Each set of drives is supplied with a complete installation manual.

Commissioning: On request France Helices can provide special installation team (to be quoted separately).

* Weights and measurements can vary based on project specifications.

### Dimensions in millimeters

<table>
<thead>
<tr>
<th>Drive</th>
<th>SDS 1</th>
<th>SDS 2</th>
<th>SDS 2L</th>
<th>SDS 3</th>
<th>SDS 3L</th>
<th>SDS 4</th>
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### Weight in Kgs

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### Installation

Each set of drives is supplied with a complete installation manual.

Commissioning: On request France Helices can provide special installation team (to be quoted separately).

For further information and custom solutions, please contact:

Z.I. La Frayère - 12, Allée des Gabians
06150 CANNES LA BOCCA - FRANCE

Tel.: +33 (0)4.93.47.69.38 - Fax: +33 (0)4.93.47.08.59

www.francehelices.fr - info@francehelices.fr
Our products are subject to continual improvement, and therefore FRANCE HELICES reserve the right to change technical specifications without prior notice.

The information appearing in this brochure is given to documentary title, without commitment of responsibility of FRANCE HELICES, which cannot be in no way held responsible of the information, data, methods and calculations.

**POWER / WEIGHT RATIO**

To improve speed, compared to conventional propulsion, the target must be above 25 Knots and power / weight ratio must be above 50 horsepower per tons.

**THE HULL**

- Monohedron type
- Warped type

**ENGINE TORQUE CALCULATION**

All engine manufacturers supply the engine power curve, look at the maximum power and maximum revolution.

Example: 420 horsepower @ 3300 rpm.

The torque is: 

\[ T \text{ (kg.m)} = 716.2 \times \text{Power} \text{ (hp)} / \text{Revolutions} \text{ (revs/min)} \]

In that case the engine torque is: 

\[ T = 716.2 \times 420 / 3300 = 91.15 \text{ kg.m} \]

**SDS IS A COMPLETE PROPULSION PACKAGE THAT INCLUDES:**

- Drives
- Propellers
- Integrated control panel
- Hydraulics and steering equipment
- Coupling flanges
- Emergency back up system
- Cardan shaft
- Indicators and sensors

- Option: FRANCE HELICES can provide you a complete surface drive propulsion package with Auto-trim feature.

Since its foundation in 1977, FRANCE HELICES has become one of the world’s leading authorities in marine propulsion systems. We are the only manufacturer in the market to control every aspect of production.

PRAVCH HELICES facility is equipped with an in-house foundry, where machinery is digitally operated and where research teams continue to study new propellers in cavitation tunnels.

The state of the art equipment allows the different production sites to manufacture everything from the casting stage onward, to produce the “right” strength / stiffness before going production.

**WHAT IS SDS ?**

**WHAT ARE THE ADVANTAGES OF SDS SURFACE DRIVE compared to other conventional propulsion systems ?**

- **15 % speed increase**
- **Tremendous steering capacity at high speed. The ability to use the boat in shallow water.**
- The constant effort in research and development by FRANCE HELICES has improved the efficiency of the surface propellers up to 10% during the last decade.
- The total overall propulsive coefficient can reach up to 70% when the application is under the control of the FRANCE HELICES engineering team.
- The new serie FH5SSP show an efficiency above 75% in cavitation tunnel tests.

**HOW TO DETERMINE WHICH MODEL IS SUITABLE FOR YOUR APPLICATION**

**THE HULL**

- Transom stern
- Planing hull

**THE ENGINE (power source)**

- Diesel engine
- Gasoline engine
- Turbine

**THE MCDU**

- Flat screen

**THE MCDU (surge control)**

- Flat screen

**PILOT/WEIGHT RATIO**

With the SURFACE DRIVE SYSTEM, all of the idle components are protected from salt and water exposure. By the use of carbon, transmission, power and weight, the MCDU is designed to be the ideal solution to today’s challenges and meets with NATO classification.

**SAFETY**

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**EFFICIENCY**

- The SDS is a complete propulsion package that includes:
  - Drives
  - Propellers
  - Integrated control panel
  - Hydraulics and steering equipment
  - Coupling flanges
  - Emergency back up system
  - Cardan shaft
  - Indicators and sensors

- Option: FRANCE HELICES can provide you a complete surface drive propulsion package with Auto-trim feature.

**PROPELLER ANALYSIS**

PRAVCH HELICES will provide you all calculations for:

- Target speed
- Longevity calculation according to classification rules

**WHAT IS SDS ?**

SDS 2

SDS 3

SDS 3L

SDS 4

SDS 4.5

SDS 5

SDS 5L

SDS 6

SDS 2L

**SOME RULES TO GET THE FULL BENEFIT OF A SURFACE DRIVE SYSTEM**

1. Change the propeller to increase speed.
2. The engine should be located as low as possible.
3. Check the diagram on the page with the maximum speed on the vertical axis and the maximum torque on the horizontal axis to see if the boat is in plateau water.

**WITH PERFORMANCE RELIABILITY LOW MAINTENANCE COST**

**HOW TO DETERMINE WHICH MODEL IS SUITABLE FOR YOUR APPLICATION**

- STEM TORQUE CALCULATION
  - Engine torque = speed x power
  - Example: 2200 rpm / 2 Gpd x 4700 x 0.70 (manufacturer's claim)
  - In order to identify the engine in your case:
    - Take the engine torque of a known boat and power
    - Calculate the value of the engine torque of the new or used engine
  - CHECK THE TABLE FOR THE SUITABLE MODEL.

**RESEARCH**

- Propulsion analysis
- Research and Development
- Safety

**EFFICIENCY**

- Propulsion analysis
- Research and Development
- Safety

**PROPELLER DESIGN ANALYSIS**

- Propulsion analysis
- Research and Development
- Safety

**DETERMINATION OF WHICH MODEL IS SUITABLE FOR YOUR APPLICATION**

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**POWER / WEIGHT RATIO**
To improve speed, compared to conventional propulsion, the target must be above 25 Knots and power/weight ratio must be above 50 horsepower per tons.

**THE HULL**
The hull form must be:
- Monohedron type
- Warped type

**ENGINE TORQUE CALCULATION**
All engine manufacturers supply the engine power curve, look at the maximum power and maximum revolution.
Example: 420 horsepower @ 3300 rpm.
The torque is: 
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**SDS IS A COMPLETE PROPULSION PACKAGE THAT INCLUDES:**
- Drives
- Propellers
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- Option: FRANCE HELICES can provide you a complete surface drive propulsion package with Auto-trim feature.

**WHAT IS SDS?**
SDS is a complete propulsion package that includes:
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- Propellers
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- Hydraulics and steering equipment
- Emergency back up system
- Cardan shaft
- Coupling flanges
- Indicators and sensors

**PROPELLENT ANALYSIS**
FRANCE HELICES will provide you full calculations for:
- Target speed
- Time life
- Safety calculation according to classification rules.

**RESEARCH**
- The constant effort in research and development by FRANCE HELICES has improved the efficiency of the surface propellers up to 10% during the last decade.
- The total overall propulsive coefficient can reach up to 70% when the application is under the control of the FRANCE HELICES engineering team.
- The new series FH5SSP show an efficiency above 75% in cavitation tunnel tests.

**HISTORICAL BACKGROUND**
Since its foundation in 1977, FRANCE HELICES has become one of the world’s leading authorities in marine propulsion systems. We are the only manufacturer in the market to control every aspect of production. FRANCE HELICES facility is equipped with six in-house foundries, where machinery is digitally operated and where research teams continue to study new propellers in cavitation tunnels.

**SAFETY**
With the SURFACE DRIVE SYSTEM, all of the vital components are protected from salt and water corrosion. By 3D engine, sensors, hydraulic, drives, and much more; all are designed with the utmost care for maximum reliability and durability and tested with NATO qualification.

**HOW TO DETERMINE WHICH MODEL IS SUITABLE FOR YOUR APPLICATION**
- DRIVE INPUT TORQUE
  The torque to be used for drive selection is the input torque, so the engine torque has to be multiplied by the gear ratio
  \[ T_{\text{final}} = \text{ENGINE TORQUE} \times \text{GEAR RATIO} \]
- CHECK THE TABLE FOR THE SUITABLE MODEL

**RESEARCH**
- Tremendous steering capacity at high speed.
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**WHAT ARE THE ADVANTAGES OF SDS SURFACE DRIVE compared to other conventional propulsion systems?**
- All of the vital components are protected from salt and water corrosion.
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**WITH PERFORMANCE RELIABILITY LOW MAINTENANCE COST**

**SOME RULES TO GET THE FULL BENEFIT OF A SURFACE DRIVE SYSTEM**
- Use the correct power source.
- Use the correct gearing.
- Use the right drives.
- Use the right propellers.
- Use the right power take-off.
- Use the right control system.
- Use the right fuel.
- Use the right maintenance.

**THE MULL**
- The Mull provides a propulsion system that is cost-effective and easy to maintain.
- The Mull is a versatile system that can be adapted to various applications.
- The Mull is a propulsion system that is designed to meet the needs of different boat types.

**THE ENGINE (power source)**
- The engine is the heart of the propulsion system.
- The engine is designed to meet the needs of different applications.
- The engine is designed to meet the needs of different applications.

**POWER / WEIGHT RATIO**
To improve speed, compared to conventional propulsion, the target must be above 25 Knots and power/weight ratio must be above 50 horsepower per tons.

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The torque to be used for drive selection is the input torque, so the engine torque has to be multiplied by the gear ratio.

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**CHECK THE TABLE FOR THE SUITABLE MODEL**

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- The engine is designed to meet the needs of different applications.
**SAFETY**
With the SURFACE DRIVE SYSTEM, all of the vital components are protected from salt and water corrosion. The SDS control panel, sensors, hydraulics, and rotation are fully protected from salt and water corrosion. The propellers are permanently mounted on the driveshaft. FRANCE HELICES uses an aramid fiber reinforced composite material which is used in many applications in the automotive and aeronautic industries.

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To improve speed, compared to conventional propulsion, the target must be above 25 Knots and power/weight ratio must be above 50 horsepower per tons.

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The hull form must be:
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**WHAT IS SDS?**
- SDS is a complete propulsion package that includes:
  - Drives
  - Propellers
  - Integrated control panel
  - Hydraulics and steering equipment
  - Emergency back up system
  - Coupling flanges
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  - Option: FRANCE HELICES can provide you a complete surface drive propulsion package with Auto-trim feature.

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**PROPELLER ANALYSIS**
FRANCE HELICES will provide you full calculations for:
- Target speed
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**WHAT ARE THE ADVANTAGES OF SDS SURFACE DRIVE compared to other conventional propulsion systems?**
- 15% speed increase
- Tremendous steering capacity at high speed
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**HOW TO DETERMINE WHICH MODEL IS SUITABLE FOR YOUR APPLICATION**
- DRIVE INPUT TORQUE
  - The torque to be used for drive selection is the input torque, so the engine torque has to be multiplied by the gear ratio.
  - \[ T_{\text{final}} = \text{ENGINE TORQUE} \times \text{GEAR RATIO} \]
  - CHECK THE TABLE FOR THE SUITABLE MODEL

**THE MILL**
- The SDS propulsion system can be fitted in any type of vessel by making only minor changes to the existing propulsion system.
- The propulsion system can be adapted to various type of vessels.
- The propulsion system can be adapted to various type of vessels with different propulsion requirements.
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**THE ENGINE (power source)**
- Many engines are available on the market,
- The SDS surface drive system can be adjusted to:
  - Diesel engine
  - Gasoline engine
  - Turbine

**WITH PERFORMANCE RELIABILITY LOW MAINTENANCE COST**
- SCREW WEIGHT
- SD 2
- SD 2L
- SD 3
- SD 3L
- SD 4
- SD 4.5
- SD 5
- SD 5L
- SD 6

**HISTORICAL BACKGROUND**
Since its foundation in 1977, FRANCE HELICES has become one of the world’s leading authorities in marine propulsion systems. The company is known for its use of the most advanced technology to control every aspect of production. FRANCE HELICES’ facility is equipped with state-of-the-art machines, allowing strict quality control and manufacturing processes.

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  - Turbine
Each set of drives is supplied with a complete installation manual.

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*Weights and measurements can vary based on project specifications.

**All dimensions are in millimeters**

**All weight are in kgs**

**Installation**

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For further information and custom solutions, please contact:

Z.I. La Frayère - 12, Allée des Gabians
06150 CANNES LA BOCCA - FRANCE

Tél.: +33 (0)4.93.47.69.38   -  Fax: +33 (0)4.93.47.08.59

www.francehelices.fr - info@francehelices.fr
**ALL DIMENSIONS ARE IN MILLIMETERS**

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**ALL WEIGHT ARE IN KGS**

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