Kiwi Feather Props Ltd - LIMITED WARRANTY

Kiwiprops™
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LIMITED WARRANTY: **VER: 05.2017**

Kiwi Feather Props Ltd. (KFP) and its agents offer the following limited warranties with the purchase of every Kiwiprop unit:

1. **If in the first 30 days following the initial launching of the unit, the purchaser is for any reason not satisfied with the performance of the unit, then the unit may be returned in undamaged condition to the point of purchase for a full refund of the purchase price in NZ dollars net of actual freight charges.**

2. **KFP and its agents warrant that the Kiwiprop™ unit is free from defects in workmanship and material for a period of 12 months from the date of purchase.**

What we will do to correct problems arising from a valid claim under the limited warranty:

To avoid unnecessary costs and delays please first contact KFP quoting the serial # of the unit stamped on the face for warranty assessment. KFP will then advise an appropriate shipment address. All costs of transport of the unit to KFP or their designated agent, including insurance, will be at the cost of the purchaser. This includes any subsequent spare parts purchased.

KFP may elect at their discretion to replace the entire unit or replace the faulty components to return the unit to it's normal function. There will be no charge to the purchaser for this service.

***What is not covered under the limited warranty*:**

While KFP believe the units meet all current operating criteria of the various manufacturers it is the customers responsibility to ensure the units are acceptable to the engine manufacturer.

Neither KFP nor it's agents shall be liable for incidental, consequential or special losses or damages, resulting from the use or inability to use the Kiwiprop™ unit, whether resulting from breach of warranty or any legal theory.

The warranty does not cover propellers that have been improperly installed, misused, neglected or improperly maintained or damage caused by collision or impact with foreign objects, including fishing lines and ropes. Post Jan 1st 2012 (ie Units with a Serial # > 12000) the loss of the entire propeller is not covered under this limited warranty as it is invariably caused by non standard mountings, corroded keys or a failure to following the mounting instructions correctly. Vessel insurance may cover this.

Wear and corrosion are not valid warranty claims. The cost of haul outs, antifouling and other propeller components eg seals, zinc's and cutters are not covered under the warranty.

***Acceptance of the terms and conditions of this limited warranty*:**

By installing the Kiwiprop™ unit you are accepting the terms and conditions of this limited warranty.

If you do not wish to accept these terms and conditions you must not install or use the product but return it to it's original point of purchase for a full refund in NZ dollars net of actual freight charges. The limited warranty and remedy provided is exclusive and in lieu of all other expressed warranties and unless stated herein, any statements or representations made by other person or business are void. The duration of any implied warranty of merchantability or fitness for a particular purpose shall be limited to the duration of this limited warranty.

Unit Serial #:	**Signed:**

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VERSION DATED: 20.05.2023

K3 - CUSTOMER MANUAL

Also available at: www.kiwiprops.co.nz

USE KEYWORD SEARCH FUNCTION OFF WEB SITE

Kiwiprops™

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ALWAYS check our web site www.kiwiprops.co.nz for additional information if required ...

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Refer first to exploded diagram on page 9 below and to the picture of the boss on page 2 ....

You are now the proud owner of an original *Kiwiprop*™ which has been carefully designed and engineered to deliver many years of carefree service on your vessel. There are some very simple recommendations you should be aware of to ensure your *Kiwiprop*™ will continue to deliver trouble free performance in the years ahead.

SHAFTS: ***Refer our web site for video guides to mounting .....***

Before fitting your new *Kiwiprop*™ to a shaft first check that the shaft is free to rotate and can be spun easily by hand to ensure correct feathering. Remove the nut from the Boss of the propeller by releasing the 2 x M8 locking screws. Post 2013 only some shaft units will progressively use Nord-Lock™ lock washers. Ensure the two ramp faces are together. Remove the key from the keyway on the shaft prior to correct mounting checks.

To ensure the key is sized correctly, mount the unit without the key, to ensure the taper is tight, and then again with the key to ensure it is not binding on the keyway which can then be ground down if required. Mark the front face of the propeller on the taper in each case.
All 1.125" and 1.250" units mount 0.250" and 0.625" respectively down from the taper start.
Nuts on SAE 1.250" shafts protrude ~ ½" to fit the spigot extension on SAE standard shafts.

Wipe all mating surfaces clean and lightly smear with a marine grease including both keyways. Check that the taper length will allow the nut to pull the propeller tight on to the shaft. In all cases the boss should protrude ~ ¼" or 6 mm aft of the small end of the taper, which is the SAE / ISO standard, to ensure the nut pulls up on the boss correctly and doesn't first bind on the thread giving only the appearance of correct mounting.

Check the fitting of the nut prior to finally mounting the propeller with key by ensuring the nut will freely go right down the thread. This will ensure the nut will subsequently push the rear face of the boss tightly onto the taper when mounted. Remove any burrs or impediments to the smooth operation of the nut when tightened post mounting. Smear the thread with a marine grease.

Failure to pull the boss onto the taper and key with the nut will result in a loose mounting with subsequent shearing the key and loss of the entire propeller.

A new key will be supplied for all 1 ¼" shafts with one face ground down by 0.030" which allows for a common boss size. Ensure the ground face is mounted outwards. Always replace any key that is old or shows any signs of corrosion. Keys are usually only a brass and will corrode rapidly. The shearing of a corroded key will result in the automatic loss of your new propeller. NB: The key must not protrude aft past the small end of the taper.

SAILDRIVES: ***Refer our web site for video guides to mounting ....*** **Ensure that both internal and external splines are scrupulously clean. Every unit has been pre-fitted to a spline but any burrs or hairs from machining can cause jamming when mounting.**

Check the guard collar with seal shield is on the shaft. ***(Yanmar #196420-09250 – Volvo 851984)***
Check the GF PP nose cone is not binding on the zinc. Units such as Lombardini come with collars and washers which must be mounted. All Saildrives require that the distance from the end of the spline to the face taking the thrust is exactly 3.000". All Saildrive propellers then have bosses which are ~ 3.125" long to ensure they pull up tight on the thrust face before the M16 (M20 for Yanmar SD40 or SD50 Saildrives) nut starts to bind at the end of the thread.

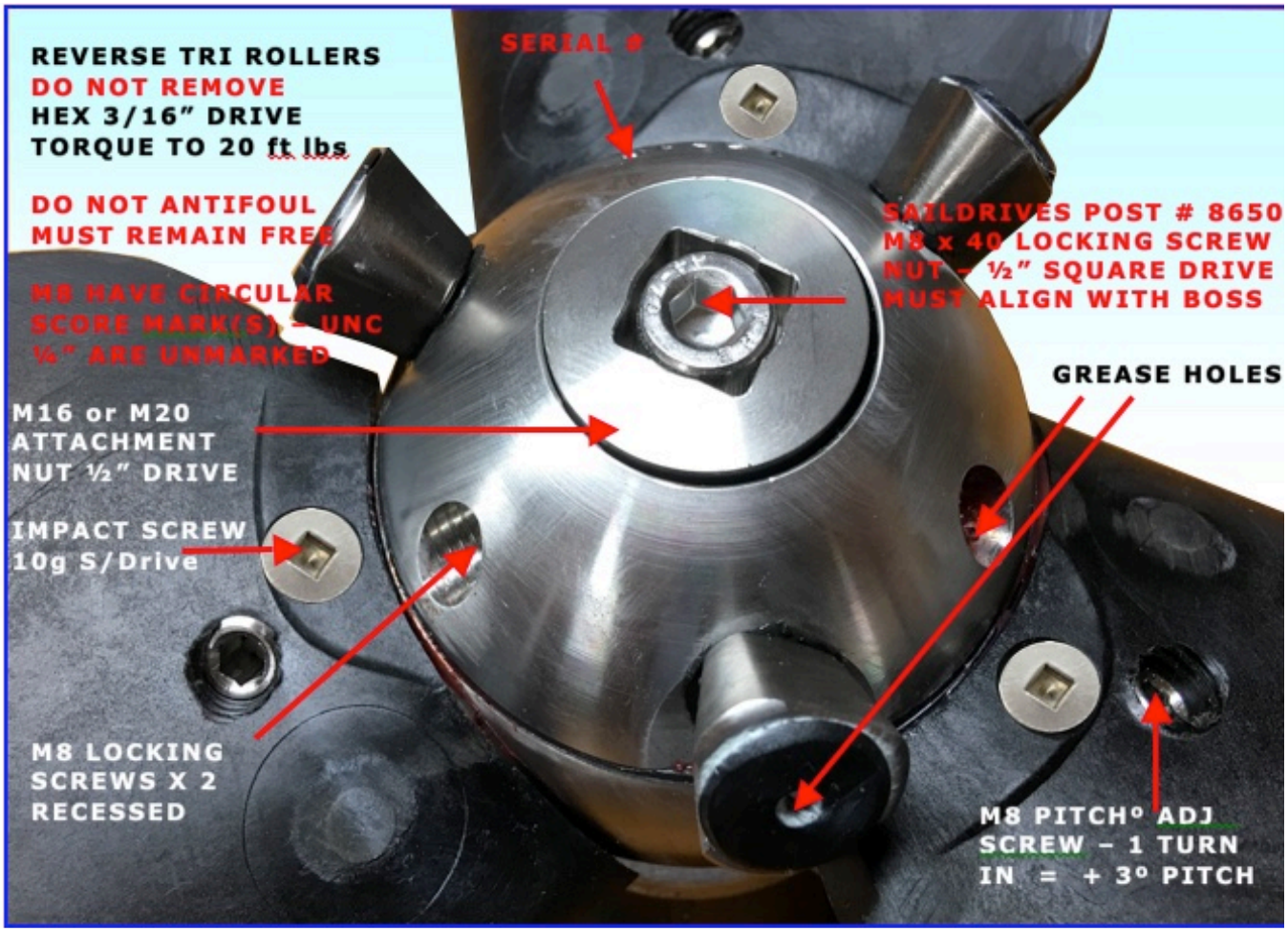
The photograph below shows a boss without the blades attached and clearly identifies the nut with it's ½" square drive recess and the two M8 locking screws that must first be backed off to allow for removal of the nut from the unit.

NB: Always clean, dry and coat both male and female thread surfaces fully with Loctite™.....
Any Medium or High Strength grade is appropriate. Remove the 2 x M8 locking screws. Insert into boss and only tighten down securely once the nut retaining the propeller is correctly locked in. Loctite™ will set underwater in 24 hours.

NB: Failure to tighten locking screws and secure all threads with Loctite™ can lead to the loss of the propeller over time on a Saildrive unit. This is not so critical on a shaft mounting. Saildrives # 8650 have an additional M8 x 40 Fail-safe Right Hand cap screw that passes through the center of the nut into the spline that should also be secured with Loctite

Continued 2 ……

NB: 1.250″ NUTS PROTRUDE ~ 13 mm & ARE SHIPPED WRAPPED WITH TRIMMED KEY



APPLY Loctite™ or equivalent to the M16 or M20 NUT & M8 x 45 Cap screw on all Saildrives. Any Medium or Strong grade is appropriate. Its presence is more important than grade.

DO NOT overtighten the nut which attaches to any standard ½ inch socket driver. This is particularly important on tapered shafts when you need to remove the propeller. Just nip it up using no more than an extra 20 foot lbs of torque or ~ 27 Nm. This is ~ equivalent to the weight of a two gallon or ten liter can of water suspended on your socket driver one foot or 300 mm from the nut.

SAILDRIVE nuts should be tightened to twice this torque – 40 ft lbs or 54 Nm.
On Saildrives - finally fit the M8 Failsafe Cap Screw inside the square drive nut and torque to ~ 5 ft-lbs or ~ 7Nm NB: Cover both Nut & M8 male and female threads fully with Loctite™

NB: Saildrive nuts and their locking screws should be checked and re-tightened at each haul out as Splines by their nature may fret slightly in use and could loosen the locking screws.

To ensure the propeller feathers correctly, first throttle down to an idle, and then place the gearbox in neutral before stopping the engine. The shaft will then slow down as the blades align themselves with the water flow and slowly come to a stop. The shaft will then remain stationary without further attention. This may take 2 - 3 minutes.

Keep the gearbox in neutral or engage forward only once the shaft has stopped when sailing. Do not allow the shaft to rotate continuously as it will generate high wear over time.

CAUTION: ENGINE IDLE ON YANMAR SD20 SAILDRIVES MUST NOT EXCEED 750 rpm …

Please .. *now turn over for future maintenance and pitch adjustment recommendations.*

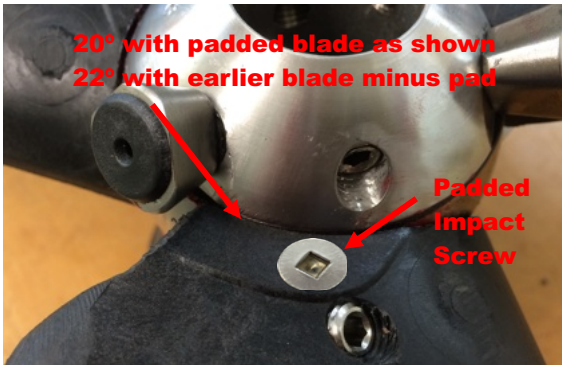
Continued 3 ……

PITCH SETTINGS: **NB: SPARE BLADES ARE SUPPLIED WITH NO PITCH SET UNLESS MARKED**

The *Kiwiprop*™ will have been set at the recommended pitch for your installation based on the engine model number, the reduction gear fitted and the particular characteristics you supplied of your vessel. You may however wish to take advantage of the simple pitch adjustment feature to accommodate the many variations between individual vessels and operating preferences to obtain the optimal motoring performance for your particular requirements. *One turn of the 8 mm pitch screw in a clockwise direction to each blade in turn will equate to 3 degrees of pitch* [not inches of pitch] and substantially increase the power required from the engine and drive train. This will translate to lower engine revs. We would recommend adjustments be made in no more than exact half turn increments to each blade, which has the effect of varying engine revs by some 200 ~ 300 rpm. Each installation is unique and only experience can deliver the appropriate settings and optimal cruising revs for your vessel. A pitch setting of 21 degrees typically equates to a normal pitch of ~ 11 to 12 inches.
[The required Allen key is 5/32" or 4 mm]

The photo shows a padded blade pushed into the forward thrust position to eliminate any slack with pitch set to 20 deg. The aft of the rear blade surface aligns with the SS aft joint line. Allow for any wear showing on the rear surface of the blade.

Add or subtract one degree of pitch using 1/3 rd of a turn = 1 degree of pitch. For example 22 degrees of pitch would be 2/3 rd of a turn in ie clockwise from the 20 Deg reference shown with padded blade. The screws are self locking into the blade.



IMPORTANT: To avoid damaging the blade roots in reverse by exceeding the designed pitch settings when increasing the pitch, first lock the propeller by engaging ahead with the engine stopped. Rotate the propeller by hand into the reverse position against the spring, and then only increase the pitch until the blade comes up against the reversing rollers. *With Triangular rollers – turn the roller to contact the blade with a rounded section between the flats.*

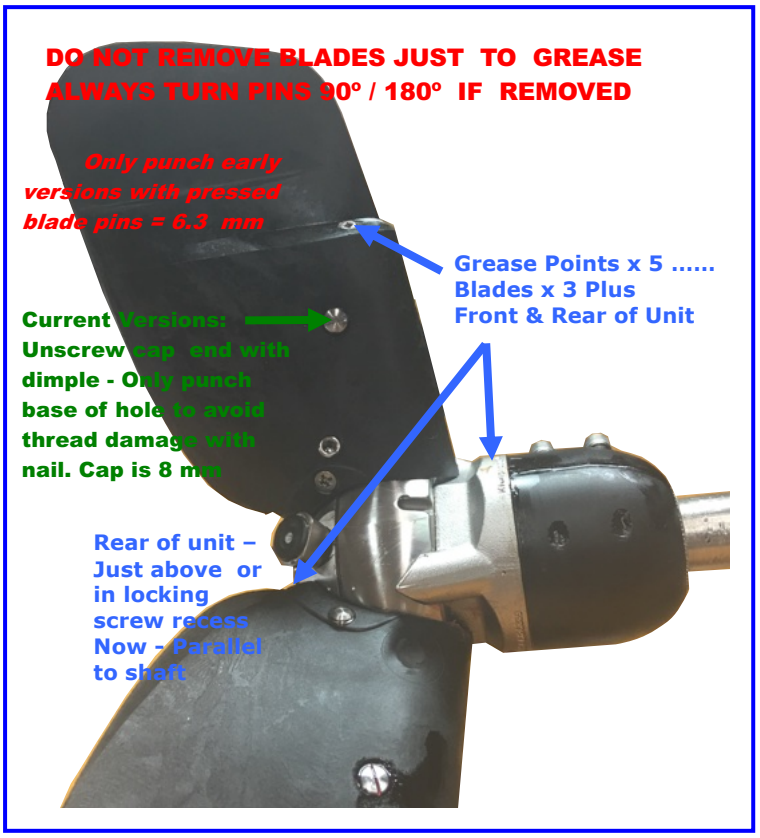
NB: YOU WILL NOT BE ABLE TO EXCEED ~ 23.5° REPRESENTING THE MAX PITCH° AVAILABLE .

LUBRICATION:

The *Kiwiprop*™ contains lubricants sufficient until your next maintenance haul out. Each blade and reverse roller cap (if present) must then be greased via a lubrication point accessed by removing the small Pozidrive stainless screw on the blade face. In addition there are two small grease holes, one very close to the GF PP nose cone in the SS casting that takes the thrust of the pitch screws and one near the outer perimeter of the sphere at the rear of the unit inside the locking screw recess. These have been chamfered to accept a standard needle nosed grease point that we provide with every unit. DO NOT OVER GREASE AND DAMAGE SEALS – JUST FILL – DO NOT FORCE EXCESS OUT. Each of these grease points should be filled with a high quality marine grease: Grade - NLGI No 2: CALTEX Delo ESI has performed well and is readily available.

Check the reversing rollers are free to turn and free up if necessary with CRC. Grease the caps on later model units

Refer to LUBRICATION and GREASING VIDEO on our web site.



WEB PAGE ON BLADE MOUNTING COVERS LATER PIN VERSIONS WITH THREADED CAPS IN DETAIL ……

Continued 4 .....

If operating or moored in very muddy environments or very shallow sandy water such that the propeller is continually operating in a sandy or dirt laden environment will require additional greasing of the blades. This will ensure that they maintain a clean bearing environment to minimise wear over time and ensure the reversing function operates correctly. Saildrive units left unused for long periods will experience zinc chloride deposits from the anode. Any dirt bound in grease will be highly abrasive and may stiffen the blades on their mountings so as to make correct reversing difficult. Reversing requires the blades are free to pivot.

NB: UNITS NUMBERED 6350 - 8500 CONTAIN O-RINGS AT THE BLADE ROOT. SUBSEQUENT UNITS HAVE NEOPRENE V SEALS. BOTH CAN BE DISPLACED WITH EXCESS GREASE PRESSURE. ONLY GREASE UNTIL BLADE RECESS IS FILLED WITH GREASE AND NO EXCESS.

ANTIFOULING:

To maintain the performance of any propeller it is essential to keep both faces, and in particular the tips clean. Barnacles and weed growth will have a serious impact on motoring performance. We recommend painting the whole propeller with a modern ablative antifouling which can be applied directly to the unit. The Zytel™ and GF PP require no special undercoats. While the paint will slowly erode from the tips of the blades over time this approach will still provide the best overall solution to fouling of the propeller. If not using a soft ablative paint that will wear away quickly with any contact from a moving blade, then care must be taken to ensure that the bottom root surface of the blade does not start to bind on the boss from a buildup of antifouling over time. All Saildrives require non copper based antifouling. Always use the same antifouling on the propeller as the Saildrive.

NB: ENSURE NO PAINT RUNS ON BLADES AND THE REVERSE ROLLERS ARE FREE TO TURN 360°

REMOVAL OF BLADES: **REFER TO: BLADE MOUNTING ON OUR WEB PAGE**

Begin by marking each blade 1,2,3 with corresponding marks or reference positions on the boss which will not be removed in any subsequent cleaning operations. This is to ensure your pitch settings are retained correctly. *Units with the later SS 316 investment cast pitch stops which are all identical can accept any blade in any position and need not be numbered.*

Remove the small Pozidrive screws halfway out the face of each blade which are used to grease the unit. Gently tap out with a pin punch of less than ¼" diameter each retaining pin that holds the blades. The blades can now be removed simply by sliding off the pin on the boss. Check for wear and corrosion on these pins which can be replaced if required.

Clean the pins and the interior of each blade carefully with a petroleum based cleaner eg Mineral Turps to ensure any old lubricant which will contain dirt and abrasives is all removed. Any areas where the blades may be binding should now become obvious from any wear patterns. These should be filed or sanded down. This is most likely to occur on the boss where the root of the blades can get caught with antifouling and or barnacles over time.

When both the mounting pin and the blade interiors are clean and dry you are now in a position to remount the blades on their correct pin and check for smooth rotation. Grease each pin hole. Smear a tablespoon of a good marine grease, Shell Nautilus Marine Grease, or similar lithium based, into the bore of each blade and also around the groove on the pin to ensure the assembly is full of grease when complete. Push the blade down fully and surplus grease will squirt from the grease hole, which must be open otherwise the blade will act like a hydraulic ram and become impossible to push back on.

Check the blade has been remounted on it's old pin. Now mount the retaining pin back into the reverse face of the blade from the side it came out of with a new wear face on the pin facing outwards. By tapping gently - reinsert the pin so that it is equidistant from each outer face of the blade. Refer photograph above for illustration.

Be careful to use a gentle striking motion with a small hammer slightly biased towards the leading edge of the blade, which will force the leading edge of the pin towards the trailing edge, to ensure it enters the hole on the opposite face cleanly. [The pin in effect pivots around the leading edge of the hole] Do not force with heavy striking. If aligned correctly it will require no more force to go in than required to take out. This should not be a problem, just a little care and common sense.

Replace the small Pozidrive screws after repeating the above process on each blade.

Continued 5 .....

AUTO ROTATION:

If high speed autorotation occurs when sailing check for freedom of movement of each blade and the presence of foreign objects – typically fishing lines or pieces of rope, flotsam etc that has been picked up by the propeller.

To deal with extreme events such as broaching, falling off waves etc - each unit is biased by modifying the last few millimeters of the blade's trailing edge on one side to provide a slight camber so that any tendency to auto rotate will always be against the normal ahead direction and prevent the internal spring winding up and in effect engaging reverse. Normal operation will be for the prop to slow down and then stop but rotate very slowly above ~ 6-8 knots.

If it continues to turn slowly, there is no problem putting it into forward gear to prevent this – but the shaft must be stopped first. The blades are still feathered. The water flows around the propeller of any yacht are very complex and turbulent. Leeway and disturbances from the shaft and strut make specific predictions very difficult. Eliminating rotation will minimise any potential blade movement and thus wear over time.
NB: DO NOT USE REVERSE TO LOCK THE SHAFT THIS COULD ROTATE THE ENGINE BACKWARDS

IDLE SPEED:

The unit has been designed and tested to engage the smaller blades into reverse position at shaft rpm > 300 rpm and < 400 rpm which accommodates all popular engine and reduction gear combinations. Small engines with high reductions ie > 2.5:1 must ensure they have the idle set correctly to ensure reverse is engaged correctly. Reverse pitch is not adjustable but is always at a maximum and thus provides an immediate engine load which can stall smaller engines. Similarly engines with high idle speeds and low reductions will engage at high shaft speeds and cause harsh engagement as the dog clutch engages in the boss of the unit.

Many Yanmar/Hurth gearboxes are ~ 3.1:1 in reverse irrespective of forward ratio which requires a minimum engine rpm idle of 850 set at the governor to achieve the above shaft rpm. Larger diameter propellers are less sensitive to shaft speed.
Check Oil levels and quality in the gearbox to ensure correct engagement of clutches.

REVERSING FUNCTION:

It is important to understand some of the issues that need to be considered when reverse is engaged with this unit. Refer to our web page Reversing Issues where this is covered in detail.

NB: CHECK GEARBOX OIL LEVEL IS CORRECT TO ENSURE CORRECT CLUTCH ENGAGEMENT

Your Kiwiprop™ will automatically go to the maximum available pitch which is ~ 23.5 deg irrespective of the pitch that the blades have been set to in the ahead position. This is to ensure the propeller will deliver the maximum thrust in reverse at relatively low engine rpm.

The latest Yanmar gearboxes will go to ~ 3.2:1 reduction in reverse irrespective of the ahead ratio and will have very adequate power in reverse. Many of the older boxes have the same ratio in astern that they have in ahead, and in this case, they will be loaded by the difference in pitch between what the propeller is currently set to and the maximum of ~ 23.5 deg.

Some gearboxes, Lombardini for example, while having a 2.6:1 ratio in ahead only have a 2.18:1 ratio in astern, which means that the propeller shaft will turn at a proportionally higher speed in reverse. Couple this with the extra pitch and the engine will be highly loaded in reverse and unable to achieve the same rpm that it can in ahead. It is not possible to design any propeller that is optimal in ahead and reverse for quite different shaft speeds.

All Saildrives have the same reduction ratio in ahead and astern.

Smaller engines that are fully loaded in reverse from the above conditions will not be able to also run a compressor (which can require as much as 4 hp) and also run an alternator which can absorb ~ 1 hp (55 amps x 12 volts = 660 watts) when the battery is low.

Always ensure your freezer / fridge is turned off if you have a small engine, typically < 20 hp and a low reduction (ie high shaft speed) reversing function to avoid overloading the engine when reversing. Higher powered engines will not be affected to the same degree where these loads are a much smaller percentage of the available power.

Continued 6 .....

REMOVAL OF THE UNIT:

If the unit is to be removed from a tapered shaft mounting - this must be done with a puller. Under no circumstances should the unit be removed with a hammer as this will damage the face of the unit and is likely to distort the GF PP nose cone. Saildrives units all mount on a parallel spline that can be easily slid off by hand once the attachment nut has been removed.

Removal procedure is simply the opposite of the mounting sequence.

DISASSEMBLY OF THE UNIT:

If disassembling the unit, which should not be necessary, ensure when pre-loading the internal torsion spring that the blades are held in the reverse position to avoid damaging the spring from over-winding when reverse is subsequently engaged. The nose cone must be sealed with 3M 5200 Fast Cure or SIKA equivalent on the joint lines and under the friction surface which assists in preventing the nose cone turning on the shaft under the torque from the spring. This includes the area under the thrust groove in the boss. Clean all the matching surfaces with Mineral Turps before applying no more than a very light smear of 3M 5200 including the area under the thrust groove to maximise the area of 3M 5200. Clean up with Mineral Turps and allow to dry.

Ensure the alignment marks are now correctly located as per the diagram on page 9.

It is critical to minimize any excess sealant flowing into the internal spring mechanism which when hardened will cause the spring to bind during the reverse function and take the reverse torque on the spring – not the drive mechanism - which will break the spring.

ANNUAL MAINTENANCE:

Whenever the boat is hauled is an opportunity to ensure the propeller receives the following checks to ensure it will continue to operate correctly into the future.

- **Check the main attachment nut and associated locking screws have not moved.**
- **Check the Blade Retaining pins are in place and have not corroded.**
- **Do not use high pressure wash near blade roots which can displace the V seals**

Ensure the blades are free of barnacles and any marine growth. If the blades have been antifouled as recommended this will minimise growth but with the expected wear near the tips these will over time accumulate growth as the paint is ablated away. Any roughness on the blades will interfere with motoring performance. Sanding with wet and dry paper will restore the blades to their original condition. Antifoul as suggested above.

Sand fair any nicks and dings on the leading edge from collision with flotsam.

Check that the spring within the nose of the propeller will return the blades to the feathered position when the blades are forced into the reverse position whilst holding the shaft of the unit to wind up the spring. Refer carefully to the above notes on disassembly.

Check that each of the small outer reversing rollers are free to turn on the small stub shafts. If the rollers are tight they can be freed up with pliers and a CRC or equivalent spray.

ENSURE THE 3 x REVERSE ROLLER HEX HEAD SCREWS ARE TIGHT – USE 3/16" HEX KEY

DO NOT attempt to remove these machine screws - they have been inserted with Loctite and riveted internally so are never intended to be removed. They can only be taken out with heat.

- **File any roughness on the Tri Rollers or Impact screws off to ensure smooth surfaces**

Continued 7 .....

Check that each of the blades is free to turn on it's shaft. Any stiffness here will impact on the overall ability of the unit to feather properly in all conditions. If it feels as if this situation will not be rectified with subsequent lubrication it will be necessary to remove the blade from it's mounting following the instructions detailed above. If the blade becomes free following the removal of the attachment pin – but not the blade then the binding will be under the root of the blade.

Careful observation of the blade and matching surfaces will indicate where the binding is occurring. It could be on the root of the blade from a buildup of marine growth and/or deposits which would need to be cleaned off. It could be foreign material in the surface between the blade and the pin. This would require that both surfaces be cleaned with a petroleum based cleaner such as mineral turps to remove all the grease and any contaminants. With only 0.003" clearance between the surfaces it takes very little to interfere with a smooth action about the pin.

If still binding on the shaft after cleaning - the internal recess will need to be sanded with a piece of sandpaper on a round mandrel such as a piece of dowel or similar to remove any high spots which are causing the interference. Ensure the blade is cleaned thoroughly to remove all traces of abrasive prior to lubrication as detailed in the above section.

As a general guide each blade should fall slowly and smoothly under it's own weight when placed in a horizontal position after it has been lubricated and reassembled following the instructions above for blade removal.

Lubricate each blade in turn plus the nose and aft section of the unit as described in the section on lubrication detailed above. The unit should now be ready for another season.
The more regular lubrication the unit receives – the longer it will last.

TOOLS REQUIRED:

The tools and consumables required to mount the unit are summarised below:

- **½" Square Drive Socket Head**
- **4 mm or 5/32" A/F Hex or Allen Key for M8 Socket Screw**
- **Allen Key for M8 Cap Screw – Saildrives only**
- **Pozidriv PH0 – Fullers 815 Screwdriver for Pozi's in blades**
- **Clean Rags with Mineral Turps or equivalent**
- **Marine grease**
- **Loctite™ or similar *(Loctite™ Medium=Blue or High Strength=Red recommended)***

BOATS STORED IN VERY LOW TEMERATURES:

In some situations around the world where the vessel is stored on the hard over winter – typically where temperatures are below zero for extended periods - we have had reports that when exposed to temperatures as low as – 40º C the blades have stiffened up on their mountings. Blades are shipped with 0.006" or 0.15 mm of clearance on diameter over the mounting pins.

Always check the blades are free and seals not exposed if your vessel has been stored for long periods of extreme low temperatures where water can expand to ice in the blade bearing.

NEW ENGINE WARRANTY ISSUES:

Engine manufacturers correctly require a new engine to reach it's rated max rpm for warranty purposes. Some engines tachometers are quite inaccurate and may also be driven off the alternator where new V belts typically can cause tachometer under reading errors of up to 350 rpm at 3600 rpm actual. Newer engines pick up off the crankshaft to avoid this.

We can only respond to apparent propeller sizing issues with accurate data that has been obtained from a digital tachometer off the engine itself.

The propeller delivered will be sized to achieve rated max rpm as measured by a digital tachometer – not the tachometer supplied with the engine

Continued 8 .....

PERFORMANCE EVALUATION:

Evaluation of any propeller performance is always difficult given the problems of replicating an identical situation for any baseline comparison. Sea state, wind, fuel and water load, current, bottom state, dinghy etc will all contribute to changes in motoring performance.

Typically a new propeller has been fitted over winter and previous data may not be available or other additional changes have been made to the vessel.

It is important to ensure instruments are calibrated correctly prior to making comparative readings. Many engines for example now run the tachometer off the alternator so even a worn v-belt can change engine rpm readouts by effectively reducing the driven pulley diameter.

Using time over distance calculations to obtain boat speed requires an accurate knowledge of any current present.

New boat speed indicators may not be calibrated correctly – or the transmitter may have antifouling coverage affecting readout accuracy.

The average of two consecutive reciprocal runs in opposite directions for a reasonable distance over the same course using a GPS in calm wind and water seems to deliver the most accurate results.

While the first evaluation will always be motoring – we stress that we would expect the benefits from your new propeller to be also manifested in improved sailing performance if you have replaced a fixed bladed propeller and in reversing function if you have replaced a folding type propeller. Sailing performance comparisons are even more difficult to quantify.

Remember that all feathering type propellers have flat blades with constant angle from the tips to the blade roots. Other types have progressive blade angle where the angle varies from high at the blade root to low at the tips. The pitch at the tips of any feathering unit will thus be higher than on a fixed or folding type unit. At low engine and boat speeds you may notice a slightly different noise coming from the propeller which goes away as soon as the engine rpm are increased. This can be caused by slight cavitation off the tips of the blades. As boat speed builds the effective pitch decreases and the unit begins to operate in it's normal design range. This is exacerbated by high shaft angles and thus does not generally occur on Saildrives.

CUSTOMER FEEDBACK:

We would appreciate receiving feedback from each customer after using their Kiwiprop for a period. In particular data on maximum and cruising rpm with corresponding boat speeds and the relative performance of the unit with the previous propeller installation allows us to continuously refine sizing recommendations.

Comments as to how the unit performs can be e-mailed to: kiwiprops@xtra.co.nz

Always consult our web page at www.kiwiprops.co.nz for additional information if required

Kiwiprops™

Contact Address of your Kiwiprop™ Dealer

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Continued 9 .....

Kiwiprops™

Early UNC ¼" Reverse Roller Screws are unmarked on upper surface.

M8 screws have circular score mark on upper face to distinguish from ¼" UNC

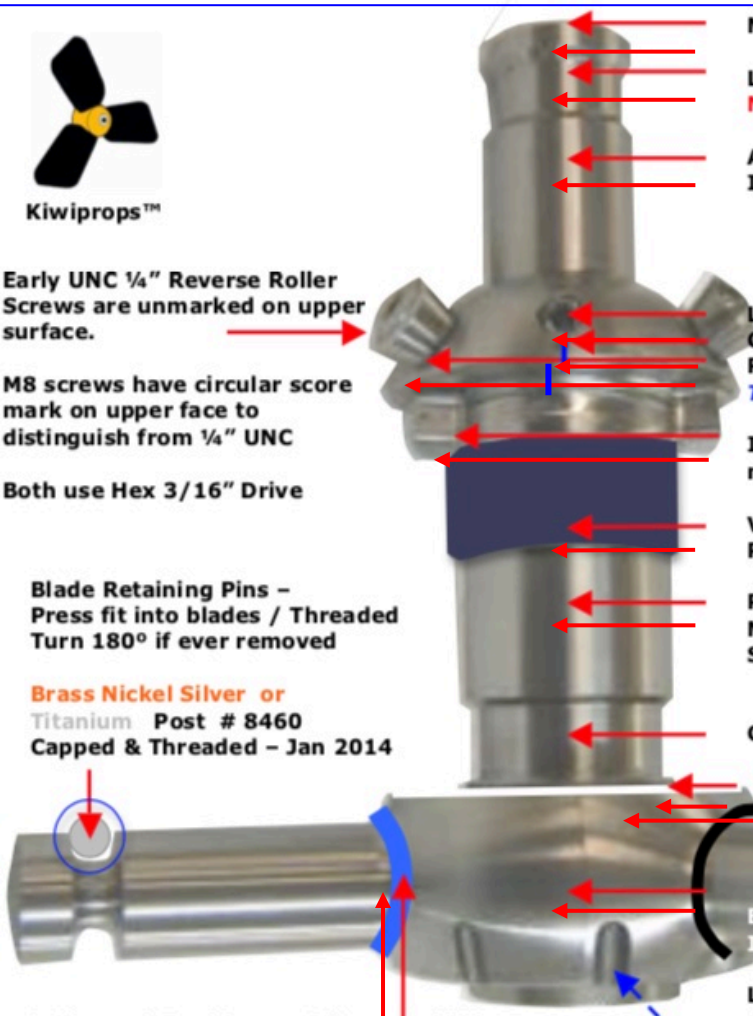
Both use Hex 3/16" Drive

Blade Retaining Pins –
Press fit into blades / Threaded
Turn 180° if ever removed

Brass Nickel Silver or
Titanium Post # 8460
Capped & Threaded – Jan 2014

O-Rings 2.5 x 25 mm - Prior to # 8500

V Seals Post # 8500 – Blue or Cream



M8 x 45 Failsafe Locking Screw [Saildrives]

Locking Groove accepts 2 x M8 316 set screws
Not present on 1.250" units

Attachment Nut – ½" Square Drive SS 316
Internal Thread dimensions as required.

Locking Screws (2 x M8) lock Nut to Boss
Grease Passage – Aft end of unit
Reversing Rollers x 3 – SS 316 now M8.
Triangular rollers now fitted to all units

Internal drive dogs x 2 transfer torque to the matching dogs recessed in blade carrier.

Vesconite Sleeve - Black under Blade Carrier
PETP Sleeves are white – Pre ~ 2008

Propeller Boss – Attached to Shaft
May be Splined or tapered internally.
Stainless Steel 316 Grade

Groove holds matching spigot in Nose Cones

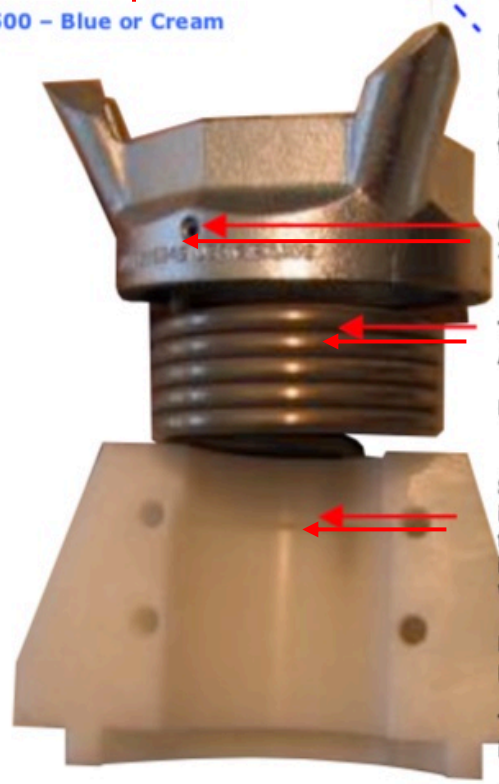
Rear Washer PETP = White pre 2008 or
GF-PP = Black Vesconite

Bronze AB2 Post ~ 2023

Blade Carrying Assembly – Mounts on Boss
Internal dogs allow 100 deg of rotation

Legs carry each blade with pin pressed into groove at end of each leg. SS 316.
Latest versions are threaded with cap.

Pitch Stop – Mounts into grooves on above.
Pitch screws in each blade contact this.
Carries forward thrust of propeller thru to the Nose Cone. This engages groove in the boss to transmit forward thrust to shaft.



Grease Hole – Forward end of unit.
Investment Cast from SS 316 Grade

Torsion Spring ex SS to return the Blade.
Assembly to the feathered position

Left Handed units have Right Handed Spring.

Saildrive GF PP Nose Cones (split) with identical internal shape fair the streamlines for either a Shaft or various Saildrive installations. Black is GF Polypropylene
White either Acetal or PETP – both superseded

Locates the tail of the torsion spring to provide the preload tension

Transfers forward thrust via spigot to groove in the Boss above

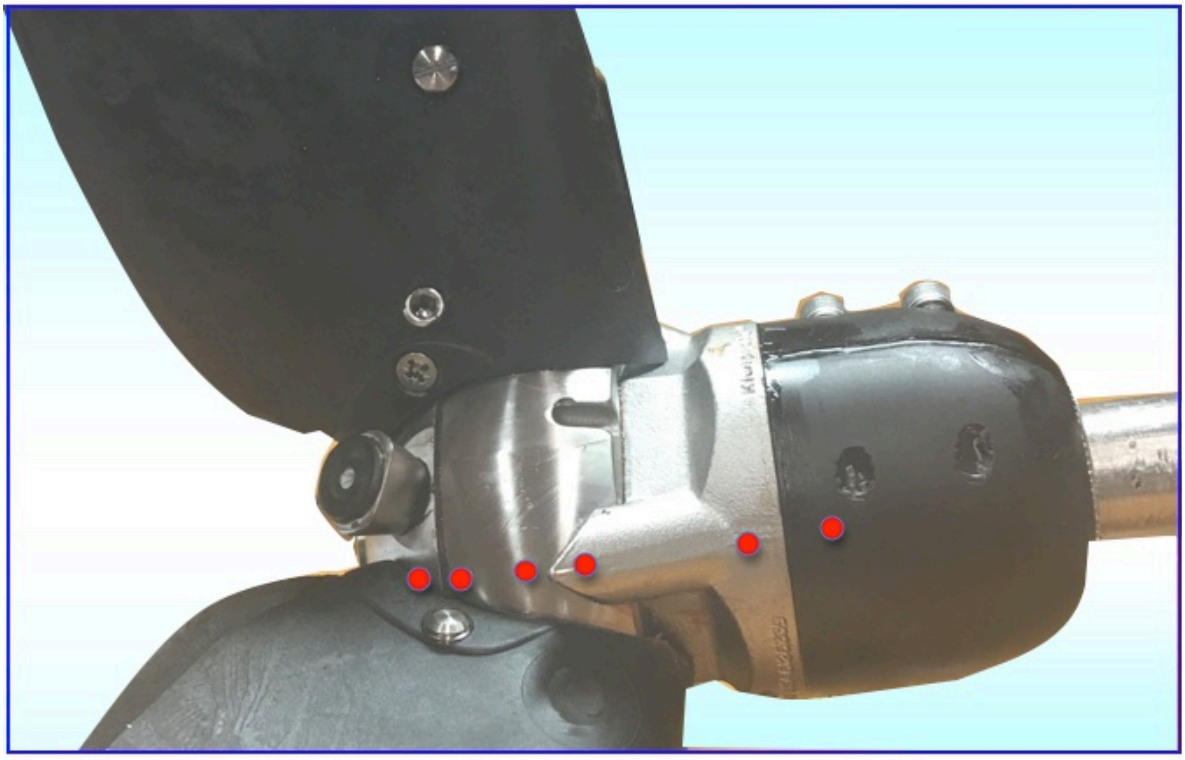
Split for assembly and to allow the two halves to be tightened with 4 x SS 316 cap screws to prevent rotation over knurled boss surface

Continued 10 …….

To assist with users in a situation where users have dis-assembled the unit for some reason and now need to ensure it is assembled correctly - a series of 5 pin punch marks is made down the length of the unit as shown in the picture below plus a small recess in the Nose Cone.

These extend from the Boss to the Blade Carrier down the leg of the tripod that is in line with these marks and then to the small hole drilled just as an indentation on the nose cone adjacent to the mark on the tripod.

The correct re-assembly of the unit will require that all these marks are re-aligned after final assembly including the correct pre tensioning of the torsional spring inside the unit.



WARNING: Customers are strongly advised not to attempt to disassemble the unit unless this becomes absolutely essential. Re-assembly of all the components coupled with the need to ensure sealant is inserted into the nose cone whilst at the same time preloading the internal torsion spring makes for a tricky operation, particularly if no stub shaft is available to hold the unit whilst these operations are completed.

In the absence of a stub shaft to hold the unit during assembly - it will be necessary to mount the unit on the actual shaft or spline which can then be locked by engaging the gearbox

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FEATHERING – MOTORING TO SAILING:

To ensure the unit feathers correctly when getting underway after hoisting sail the following series of actions should ensure the unit always feathers correctly.

- ***Hoist the sails and get underway with the motor still running in gear***
- ***Throttle down to idle rpm whilst still in gear***
- ***Sail with the engine in gear at idle for about 30 secs this gives time for the water flows to nearly align the blades with the stream lines – but still not fully feathered***
- ***Take the unit out of gear and leave in neutral going forward***
- ***Switch the engine off***
- ***Leave in neutral initially then lock in gear***

The unit should then remain feathered with each blade aligned to a minimum drag position. The unit may tend to rotate slowly in a reverse direction but is still feathered.

On long passages - if the unit is rotating very slowly in reverse as designed - with the small foils that bias any motion into a reverse rotational direction – engaging gear will reduce any movement of the blades " flapping " a little up and down on their mounting pins due to shaft angle and / or leeway. Any continuous movement over time, even if lubricated and with little forces involved will involve wear – albeit at very low rates.

CAUTION: Avoid engaging reverse to lock the shaft as were the propeller to encounter flotsam or seaweed - there exists the possibility that it could engage fully and then operate like a fixed propeller.

This would then construct a scenario where the engine could be rotated in reverse.

Unless you are very confident that the vessels exhaust will never be underwater or you have a fully compliant anti-siphon water riser with air break to never allow for water to be sucked back into the motor under any circumstances with reverse rotation – Do not engage reverse to lock the shaft.

K3 BLADE SIZE CODES: ***– NB: Same blades on a larger K4 unit will be 1" greater Ø.***

Blades are marked near the outer trailing edges with a code to indicate blade size:

No Mark:	**19.50"**	**Very Large blades with Ø = 20" @ tips**	
Small Line:	**18.50"**	**No mark:**	**17"**
One Dot:	**16.50"**	**Two Dots:**	**16"**
Three Dots:	**15.50"**	**No Mark:**	**14.50" – Very small blades**