IMPORTANT

VFD comes pre-configured from the manufacturer. DO NOT personally reconfigure any settings on the VFD.

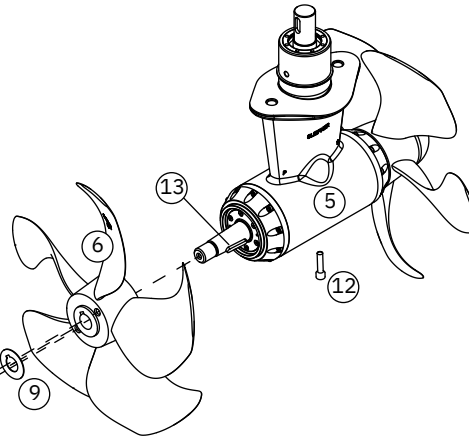
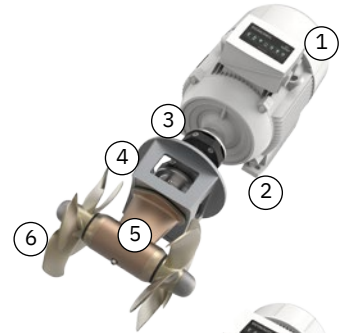
AC
 *240
 *320
 *360



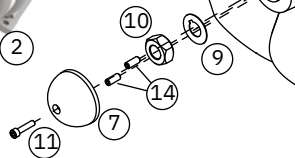
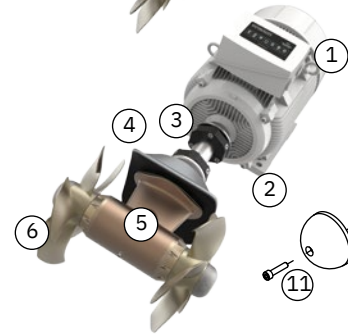
AC
 *450
 *520



AC
 *400



AC
 *700
 *750
 *900
 *1100
 *1300
 *1400



- KEY:**
- 1. Motor
 - 2. Mounting feet
 - 3. Cardan shaft with flexible coupling
 - 4. Bracket for gear leg support
 - 5. Gear Leg
 - 6. Propeller
 - 7. Anode
 - 8. Drive pin
 - 9. Washer
 - 10. Lock Nut
 - 11. Fastening Screw for anode
 - 12. Oil drain screw with washer
 - 13. Holding Key
 - 14. Pin Bolts

PDC-301 Load Sharing

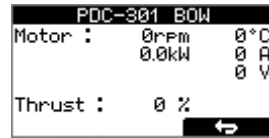
The Load Sharing limitation allows the system to limit the combined load on the generator from a bow and stern thruster when both thrusters are used at the same time. The load sharing will dynamically limit the thrust request for each thruster depending on the joystick position and limit settings. Load Sharing is configured by adjusting the PDC-301 parameter “Load share limit” in SETUP from any PJC2xx and PJC4xx panel.

Example of Load Share operation:

The Bow PDC-301 “Load share limit” is set to 60%, and the Stern PDC-301 “Load share limit” is set to 80%,
 In the example, if the Bow thruster is operated at 100% thrust, output is reduced proportionally down to the limit value of 60% when the Stern joystick exceeds 60% signal. If the stern thruster is operated at 100% thrust, output is reduced proportionally down to the limit value of 80% when the Bow joystick exceeds 80% signal. In the example, the bow thruster will run at 60% and stern at 80% if both joysticks are at full in any direction.

How to find SAC thruster power load in kW

In PJC2xx / PJC4xx panel, enter *SETUP->INFO->THRUSTER INFO* select *Bow PDC-301*.
 You will see this info screen for the Bow PDC-301:



Motor: speed (rpm), temperature (°C/°F), Power (kW), AC current (A) & AC voltage (V).
 Thrust: Joystick thrust (%)

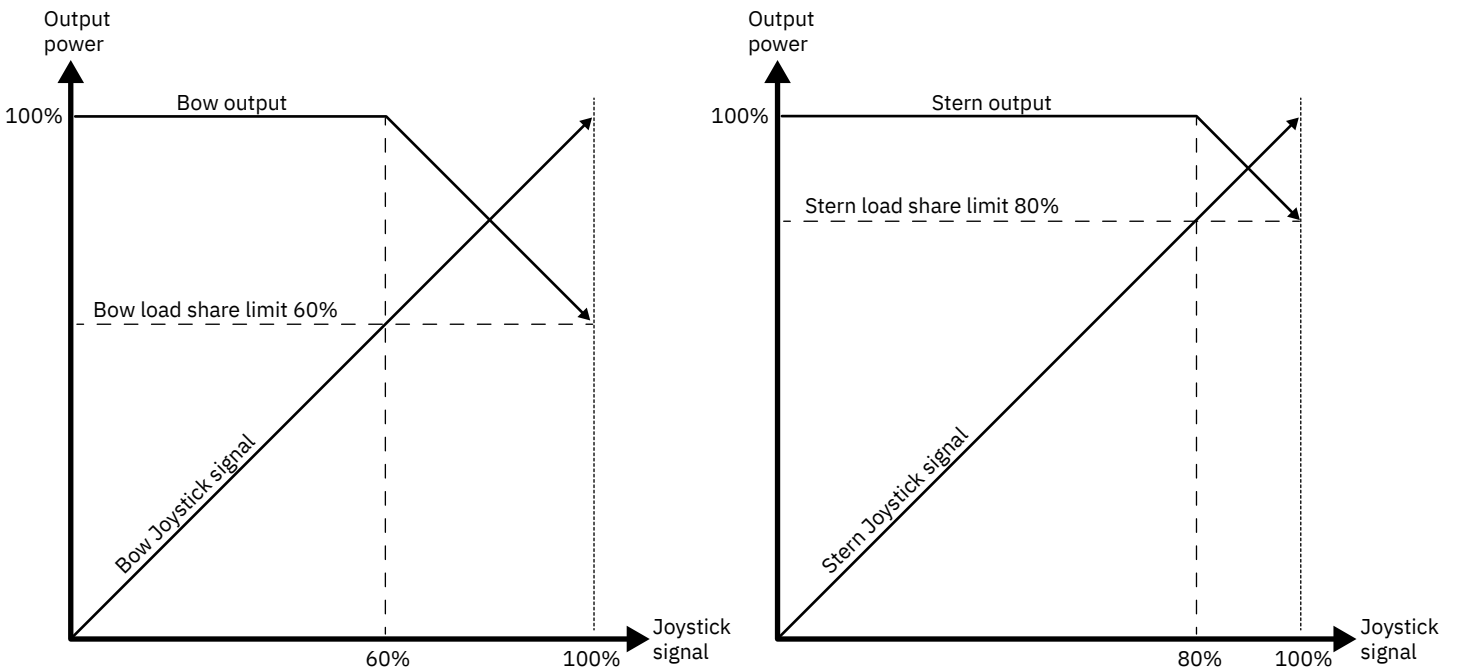
Ensure it is safe to run thruster at full speed before the next step.
 Run the Bow SAC thruster with 100% thrust (to starboard or port) and read the maximum power consumption (in kW) of the Bow SAC thruster in the display. Do the same for Stern SAC thruster.

If the installation has two Bow and/ or Stern SAC thrusters, read power from each PDC-301 and add them together.

How to limit SAC thrusters to a fixed maximum power load

Bow SAC thruster maximum power consumption is 40kW and Bow Load share limit is set to 60%.
 Stern SAC thruster maximum power consumption is 30kW and Stern Load share limit is set to 80%.
 The maximum load is then calculated when running Bow and Stern at 100% joystick signal.
 Bow thruster load = 40kW * 60% = 24kW
 Stern thruster load = 30kW * 80% = 24kW
 Total thruster load = Bow 24kW + Stern 24kW = 48kW

The limit levels for bow and stern thruster can be set to best balance different thruster sizes or to prioritize one of the thrusters in the limit state.



Before seeking assistance from the website help desk from your Sleipner dealer/ distributor, please perform these tests.
(NB: If you are unable to perform these checks, you must consult a Sleipner distributor.)

CHECK	SOLUTION
The motor runs, but there is no thrust	
Check propellers are fitted, fastened correctly and there is no damage to the prop shaft.	Re-fasten or replace if necessary
* Check the flexible coupling between the motor and drive shaft is fitted correctly and not damaged.	Replace if necessary
* Check the gear leg is not damaged.	Replace if necessary
The thrusters performance is reduced	
Check the propeller, gear house and tunnel are free from growth/ barnacles or debris and damage.	Remove growth and clean. (NB: If there is obstruction in the tunnel it will disturb/ block the water flow and significantly reduce performance.)

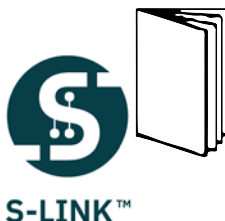
* Not applicable to SX thrusters.

Advanced Control Panel Troubleshooting

Control panels operating on the S-link system display all faults via the control panel interface or via other warning methods.

To review any issues of your product refer to the appropriate user manual for a complete list of fault codes and troubleshooting guides.

For additional supporting documentation, we advise you to visit our website www.sleipnergrou.com



CHECK TO PERFORM	DATE											
The thruster components are fastened securely.												
The area around the thruster is clean and dry. If there are signs of water or oil leaks, find the source and eliminate it												
Apply anti fouling on the the propeller and gear leg inside the thruster housing												
All electrical connections are clean and fastened firmly.												
Change the anode.												
Check oil in the oil reservoir.												
Change oil												

SAC240/250-C	SAC320/300-I	SAC360/300-C	SAC400/300-C	SAC450/386-C	SAC520/386-I	SAC520/386-C	SAC700/412-C	SAC750/513-I	SAC900/513-I	SAC1100/513-I	SAC1100/513-C	SAC1300/610-I	SAC1400/610-I
--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	---------------	---------------	---------------	---------------

Performance & sizing

Tunnel inside diameter (mm • in)	250 • 9.8	300 • 11.8	300 • 11.8	300 • 11.8	386 • 15.2	386 • 15.2	412 • 16.2	513 • 20	513 • 20	513 • 20	513 • 20	610 • 24	610 • 24
Thrust, continuous (kg • lbs)	240 • 529	280 • 617	360 • 794	400 • 882	450 • 992	450 • 992	700 • 1543	600 • 1323	750 • 1653	900 • 1984	1100 • 2425	1100 • 2425	1200 • 2646
Thrust, max. (kg • lbs) *	-	320 • 705	-	-	520 • 1146	520 • 1146	-	750 • 1653	900 • 1984	1100 • 2425	-	1300 • 2866	1400 • 3086
Motor output (kW • Hp)**	14 • 19	21 • 27	27 • 37	30 • 41	35 • 48	35 • 48	42 • 57	41 • 56	53 • 72	70 • 95	70 • 95	74 • 101	83 • 113
Typical boat size (m • ft)	13-23 • 42-75	17-31 • 55-100	18-33 • 59-108	18-33 • 59-108	22-35 • 75-110	25-40 • 85-140	29-44 • 95-145	29-44 • 95-145	30-45 • 100-150	32-49 • 105-160	32-49 • 105-160	40-52 • 130-170	40-55 • 130-175
Voltage range, 3-Phase supply	208-240/380-440V	208-240/380-440V	208-240/380-440V	208-240/380-440V	208-240/380-440V	208-240/380-440V	208-240/380-440V	380-440V	380-440V	380-440V	380-440V	380-440V	380-440V

Current draw max: ***

230V Systems:	51A	80A	106A	115A	127A	127A	150A	153A	193A	-	-	-	-
400V Systems:	28A	46A	62A	65A	73A	73A	87A	84A	106A	134A	134A	143A	160A
Generator load max****	19.5 kVA	29 kVA	36 kVA	39 kVA	47 kVA	47 kVA	56 kVA	49 kVA	61 kVA	81 kVA	81 kVA	86 kVA	97 kVA

Features

CE approved	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DNV-GL type approved gear leg				Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Proportional speed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Propulsion system	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter
Lubrication	Sealed	Sealed	Gravity feed	Gravity feed	Gravity feed	Gravity feed	Gravity feed	Gravity feed/ On water change (optional)	Gravity feed/ On water change (optional)	Gravity feed/ On water change (optional)	Gravity feed/ On water change (optional)	Gravity feed/ On water change (optional)	Gravity feed/ On water change (optional)
Galvanic separation	No	No	No	No	No	No	No	No	No	No	No	No	No

*) Max thrust is available until the motor winding temperature exceeds 130°C and the dynamic thrust limitation gradually decrease the thrust to continuous rated performance.

**) Motor output @ 230/400V supply. Actual value may vary depending on supply voltage and thruster install.

***) Current draw values are max values set in the VFD parameter setup.

****) Listed generator load is the maximum load value at standard thruster setup. Note that this value is different from the required generator capacity. Required generator capacity will vary depending on generator characteristics and other loads on the system and have to be selected in cooperation with generator supplier. Side-Power SAC thrusters are in standard version powered by standard Variable Frequency Drives. Low harmonic drives (THD <5%) can be supplied on request. Indicative, recommended generator capacity to be 2 x listed generator load.

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

A series of horizontal dotted lines for writing notes.

© **Sleipner Group**, All rights reserved
The information given in the document was right at the time it was published. However, Sleipner Group cannot accept liability for any inaccuracies or omissions it may contain. Continuous product improvement may change the product specifications without notice. Therefore, Sleipner Group cannot accept liability for any possible differences between product and document.

Learn more about our products at
www.sleipnergroun.com



SLEIPNER MOTOR AS

P.O. Box 519

N-1612 Fredrikstad

Norway

www.sleipnergroun.com

Made in Norway