

# Aircraft Propeller W 001

Technical description

Operational Manual

Type of the propeller:

Serial number:

Issued by:

Datum:

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## TECHNICAL DESCRIPTION

### **General**

The propeller W 001 is two-blade fixed wooden propeller designed for aircraft and motor gliders powered by two- and four-stroke engines up to 34 kW and max. rpm of the propeller 3300 / min. The propeller is made of ash wood from a block glued from six layers. The propeller is connected to the engine by six bolts through a flange. The surface is painted by a transparent dope, the tips are protected by one layer of the glass fabric laminated by the EPOXY 110.

### **Technical data**

Type	W 001
Direction of rotation	Left / Right
Direction of thrust	Tractor / Pusher
Material of blades	Wood
Number of blades	2
Diameter	1200 mm, +5/-5
Weight	
Max. rpm	3300 n/min <sup>-1</sup>
Airfoil of the blade	CLARK Y

### **Operational limits**

Temperature	-15°C to +45°C
Climatic resistance	N1 acc. to ČSN 03 8805 ST SEV 460 77
Max. cross wind speed at the engine test	8 m/s

Lifetime: at right operation and maintenance according to the real condition of the propeller.

Marking: on the propeller hub there is shown: type, serial number. The logo of the manufacturer is on both blades.

## **INSTALLATION OF THE PROPELLER**

Before the installation, check the integrity of the surface. Verify, that the threads in the engine flange are not damaged and the bolts can be screwed freely, but without excessive clearance. There must be a centering cartridge in the flange of the engine. For fixing of the propeller use strength bolts 8.8. These bolts must go through the openings in the propeller smoothly, but without any excessive clearances.

Check the completeness of the fixing parts, insert the propeller between the flanges and insert the bolts. Put the propeller onto the centering cartridge of the engine flange and screw down the bolts. Step by step, by square way, lightly tighten the bolts. On the end tighten the bolts, again by a square way, by the maximal moment  $M_k = 15 \text{ Nm}$ . Secure the bolts by a wire against loosening.

## **OPERATION OF THE PROPELLER**

After first 10 hours in operation, and then after each 100 hours or once a year check the tightening of the bolts. Release the bolts and again tighten them by a square way by a moment  $M_k = 15 \text{ Nm}$ .

Take care for right adjustment of the engine and its smooth run without failures and vibrations.

The aircraft must not be towed for the propeller. This could create non-defined loads of the propeller and its fixing.

Keep the propeller clean.

Check the condition of the propeller and its fixing and securing before each flight. After the flight clean the propeller and check it. Look for damages, scratches, cracks and grooves.

**WARNING:** Do not start the engine and do not fly if some defect has been found out.

**WARNING:** If the engine is started by hand, give instructions to a person doing it. Agree in advance mutual signals for this activity.

## **ALLOWED REPAIRS**

Scratches or grooves on the leading and trailing edge of the blades caused by grits or sand from the runway not exceeding deepness 2 mm or length 60 mm can be repaired by filling by an epoxy lute and sanding. Minor damages of the surface dope can be repaired by re-painting by acetone dope in order to protect the wood against moisture. On the suction and pressure area of the blade, from 200 mm from the center to the tips, max. 3 repairs are allowed provided they are min. 50 mm from each other, the damages are not deeper than 0.7 mm and the area is not greater than  $1 \text{ cm}^2$ . No repairs can be done in the root part and in the cartridge, in this case the propeller must be repaired at the manufacturer.

In case the callosities of the openings for the bolts exceeding 0.7 mm the manufacturer must approve the propeller for its further operation.

**BALANCING OF THE PROPELLER.**

The balancing must be done in a special jig.

Max. misbalancing, measured on the tip of the blade, is at the horizontal position of the blades 2 gm.

WARNING: If repairs have been done which can influence the balancing, a new check of the balancing must be done. The very balancing can be done only by the manufacturer or by him authorized repair shop.

NOTE: All checks, repairs and modifications must be recorded in the following table:

Datum	Description	Signature