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## BEARING REPLACEMENT INSTRUCTIONS

### APS-H5 Sailandrive (3-blade) TAB SCREW ROLLER BEARING

This instruction sheet will accompany your Autoprop bearing replacement kit. You must follow these instructions to ensure that your Autoprop provides reliable and trouble free service. **WARNING.** Do not attempt to change your bearings without these instructions. Should you have any difficulties with following our procedures then you should contact your Autoprop dealer for assistance and quote your AP serial number.

#### Tools required for bearing replacement

Autoprop peg spanner

(Code: [APPEGSPANNER])

Autoprop lock screw spanner

(Code: [H5LSSPANNER])

Autoprop nut spanner

(Code: [H5NUTSPANNER])

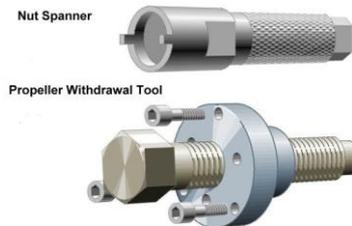
Torque spanner and socket to fit Autoprop nut spanner

Small flat blade screwdriver

Thread locking compound

Grease gun

Pliers



#### Blade Removal

We recommend that you remove your Autoprop to carry out the bearing replacement. Working on the Autoprop held in a vice makes this operation easier, cleaner and faster.

1. Remove grease channel screws (1) (7) on all three blades and discard.
2. Fit the peg spanner into the retaining cap (2) by matching up the pegs on the tools into the slots on the cap. Unscrew the bearing cap (2) anti clockwise. Leverage on the end of the peg spanner may be required initially to “crack the seal.”
3. You now have access to the bearing mechanism. Release the tab on the tab screw (4) bent down into the locking nut (5) Using the tab spanner fitted to the slots release the screw, note that the thread is left hand (**clockwise to release**)
4. Fit the nut spanner into the slots on the locking nut (5) and release by turning anticlockwise. You may need to apply some force as the locking nut (5) is originally factory fitted using thread-locking compound.
5. With the locking nut (5) and the tab screw (4) fully removed from the assembly, you are now able to lift off the blade. You will need to rotate the blade whilst still applying a lifting action as you need to release the hydraulic pressure created by the residual grease.
6. With the blade detached from the hub clean off all the excess grease. A paint brush works well with some solvent.
7. Remove the taper roller bearing (6) by pushing it out. The bearing may just drop out but the track may need some assistance by tapping it lightly with a screwdriver and mallet.
8. Discard the seal (8) by levering them out of the blade using pliers.
9. Remove all the stainless steel 6mm ball bearings (9)
10. Clean up the hub and blade tracks and remove all excess grease.
11. Repeat this procedure for all three blades.

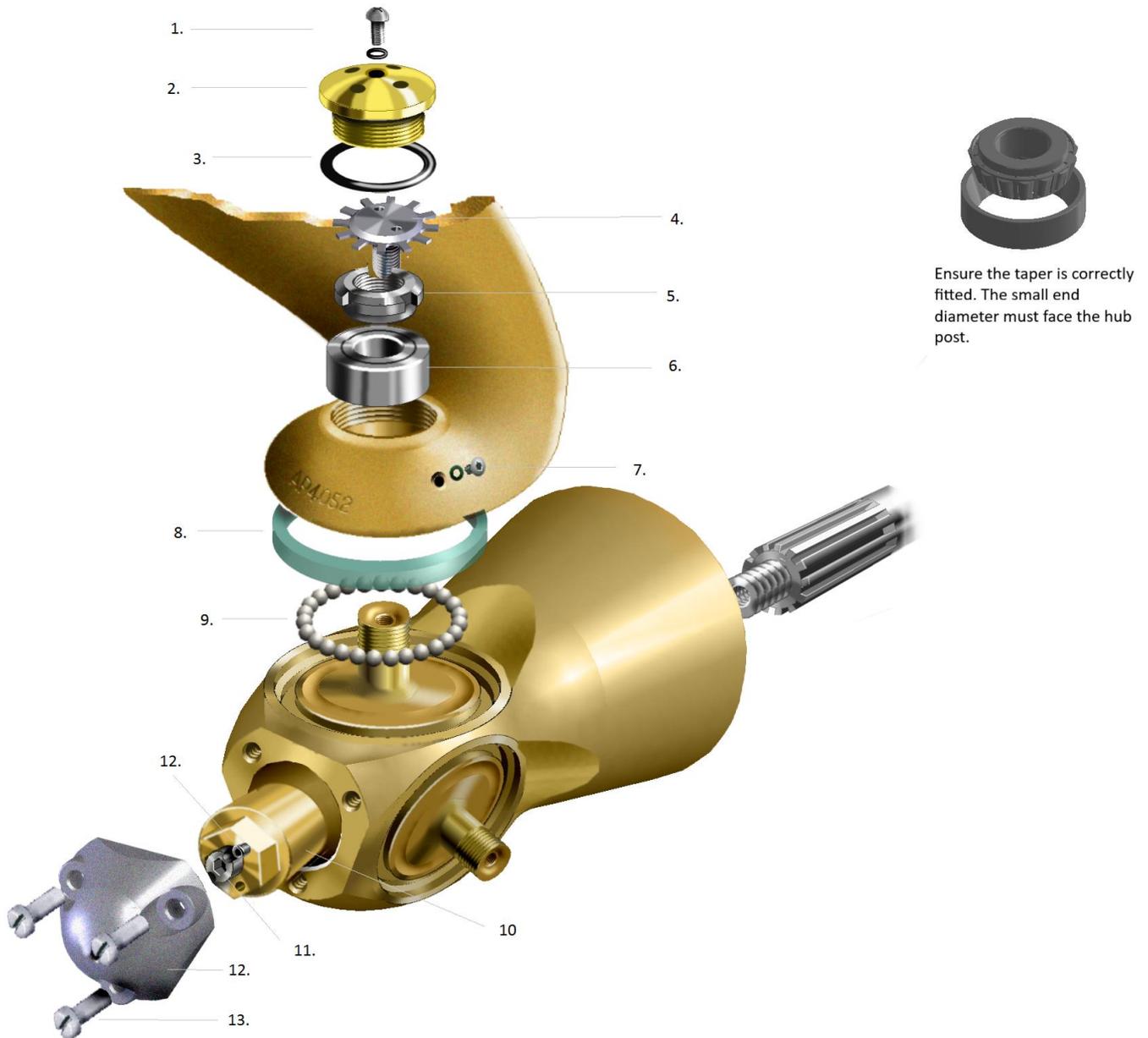
## Blade Assembly

**Lay out all component parts required for assembly and check against parts list. Make sure that they are all clean and that no foreign bodies fall into the assembly whilst fitting the new parts.**

- 1 Clean the hub and blades thoroughly; ensure the grease holes (7) in the blades are clear. Ensure the base face of the seal grooves in the hub are clean, this is the seal location face and must be thoroughly clean and damage free.
- 2 Fit the outer half of the taper roller bearing (6) into the blades; check it fits all the way to the bottom of the bearing bore and that the large end of the taper is facing upwards.
- 3 To fit the seal (8) into the blades, you will require a smooth radiused surface. In the factory we use a 40mm ground bar screwed to the bench. Your shaft would do perfectly for this operation. First start fitting the seal by hand pressing into the blade, when you can't press it any further place the blade seal face onto the smooth radiused surface. Press the blade onto the surface and rotate the blade about the bore centre until the seal is fully fitted into the blade. The seal lip should be approximately 5mm above the blade face and there should not be any deviations to the lip (no wrinkles.) Discard the seal should any damage occur.
- 4 The 6mm diameter stainless steel balls (9) must now be positioned in the ball track on the hub. It is important that when all the balls are positioned there is a gap. If the balls are touching all the way round the track remove one ball (23 balls on each track)
- 5 Ensure both nut and post are free from grease. Locate the blade over the hub centrally. Locate the inner part of the taper roller bearing (6) over the hub-threaded post and into the outer track fitted earlier.
- 6 Fit the nut using the thread-locking compound supplied. Ensure that the thread-locking compound does not enter the bearing. Tighten the locking nut (5) using a torque spanner fitted to the nut spanner. Set the torque spanner at **10.nm** and tighten until there is no rocking movement but the blade rotates freely. Spin the blade by hand to settle the bearings and repeat the torqueing and spinning procedure until the nut does not move, check again for rocking movement but ensure it still falls under its own weight.
- 7 Screw the left-hand threaded tab screw (4) (anti-clockwise) into the centre of the hub post aligning the slot in the locking nut (5.) Please note thread locking compound starts to cure as you use it so complete the above procedure without delay.
- 8 Bend the tab washer (4) into the slot on the locking nut (5)
- 9 Repeat this assembly procedure on the other two blades and double check the tab screw is bent into the nut slot.
- 10 Use the peg spanner to fit the caps into blades using thread-locking compound on the threads, ensuring the compound does not run into the bearings; tighten the cap down fully. Use some leverage on the peg spanner if necessary
- 11 Fit the grease gun and nipple to the bearing cap (2) not the blade. Start pumping grease into the assembly rotating the blade at the same time to distribute the grease evenly. Pump until grease flows freely from the blade without any air bubbles. The grease may also exhaust from the seal.
- 12 Remove the grease nipple and fit the M5x6 screws (1) and (7) into the hub and blade. Repeat this operation with the remaining two blades. The Autoprop is now assembled. All blades should rotate smoothly but with light resistance caused by the seal fit.
- 13 Ensure you use the correct grease or a direct equivalent, corrosion and waterproof grease, maker's name,(S.K.F.) type.(l.g.w.a.2)

### Parts required for bearing replacement

Position	Part No	Qty	Description
1&7	M5X6BUTHDSSA4	6	M5 x 6.0mm Button head Screw Stainless Steel A4
2	H5RBC	3	H5 Roller Bearing - Bearing Retaining Cap
3	M35.00X02.00'O'RINGNITRILE70	3	35.0mm Inner Dia x 2.0mm Section "O" Ring Nitrile 70 Shore
4	H5RBTS	3	H5 Roller Bearing Tab Screw
5	H5TSLN	3	H5 Tabscrew Locking Nut
6	BEARING30203J/2	3	Taper Roller Bearing 30203 J/2
8	H5LS	3	H5 Roller Bearing Autoprop Seal
9	M06.00BALLSS316	69	6mm Ball Bearing Stainless Steel 316 Grade 100
10	APSN(M16X2)*	1	APS Autoprop M16 x 2 Threaded Shaft Nut
11	APSLB	1	Saildrive Scalloped Locking Bolt
12	M5X10SKHDCPSSA4	1	M5 x 10mm Socket Head Cap Screw Stainless Steel A4
13	M6X16CHHDNY	6	M6 x 16.0mm Cheese Head Screw Nylon



\* Note Yanmar SD 50 and 60 use M20x2 thread form