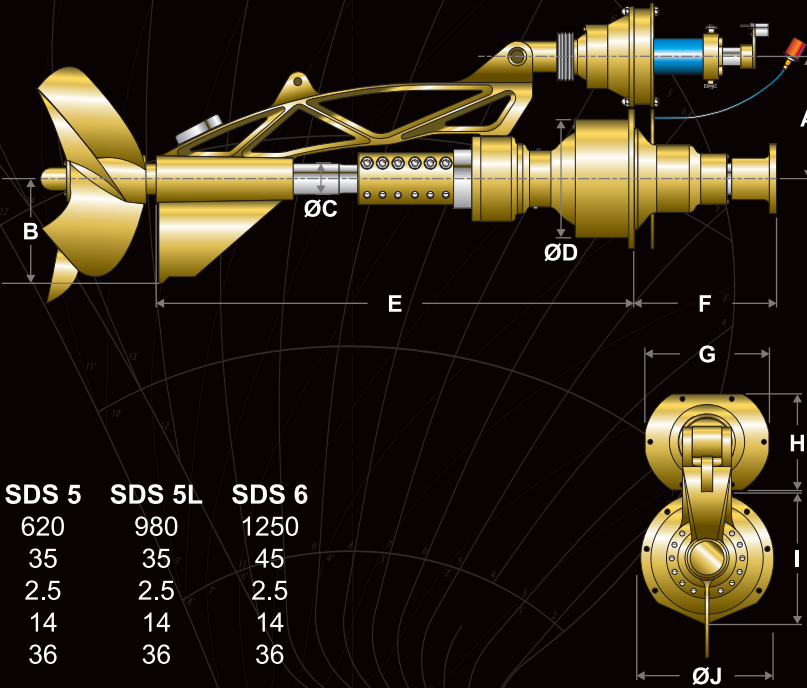


ALL DIMENSIONS ARE IN MILLIMETERS*

	SDS 1	SDS 2	SDS 2L	SDS 3	SDS 3L	SDS 4	SDS 4.5	SDS 5	SDS 5L	SDS 6
A	300	300	300	400	400	460	460	475	470	550
B	228	243	243	289	288	355	355	405	403	507
ØC	50	50	50	65	65	82.5	82.5	90	110	110
ØD	222	222	222	292	292	314	314	380	458	548
E	850	1100	1100	1260	1260	1550	1550	1810	1857	2000
F	272	272	272	292	292	364	364	489	557	610
G	271	271	271	400	400	400	400	464	464	600
H	240	240	240	350	350	350	350	391	391	520
I	303	303	303	397	397	400	400	465	543	548
ØJ	303	303	303	398	398	400	400	465	543	548



ALL WEIGHT ARE IN KGS*

	SDS 1	SDS 2	SDS 2L	SDS 3	SDS 3L	SDS 4	SDS 4.5	SDS 5	SDS 5L	SDS 6
DRIVE	137	150	160	252	270	435	445	620	980	1250
STEERING CYLINDER	18	18	18	18	18	35	35	35	35	45
OIL TANK	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SHOCK ABSORBER	8	8	8	12	12	12	12	14	14	14
HYDRAULIC POWER UNIT	30	30	30	30	30	36	36	36	36	36

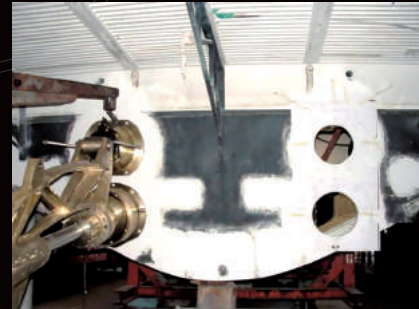
* Weights and measurements can vary based on project specifications

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).

“LEADING EDGE TECHNOLOGY”



FRANCE HELICES Cannes a été certifié ISO 9001 : 2015 par le BUREAU VERITAS Certification pour ses domaines d'activités : conception, fabrication, commercialisation, et réparation de systèmes de propulsion marine par hélices.

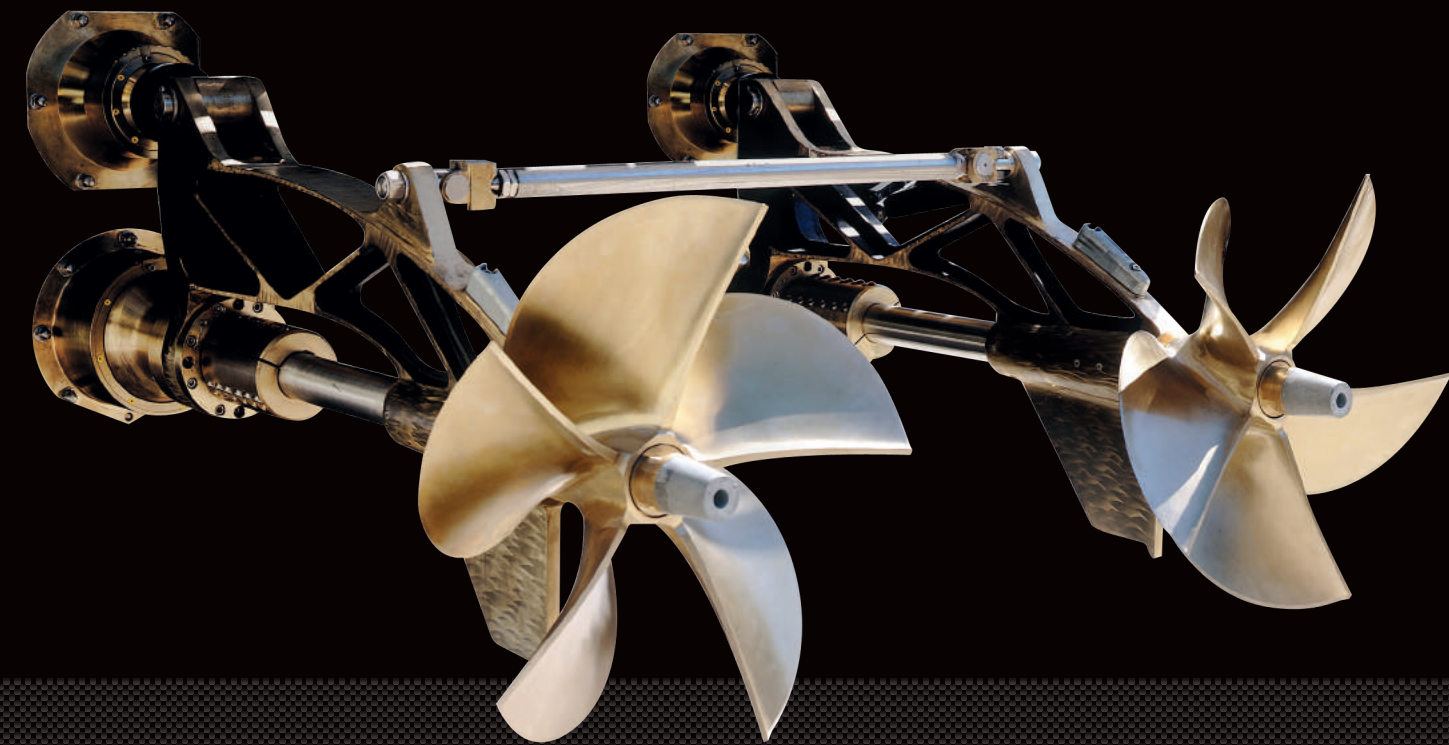
FRANCE HELICES Cannes has been awarded ISO 9001:2015 by the BUREAU VERITAS Certification for its fields of activities : design, manufacture, marketing and repair of marine propulsion systems with propellers.



For further information and custom solutions,
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SURFACE DRIVE SYSTEM®
LEADER IN MARINE PROPULSION

HISTORICAL BACKGROUND

FRANCE HELICES was founded in 1977 and has since then become one of the world's leading company in marine propulsion systems.
In 1990's FRANCE HELICES has designed and created a range of SURFACE DRIVE SYSTEM called SDS.

Our R&D department is equipped with the CAD / CAC / CAM and CFD software and CNC machines enabling to provide you the best propulsion systems. The research team continues to innovate and create new propellers that are tested the cavitation tunnel or with CFD to assure you a continuity in excellence.

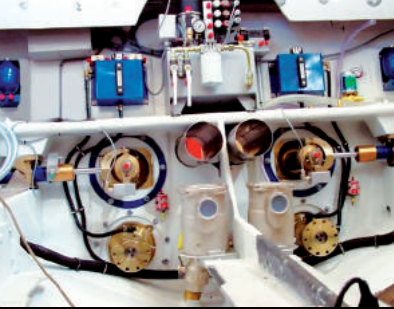
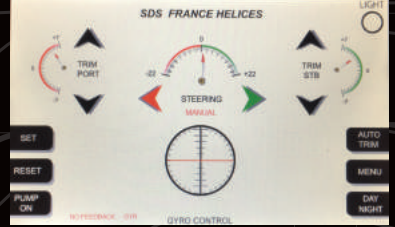
The state of the art equipment allows the different manufacturing sites to produce every part from the coupling flange to the electronic dashboard, including the CNC machined customized 5 blades surface piercing propellers made to reach your expectations.

WHAT IS SDS ?

- SDS IS A COMPLETE PROPULSION PACKAGE THAT INCLUDES :

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

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



SAFETY

With the SURFACE DRIVE SYSTEM, all of the vital components are protected from salt and water corrosion. All of the cables, sensors, hydraulics, hoses, and electric connections are situated inside the engine room, away from the harsh marine environment. Our drives may be approved by all classification societies : ABS, LLOYDS, RINA ...

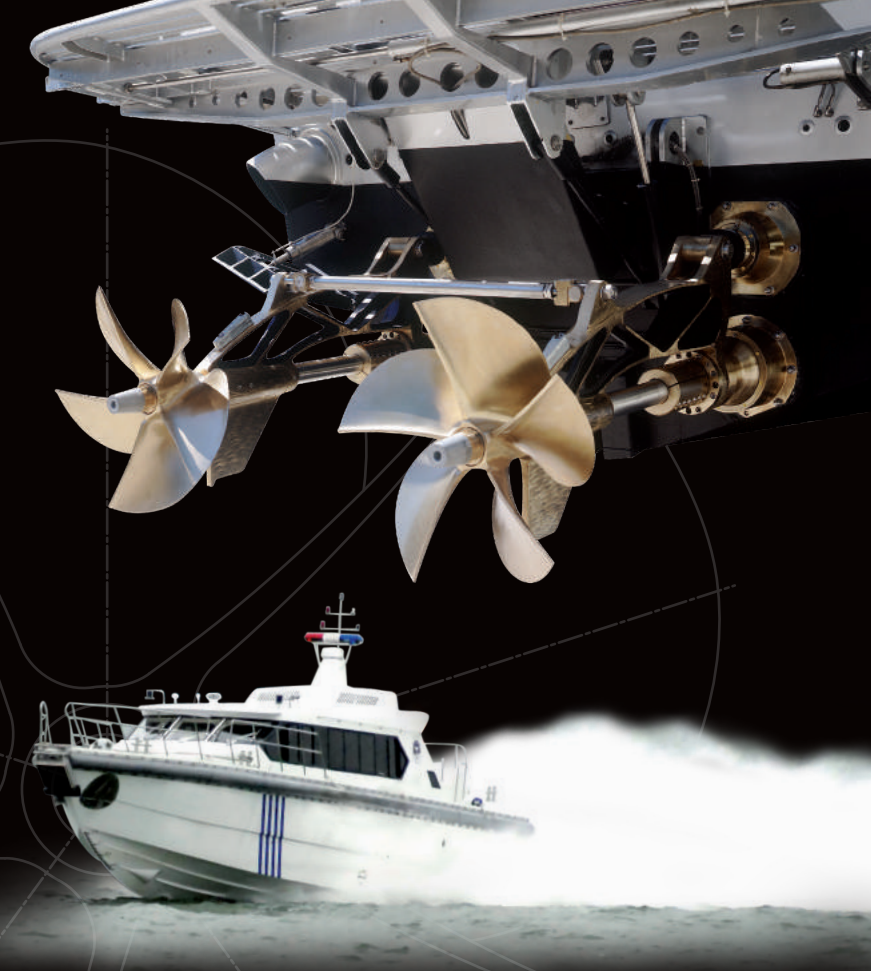
EFFICIENCY

Years of research, development and rigorous testing have resulted in the development of SDS, the most reliable surface drive transmission package.

Each piece used in its construction has high safety factor rates.

PROPULSION ANALYSIS

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



HOW TO DETERMINE WHICH MODEL IS SUITABLE FOR YOUR APPLICATION

- 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 : $T \text{ (kg.m)} = 716,2 \times \text{Power (hp)} / \text{Revolutions (revs/min)}$
In that case the engine torque is : $T = 716,2 \times 420 / 3300 = 91,15 \text{ kg.m}$

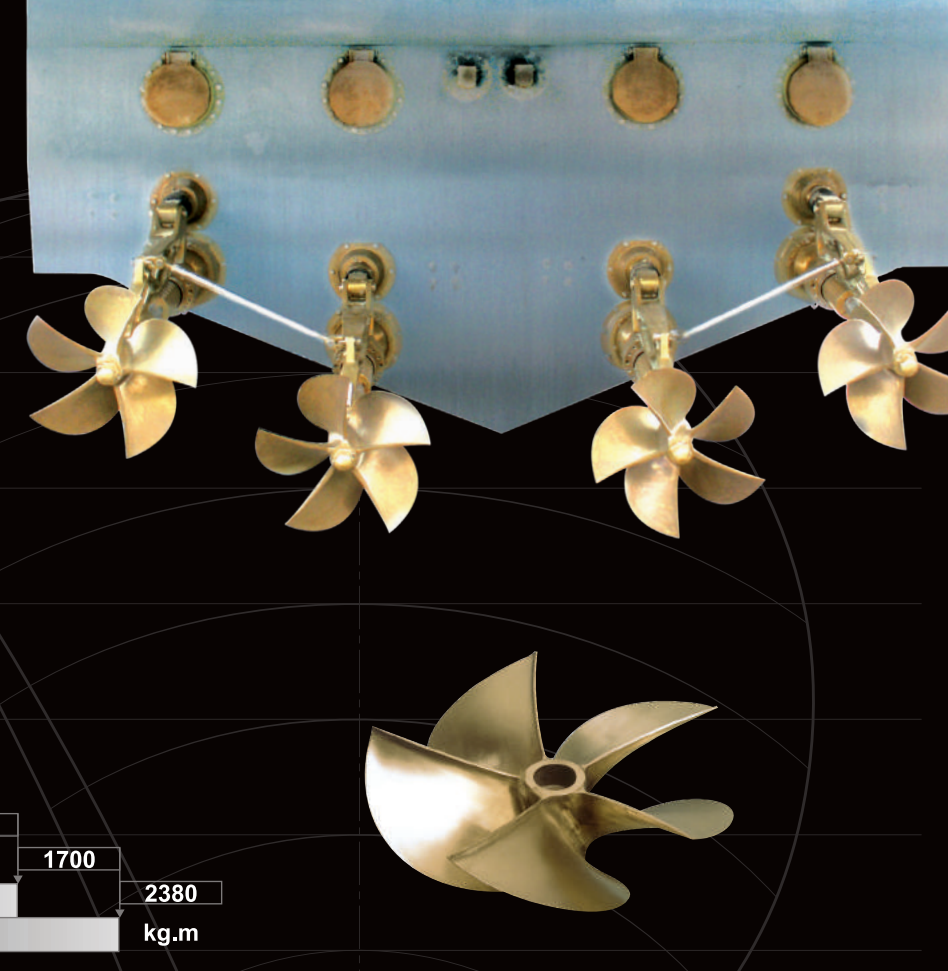
- DRIVE INPUT TORQUE

The torque to be used for drive selection is the input torque, so the engine torque has to be multiplied by the gear ratio $T_{final} = \text{ENGINE TORQUE} \times \text{GEAR RATIO}$

- CHECK THE TABLE FOR THE SUITABLE MODEL

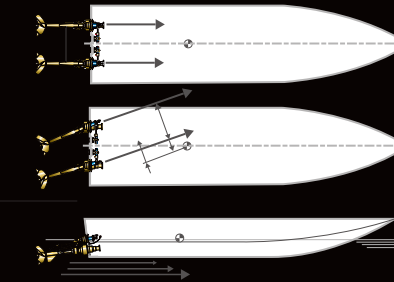
Maximum torque chart

	170	182	220	335	375	575	730	1190	1700	2380
SDS 1										
SDS 2										
SDS 2L										
SDS 3										
SDS 3L										
SDS 4										
SDS 4.5										
SDS 5										
SDS 5L										
SDS 6										



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

- 15 % speed increase
- Tremendous steering capacity at high speed
- U turn in 2 boat lengths
- The ability to use the boat in shallow water
- Guaranteed performance
- Reduced maintenance costs
- Easy maintenance
- The small amount of spare parts to keep in the inventory
- A worldwide assistance in 24 hours for spare parts and technicians
- Reliable mechanics +++++



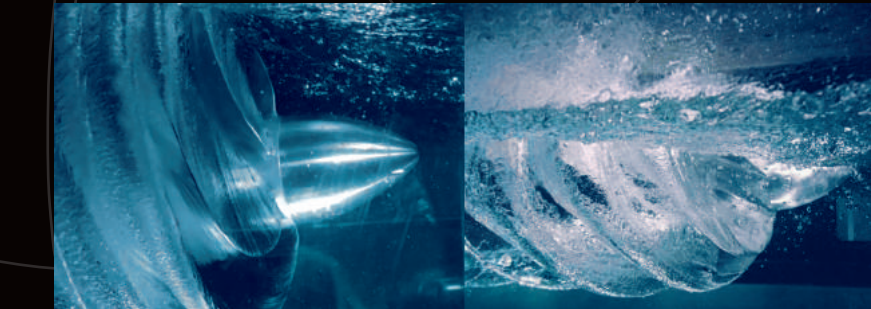
Tremendous steering capacity at high speed. The ability to use the boat in shallow water.

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 serie FH5SSP show an efficiency above 75% in cavitation tunnel tests.

Typical Kt, Kq, Eta curves issued from cavitation tunnel for the FH5SSP series

WITH PERFORMANCE RELIABILITY LOW MAINTENANCE COST



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

THE HULL

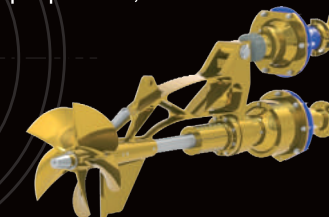
The hull form must be :
- Monohedron type
- Warped type

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

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.



Our products are subject to continual improvement, and therefore FRANCE HELICES reserve the right to change technical specifications without prior notice.
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