

Kiwi Cylinder Heads Ltd.



Installation Instructions

Toyota 5VZ FE Cylinder Head Kit
Part Number 11081241 & 11081275



**This instruction manual contains important installation and assembly instructions. Read these instructions carefully before use. Please contact us directly if you have any questions or concerns. Remember...
"Prevention is Better than Cure"**

Kiwi Cylinder Heads (NZ) Ltd.

3 D Edinburgh St, Onehunga, Auckland 1061

Call: 0800-549-429, email: info@kch.co.nz

www.cylinderheads.co.nz

Kiwi Cylinder Heads Pty Ltd

14 Waler Crescent, Smeaton Grange, NSW, 2567

Call: 1800-786-987, email: info@kch.co.nz

www.cylinderheadsaustralia.com.au

Kiwi Cylinder Heads 12 Month, Unlimited Kilometer, Parts & Labor Warranty

This new cylinder head is subject to a **12 Month** (from date of purchase), **unlimited kilometer, parts & labor warranty**. This means in the rare event this product fails due to either a manufacturing or physical fault the purchaser is covered by this warranty for a period of 12 months from date of purchase, and it includes replacement parts & labor at a fair and reasonable rate to re-instate the vehicle to its pre-failure state. This excludes service items such as but not limited to, oil, coolant, filters etc. as well as any vehicle recovery costs and the cost of any replacement vehicle.

Responsibilities: To maintain this warranty the product is to be professionally installed & serviced in accordance to the vehicle manufacturers guidelines & service intervals. Ensure the vehicle is not used in an inappropriate manner for which it is designed or intended for. To minimize any further unnecessary damage once a fault is suspected or detected in the vehicles operation. To contact the installer or Kiwi Cylinder Heads Ltd at the very earliest opportunity after detecting or suspecting a fault. Proof of Purchase & service records will be requested in an event of a claim. The warranty will be voided if the vehicle to which it is fitted is used in off-road, competition or modified beyond the vehicle manufacturers original design.

How to make a claim: If there is a suspected warranty fault, Kiwi Cylinder Heads Ltd must be contacted before any repair work can commence. (Contact details below) A warranty claim form and claim number will be made available and must be completed & returned to Kiwi Cylinder Heads Ltd, along with any requested related documents and/or parts. The suspected failed parts supplied by Kiwi Cylinder Heads Ltd must be returned to a pre-determined location for inspection and analysis of the suspected failure. The cost of returning parts & documents is the responsibility of the claimant. Failure to adhere to these procedures may void any warranty.

This warranty does not exclude any rights to the claimant under the N.Z Consumer Guarantees Act 1993 or the Australian Consumer Law 2011.

**Kiwi Cylinder Heads Ltd, PO Box 132-189 Sylvia Park, Mt Wellington, Auckland 1644. 0800-549-429, info@kch.co.nz
Kiwi Cylinder Heads (Pty) Ltd, 14 Waler Crescent, Smeaton Grange, NSW 2567. Ph.1800-786-987, Fax 1800-786-535**

IMPORTANT

If this product is being fitted as a replacement for an item, which has failed in service? It is critical that the “real cause” of the failure has been identified and rectified. Failure to do so may result in this product also failing for the same reasons, which will not be covered under any warranty.

If the purchaser chooses to fit parts other than those supplied, this does not invalidate the Kiwi Cylinder Heads warranty other than to the extent that the replacement parts carry no warranty unless purchased from Kiwi Cylinder Heads. Additionally, any consequential damage to Kiwi Cylinder Heads products as a result of using these alternative parts is not covered by the Kiwi Cylinder Heads warranty.

Foreign Material / Debris Removal Procedure

Whilst every attempt is made to remove unwanted machining material, such as aluminum shavings or casting material at time of assembly. It is possible you may encounter some remaining material.

In most cases it can be cleaned by carefully standing the cylinder head on its end and using a compressed air gun and appropriate personal safety equipment, apply compressed air to the galleries to eliminate the foreign material. You may need to move the cylinder head around to assist in the removal. If this is not acceptable please contact us directly.

NZ- 0800-549-429

AUST- 1800-786-987

info@kch.co.nz

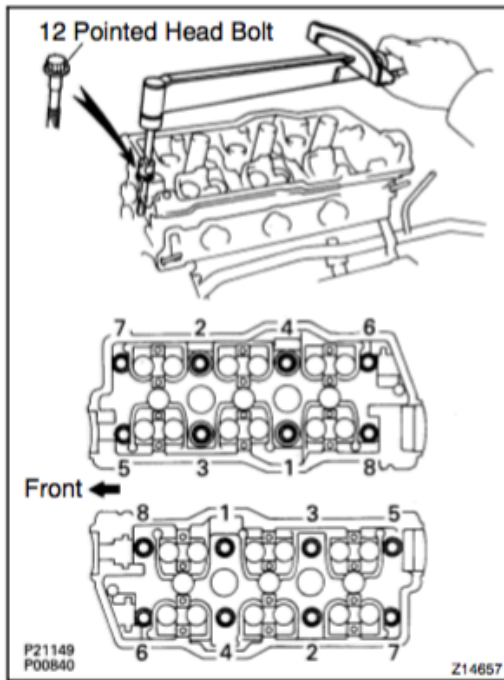


Seven Steps to Success

- 1. Ensure both mating surfaces are **CLEAN** and **FREE OF DIRT AND OIL**.
- 2. **DO NOT** clean block threads with a thread **TAP**. Best use an old head bolt with “cleaning” grooves cut the length of the thread to “chase” the block threads.
- 3. Ensure **NEW** head bolts are used where applicable
- 4. Ensure the correct torque settings and sequence are employed.
- 5. For engines that use a **MLS (Multi Layer Steel)** Head gasket, flush block of any remaining “anti freeze”. When fitment is completed only use water (preferably distilled water) for the first 600kms. This is to insure the head gasket has the best possible chance to seal correctly.
- 6. **FUEL INJECTORS** must always be checked and /or serviced to be sure of correct operation.
- 7. If this is a “Fully Assembled” head kit which includes new camshafts? Then the correct “Start-up Procedure” **MUST** be followed. Otherwise premature camshaft wear **WILL** occur and will **NOT** be covered by warranty.

Start-Up Procedure

- **Diesel Cam Shaft.** With rocker cover & glow plugs removed & fuel solenoid de-activated. Apply the “Z Paste” to the camshaft lobes. Using the starter motor, crank the engine until oil is present from ALL oil galleries & across the entire cam shaft and valve train area. This may take several minutes. It is now safe to complete the assembly and start the engine.
- **Petrol Cam Shaft.** With the rocker cover & spark plugs removed & the ignition dis-connected. Apply “Z Paste” to the camshaft lobes. Using the starter motor, crank the engine until oil is present at ALL oil galleries & across the entire cam shaft & valve train area. This may take several minutes. It is now safe to complete the assembly. Ensure the ignition timing is as close as possible to correct setting before firing the engine. Also ensure there is adequate cooling for the engine, air flow & ventilation. DO NOT let the engine idle, run engine at approx. 1800RPM for 15 - 20 minutes. ANY unusual noises shut down & inspect.
- **Failure to follow this exact procedure can & will lead to premature camshaft wear which will NOT be covered by KCH Warranty.**



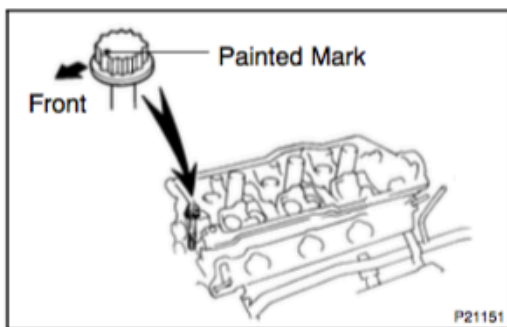
2. INSTALL 12 POINTED HEAD CYLINDER HEAD BOLTS

HINT:

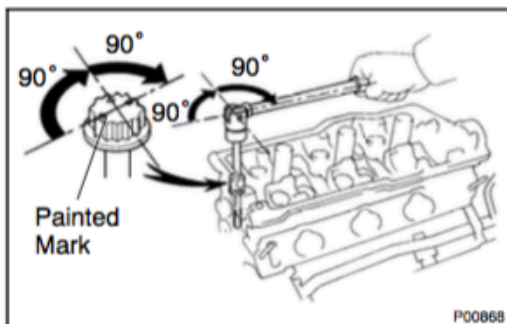
- The cylinder head bolts are tightened in 3 progressive steps (steps (b), (d) and (e)).
 - If any bolt is broken or deformed, replace it.
- (a) Apply a light coat of engine oil on the threads and under the heads of the cylinder head bolts.
 - (b) Install and uniformly tighten the cylinder head bolts on each cylinder head, in several passes, in the sequence shown, then repeat for the other side, as shown.

Torque: 34 N·m (350 kgf·cm, 25 ft·lbf)

If any of the cylinder head bolts does not meet the torque specification, replace the cylinder head bolt.



- (c) Mark the front of the cylinder head bolt head with paint.



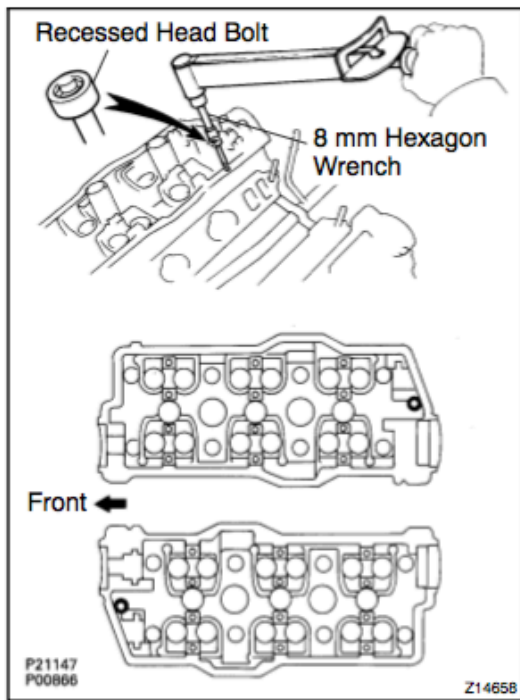
- (d) Retighten the cylinder head bolts by 90° in the numerical order shown.
- (e) Retighten the cylinder head bolts by an additional 90°.
- (f) Check that the painted mark is now facing rearward.

IMPORTANT NOTE

Installing MLS (Multi-Layer Steel) Head Gaskets

NEVER employ any abrasive cleaning methods to the engine block or cylinder head mating surfaces. Such as sandpapering, scouring discs etc.

Use ONLY proper gasket scrapers and appropriate solvents. The surface finish of the mating surfaces is absolutely critical to the successful sealing of the MLS head gaskets.

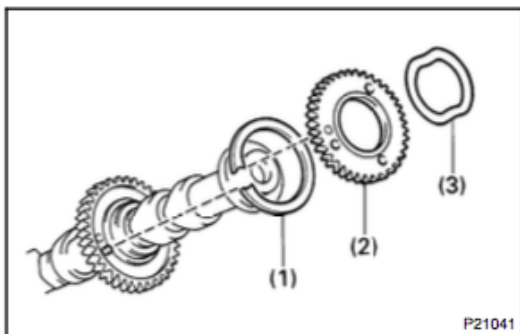


- 3. INSTALL RECESSED HEAD CYLINDER HEAD BOLTS**
- (a) Apply a light coat of engine oil on the threads and under the heads of the cylinder head bolts.
 - (b) Using an 8 mm hexagon wrench, install the cylinder head bolt on each cylinder head, then repeat for the other side, as shown.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

4. CONNECT GROUND STRAP

Install the bolt, and connect the ground strap.



5. ASSEMBLE EXHAUST CAMSHAFTS

- (a) Mount the hexagonal wrench head portion of the camshaft in a vise.

NOTICE:

Be careful not to damage the camshaft.

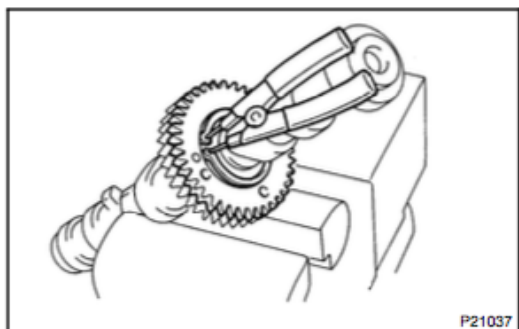
- (b) Install these parts:

- (1) Camshaft gear spring
- (2) Camshaft sub-gear

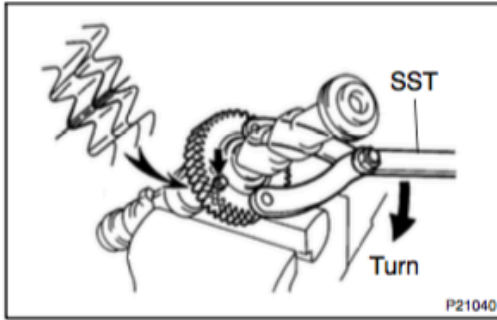
HINT:

Attach the pins on the gears to the gear spring ends.

- (3) Wave washer



- (c) Using snap ring pliers, install the snap ring.

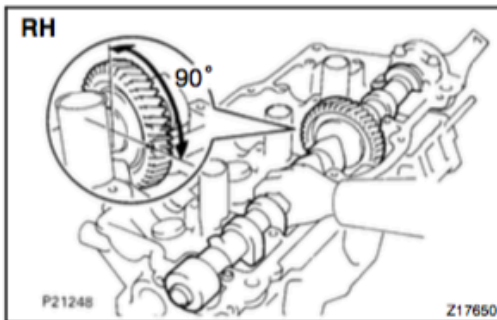


- (d) Using SST, align the holes of the camshaft main gear and sub-gear by turning camshaft sub-gear clockwise, and temporarily install a service bolt.
SST 09960-10010 (09962-01000, 09963-00600)
- (e) Align the gear teeth of the main gear and sub-gear, and tighten the service bolt.

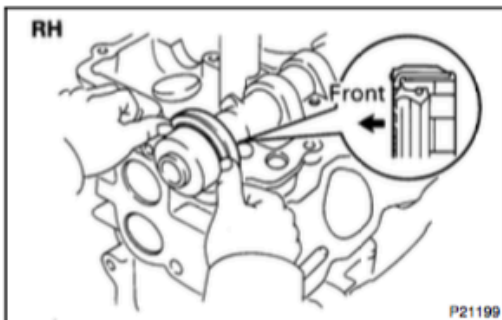
6. INSTALL CAMSHAFTS OF RH CYLINDER HEAD

NOTICE:

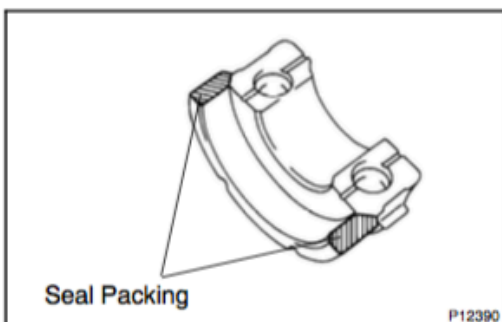
Since the thrust clearance of the camshaft is small, the camshaft must be held level while it is being installed. If the camshaft is not level, the portion of the cylinder head receiving the shaft thrust may crack or be damaged, causing the camshaft to seize or break. To avoid this, these steps should be carried out.



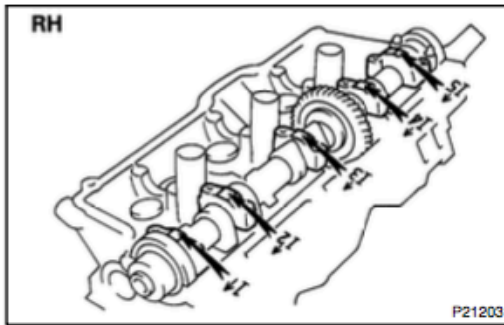
- (a) Install the intake camshaft.
 - (1) Apply new engine oil to the thrust portion and journal of the camshaft.
 - (2) Place the intake camshaft at 90° angle of timing mark (2 dot marks) on the cylinder head.



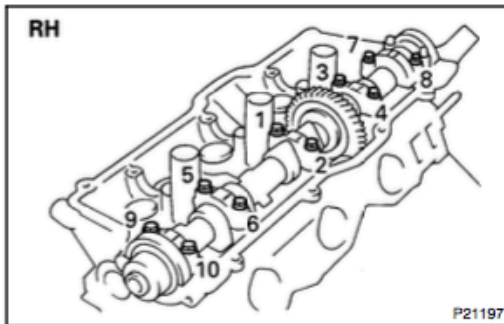
- (b) Apply MP grease to a new oil seal lip.
- (c) Install the oil seal to the camshaft.



- (d) Remove any old packing (FIPG) material.
- (e) Apply seal packing to the No.1 bearing cap as shown.
Seal packing:
Part No. 08826-00080 or equivalent

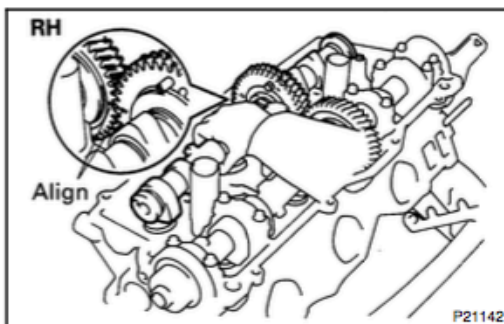


- (f) Install the 5 bearing caps in their proper locations.

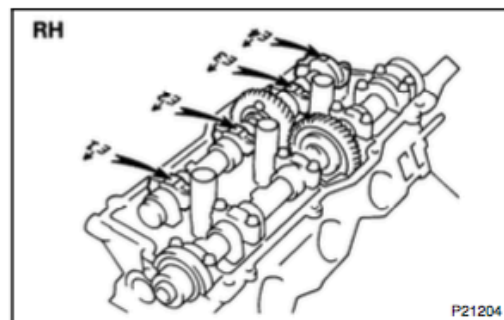


- (g) Apply a light coat of engine oil on the threads and under the heads of the bearing cap bolts.
 (h) Install and uniformly tighten the 10 bearing cap bolts, in several passes, in the sequence shown.

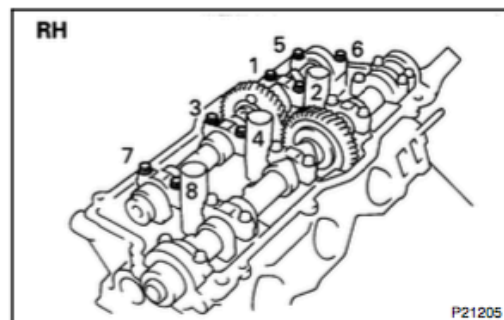
Torque: 16 N·m (160 kgf·cm, 12 ft·lbf)



- (i) Install the exhaust camshaft.
 (j) Apply new engine oil to the thrust portion and journal of the camshaft.
 (k) Align the timing marks (2 dot marks) of the camshaft drive and driven gears.
 (l) Place the exhaust camshaft on the cylinder head.



- (m) Install the 4 bearing caps in their proper locations.



- (n) Apply a light coat of engine oil on the threads and under the heads of the bearing cap bolts.
 (o) Install and uniformly tighten the 8 bearing cap bolts, in several passes, in the sequence shown.

Torque: 16 N·m (160 kgf·cm, 12 ft·lbf)

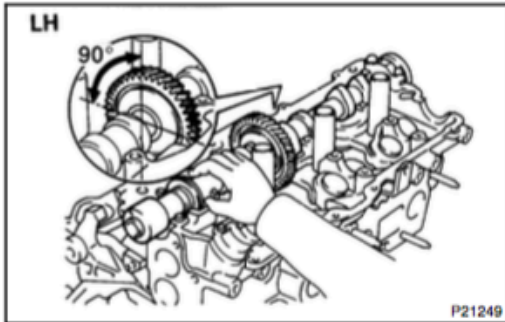
- (p) Remove the service bolt.

7. Intake:

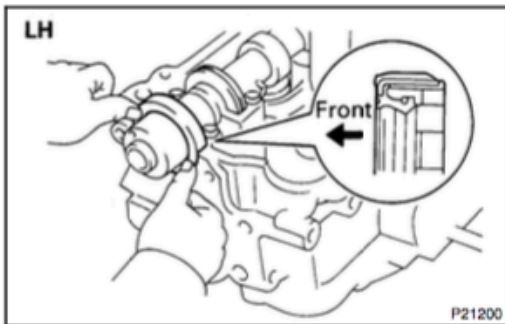
INSTALL CAMSHAFTS OF LH CYLINDER HEAD

NOTICE:

Since the thrust clearance of the camshaft is small, the camshaft must be held level while it is being installed. If the camshaft is not level, the portion of the cylinder head receiving the shaft thrust may crack or be damaged, causing the camshaft to seize or break. To avoid this, these steps should be carried out.



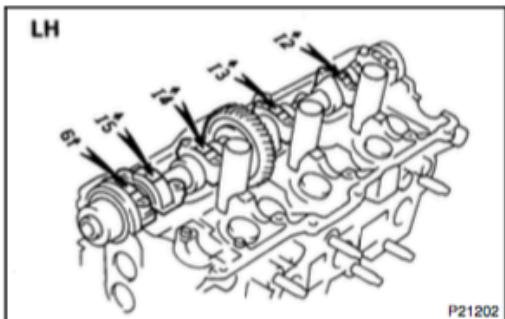
- (a) Apply new engine oil to the thrust portion and journal of the camshaft.
- (b) Place the intake camshaft at 90° angle of timing mark (1 dot mark) on the cylinder head.



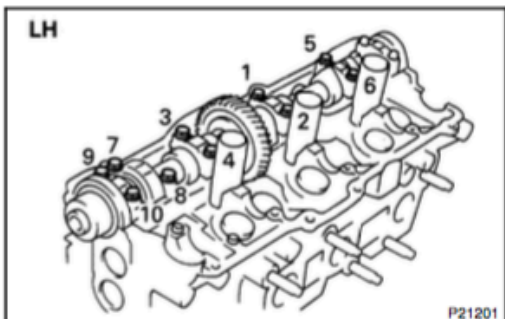
- (c) Apply MP grease to a new oil seal lip.
- (d) Install the oil seal to the camshaft.
- (e) Remove any old packing (FIPG) material.
- (f) Apply seal packing to the No.1 bearing cap.

Seal packing:

Part No. 08826-00080 or equivalent

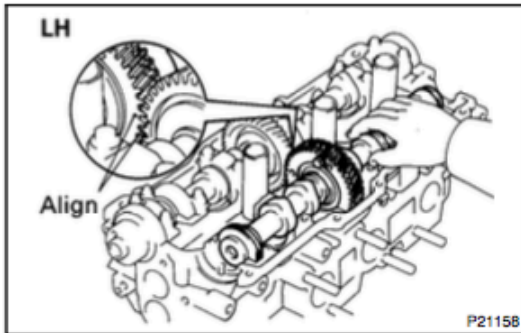


- (g) Install the 5 bearing caps in their proper locations.



- (h) Apply a light coat of engine oil on the threads and under the heads of the bearing cap bolts.
- (i) Install and uniformly tighten the 10 bearing cap bolts, in several passes, in the sequence shown.

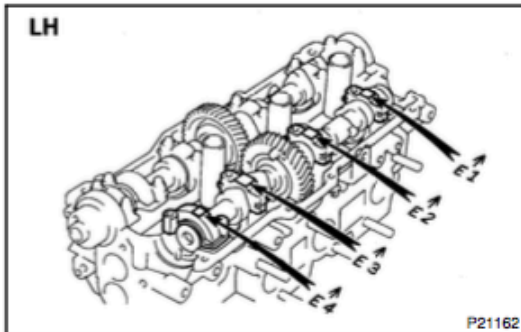
Torque: 16 N·m (160 kgf·cm, 12 ft·lbf)



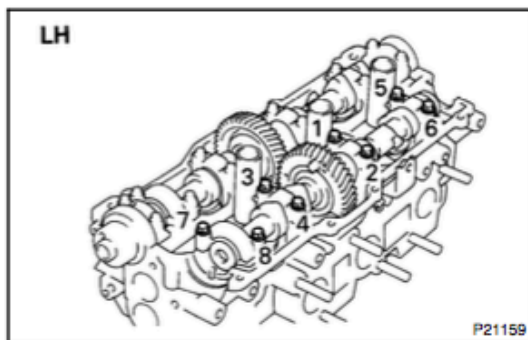
8. Exhaust:

INSTALL CAMSHAFTS OF LH CYLINDER HEAD

- Apply new engine oil to the thrust portion and journal of the camshaft.
- Align the timing marks (1 dot mark) of the camshaft drive and driven gears.
- Place the exhaust camshaft on the cylinder head.



- Install the 4 bearing caps in their proper locations.

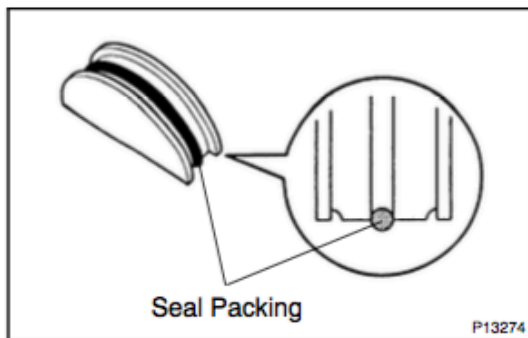


- Apply a light coat of engine oil on the threads and under the heads of bearing cap bolts.
- Install and uniformly tighten the 8 bearing cap bolts, in several passes, in the sequence shown.

Torque: 16 N·m (160 kgf·cm, 12 ft·lbf)

- Remove the service bolt.

9. CHECK AND ADJUST VALVE CLEARANCE



10. INSTALL SEMI-CIRCULAR PLUGS

- Remove any old packing (FIPG) material.
- Apply seal packing to the semi-circular plug grooves.

Seal packing:

Part No. 08826-00080 or equivalent

Do you have ANY questions?

Please feel free to contact Kiwi Cylinder Heads if you have any questions or comments regarding any of our quality componants.

New Zealand

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- ☒ Engine Valves
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- ☒ Valve Shims
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