

# Toyota 2AZ-FE: Unlocking VVT Phaser Hubs

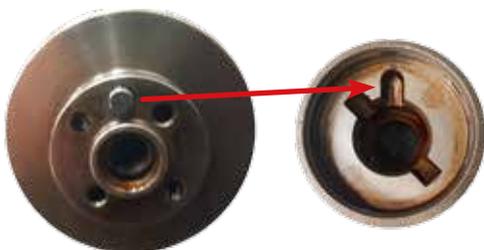


All Head Services have had numerous calls for technical help regarding fitting the inlet camshaft VVT (Variable Valve Timing) phaser hub to the camshaft once they have been removed.

The VVT hub is locked by an internal pin which is fed by oil pressure through the camshaft. It is essential to make sure that the hub is in the UNLOCKED position before it is bolted to the camshaft.

The procedure to unlock the hub is as follows.

1. Check to see whether the hub is locked or unlocked by checking if the dots on the front face of the hub. If they are aligned, the hub is LOCKED. If the dots are about 30° out of alignment, the hub is UNLOCKED, and it is OK to be fitted.
2. If it is LOCKED. Mounted the hub onto the camshaft temporarily, with the bolt finger tight.  
**NOTE:** Make sure that the dowel pin at the end of the camshaft is aligned with the correct slot in the hub. It must engage with the rounded slot, not the two square ones. **See below.**



Make sure that the dowel fits into the rounded slot in the phaser hub

Tape up the journals then apply air pressure to the closest hole.



3. Tape the oil supply journal of the camshaft with insulation tape. **See above.**
4. The oil pressure hole for unlocking the camshaft is the closest hole to the cam gear approximately at 90° clockwise from the oval hole on the rear of the hub
5. Poke a small hole in the tape to access the oil hole.
6. Apply approximately 20 psi air pressure to the oil hole (Cover with a rag as oil will squirt out!).
7. The VVT hub will usually turn with the air pressure to the unlocked position, if not turn the inside of the gear assembly anti-clockwise.
8. Check that the hub is in the unlock position and that the dots on the hub are not lined up. You should be able to move the hub in the advance and retard position easily.

**NOTE:** if you move it too far it will relock and you will have to repeat this procedure.

We would like to thank Geoff, from All Head Services, for sharing this practical information and photos [www.allhead.com.au](http://www.allhead.com.au)

9. Tension camshaft bolt to 54 Nm.
10. With the bolt tight, you can now rotate the hub clockwise all the way and that you hear the pin lock the hub.
11. The camshaft can now be fitted to the engine.
12. Confirm that the hub is LOCKED before installing the timing chain.

For more information on the 2AZ-FE engine log on to Tech Online, or call the VACC's Technical Advisory Service.



When the two dots are aligned the hub is LOCKED. When the dots are about 30° out of alignment the hub is UNLOCKED.