

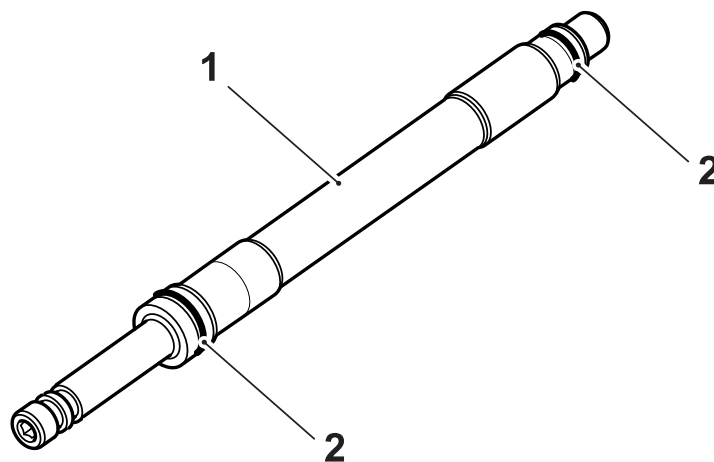
Front Balancer Shaft - Installation

WARNING

Before starting work, ensure the motorcycle is stabilised and adequately supported. This will help prevent it from falling and causing injury to the operator or damage to the motorcycle.

Note

- **To ensure a correct relationship, the balancer shaft must be installed in a specific orientation relative to the crankshaft.**
1. Check T3880039 - Idler Gear Timing Pin is fully inserted into the idler gear, and that the camshaft to idler gear timing is correct.
 2. Fit a new O-ring to the grooves at each end of the deadshaft.



1. **Deadshaft**
2. **O-rings**

CAUTION

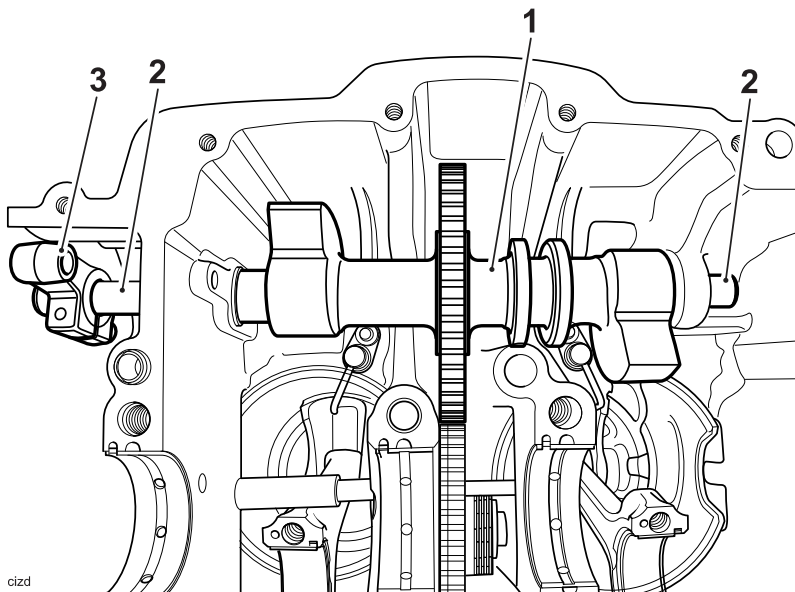
The balancer shaft gear is designed to mesh with the crankshaft gear.

Correct adjustment of the balancer shafts is critical to the performance of the engine and comfort of the rider.

Failure to correctly adjust the balancer shafts may cause serious engine damage and a poor rider experience.

3. Lubricate the balancer shaft, needle roller bearings and O-rings with clean engine oil.
4. Fit the balancer shaft into the crankcase as noted during removal.

5. Support the balancer shaft and noting its orientation, slide the dead shaft through the balancer shaft and into the upper crankcase.

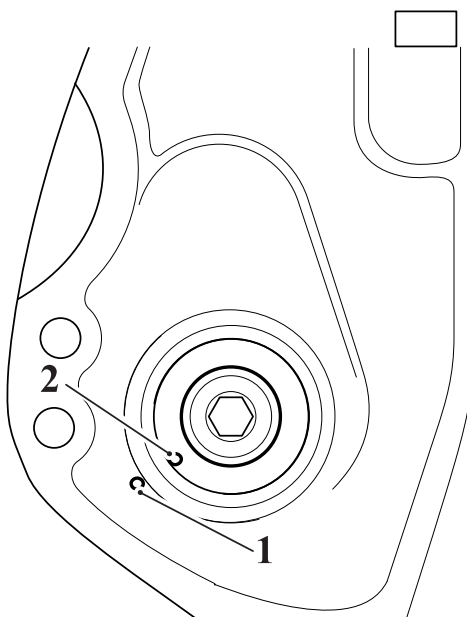


1. Balancer
2. Dead shaft
3. Dead shaft clamp

6. Position the alignment mark on the dead shaft with the alignment mark on the crankcase.

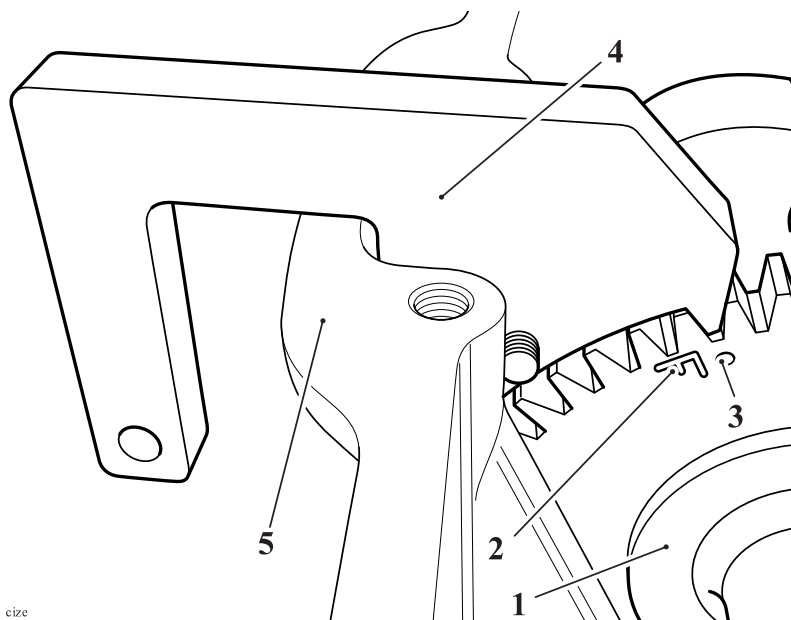
Note

- The static alignment of the balancer shaft will allow for initial starting of the engine.
- Final adjustment must be carried out with the engine running and at operating temperature, see [Balancer Shafts Dynamic Adjustment](#)



1. **Alignment mark (Crankcase)**
2. **Alignment mark (Dead shaft)**

7. Rotate the balancer shaft until the F and dot mark are visible.
8. Position the peg on T3880811 - Front Balancer Timing Tool to the dot mark on the balancer shaft gear.
9. Allow the balancer shaft to rotate anti-clockwise until the flat surface rests against the machined surface of the crankcase, as shown.

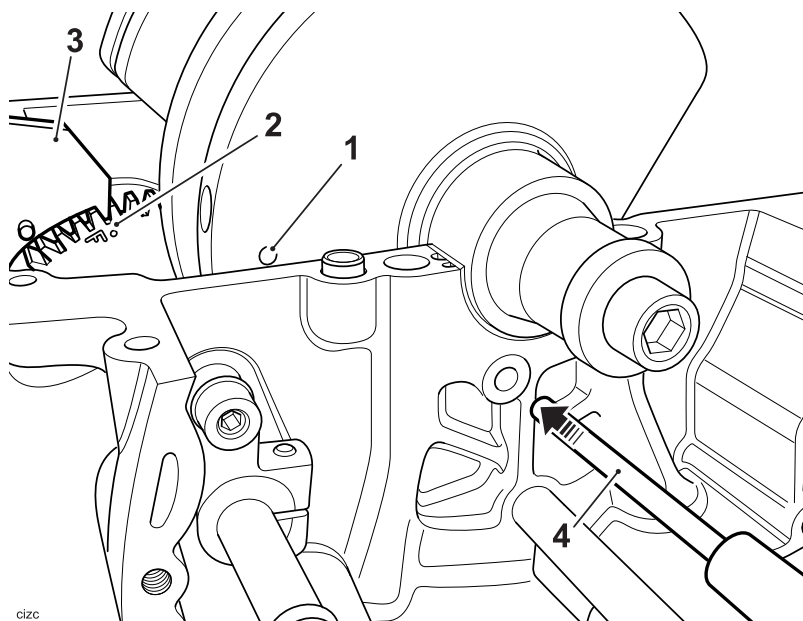


1. **Balancer shaft**
2. **Balancer shaft 'F' (front) mark**
3. **Balancer shaft alignment mark**
4. **T3880811 - Front Balancer Timing Tool**
5. **Crankcase**

10. Clean the crankshaft, crankshaft bearings and big end bearings with a high flashpoint solvent.
11. Lubricate the crank shaft and bearings with clean engine oil.
12. Position the connecting rods as noted during removal.

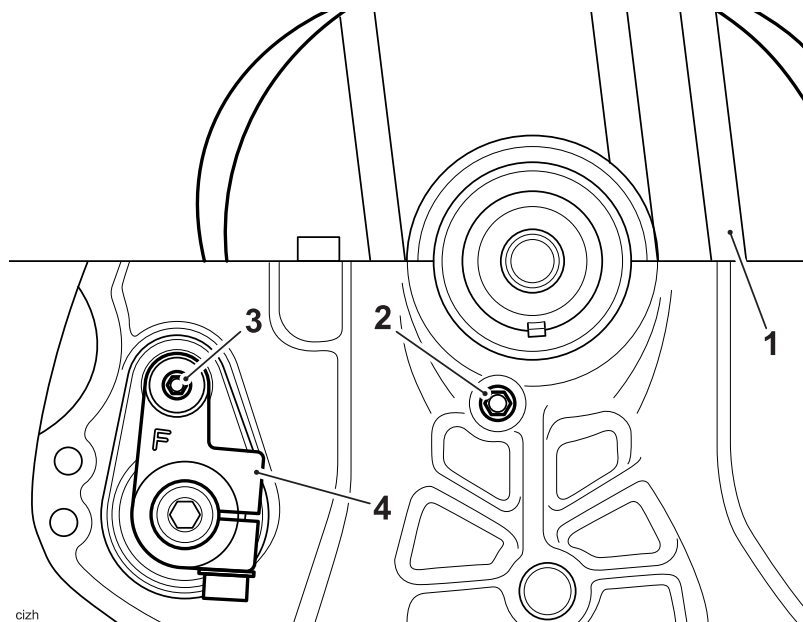
Note

- **As the crankshaft is lowered into position the balancer shaft will rotate and the T3880811 - Front Balancer Timing Tool will no longer rest against the crankcase.**
13. Position the crankshaft to the crankshaft bearings, aligning the timing mark on the crankshaft with the machined surface of the crankcase.



1. Crankshaft timing mark
2. Balancer gear timing marks
3. T3880811 - Front Balancer Timing Tool
4. T3880601 - Camshaft Timing Pin

14. To check that the balancer shaft is correctly timed to the crankshaft proceed as follows:
- o The alignment hole in the crank shaft is visible through the hole in the crankcase.
 - o The alignment mark on the balancer shaft is visible through the screw hole in the dead shaft clamp.
 - o The T3880601 - Camshaft Timing Pin can be inserted fully, locking the crankshaft in position.

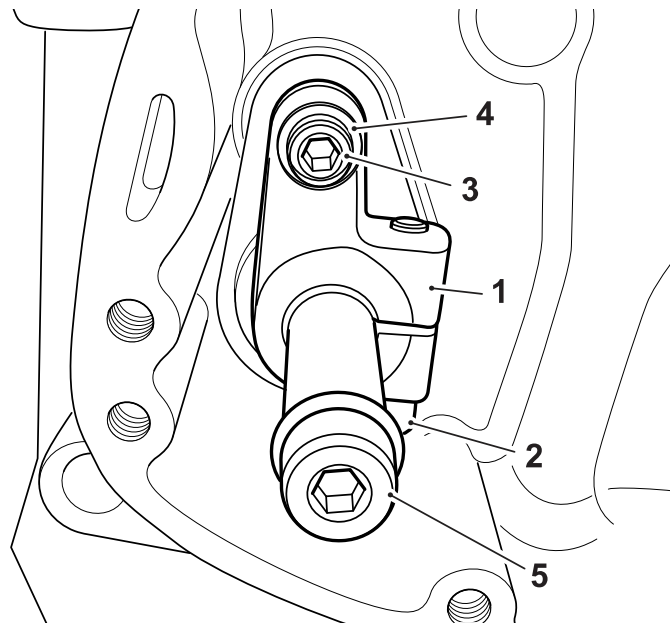


1. Crankshaft

2. Crankshaft dot mark
3. Front balancer shaft dot mark
4. Dead shaft clamp

Note

- If the balancer shafts timing is incorrect, the procedure must be restarted from the beginning.
15. Refit the dead shaft clamp and tighten the securing screw to **10 Nm** and then tighten the dead shaft clamp locking screw to **10 Nm**.



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1. Dead shaft clamp
2. Locking screw
3. Securing screw
4. Washer
5. Dead shaft

- Refit the big end caps to the connecting rods (see [Connecting Rod - Installation](#)).
- Refit the crankcase halves (see [Rear Balancer Shaft - Installation](#) and [Crankcase - Assembly](#)).
- Refit the alternator cover to the engine (see [Alternator Cover - Installation](#)).
- Refit the clutch cover (see [Clutch Cover - Installation](#)).
- Refit the camshaft cover (see [Camshaft Cover - Installation](#)).
- Refit the engine (see [Engine - Installation](#)).
- Refit the fuel tank (see [Fuel Tank - Installation](#)).
- Reconnect the battery, positive (red) lead first (see [Battery - Installation](#)) and tighten the terminals to **4.5 Nm**.
- Refit the seat (see [Seat - Installation](#)).