

The surface drive propulsion system (also known as semi-submerged propeller) independently developed by Tofoo Electronics Engineering Co., Ltd. for TSD type high-speed boats has been tested in Changsha, China, with a maximum measured speed of 78.9 km/h, which has been successfully used in high-speed boats. This technology has obtained a number of utility model patents and invention patents. The success of this test voyage fully demonstrated the maturity of the key technology and core technology of the high-speed surface propeller device, marking that the surface propeller device and surface propeller technology for domestic TSD high-speed boats have gradually matured, and the application direction of the product will be more mature. It is safe, efficient and cost-effective.

TDS Surface Drive certification  
Our propulsion system can pass the certification of major classification societies: ABS, CCS ISO9001:2015/ISO9001:2016 certification, and its activities include: marine supporting products (movable surface drive, fixed surface drive, gear box) design, development and manufacturing.



This certificate is valid to the following scope for QMS: \*DESIGN, DEVELOPMENT AND MANUFACTURE OF MARINE ACCESSORY PRODUCTS (MOVABLE SEMI-IMMERSED OAR, FIXED SEMI-IMMERSION OAR, GEAR BOX)\*.

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All dimensions are in millimeters

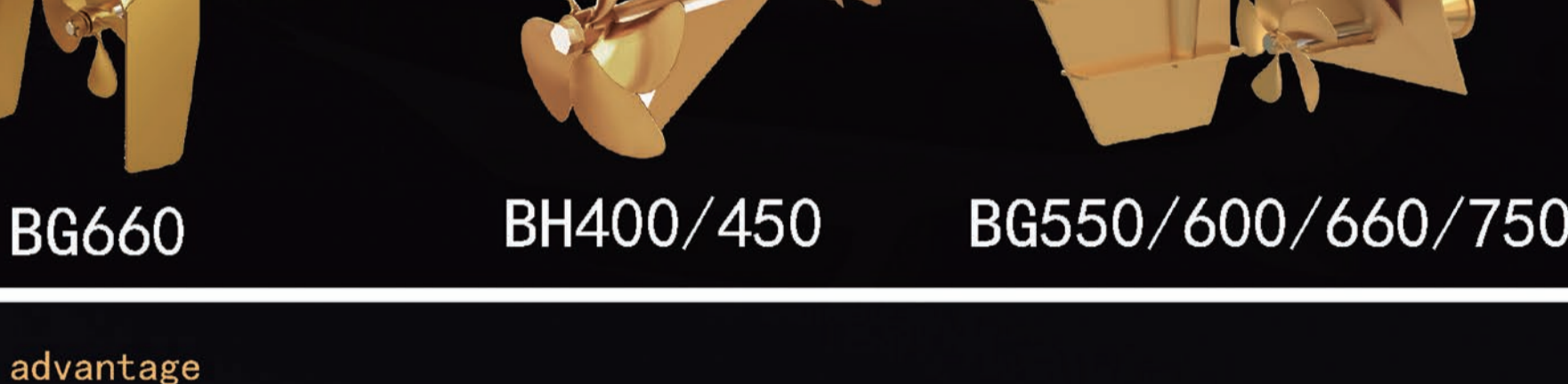


	BH400	BH450
Adaptable blade diameter	400	400
Number of adaptable blades	4, 5, 6	4, 5, 6
Gearbox reduction ratio	1.2, 1.5, 2/; 1	1.2, 1.5, 2/; 1
Maximum input torque N.m	375N.m	375N.m
The maximum power of the main engine Kw/Ps	110Ps	110Ps
Minimum output speed of main engine r/min	200G	200G
Maximum output speed of host r/min	5000	5000
Left and right steering angle	45°	45°
Up and down angle	37°	37°
Maximum suitable ship weight for single machine (T)	1T	1T
Maximum suitable ship weight for dual engines (T)	2T	2T
Single machine weight (KG)	30Kg	30Kg
Standard drive shaft length (mm)	300mm	300mm
Body shield	Have	Have
Steering hydraulic cylinder	Internal	Internal

Excellent performance design, flexible and high-efficiency applications make us very popular in the market! TSD surface drive system is specially designed for fast-planing yachts, sports fishing boats, racing boats and professional applications that require acceleration, high speed and endurance provide excellent performance. High-speed customs cruiser, the law enforcement supervision rowing boat, high-speed, high-speed yacht, high-speed transport boat, military ships, cruise ships, hydrological ship, the ship, high-speed interceptor, RIB, the rescue boat, when navigating in high speed have no cavitation erosion, low resistance, shallow draft and high efficiency etc., is the world's new high-speed boat preferred way.



BH500/550/600/660/750



BG660 BH400/450 BG550/600/660/750

**Design advantage**

- A pair of TDS surface drive can lift and steer system
- A pair of high anti-corrosion, high toughness and strength two-way special stainless steel surface perforated propellers
- Hydraulic and steering equipment
- The body is made of all 316L anticorrosive stainless steel
- Indicators and sensors
- Double hydraulic cylinder
- Two kinds of adjustable movable and fixed semi-submerged propeller systems
- Universal ball cage connection design



**Performance advantages**

- The water intake of the surface piercing propeller is half of the water intake
- 15% to 30% faster than traditional systems
- 15% to 30% increase in fuel efficiency
- The propeller is ventilated to the water surface, thereby reducing noise and destructive hull and pillar erosion.
- The maintenance requirements are low, and the propeller immersion can be adjusted in progress.



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**TFC series gear box**

It is made of full anti-corrosion aluminum alloy shell, and the overall weight is light. It is only about a quarter of the weight of the traditional domestic marine gearbox compared with the same period, and the weight is only 35kg. It is very light to install and maintain. The gearbox is circulated and cooled in seawater, and the cooling is very sufficient, which can meet the continuous long-term work of more than 10 hours. The gear shifting mechanism is a mechanical copper cone clutch, which makes it easy to change gears without impact and has strong transmission capacity.

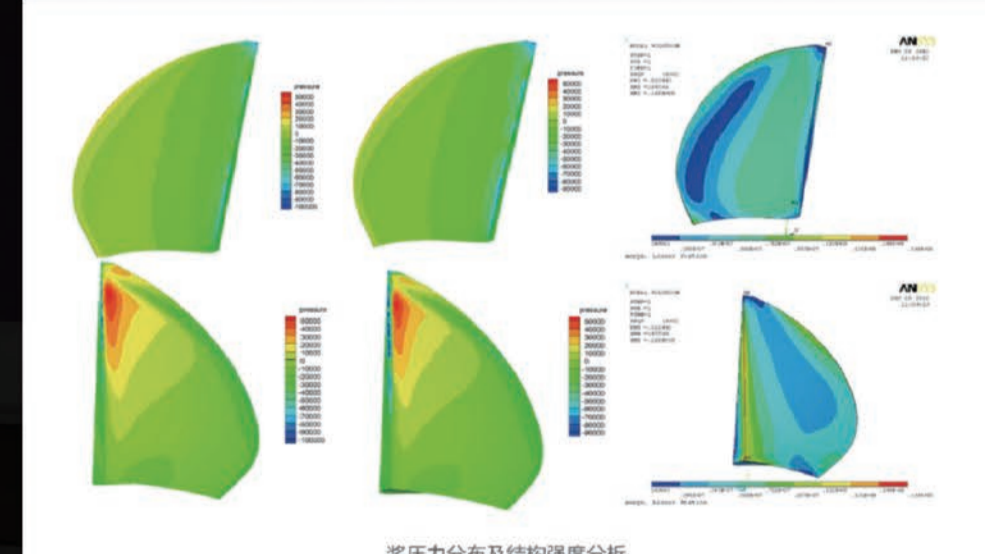
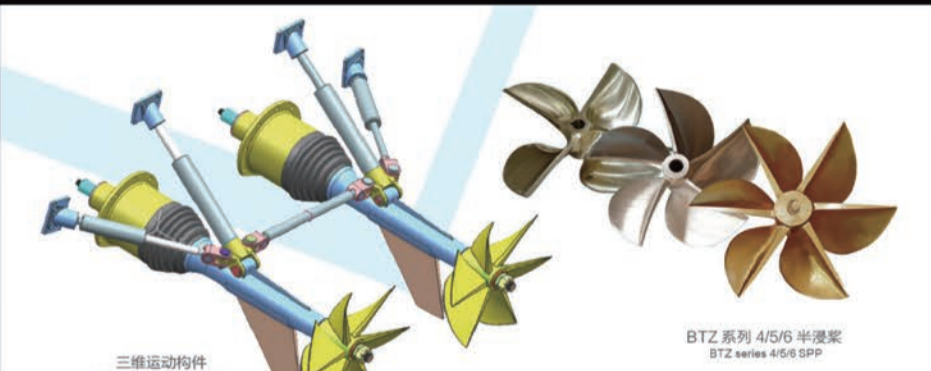


LQ85 LQ100 HC65 120C LQ138 LQ200 LQ200-1 LQ300

	LQ85	LQ100	HC65	120C	LQ138	LQ200	LQ200-1	LQ300
Input speed (r/min)	1500-4000	1500-4000	1500-2500	1000-2800	1000-3200	1000-3000	1000-3000	1000-3000
Input power (Kw)	60-140	100-240	60-140	100-250	100-280	160-370	200-600	300-735
Transmission capacity (kw/r/min)	0.04	0.08-1.0	0.04	0.10	0.1-0.15	0.16	0.26	0.35
(Increase)	0.8-2.03	0.65-3	1.52	1.36-3.5	1.03-3	2-2.3	1.1,2,1.5,1.7	1-2.38
Reduction ratio								
Bearing propeller	9	15	9	25	25	40	40	50
thrust (kN)								
Center distance	100	142	100	180	165	190	190	203
Net weight (kg)	62	105	130	220	155	250	235	285
Manipulation form	Push-pull flexible shaft	Push-pull flexible shaft	Push-pull flexible shaft	Electronically controlled or push-pull flexible shaft	Electronically controlled or push-pull flexible shaft	Electronically controlled or push-pull flexible shaft	Electronically controlled or push-pull flexible shaft	Electronically controlled or push-pull flexible shaft
Input connection	Push-pull shaft Housing SAE 4#, 3# flywheel SAE 10, 8	Sizing 2#, 3#, 4#, 3# flywheel SAE 11.5, 10	Sizing 4#, 3# flywheel SAE 10, 8	1#, 2#, 3# flywheel SAE 14, 11.5	Housing SAE 1#, 2# flywheel SAE 14, 11.5	Housing SAE 1#, 2# flywheel SAE 14, 11.5	Housing SAE 1#, 2# flywheel SAE 14	Housing SAE 1#, 2# flywheel SAE 14

**Advance analysis**

The TSD Surface Drive team will provide complete calculations in order to achieve  
 ——Target speed  
 ——Use life  
 ——Safe calculation according to the specifications of the Shipping Association



**Research**  
 —— Through the continuous research of TSD team, we have a professional line from product research and development, production and manufacturing to post-maintenance. In the last ten years, the efficiency of the surface propeller has been improved by 15%, and a mature 4/5/6 half submerged propeller series has been established, which has the design ability of all kinds of high speed boat half submerged propeller propellers.  
 —— Based on the digital design platform, through dynamic simulation and finite element optimization of the moving components, the TSD team can make the device meet the technical requirements of the semi-submerged propeller and at the same time have better performance.

**Details and real scene display**

