Instructions for use of Kiev prop type 283

1. Description

The Kiev Prop type 283/1800 consists of 3 glass fibre/epoxy composite blades with curved brass leading edges fitted into a central cast aluminium alloy (AK-6) hub.

- Propeller diameter: 1.80 m
- Blade mass: 0.82 kg
- Propeller mass: 3.9 kg
- Radius of blade cg: 0.38 m from propeller axis
- Measured rotational inertia: 4800kg cm^3

2. Limitations

Maximum rotational speed:

- The Kiev Prop 283/1800 is suitable for use in applications where the maximum propeller rotational speed will not exceed 2700 rpm.

Rotational inertia:

- The selected power plant / gearbox combination must also be capable of accepting the rotational inertia of 4800 kg cm^3.

Acceptable applications:

- Known acceptable applications include:
  - Rotax 503/582 engines fitted with C or E type gearboxes
  - Rotax 912ULS
  - BMW R1200 fitted with TakeOff GT-3.2 gearbox
- For other applications consult the aircraft / engine manufacturer or BMAA/LAA Technical offices.
- In all cases approval for fitment will be required from BMAA /LAA for all installations where the Kiev prop does not appear in the TADS/HADS for the aircraft/engine type.

Clearance:

- Care should be taken that the diameter will not cause the distance between the propeller and parts of the aircraft structure or the ground to reduce below the limits defined in BCAR

Section S and as advised by the BMAA/PFA (150mm longitudinal clearance, 180mm ground clearance – nose wheel aircraft, 230mm ground clearance tail dragging aircraft, 25mm radial clearance from flying/landing wires and other flexible components although 100mm for flexwing types and older style fixed wing aircraft due to the flexibility of the structure.

- Clearance between the propeller and the aircraft cowlings may be increased by the use of the optional Kiev Prop spacer.

3. Assembly and pitch setting

Assemble the blades in the hub:

- The propeller blades should be positioned in the hub checking that the root of each blade fits snugly and that no swarf or flashing is preventing correct placement.
- The hub halves should be positioned so that the sides of the hubs with the alignment marks are positioned together.

- Insert the clamping bolts and tension lightly until the blades can just be turned by hand.

Hub orientation / assembly:

- The standard Kievprop hub has one half with a big hole and one with a small hole. The assembly should be done with the big hole on the engine side. This hole is the correct size to fit directly to the Rotax 900 series gearbox flange. The Rotax 503/582 has a smaller flange nose, in this case a Kievprop reducing washer should be used to reduce the hole size.

Engine side of hub

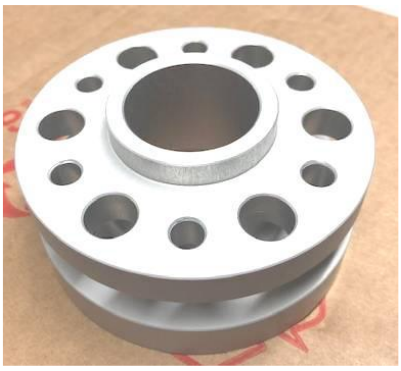
Reducing washer

Washer in position

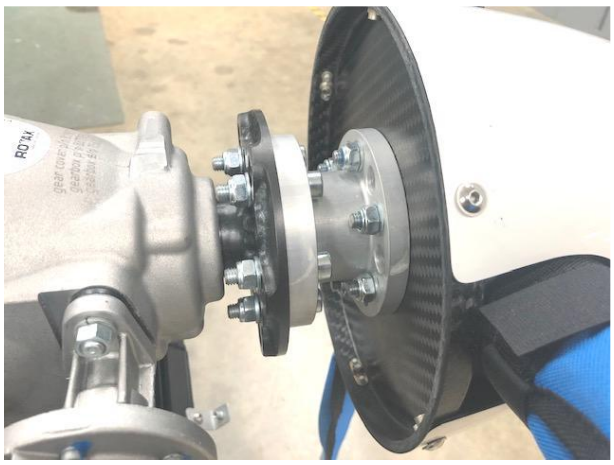
Using a spacer:

- Many installations use a spacer to move the prop forwards for clearance purposes. Kievprop make spacers in a variety of lengths for this.
- The Kievprop spacer attaches to the engine gearbox flange with its own set of bolts (25nm torque). And can be fitted with a reducing washer for the smaller 582 flange nose.


Engine side of spacer – without reducing washer, and with washer fitted.

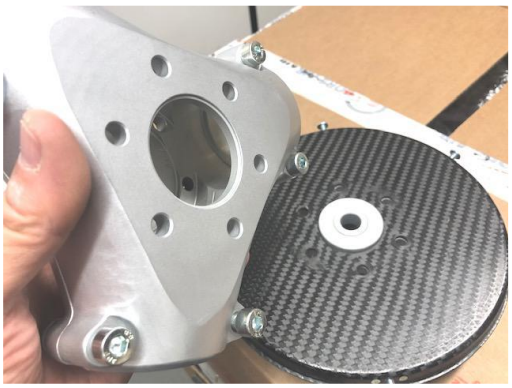



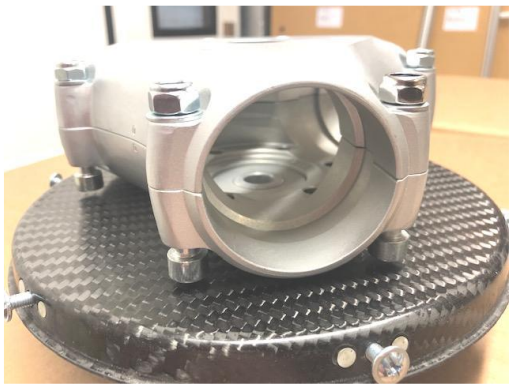
There are two types of spacer design – type 1 (picture above left) that needs a reducing washer to fit to the hub, and type 2 (picture above right)– which doesn't need the reducing washer to fit to the hub.



Using the Kievprop Spinner:

- The Kievprop spinner back plate is fitted between the spacer and the hub. If using type 1 spacer ensure the reducing washer is fitted to the spacer before the back plate.





Pitch setting:

- Pitch setting can be done on the bench, or with the propeller attached to the engine and the attachment bolts lightly tensioned.
- Use the pitch setting tool to set the desired pitch. Refer to the relevant TADS, HADS or MAAN for the correct pitch for your application. In the case of an experimental application consult with the Kiev Prop importers for a starting pitch. The scale on the tool references meters of pitch.
- The pitch setting tool should be positioned in the centre of the hub and checked that the reference flange is sitting squarely on the hub. The pitch of the blade can be read from the scale on the outer end of the tool.
- The best way to set pitch is to squeeze the pivot rivet of the tool in a vice so that it requires some effort to rotate it. Select the desired angle on the gauge the twist the blade to meet the tool flange exactly.
- Set each blade taking care that the pitch is exactly the same.

- Then tighten the clamping bolts to a torque of 15Nm.
- Re check the pitch of the blades and loosen and adjust if necessary.

- With the propeller fitted to the aircraft, tighten the main fixing bolts to a torque of 25Nm. The hub will settle a little as each bolt is tightened reducing the torque on the previous bolt. Keep cycling round the bolts until torque is constant. Some 'creaking' may be heard when torquing the bolts – this is normal.
- Then recheck the outer clamping bolts they will likely need re torquing to 15Nm, because of the clamping force applied by the main bolts.
- Finally re-check the pitch setting.
- Some applications define the pitch setting by maximum static or climb rpm. In this case use an optical tachometer to accurately measure the rpm, as rpm gauges can be unreliable.

Fitting the spinner cone :

- The screws in this go into captive nuts fitted in the back plate, these can be quite tight. Make sure that the Screwdriver used fits well and apply a drop of oil or grease on the screws before insertion.

Safety:

- When running the engine to check prop settings and RPM – apply the same checks and care as if starting for flight, If doing high power running be aware of prop-wash, and debris that might be sucked into your nice new prop. High power running will normally exceed the power of the aircrafts brakes so aircraft will need to be suitably restrained with stout rope / strops around the gear legs to a suitably strong anchor point. Beware of nose-over hazard with tail wheel aircraft!

4. Maintenance

Bolt torque:

- Bolt torques should be rechecked after the first five hours of use, and at 50-hour intervals thereafter.

Balance:

- The Kiev prop is supplied ready balanced. However, after a period of time it is good practice to check the balance. Various proprietary tools exist for this purpose. Adjustments to balance can be made by putting washers under the heads of the securing bolts, but care must be taken to ensure enough thread remains for correct security in the flange / nuts.

Tracking:

- The tracking of the propeller should be within 15mm measured at the tips. Normally the tracking should not change unless the propeller / hub or gearbox has been damaged, or in the case of incorrect assembly with foreign objects trapped in the hub.

Damage:

- Propellers often attract damage from debris ingestion. Always thoroughly inspect your propeller before flight. Damage deep enough to show cut glass fibre strands or cracks in the blade should be considered serious and the propeller not safe for flight.

- Small nicks and abrasions can be repaired using epoxy resin (slow setting Araldite or similar) and automotive paint systems. Always re-balance your propeller after such repair or refurbishment.

Cleaning:

- Soapy water and a sponge are good for propeller cleaning, followed by application of automotive type wax polish with a soft cloth. Do not us strong detergent or chemicals / thinners / Acetone etc.

5. Technical information.

For technical information, contact should be made in the first instance to the UK agents:

Flylight Airsports ltd
Jet stream Hangar
Sywell Aerodrome
Sywell
Northants
NN6 0BN

Tel 01604 494459
Email Engineering@flylight.co.uk