



**SLEIPNER**

# Stabilizer systems

Sleipner's Vector fins™ is the only top performing stabilizer system for both cruising and at anchor-use. The fins' patented, unique shape reduces drag and improves fuel efficiency – translating more of their power into actual roll stabilization. Enhanced comfort and safety with none of the drawbacks from flat fins.





## Vector Fins™ systems

# Superior stabilization in every situation

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

### 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 stabilisation 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 stabilisation 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:  $\text{force} = \text{speed}^2$ . Gyro-type stabilisers 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 stabilisers 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 fin stabilizer

- 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 stabilisation 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 stabilisation 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.



*Boat owner John Maxey on his experience with Sleipner Stabilizers.*

”  
It is like riding on a  
Magic Carpet

Up to  
**55%**  
less side  
effects

Up to  
**50%**  
more efficient







### Performance of different stabiliser technologies

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

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

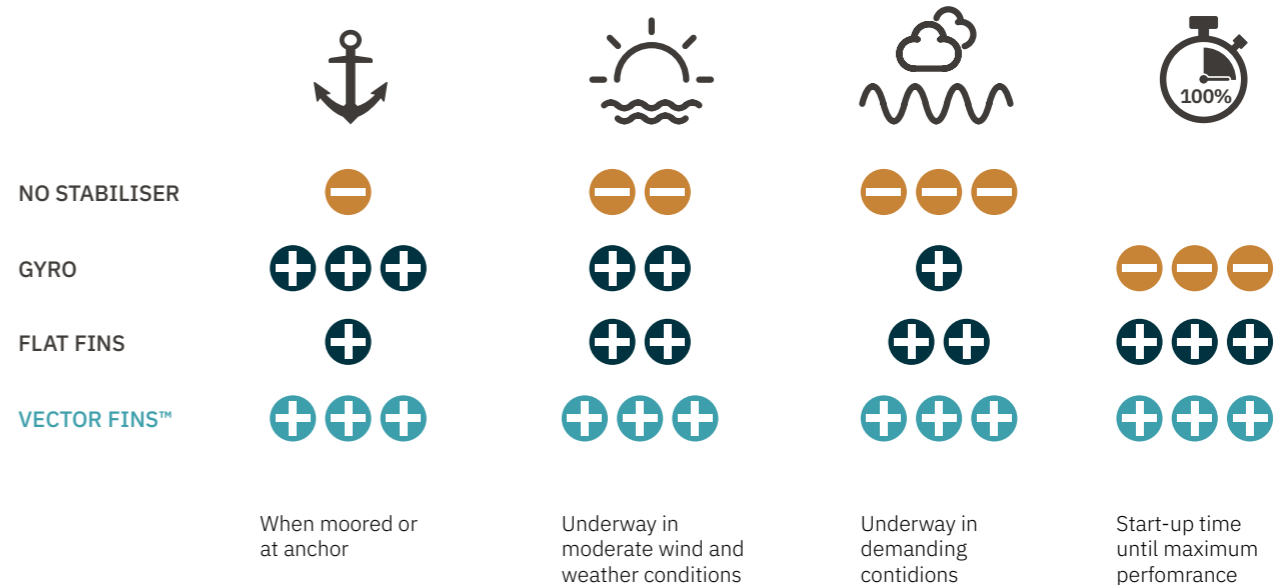
Vector Fins are up to 30% more efficient when cruising and up to 50% more efficient when anchoring. Unwanted additional effects in terms of yaw and swaying can be reduced by up to 55% compared to flat fins.

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.

## How to choose the right stabilizer for your boat

Over the last few years, roll stabilization has become a must-have for boat owners due to the impressive increase in comfort it delivers. The dramatic roll reduction modern systems provide also increases safety onboard and as a result, allows many families to get more use out of their boats.

If your only priority is having stabilisation 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 stabilisation 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.



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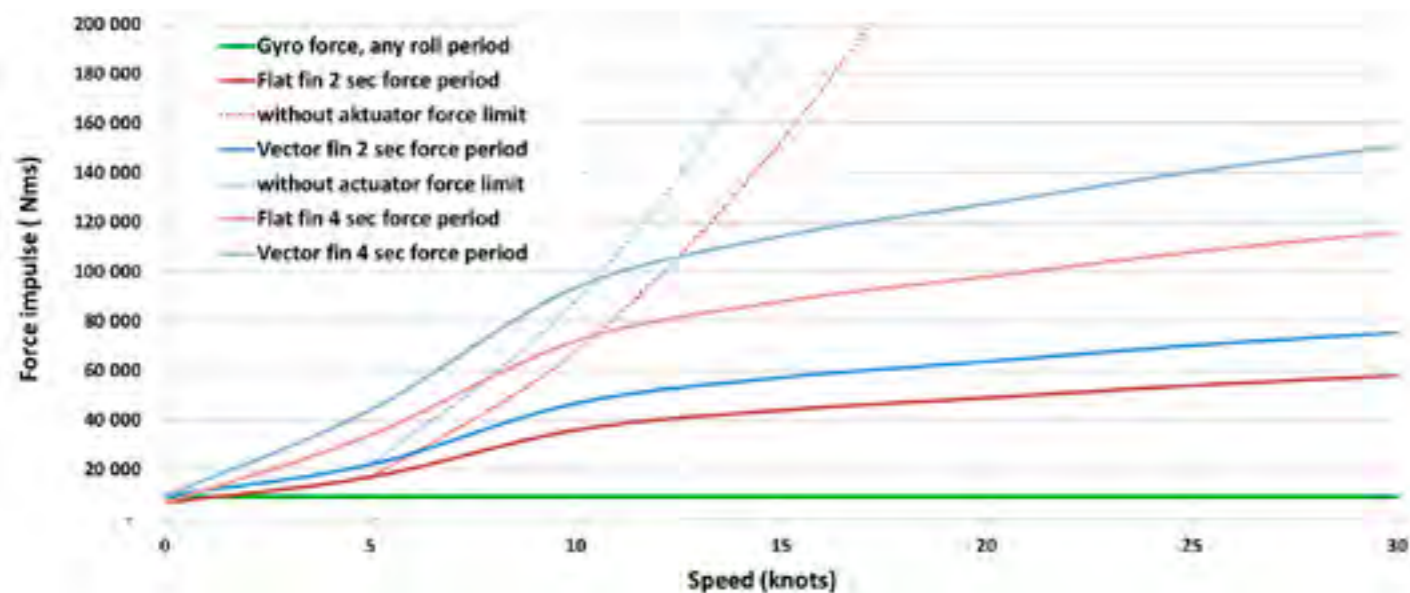
# Vector Fins™

- it's all about the physics

Most boaters who have ever had a stabilised boat would never buy another boat without. Most stabiliser 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 stabilisation both at anchor and underway, while gyro is good choice for boaters who are primarily focused on at anchor stabilisation. The reason is that gyro stabilisers has a maximum stabilisation 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 Princess 56 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.

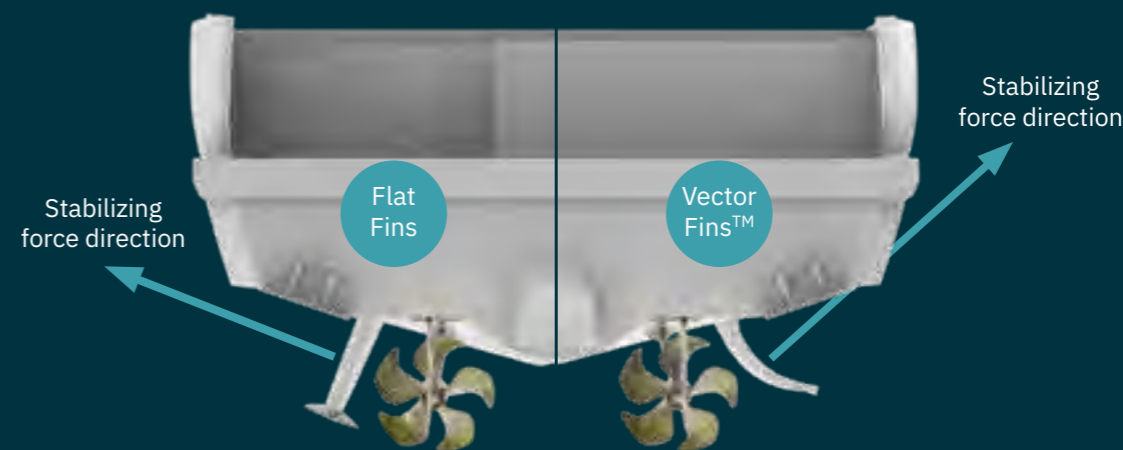
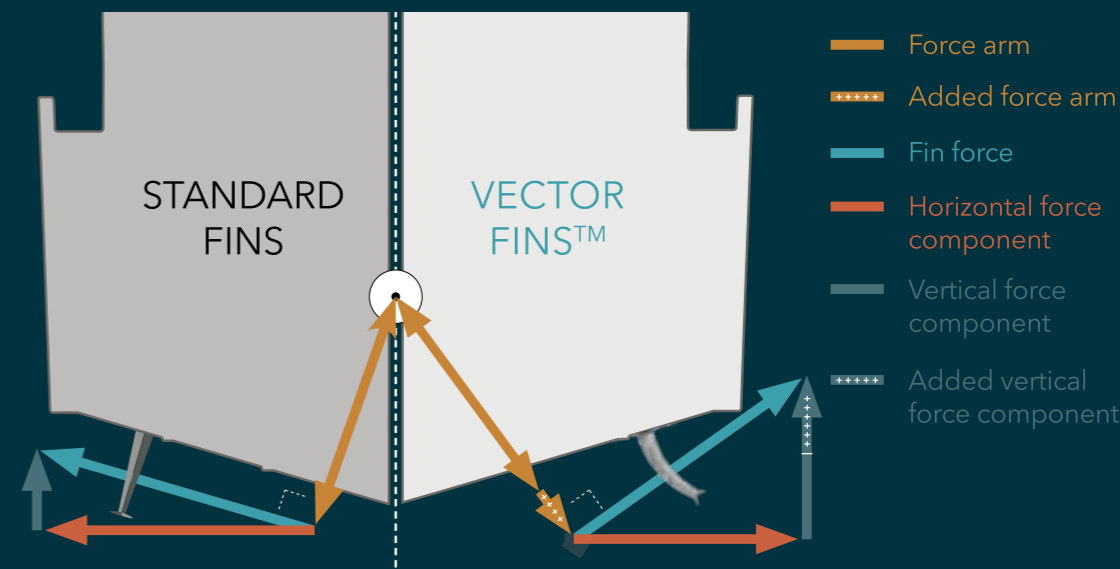
Another aspect worth considering is plain and simple onboard safety.

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. The dramatic roll reduction modern systems provide also increases safety on board and as a result, allows many families to get more use out of their boats.



Up to  
**97%**  
roll  
reduction



Vector Fins™ –  
more stabilization force in every situation



# Vector Fins™ – a revolutionary generation of fin stabilizers

Fin stabilizers is the only system that handle well 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, independant 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. Moving around, getting the tender out, serving dinner or just getting in and out of the water for swimming becomes a lot easier and safer from a stabilized boat.

Spend those amazing nights at anchor under the stars in a bay - instead of a busy harbour!





## 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 math layers to ensure maximum strength

Up to  
**55%**  
less side  
effects

Up to  
**50%**  
more efficient

## Product features

-  S-Link™
-  ANYSPEED
-  HYDRODYNAMICAL SHAPE
-  INSTANT-ON (MAX POWER AT START-UP)

## Technical details

Ideal Vessel Class	Yacht , Superyacht, Motor Boat
	Commercial vessel
Ideal Vessel Size	9–55m / 50–140ft
Power	Electrohydraulic System
Rated Power	3,5–15 kW
Actuator Position	360°
Shaft Positions	At anchor / Balanced / Underway





### 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

### Actuators

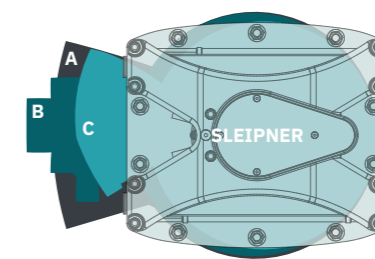
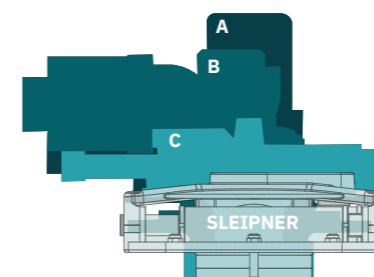
The height inside the boat is often the key measurement to allow for installation in modern boats. The Sleipner actuators are typically 25% to 75% lower than others. They are constructed for easy installation and minimal noise reproduction.

### 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

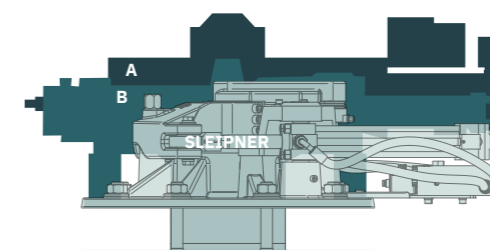
their bearings, meaning either a part change, lubrication and/or mechanical adjustments. Side-Power's latest generation of bearings do not need any of that, saving time and money for the owner with lifetime lubricated high-end bearings as standard, meaning one less service point on your vessel.

- 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.



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

■ Sleipner actuators



## The most compact actuator



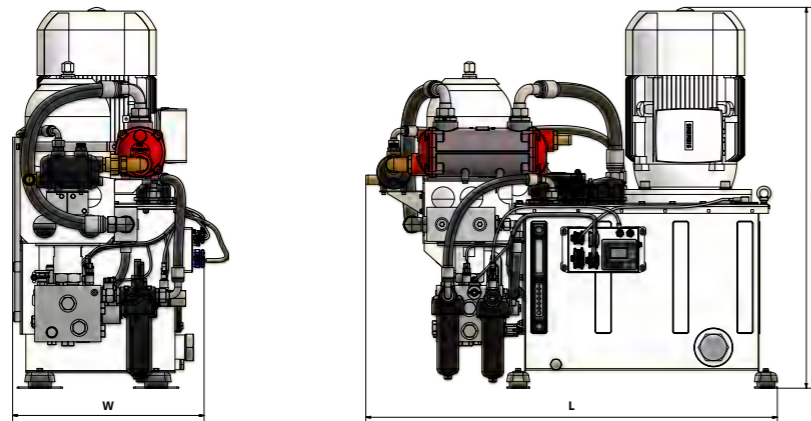
Compact,  
quiet and  
easy to  
install



**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



Courtesy of Ferretti Group



**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.

- 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.

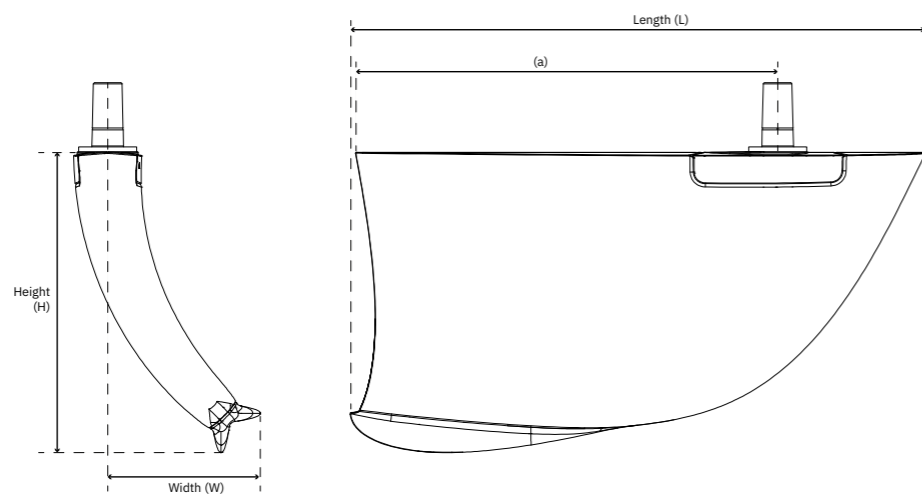
**Features**

- 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.





# Vector fins™



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

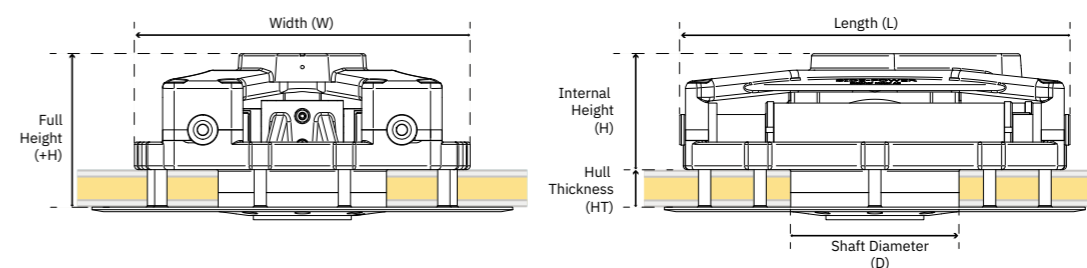


Vector Fins™ (mm)	VF650	VF800	VF1050-66	VF1350	VF1650	VFS1950-M
(H) Height	661	733	847	956.5	956.5	1054.1
(L) Length	1271	1395	1618	1835	1835	2081
(W) Width	337	337	429	485	485	533
Size	VF650	VF800	VF1050	VF1350	VF1650	VF1950-A/M/HS
Weight	0 weight in water	0 weight in water	0 weight in water	0 weight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

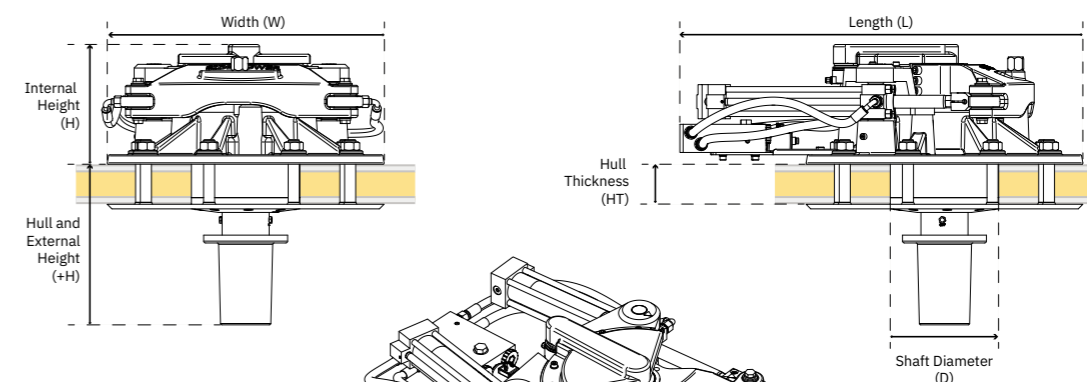
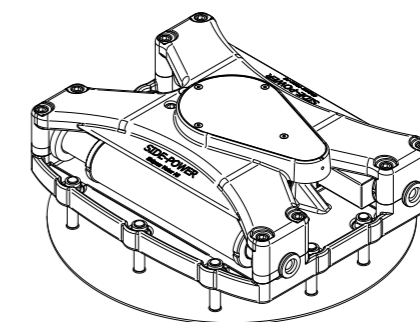
Fins have zero weight in water

Patents: sleipnergroup.com/patents

# Actuator

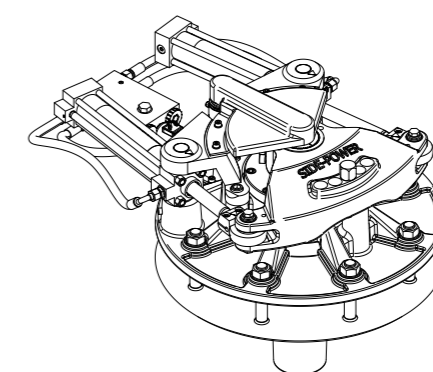


Measurements SPS55B



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



Rock  
the  
boat.  
We  
dare  
you.

