



Fixed Pitch Propellers

Marine Propulsion Systems





For over 25 years ZF Marine has produced propellers for the commercial and pleasure craft industries. Our close association with some of the leading schools of hydrodynamic design have helped shape our propeller families to be some of the industry's best in efficiency and robust design. ZF Marine has in-house naval architects ready to assist customers with the most challenging of applications and hull designs. Our manufacturing facility can produce propellers in a multitude of configurations, in a range of diameters from 50 centimeters (20") to 2 meters (79") or greater.

The right propeller for your application



ZF Propellers

ZF Marine offers both standard and custom designed propellers utilizing CAD-CAM design technology. From yachts to ferries, cruisers to fishing vessels, whether it's a pleasure or commercial application, ZF Marine can provide "off the shelf" products, or can custom design propellers to meet specific performance criteria.

Custom designed for individual applications

Our flexibility in being able to partner with naval architects, engineers, and end customers to design and

manufacture propellers that are unique to a single application is what sets ZF apart. Our in-house naval architects can work side by side with your project team to analyze your hull design and help maximize the performance and efficiency of the vessel's propulsion system. ZF offers complete flexibility in the diameter, number of blades, blade area ratio, section shape, skew, rake, and cupping. Our propellers can be designed to meet your exacting specifications.

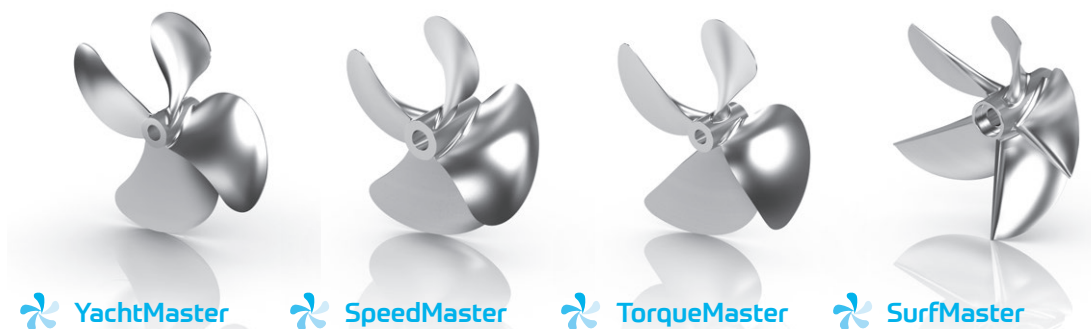


Pleasure Craft Propellers

Pleasure Craft propellers from ZF are designed for maximum comfort and efficiency for various pleasure craft applications. Whether a sailboat, sportfish, or mega yacht, ZF has a product for the application. In addition to "standard" sized propellers ZF can create custom solutions for unique applications.



Application	Sailing Vessels	Cruisers/ Trawlers	Sportfish Boats (> 30 knots)
Number of blades	3	4, 5	4, 5
DAR range*	0.5-0.55	0.55-0.80	0.8-1.20



Application	Displacement Yachts	Planing Hulls (> 25 knots)	Planing Hulls (< 25 knots)	Surface Drives
Number of blades	4, 5	4, 5	4	5,6
DAR range*	0.55-1.20	0.8-1.20	0.6-0.9	0.8-1.20
		Progressive Pitch	Constant Pitch	

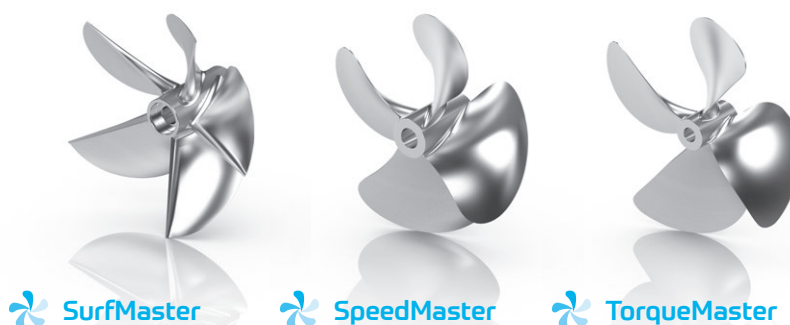
Commercial Craft Propellers

Commercial Craft propellers from ZF are designed to meet the rigours of medium and continuous duty work applications. Commercial fishing, ferries, military, or civilian applications, it's all about getting the work done, every day. Whether you require bronze, NiBrAl, or stainless steel – all are options from ZF. In addition to standard and commercial thickness options, ZF offers DuraEdge. DuraEdge increases prop thickness at the tip of the blade. For continuous duty applications DuraEdge offers increased durability and longevity.



Application	Crew Boats	Tugs/Push Boats	General Workboat
Number of blades	4	3, 4, 5	4
DAR range*	0.8-0.85	0.55-0.75	0.7

Kaplan



Application	Surface Drives	Planing Hulls (> 25 knots)	Planing Hulls (< 25 knots)
Number of blades	5, 6	4, 5	4
DAR range*	0.8-1.20	0.8-1.20	0.6-0.9
		Progressive Pitch	Constant Pitch

* Other DARs are available upon customer request.

Design and manufacturing

ZF propellers are manufactured to ISO 484/2 tolerance standards and can be ordered to meet any classification society requirements.

Design

ZF Marine's team of design engineers offer unparalleled customer support throughout the lifecycle of a project. Once input from the customer about application and performance specification has been established, our design team runs simulations through our in-house software to complete an optimal propeller design. The design is presented to the customer and must be approved for manufacturing to commence.

Casting

High quality alloys are chosen with the exact composition to meet both ZF's quality standards and any classification society requirements. The chemical composition and physical properties of the materials are precisely controlled and tested for each cast.

Machining

Numerical Control machining centers are linked to the designer's 3D CAD geometry files to machine the propeller to a high tolerance. ZF Marine propellers can be machined to meet the highest geometrical tolerances required by the ISO 484/2 Class S standard.

Dynamic Balance

Every propeller is dynamically balanced to ensure smooth operation. Dynamic balancing considerably reduces noise and vibration.

Inspection

The propellers are scanned by industry leading measurement devices to verify every aspect of the geometry and ensure design compliance.



All of our series and custom designed propellers are serialized for easy tracking. In the event that a propeller is damaged beyond repair, a replacement can be manufactured to the original specification.

Data Sheet for propeller design

Shipyard	
Boat's name or project no.	
Contact	
Phone	
Fax	
E-mail	
	Project no.: FPS
	Date

The propeller suggestion can only be as accurate as the information that you provide.

Boat information

Type of analysis	Powerboat <input type="checkbox"/>	Sailboat <input type="checkbox"/>	Re-power <input type="checkbox"/>	Year	New _____	Old _____	Years _____	
Boat use	Work/commercial <input type="checkbox"/>	Towing <input type="checkbox"/>	Pleasure <input type="checkbox"/>	Hull type	Displacement <input type="checkbox"/>	Semi-Disp. <input type="checkbox"/>	Planing <input type="checkbox"/>	
Bottom design	Open <input type="checkbox"/>	Tunnel <input type="checkbox"/>	Pocket <input type="checkbox"/>	Appendage	Skeg <input type="checkbox"/>	Wedge <input type="checkbox"/>	Stabilizer <input type="checkbox"/>	Rope cutter <input type="checkbox"/>
Hull material	Fiberglass <input type="checkbox"/>	Wood <input type="checkbox"/>	Aluminum <input type="checkbox"/>					

1. Hull data

Light load displacement _____	Half load displacement _____	Full load displacement _____	
Length overall _____	Length waterline _____	Bpx (max. chine beam) _____	
LCG from transom _____	Deadrise angle at midship _____°, at transom _____°		
Draught at full load _____	Draught at midship _____	Shaft angle _____	
Max. diameter _____	Clearance _____	Distance between hull and center of prop. shaft _____	
Shaft diameter	SAE <input type="checkbox"/>	Metric <input type="checkbox"/>	Size _____

2. Existing or new engine data

Number of engines	Single <input type="checkbox"/>	Twin <input type="checkbox"/>	Triple <input type="checkbox"/>	Other <input type="checkbox"/>	Manufacturer _____	Model _____
Maximum engine rating _____	HP <input type="checkbox"/>	KW <input type="checkbox"/>	Cv <input type="checkbox"/>	@ _____ rpm		
Make and type of gearbox _____	Reduction ratio _____ : 1					
Demand speed, or not	Yes <input type="checkbox"/>	_____ knots @ _____ tons	No <input type="checkbox"/>	if no, suggested by ZF-FPS		

If re-power, fill in the above with NEW engine data and try your best to fill in the item 3 for existing propeller data and item 4 for repower data.

3. Existing propeller data

Manufacturer _____	Model/series _____	Material MnBr <input type="checkbox"/>	NiAlBr <input type="checkbox"/>	Stainless Steel <input type="checkbox"/>
Propeller Size	Diameter _____ x Pitch _____ x Blade _____ x Area Ratio _____			
Existing performance	Full throttle ship speed _____ mph <input type="checkbox"/>	knots <input type="checkbox"/>	@ _____ tons (sea trial disp.)	
	Full throttle engine rpm _____ rpm @ engine load _____ %			

4. Re-power data (old engine information)

Number of engines	Single <input type="checkbox"/>	Twin <input type="checkbox"/>	Triple <input type="checkbox"/>	Other <input type="checkbox"/>	Manufacturer _____	Model _____
Maximum engine rating _____	HP <input type="checkbox"/>	KW <input type="checkbox"/>	Cv <input type="checkbox"/>	@ _____ rpm		
Make and type of gearbox _____	Reduction ratio _____ : 1					
Existing performance	Full throttle ship speed _____ mph <input type="checkbox"/>	knots <input type="checkbox"/>	@ _____ tons (sea trial disp.)			
	Full throttle engine rpm _____ rpm @ engine load _____ %					

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