

User manual

AC Electric



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

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

WARNING

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

CAUTION

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

MC_0800

Important safety information:

- Ensure that no persons, animals, or objects are in the water near the thruster.
- Operate the thruster only within the specified operating limits and for its intended purpose.
- Stop operation immediately if the thruster produces abnormal noise, excessive vibration, irregular operation, or loss of thrust.

WARNING

The AC thruster system contains high-voltage electrical components. Do not open, modify, or service electrical components. Electrical work must only be performed by qualified personnel after the system has been isolated from the power supply.



Safety and precautions

The Safety and precautions manual included with the product contains important instructions for safe installation and operation. Read the safety and precautions manual before installing or operating the thruster system.

The manual is also available online. Scan the QR code or visit the technical documentation hub to access it: www.sleipnergroupp.com/document-hub

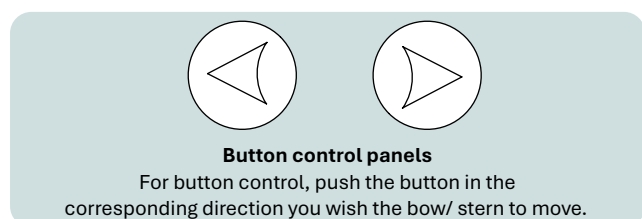
MC_1155

! 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.

General operation

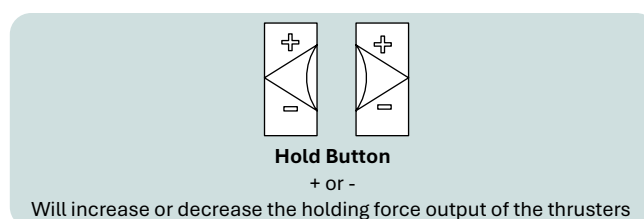
1. Turn on the main power switch for the bow thruster. (*Note: Always turn off the main power switch when not on-board.*)
2. Turn on the control panel by pushing the/ both "ON" button(s) on the original Sleipner panel simultaneously.
Turn off the control panel by pushing the "OFF" button.
3. To turn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



Note: 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:



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



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



Drift

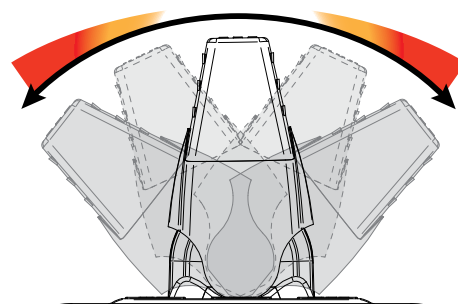
Depending on the sideways speed of the bow/ stern, you must disengage the control device shortly before the vessel is in the desired position. **Note:** Be aware the boat will continue to move after disengaging the thruster control.

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

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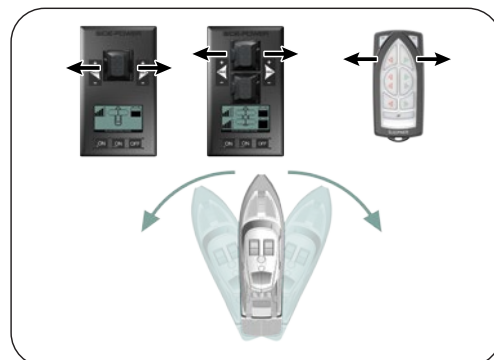
Variable thrust power for proportional thrusters is dependent on the extent of the joystick/ throttle.

- For minimal thrust slightly move the joystick/ throttle in one direction.
- For maximum thrust move the joystick/ throttle to its end point.



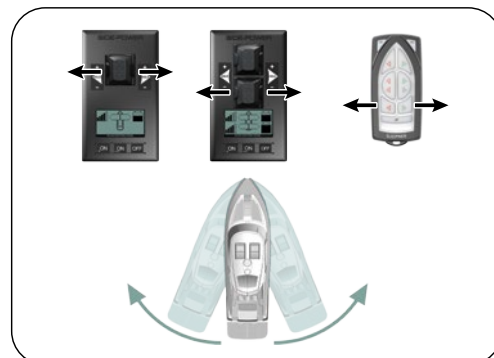
Activating the bow thruster

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.



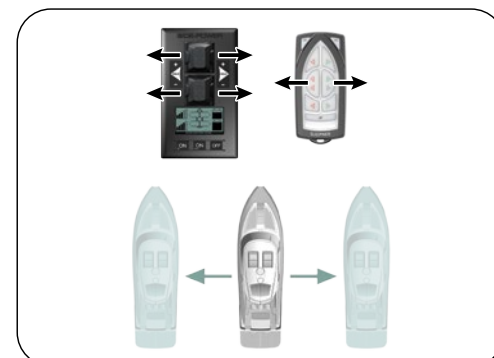
Activating the stern thruster

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.



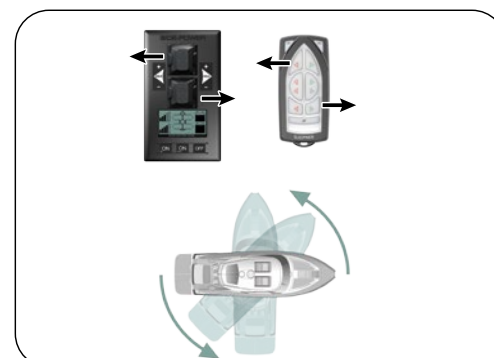
Activating full sideways maneuverer

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.



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.



MC_1258

! 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 gearleg from marine growth.
- Paint the propeller and gearleg with anti-fouling before every season to keep it clean from sea growth. **Note: Never paint the anode, sealing or propeller shaft. Ensure paint does not enter the space between the propeller and the gearleg.**
- 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.

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Gearleg oil change

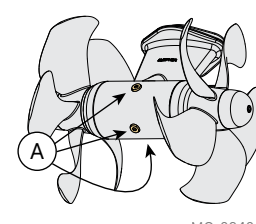
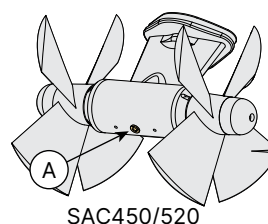
There must always be oil in the oil reservoir. Refill if necessary with gear oil API GL-5, SAE 80W-90

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. (Fig. A) SAC450/520 has only one drain plug. **Note: Three drain ports was introduced medio 2021, except for SAC450 and SAC520.**
 - Ensure that the oil is drained to a suitable container.
 - The oil will drain out from the gearleg.
3. When the oil flow stops, ensure that the external reservoir is empty



Filling the gearleg oil

1. Attach oil filling equipment to the lower oil drain hole.
2. Pump oil until the oil level in the reservoir is correct.
Note: Refer to chart for gearleg 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	750-2200
Port threads from 2021	M10×1	M12×1,75	M12×1,5
Port threads until medio 2021	M8×1,25	M12×1,75	M12×1,75

Gearleg oil volume

SAC Model	360, 400	450, 520	700	750, 900, 1100	1300, 1400, 1700
Oil Volume	0,4L	0.76L	1L	3.3L	3.7L

MC_0541

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

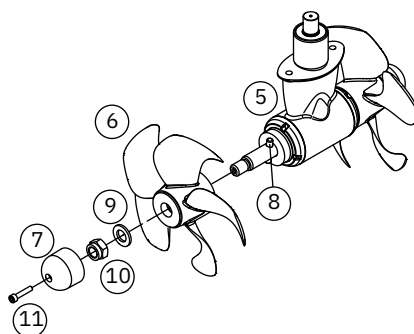
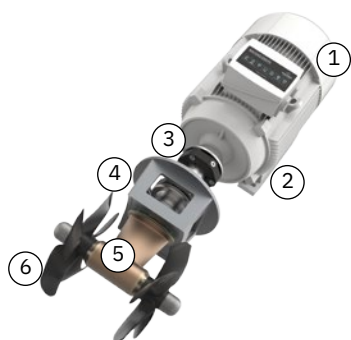


CAUTION

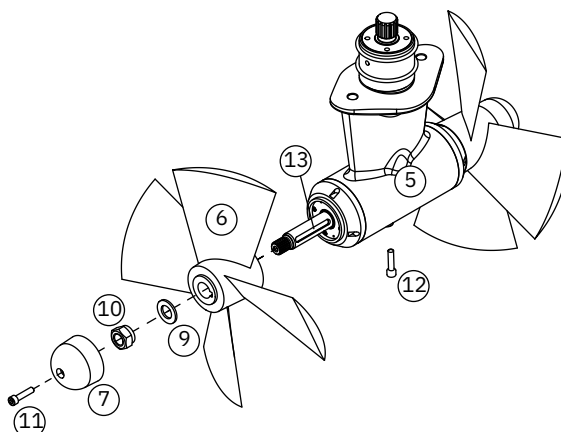
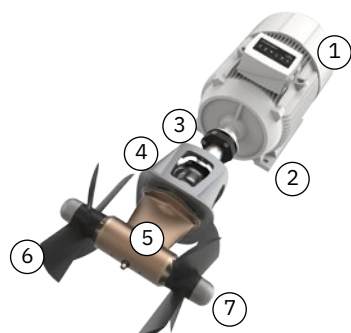
VFD comes pre-configured from the manufacturer. DO NOT personally reconfigure any settings on the VFD.

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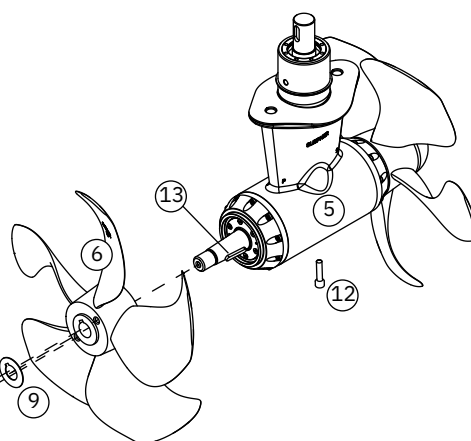
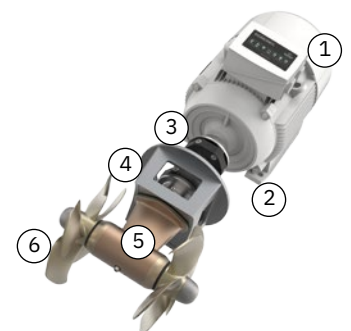
AC
*240
*320
*360



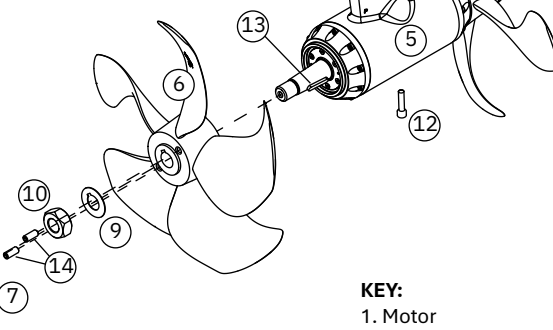
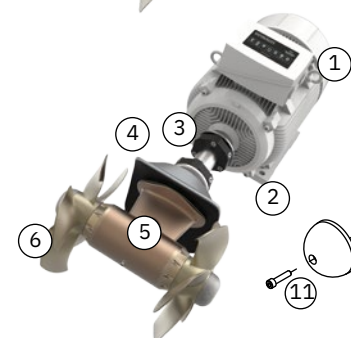
AC
*450
*520



AC
*400



AC
*700
*750
*900
*1100
*1300
*1400
*1700
*2200



- KEY:**
- 1. Motor
 - 2. Mounting feet
 - 3. Cardan shaft with flexible coupling
 - 4. Bracket for gearleg support
 - 5. Gearleg
 - 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

MG_0171

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

1. 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 (%).
2. Ensure it is safe to run thruster at full speed. 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.

PDC-301 BOW			
Motor :	0rpm	0°C	
	0.0kW	0 A	
		0 V	
Thrust :	0 %		

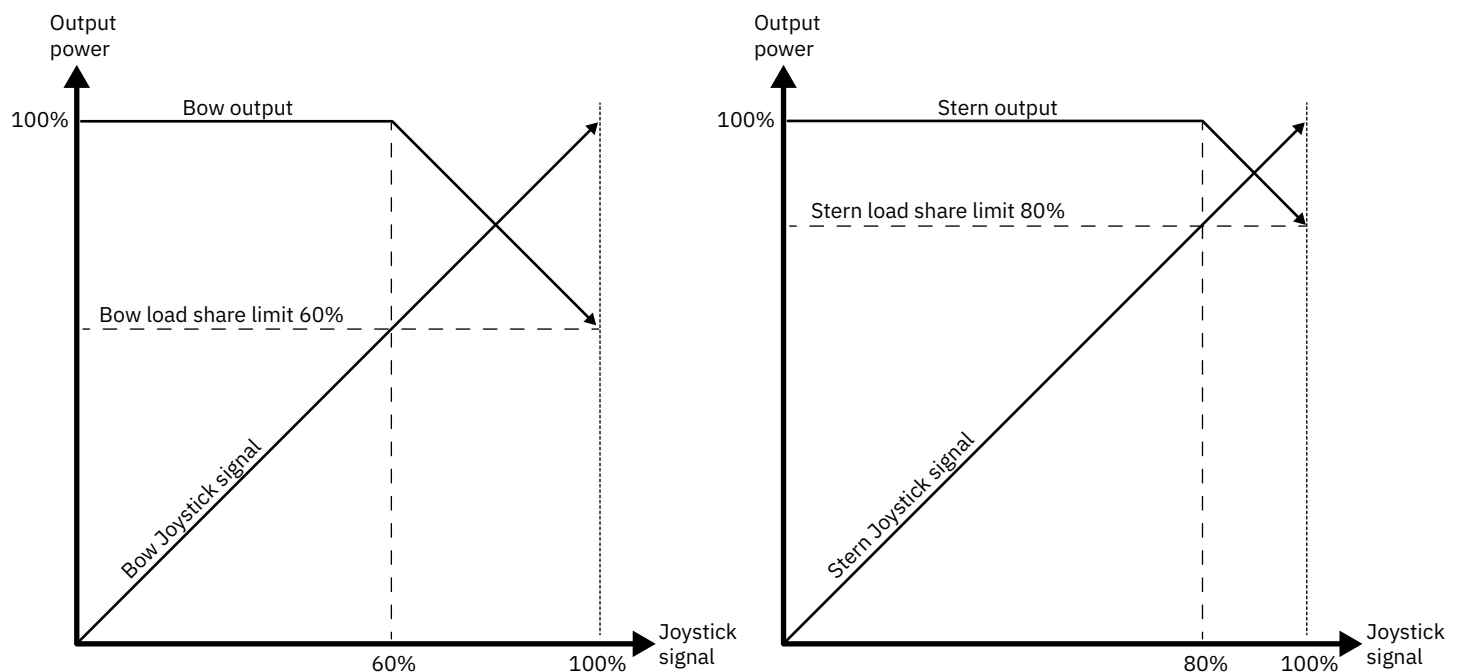
Note: If the installation has two Bow and/ or Stern SAC thrusters, read power from each PDC-301 and add them together.

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

Note: 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.

MC_0347



MG_0386

Before seeking assistance from the website help desk from your Sleipner dealer/ distributor, please perform these tests.

Note: 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 gearleg 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. Note: If there is obstruction in the tunnel it will disturb/ block the water flow and significantly reduce performance.

* Not applicable to SX thrusters.

MC_0897

Advanced control panel troubleshooting

Control panels operating on the S-Link system display all faults via the control panel interface or other warning methods. To review any issues with your product, please refer to the online Fault Code Navigator for a complete and up-to-date list of fault codes and troubleshooting guidance.

For additional supporting documentation, we advise you to visit our website:

www.sleipnergroupp.com/document-hub

MC_0352

Fault code navigator



Fault code navigator

Scan the QR code to access Sleipner's Fault code navigator. Enter a fault code to view the fault description and guidance on resolving the issue.

A complete list of fault codes and troubleshooting tips is also available for download:

www.sleipnergroupp.com/support/fault-code-navigator

MC_0974

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
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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	386 • 15.2	412 • 16.2	513 • 20
Thrust, continuous (kg • lbs)	240 • 529	280 • 617	360 • 794	400 • 882	450 • 992	450 • 992	520 • 1146	700 • 1543	600 • 1323
Thrust, max. (kg • lbs) *	-	320 • 705	-	-	-	520 • 1146	-	-	750 • 1653
Motor output (kW • Hp)**	14 • 19	21 • 27	27 • 37	30 • 41	28 • 38	35 • 48	35 • 48	42 • 57	41 • 56
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	25-40 • 85-140	29-44 • 95-145	29-44 • 95-145
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	See VFD table	380-440V

Current draw max: ***

230V Systems:	51A	80A	106A	115A	110A	127A	133A	159A	153A
400V Systems:	28A	46A	62A	65A	62A	73A	77A	92A	84A
Generator load max:****	19,5 kVA	29 kVA	36 kVA	39 kVA	40 kVA	45 kVA	45 kVA	55 kVA	49 KVA

Features

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

SAC900/513-I	SAC1100/513-I	SAC1100/513-C	SAC1300/610-I	SAC1400/610-I	SAC1700	SAC2200
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Performance & sizing

Tunnel inside diameter (mm • in)	513 • 20	513 • 20	513 • 20	610 • 24	610 • 24		
Thrust, continuous (kg • lbs)	750 • 1653	900 • 1984	1100 • 2425	1100 • 2425	1200 • 2646		
Thrust, max. (kg • lbs) *	900 • 1984	1100 • 2425	-	1300 • 2866	1400 • 3086		
Motor output (kW • Hp)**	53 • 72	70 • 95	70 • 95	74 • 101	83 • 113		
Typical boat size (m • ft)	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	380-440V	380-440V	380-440V	380-440V	380-440V		

Current draw max: ***

230V Systems:	193A	-	-	-	-		
400V Systems:	106A	134A	134A	143A	160A		
Generator load max:****	61 KVA	81 KVA	81 KVA	86 kVA	97 KVA		

Features

CE approved	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DNV-GL type approved gear leg	Yes	Yes	Yes	Yes	Yes		
Proportional speed	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Propulsion system	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter
Lubrication	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	Gravity feed
Galvanic separation	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. Sleipner 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.

Interval: Once per season.

- Ensure all thruster components are securely fastened.
- Verify that the area around the thruster is clean and dry. If signs of water or oil leaks are present, locate the source and correct the issue.
- Apply anti-fouling coating to the propeller and gear leg inside the thruster housing.
- Ensure all electrical connections are clean and firmly secured.
- Replace the anode.
- Check the oil level in the oil reservoir.
- Change the oil.

Date:								

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This image shows a single page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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