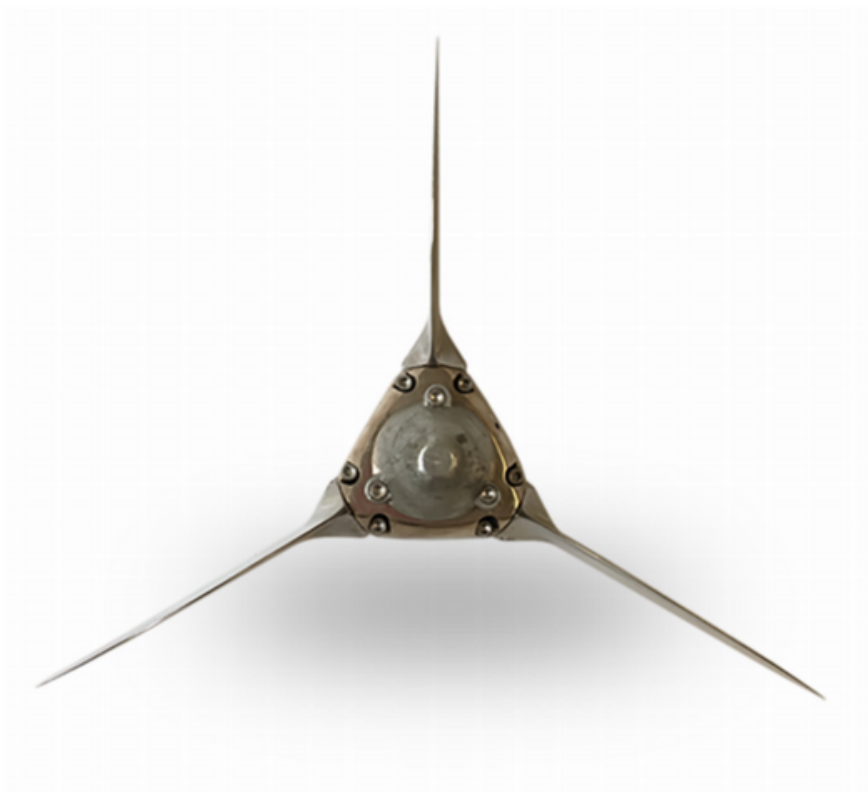


HYDRALIGN SELF-FEATHERING PROPELLER

APERTURE B MODEL



Your Propeller Details:

Propeller Number _____

Diameter _____

'R' Hand or 'L' Hand _____

Number of Blades _____

Pitch in Inches _____

Shaft Size _____

Key Size _____

Pinion Gear Setting + or - _____

Nut Torque _____

Installation

1- Remove the old propeller and key, clean the shaft taper with scotch brite or similar.

2- With no key installed, mark how far onto the shaft the new propeller hub will slide. (Mark on the shaft at the forward end with a fine marker).

3- Fit the stainless key steel supplied to the shafts key seat (or if the original key is stainless steel it may be used).

4- Slide the new propeller hub onto the shaft with the key installed.

- If the hub reaches the mark made in step 2 proceed with the install.
- If the hub does not reach the mark made in step 2 mill/file/grind the key until the hub will reach the mark made in step 2. (The height of the key is the most likely reason for the hub not reaching the mark)

5- Install the nut using a torque wrench to tighten (torque setting is noted in the propeller details). DO NOT OVERTIGHTEN THE PROPELLER NUT.

6- Lock the nut with the split pin supplied, this may require a hole to be drilled through the prop shafts thread.

7- If you are reinstalling the propeller after a pitch adjustment pump the body full of grease - refer to "greasing your propeller". Propellers are shipped full of grease.

8-Install the anode with the three M6x30 SHCS supplied.

9- Check the propeller moves freely from the forwards to reverse position. If not, the most likely causes are.

-The split pin, nut or shaft end is binding with the inside of the anode.

-The propeller has been over tightened onto the propeller shaft or the taper is a poor fit. If so, contact our office for advice.

Assembly Notes

-The AB propeller can be set to be left or right hand rotation and to a large range of pitch upon assembly. Before disassembling the propeller care should be taken to be sure the current hand and pitch are recorded.

-The marks aligning the propeller blade to the body for right and left hand rotation are set at the datum "0" pitch setting and will not line up perfectly when other pitch settings are used.


-If the blades are inserted into the body one blade gear tooth either side of the correct position it will be obvious on assembly as the Blade/Body datum marks will not line up.

-If one blade is out by one blade gear tooth it will be obvious when the propeller is put into the feathered position.

-It is easiest to assemble and disassemble the propeller on the bench rather than installed on the prop shaft. (although in very tight apertures on-shaft assembly may be required).

-Whilst great care is taken in determining a diameter and pitch most suitable for the efficient operation of the propeller, the ultimate pitch setting is the responsibility of the purchaser.

Pitch chart

		Pitch in inches for equivalent blade angle																	Aperture			
		Plus or minus number of splines in gear from blade angle of 18°																	B			
angle in degrees	-16	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16					
	3.0"	4.8"	6.7"	8.6"	10.5"	12.3"	14.2"	16.1"	18.0"	19.8"	21.7"	23.6"	25.5"	27.3"	29.2"	31.1"	33.0"					
	1.6	2.6	3.6	4.7	5.8	6.9	8	9.1	10.2	11.3	12.5	13.7	15	16.2	17.5	18.9	20.4					
	1.8	3	4.2	5.4	6.6	7.8	9	10.3	11.6	12.9	14.2	15.6	17	18.5	20	21.6	23.2					
	19.5"	1.9	3.1	4.3	5.5	6.8	8	9.3	10.6	11.9	13.2	14.6	16	17.5	19	20.5	22.1	23.8				
	20"	1.9	3.2	4.4	5.7	6.9	8.2	9.5	10.9	12.2	13.6	15	16.4	17.9	19.5	21	22.7	24.4				
	20.5"	2	3.3	4.5	5.8	7.1	8.4	9.8	11.1	12.5	13.9	15.4	16.9	18.4	20	21.6	23.3	25				
	21"	2	3.3	4.7	6	7.3	8.6	10	11.4	12.8	14.3	15.8	17.3	18.8	20.4	22.1	23.8	25.6				
	21.5"	2.1	3.4	4.8	6.1	7.5	8.9	10.2	11.7	13.1	14.6	16.1	17.7	19.3	20.9	22.6	24.4	26.2				
	22"	2.2	3.5	4.9	6.3	7.6	8.9	10.5	11.9	13.4	14.9	16.5	18.1	19.7	21.4	23.2	25	26.9				
	22.5"	2.2	3.6	5	6.4	7.8	9.2	10.7	12.2	13.7	15.3	16.9	18.5	20.2	21.9	23.7	25.5	27.5				
	23"	2.3	3.7	5.1	6.5	8	9.5	11	12.5	14	15.6	17.3	18.9	20.6	22.4	24.2	26.1	28.1				
	23.5"	2.3	3.7	5.2	6.7	8.2	9.7	11.2	12.8	14.4	16	17.6	19.3	21.1	22.9	24.7	26.7	28.7				
	24"	2.4	3.8	5.3	6.8	8.4	9.9	11.4	13	14.7	16.3	18	19.7	21.5	23.4	25.3	27.3	29.3				
	24.5"	2.4	3.9	5.4	7	8.5	10.1	11.7	13.3	15	16.6	18.4	20.2	22	23.9	25.8	27.8	29.9				
	25"	2.5	4	5.5	7.1	8.7	10.3	11.9	13.6	15.3	17	18.8	20.6	22.4	24.3	26.3	28.4	30.5				

Propeller diameters

Disassembling the propeller

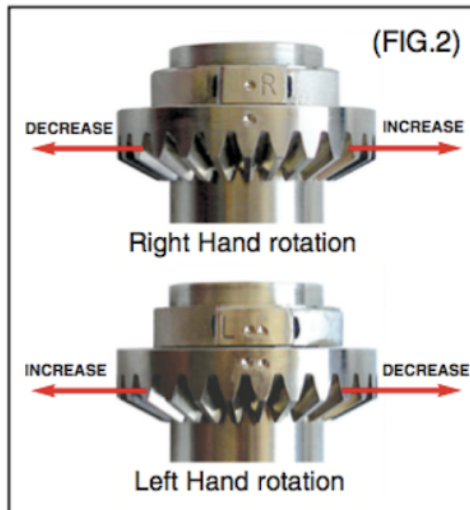
- Sit the propeller on the bench with the rear (nut/anode) side of the propeller facing upwards.
- Remove the six M8 SHCS holding the propellers body together.
- Lift the rear (anode/nut) side of the propellers body away.
- Remove the 3 blades.
- The hub can now be lifted from the forward side of the propellers body.

Pitch setting

Indexing pinion gear from positions shown in FIG.2 gives greater or less pitch. Counting each spline away from the datum position gives the pitch setting.

Indexing the gear in the same direction of (of the propeller) rotation increases pitch and is considered a PLUS setting.

Alternatively indexing pinion gear in the opposite direction of rotation (of the propeller) decreases pitch and is considered a minus setting (FIG. 2).



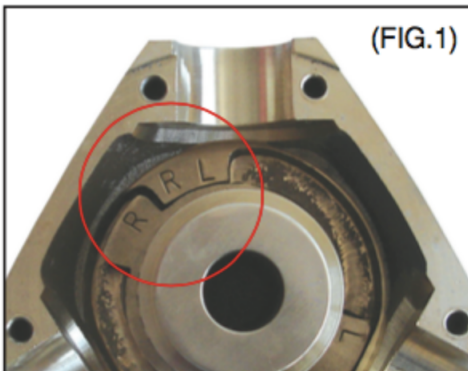
Alignment of dimples(lines in later models) on hub and gear provide a '0' pitch setting.

Hub-body assembly

When reinstalling the hub into the forward body care needs to be taken to position it in the correct rotation for the hand of the propeller.

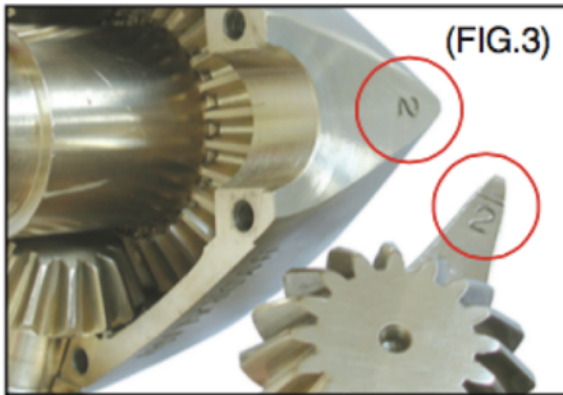
For a right hand propeller the R on the hub stop must be against the R on the forward body stop. (see example in Fig.1)

For a left hand propeller the L on the hub stop must be against the L on the forward body stop.



Blade Assembly

It is essential that the blades are assembled in the numbered sockets that coincide with numbers on the blades (FIG. 3). A mistaken assembly will result in the propeller being out of balance.



With the hub in the correct location in the forward body (as above) the blades can then be inserted taking care to put them in the matching numbered journals and in the correct position (with the blade datum in the 12 o'clock/uppermost position as in FIG.4) .

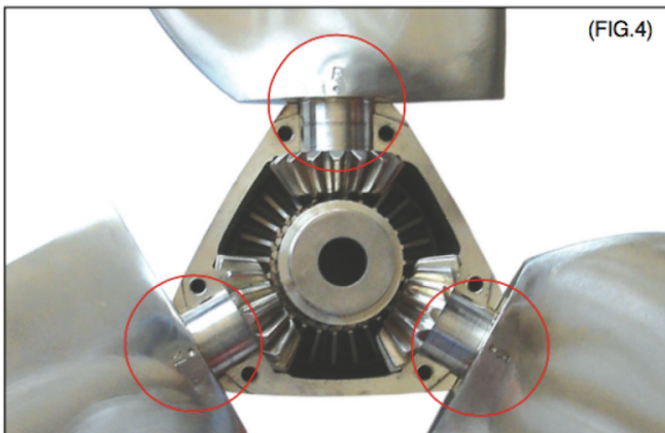
For right hand propellers the datum next to R stamped on each blade should be at 12 o'clock. FIG.4

For left hand propellers the datum next to the L stamped on each blade should be at 12 o'clock.

For confirmation of the correct position of the blade - the datum on the blade will align with the datum on the rear body when it is installed. Although the datum is marked at "0" pitch setting and will be slightly different if a +/- pitch setting is used.

The rear housing can now be slid into place after applying a good quality marine grease liberally. The body must be aligned using the datum on the side of the body or in later models the blade numbers. The six socket head screws should be tightened to a torque setting of 15-17 N/m.

NOTE - the blade/body datums are marked at "0" pitch setting and will be slightly different if a +/- pitch setting is used.



NOTE: the propeller in Figure 4 is set up for right hand rotation. If it was for left hand rotation you would see the L stamps.

Should the engine RPM under load be less than desired, the pitch should be reduced by indexing the pinion gear on the drive hub in the opposite direction of the shaft rotation.

Conversely, should engine RPM under load be more than desired and half speed not achieved, the pitch should be increased by indexing the pinion gear on the drive hub in the same direction as shaft rotation.

Propeller Care

Always reduce engine speed to idle before engaging forward or reverse gear. **Do not 'SLAM' from forward to reverse gear.**

Your propeller should be greased every year, fill until grease oozes from the bearing journals.

We strongly recommend using Propspeed to coat your propeller. This should be applied with the blades in the feathered position.

NOTE - Applying Propspeed to the flat surfaces around where the blade enters the body should be done minimally if at all as it can prevent the free movement of the propeller.

Greasing your Propeller

-Remove the anode.

-Put two of the anode retaining bolts back into the holes they came from finger tight to block the holes.

-Install the m6 grease nipple into the third anode hole and pump the body of the propeller full of grease. The body is full when grease oozes from bearing journals and or the body joint.

-Remove the grease nipple and anode rotate the propeller from the forward to the reverse position to remove excess grease. (it will come out of the anode holes)

-Reinstall the anode.

We recommend using Penrite marine grease which can be purchased from our online store at jbceng.com, along with spare grease nipples and retaining bolts if required.

Product Warranty

Hydralign provides a guarantee of three years from date of invoice against any manufacturing defect that leads to the products failure. This applies to repairs to the propeller, NOT to haul out, install, removal or transport of the propeller.

Hydralign does not assume responsibility of install, removal or freight of the product to our works or a dealer for warranty claims to be assessed.

Hydralign's product warranty is void if the damage is deemed to be a result of:

- Collision
- Improper use or abuse
- Incorrect installation
- Lack of maintenance (greasing and anode replacement)

Any warranty claim will require the owner to organise the removal and return of the prop to our workshop or a local dealer. Local dealers can only repair minor damage, any major damage will require return to Hydralign.

Hydralign takes great care in calculating the correct pitch of your propeller to either match that of an existing propeller or to specifications supplied.

However, Hydralign does not take responsibility for final pitch adjustment, this remains the propeller owners responsibility.

Operation

Your propeller will behave much like a fixed blade propeller when under motor. **Caution must be taken not to shift from forward to astern gear above idle RPM.**

There are two methods of feathering your propeller depending on the type of gearbox you have.

Mechanical gearbox

Once you are under sail stop the engine and shift the gear lever into the reverse position. This will lock the propeller shaft and the propeller will feather.

Hydraulic gearbox

Once you are under sail stop the engine with the gearbox still engaged in forward gear. This will offer enough resistance on the propeller shaft to feather the propeller.

Depending on variables of hull shape, installation angle, hull speed etc your propeller can be used to regenerate power when under sail if you have a Hybrid or Electric drive.

Initially try to run your propeller shaft in forward drive immediately prior to regeneration. In most cases it will stay in the drive position and regeneration can take place.

If the above does not work whilst under sail engage the drive in reverse. The propeller will not feather from the reverse position and will regenerate.

Notes



george@jbceng.com

(61-2) 9188 0825

4/1 Bradly ave

Milsons Point, NSW, 2061

Sydney, Australia