

Kiwi Cylinder Heads Ltd.



# Installation Instructions

**Mitsubishi 4D56U Cylinder Head Kit**  
**Part Number 11041230**



**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.

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Kiwi Cylinder Heads Pty Ltd

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## 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](mailto: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.

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# 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.

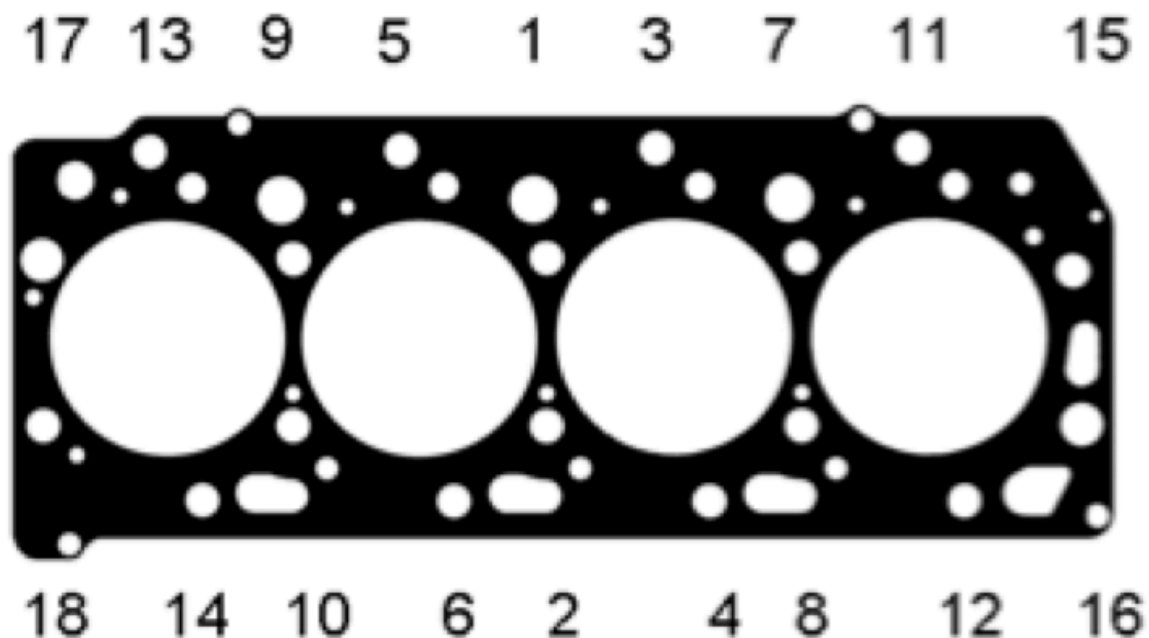
# Start-Up Procedure

- **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.**

**Mitsubishi 4D56U DOHC 16v Common Rail  
Torque Sequence**

**Stage One: 80Nm**  
**Stage Two: Loosen in Reverse Order**  
**Stage Three: 30Nm**  
**Stage Four: +90 Degrees**  
**Stage Five: +90 Degrees**

**Be sure to lightly lubricate all threads and under the heads of all head bolts prior to fitting. Ensure block threads are clean and free of tight spots or interference.**



# **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.

## **Importance of Testing Diesel Fuel Injectors**

“Improper Fuel Delivery” is a leading cause of Diesel Cylinder Head failure.

Faulty fuel injectors can & do cause serious engine damage! Never assume they are “ok”, always have them tested, serviced or replaced. They are critical to a healthy diesel engine.

## **Mitsubishi MN Triton with 2.5-litre 4D56HP diesel engine: overheating**

In November 2014, Mitsubishi initiated preventative action service campaign 020116 for Mitsubishi MN Triton vehicles that had 2.5-litre 4D56HP diesel engines and were manufactured prior to 18 March 2014.

According to the service bulletin, the diesel engines of these Mitsubishi MN Triton vehicles could overheat due to excessive loss of coolant caused by 'repetitive coolant evaporation' – this could occur after high-load driving such as towing heavy cargo. Furthermore, if head gasket sealing was not adequate at the upper surface of the cylinder block (due to surface roughness), then engine coolant blow-by could occur and contribute to overheating.

As part of the service campaign, the following measures were implemented:

- ¥ The radiator cap was to be replaced with a high-valve-opening-pressure type which increased the boiling point. These radiator caps could be identified by their '127 kPa' sticker;
  - ¥ The coolant was to be replaced with coolant that had a 50 per cent concentration (previously 30 per cent); and,
  - ¥ The ECU was to be re-programmed for early detection of coolant damage to reduce the risk of engine damage.
- These measures, however, did not address the potential inadequacy of the head gasket sealing.

The following measures were implemented in production to reduce the incidence of 4D56HP engine overheating:

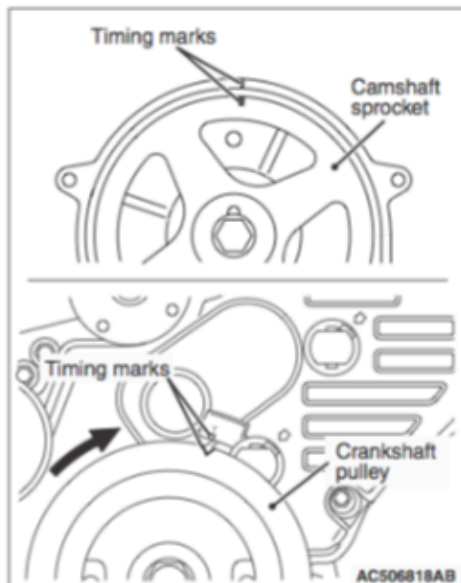
- ¥ New ECU programming was introduced for earlier detection of coolant loss on 9 September 2013;
- ¥ Coolant concentration was increased to 50 per cent on 22 November 2013;
- ¥ Radiator valve cap opening pressure was increased to 127 kPa (previously 109 kPa) on 21 February 2014; and,

**The surface of the upper cylinder block was smoother from 18 March 2014, which corresponded to engine no. 4D56 UCFA9504.**



# Mitsubishi 4D56U Valve Clearances

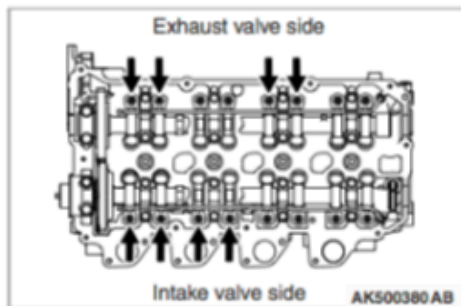
## OPERATIONS INSIDE THE ENGINE COMPARTMENT



6. Align the camshaft sprocket timing marks and set the No. 1 cylinder at top dead centre.

### CAUTION

The crankshaft should always be turned in a clockwise direction.

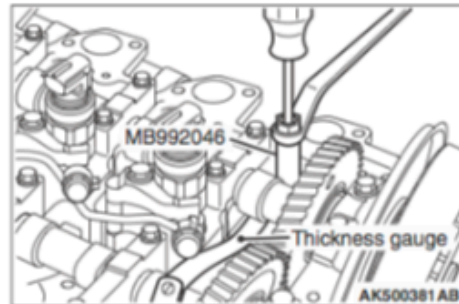


7. Measure the valve clearance. If the valve clearance is not as specified, loosen the rocker arm lock nut and adjust the clearance using a thickness gauge between the camshaft and the roller while turning the adjusting screw.

Standard value (cold engine):

Intake valve: 0.09 mm

Exhaust valve: 0.14 mm



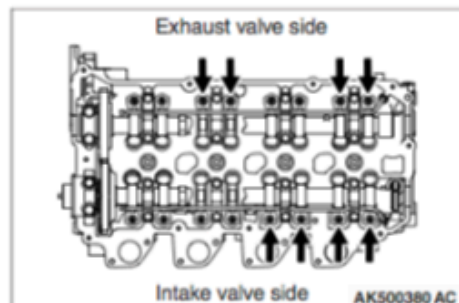
8. While holding the adjusting screw with a screwdriver to prevent it from turning, tighten the lock nut to the specified torque using a valve adjusting socket. (MB992046)

Tightening torque:  $15 \pm 3$  N·m

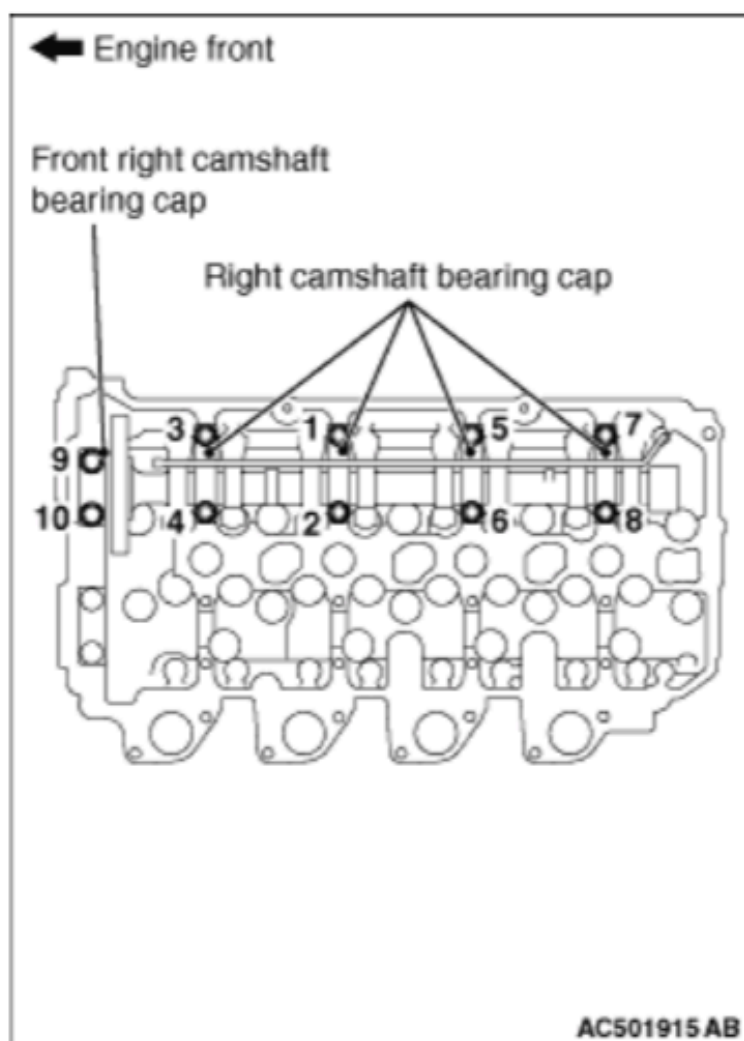
### CAUTION

Pay special attention that the tightening torque is not beyond this valve. If the tightening torque is beyond the valve, the valve stem would possibly bend.

9. Turn the crankshaft 360° clockwise to bring No. 4 cylinder to the top dead centre position.



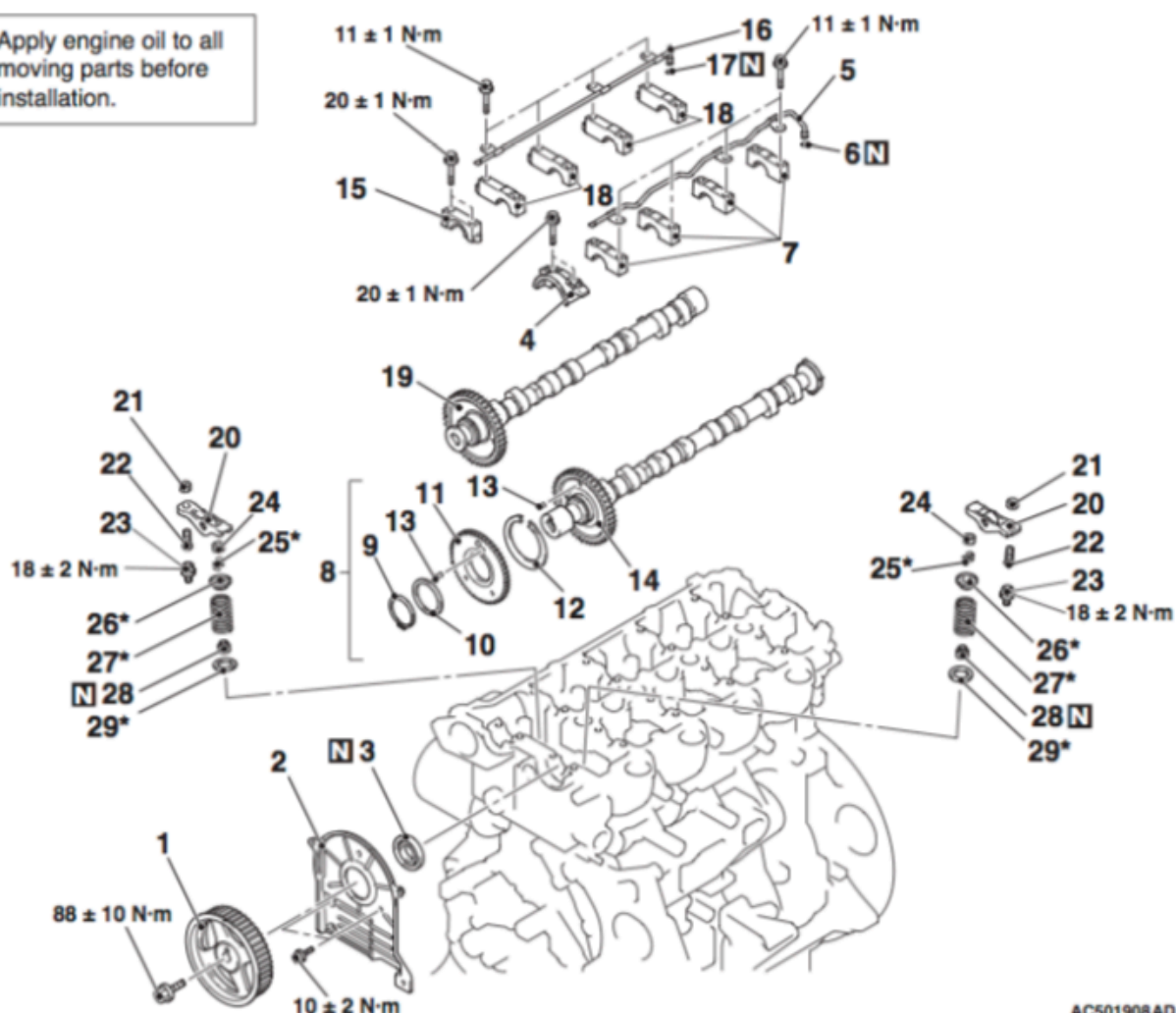
10. Measure the valve clearances at the places indicated by arrows in the illustration. If the clearance is not within the standard value, repeat steps 7 and 8 above.



### **CAMSHAFT BEARING CAP/O-RING/EXHAUST OIL PIPE ASSEMBLY/FRONT RIGHT CAMSHAFT BEARING CAP INSTALLATION**

- **$11 \pm 1$  N·m (Right camshaft bearing cap mounting bolts)**
- **$20 \pm 1$  N·m (Front right camshaft bearing cap mounting bolts)**

Apply engine oil to all moving parts before installation.



AC501908AD

### IMPORTANT

**High Output Engines (133Kw) used in the Triton & Challenger models from 2008 on wards use a different head gasket. (Genuine Part Number 1005B998.) This is a MLS gasket with Graphite layers on top and bottom. Also see related note about "Engine Block Surface Finish" for these vehicles.**

# 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.

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## **Other Products Available from Kiwi Cylinder Heads**

- ☒ Head Gaskets
- ☒ Head Sets (VRS)
- ☒ Head Bolt Sets
- ☒ Rocker Cover Sets
- ☒ Manifold Sets
- ☒ Bottom Sets
- ☒ Timing Belt Kits
- ☒ Timing Chain Sets

- ☒ Water Pumps
- ☒ Thermostats
- ☒ EGR Coolers
- ☒ Engine Valves
- ☒ Cam Shafts
- ☒ Valve Shims
- ☒ Valve Train Components
- ☒ Hydraulic Lifters