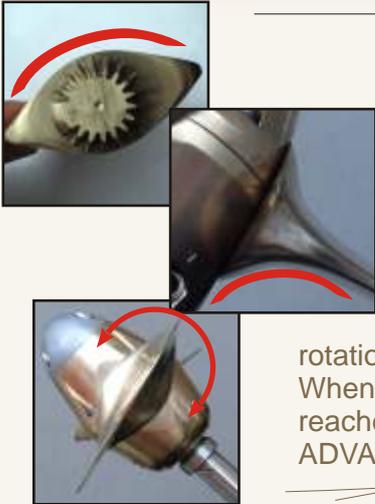


Smoothness under sail



Blade profile : HYDRODYNAMIC !

The enlarged base of the blades, required under motor, has a profile designed to facilitate the water flow.

ADVANTAGES : ● Low drag while sailing.
● No cavitation under motor.

Blade rotation ? Not too much but not too little PLAY !

The play introduced between the internal gears is facilitating the blade rotation and warrants that the propeller will feather without blocking during all of its life. When, after many years of good service, it will end, as anybody of us, having reached its age limit, it will still feather...

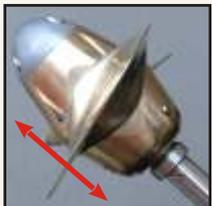
ADVANTAGE : ● More speed under sail, even when the propeller will become old and tired !

Soft force under motor !

Blade axis? NO PLAY!

Thanks to the absence of play around the blade's axis when they are in «motor» position, the thrust transmission to the propeller's body occurs under optimal mechanical conditions.

ADVANTAGES : ● No vibrations nor unwanted noises.
● Limitation of mechanical strain on the metal



External body? NO PLAY!

There is also no play between the body and the central boss of the propeller. They are perfectly machined and one turns within the other. The propeller's thrust is transmitted from the body to the boss without involving the internal gears.

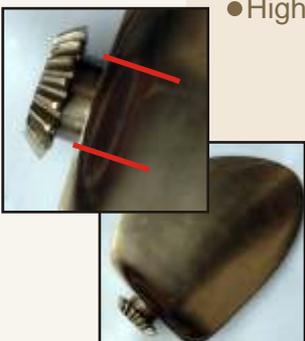
ADVANTAGES : ● No mechanical strain on the gears.
● Low mechanical strain on the interface body <=> boss.

Blade robustness under motor

Blade base? LARGE!

Under motor, the mechanical forces are much greater than under sail. It is when the blades are in motor position and perpendicularly to the surface that we are winning or losing the game... Never under sail or in a boat show ! The width of the contact area of the blade on the body is limiting the flexion torque of its axis.

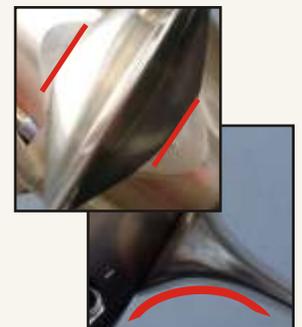
ADVANTAGES : ● Perfect transmission of the blade thrust to the body.
● Low mechanical force on the blades axis and the propeller's body.
● High resistance of the blades to the thrust of the propeller... even if, by accident, the propeller is touching the ground !



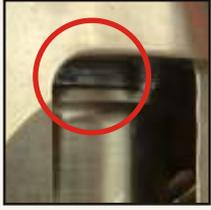
Blade axis? LARGE SIZE!

The blade axis transmits the thrust to the propeller's body without introducing high mechanical force to the blade metal nor to the body. The diameter of the axis and the absence of assembly dramatically reduces the shearing force on the metal.

ADVANTAGE : ● Reliability & increased longevity of the VARIPROP.



Shock absorber



Gear changing? LIMITED SHOCK!

The blades of any feathering propeller are fitted with a thrust surface to set the blade angle to the selected pitch. All are transmitting shocks to the gears while putting the motor in forward or reverse.

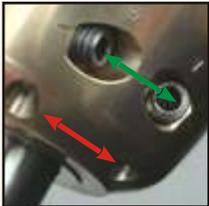
The shock absorber (patented exclusivity of SPW) reduces the shock by 60%. It allows rapid passage forward <=> reverse without damage to the propulsion train, even on large ships.

- ADVANTAGES :
- Reduction of the mechanical force on the thrust blocking surface.
 - Protection of the gears while maneuvering.
 - Less noise while changing gear.

The proof ?

Thrust blocking surface and adjusting screws

The motor torque is transmitted to the blades via the gears, the central boss of the propeller (it is attached to the shaft with a nut), the thrust blocking surface, the adjusting screws, the external body and finally the blade axis. Conversely, the propeller thrust produced by the rotating propeller is transmitted to the boat via the blades axis, the external body, the central boss and the shaft.



Pitch adjustment ? SIMPLE & RELIABLE !

The adjustments are made with screws (green arrow) which are locked by set screws (red arrow). When the head of these screws are fouled by marine growth, what is more simple than removing them with a screwdriver ?

ADVANTAGES :

- Possibility of adjusting forward and reverse pitches separately, without hauling.
- No risk to see the pitch adjusting system completely blocked by marine growth

Thrust blocking surfaces and adjusting screws ? EFFICIENT & RELIABLE !

The shock absorber is dramatically reducing the gear setting shock. Then, the motor-torque is transmitted from the central boss to the propeller's body by the thrust blocking surface and the adjusting screws. We demonstrated (computation sheet available on request) that the security coefficient of the screws and the blocking surfaces are 5 to 10 times greater than when a nice woman is dancing tango with high heels on a concrete floor...

ADVANTAGES :

- No risks of breaking complicated parts.
- In case of possible damage to the blocking surface, simply grind the surface or adjust the pitch again to retrieve the initial settings of the propeller.
- Longevity of the propeller



Gears and teeth : A sensitive question !

The toothed gears turning the blades onto the central boss have two and ONLY two missions : coordinating the overall movement of the blades automatically and giving to all blades the same pitch with a single adjustment system. The teeth are subject to a very low force while pivoting at the gear setting. The gears are NEVER subject to the motor torque nor the propeller thrust

Teeth ? Subject to a RIDICULOUS polemic !

The gears do not play any role while putting the boat in forward. 100% of the motor-torque is transmitted by the adjusting screws and the thrust blocking surfaces. 100% of the propeller-thrust is transmitted by the central boss and the propeller's body which are turning within each other. These two parts are machined with a very small tolerance.

ADVANTAGES :

- The gears are only forcing all blades to be equally pitched at any time.
- The teeth, should they be 2, 2.5 or whatever, are totally sufficient to transmit a near to zero effort to the blades !!!



„ It's over to you now
we'll be delighted to answer your questions:“

Made in Germany

Manufacturing and Distribution by
SPW GmbH Sail Propeller - und Wellenbau
Westkai 58 27572 Bremerhaven, Germany
Tel. +49/471-77047 Fax +49/471-77444
eMail: info@spw-gmbh.de www.spw-gmbh.de