

# Ivoprop Corp.

2615 E. 67<sup>th</sup>. St. Unit E, Long Beach, CA 90805

Tel. (562) 602-1451 Fax. (562) 602-1374

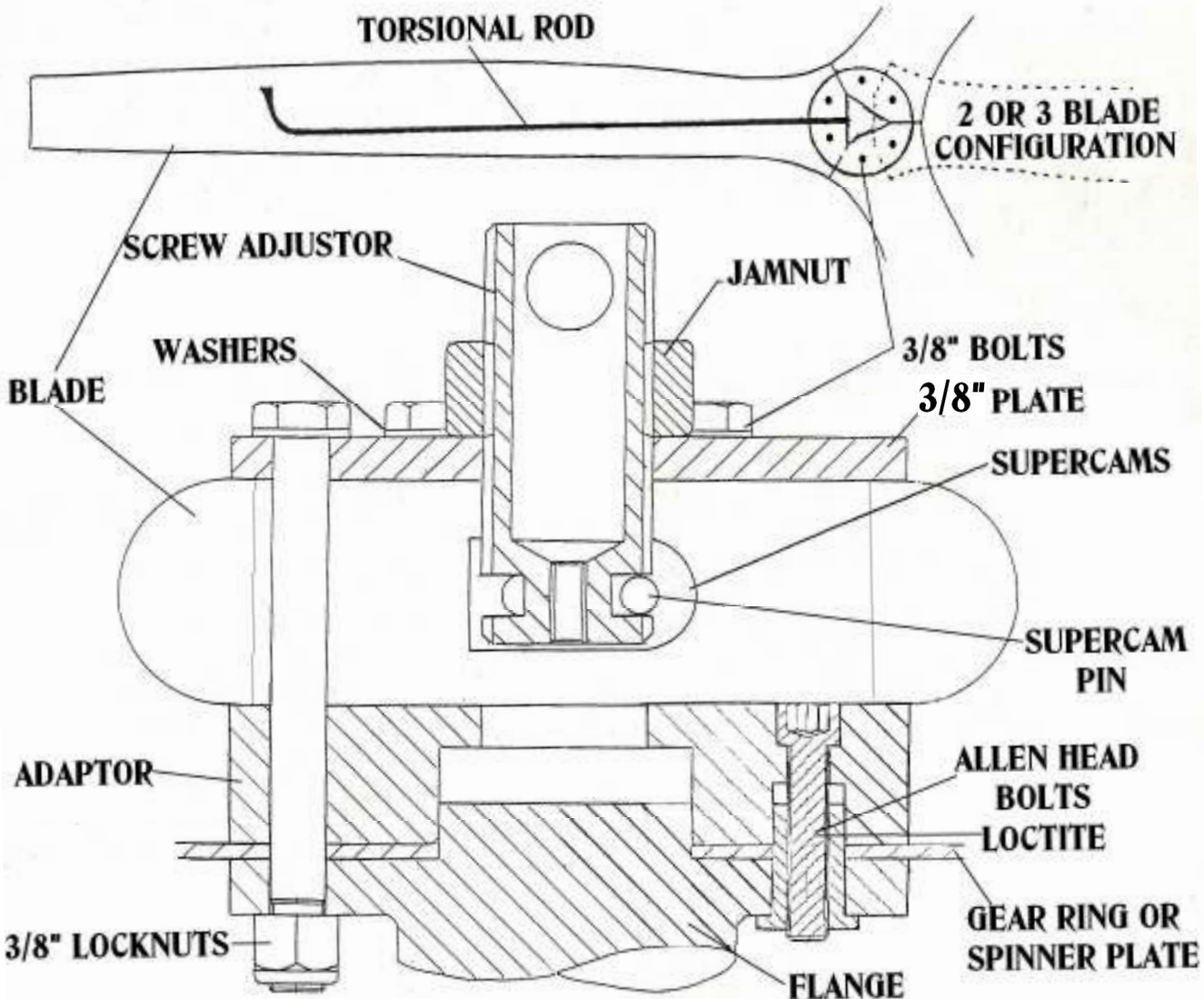
ivoprop@pacbell.net www.ivoprop.com

## QUICK ADJUSTMENT MEDIUM PROP INSTRUCTIONS

PITCH CONTINUOUSLY ADJUSTABLE ON THE GROUND IN A MATTER OF SECONDS BY TURNING THE SCREW ADJUSTOR IN THE CENTER OF THE PROP.

THE PITCH RANGE IS FROM 30° - 90°

HOW IT WORKS : THE SUPERCAM IS WELDED ON THE END OF TORSIONAL ROD. EACH SUPERCAM PIN FITS INTO THE GROOVE IN THE SCREW ADJUSTOR. TURNING THE SCREW ADJUSTOR CAUSES EACH SUPERCAM TO ROTATE AND TURN THE TORSIONAL ROD AND THEREBY TWIST THE BLADE THEREFORE CHANGING THE PITCH.



## **QUICK ADJUSTMENT MEDIUM IVOPROP PROP INSTRUCTIONS ASSEMBLY**

- MOUNT THE ADAPTOR ON THE FLANGE. USE ALLEN HEAD BOLTS AND BLUE LOCTITE OR LOCKNUTS.
- TORQUE BOLTS TO: **(8MM TO 200 INCH X LBS.) AND (3/8" TO 30 FT. X LBS.)**
- INSERT 3/8" BOLT WITH A WASHER THROUGH THE 1/2" PLATE.
- PIVOT THE BLADE SO THAT SUPERCAM PIN IS IN THE GROOVE OF THE SCREW ADJUSTOR.
- INSERT SECOND BOLT WITH THE WASHER.
- MOUNT THE BLADE WITH 1/2" PLATE LOOSELY ON THE ADAPTOR WITH 3/8" LOCKNUTS.
- INSERT REMAINING BLADES AND BOLTS.
- **TORQUE 3/8" BOLTS TO 30 FT. X LBS.**

### **WARNING:**

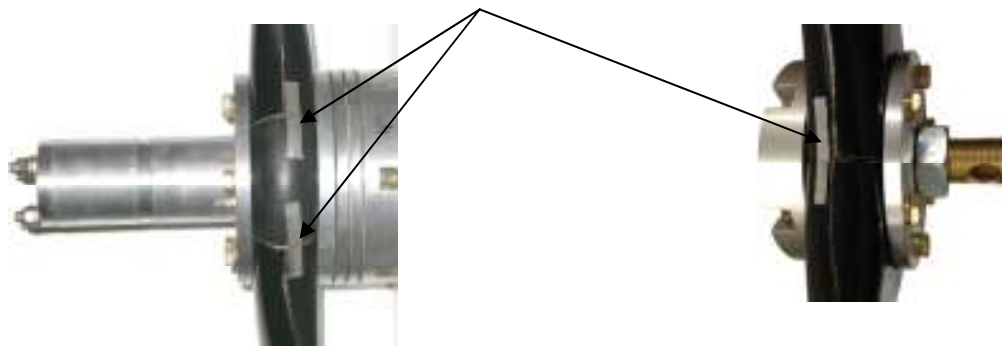
- ❖ SOME PROP ENGINE COMBINATIONS (DIRECT DRIVE, 2:1, 3:1, AND HIGHER REDUCTION RATIOS, 3-CYLINDER OR DIESEL ENGINES) CAN CREATE RESONANCE INTERACTION BETWEEN THE PROP AND THE POWER PLANT.
- ❖ IF THE PROP IS MOUNTED LOOSE AND, OR GETS IN RESONANCE WITH THE ENGINE, THE BLADES COULD MOVE INSIDE THE HUB BACK IN FORTH IN THE DIRECTION OF ROTATION.
- ❖ THE PURPOSE OF INSTALLING AND INSPECTING MOTION DETECTOR STAINLESS STEEL TAPE IS TO DETECT THE BLADE MOVEMENT BEFORE BREAKING BOLTS, BLADES, ETC...
- ❖ GET THE TORQUE WRENCH AND CHECK ITS CALIBRATION BY HANGING A KNOWN WEIGHT ON ITS ARM AND BY MULTIPLYING THE WEIGHT IN POUNDS BY ARM IN FEET. THIS READING SHOULD BE AS CLOSE AS POSSIBLE TO 30 FT X LBS. WE TRIED SEVERAL TORQUE WRENCHES AND MOST OF THEM WERE OFF AND BY A LOT.
- ❖ MARK THE PROP POSITION IN RELATION TO THE CRANK SHAFT ON DIRECT DRIVE ENGINES OR IN RELATION TO REDUCTION FLANGE ON 2:1, 3:1 OR 4:1 REDUCTIONS. THERE ARE 2 POSITIONS TO MOUNT 3-BLADE PROP AND 3 POSITIONS TO MOUNT THE 2 BLADE PROP. THIS MAKES A GREAT DIFFERENCE IN HOW THE PROP AND ENGINE VIBRATE TOGETHER AND EACH POSITION CREATES A TOTALLY NEW SITUATION.
- ❖ RUN THE PROP FOR 1 MINUTE ON THE GROUND, RE-TORQUE THE BOLTS.
- ❖ REPEAT THE ABOVE PROCEDURE UNTIL TORQUE STAYS THE SAME.
- ❖ CUT THE STRIPS OF STAINLESS STEEL TAPE ABOUT 2" LONG AND 3/8" WIDE (TAPE SUPPLIED WITH THE PROP)
- ❖ CLEAN THE AREA AROUND THE GAP BETWEEN THE BLADES OR GAP BETWEEN BLADES AND BLADE BLOCKS BY RUBBING IT WITH CLEAN NAPKIN SOAKED WITH M.E.K SOLVENT.
- ❖ APPLY STAINLESS STEEL TAPE ACROSS THE GAP NEXT AND PARALLEL TO MOLD PARTING LINE. USE A ROUND OBJECT TO PRESS THE TAPE ON THE SURFACE.
- ❖ FOLLOW THIS INSPECTION SCHEDULE TO CHECK IF THE TAPE IS BROKEN. AFTER A SHORT GROUND RUN UP THROUGH FULL R.P.M. RANGE AND THE FIRST 10 MINUTES, 15 MINUTES, 30 MINUTES, 1 HOUR, 2 HOURS, 4 HOURS AND THEN EVERY PREFLIGHT INSPECTION. ALSO FOLLOW THIS SCHEDULE FROM THE BEGINNING IF THE PROP HAS BEEN REINSTALLED. ANYTIME YOU INSPECT THE TAPE, CHECK THE TORQUE ON THE BOLTS DURING THE FIRST 4 HOURS. AFTER THAT, CHECK THE TORQUE EVERY 10 HOURS.

## WARNING CONTINUE:

- ❖ IF THE TAPE BREAKS OR CRACKS REMOVE THE TAPE, CLEAN THE SURFACE WITH M.E.K. AND APPLY NEW TAPE AND START THE INSPECTION SCHEDULE FROM THE BEGINNING. IF THE TAPE BREAKS AGAIN REMOVE THE PROP FROM SERVICE AND CONTACT IVOPROP CORP.
- ❖ THE KNURLED PLATES SHALL BE INSTALLED SO THAT THE KNURLING FINISH ON EACH PLATE IS IN CONTACT WITH THE BLADES.
- ❖ THE KNURLED PATTERN IS 60 DEGREES SYMMETRICAL, SO IF YOU REINSTALL THE BLADES BETWEEN CRUSH PLATES LATER IN A DIFFERENT POSITION, THE IMPRINT ON THE BLADES SHOULD MATCH THE KNURLED PATTERN. HOWEVER (BECAUSE OF MANUFACTURING TOLERANCES) TO GET THE BEST MATCH YOU NEED TO NUMBER THE BLADES AND PLATES AND ALWAYS PUT THE BLADES BACK IN THE SAME PLACE.
- ❖ IF YOU GET A NEW BLADE OR IF YOU GET MIXED UP START THE TORQUE SCHEDULE OVER AGAIN.
- ❖ IT TAKES 5 TURNS OF THE SCREW ADJUSTER EACH WAY TO GO THROUGH THE FULL PITCH RANGE.
- ❖ USE ONLY HARDWARE SUPPLIED WITH THE PROP. NEVER DRILL OR MODIFY THE BOLTHOLES.
- ❖ MAKE SURE THAT THERE IS AT LEAST 5" OF CLEARANCE BETWEEN THE BLADE TIPS AND TRAILING EDGE OF THE WING, RADIATOR, RUDDER, OR WHATEVER BECAUSE THE BLADES ARE DESIGNED TO FLEX BACK AND FORTH MORE THAN WOODEN BLADES.
- ❖ DO NOT CUT THE PROP ANY LESS THAN 52" IN DIAMETER.
- ❖ DO NOT SLIDE YOUR FINGERS ALONG THE EDGES OF THE BLADES, FIBERS MAY PIERCE YOUR SKIN.
- ❖ BEFORE TAKING PROP APART BRING THE SCREW ADJUSTOR TO NEUTRAL POSITION.
- ❖ TO REMOVE THE ADAPTOR FROM THE FLANGE TAKE THE PROP OFF FIRST.
- ❖ REMOVE ALLEN HEAD BOLTS FROM THE ADAPTOR. MOUNT THE PROP BACK ON THE ADAPTOR, WIGGLE THE ADAPTOR WITH THE PROP UNTIL IT COMES OFF.
- ❖ IF YOU ARE GOING TO USE OTHER THAN SKULL TYPE SPINNER MAKE SURE THAT THERE IS AT LEAST 1/4" CLEARANCE BETWEEN THE BLADES AND CUT-OUTS IN THE SPINNER.

***If your aircraft holds u.s. experimental airworthiness certificate you are supposed to contact the F.A.A. FSDO before flying the aircraft. When notified, the F.A.A. inspector can determine if procedure was major change (as defined per far 21.93 and listed in appendix a to part 43) and if any additional inspections or operating limitations are needed prior the flight.***

BELOW 3/8" WIDE X 2" LONG STAINLESS STEEL TAPE APPLIED



SIDE VIEW 2-BLADE ELECTRIC PROP

SIDE VIEW 3-BLADE QUICK ADJUSTABLE PROP

## **Common mistakes when mounting the Medium Ivoprop**

*\*Not applying the proper torque to the bolts*

Do not rely on feel. Get torque wrench and calibrate it by yourself.  
**Torque on 3/8" bolts is 30ft. X Lbs.**

*\*Bottoming the thread of the mounting bolts into the driving lugs or lock nuts.  
Use extra washers if the bolts are too long.*

*\*Bottoming the driving lugs into the counter bored holes in our thick aluminum plate.  
Always make sure there is some clearance between driving lug and bottom of the counter bored hole.*

*\*Not having driving lugs pushed all the way into the flange.*

Torquing the bolts does not generate enough force to pull the driving lug fully in, however the vibration forces do and you loose the torque on the bolts. Always make sure that there is not even the slightest gap between driving lug head and the back of the flange.

*\*Using wrong hardware*

If your center boss is too long or the radius at its base to big to accept our hardware.

*\*If something does not fit or it does not look right or has more holes than you need, do not force it together. Contact Ivoprop Corp. and get the right hardware.*

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