



**SLEIPNER**

Side-Power

**COMMERCIAL  
PRODUCTS**

**2022**

# Index

## Introduction

### Stabilizer systems

- 8 Introduction guide
- 14 Stabilizer features
- 18 Actuators
- 20 Systems
- 22 Technical details and measurements

### Thruster systems

- 24 Main features
- 26 AC electric tunnel thrusters
- 28 Technical details and measurements
- 30 AC Components
- 32 Hydraulic tunnel thrusters
- 34 Technical details and measurements
- 36 DC Control devices
- 40 Hydraulic power systems
- 42 Project engineering

### Steering

- 44 Hydraulic system
- 46 Cylinders/pumps
- 48 Hydraulic unit
- 50 Installations:  
rudders, hoses, couplings
- 52 Technical details and measurements

### Imprint

- 54 Footnotes, sources, and  
contact information



**SLEIPNER**

**OCEAN BORN. TECH BRED.**

#### Quality legacy

We've lived and worked with the unruly sea for a hundred years. That's why we create products that can create a safer and more comfortable experience at sea – products you can rely on to get the job done.

#### Robust engineering

Our technology is world-class. Our meticulous attention to detail combined with extensive experience as a volume manufacturer is why your workday at sea always will be better with a Sleipner aboard.

#### Worldwide service

We care. Our global network is there for you to ensure continuous optimal function on your Sleipner solution, even when it has left for distant shores. You can rely on your Sleipner solution, year after year.

# Our story

We are a Norwegian technology driven company, focused on creating world leading products and solutions of uncompromised quality to improve safety and comfort at sea. As boaters we know what safety at sea *means*.

So, we don't let our solutions slip out of sight for a second; We manufacture them ourselves, using technologies we have developed ourselves – and we work in close partnership with boat builders and our global service network to ensure optimal function throughout their lifetime.

You know what you get when you install a Sleipner. Our dedication to boating and innovation ensures that our solutions are the benchmark for the industry, today and tomorrow.



**SLEIPNER**

Trustworthy • Knowledgeable • Future ready

## — This is Sleipner —

Established in Norway in **1908** with more than **113 years of experience**. Sleipner has 200+ employees, including **27 engineers** with more than **250 years combined experience** in the marine industry.

**45**

Third party sales and service organizations in **45 countries**.

**18**

**18 CNC operators** with more than **230 years** combined marine experience.

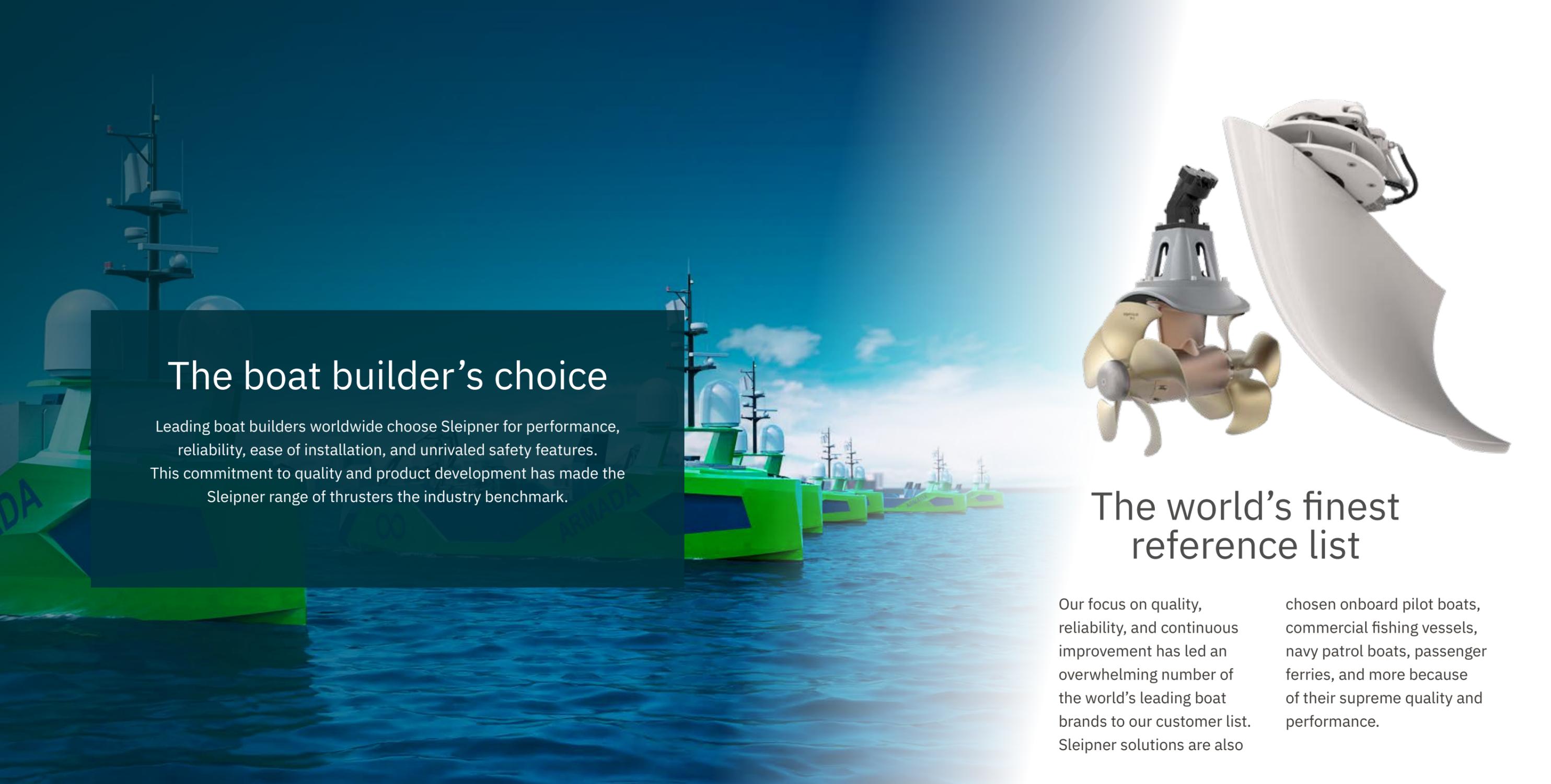
**7**

**7 subsidiaries** providing sales, support and after sales services.

**5**

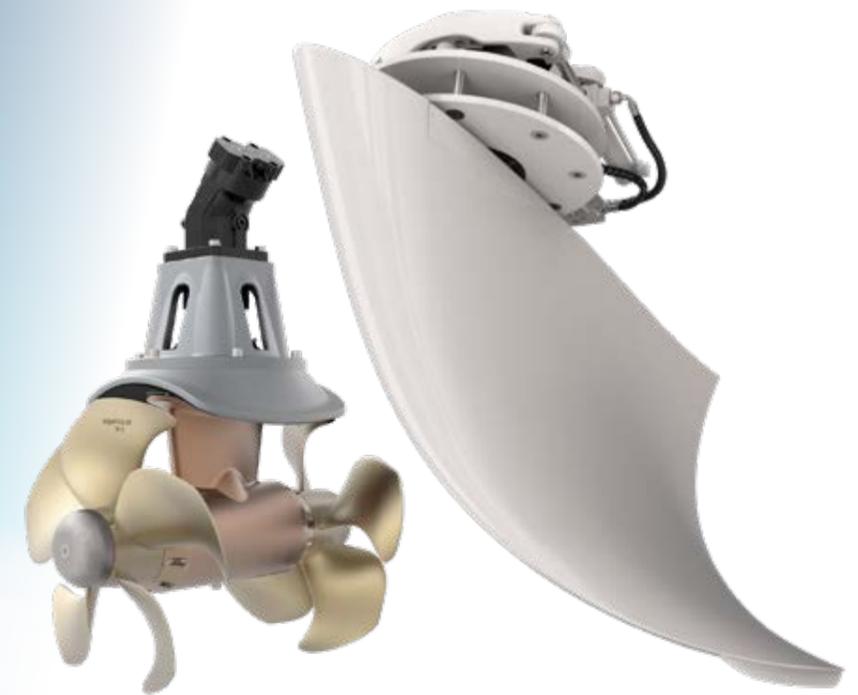
Strategic technology partnership with **5 external specialists**.

1908 250 27



## The boat builder's choice

Leading boat builders worldwide choose Sleipner for performance, reliability, ease of installation, and unrivaled safety features. This commitment to quality and product development has made the Sleipner range of thrusters the industry benchmark.



## The world's finest reference list

Our focus on quality, reliability, and continuous improvement has led an overwhelming number of the world's leading boat brands to our customer list. Sleipner solutions are also

chosen onboard pilot boats, commercial fishing vessels, navy patrol boats, passenger ferries, and more because of their supreme quality and performance.

”

When choosing a Sleipner product, you choose a product invented, engineered, and manufactured for boaters - by boaters.

CEO Ronny Skauen



The result of over **113 years of experience.**  
Made in Norway.

## Vector Fins™

# Superior stabilization in every situation

Stabilizer systems have been used on larger passenger ships for a long time. With ever more compact and efficient systems, owners can now enjoy the better usability and comfort on commercial vessels of all sizes.

Up to  
**55%**  
less side effects

Up to  
**50%**  
more efficient

### What can stabilizers do for you?

Stabilizers reduce the roll movement of a vessel, which is in most situations by far the most dominant and most uncomfortable motion. So reducing roll by a good percentage will make a substantial difference in comfort and safety on board.

However, it is not always so clear what type of stabilization system to choose because the two leading technologies (fins and gyros) have significant functional differences, meaning that no one type suits all boats or all owners' cruising priorities.

### Key things to consider

- Choose the right stabilization technology to match the type of boating you do.
- Check the practical limitations of your boat – not all systems will fit all boats, mainly due to space limitations.
- Consider what is best suited to your boat and what is likely to retain the most value when the time comes to sell – some sizes and style of boat lean more towards one technology than another.

### Understanding the basics

The roll forces depend not just on the wave height but also on the time during which it affects the boat (wavelength). Another big factor is the speed of the boat: force = speed<sup>2</sup>.

Gyro-type stabilizers are installed inside the boat and get their total roll reduction force from the precession motion that they generate to resist the roll of a boat. They have the same total force regardless of wave period and boat speed with limited force.

Fin stabilizers on the other hand act in the water and have two ways of creating roll reduction force, depending on the boat's speed. At zero speed or 'at anchor' mode, the fins rotate rapidly (flap) to generate force and like the gyro, have a definite limit. However, when the boat is moving forward, fins also generate roll reduction forces by the angle at which they pass through the water, like adjustable airplane wings or underwater foils. This force increases by speed squared, so the faster the boat moves, the more force they generate.

### Vector Fins™ stabilizers

- Unlike Gyros, efficiency increases with speed
- Minimal to no increase in fuel consumption
- Minimal to no loss of speed
- Silent all night operation
- Minimal internal space requirement
- Also suitable for retrofit

### Which system is right for you?

If your only priority is having stabilization at zero speed, with these size choices, the gyro will eliminate more roll than the fins when anchored. However, if you also use your boat on longer cruises and want to have excellent stabilization when cruising in the open sea between sheltered anchorages, fins have a colossal force benefit. They can reduce or eliminate many times the wave height and length of a gyro of this size.



”  
We hoped for 50% effect, dreamed of 70%, and ended up getting 90% effect!



Video:  
**Ola Tønder**, owner of Grip Shipping on his experience after retrofitting the former rescue vessel MS Hagbart Waage with Sleipner Stabilizers.

# Demanding working conditions?

## Elimination of roll – at anchor and underway!

You can't calm the sea, but you can manage the effect of it. And by a lot too. Our award-winning Vector Fins™ reduces a boat's roll underway by up to 90 percent, without any significant loss of speed or consequential extra fuel consumption. That's unique. But what's even more remarkable is that these innovative stabilizers also reduce roll at anchor by an outstanding 70 percent!

The numbers above are significant. Considering the fact, they are literally stating the difference between getting the job done or not. Seasickness reduction by Vector Fins™ is rated to a whopping 97 and 90 percent underway and at anchor, respectively. Now that makes the sea a whole different workplace.

A stabilizer system with Vector Fins™ is the only system that effectively handles both cruising and at anchor situations.

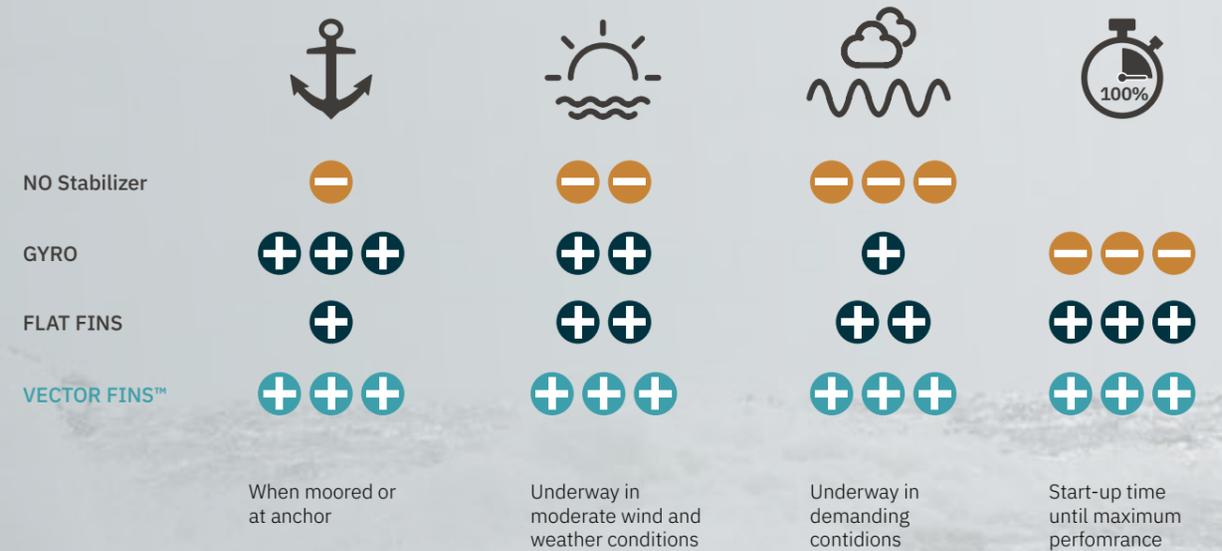
### Performance of different stabilizer technologies

Due to their design, gyro stabilizers provide a constant force to stabilize a vessel, while fin stabilizers increase the forces by the square of the speed which makes a big difference.

and swaying can be reduced by up to 55% compared to flat fins.

Vector Fins are up to 30% more efficient when cruising and up to 50% more efficient when anchoring compared to old style flat fins. Unwanted additional effects in terms of yaw

Gyro stabilizers require a start-up time of 30-45 minutes until they function optimally and are more suited for anchoring due to their construction.



# Vector Fins™

- it's all about the physics

Most boaters who have ever had a stabilised boat would never buy another boat without. Most stabilizer systems on the market today will make a huge impact on onboard comfort, safety and second hand boat value.

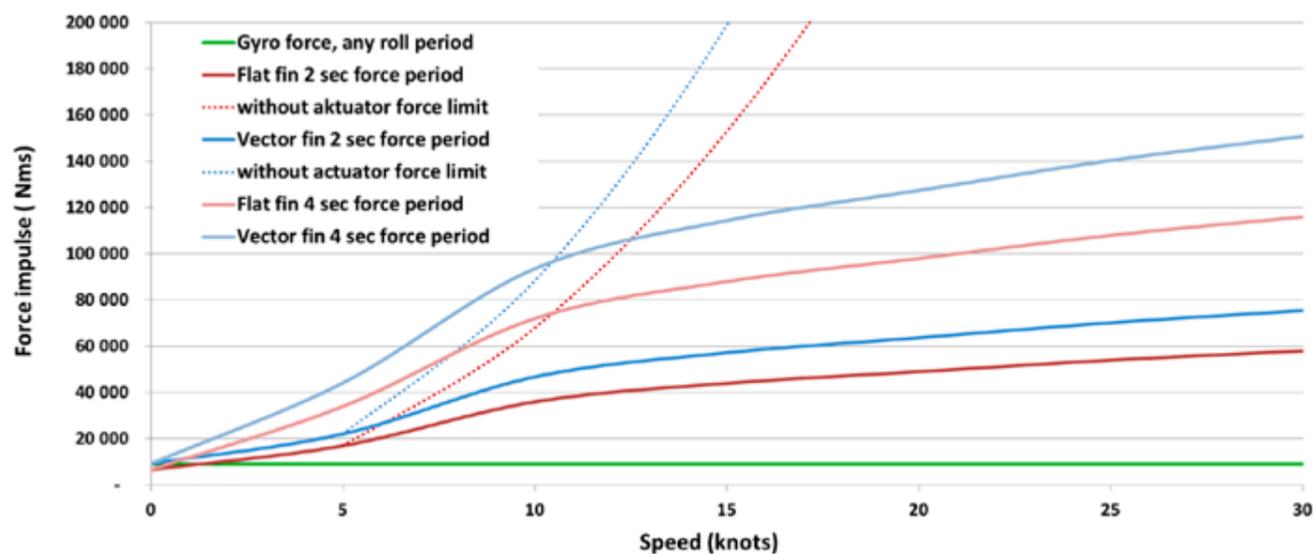
However, there are important technological and efficiency differences that must be considered to choose the optimal system for a given boat.

The two most common roll reducing systems on the market today are gyro and fins. It is well established that fins are better for those who want effective stabilization both at anchor and underway, while gyro is good choice for boaters who are primarily focused on at anchor stabilization. The reason is that gyro stabilizers has a maximum stabilization force while fins will increase their stabilising efficiency with speed by a factor of 2.



*The sleek and curved fins have minimal direct drag and winglets to avoid wingtip vortex creation.*

*Curved Vector fins also generate lift at speed, helping to offset drag.*



## Verified stabilization test results 56ft planing hull with 0,6m<sup>2</sup> Vector Fins™

	No stabilizer	Vector Fins™	Reduction of roll	Reduction of seasickness
<b>Cruising at 11 knots</b>				
Maximum roll movement	10.4°	0.3°	97%	99.8%
Average roll movement	5.7°	0.15°	97%	99.9%
<b>At Anchor</b>				
Maximum roll angle	9.4°	2.6°	72%	92%
Average roll angle	4.1°	1.4°	66%	88%

# Vector Fins™

## The most efficient stabilizer system on the market

Rolling around at sea is something most people will prefer to avoid if they can. With the modern stabilizing systems available on the market today, they do reduce the risk of becoming seasick by 80-90 percent.

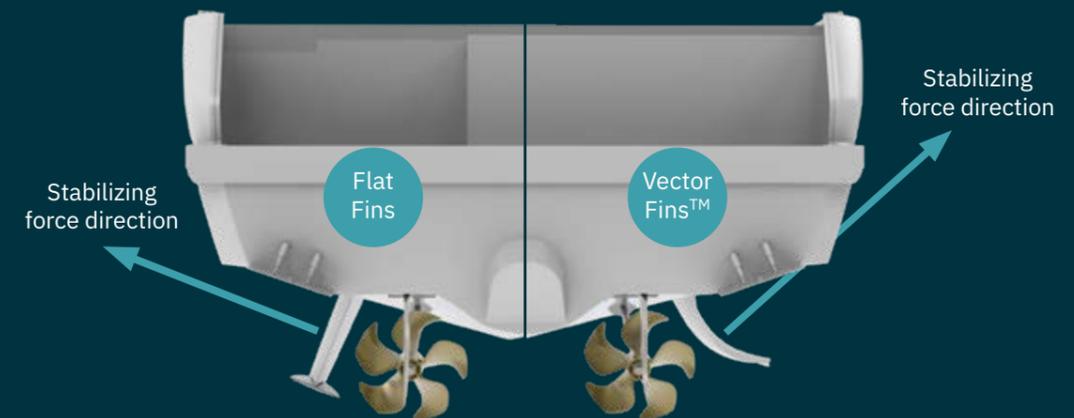
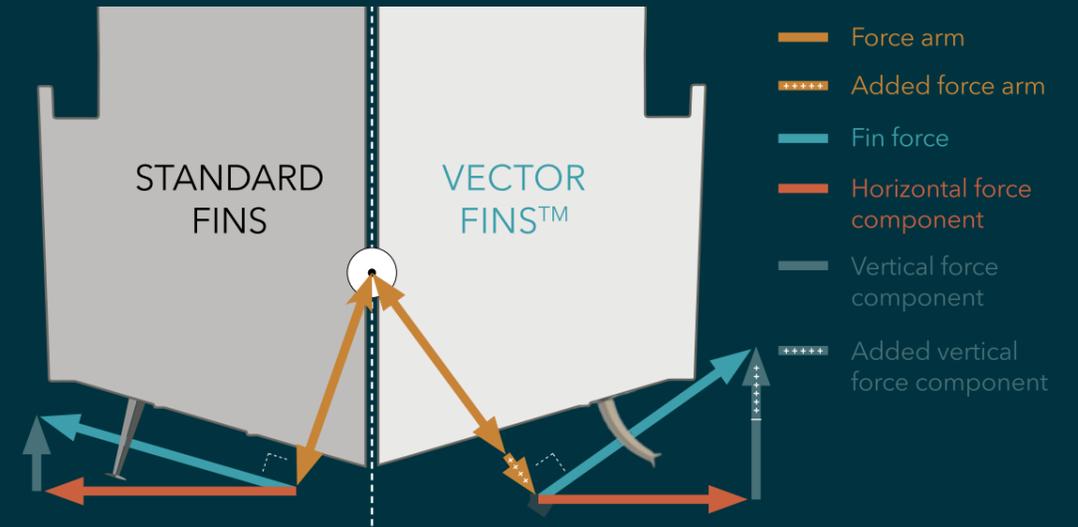
Another aspect worth considering is plain and simple onboard safety.

Let's forget about seasickness and general onboard comfort for a while. A roll of just a few degrees impacts your footing onboard. Unexpected swells catch you off guard and send objects flying around. We've all been there. A stabilized boat is a very different base in terms of both perceived and actual safety.

Over the last few years, roll stabilization has become a must-have for boat owners due to the impressive increase in comfort it delivers. Stable conditions on and below deck reduce injuries to the crew and minimize the potential risk of damage to your cargo.



Up to  
**97%**  
roll  
reduction



Vector Fins™ –  
more stabilization force in every situation

# Vector Fins™ – a revolutionary generation of fin stabilizers

Vector Fins™ is the only top-performing stabilizer system that handles both cruising and at anchor-use, with the “at anchor” stabilization force deciding the size of the fins.

### Vector Fins™ – a simple solution to a complex problem!

The Vector Fins™ stabilizers dramatically improve the roll reduction efficiency while at the same time reducing undesired yaw and sway motions caused by active fins.

The fins are made as a “one shot” vacuum injected vinylester process over pre-shaped core material in a closed mold method.

Designed with rowing and mat layers to ensure maximum strength and minimum weight. Can even withstand minor damages without totally disintegrating afterwards, unlike traditional production methods often allows.

### Underway

Unlike Gyro stabilizers that always have the same maximum total force they can apply to reduce roll, independent of boat speed or roll periods, fin stabilizers increase their stabilization force by both speed and roll period when “cruising”.

### At Anchor

As most boat owners spend more time at anchor than underway, it is critical that the stabilization system performs well at any speed, including no speed.

A stabilized boat offers a significant increase in onboard well-being. Working on board becomes a lot easier and safer on a stabilized boat.

### Vector Fins™ benefits

- Up to 50% more efficient than flat fins
- Up to 55% less side effects than flat fins
- Advanced hydrodynamic fin design
- 20% – 50% less resistance than other fins, results in > virtually no loss of speed and thereby no added fuel consumption
- All fins are prepared for high efficiency in “Any Speed” – 2:1 size ratio, also “At Anchor”
- “one-shot” vacuum injected vinylester process
- rowing and mat layers to ensure maximum strength

Up to  
**55%**  
less side effects

Up to  
**50%**  
more efficient

#### Product features

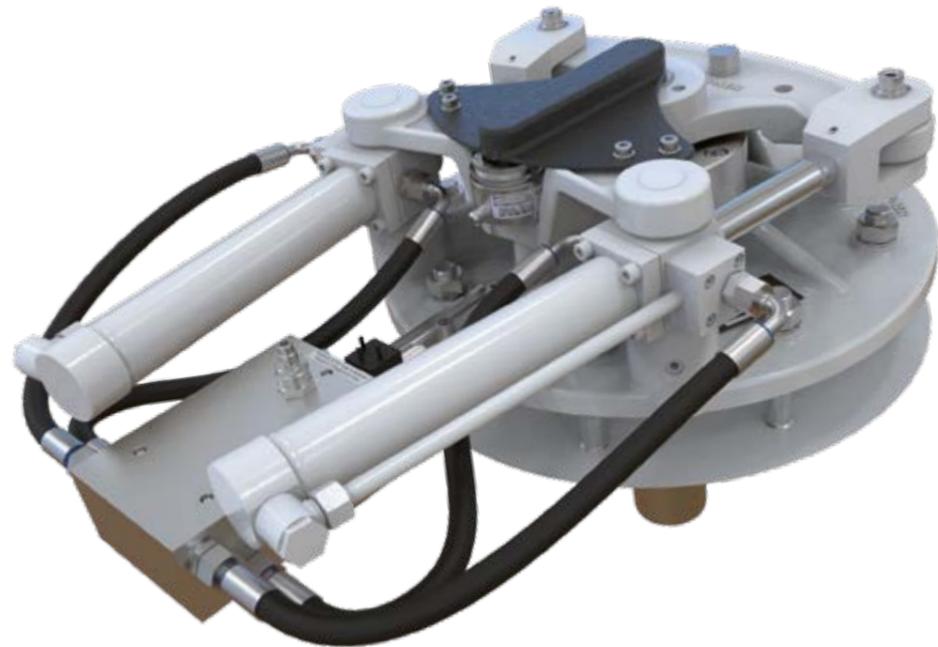
-  S-LINK™
-  ANY SPEED
-  HYDRODYNAMICAL SHAPE
-  INSTANT-ON (Max power at Start-Up)

#### Technical details

Ideal Vessel Class	Commercial
Ideal Vessel Size	9–55m / 50–140ft
Power	Electrohydraulic
Rated Power	3,5–15 kW
Actuator Position	360°

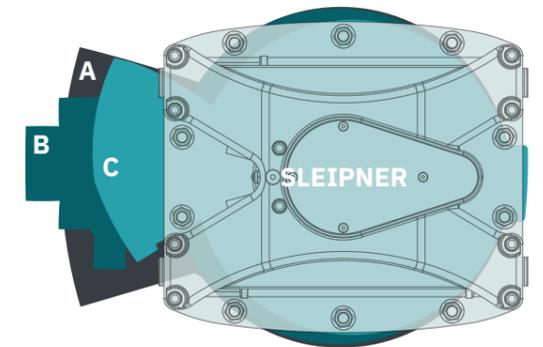
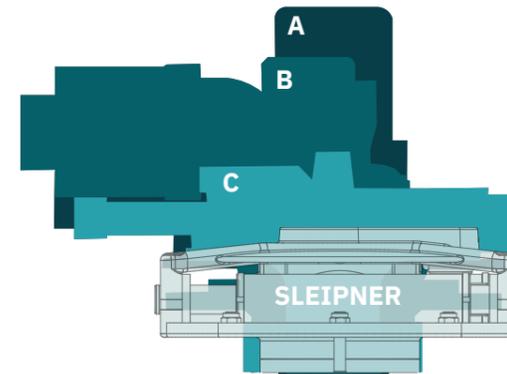
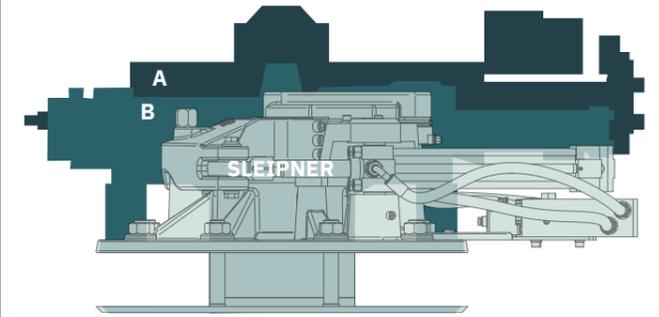
**Actuators**

The height inside the boat is often the key measurement to allow for installation in modern boats. The Sleipner actuators are typically 25% to 75% lower than others. They are constructed for easy installation and minimal noise reproduction.



**Advantages of a centralized hydraulic power system**

- High efficiency for moving and holding high loads
- Proven and reliable technology
- Most used power system on boats from 60-70 feet and larger
- Can power many applications from one central hub
- Low maintenance
- Silent operation



Size of Sleipner actuators compared to other brand actuators for similar fin sizes

■ Sleipner actuators

**Technical design benefits**

- Precision machining and assembly ensures a long lifetime and durability.
- No additional center lock, this is automatic in the standard hydraulic system – very safe due to the hydraulics having extreme safety limits.
- Dual cylinders provide
  - balanced load unlike single cylinder solutions.
  - less bearing load, thereby allowing for a more compact shaft bearing assembly.
- Purpose-designed dual shaft sealing - superior to standard Simmer Ring lip seals.
- Internal hydraulic connections on actuators are pre-fitted from factory, the installer only connects non-moving hoses/ pipes - Easier and safer.
- No complex adjustments required to set up controller with lots of factors, these are set automatically on first seatrial of the boat.
- Most stabilizer systems require you to periodically service their bearings, meaning either a part change, lubrication and/or mechanical adjustments. Side-Power's latest generation of bearings do not need any of that, saving time and money for the owner with lifetime lubricated high-end bearings as standard, meaning one less service point on your vessel.
- Fins are installed and removed very easily and quickly from the outside for best convenience in transport or other haul-out situations where this might be needed.
- Defined shaft-shear point in case of the fins accidentally hitting something.
- All exterior parts are in stainless steel.

The most compact actuator



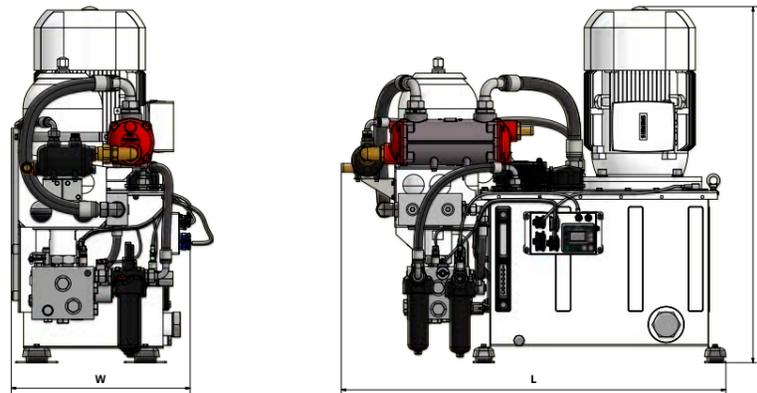
Compact, quiet and easy to install



**Hydraulic Power pack for standalone installations**

This a complete hydraulic power unit (HPU) for installations where the vessel does not have a hydraulic thruster system. All of the hose and wire connections are pre-installed, allowing for faster system install and startup in the field. All connections are focused on two sides of the tank, allowing installation in confined spaces.

We also offer pre-connected and easy to install central hydraulic systems with S-Link™ CAN bus system.



Power pack	10 4435C-W-01	10 4450C-W-01	10 4455C-W-01	10 4475C-W-xx-xx	10 44110C-W-xx-xx	10 44150C-W-xx-xx
Rated power (kw)	3.5	4.6	5.5	7.5	11	15
Weight (kg • lbs)	111 • 245	116 • 256	135 • 298	N/A	300 • 661	312 • 687
L (mm • in)	726 • 28.6	726 • 28.6	780 • 30.7	1087 • 42.8	1087 • 42.8	1087 • 42.8
W (mm • in)	432 • 17	432 • 17	465 • 18.3	506 • 19.9	506 • 19.9	506 • 19.9
H (mm • in)	762 • 30	756 • 29.8	790 • 31.1	1006 • 39.6	1006 • 39.6	1006 • 39.6
Generator load (kVA)*	4.6	6	7	9.8	13	18
For fin size (short r. p.)*	VF650 (SPS55)	VF800 (SPS55B)	-	VF1050 (SPS66B)	VF1350 (SPS93B)	VF1650 (SPS93B)
For fin size (long r. p.)*	VF650 (SPS55)	VF800 (SPS55B)	VF1050 (SPS66B)	VF1350 (SPS93B)	VF1350 (SPS93B)	VF1650 (SPS93B)

\* Single phase supply will increase current with factor 1.73 and will require more margins on generator capacity.  
 \* ECO mode available in new 2018 control system for reduced generator load.  
 xx-xx - available in 230V 1-phase, 230V 3-phase and 400V configuration.

\* Short r. p. = Short roll period  
 \* Long r. p. = Long roll period  
 Roll period is the time between two waves



**DMC-SCU Dynamic Motion Controller TP-43**

4,3" Sunlight color touch panel for ease of use and control. Multiple Control panels can be installed in one system.

**Features**

- Continuous development of the best control software possible, cooperating with leading companies in control technologies.
- Self adjusting – advanced algorithms – also “Any/No Speed” functions for stabilization at anchor.
- Easy upgrade of software ensures future compatibility and improvements.
- Reverse gear position input, but also other sensors to safeguard that fins are centered and locked immediately if the boat is starting to move backwards.
- GPS speed input (no shaft sensor) helps control algorithms do the best possible job.
- S-Link™ integrates common intelligence with thruster systems and main hydraulics.
- Can be flushed mounted.

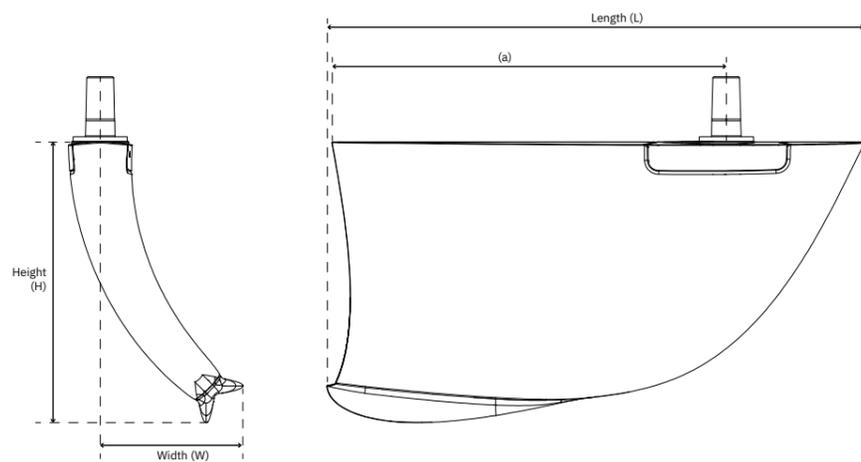
**New feature Q1 2020; Built in Wi-Fi module:**

- Allows for software upgrades for the S-Link™ system without additional computer tool or service technicians.
- Allows for faster support, as service technicians can remotely access the control system upon request.





# Vector Fins™



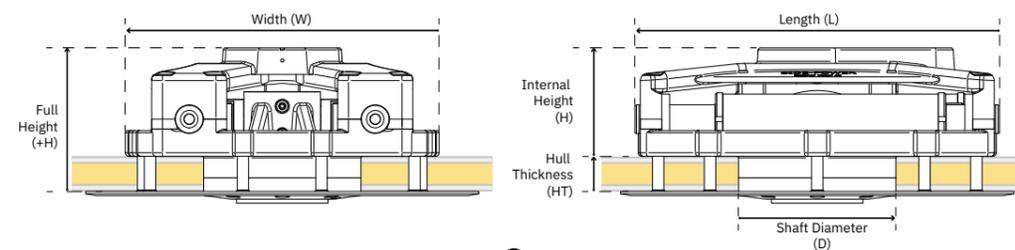
Actuator Vector Fin    SPS55B VF650    SPS55B VF800    SPS66B / SPS67B VF1050    SPS92B VF1350    SPS93B / SPS94B VF1650    SPS96B / SPS97B VF1950



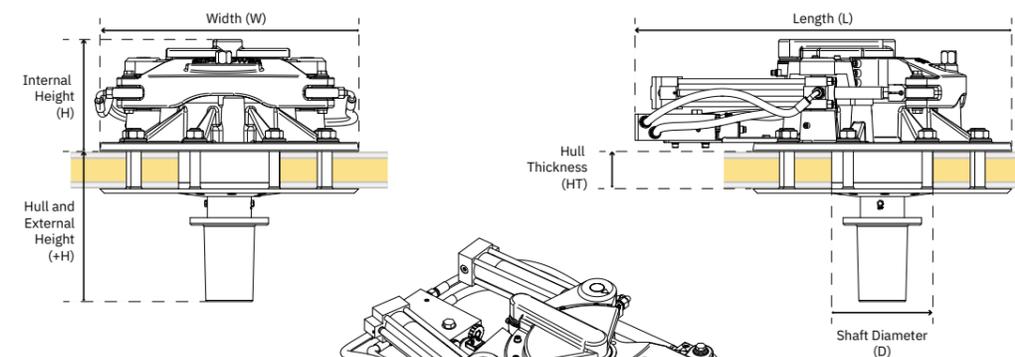
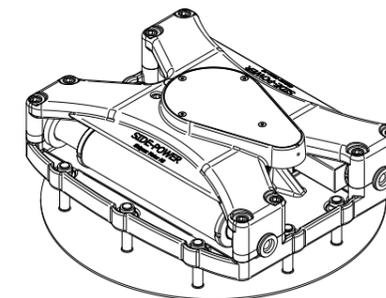
Vector Fin™ (mm)	VF650	VF800	VF1050-66	VF1350	VF1650	VFS1950-M
(H) Height	661	733	847	956.5	956.5	1054.1
(L) Length	1271	1395	1618	1835	1835	2081
(W) Width	337	337	429	485	485	533
Size	VF650	VF800	VF1050	VF1350	VF1650	VF1950-A/M/HS
Weight	0 weight in water					

Fins have zero weight in water

# Actuator

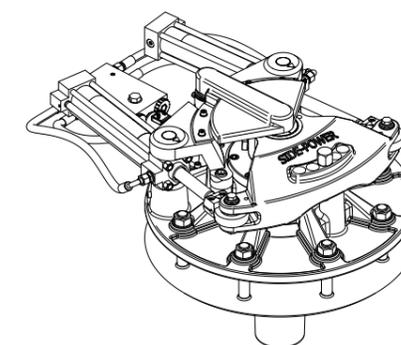


Measurements SPS55B



Measurements SPS66B / 67B / 92B / 93B / 94B / 96B / 97B

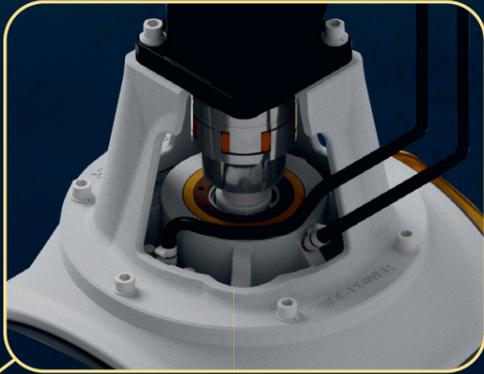
For metal framed boats extra actuator available



Actuator (mm)	SPS55B	SPS66B	SPS67B	SPS92B	SPS93B	SPS94B	SPS96B	SPS97B
(H) Height	149.5	190	190	260	260	260	346	346
(+H) Additional Height	201	318	-	347	347	-	-	-
(L) Length	510	770	770	871	871	871	871	871
(W) Width	430	650	650	700	700	700	700	700
(D) Diameter	-	175	175	235	235	235	235	235
(HT) Hull Thickness	49	70	159	86	86	237	86	237
Weight	100	105	114	185	185	190	185	190

## New feature 2021

All thrusters for tunnel diameter 513 and 610mm can now be delivered ready prepared for an on water oil change, eliminating the need for dry docking the vessel for scheduled oil change and thereby keeping the vessel operational and minimize thruster service cost.



### GALVANIC SEPARATION

The gear house and drive legs are fully galvanically isolated/separated from the electric motor and motor bracket. This ensures that even if there is an accidental short circuit or a current leak for other reasons, the immersed parts are not affected as they could be with direct electric contact.

- Achieved by composite bushings around the bolts and beneath the washers and a bushing in the motor bracket electrically isolating the drive housing from the motor bracket.
- Available on DC electric models with flexible couplers only, where the flexible coupler provides galvanic separation of the motor and gearleg shaft.



### GRAVITY FEED LUBRICATION

The thruster gearleg is filled with oil from a remote reservoir located above the waterline. This generates overpressure, making an effective seal against water intrusion in the gear leg

- Separate oil reservoir placed above the waterline.
- Allows easy access for oil changes
- Having the advantage to be able to change oil in units used commercially, with hundreds of running hours per year



### OVERHEAT PROTECTION

Detects when internal components become too hot. When an unsafe temperature is detected, the switch automatically shuts off the unit to prevent overheating.



### IGNITION PROTECTION

To provide reliable and safe thruster installations in more boats, we offer modified versions of our DC electric thrusters in watertight housings for use in stern and other locations that may get wet or be exposed to gasoline fumes. These thrusters are fully ignition protected (ISO 8846) for use in boats with gasoline engines. They have a hermetically sealed composite housing around all electric parts. This provides the ignition protection as no gasoline fumes can enter and be ignited by sparks.

The other advantage is that the electric parts that could be damaged by water are also covered and protected, making these thrusters the ideal choice for other stern thruster installations where it is difficult to ensure that the thruster will always remain dry.



### INTELLIGENT POWER CONTROL

- Provides delay between drive directions
- Monitors solenoid functions to reduce the chance of solenoid lock-in
- Will stop the thruster in case of a locked-in solenoid, without extra user action and even without controlling a main switch.



### Q-PROP

- Noise reductions of up to 75% measured in controlled environments
- The expected and tested normal noise reduction in average installations: 20-40%
- Upgrade kits are available for most SP series thrusters with special adaptors



### PROPORTIONAL VARIABLE SPEED CONTROL

A PRO thruster system with variable speed control allows for more precise handling of the boat in all conditions, applying only the necessary power needed to complete your maneuver confidently.

By limiting the power under normal weather conditions, noise levels are significantly reduced. The system also includes a practical hold-function in a twin thruster system. With a single press of a button, the bow and stern thruster will keep you alongside the docks - making docking truly a one-person job. PRO thrusters are the best choice for joystick interaction.

A PRO system contains three main elements - a control panel, a power control unit, and a DC electric thruster - all tied together with the S-Link™ control system. All mechanical and main electric parts are from the well-proven thruster range produced by Sleipner for many years.

All of Sleipner's 12 and 24 volt DC electric thrusters can be enabled for variable speed control by authorized Sleipner service personnel, even past models.



### S-LINK™



### SAFE STARTUP

Sleipner control panels use dual ON buttons to engage the product to start. The safe start-up prevents the accidental initiation of products for a child-safe environment and peace of mind while on your vessel.



### SEALED DRIVE LUBRICATION

- Sealed gearleg with long-life "mechanical" seal where highly polished ceramic and carbon surfaces form the only moving sealing surfaces, ensuring protection against damaging water intrusion into the gear leg.
- Pre-filled with special gear oil for lifetime lubrication.



### SMART SHUT-OFF

S-Link™ is a CAN-bus-based control system with full intelligent communication between all units in the system, much like a computer network.

#### Main advantages include:

- Round, compact and waterproof connectors with unique keying and color coding to avoid faulty hookup
- Unlimited number of commands or information transferred on a single cable
- User feedback on the panel
- Intelligent troubleshooting.



### SMART SHUT-OFF

Sleipner control panels are programmed to shut down automatically after approximately 6 minutes without use. This avoids accidental activation of our products, improving safety

# Main

# thruster features

# AC electric tunnel thrusters

Sleipner's AC thrusters offer the benefit of unlimited run time, enabling heavier duty usage. Each system is custom-built according to your boat's specifications and working conditions. AC thrusters are also perfect for hybrid or fully electric vessels.

©OCEA FPB 100 SOKAN

Sleipner's AC thruster systems are precisely matched to the generator capacity to maximize the amount of thrust you get from the system.

Each AC motor is controlled via a Variable Frequency Drive (VFD) to minimize startup loads on the power system and allow for precise control of the thruster with variable speed control. No further setup of the VFD is required. The PDC-301 drive controller is configured from the control panel.

In addition to the standard VFD's, we can deliver low harmonic VFD's for installations with specific THD requirements.

An Electromagnetic Compatibility (EMC) is also included to reduce feedback noise on the vessel's power system.

The innovative S-Link™ control system ensures fast and trouble-free installation, and gives you the unique option to combine hydraulic and AC thrusters in a single control environment.

All of Sleipner's AC systems can be mixed and matched with hydraulic and DC Electric PRO systems with seamless integration.

All AC components are selected from top brand manufacturers ensuring the best quality and worldwide support. Standard range is designed for 230V / 400V. Setup for alternative power supply specifications can be delivered on request.

## Benefits

- Continuous use
- Controlled power
- Reliability
- S-Link™ operating system
- Custom-made, ready to install with plug-and-go wiring
- The choice of leading boatbuilders
- DNV type approval for specific models
- Cost efficient, high quality components
- Suitable for joystick and DP integration



DNV type approved gearleg for specific models

- Complete AC thruster kit including
- PDC 301 drive controller
  - Variable Frequency Drive (VFD)
  - Gearleg with propellers and bracket
  - Flexible coupling
  - AC motor
  - EMC filter

## Product features

-  S-LINK™
-  SEALED DRIVE LUBRICATION
-  GRAVITY FEED
-  Q-PROP™
-  GALVANIC SEPARATION (optional)
-  PRO-VARIABLE SPEED CONTROL

## Technical details

Ideal Vessel Class	Commercial
Ideal Vessel Size	13–55m / 42–175ft
Power	AC 230/400V
Thrust cont.	240–1200kg / 529–2646lbs
Thrust max.	240–1400kg / 529–3086lbs
Tunnel diameter	250–610 mm
Placement	Bow / Stern



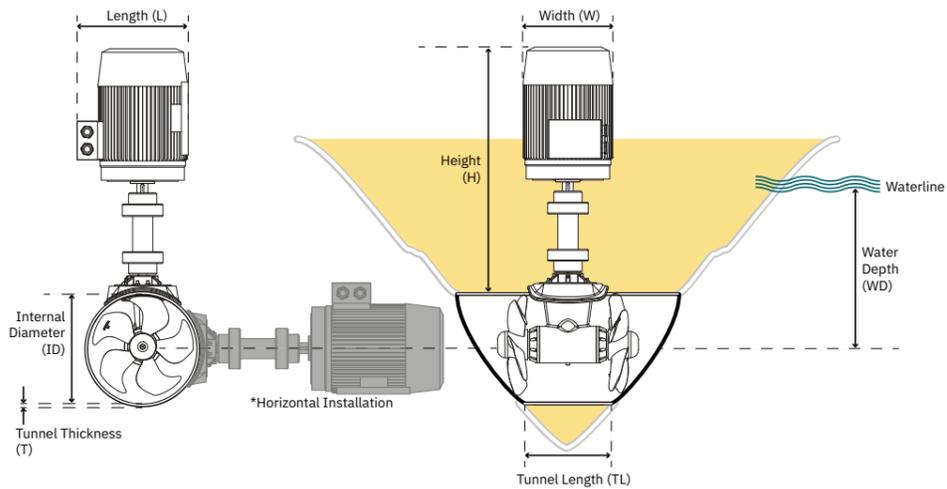
Performance & sizing*	SAC240/250-C	SAC320/300-I	SAC360/300-C	SAC450/386-C	SAC520/386-I	SAC520/386-C
Continuous Thrust (kg)	240	280	360	450	450	520
Thrust, max. (kg) <sup>1</sup>	-	320	-	-	520	-
Power Output (kW • Hp)	14 • 19	21 • 27	27 • 37	28 • 38	35 • 48	35 • 48
Ideal Vessel Size (m/ft)	13-23/42-75	17-31/55-100	18-33/59-108	22-35/75-110	25-40/85-140	25-40/85-140
Internal Diameter (mm)	250	300	300	386	386	386

**Features**

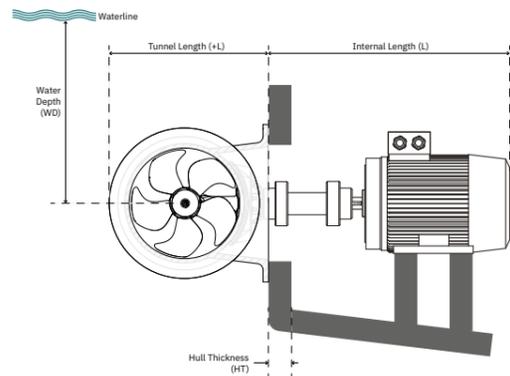
CE approved	Yes	Yes	Yes	Yes	Yes	Yes
PROportional speed	Yes	Yes	Yes	Yes	Yes	Yes
Control system	S-Link™	S-Link™	S-Link™	S-Link™	S-Link™	S-Link™
Q-propeller	Yes	Yes	Yes	No	No	No
Propulsion system	Twin Counter					
Lubrication	Sealed	Sealed	Gravity feed	Gravity feed	Gravity feed	Gravity feed
Galvanic separation <sup>3</sup>	No	No	No	No	No	No

For light usage

Bow	Description
(H)	Height
(L)	Length
(W)	Width
(ID)	Internal Diameter
(WD)	Water Depth
(TL)	Recommended Tunnel Length
(TL min.)	Minimum Tunnel Length
(T min.)	Minimum Tunnel Wall Thickness
(T max.)	Maximum Tunnel Wall Thickness
Stern	Description
(L)	Internal Length
(+L)	Tunnel Length
(WD)	Stern Water Depth
(HT)	Maximum Hull Thickness



\*Horizontal Installation



Sleipner thrusters can be installed at an angle off the vertical centre. Tailored to fit any space available in your vessel.

<sup>1</sup> Max thrust is available until motor temperature will reduce performance to continuous thrust rating.  
<sup>3</sup> Isolation kit for galvanic separation available  
<sup>4</sup> Weight stated is for complete thruster excluding VFD



SAC400/300-C	SAC700/412-C	SAC750/513-I	SAC900/513-I	SAC1100/513-I	SAC1100/513-C	SAC1300/610-I	SAC1400/610-I
400	700	600	750	900	1100	1100	1200
-	-	750	900	1100	-	1300	1400
30 • 41	42 • 57	41 • 56	53 • 72	70 • 95	70 • 95	74 • 101	83 • 113
18-33/59-108	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
300	412	513	513	513	513	610	610

Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
S-Link™	S-Link™	S-Link™	S-Link™	S-Link™	S-Link™	S-Link™	S-Link™
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter
Gravity feed	Gravity feed	Gravity feed/ On water change					
No	No	No	No	No	No	No	No

For heavy duty usage

Measurements (mm)	H	L	W	ID	WD	TL	TL min.	T min.	T max.	Weight <sup>4</sup> kg
SAC240/250 (horizontal version)	688	347	262	250	380	550	300	7	10	68
SAC240/250 (vertical version)	688	347	262	250	380	550	300	7	10	68
SAC320/300 (horizontal version)	703	347	262	300	450	550	300	10	10	71
SAC320/300 (vertical version)	703	347	262	300	450	550	300	10	10	71
SAC360/300 (horizontal version)	774	397	313	300	450	550	370	10	10	105
SAC360/300 (vertical version)	774	397	313	300	450	550	370	10	10	105
SAC400/300 (horizontal version)	774	397	313	300	450	550	370	10	10	111
SAC400/300 (vertical version)	774	397	313	300	450	550	370	10	10	111
SAC450/386 (horizontal version)	999	439	356	386	580	750	500	10	15	189
SAC450/386 (vertical version)	999	439	356	386	580	750	500	10	15	189
SAC520/386 (horizontal version)	999	439	356	386	580	750	500	10	15	189
SAC520/386 (vertical version)	999	439	356	386	580	750	500	10	15	189
SAC700/412 (horizontal version)	964	439	356	412	620	800	550	12	16	205
SAC700/412 (vertical version)	964	439	356	412	620	800	550	12	16	205
SAC750/513 (horizontal version)	1079.5	496	396	513	700	1000	750	12	22	330
SAC750/513 (vertical version)	1079.5	496	396	513	700	1000	750	12	22	330
SAC900/513 (horizontal version)	1193.5	563	449	513	700	1000	750	12	22	450
SAC900/513 (vertical version)	1193.5	563	449	513	700	1000	750	12	22	450
SAC1100/513-C (horizontal version)	1303.5	642	495	513	770	1000	750	12	22	450
SAC1100/513-C (vertical version)	1303.5	642	495	513	770	1000	750	12	22	450
SAC1100/513-I (horizontal version)	1193.5	563	449	513	770	1000	750	12	22	575
SAC1100/513-I (vertical version)	1193.5	563	449	513	770	1000	750	12	22	575
SAC1300/610 (horizontal version)	1305	712	555	610	900	1000	750	14	24	680
SAC1300/610 (vertical version)	1305	712	555	610	900	1000	750	14	24	680
SAC1400/610 (horizontal version)	1305	712	555	610	900	1000	750	14	24	740
SAC1400/610 (vertical version)	1305	712	555	610	900	1000	750	14	24	740

# AC components

AC Thrusters are delivered as a complete ready to install kit.

- PDC301 drive controller
- Variable Frequency Drive (VFD)
- Gearleg with propellers and bracket
- Flexible coupling
- AC motor
- EMC Filter

Each AC thruster system is configured according to the specific working conditions and specifications. No further setup of the VFD is required. The PDC301 is configured from the PJC control panel.

The S-Link™ control system ensures fast and trouble-free installation, and gives you the unique option to combine hydraulic and AC thrusters in a single control environment.

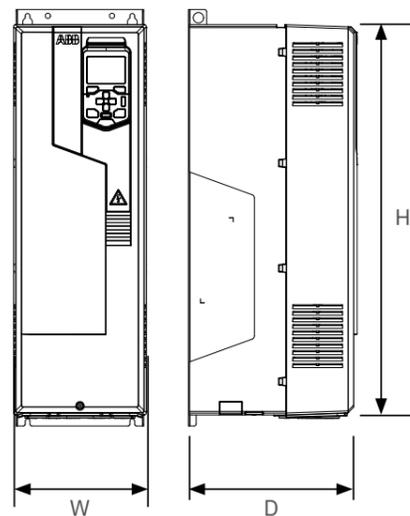
All with variable speed control.



### PDC 301 drive controller

- Communication with VFD by Modbus connection
- Included 3-wire cable for connection to VFD Modbus terminals
- Monitoring and diagnostics
- Firmware upgrade through S-Link™ programmer

### Variable frequency drive (VFD)



VFD	Thruster model	VFD model	Weight kg	D mm	W mm	H mm
SAC240	SAC240/250-C-2-x <sup>2</sup>	ACS580-01-047A-2	11,8	228	203	454
	SAC240/250-C-4-x <sup>2</sup>	ACS580-01-033A-4	11,8	228	203	454
SAC320	SAC320/300-C-2-x <sup>2</sup>	ACS580-01-076A-2	19	258	203	600
	SAC320/300-C-4-x <sup>2</sup>	ACS580-01-046A-4	11,8	228	203	454
SAC360	SAC360/300-C-2-x <sup>2</sup>	ACS580-01-115A-2	28,3	295	203	732
	SAC360/300-C-4-x <sup>2</sup>	ACS580-01-073A-4	19	258	203	636
SAC400	SAC400/300-C-2-x <sup>2</sup>	ACS580-01-115A-2	28,3	295	203	732
	SAC400/300-C-4-x <sup>2</sup>	ACS580-01-073A-4	19	258	203	636
SAC450	SAC450/386-C-2-x <sup>2</sup>	ACS580-01-115A-2	28,3	295	203	732
	SAC450/386-C-4-x <sup>2</sup>	ACS580-01-062A-4	19	258	203	600
SAC520	SAC520/386-I-2-x <sup>2</sup>	ACS580-01-144A-2	42,4	369	252	727
	SAC520/386-I-4-x <sup>2</sup>	ACS580-01-089A-4	28,3	295	203	732
	SAC520/386-C-2-x <sup>2</sup>	ACS580-01-144A-2	42,4	369	252	727
SAC700	SAC520/386-C-4-x <sup>2</sup>	ACS580-01-089A-4	28,3	295	203	732
	SAC700/412-C-2-x <sup>2</sup>	ACS580-01-171A-2	54	370	284	880
SAC750	SAC700/412-C-4-x <sup>2</sup>	ACS580-01-106A-4	28,3	295	203	732
	SAC750/513-I-4-x <sup>2</sup>	ACS580-01-089A-4	28,3	295	203	732
SAC900	SAC900/513-I-4-x <sup>2</sup>	ACS580-01-106A-4	28,3	295	203	732
	SAC1100/513-I-4-x <sup>2</sup>	ACS580-01-145A-4	42,4	369	252	727
SAC1100	SAC1100/513-C-4-x <sup>2</sup>	ACS580-01-145A-4	54	370	284	880
	SAC1300/610-I-4-x <sup>2</sup>	ACS580-01-169A-4	54	370	284	880
SAC1400	SAC1400/610-I-4-x <sup>2</sup>	ACS580-01-169A-4	54	370	284	880

VFD protection: IP21  
IP55 on request



# Dear Ocean.

Thank you for all the knowledge, all the richness and enjoyment you've given us. Thank you for putting us to the sword every day. Thank you for what we have learned through the years to be able to master you.



# Hydraulic tunnel thrusters

Power from 100 kg to 1400 kg and continuous operation make a hydraulic thruster system ideal for yachts, super yachts and professional vessels. It is the natural choice when extensive thruster usage or long run cycles are required.

For all the hydraulic components to be compatible and maintain the same high quality, Sleipner offers complete hydraulic systems with guaranteed performance. Sleipner hydraulic systems use only brand-name hydraulic components, ensuring reliability and easy worldwide access to spare parts and service.

The innovative S-Link™ control system ensures fast and trouble-free installation, and gives you the unique option to combine hydraulic and AC thrusters in a single control environment.

All hydraulic systems are delivered ready-to-use to provide a straightforward installation and the highest degree of quality assurance.



We offer complete hydraulic systems. Scan QR code to learn more

### Benefits

- Continuous use
- Controlled power
- Reliability
- S-Link™ operating system
- Custom-made, ready to install with plug-and-go wiring
- The choice of leading boatbuilders
- Full documentation
- DNV type approval for specific models
- Suitable for joystick and DP integration



DNV type approved gearleg for specific models



### Product features

- S-LINK™
- SEALED DRIVE LUBRICATION
- GRAVITY FEED LUBRICATION
- Q-PROP™
- PRO-VARIABLE SPEED CONTROL

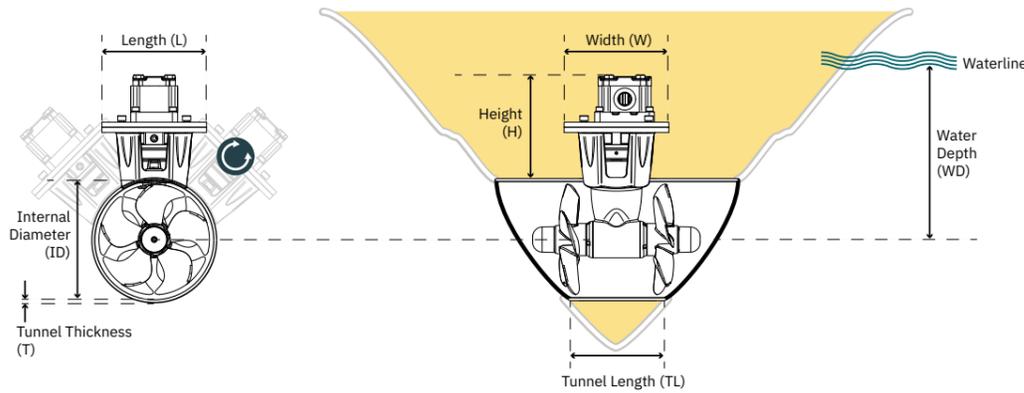
### Technical details

Ideal Vessel Class	Commercial
Ideal Vessel Size	9–55m / 30–175ft
Power	HYD
Thrust light duty	100–1100kg / 220–2425lbs
Thrust heavy duty	80–1400kg / 176–3085lbs
Tunneldiameter	185–610 mm
Placement	Bow / Stern



Performance & Sizing*	SH 100/185 T	SH 160/215 T	SH 240/250 TC	SH 320/300TC	SH 360/300 TC
Light duty thrust (kg)	100	160	240	320	-
Heavy duty thrust (kg)	80	140	220	270	360
Ideal Vessel Size (m/ft)	9-16/30-34	11-19/35-62	13-23/42-75	13-23/42-75	18-33/59-108
Power Output (kW • Hp)	6.9 • 9.3	10.0 • 13.4	14.9 • 20	17.4 • 23.3	27 • 37
Q-propeller	Yes	Yes	Yes	Yes	Yes
Propulsion system	Twin	Twin	Twin Counter	Twin Counter	Twin Counter
Lubrication	Sealed	Sealed	Sealed	Sealed	Gravity feed

For light usage



Sleipner thrusters can be installed at an angle off the vertical centre. Tailored to fit any space available in your vessel.

Measurements Bow	SH100/185T	SH 160/215 T	SH 240/250 TC	SH 320/300TC	SH 360/300 TC
(ID) Internal Diameter (mm)	185	215	250	300	300
Weight <sup>1</sup> (kg)	7.8	11.4	13.5	17.16	26
(H) Height (mm)	215	195	235	245	356
(L) Length	203	203	203	258	258
(W) Width	203	203	203	258	258
(ID) Internal Diameter (mm)	185	215	250	300	300
(WD) Water Depth (mm)	200	215	250	300	450
(TL) Rec. Tunnel Length (mm)	340	560	600	550	550
(TL min.) Minimum Tunnel Length (mm)	170	280	300	370	370
(T min.) Min. Tunnel Wall Thickness	4	6	7	10	10

Measurements Stern	SH100/185T	SH 160/215 T	SH 240/250 TC	SH 320/300TC	SH 360/300 TC
(L) Internal Length	405	172	912	195	310
(+L) Tunnel Length	705	300	340	420	420
(WD) Stern Water Depth	770	215	250	300	300
(HT) Maximum Hull Thickness	120	54	60	60	60
Stern thruster kit	90086i	90135i	90140i	90200i	90350
- Cowls - short model	90075	-	-	-	-
Cowls - long model	90077	90136	90132	90220	-

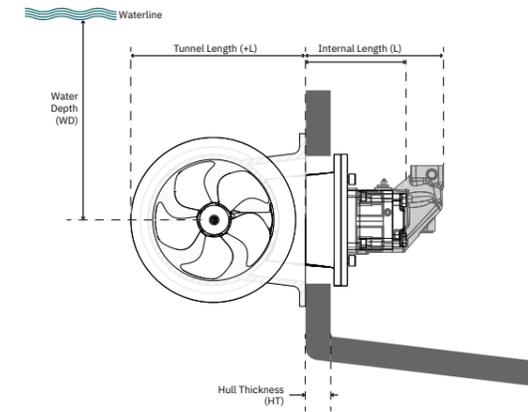
<sup>1</sup> Weight stated include thruster, props & bellhousing ONLY. Weight of hydraulic motor comes in addition



SH 420/386 TC	SH 550/386 TC	SH 400/300	SH 700/412	SH 1000/513	SH 1400/610
-	550	-	-	1100	-
420	500	400	700	1000	1400
22-35/75-110	25-40/85-140	18-33/59-108	29-44/95-145	30-45/100-150	40-55/130-175
31.8 • 42.6	39.9 • 53.5	30 • 41	43.4 • 58.2	59.8 • 80.2	80.1 • 107.4
No	No	Yes	Yes	Yes	Yes
Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter	Twin Counter
Gravity feed	Gravity feed	Gravity feed	Gravity feed	Gravity feed/On water change	Gravity feed/On water change

For light usage

For heavy duty usage



SH 420/386 T	SH 550/386 T	SH 400/300	SH 700/412	SH 1000/513	SH 1400/610
386	386	300	412	513	610
46	56	31	72-76	168-182	211
369	369	356	450	486	500
268	268	258	268	398	398
268	268	258	268	398	398
386	386	300	412	513	610
580	580	450	620	750	900
750	750	550	800	1000	1000
500	500	370	550	750	750
10	10	10	16	16	18

SH 420/386 T	SH 550/386 T	SH 400/300	SH 700/412	SH 1000/513	SH 1400/610
257	257	305	n. a.	405	470
540	540	422	n. a.	705	820
380	380	300	n. a.	770	915
54	54	60	n. a.	120	145
90550	90550	90350	90700	91000	91400
-	-	n. a.	n. a.	n. a.	n. a.
90560	90560	n. a.	n. a.	n. a.	n. a.



# Control devices for Hydraulic and AC Thrusters

## PJC2 series

### Proportional thruster control for S-Link™ thruster systems

- Fingertip speed control with purpose designed joysticks
- Hold-function for easy docking, runs thrusters at selected power step
- Compact design
- Backlit LCD display
  - System status and diagnostics
  - Indication of power and direction of thrust
  - Interactive multi-language menus
- S-Link™ CAN-Bus communication
- Built-in alarm buzzer
- Connector for external alarm buzzer
- Plug & Play cables, waterproof and compact connectors
- Supports all Sleipner retractable thrusters
- Supports Vector Fins™ on/off control



Control Devices	PJC211	PJC212	PJC221	PJC222
For thruster type	AC/DC electric	AC/DC electric	DC/AC/Hydraulic	DC/AC/Hydraulic
Display	Internal	Internal	Internal	Internal
Height (mm)	141	141	141	141
Width (mm)	83	83	83	83
S-Link™ CAN-Bus	Yes	Yes	Yes	Yes
Multi-voltage	Yes	Yes	Yes	Yes
Child safety/Stop function	Yes / No	Yes / No	No / Yes	No / Yes
Number of joystick/lever	1	2	1	2
Joystick/lever type	Spring / Hold-button	Spring / Hold-button	Spring / Hold-button	Spring / Hold-button
Item Code	PJC211	PJC212	PJC221	PJC222
Item Code DNV Design Approved variants	N/A	N/A	N/A	N/A

## PJC4 series

Control your thrusters with the new PJC4 – joystick and control panel. The bright 3.5” daylight touch screen offers an easy day-to-day operation.

**NEW 2021**



### Proportional thruster control for S-Link™ thruster systems

- Back-lit touch color LCD with instant feedback:
  - System status and diagnostics
  - Indication of power and direction of thrust
  - Interactive multi-language menus
- IPX7 water ingress rated control panel
- Flush or top mount control panel (HxW: 149x112mm)
- Built-in Wi-Fi module
- S-Link™ CAN-bus communication
- Built-in alarm buzzer
- Plug & Play cables, waterproof and compact connectors
- Dedicated connector for IO signals
- Supports various joystick designs

### Environmental testing

- DNVGL-CG-0339:2019
- IACS E10:2018
- IEC 60945
- IEC 60092-504:2016

### DNV design approved product variant for all available lever types

- Power supply fault monitoring
- Display of propeller RPM
- Gearleg low oil level monitoring
- Select station, command transfer between multiple operator stations

The PJC4 package consists of joystick of choice and the external TP-35 display.



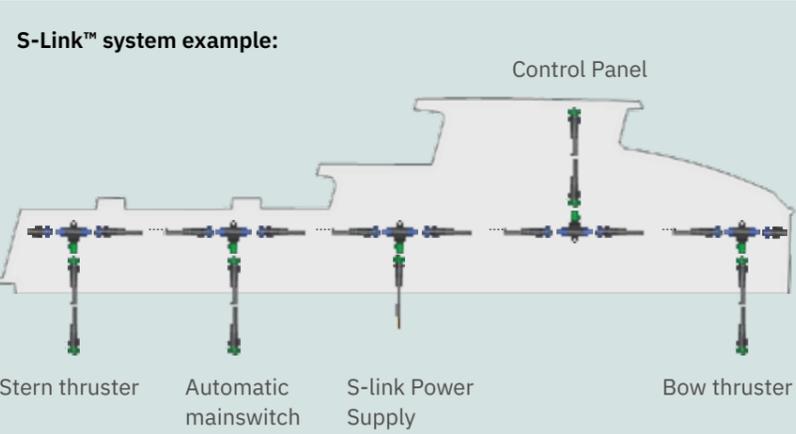
PJC421-PVREL	PJC422-PVREL	PJC421-LE90	PJC422-LE90	PJC421-LF90X	PJC422-LF90X	PJC421-LF90	PJC422-LF90
DC/AC/Hydraulic	DC/AC/Hydraulic	DC/AC/Hydraulic	DC/AC/Hydraulic	DC/AC/Hydraulic	DC/AC/Hydraulic	DC/AC/Hydraulic	DC/AC/Hydraulic
External (TP-35)	External (TP-35)	External (TP-35)	External (TP-35)	External (TP-35)	External (TP-35)	External (TP-35)	External (TP-35)
123,4	206,0	96,0	96,0	96,0	96,0	96,0	96,0
105,5	106,0	96,0	96,0	96,0	96,0	96,0	96,0
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No / Yes	No / Yes	No / Yes	No / Yes	No / Yes	No / Yes	No / Yes	No / Yes
1	2	1	2	1	2	1	2
Spring twist detent	Spring twist detent	Detent	Detent	Detent	Detent	Detent	Detent
PJC421-PVREL	PJC422-PVREL	PJC421-LE90	PJC422-LE90	PJC421-LF90X	PJC422-LF90X	PJC421-LF90	PJC422-LF90
PJC421-PVREL-DNV	PJC422-PVREL-DNV	PJC421-LE90-DNV	PJC422-LE90-DNV	PJC421-LF90X-DNV	PJC422-LF90X-DNV	PJC421-LF90-DNV	PJC422-LF90-DNV

# S-Link™

S-Link™ is a CAN-bus based control system with full intelligent communication between all units in the system, much like a computer network. The system saves precious installation time as you can control DC, AC or Hydraulic thrusters, Stabilizers, Hydraulic Power Systems, control panels, joysticks, and various interfaces and automatic main switches all on the same network.

## Advantages

- Round, compact and waterproof plugs with unique keying and color coding to avoid faulty hookup
- Unlimited number of commands or information transfer on a single cable
- User feedback to panel
- Intelligent troubleshooting



### S-Link™ system example for one control positions and two thrusters.

Depending on the boat's construction, there might be several different ways to route the S-Link™ backbone. Find the most practical way to implement the backbone and remember that the S-Link™ equipment does not need to be connected in a specific order.

Item code	Description	Parts
6 1320-xx	Backbone cable	4 pcs
6 1321-xx	Spur cable	4 pcs
6 1326	T connector	5 pcs
6 1328	Power cable	1 pc
6 1327	End terminator	2 pcs

## S-Link™ cable components



### Backbone cables

Forms the main "loop" around the boat.

- Item code:
- 6 1320-xxM (xx=length)
  - 6 1320-0.2M (0.2m)
  - 6 1320-2M (2.0m)
  - 6 1320-4M (4.0m)
  - 6 1320-7M (7.0m)
  - 6 1320-10M (10.0m)
  - 6 1320-15M (15.0m)
  - 6 1320-20M (20.0m)



### Spur cables

Must be used to connect all parts to the backbone cable (one for each component, no exceptions), recommended to be as short as practically possible.

- Item code:
- 6 1321-xxM (xx=length)
  - 6 1321-0.4M (0.4m)
  - 6 1321-1M (1.0m)
  - 6 1321-3M (3.0m)
  - 6 1321-5M (5.0m)



### Power cable

Must be one in each system, length 2.5m

- Item code: 6 1328



### End terminator

Must be one in each end of the backbone "loop".

- Item code: 6 1327



### Backbone extender

Connects two backbone cables to extend length.

- Item code: 6 1322



### T connector

Must be one for each spur, including power cable.

- Item code: 6 1326



### S-Link™ 4-Port T-connector

Allows four spur cable connections in the same device for a more tidy installation with fewer parts. Two sealing caps included for protection.

- Item code: 6 1403

# Accessories S-Link™ system



### 8730B / 8730S S-Link™ Interface

S-Link™ interface to connect foot switches and standard radio remotes/control panels to a S-Link™ system (Foot switches/Panels/Radio Remote not included). Multivoltage 12/24V.

### S-Link™ Signal Interface

H (mm)	45
W (mm)	80
D (mm)	145
Item code bow thruster	8730 B
Item code stern thruster	8730 S



### GW-1

The GW-1 gateway is the link between NMEA2000 networks and S-Link™. Slepner allows numerous vendors of boat maneuvering systems to communicate with S-Link™ thrusters through the GW-1. Controlling S-Link™ systems through GW-1 is restricted to certified vendors. GW-1 is also enabling the use of GPS data for S-Link™ devices. GPS messages can be received from NMEA2000 compatible GPS-receivers, or optionally through the NMEA0183 input connector provided on the unit.

### GW-1

H (mm)	26
W (mm)	50
D (mm)	127



### ESI-1

The ESI-1 (External Signal Interface) acts as a link between various systems that require control of the vessel thrusters, and the complete range of Side-Power proportional thruster systems. Any DC proportional, AC or Hydraulic thrusters can be controlled with variable speed. The unit is connected to the S-Link™ bus, and has numerous digital and analogue inputs and outputs. Two analogue 4-20mA inputs are used for controlling thruster speed.

### ESI-1

H (mm)	156
W (mm)	212
D (mm)	62



### Foot switch

Foot switch kit suitable for 8730 S-Link™ interface. Kit contains 2 switches with covers to protect from unwanted operation.

(Cables from switches to 8730 S-Link™ interface not included)

### Foot Switch

Diameter (mm)	105
Item code (kit)	8751



# Hydraulic power systems

Sleipner’s hydraulic power systems are designed for ultimate flexibility to support all hydraulic components onboard, including thrusters and stabilizers. A hydraulic system offers immense savings on space and labor cost, considering that essentially all necessary parts are pre-installed, wired, and adjusted.

A hydraulic system makes sound economic sense for many vessels as several functions can run off one central hydraulic source. Once the primary system is in place, including the pump, reservoir, and cooler, adding a function is simply a matter of adding a relatively inexpensive hydraulic valve. This approach is more efficient and cost-effective than running each part with its own electric motor, solenoid, fuse, and battery switch, especially with larger equipment.

Hydraulic valves and motors are better choices in harsh environments such as the forepeak, bilge, and transom areas and areas requiring ignition protection. Typical hydraulic applications are thrusters, stabilizers, winches, capstans, cranes, and so on.

For all the hydraulic components to be compatible and maintain the same high quality, Sleipner offers complete

hydraulic systems with guaranteed performance. Sleipner hydraulic systems use only brand-name hydraulic components, ensuring reliability and easy worldwide access to spare parts and service.

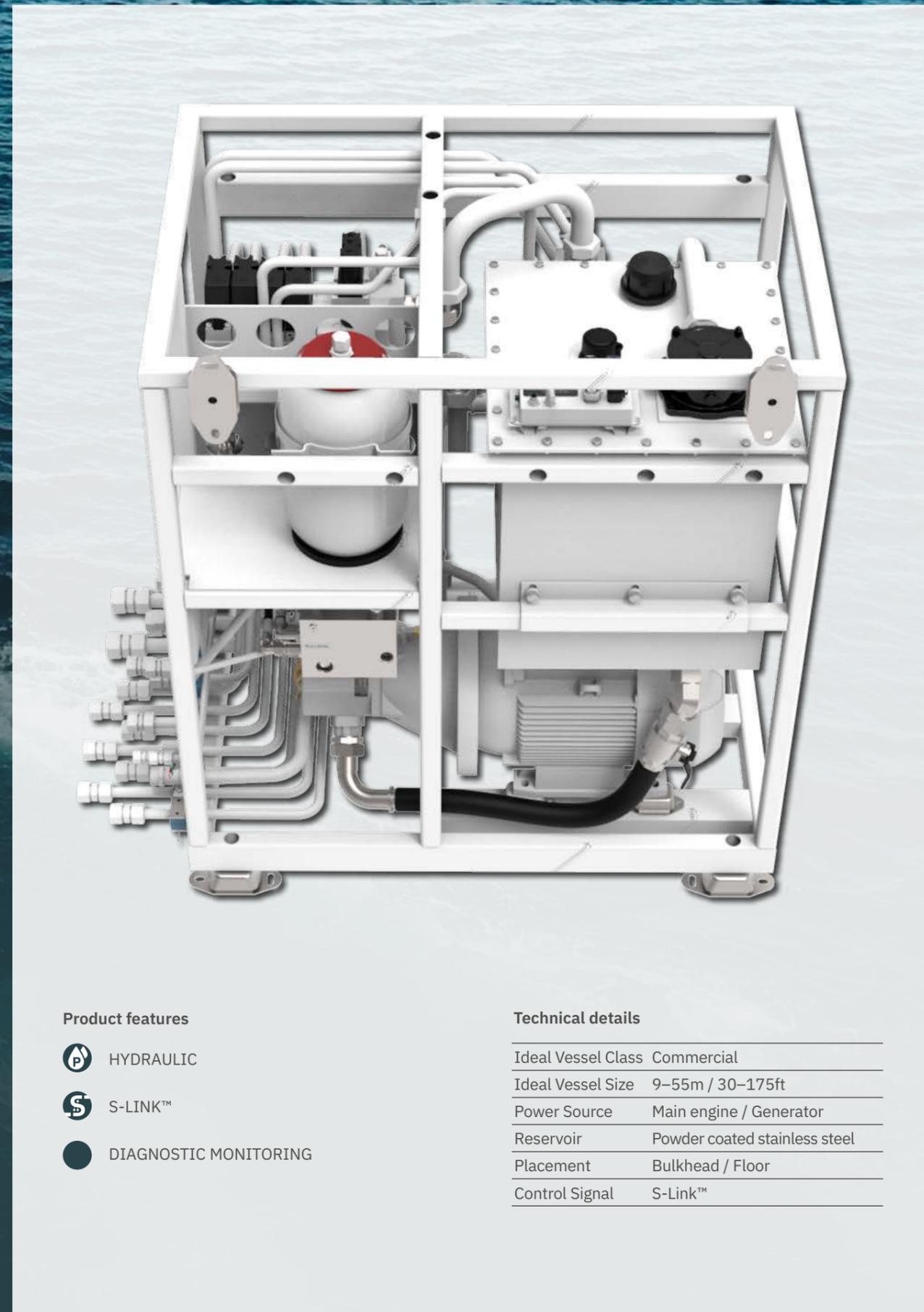
The hydraulic pumps are based on the well-proven and reliable load sense principle, ensuring high efficiency, low noise, and low heat generation.

The system’s brain is the PHC-3 with real-time component diagnostics on both the integrated LCD panel and at the helm. Installed directly on the tank, it provides below deck access to diagnostics and local configuration of parameters.

All hydraulic systems are delivered ready-to-use to provide a straightforward installation and the highest degree of quality assurance.

### Benefits

- Compact-sized units and easy maintenance
- Delivered pre-fitted with all components adjusted
- Advanced real-time diagnostics
- S-Link™ operating system
- Plug-and-go wiring
- Available as standard or customized by our hydraulic expert engineers
- Bulkhead and floor installation options
- Delivered with complete system-specific documentation
- Load sensing hydraulic pumps for optimal efficiency
- Easy firmware update through S-Link™



### Product features

-  HYDRAULIC
-  S-LINK™
-  DIAGNOSTIC MONITORING

### Technical details

Ideal Vessel Class	Commercial
Ideal Vessel Size	9–55m / 30–175ft
Power Source	Main engine / Generator
Reservoir	Powder coated stainless steel
Placement	Bulkhead / Floor
Control Signal	S-Link™

## Project engineering

Sleipner has been working in close partnership with leading boat builders for decades. Our in-house knowledge amongst our engineers represents more than 250 years of combined experience.

More than 4,000 vessels have been fitted with a Sleipner hydraulic system just in the last 20 years.

Scan the QR code below to see our commercial reference list for a small selection of our deliveries.



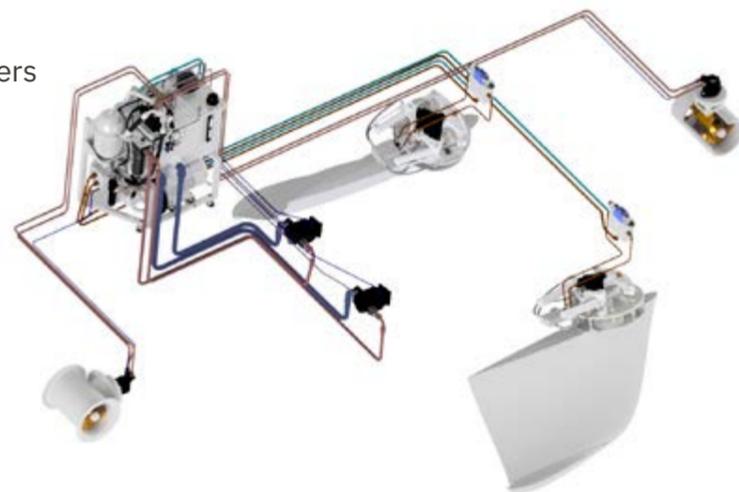
”

We have always worked passionately to create a safer, more comfortable experience at sea. Our products continue to be a benchmark for the boating industry.

*Tore Eriksen, Chief Technical Officer*

### Main services

- Complete designs for thrusters, stabilizers and hydraulic power systems
- 3D modelling
- Calculations
- System specific documentation
- Type approvals / certifications
- On board system set up / training



### A reliable partner

- In-house engineering, manufacturing and assembly
- Engineering assisted by extensive experience
- Use of superior materials Controlled quality of every supplied part
- Only high quality brand components
- Worldwide product support
- 2-year limited warranty



# Robust and reliable steering comfort

Close collaboration with boatbuilders and shipowners has allowed Sleipner to develop robust hydraulic steering systems for the professional market. You can easily select the best-suited equipment for your boat's specific needs within a wide range of pumps, cylinders, and accessories made from marine-resistant materials.

### Advantages

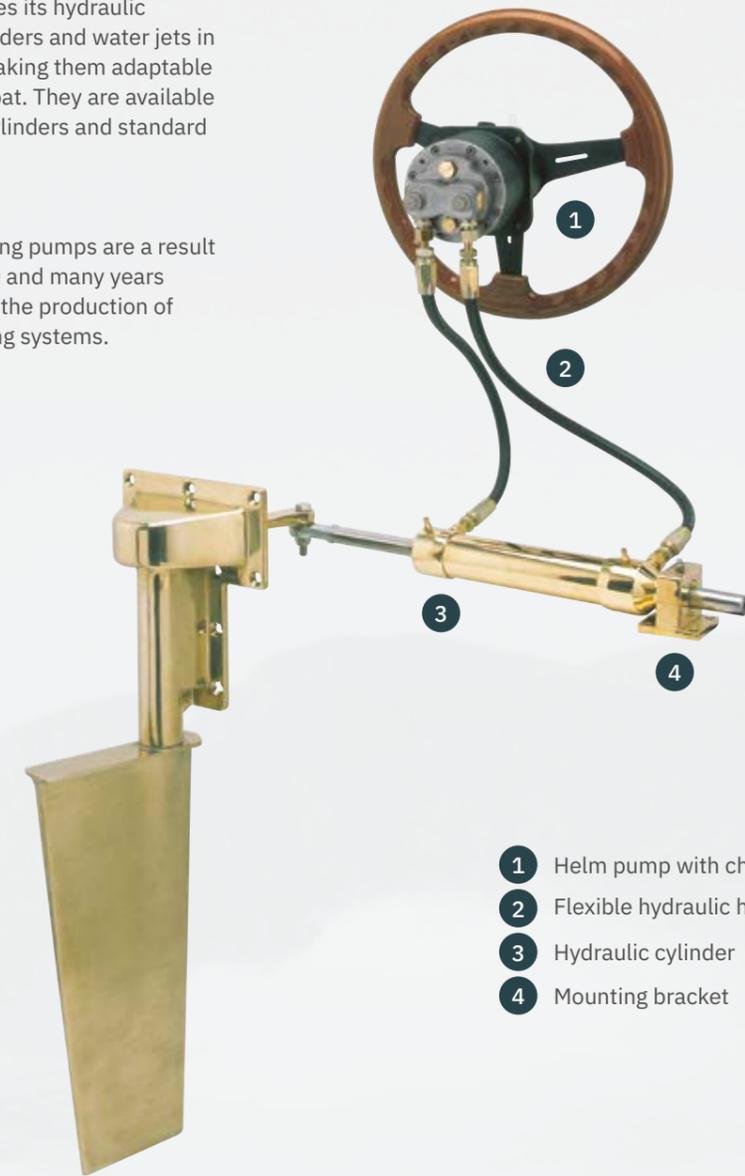
- Safer and more precise control of your vessel
- An integrated non-return valve helps the rudder maintain its position without holding the steering wheel
- Minor mechanical wear means minimal maintenance and extended product-life
- Best alternative if you want two or more steering positions
- Stable course with minimal use of force

### Cylinders

Sleipner produces its hydraulic cylinders for rudders and water jets in various sizes, making them adaptable to almost any boat. They are available as heavy duty cylinders and standard cylinders.

### Steering Pump

Sleipner's steering pumps are a result of intensive R&D and many years of experience in the production of hydraulic steering systems.



- 1 Helm pump with check valve
- 2 Flexible hydraulic hose
- 3 Hydraulic cylinder
- 4 Mounting bracket

### Certification

**Heavy Duty Cylinders**  
DNV type approved

**Standard Cylinders**  
Approved by the Norske Veritas for Recreational Boats.



### Technical details

Ideal Vessel Class	Commercial
Steering Positions	Multiple
Standard Cylinder	110–565 cm <sup>3</sup> / 50 bar
Heavy duty Cylinder	1111–1187 cm <sup>3</sup> / 70–85 bar
Helm Pumps	26, 35, 43, 70 cm <sup>3</sup>
Helm pump installation	Flange, flush, tilt

## Hydraulic cylinders

Sleipner's hydraulic cylinders fit a wide range of installations. They are adaptable to most rudders and water jets as long as the rudder torque does not exceed what the cylinder is intended for.

### Finding the right cylinder

#### Rudders

To find the proper steering for boats with rudders, you must calculate the rudder torque. The calculation formula can be found under technical details in the cylinder's product information.

#### Pump Jets

For water jets and other types of installations, please contact a Sleipner dealer that can assist you.



#### Heavy Duty Cylinders

Our series of heavy-duty cylinders are designed to deliver maximum performance and reliability for our power steering systems. Still, several of the cylinders are equally suitable with a traditional hydraulic steering pump. Teflon gaskets of the highest quality provide a smooth ride with minimal friction and maintain high pressure.

- Three sets of connection ports allow for installation of an optional shock and by-pass valve
- DNV Type approved

#### Standard Cylinders

Sleipner's standard cylinders are of very high quality and are in use in thousands of boats. The cylinders are proven and have a very long service life.

- Robust construction in stainless steel and brass
- Long lifetime
- Easy air purging
- Supplied with attachment nipples
- Approved by the Norwegian Veritas for Recreational Boats



Learn more at our blog or at our website.



## Hydraulic steering pumps

The steering pump is the heart of a hydraulic steering system. This component decides how much oil to pump through to the system's muscle which is the cylinder.

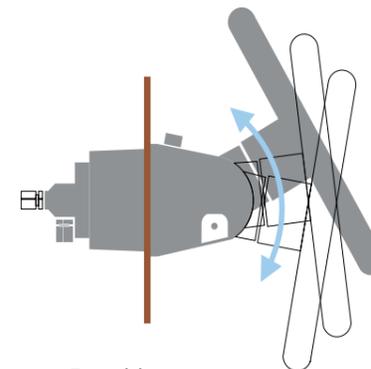
### Sleipner offers three different models for different boats and dashboard designs.

All three models are available in 26 cm<sup>3</sup>, 35 cm<sup>3</sup> and 43 cm<sup>3</sup> for adaption to different hydraulic cylinders, or the desire to choose a steering wheel mandrel.

Additionally, we have a more extensive steering pump of 70 cm<sup>3</sup>, which has 10 pistons. This pump is mainly used together with our largest cylinder, only available as a recessed model.

DNV EN30592

- Axial piston pump with fine-tuned piston angles
- Seven pistons for smooth and precise steering
- Piston in hardened steel
- Stable and rigidly mounted acid-resistant steering shaft with four ball bearings
- Integrated non-return valve
- Large internal oil reservoir
- All parts in corrosion-free materials



5 positions:  
-10°, 0°, 10°, 20°, 30°



Helm pump with flange



Helm pump with flush mount

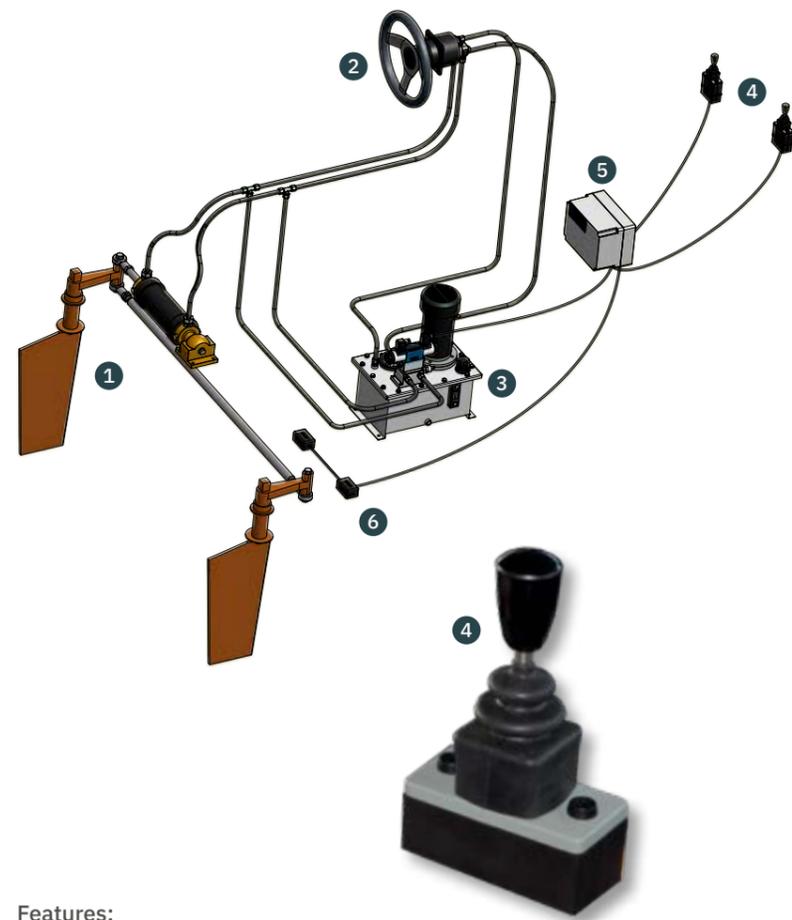


Helm pump with tilt

# Hydraulic Unit PS600

PS600 is a robust power steering for commercial vessels. Sleipner has designed a control with a constantly running electro-hydraulic pump and valve for connecting the autopilot and joystick. To ensure long life and high operational reliability, an adjustable auto-stop function is built into the control unit which significantly reduces the running time of the pump and motor. Automatic end stops are an important feature to reduce the load and stress on the system.

The system maintains Sleipner quality and can also be expanded with manual hydraulic steering pumps.



The Power steering system includes the following:

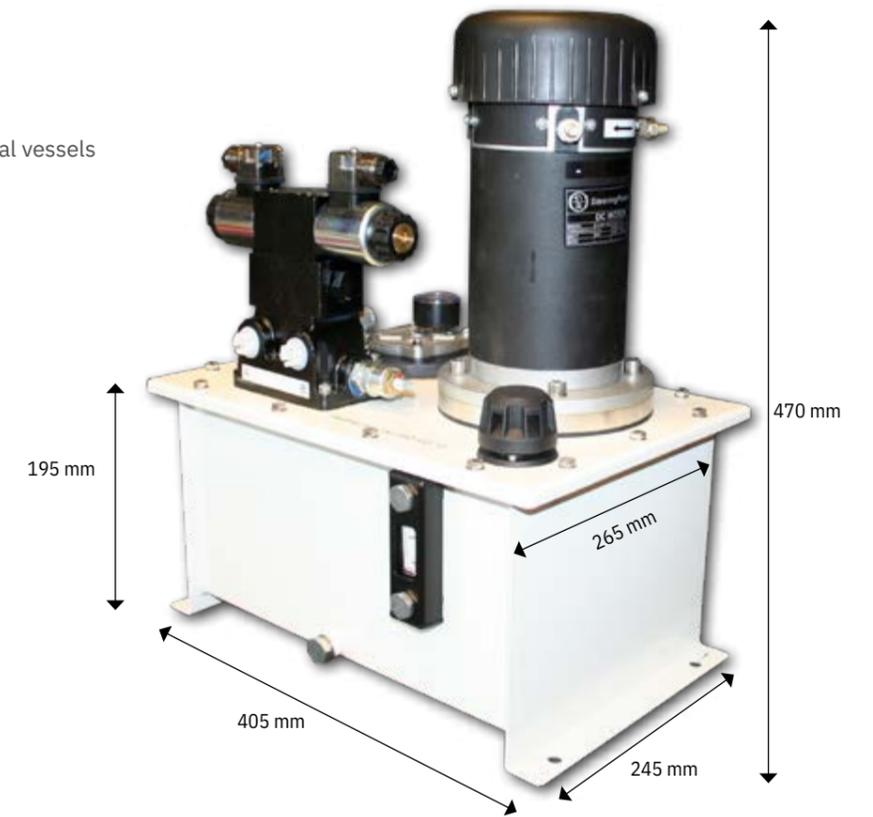
- 1 Hydraulic steering cylinder
- 2 Hydraulic helm pump
- 3 Hydraulic power unit consists of electric motor, hydraulic pump, oil filter, valve system and oil
- 4 Joystick, one or two
- 5 Electronic control unit handling signals from joystick, autopilot and rudder stop switches. Outputs signals from the control box controls starboard and port directional valves and the motor starter relay
- 6 Rudder end stop switches
- 7 Optional level and temperature sensor

**Features:**

- Compact oil tank with return filter, pump, valve and electric motor
- Fits steering cylinder volume from 345cm<sup>3</sup> to 1200cm<sup>3</sup>
- When using autopilot, no external pump is required
- Auto stop function on electric motor
- 600W / 24V electric motor
- Selectable pump of 7.0, 4.5 or 3.3 liters per. minute
- Prepared for joystick, autopilot and manual control
- 240 / 400V AC

Contact Sleipner for more information.

- Robust power steering for commercial vessels
- Constant running pump
- Auto-stop function
- Automatic end stop
- Compact construction



Art.no	Pump volume	Cylinder art. no	Volume	Time from port to starboard
74352	3,2 liters per min	6525-200-	565 cm <sup>3</sup>	10,6 sec
74352	3,2 liters per min	71140	345 cm <sup>3</sup>	6,5 sec
74352	3,2 liters per min	6530-200-x	522 cm <sup>3</sup>	10,3 sec
74351	4,3 liters per min	6525-200-x	565 cm <sup>3</sup>	7,9 sec
74351	4,3 liters per min	6530-200-x	522 cm <sup>3</sup>	7,3 sec
74351	4,3 liters per min	71140 x 2 stk	690 cm <sup>3</sup>	9,6 sec
74351	4,3 liters per min	9032-200-x	1111 cm <sup>3</sup>	14,0 sec
74350	6,8 liters per min	6525-200-x	565 cm <sup>3</sup>	5,0 sec
74350	6,8 liters per min	6530-200-x	522 cm <sup>3</sup>	4,6 sec*
74350	6,8 liters per min	71140 x 2 stk	690 cm <sup>3</sup>	6,1 sec*
74350	6,8 liters per min	8032-200-x	844 cm <sup>3</sup>	7,4 sec
74350	6,8 liters per min	9032-200-x	1111 cm <sup>3</sup>	9,8 sec

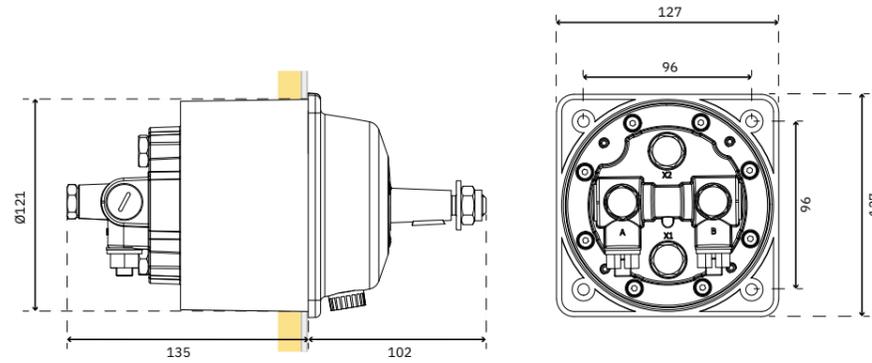
Supplied standard with starting relay.  
 \* These driving times may be too fast for autopilots  
 \*\* Pump volume with 27V operating voltage.

74362	Control unit for PS600 with limit switches
10 2209	

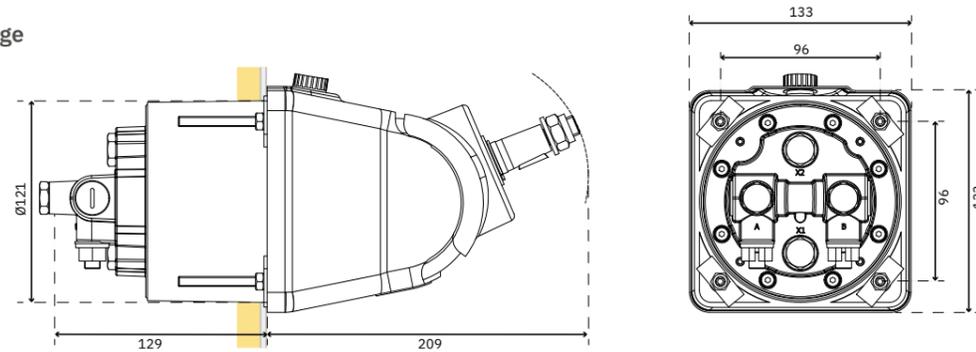
# Helm pumps 26–43 ccm

Item number 72061–72069

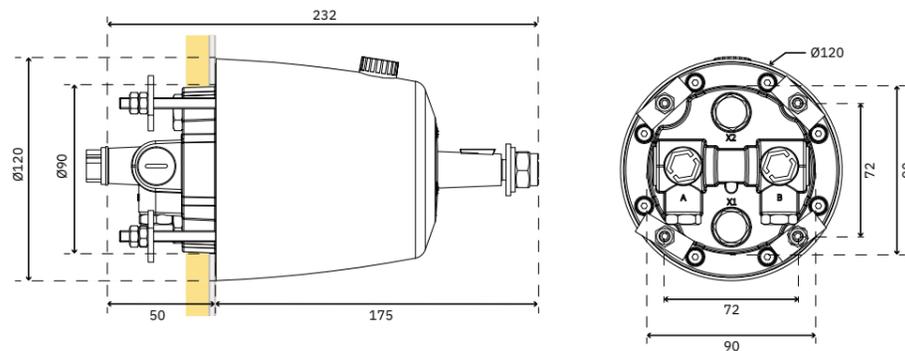
## Helm pumps with flange



## Helm pumps with flange and tilt



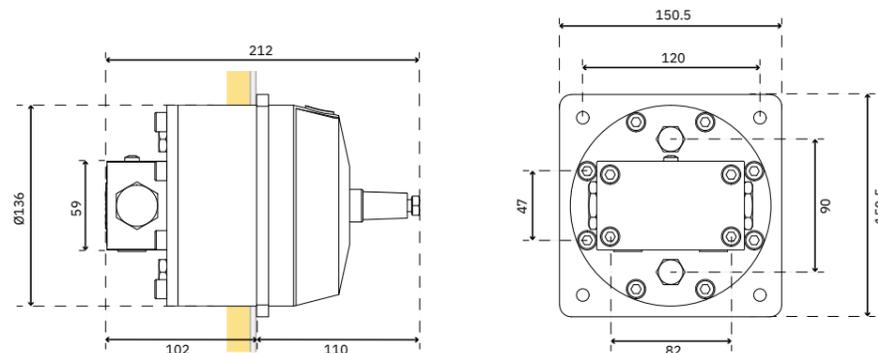
## Helm pumps flush mount



# Helm pump 70 ccm

Item number 72070

## Helm pumps with flange



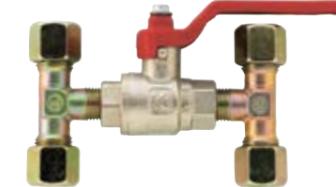
Item code	Port Flange Thread	Helm pump	Port dimensions BSP A/B x1/x2	
72061	26 ccm	with flange	1/4"	1/4"
72062	35 ccm	with flange	1/4"	1/4"
72063	43 ccm	with flange	1/4"	1/4"
72064	26 ccm	with tilt	1/4"	1/4"
72065	35 ccm	with tilt	1/4"	1/4"
72066	43 ccm	with tilt	1/4"	1/4"
72067	26 ccm	flush mount	1/4"	1/4"
72068	35 ccm	flush mount	1/4"	1/4"
72069	43 ccm	flush mount	1/4"	1/4"
72070	70 ccm	with flange	3/8"	1/4"



Hose coupling, 90°



T-coupling



By-pass valve



Hydraulic oil

Meets ISO-VG-15, DIN 51524-3 HVLP specifications.



Hydraulic hose for steering

1 layer steel braided  
Inner Ø: 9,5 mm (3/8").  
Outer Ø: 12 mm  
Meets DNV standard EN 30592



Union fitting

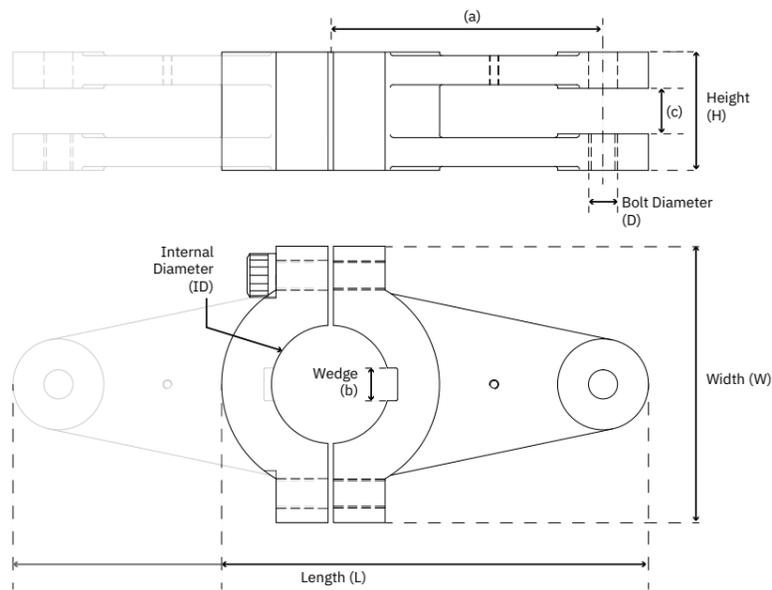
Description	Item code standard	Item code stainless
Union fitting 1/4" BSPx10mm	72200	72210
Hose coupling, 10mm for 3/8" hose	72335	72336
T-coupling for 10mm	72500	73510
Hose coupling, 90°, 10mm	72400	72410
Hydraulic hose for steering, 3/8" 1 layer steel braided	72135	
Hyd. hose for steering, PA/11 2004, non pressure ventilation hose	72140	
By-pass valve 10mm	72600	
By-pass valve 12mm	72612	
Hydraulic oil for steering, 1ltr	72750	
Hydraulic oil for steering, 12 pack (12x1ltr)	72760	
Hydraulic oil for steering, 2,5ltr	72700	



**Rudder tiller arm**

Made of coated cast iron, available single or dual, for shafts of 40–80 mm diameter, length 215–345 mm, width 115-180 mm.

Contact us for more details and custom-made products.



Item code	Material	Description	For shaft ID	Size Group	(H) Height	(L) Length	(W) Width	(D) Bolt dia.	(ID)	(a)	(b)	(c)
72848	Coated cast iron	Single	40	1	55	215	115	14	40	150	14	22
72849	Coated cast iron	Dual	40	1	55	340	115	14	40	150	14	22
72844	Coated cast iron	Single	40	1	55	340	115	16	40	150	14	22
72847	Coated cast iron	Dual	40	1	55	215	115	16	40	150	14	22
72850	Coated cast iron	Single	45	1	55	215	115	14	45	150	14	22
72851	Coated cast iron	Dual	45	1	55	340	115	14	45	150	14	22
72836	Coated cast iron	Single	45	1	55	215	115	16	45	150	14	22
72837	Coated cast iron	Dual	45	1	55	340	115	16	45	150	14	22
72852	Coated cast iron	Single	50	1	55	215	115	14	50	150	14	22
72853	Coated cast iron	Dual	50	1	55	340	115	14	50	150	14	22
72838	Coated cast iron	Single	50	1	55	215	115	16	50	150	14	22
72839	Coated cast iron	Dual	50	1	55	340	115	16	50	150	14	22
72854	Coated cast iron	Single	55	2	64	235	150	16	55	150	18	26
72855	Coated cast iron	Dual	55	2	64	345	150	16	55	150	18	26
72856	Coated cast iron	Single	60	2	64	235	150	16	60	150	18	26
72857	Coated cast iron	Dual	60	2	64	345	150	16	60	150	18	26
72858	Coated cast iron	Single	65	2	64	235	150	16	65	150	18	26
72859	Coated cast iron	Dual	65	2	64	345	150	16	65	150	18	26
72860	Coated cast iron	Single	60	2	64	235	150	20	60	150	18	35

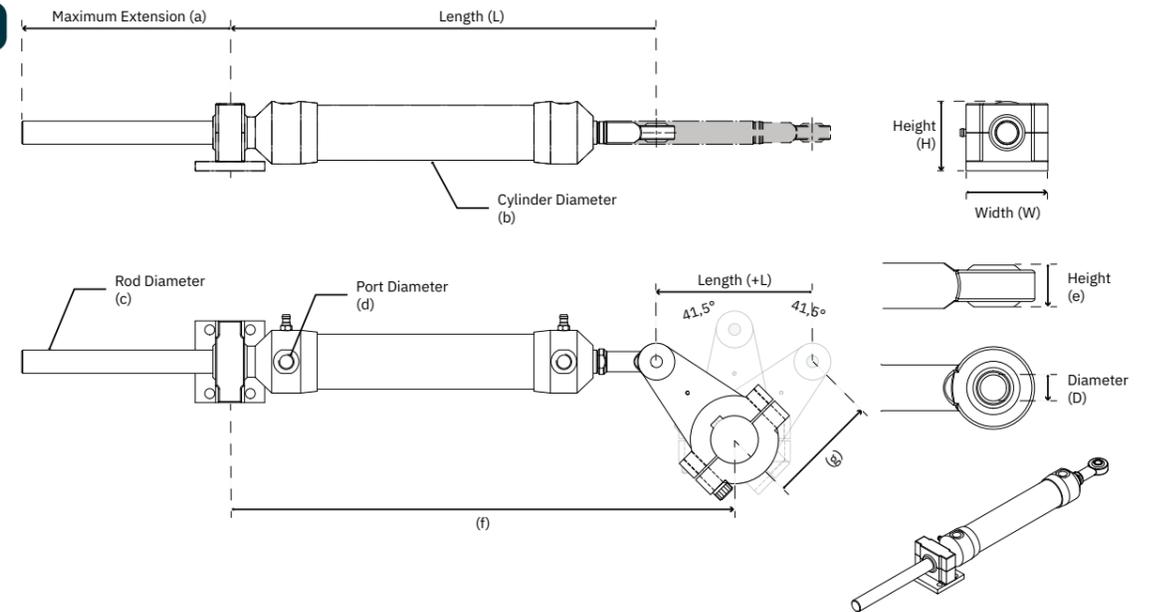
Measurements in mm

**Rudder rotations and cylinder pump volumn**

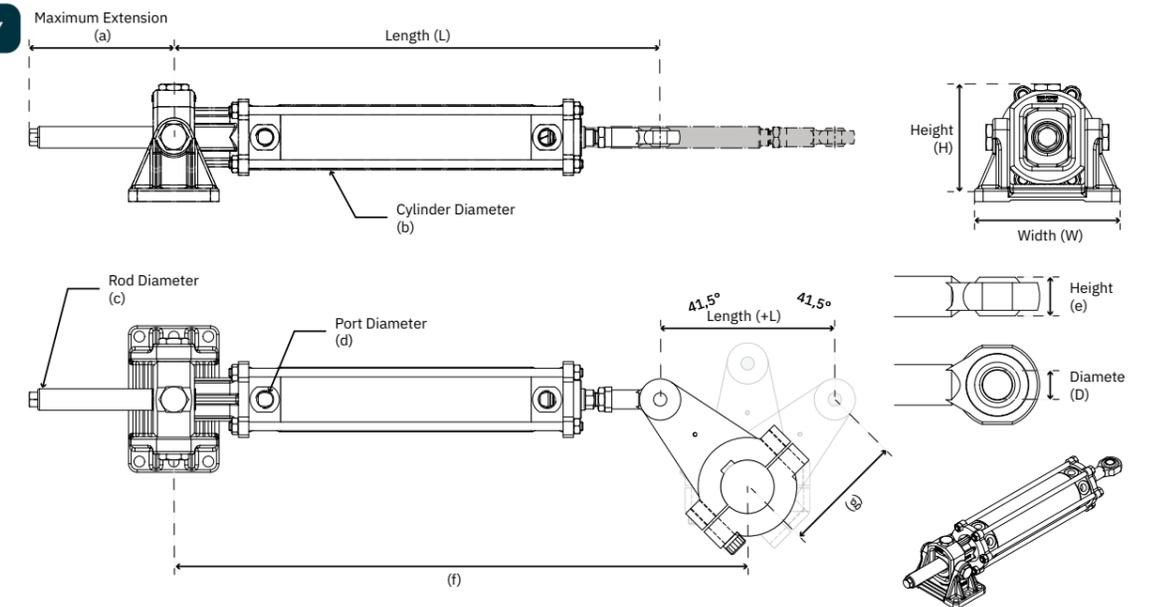
Item code	26 ccm	35 ccm	43 ccm	70 ccm	Item code	43 ccm	70 ccm
71030*	4,2	3,1	-	-	6525-200-xx	13,1	8,1
71060	4,8	3,6	-	-	6530-200-xx	12,1	7,5
71090	8,3	6,1	5,0	-	8032-200-xx	-	12,0
71140	-	-	8,0	4,9	9032-200-xx	-	16,7
71220	-	-	-	8,1	8032-305-xx	-	18,5

**Recommended**

**STANDARD**



**HEAVY DUTY**



Item code	Volumn (ccm)	Max rudder torque (kgm) v/150mm tiller	Working pressure (bar)	Recom. hose ID	Cylinder diam. (b) mm	Rod diam. (c) mm	Port dimension (d)	Max Extension (a) mm	Length (L) mm	(f) mm	Stroke length (+L) mm	(g) mm	Diameter (D) mm	Height (e) mm
<b>Standard cylinder</b>														
71030*	110	45 kgm	50 bar	3/8"	38	16	1/4"	158	337,5	425	175	150	12	150
71060	125	45 kgm	50 bar	3/8"	38	16	1/4"	180	355	460	200	150	12	150
71090	215	80 kgm	50 bar	3/8"	48	20	1/4"	180	365	465	200	150	12	150
71140	345	130 kgm	50 bar	1/2"	57	20	1/4"	165	392	492	200	150	14	150
71220	565	210 kgm	50 bar	1/2"	75	25	3/8"	175	350	520	200	150	16	150
<b>Heavy duty cylinder</b>														
9032-200-7-60	1111	580	70	1/2"	100	32	1/2"	135	556	656	200	150	20	25
9032-200-7-70**	1111	580	70	1/2"	100	32	1/2"	135	556	656	200	150	20	25
8032-305-9-60	1287	-	85	1/2"	90	32	1/2"	240	679	832	305	-	25	20
8032-305-9-70**	1287	-	85	1/2"	90	32	1/2"	240	679	832	305	-	25	20

Measurements in mm

Contact Sleipner for more information and dimensioning.

\*Rudder angle +/- 35° for Item code 71030.

\*\*with shock and by-pass valve

# Imprint

## IMAGERY

Sleipnergroup thanks our partners for providing the imagery for this catalogue.

## SOURCES

p. 06: © Courtesy Grovfjord Mek Verksted  
p. 08: © Courtesy Baltic Workboats  
p. 09: © Courtesy Grip Shipping  
p. 26: © OCEA FPB 100 SOKAN  
p. 32: © Courtesy Måløy Verft  
p. 40: © Courtesy Grovfjord Mek Verksted  
p. 44: © Courtesy Selfa Arctic

## COPYRIGHT Sleipnergroup 2021

Sleipnergroup constantly seeks ways of improving specifications, design and production. Thus, alterations take place continuously. Whilst every effort is made to produce up-to-date literature, this brochure should not be regarded as a definitive guide to current specifications, nor does it constitute an offer for the sale of any particular product.

Some product images used in this brochure are 3D model illustrations and might deviate in color and texture from actual product.

All Sleipner / Side-Power products fulfill the requirements of the relevant CE-directives.

Sleipner\_Commercial Catalogue INT\_EN\_rev03\_2021

Sleipnergroup  
Arne Svendsensgate 6-8  
NO-1610 Fredrikstad  
sleipnergroup.com



Visit us on YouTube

[www.youtube.com/user/SidepowerTV](https://www.youtube.com/user/SidepowerTV)



Visit us on Facebook

[www.facebook.com/sleipnergroup](https://www.facebook.com/sleipnergroup)



Visit us on LinkedIn

[www.linkedin.com/company/sleipnerofficial](https://www.linkedin.com/company/sleipnerofficial)



Visit our blog

[www.sleipnergroup.com/blog](https://www.sleipnergroup.com/blog)



More information on our patents

[www.sleipnergroup.com/patents](https://www.sleipnergroup.com/patents)



Visit our website

[www.sleipnergroup.com](https://www.sleipnergroup.com)



**SLEIPNER**

*Ocean born. Tech bred.*

# We create

world-leading technologies that consistently improve safety and comfort at sea and set the benchmark for the boating of tomorrow.



**SLEIPNER**

*Ocean born. Tech bred.*



Worldwide sales and service

[www.sleipnergroupp.com](http://www.sleipnergroupp.com)

Distributor information: