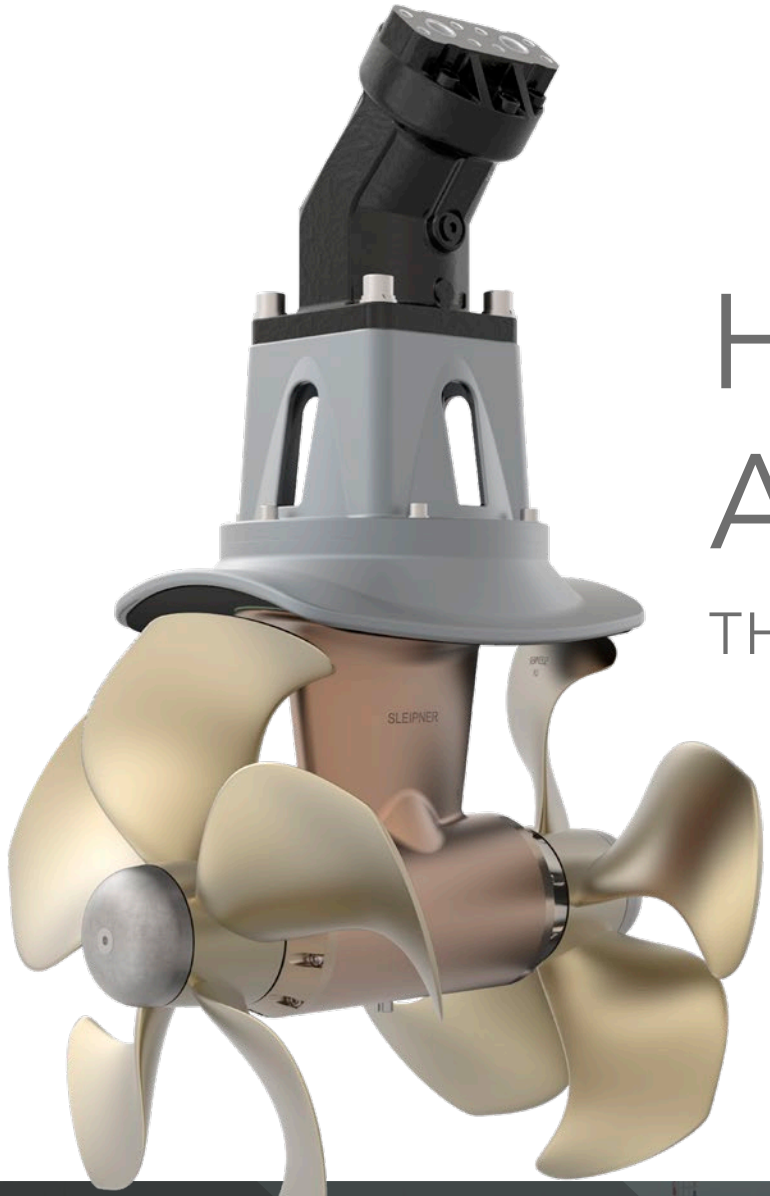
SIDE-POWER
Thruster Systems




# Hydraulic & AC Electric

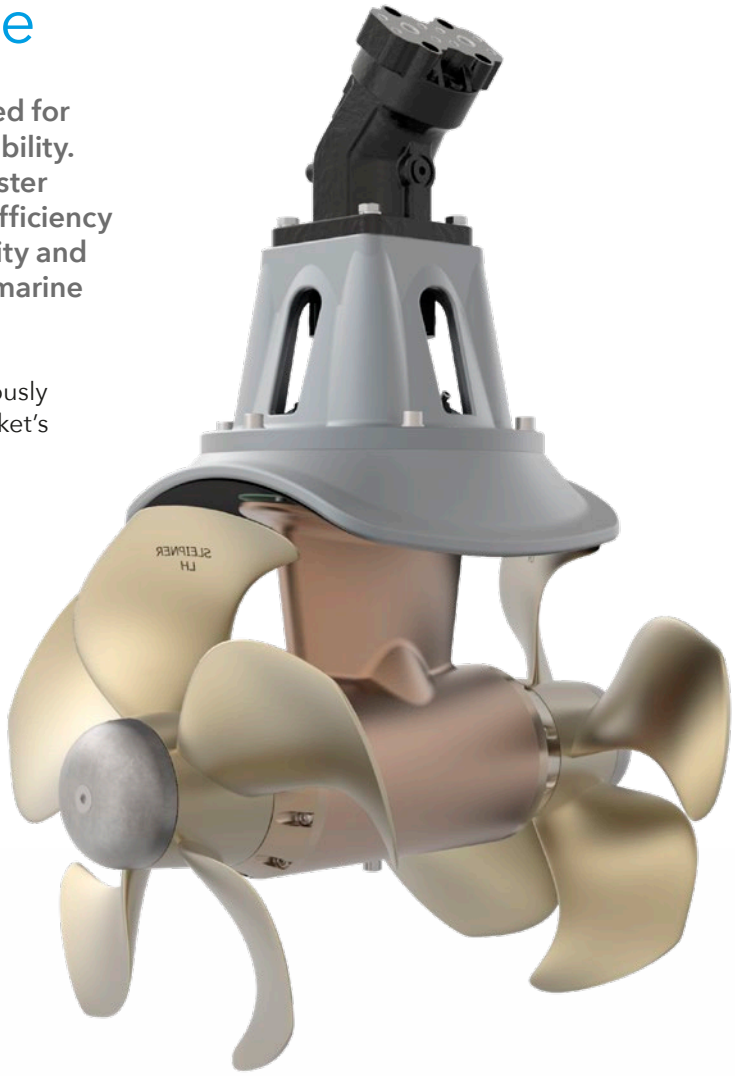
## THRUSTER SYSTEMS

YACHTS SUPERYACHTS COMMERCIAL VESSELS 2020

# Innovation & Experience

**Side-Power thrusters are well known and respected for their superior performance, functionality and reliability. Side-Power has decades of experience in the thruster sector with high volume production focusing on efficiency while maintaining the demands of quality, reliability and safety – advantages of great value in demanding marine markets.**

We cooperate with leading boat builders and are continuously developing our product range in accordance with the market's demand for high quality thruster systems.



Sleipner since 1908

We design our hydraulic systems with the style needed for pleasure crafts and the reliability necessary for commercial vessels.

# Side-Power facts

**Side-Power thrusters are the choice of the leading boat builders around the world. Our engineering and development work is the foundation for the high quality products that have been accepted as the best in the industry.**

## Safety

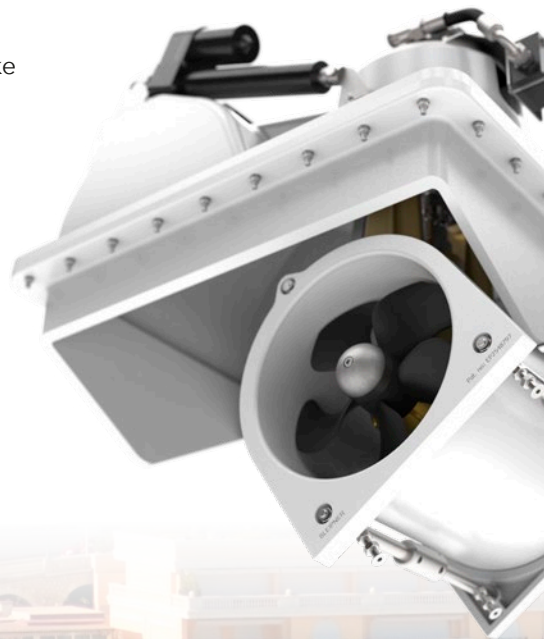
Side-Power thrusters include several features to ensure the safety of your vessel and its passengers. These features protect against technical and operator faults.

- Mechanical protection of drive gear with flex couplers.
- Electronic protection against sudden change of drive direction.
- Protection against accidental operation incorporated in control panels.

## Performance

Investing in product development and testing is an important reason why Side-Power is the leading thruster brand today. Now larger vessels can benefit from these investments that have resulted in modern, cost effective production of highly efficient and reliable thrusters.

- Propulsion technology know-how.
- 5-bladed composite or NiBrAl propellers.
- Improved water flow from streamlined gear leg design.
- High thrust and efficiency in compact tunnel diameters.
- All hydraulic and AC components are supplied by high quality manufacturers like Parker Hannifin, Danfoss, Bosch Rexroth, Bowman, ABB and Siemens.



## Reliability

The world's leading boatbuilders have used Side-Power for many years because they know they can trust Side-Power equipment to work without problems, year after year.

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

QUALITY SYSTEM CERTIFICATION
DNV·GL
ISO 9001

# Thruster features

The 5 blade special skew propellers are the result of over 2 years of development work and thousands of tests. They have been designed to reduce the noise level, while maintaining the exceptional efficiency of the old 4 blade Side-Power propellers. And the result is even increased thrust on several models.

- Noise reductions of up to 75% measured in controlled environments
- The expected and tested normal noise reduction in "average installations" 20-40%

**Twin Propellers:**
The twin propeller system can give more thrust than a single propeller system in the same tunnel diameter. This is our choice for our mid-range models where high thrust is required in a small tunnel diameter. Due to the compact design and high performance, the twin models have become the thrusters of choice among boat builders around the world.

**Twin Counter Rotating Propellers:**
Two counter-rotating propellers can give the most thrust at a good performance ratio in a minimal tunnel diameter. This system is used in our larger thrusters for maximum power. The TC models are the favourite thrusters among leading boat builders for their high-end yachts.

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

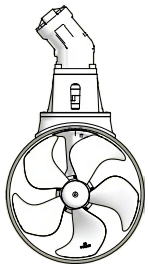
- Separate oil reservoir placed above the waterline.
- Prepared with service plug for oil change
- Some models are now upgraded to feature on water oil change. See page 8.

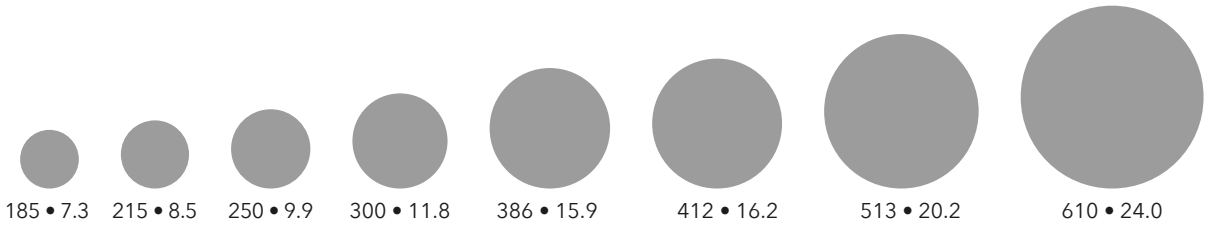
Sealed gear leg using ceramic/carbon mechanical seals.

- Prefilled with longlife gear oil for lifetime lubrication on smaller models

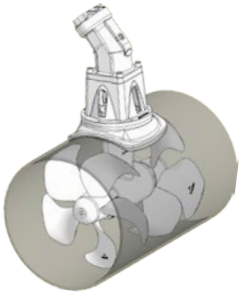
## Tunnel sizes

Our hydraulic and AC thrusters are available in a wide range of tunnel diameters. Tunnels are available in GRP, aluminium and steel. Tunnel diameters shown below indicate inside diameter in mm and inches.






With the ever growing demand for increased performance, we continue to expand our range of tunnel diameters to allow customers to choose more powerful thrusters in tunnel sizes that will fit in their boat.



**Facts about tunnel sizes:**

- Principally a larger tunnel diameter will always be more energy efficient than a smaller tunnel diameter for the same thrust. The factor is water speed, and this is decided by the amount of water you move through the possible opening which is the square area of the tunnel less the area blocked by the thrusters gearleg.
- The opening in the boat hull is not only the circular size of the tunnel diameter. Because the hull is angled, you get a much larger oval opening, and this makes a larger tunnel diameter more difficult to fit properly into the hull.

# S-link Total integration

The CAN bus based Side-Power S-link control system offers full integration of all Side-Power equipment and interface with other signal devices

Control Panels

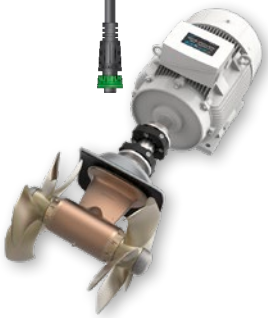
Signal interface devices

Hydraulic thrusters

Side-Power Stabilizer Systems

DC PRO thrusters

AC thrusters



DC power supply

# System examples

## Total integration - Maximize comfort and control

➤ **System Integration**

- Total system communication allows for easy and quick installation
- Can be integrated into other joystick and autopilot control systems to improve performance and accuracy

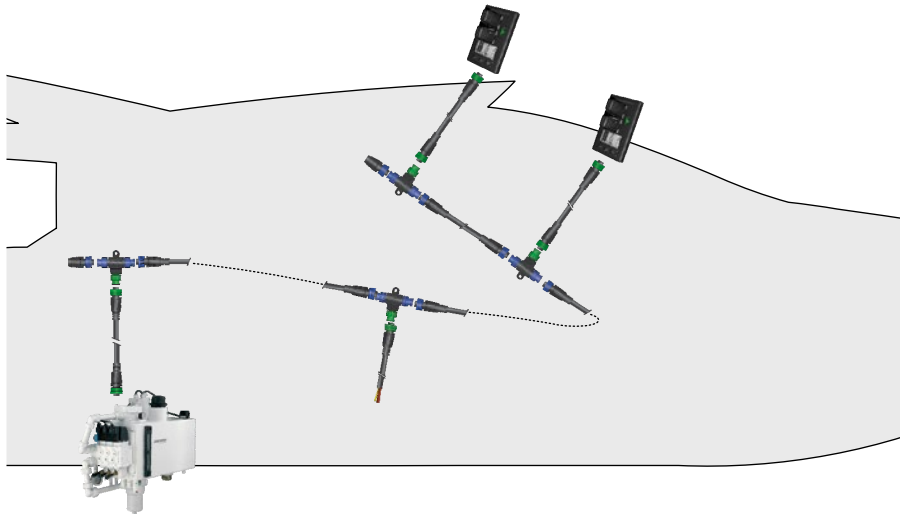
The thrusters in the SH and the SAC range are part of a total vessel control system. All of the Side-Power systems communicate on a shared CAN bus based S-link system. The S-link system enables the best integration possible no matter what the combination of equipment. AC thrusters can be combined with hydraulic stabilizers. An AC bow thruster can be used with a hydraulic stern thruster. In fact, any combination of Side-Power equipment imaginable can be used. Even two bow thrusters and two stern thrusters can be controlled on a single backbone. Additional information about our S-link compatible products is found in our separate product brochures as well as on our website: www.side-power.com

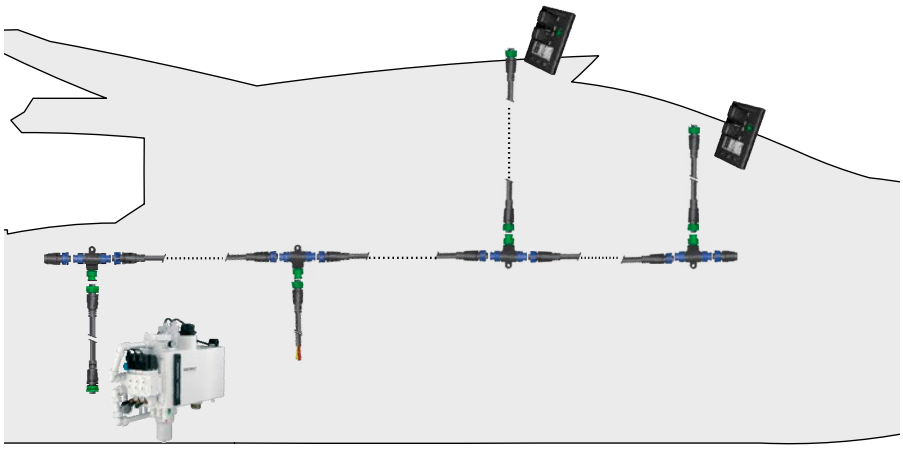
**Side-Power builds the most technologically advanced, user-friendly systems in the industry, offering stabilizers and thrusters that have set the standard for reliability, convenience and precision control without compromise.**

**Examples of the control wiring with S-link system for boats with two control positions and hydraulic thruster system:**

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.





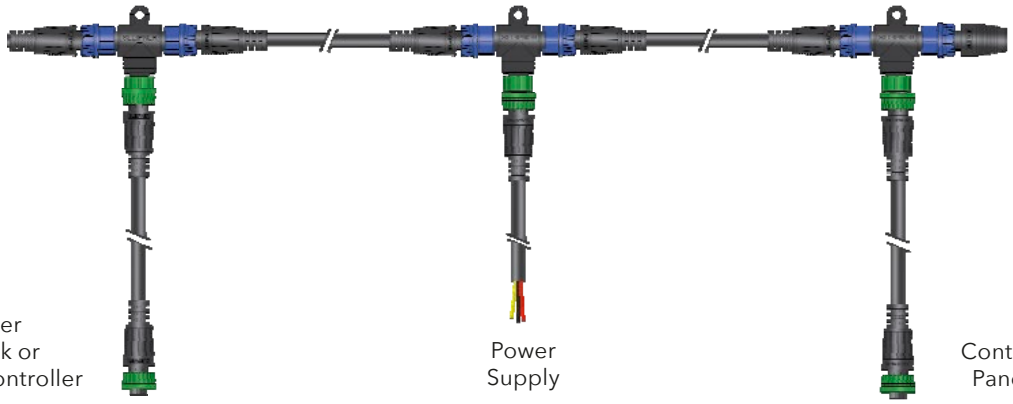
# S-link system components

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

## Main advantages include:

- Round, compact and sealed 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 cable component overview



S-link Controller on hydraulic tank or AC Thruster drive controller

Power Supply

Control Panel

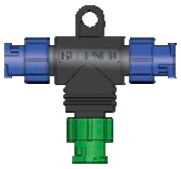
**Backbone cables**
Forms the main "loop" around the boat.

Part #: 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.

Part #: 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.
Part #: 6 1328

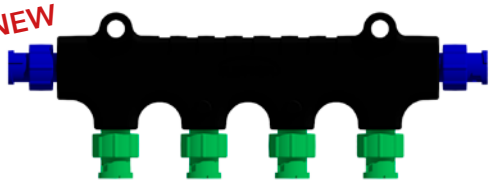


**T connector**
Must be one for each spur, including power cable.
Part #: 6 1326

**Backbone extender**
Connects two backbone cables to extend length.
Part #: 6 1322

**End terminator**
Must be one in each end of the backbone "loop".
Part #: 6 1327

NEW



**S-link 4-Port T connector**
The 4 port T connector allows four spur cable connections in the same device. This allows a more tidy installation with fewer parts. The 6 1403 comes with two sealing caps to protect unused spur connections.
Part #: 6 1403

# Electric or hydraulic?

**Being a leading manufacturer of hydraulic, AC and DC electric thruster systems, you can trust Side-Power to give you objective advice on what to choose for your vessel.**

## Side-Power Hydraulic systems

**A hydraulic thruster system is the natural choice when extensive thruster usage or long run cycles are required. We design our hydraulic systems with the style needed for pleasure craft and the reliability necessary for commercial use.**

For many vessels, a hydraulic system makes sound economic sense since several functions can run off one central hydraulic source. Once the basic system is in place (pump, reservoir, 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 individual function with its own electric motor, solenoid, fuse and battery switch, especially with larger equipment. Additionally, hydraulic valves and motors are better choices in harsh environments such as the forepeak, bilge and transom areas, as well as areas requiring ignition protection. Typical hydraulic applications are thrusters, stabilizers, winches, capstans, cranes, etc.

There are many different ways of designing hydraulic systems, and some solutions are better for specific applications than others. Side-Power Hydraulic systems are designed to provide outstanding performance of the core components and flexibility to power multiple additional equipment.

## Side-Power AC thruster systems

**AC Thrusters are delivered complete with all main components for easy Plug & Play installation. Each thruster has been configured according to the specific working conditions and specifications. No further setup of the VFD (variable frequency drive) is required.**

The innovative S-link CAN bus control system ensures fast and simple installation. S-link incorporates system monitoring and provides the unique option to combine a hydraulic thruster and AC thruster into one dual joystick system - all with variable speed control. The SAC thrusters are a very cost effective, high quality product. Standard range is designed for 230V or 400V systems. Setup for alternative power supply specifications can be delivered on request.

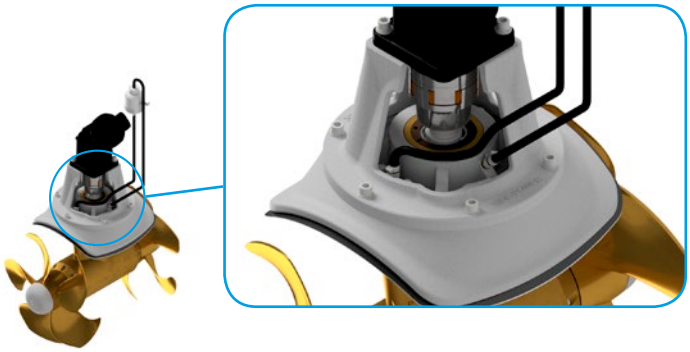
## Side-Power Retract thruster systems

**Side-Power retractable thrusters are designed with particular focus on practical sturdiness, uncompromised safety and quick deployment. The retract range features models up to 350 kgs of thrust and can be powered by DC, AC or hydraulic motors.**

There are four versions of the retractable thrusters, one very compact model design for direct mold-in, and three designed to be mounted on a flange with either vertically (SRV) or horizontally (SRL) mounted motor for minimum build height. All Side-Power retractable models use the S-link CAN bus control system.

## On water oil service

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



# Side-Power hydraulic thrusters

**➤ Continuous use**

A Side-Power hydraulic thruster system is designed for continuous run capability.

**➤ Controlled power**

With a Side-Power hydraulic system, you can easily, and without excessive cost get proportional control of your thruster(s). This will provide much easier and more precise control of the vessel in varying conditions.

**➤ Stern thruster**

The added cost for fitting a stern-thruster for your vessel is sometimes only a modest percentage of the total package if you are already installing a complete hydraulic system.

**The leading position of Side-Power thrusters is a clear result of our focus on product performance, functionality and reliability.**

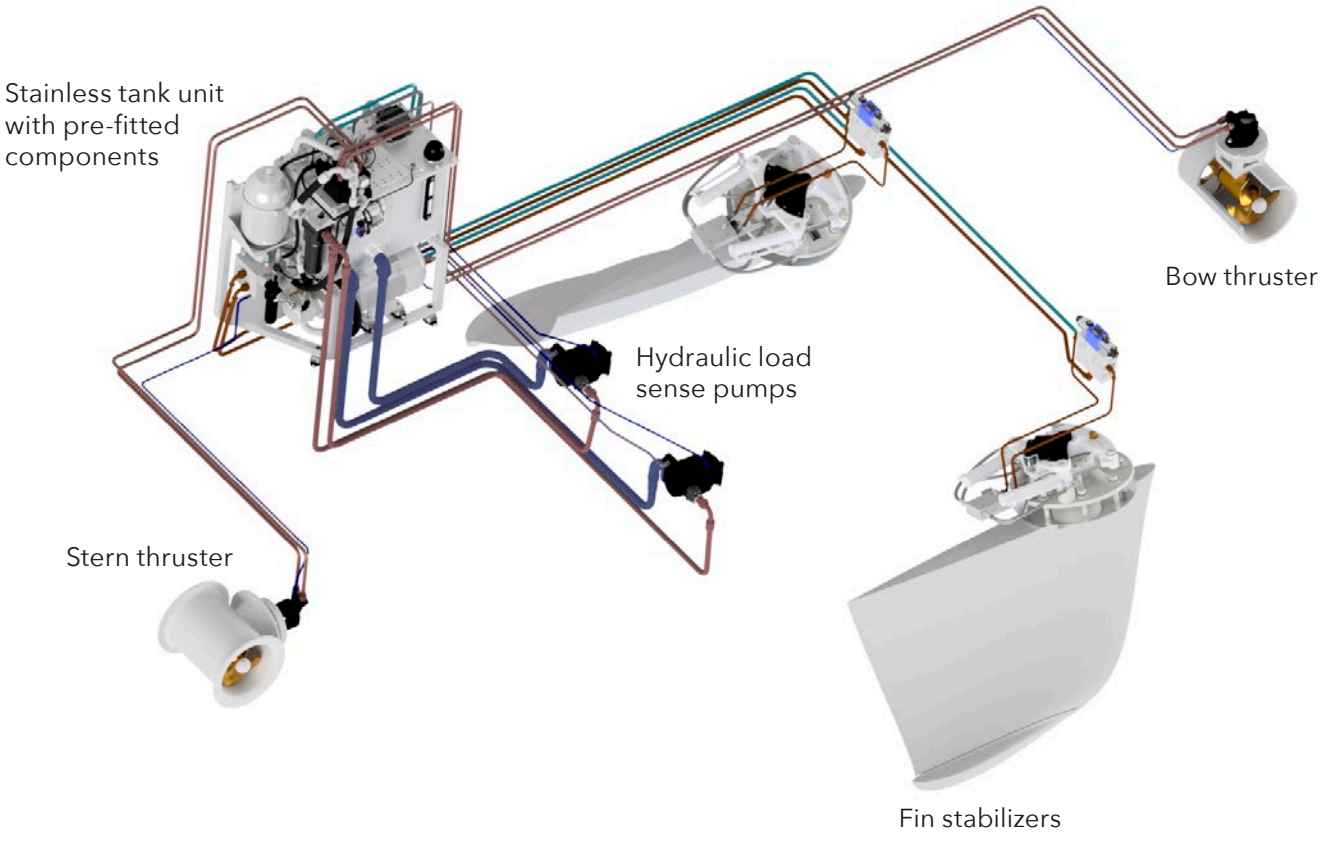
Over the last fifteen years we have evolved into the commercial and superyacht sector. First represented by SP550 and the later years with SH1000 and SH1400. One point that makes us different from many of the traditional suppliers found in this industry is that we develop and produce high quality products with extreme efficiency. High volume production of DC thrusters has given us an experience and knowledge which we have brought with us into the production of thrusters for the high-end markets. This high quantity production also allows us to maintain top modern, efficient and flexible production facilities.

Our hydraulic thrusters range from 100 to 1400 kgs of thrust, where several models are delivered with DNV-GL approved gearlegs. Please see product overview for details.

A hydraulic thruster system is the natural choice when extensive thruster usage or long run cycles are required, and all our hydraulic thrusters can be optimized for the best efficient setup for the actual requirements.

Thousands of delivered systems have given us a unique experience and knowledge about system optimization.

## Complete hydraulic thruster and stabilizer system example



# The Boat-Builder's Choice

**Through our close cooperation with major boatbuilders we know how important an easy and proper installation is. All our thruster systems are designed to install easily.**

### ➤ The safe choice

Side-Power is a reliable, long term partner. We have design, manufacturing, product support and service directly in house, this means that you always get up to date products you can rely on year after year.

### ➤ Technology

The most important factor for correct sizing of a thruster as well as designing the hydraulic system to power it, is to have exact and detailed knowledge about the thruster's performance and power requirements. All Side-Power thrusters have specially developed and tested composite or NiBrAl propellers for maximum performance. We supply matched hydraulic systems to your requirements to ensure ultimate cost and space efficiency.

### ➤ Manuals


Installation and start-up manual


System manual

## Design parameters

The hydraulic system has been designed using the same standards as all other Side-Power parts, focusing on:

- Reliability
- Safety
- Performance
- Easy & safe installation
- Easy maintenance

## Side-Power hydraulic system features

- Compact-sized units.
- "Plug & Play" electric wiring.
- All hydraulic connections internally on the tank are pre-fit.
- Delivered ready with all hydraulic settings pre-adjusted.
- All electric connections for thrusters and stabilizers are pre-wired on tank unit.
- Full documentation, including installation and user manual, startup manual etc.

## Brand name components

Side-Power hydraulic systems use only brand name hydraulic components ensuring reliability and easy worldwide access to support and service.

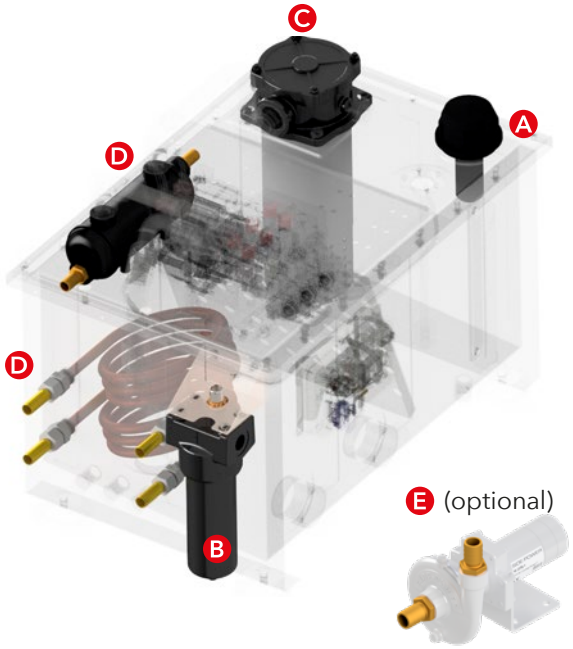
## Full documentation

A Side-Power hydraulic system is delivered with all necessary drawings, installation manual, system startup manual, service manuals, hose/pipe specifications etc. to ensure an easy and correct installation and a lifetime of reliability and serviceability.

## Installation

Side-Power hydraulic systems are designed for ultimate reliability, performance and easy installation. For the installer, perhaps the most important feature of any hydraulic system is that they are delivered ready for installation. Side-Power hydraulic systems are manufactured with this in mind and each hydraulic system is built for each vessel and its specific needs. Side-Power hydraulic systems come pre-fitted with all internal hydraulic and electrical components ensuring correct installation that will potentially save hours of work for the installer.

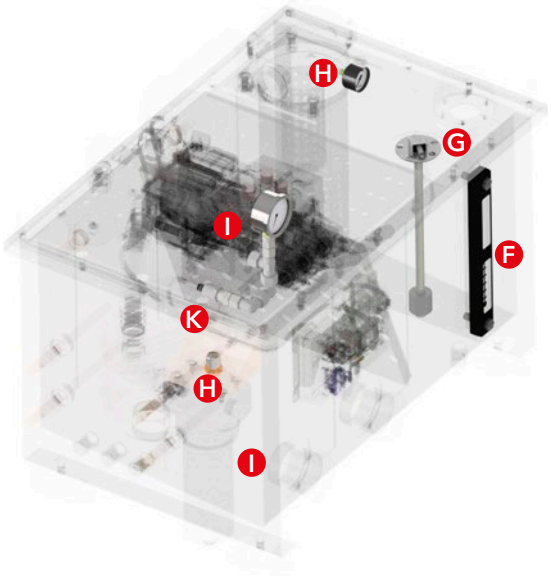
# Hydraulic system components




## Cooling and filtration

It is important for the lifetime and reliability of a hydraulic system that the oil stays clean and within correct temperatures to avoid excessive wear and damage to any of the components in the system. The Side-Power hydraulic system is designed to achieve this by having:

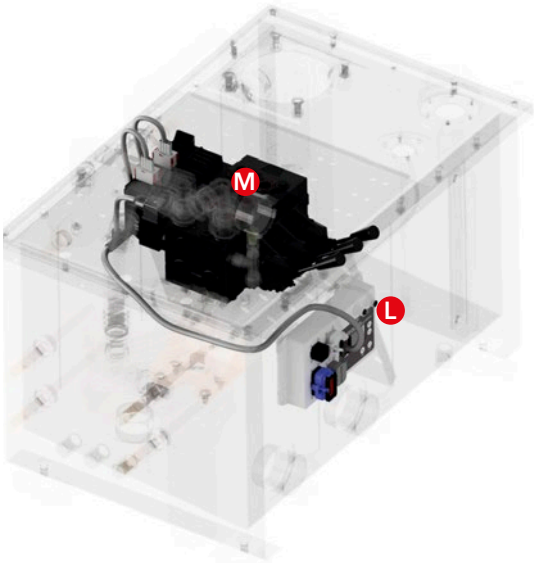
- A Air filter and strainer in filler cap
- B High pressure filter with service indicator
- C Return filter with service gauge
- D Dual internal oil cooler or tank mounted in-line return cooler and drain cooler. Setup and mounting will vary depending on selected tank unit and system setup
- E DC or hydraulic driven water pump for the oil coolers (optional)




## Information and warning system

For safety and ease of service there are several sources of information and warnings on the tank.

- F Oil level and temperature gauge on the tank.
- G Electronic alarm outputs for oil level and temperature to Side-Power control panels with visual and audible alarm.
- H Both filters have gauge/indicator for filter element condition.
- I Pressure gauge on valve shows system pressure.
- K Pressure sensor for control panel monitoring.




## Valve and controller system

NEW

- L PHC3 Controller (Proportional Hydraulic Controller)
- M Valve system

- Safety relief valve on feed protects system against overpressure.
- Can be built to control up to seven hydraulic consumers.
- Individual pressure and flow adjustments (preset) for all consumers.
- Shock valve on outputs to all consumers to avoid hydraulic pressure peaks.
- Hydraulic flow rating and characteristics are selected for best possible match with the individual consumer.
- Manual activation of each consumer for easy servicing and trouble shooting.
- Identification of each valve system for reference to factory specifications.

# Side-Power controller


**Side-Power Proportional Hydraulic Controller PHC-3 for thruster and stabilizer systems**

- Integrated controller for all hydraulic control functions needed for thruster and stabilizer systems.
- Front panel LCD display and button interface allow for local configuration of parameters.
- LCD panel provides real time diagnostic monitoring of pressure, oil temperature and other values, as well as displaying fault code messages.
- Sensors and valves are constantly monitored, and in case of faults, the problem can easliy be identified by the fault code messages shown in the display or on the PJC control panels.
- The AC powerpack, cooling pump and other functions can be tested locally by the installer through manual control.
- The PHC-3 connects directly to Stabilizer powerpack VFD using a Modbus connection. The controller continiously communicates with the VFD to provide the best control and diagnostic functions.
- The new ECI cooling pump is the new smart cooling option that is available with the PHC-3. The pump connects directly to the controller harness with a ready-made cable for simple installation. The PHC-3 controller communicates with the pump unit, allowing variable flow control and advanced diagnostics.
- Firmware updated through S-link programmer.
- The controller and connectors are sealed.


# ECI DC cooling water pump

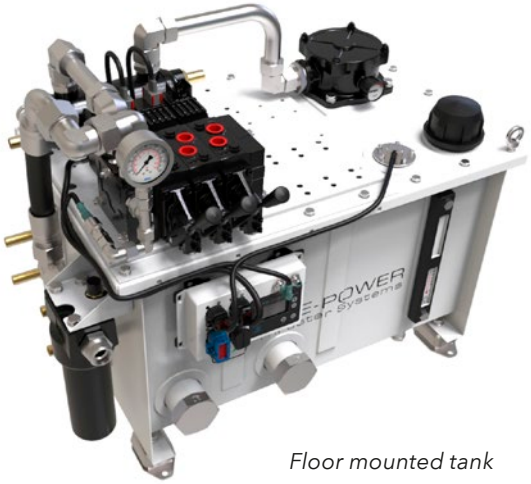
This centrifugal water pump has been developed as a part of a smart cooling system made possible with the new PHC-3 hydraulic controller. The controller communicate with the pump unit for control and diagnostics. Setup can be made from the display on PHC-3.

**Main features and characteristics:**

- Controlled and monitored by the new PHC-3 controller
- Brushless DC motor with integrated motor controller.
- Water flow can be adjusted from the PHC-3 panel
- Cable with sealed plugs for connection to PHC-3 controller included, no other wiring required.
- Insulation class IP54
- Centrifugal pump with stainless steel impeller and bronze body.
- Delivered with ¾" or 1" water barbs.


*Compact Power pack for Stabilizer*

# Side-Power
# hydraulic system components



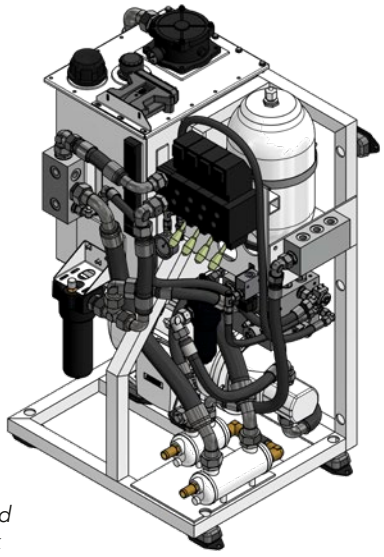
*Floor mounted tank*


*Bulkhead mounted tank*

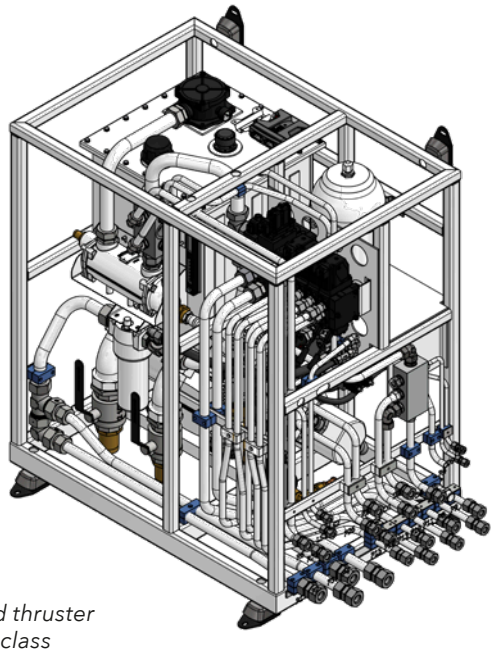
➤ **Tank unit features**

- Powder coated stainless steel reservoir.
- Soft mounting feet to avoid structural carried noise on floor mounted tanks.
- Internal baffle plate that also helps remove air from the oil.
- Angled bottom of tank with drain plug at lowest point on floor mounted tanks.
- All internal hydraulic connections on tank are pre-fitted.
- All internal electric connections for thrusters pre-wired, ready with extension connectors.
- Optional temperature controlled water pump for oil cooler.
- Flexible setup

## System rack examples



*Stabilizer and thruster rack*



*Stabilizer and thruster rack for Rina class*

# Hydraulic system components

**Side-Power hydraulic thruster systems use exclusively variable displacement piston pumps. They offer a high level of reliability, efficiency and flexibility.**

**➤ What is «load sense»**

Load sense means that the pump displacement is controlled by a pressure signal from the hydraulic control valves. The pump will then continuously sense if there is a need for more flow or pressure to any consumer and adjust the displacement accordingly. This means there is no need to rely on electrical activation or to have large volumes of unused oil pumped around the boat constantly.

## Advantages with load sense system

- Reliable and well proven system
- Delivers only the flow and pressure that is actually needed at the time
- Low heating and energy waste
- High efficiency piston pumps
- Low system noise in both running and standby mode

## Normal power sources for hydraulic pumps

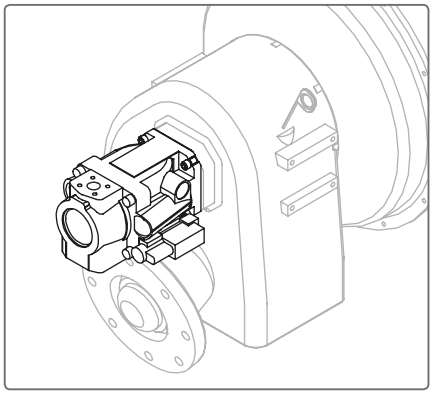
- Main engine / gear box
- Generator / auxiliary engine
- AC electric motor

## How to connect and power hydraulic pumps

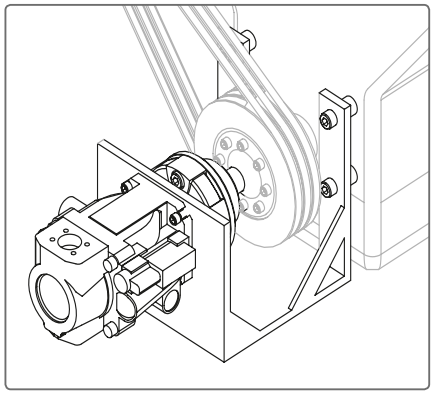
The most common way of fitting pumps is by a PTO (Power Take Off). This is the preferred method if available, because everything is then matched together by standards so that the fitting is safe and reliable. If there is no PTO available, it is normally possible to fit the pump with a bracket and a flexible coupling to the front end of any engine. Some also use belt drives, but we prefer not to do so because of the high torque needed by a thruster system. Another option is to power the hydraulic pump by using an AC electric motor.

*One of many variable displacement load sense pumps offered by Side-Power*

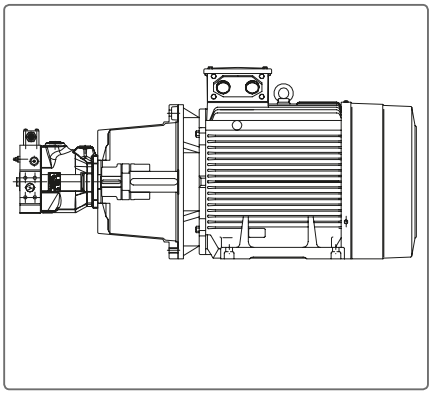
Examples of the installation methods:



*PTO fitting of pump*



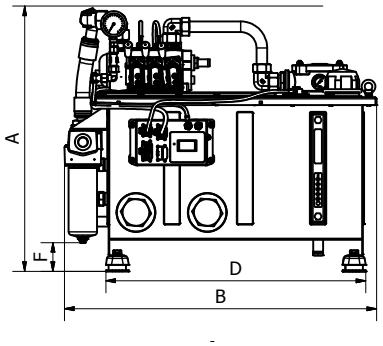
*Engine front-end fitting of pump*

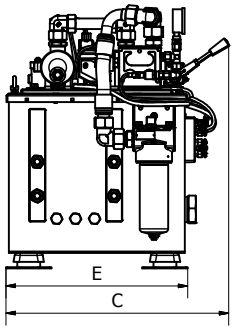


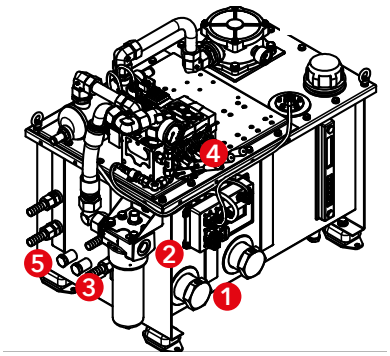
*AC Power pack*

# Technical specifications - Hydraulic system tank units

## Floor mounted models



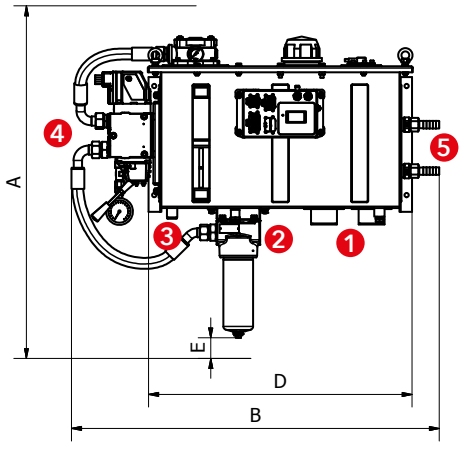



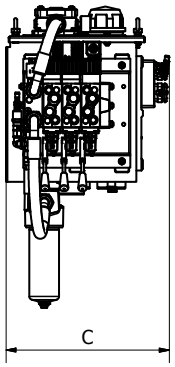

| Tank kit | 40 ltr | 60 ltr | 90 ltr | 120 ltr |
|---|---|---|---|---|
| **Tank volume** (ltr • usg) | 52.8 • 13.9 | 93.9 • 24.8 | 122.3 • 32.3 | 160 • 42.3 |
| **Oil volume** (ltr • usg) | 40 • 10.6 | 60 • 15.9 | 90 • 23.8 | 120 • 31.7 |
| **Dry weight*** (kg • lbs) | 60 • 132 | 70 • 154 | 78 • 172 | 87 • 192 |
| **A** Build height (mm • in) | 690 • 27.2 | 690 • 27.2 | 800 • 31.5 | 800 • 31.5 |
| **B** Build length (mm • in) | 785 • 30.9 | 800 • 31.5 | 800 • 35.1 | 1000 • 39.4 |
| **C** Build depth (mm • in) | 400 • 15.7 | 550 • 21.7 | 550 • 21.7 | 550 • 21.7 |
| **D** Tank length (mm • in) | 615 • 24.2 | 683 • 26.9 | 683 • 26.9 | 883 • 34.8 |
| **E** Tank depth (mm • in) | 340 • 13.4 | 479 • 18.9 | 479 • 18.9 | 479 • 18.9 |
| **F** Filter change (mm • in) | 100 • 4.0 | 100 • 4.0 | 100 • 4.0 | 100 • 4.0 |

* with valve block for single thruster only

| Connections on tank | |
|---|---|
| **1** Tank to pump (2x) | 2" BSP |
| **2** Pump to valve | 3/4 or 1" BSP |
| **3** Drain returns (3x) | 1/2" BSP |
| **4** Valve ports to users | 3/4 or 1/2" BSP |
| **5** Water to/from oil cooler | 3/4" or 1" Hose barb |

## Bulkhead mounted models




| Tank kit | 40 ltr | 60 ltr |
|---|---|---|
| **Tank volume** (ltr • usg) | 52.7 • 13.9 | 80 • 21.2 |
| **Oil volume** (ltr • usg) | 40 • 10.6 | 60 • 15.9 |
| **Dry weight*** (kg • lbs) | 55 • 121 | 65 • 143 |
| **A** Build height (mm • in) | 705 • 27.8 | 860 • 33.6 |
| **B** Build length (mm • in) | 870 • 34.3 | 890 • 35.0 |
| **C** Build depth (mm • in) | 330 • 13.0 | 330 • 13.0 |
| **D** Tank length (mm • in) | 600 • 23.6 | 600 • 23.6 |
| **E** Filter change (mm • in) | 100 • 4.0 | 100 • 4.0 |

* with valve block for single thruster only

| Connections on tank | |
|---|---|
| **1** Tank to pump (2x) | 2" BSP |
| **2** Pump to valve | 3/4 or 1" BSP |
| **3** Drain returns (3x) | 1/2" BSP |
| **4** Valve ports to users | 3/4 or 1/2" BSP |
| **5** Water to/from oil cooler | 3/4" or 1" Hose barb |

# Technical specifications - Hydraulic thruster units






| | SH 100/185 T | SH 160/215 T | SH 240/250 TC | SH 320/300TC | SH 360/300 TC |
|---|---|---|---|---|---|
| **Performance & sizing** | | | | | |
| Light duty thrust up to (kg • lbs) | 100 • 220 | 160 • 352 | 240 • 529 | 320 • 705 | - |
| Heavy duty thrust up to (kg • lbs) | 80 • 176 | 140 • 308 | 220 • 440 | 270 • 594 | 360 • 795 |
| Typical boat size (ft • m) | 30 - 34 • 9 - 16 | 35 - 62 • 11 - 19 | 42 - 75 • 13 - 23 | 55 - 100 • 17 - 31 | 59 - 108 • 18 - 33 |
| Hydraulic power up to (kW • hp) | 6.9 • 9.3 | 10.0 • 13.4 | 14.9 • 20.0 | 17.4 • 23.3 | 27 • 37 |
| **Item Code** | **SH100/185T-xxx** | **SH160/215T-xxx** | **SH240/250TC-xxx** | **SH320/300TC-xxx** | **SH360/300TC-xxx** |
| **Features** | | | | | |
| CE approved | Yes | Yes | Yes | Yes | Yes |
| Proportional speed * | Yes | Yes | Yes | Yes | Yes |
| Control system * | S-link | S-link | S-link | S-link | S-link |
| Q-propeller | Yes | Yes | Yes | Yes | Yes |
| Propulsion system | Twin | Twin | Twin Counter | Twin Counter | Twin Counter |
| Lubrication | Sealed | Sealed | Sealed | Sealed | Gravity feed |
| Galvanic separation ** | No | No | No | No | No |

## For yachts, superyachts & light commercial use

### PROproportional speed

A PROportional speed controlled thruster system 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 single handed docking very easy indeed! Proportional thrusters are also the best choice for joystick interaction.

### Control system

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

- 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 at panel
- Intelligent troubleshooting.

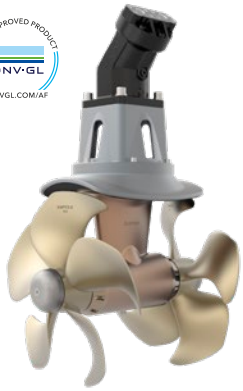
### Q-propeller

The 5 blade special skew propellers are the result of over 2 years of development work and thousands of tests. They have been designed to reduce the noise level, while maintaining the exceptional efficiency of the old 4 blade Side-Power propellers. And the result is even increased thrust on several models.

- Noise reductions of up to 75% measured in controlled environments
- The expected and tested normal noise reduction in "average installations" 20-40%

* *Can also be delivered in on/off version with standard control*
** *Isolation kit for galavanic separation available.*

NEW



| SH 420/386 TC | SH 550/386 TC | SH 400/300 | SH 700/412 | SH 1000/513 | SH 1400/610 |
|---|---|---|---|---|---|
| - | 550 • 1210 | - | - | 1100 • 2425 | - |
| 420 • 925 | 500 • 1100 | 400 • 882 | 700 • 1543 | 1000 • 2205 | 1400 • 3085 |
| 75 - 110 • 22 - 35 | 85 - 140 • 25 - 40 | 75 - 110 • 18 - 33 | 95 - 145 • 29 - 44 | 100 - 150 • 30 - 45 | 130 - 175 • 40 - 55 |
| 31.8 • 42.6 | 39.9 • 53.5 | 30 • 41 | 43.4 • 58.2 | 59.8 • 80.2 | 80.1 • 107.4 |
| **SH420/386TC-xxx** | **SH550/386TC-xxx** | **SH400/300TC-xxx** | **SH700/412-xxx** | **SH1000/513-xxx** | **SH1400/610-xxx** |
| Yes | Yes | Yes | Yes | Yes | Yes |
| Yes | Yes | Yes | Yes | Yes | Yes |
| S-link | S-link | S-link | S-link | S-link | S-link |
| 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 |
| No | No | No | No | No | No |

## For superyachts & commercial vessels

### Propulsion system

The twin propeller system can give more thrust than a single propeller system in the same tunnel diameter. This is our choice for our mid-range models where high thrust is required in a small tunnel diameter. Due to the compact design and high performance, the twin models have become the thrusters of choice among boat builders around the world.

Two counter-rotating propellers can give the most thrust at a good performance ratio in a minimal tunnel diameter. This system is used in our larger thrusters for maximum power. The TC models are the favourite thrusters among leading boat builders for their high-end yachts.

### Lubrication

Sealed gear leg using ceramic/carbon mechanical seals.

- Prefilled with longlife gear oil for lifetime lubrication on smaller models

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.

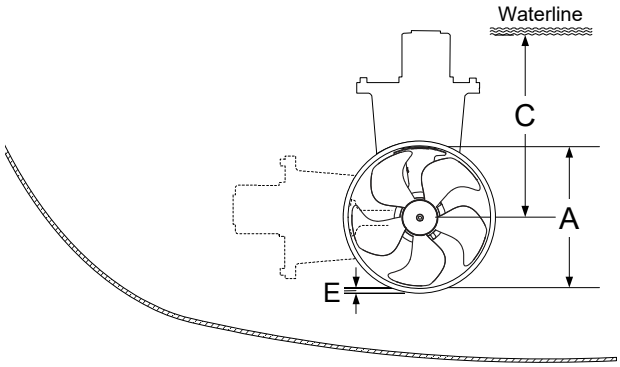
- Separate oil reservoir placed above the waterline.
- Prepared with service plug for oil change
- Some models are now upgraded to feature on water oil change.

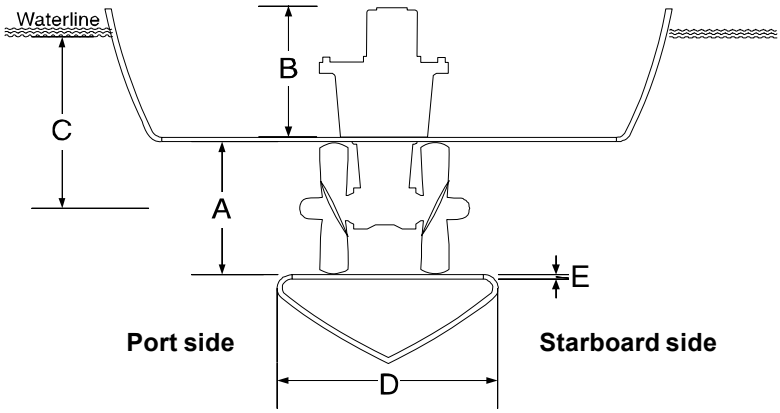
### Galvanic separation

The gearhouse / 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 effected 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 gear legs with flexible couplers only, where the flexible coupler provides galvanic separation of the motor and gear leg shaft

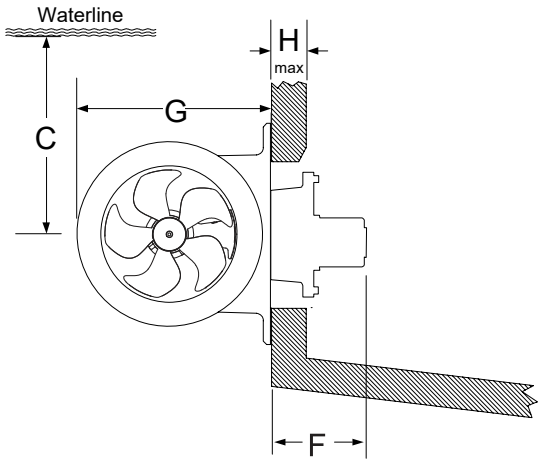
# Measurements - Hydraulic thruster units




| | SH 100/185 T | SH 160/215 T | SH 240/250 TC | SH 320/300TC | NEW SH 360/300 TC |
|---|---|---|---|---|---|
| **Measurements Bow Thruster** | | | | | |
| Tunnel I.D. (mm • in) | 185 • 7.28 | 215 • 8.46 | 250 • 9.8 | 300 • 11.8 | 300 • 11.8 |
| Weight[1] (kg • lbs) | 9.0 • 19.8 | 10.5 • 23 | 15.9 • 35.0 | 19.5 • 42.9 | 26 • 57.32 |
| A (mm • in) | 185 • 7.28 | 215 • 8.46 | 250 • 9.84 | 300 • 11.81 | 300 • 11.8" |
| B (mm • in) | 195 • 7.64 | 210 • 8.26 | 213 • 8.38 | 220 • 8.66 | 356 • 14.02 |
| B max. (mm • in) | 212 • 8.34 | 230 • 9.05 | 230 • 9.05 | 244 • 9.61 | 356 • 14.05 |
| C min. (mm • in) | 200 • 7.87 | 215 • 8.5 | 230 • 9.0 | 300 • 11.81 | 300 • 11.8 |
| D (mm • in) | 170 • 6.70 | 280 • 11 | 280 • 11 | 300 • 11.81 | 370 • 14.57 |
| D recommended (mm • in) | 340 • 13.4 | 560 • 22 | 560 • 22 | 550 • 21.65 | 550 • 21.65 |
| E min. (mm • in) | 6 • 0.24 | 6 • 0.24 | 7 • 0.28 | 10 • 0.39 | 10 • 0.39 |
| E max. (mm • in) | 8 • 0.31 | 8 • 0.31 | 10 • 0.39 | 10 • 0.39 | 10 • 0.39 |
| **Measurements Stern Thrusters** | | | | | |
| F (mm • in) | 172 • 76.72 | 172 • 76.72 | 91 • 7.52 | 195 • 7.68 | 310 • 12.2 |
| G (mm • in) | 256 • 10.08 | 300 • 11,8 | 340 • 13.39 | 420 • 16.54 | 420 • 20.5 |
| C min. (mm • in) | 150 • 5.91 | 215 • 8.46 | 250 • 9.84 | 300 • 11.81 | 300 • 11.81 |
| H max. (mm • in) | 35 • 1.38 | 54 • 2.13 | 60 • 2.36 | 60 • 2.36 | 60 • 2.36 |
| Tunnel length (mm • in) | 337 • 13.27 | 330 • 13 | 350 • 13.78 | 456 • 17.95 | 456 • 17.95 |
| **Item code:** | | | | | |
| **Stern thruster kit** | **90086i** | **90135i** | **90140i** | **90200i** | **90350** |
| **Cowls - short model** | **90075** | | | | |
| **Cowls - long model** | **90077** | **90136** | **90132** | **90220** | |

[1] *Weight stated include thruster, props & bellhousing ONLY. Weight of hydraulic motor comes in addition*




NEW

| SH 420/386 T | SH 550/386 T | SH 400/300 | SH 700/412 | SH 1000/513 | SH 1400/610 |
|---|---|---|---|---|---|
| 386 • 15.2 | 386 • 15.2 | 300 • 11.81 | 412 • 16.2 | 513 • 20 | 610 • 24 |
| 51.8 • 114.2 | 52.6 • 115.7 | 31 • 68.34 | 70 • 154.3 | 146.5 • 323 | 170 • 375 |
| 386 • 15.2 | 386 • 15.2 | 300 • 11.81 | 412 • 16.2 | 513 • 20.2 | 610 • 24 |
| 292 • 11.5 | 292 • 11.5 | 356 • 14.02 | 372 • 14.65 | 483 • 19.1 | 500 • 19.1 |
| 372 • 14.65 | 372 • 14.65 | 356 • 14.02 | 450 • 17.72 | TBC | TBC |
| 380 • 15.0 | 380 • 15.0 | 300 • 11.8 | 412 • 16.2 | 700 • 27.6 | 830 • 32.7 |
| 500 • 19.7 | 500 • 19.7 | 370 • 14.57 | 520 • 20.47 | 750 • 29.52 | 900 • 35.43 |
| 750 • 29.5 | 750 • 29.5 | 550 • 21.65 | 770 • 30.3 | 1000 • 39.4 | 1000 • 39.4 |
| 10 • 0.39 | 10 • 0.39 | 10 • 0.39 | 12 • 0.47 | 12 • 0.47 | 14 • 0.55 |
| 15 • 0.59 | 15 • 0.59 | 10 • 0.39 | 16 • 0.63 | 22 • 0.87 | 24 • 0.94 |
| 257 • 10.12 | 257 • 10.12 | 310 • 12.2 | n. a. | 365 • 14.4 | 380 • 15.0 |
| 540 • 21.25 | 540 • 21.25 | 420 • 20.5 | n. a. | 726 • 28.6 | 851 • 33.5 |
| 380 • 15.00 | 380 • 15.00 | 300 • 11.8 | n. a. | 770 • 30.3 | 915 • 36.0 |
| 54 • 2.13 | | 60 • 2.36 | n. a. | | |
| 550 • 21.65 | 550 • 21.65 | 456 • 17.95 | n. a. | 950 • 37.4 | 1000 • 39.4 |
| **90550** | **90550** | **90350** | **n. a.** | **91000** | **91400** |
| | | | **n. a.** | | |
| **90560** | **90560** | | | | |

# Side-Power AC thruster systems

**The SAC series is manufactured taking advantage of experiences gained through years of volume production, resulting in a very cost efficient, high quality product. All AC components are selected from brand name 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.**

## AC Thrusters are delivered as a complete ready to install kit including the following parts:

- PDC301 drive controller NEW
- 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 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 with variable speed control.

## Low harmonic VFD's

A system with a standard VFD will create a certain level of distortion to the AC network. The actual THD (Total Harmonic Distortion) in a system will vary depending on other loads, available generator capacity, total generator capacity etc.

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

Side-Power system with a low harmonic VFD will reduce the harmonic distortion to less than 5% which gives the following advantages:

- Keep the electrical network clean
- Reduce the risk of disturbance
- Prevent damage to other equipment
- Prevent interference with communications equipment
- Reduced need for oversizing of the generators.

# AC power & control system

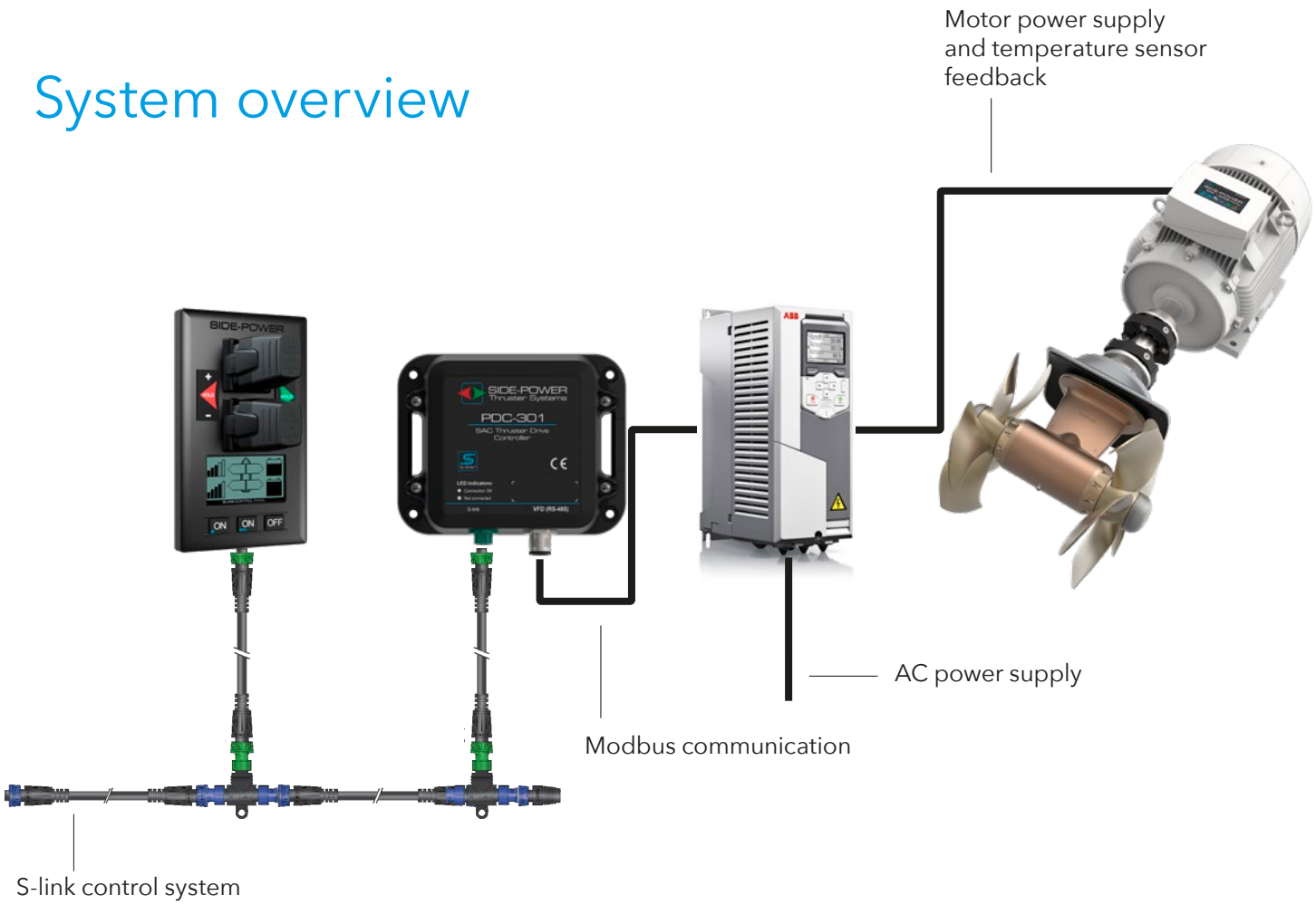

## PDC 301 drive controller

With the new PDC 301 drive controller the installation has been greatly simplified.

PDC301 has the following characteristics:

- Communication with VFD by Modbus connection
- Included 3-wire cable for connection to VFD Modbus terminals
- Improved monitoring and diagnostics simplifies commissioning and troubleshooting by real time data logging and readout of historical faults.
- Firmware upgrade through s-link programmer

# System overview




AC thruster kit includes PDC 301 drive controller, VFD and EMC filter.

# Technical specifications - AC electric thrusters

NEW

| | SAC240/250-C | SAC320/300-I | SAC360/300-C | SAC450/386-C | SAC520/386-I | SAC520/386-C |
|---|---|---|---|---|---|---|
| **Performance & sizing** | | | | | | |
| Thrust, continous (kg • lbs) | 240 • 529 | 280 • 617 | 360 • 794 | 450 • 992 | 450 • 992 | 520 • 1146 |
| Thrust, max. (kg • lbs) * | - | 320 • 705 | - | - | 520 • 1146 | - |
| Motor output (kW • hp) | 14 • 19 | 21 • 27 | 27 • 37 | 28 • 38 Hp | 35 • 48 | 35 • 48 |
| Typical boat 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 |
| Tunnel inside diameter (mm • in) | 250 • 9.8 | 300 • 11.8 | 300 • 11.8 | 386 • 15.2 | 386 • 15.2 | 386 • 15.2 |
| **Item Code** | **SAC240/250-C-x-x** | **SAC320/300-I-x-x** | **SAC360/300-C-x-x** | **SAC450/386-C-x-x** | **SAC520/386-I-x-x** | **SAC520/386-C-x-x** |
| **Features** | | | | | | |
| CE approved | Yes | Yes | Yes | Yes | Yes | Yes |
| PROproportional 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 | Twin Counter | Twin Counter | Twin Counter | Twin Counter | Twin Counter |
| Lubrication | Sealed | Sealed | Gravity feed | Gravity feed | Gravity feed | Gravity feed |
| Galvanic separation*** | No | No | No | No | No | No |

## For yachts, superyachts & light commercial use

### PROproportional speed

A PROportional speed controlled thruster system 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 single handed docking very easy indeed! Proportional thrusters are also the best choice for joystick interaction.

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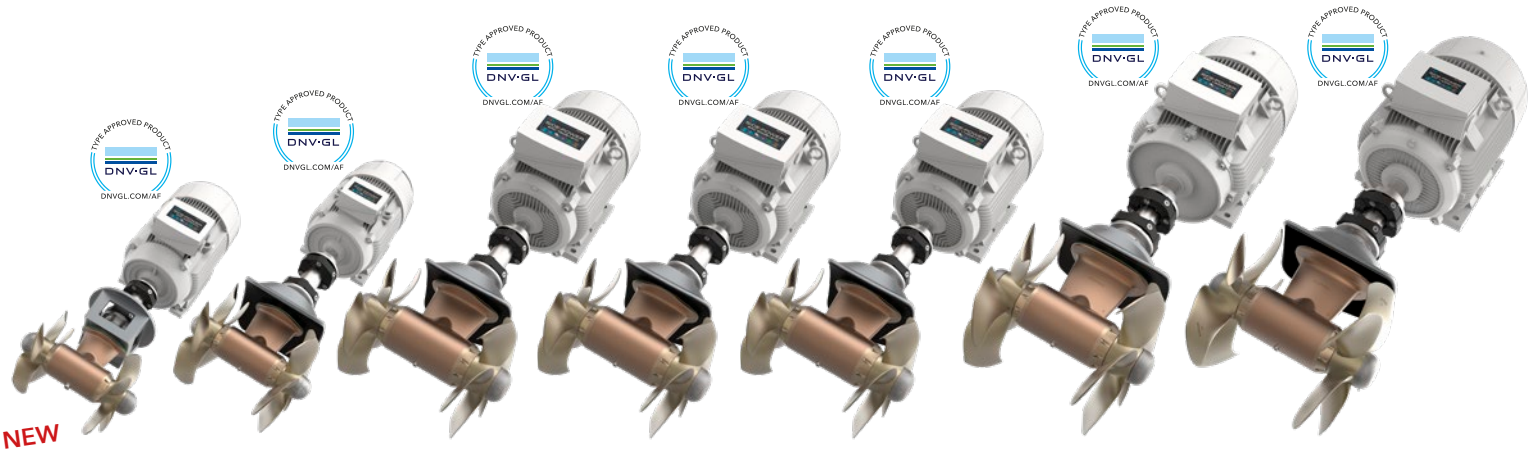
The 5 blade special skew propellers are the result of over 2 years of development work and thousands of tests. They have been designed to reduce the noise level, while maintaining the exceptional efficiency of the old 4 blade Side-Power propellers. And the result is even increased thrust on several models.

- Noise reductions of up to 75% measured in controlled environments
- The expected and tested normal noise reduction in "average installations" 20-40%

* *Max thrust is available until motor temperature will reduce performance to continuous thrust rating.*
** *Can also be delivered in on/off version with standard control*
*** *Isolation kit for galavanic separation available.*



NEW

| 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 • 882 | 700 • 1543 | 600 • 1323 | 750 • 1653 | 900 • 1984 | 1100 • 2425 | 1100 • 2425 | 1200 • 2646 |
| | - | 750 • 1653 | 900 • 1984 | 1100 • 2425 | - | 1300 • 2866 | 1400 • 3086 |
| 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 • 11.8 | 412 • 16.2 | 513 • 20 | 513 • 20 | 513 • 20 | 513 • 20 | 610 • 24 | 610 • 24 |
| **SAC400/300-C-x-x** | **SAC700/412-C-x-x** | **SAC750/513-I-x-x** | **SAC900/513-I-x-x** | **SAC1100/513-I-x-x** | **SAC1100/513-C-x-x** | **SAC1300/610-I-x-x** | **SAC1400/610-I-x-x** |
| 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 | Gravity feed/ On water change | Gravity feed/ On water change | Gravity feed/ On water change | Gravity feed/ On water change | Gravity feed/ On water change |
| No | No | No | No | No | No | No | No |

## For superyachts & commercial vessels

### Propulsion system

Two counter-rotating propellers can give the most thrust at a good performance ratio in a minimal tunnel diameter. This system is used in our larger thrusters for maximum power. The TC models are the favourite thrusters among leading boat builders for their high-end yachts.

### Lubrication

Sealed gear leg using ceramic/carbon mechanical seals.

- Prefilled with longlife gear oil for lifetime lubrication on smaller models

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.
- Prepared with service plug for oil change
- Some models are now upgraded to feature on water oil change.

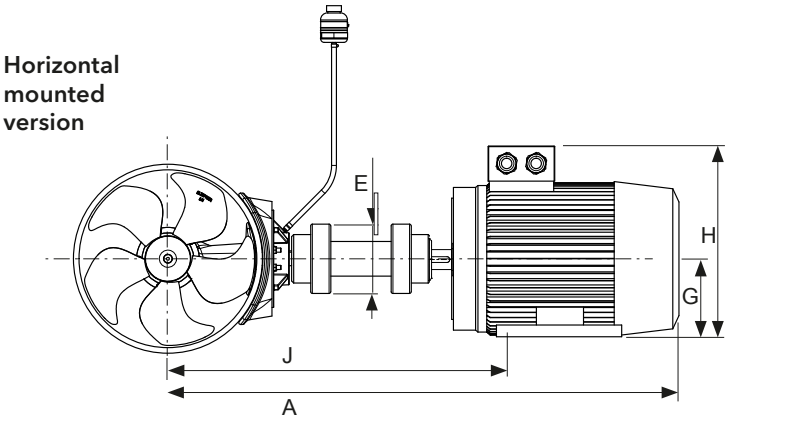
### Galvanic separation

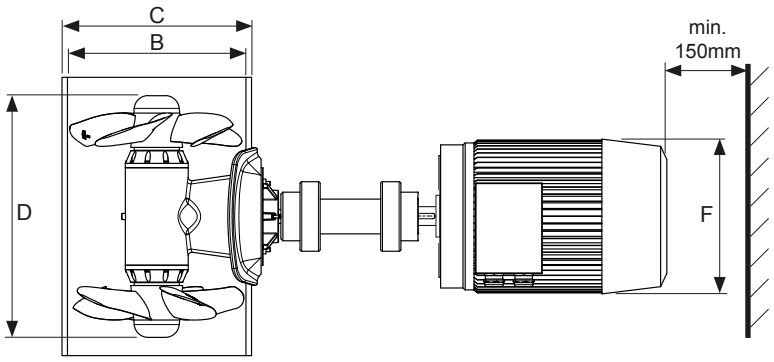
The gearhouse / drive legs are fully galvanically isolated / separated from the electric motor and motor bracket. This ensures that even if there is an accidental short circuit or a current leak for other reasons, the immersed parts are not effected as they could be with direct electric contact.

- 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 gear legs with flexible couplers only, where the flexible coupler provides galvanic separation of the motor and gear leg shaft

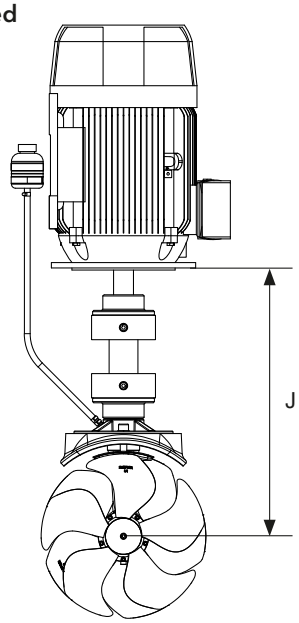
# Measurements - AC electric thrusters

**Horizontal mounted version**



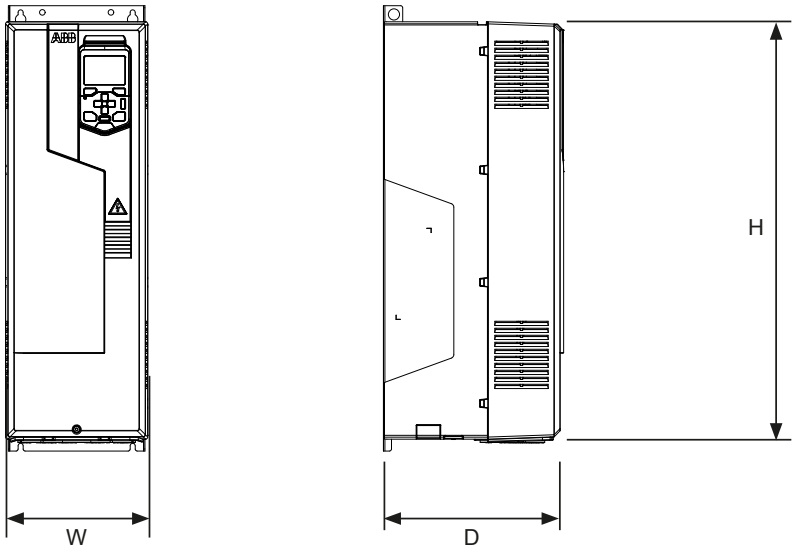

**Vertical mounted version**




**Measurements Thruster**

| | A mm | B mm | C mm | D mm | E mm | F mm | G mm | H mm | J mm | Weight [1] kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **SAC240/250** (horizontal version) | 820 | 250 | 264 | 357 | 100 | 262 | 132 | 347 | 482 | 68 |
| **SAC240/250** (vertical version) | 820 | 250 | 264 | 357 | 100 | 262 | 132 | 347 | 393 | 68 |
| **SAC320/300** (horizontal version) | 863 | 300 | 320 | 357 | 120 | 262 | 132 | 347 | 524 | 71 |
| **SAC320/300** (vertical version) | 863 | 300 | 320 | 357 | 120 | 262 | 132 | 347 | 431 | 71 |
| **SAC360/300** (horizontal version) | 934 | 300 | 320 | 371 | 120 | 313 | 160 | 397 | 548 | 105 |
| **SAC360/300** (vertical version) | 934 | 300 | 320 | 371 | 120 | 313 | 160 | 397 | 439 | 105 |
| **SAC400/300** (horizontal version) | 934 | 300 | 320 | 371 | 120 | 313 | 160 | 397 | 548 | 111 |
| **SAC400/300** (vertical version) | 934 | 300 | 320 | 371 | 120 | 313 | 160 | 397 | 439 | 111 |
| **SAC450/386** (horizontal version) | 1204 | 386 | 410 | 503 | 122 | 356 | 180 | 439 | 736 | 189 |
| **SAC450/386** (vertical version) | 1204 | 386 | 410 | 503 | 122 | 356 | 180 | 439 | 615 | 189 |
| **SAC520/386** (horizontal version) | 1204 | 386 | 410 | 503 | 122 | 356 | 180 | 439 | 736 | 189 |
| **SAC520/386** (vertical version) | 1204 | 386 | 410 | 503 | 122 | 356 | 180 | 439 | 615 | 189 |
| **SAC700/412** (horizontal version) | 1237 | 412 | 444 | 488 | 155 | 356 | 180 | 439 | 770 | 205 |
| **SAC700/412** (vertical version) | 1237 | 412 | 444 | 488 | 155 | 356 | 180 | 439 | 651 | 205 |
| **SAC750/513** (horizontal version) | 1352 | 513 | 545 | 681 | 170 | 396 | 200 | 496 | 849 | 330 |
| **SAC750/513** (vertical version) | 1352 | 513 | 545 | 681 | 170 | 396 | 200 | 496 | 728 | 330 |
| **SAC900/513** (horizontal version) | 1466 | 513 | 545 | 681 | 170 | 449 | 225 | 563 | TBA | 450 |
| **SAC900/513** (vertical version) | 1466 | 513 | 545 | 681 | 170 | 449 | 225 | 563 | TBA | 450 |
| **SAC1100/513-I** (horizontal version) | 1466 | 513 | 545 | 681 | 170 | 449 | 225 | 563 | TBA | 450 |
| **SAC1100/513-I** (vertical version) | 1466 | 513 | 545 | 681 | 170 | 449 | 225 | 563 | TBA | 450 |
| **SAC1100/513-C** (horizontal version) | 1564 | 513 | 545 | 681 | 200 | 497 | 250 | 660 | 915 | 575 |
| **SAC1100/513-C** (vertical version) | 1564 | 513 | 545 | 681 | 200 | 497 | 250 | 660 | 759 | 575 |
| **SAC1300/610** (horizontal version) | 1628 | 610 | 646 | 685 | 200 | 555 | 280 | 713 | 998 | 680 |
| **SAC1300/610** (vertical version) | 1628 | 610 | 646 | 685 | 200 | 555 | 280 | 713 | 808 | 680 |
| **SAC1400/610** (horizontal version) | 1628 | 610 | 646 | 685 | 200 | 555 | 280 | 713 | 998 | 740 |
| **SAC1400/610** (vertical version) | 1628 | 610 | 646 | 685 | 200 | 555 | 280 | 713 | 808 | 740 |

# Variable frequency drive (VFD)




**VFD protection: IP21**

**Measurements VFD**

| | Thruster model | VFD model | Weight kg | D mm | W mm | H mm |
|---|---|---|---|---|---|---|
| SAC240 | **SAC240**/250-*C-2-x²* | ACS580-01-047A-2 | 11,8 | 228 | 203 | 454 |
| | **SAC240**/250-*C-4-x²* | ACS580-01-033A-4 | 11,8 | 228 | 203 | 454 |
| SAC320 | **SAC320**/300-*C-2-x²* | ACS580-01-076A-2 | 19 | 258 | 203 | 600 |
| | **SAC320**/300-*C-4-x²* | ACS580-01-046A-4 | 11,8 | 228 | 203 | 454 |
| SAC360 | **SAC360**/300-*C-2-x²* | ACS580-01-115A-2 | 28,3 | 295 | 203 | 732 |
| | **SAC360**/300-*C-4-x²* | ACS580-01-073A-4 | 19 | 258 | 203 | 636 |
| SAC400 | **SAC400**/300-*C-2-x²* | ACS580-01-115A-2 | 28,3 | 295 | 203 | 732 |
| | **SAC400**/300-*C-4-x²* | ACS580-01-073A-4 | 19 | 258 | 203 | 636 |
| SAC450 | **SAC450**/386-*C-2-x²* | ACS580-01-115A-2 | 28,3 | 295 | 203 | 732 |
| | **SAC450**/386-*C-4-x²* | ACS580-01-062A-4 | 19 | 258 | 203 | 600 |
| SAC520 | **SAC520**/386-*I-2-x²* | ACS580-01-144A-2 | 42,4 | 369 | 252 | 727 |
| | **SAC520**/386-*I-4-x²* | ACS580-01-089A-4 | 28,3 | 295 | 203 | 732 |
| | **SAC520**/386-*C-2-x²* | ACS580-01-144A-2 | 42,4 | 369 | 252 | 727 |
| | **SAC520**/386-*C-4-x²* | ACS580-01-089A-4 | 28,3 | 295 | 203 | 732 |
| SAC700 | **SAC700**/412-*C-2-x²* | ACS580-01-171A-2 | 54 | 370 | 284 | 880 |
| | **SAC700**/412-*C-4-x²* | ACS580-01-106A-4 | 28,3 | 295 | 203 | 732 |
| SAC750 | **SAC750**/513-*I-4-x²* | ACS580-01-089A-4 | 28,3 | 295 | 203 | 732 |
| SAC900 | **SAC900**/513-*I-4-x²* | ACS580-01-106A-4 | 28,3 | 295 | 203 | 732 |
| SAC1100 | **SAC1100**/513-*I-4-x²* | ACS580-01-145A-4 | 42,4 | 369 | 252 | 727 |
| | **SAC1100**/513-*C-4-x²* | ACS580-01-145A-4 | 54 | 370 | 284 | 880 |
| SAC1300 | **SAC1300**/610-*I-4-x²* | ACS580-01-169A-4 | 54 | 370 | 284 | 880 |
| SAC1400 | **SAC1400**/610-*I-4-x²* | ACS580-01-169A-4 | 54 | 370 | 284 | 880 |

**-H** *horizontal*
**-V** *vertical*

**-2** *for 208-240V version*
**-4** *for 380-480V version*

**-C** *operation mode*
**-I** *operation mode. See specification table*

**SAC1400/610** *thruster model*

**610** *tunnel diameter*

**1400/** *thrust value*

[1] *Weight stated is for complete thruster excluding VFD*

[2] *-H for horizontal version, -V for vertical version*

*TBA: To be announced soon. Please visit our website to find updated information for these new models.*

*VFD's assume 3-phase input power. Dimensions will be different for single-phase.*


# Retract Thruster Series

## - for yachts up to150 ft

**Side-Power retractable thrusters are designed with particular focus on practical sturdiness, uncompromised safety and quick deployment. Side-Power cooperates with leading boat builders and are continuously developing our product range in accordance with the market demand for high quality thruster systems. Our retract thrusters can now be delivered in even more variants to fit most vessels. The retract range features models with three tunnel diameters, 185, 250 and 300mm with a power handling up to 320 kgs of thrust and can be powered by DC, AC or hydraulic motors.**

The retracting thrusters are built with the same high safety standards as all Side-Power products, and incorporate the important benefits introduced with the SE-series thrusters. Our focus on safety is a totally integral part of the product design so that everything from build quality to ease of installation is thought of to ensure long term reliability.

There are three versions of the retractable thrusters, one very compact model design for direct mold-in, and two designed to be mounted on a flange with either a vertically (SRV) or horizontally (SRL) mounted motor for minimum build height. The flange can be a mold-in base delivered from Side-Power, or the boat builders can manufacture their own base in materials suited for their hulls or as part of their basic hull design.

The flange mounted models have the thruster unit in a casing that will be bolted to the base. This allows for easier installation in hulls made from different materials, as well as in series production where you do not need to mix laminating and engineering type jobs.


The 185mm tunnel diameter thrusters use one fast and powerful actuator, while the 250mm and the NEW 300mm tunnel diameter models have two actuators to handle the increased forces with the same exceptionally fast deploy/ retract operation time. The actuator design contains safety breaking points which releases the tunnel if exposed to a frontal impact while deployed. Spare braking points are delivered with all models. There is also a manual override to retract the tunnel in case of power loss.

The unique design of the underwater mechanism has only a few, but very sturdy parts that all contribute to the stability of the moving assembly. The unit is also designed to keep the thruster as compact as possible while enabling the safe use of heavier motors on the more powerful units.

All Side-Power retractable models use the S-link CAN bus control system with full intelligent communication between all units in the system, much like a computer network.

## Retract series benefits:

- Plug and play S-link two way communication control cable wiring
- Motor assembly rigid mounted on retracting casing - no stress on electrical cables or hydraulic hoses
- Compact size
- Reliable retracting mechanism with sturdy self-locking actuators
- Fast deployment time
- Easy to use control panel with status feedback from thruster
- Available in PRO versions with proportional speed control. Standard for AC versions.

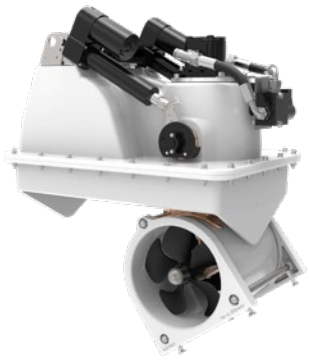
## Add a mold-in base for easy installation (option):

- SRF-250-GRP; mold-in mounting base for 250mm tunnel SRV models - ISO Polyester
- SRF-300-GRP; mold-in mounting base for 300mm tunnel SRV models - ISO Polyester

# Measurements - Retract thrusters

## Hydraulic series

## AC series



| | SRHP 240/250 TC | SRHP 320/300 TC | SRAC 320/300 TC |
|---|---|---|---|
| **Performance & sizing** | | | |
| Thrust up to (kg • lbs) | 240 • 529 | 320 • 705 | 320 • 705 |
| Typical boat size (ft • m) | 42 - 75 • 13 - 23 | 72 - 110 • 22 - 34 | 72 - 110 • 22 - 34 |
| Tunnel I.D. (mm • in) | 250 • 9.8 | 300 • 11.8 | 300 • 11.8 |
| Power up to (kw • Hp) | 14 • 19 | 20 • 27 | 20 • 27 |
| Motor | Hydraulic | Hydraulic | AC |
| Weight (kg • lbs) | 82 • 180 | 88 • 194 | 140 • 308 |
| Installation | flange | flange | flange |
| **Item Code** | **SRHP240/250TC-xxx** | **SRHP320/300TC-xxx** | **SRAC 320/300TC-x [1]** |
| **Features** | | | |
| CE approved | Yes | Yes | Yes |
| PROportional speed | Yes | Yes | Yes |
| Control system | S-link | S-link | S-link |
| Q-propeller | Yes | Yes | Yes |
| Propulsion system | Twin Counter | Twin Counter | Twin Counter |
| Lubrication | Sealed | Sealed | Sealed |
| Galvanic separation | No | No | No |

### PROproportional speed

A PROportional speed controlled thruster system 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 single handed docking very easy indeed! Proportional thrusters are also the best choice for joystick interaction.

### Control system

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

- 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 at panel
- Intelligent troubleshooting.

### Q-propeller

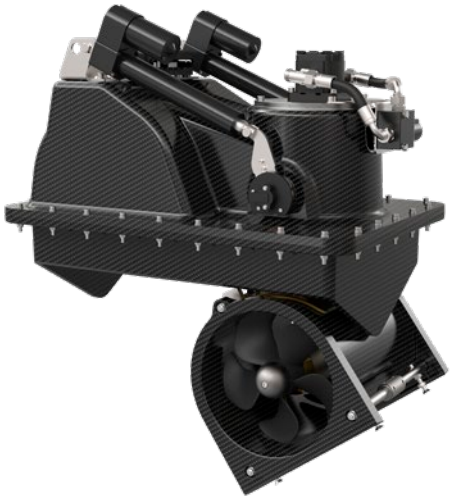
The 5 blade special skew propellers are the result of over 2 years of development work and thousands of tests. They have been designed to reduce the noise level, while maintaining the exceptional efficiency of the old 4 blade Side-Power propellers. And the result is even increased thrust on several models.

- Noise reductions of up to 75% measured in controlled environments
- The expected and tested normal noise reduction in "average installations" 20-40%

[1] *-2 for 208-240V version*
*-4 for 380-480V version*

# Retract thrusters in carbon fiber

Available on request



Hydraulic retract version*

AC electric retract version*

Available as hydraulic, AC and DC powered versions.
Light weight carbon fiber retract models can be delivered on request.

*For more information, please visit www.side-power.com*

**Propulsion system**

Two counter-rotating propellers can give the most thrust at a good performance ratio in a minimal tunnel diameter. This system is used in our larger thrusters for maximum power. The TC models are the favourite thrusters among leading boat builders for their high-end yachts.

**Lubrication**

Sealed gear leg using ceramic/carbon mechanical seals.

- Prefilled with longlife gear oil for lifetime lubrication on smaller models

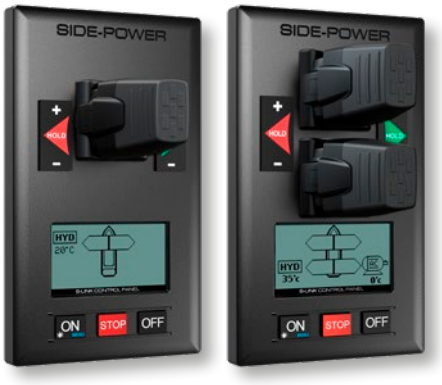
**Galvanic separation**

The gearhouse / 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 effected 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 gear legs with flexible couplers only, where the flexible coupler provides galvanic separation of the motor and gear leg shaft

**Example illustrations only.*

# Control devices




## PJC 221/222 - Single/Dual Joystick for hydraulic thruster systems

- For proportional thruster control with S-link hydraulic thruster systems
- Finger tip speed control with purpose designed joysticks
- Hold - function for easy docking, runs thrusters at selected power step
- Compact design
- Back-lit LCD display with instant feedback
  - System status
  - Indication of thrust level & direction
  - Oil temperature and pressure readout (hyd. only)
- Interactive multi-language menus
- CAN-Bus communication with thrusters and accessories
- Plug & play cables, sealed and compact connectors
- Built-in audible alarm “buzzer”
- Connector for external “buzzer”/loud audible alarms
- Supports Side-Power retractable thrusters with/without Speed Control
- PJC211/PJC212 is compatible with AC thrusters, not hydraulic systems

| | Single | | Dual |
|---|---|---|---|
| H (mm • in) | 141 • 5.55 | H (mm • in) | 141 • 5.5 |
| W (mm • in) | 83 • 3.27 | W (mm • in) | 83 • 3.27 |
| **Item code (12 & 24V)** | **PJC221** | **Item code (12 & 24V)** | **PJC222** |

## PJC 321/322 - Single/Dual Joystick

- For proportional thruster control with S-link hydraulic thruster systems
- “Twist & Hold”-function on joysticks
- Separate back-lit LCD display with instant feedback
  - System status
  - Indication of thrust level & direction
  - Oil temperature & pressure readout
- Interactive multi-language menus
- CAN-bus communication with thrusters and accessories
- Plug & play cables, sealed and compact connectors
- built-in audible alarm “buzzer”
- Diagnostics via panel
- Connector for external “buzzer”/loud audible alarms

| | Single* | | Dual* |
|---|---|---|---|
| H (mm • in) | 125 • 4.92 | H (mm • in) | 206 • 8.11 |
| W (mm • in) | 106 • 4.17 | W (mm • in) | 106 • 4.17 |
| **Item code (12 & 24V)** | **PJC321** | **Item code (12 & 24V)** | **PJC322** |

*Dimensons for panel only


## 8730 S-link Interface

S-link interface to connect footswitches and standard radio remotes/ control panels to a S-link system (Footswitches/Panels/Radio Remote not included).

Add a Radio Remote to your S-link system for even easier short handed boating, or footswitches for hands-free operation of your S-link thrusters.

| Interface Box | for Bowthruster | for Sternthruster |
|---|---|---|
| H (mm • in) | 45 • 1.77 | 45 • 1.77 |
| W (mm • in) | 80 • 3.15 | 80 • 3.15 |
| D (mm • in) | 145 • 5.70 | 145 • 5.70 |
| **Item code (12 & 24V)** | **8730 B** | **8730 S** |

# Control devices

## PJC321/322 MCL2 - Single or dual lever

- For proportional thruster control with S-link hydraulic thruster systems
- Control lever for S-link control system
- Proportional control
- Sturdy and compact construction, space saving and ergonomic design.
- Easy mounting, ideal for armrest mount.
- Single or dual
- Optional sealing to IP56
- Other features as for PJC321/322

| | Single | | Dual |
|---|---|---|---|
| **Item code (12 & 24V)** | **PJC321-MCL2** | **Item code (12 & 24V)** | **PJC322-MCL2** |

## PJC 321/322 L – Single or dual lever

- For proportional thruster control with S-link hydraulic thruster systems
- Control lever for S-link control system
- Proportional control
- Compact, heavy duty throttle design
- Single or dual
- IP66 (panel plate)
- Other features as for PJC321/322

| | Single | | Dual |
|---|---|---|---|
| **Item code(12 & 24V)** | **PJC321L** | **Item code (12 & 24V)** | **PJC322L** |


## GW-1

The GW-1 gateway is the link between NMEA2000 networks and S-link. Side-Power 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.

**Item code GW-1**


## 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.

**Item code ESI-1**

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Contact:

# Worldwide sales and service

For updates and more detailed information
please visit

## www.side-power.com

Sleipner Motor AS constantly seek 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. All images used are for illustrative purposes. Alterations to actual product may occur.

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

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