

DUC SWIRL PROPELLER

CARACTERISTICS

PROPELLERS :



This propeller is available in :

- § Two-bladed,
- § Three-bladed.

Diameter :

1 400 à 1 745 mm.

Weight : Two-bladed : 2.570 kg
Three-bladed : 3.375 kg

HUB :



The hub used is a carbon hub identical to DUC FC WINDSPOON propeller, made out of **FORGED CARBON PROCESS** which makes it possible to obtain exceptional mechanical resistances

This propeller was studied to have an « constant speed » effect. The blades are manufactured with part of carbon plies and their design was carried out to obtain maximum strains in torsion and inflection. It's why the constant speed effect is not dependent on the blade distortion but on its geometry and its particular profile.

Because of the extra flat profile and a small cord, we obtain an excellent output as well:

- § In performance,
- § In noise,
- § In consumption.



ADVANTAGES

Thanks to the « constant speed » effect, we have very little variation of the RPM engine between static and dynamic.

This propeller makes it possible to have more performances on the whole of flight to knowing :

- § Better effectiveness on the takeoff and in rates of rise due to the engine speed more raised
- § much lengthening-piece in cruising,
- § A great comfort of use.

TYPE OF BLADE



SWIRL STANDARD and INCONEL blades

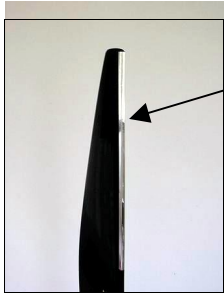
The SWIRL blade is available in two versions :

- § The STANDARD SWIRL BLADE,
- § The INCONEL SWIRL BLADE.

SWIRL STANDARD

SWIRL INCONEL

The **INCONEL SWIRL Blade** has the characteristic to be to protect on the level from the leading edge with an Inconel reinforcement.
 INCONEL is refractory stainless with a hardness of very high surface.



INCONEL reinforcement



APPLICATIONS

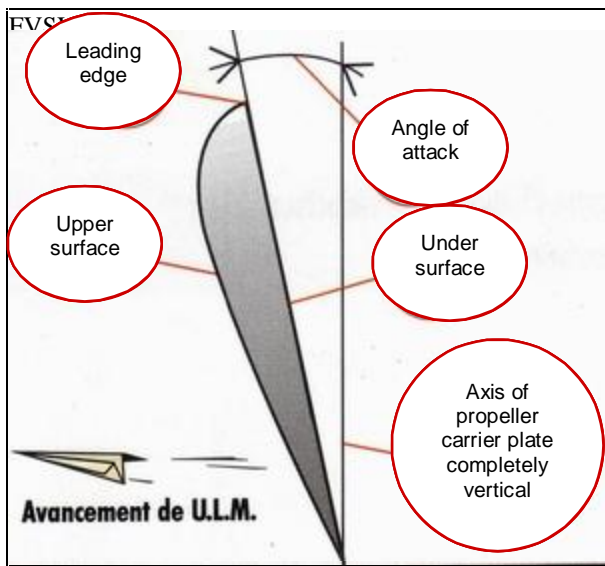
Engine	type	Reducer	Recommended system	Blade diameter
3 TRACTIVE AXES				
ROTAX 912	4 times	2.27	Three-bladed RIGHT tractive SWIRL	∅ STANDARD
ROTAX 912 S	4 times	2.48	Three-bladed RIGHT tractive SWIRL	∅ STANDARD
ROTAX 503 / 582	4 times	2.58 / 2.62	Two-bladed LEFT tractive SWIRL	∅ STANDARD
ROTAX 503 / 582	2 times	3	Three-bladed LEFT tractive SWIRL	∅ STANDARD
JABIRU	4 times	-	Two-bladed RIGHT tractive SWIRL	∅ 1620 mm *
VOLKSWAGEN	4 times	-	Two-bladed RIGHT tractive SWIRL or LEFT according to adaptaion of the engine	∅ 1620 mm *
3 PROPULING AXES				
ROTAX 912	4 times	2.27	Three-bladed LEFT propelling SWIRL	∅ STANDARD
ROTAX 912 S	4 times	2.48	Three-bladed LEFT propelling SWIRL	∅ STANDARD
ROTAX 503 / 582	2 times	2.58 / 2.62	Two-bladed RIGHT propelling SWIRL	∅ STANDARD
ROTAX 503 / 582	2 times	3	Three-bladed RIGHT propelling SWIRL	∅ STANDARD
JABIRU	4 times	-	Two-bladed LEFT propelling SWIRL	∅ 1620 mm *
VOLKSWAGEN	4 times	-	Three-bladed RIGHT propelling SWIRL or LEFT according to adaptation of the engine	∅ 1620 mm *
PENDULARS				
ROTAX 503 / 582	2 times	2.58	Two-bladed RIGHT propelling SWIRL	∅ STANDARD

* For the very fast machines (speed higher than 200 km/h) we advise a 2 blade right tractive propeller with a reduction of the diameter according to the smoothness and the speed of the apparatus

ADJUSTMENT

ANGLE OF ATTACK :

The values which follow are theoretical values and the number RPM engine in statics must be checked.

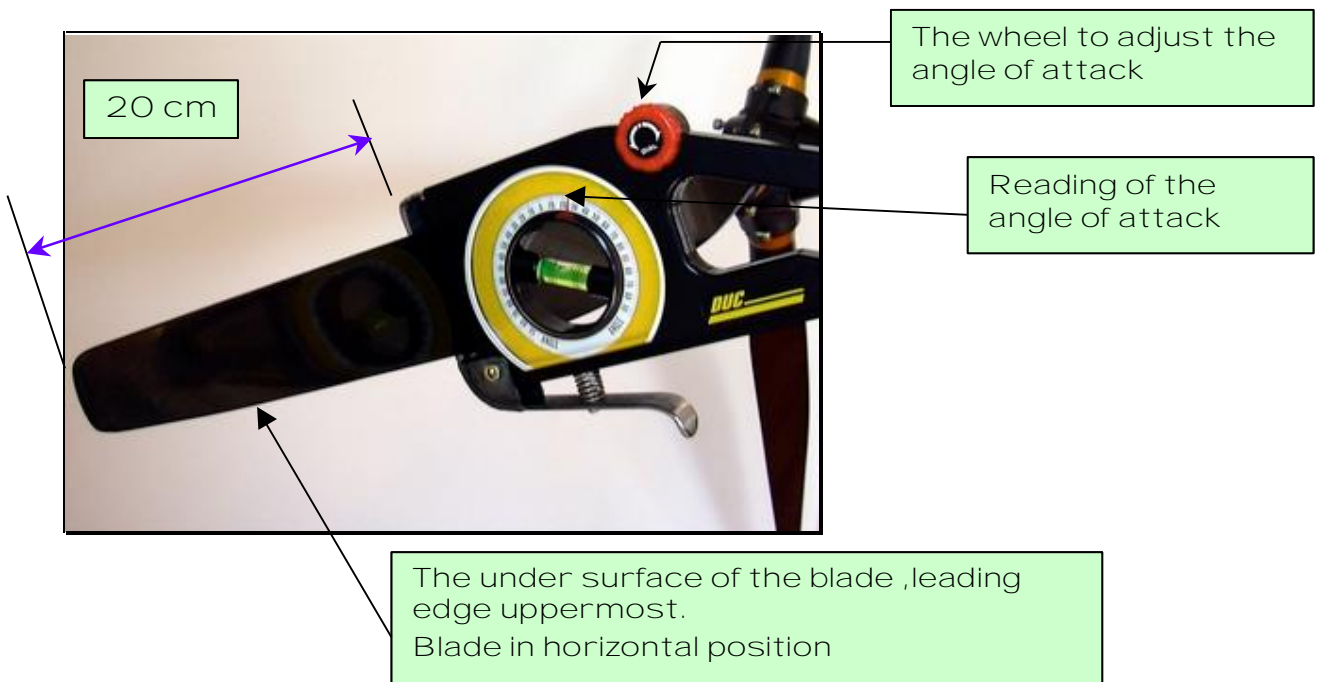


TWO-BLADED		
JABIRU	/	17°
VW	/	17°
503	2.58	16°
582	2.58	18°
503	2.62	18°
582	2.62	20°

THREE-BLADED		
912	/	20°
912 S	/	24°
503	2.62	13°
582	2.62	15°
503	3	15°
582	3	17°

The chock is carried out with the tool for adjustment plated on the under-surface (leading edge in top) to 20 cm of the blade tip. The angle d'attaque is formed by the vertical and the leading edge of the blade. For this, place your ULM so that the carries – propeller plate is perfectly vertical.

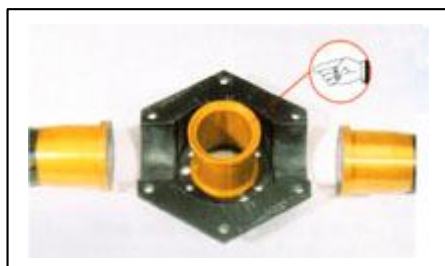
ADJUSTMENT :



ASSEMBLY AND ADSUTEMENT

Upon receipt of your package, make sure that all the parts are included !

- Blades
- 1/2 hub
- spacer
- Bolts (short and long)
- Nuts and washers



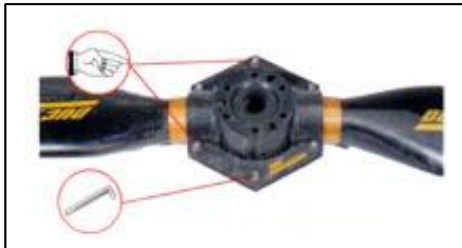
Place one of the half hub on a table.
Put the spacer in the centre of the half hub.



Put the 2 or 3 blades in their slots.
Make sure that the DUC logo is facing you



Put the 2nd half hub over the assembly.



From the back of the hub insert the 6 assembly bolts.
Put on the assembly nuts and do up moderately.



If assembling the propeller spinner,
include the support plate.



Be careful you get the washers in the correct order.



Put the propeller on the reducer, do up moderately.



Position your microlight so that the propeller carrier plate is completely vertical. Measure this with the leveller on the adjusting tool.



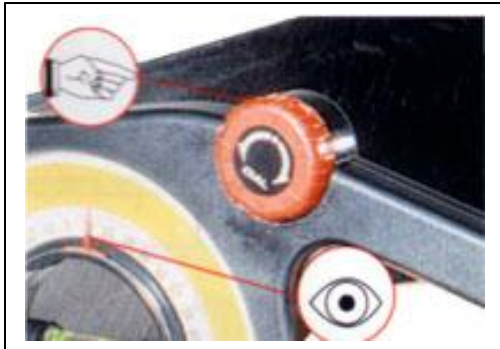
Unscrew the assembly bolts enough to enable you to turn each blade easily in its slot.



Turn the first blade horizontal.



Take the adjusting tool in your hand, press the lever, put the tool right at the end of the Windspoon. Make sure that the tool is flat and steady against the inside skin of the blade, leading edge uppermost.



Turn the wheel with your thumb to adjust the angle of attack.

TIGHTENING
 2.5 Kg/m
 25 Nm



Hold the foot of the blade and turn slowly until the bubble of the tool is completely in the middle and level.

The tightening of the bolts on the propeller is carried out in 2 stages :

- 1st tighten the bolts moderately,
- 2nd tighten with a torque spanner.

Attention

Retighten your propeller after 1 hour of use.

ESSAIS

Tests are important. It is normal to have to carry out several successive adjustments alternating between the ground and the air.

Make sure the blades are correctly orientated and all the bolts are tightened properly to the recommended torques .

SOL

Secure your microlight, put the brakes on, get someone to make sure it can not move. Follow the manufacturer's recommendations concerning safety.

Start up the engine, warm it up.

AT FULL THROTTLE the engine must achieve at least 85% of the maximum revs. recommended for flight by the engine manufacturer.

If this does not happen ADJUST THE BLADES

VOL

Check all nuts and bolts.

TAKE OFF and fly straight and level, vario on zero.

AT FULL THROTTLE the engine must attain the manufacturer's recommended maximum revs. **BUT DO NOT EXCEED.**

If this does not happen ADJUST THE BLADES

Atmospheric pressure	<input type="text"/>	Engine revs.on ground	<input type="text"/>
Temperature	<input type="text"/>	Engine revs. in flight	<input type="text"/>
Humidity	<input type="text"/>	Date	<input type="text"/>

If you note anomalies of assembly or operation, not undertake flight and contact immediately the DUC-HELICES compagny.

The accessories of assembly and the DUC propeller must be assembled in accordance with the technical notes of the DUC compagny.

The non-observance of these data would release from any responsibility the DUC compagny.