

Kiwi Cylinder Heads Ltd.



Installation Instructions

Isuzu 4JG2B Cylinder Head Kit
Part Number 11031211



**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

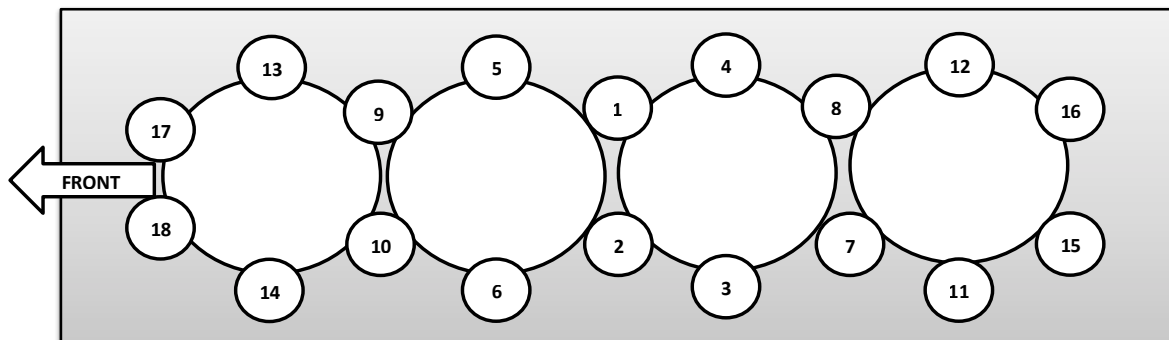
- 1. Ensure both mating surfaces are **CLEAN** and **FREE OF DIRT AND OIL**.
- 2. **DO NOT** clean block threads with a thread **TAP**. Best use an old head bolt with “cleaning” grooves cut the length of the thread to “chase” the block threads.
- 3. Ensure **NEW** head bolts are used where applicable
- 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.**

Isuzu 4JB1/4JB2/4JG2 Torque Sequence

- HEAD BOLT P/N 30036001 QUANTITIES: 18
- HEAD BOLT TIGHTENING SEQUENCE.
- STEP ONE: 25Nm
- STEP TWO: 50Nm
- STEP THREE: Loosen all
- STEP FOUR: 50Nm
- STEP FIVE: +60 Degrees
- STEP SIX: +60 Degrees
- STEP SEVEN: +30 Degrees
- IMPORTANT: ALL BOLT THREADS, BOLTHEADS AND WASHERS MUST BE LIGHTLY OILED.
- USING AN OLD HEADBOLT WITH GROOVE CUT DOWN THREAD, CLEAN THE BLOCK HEADBOLT THREADS.



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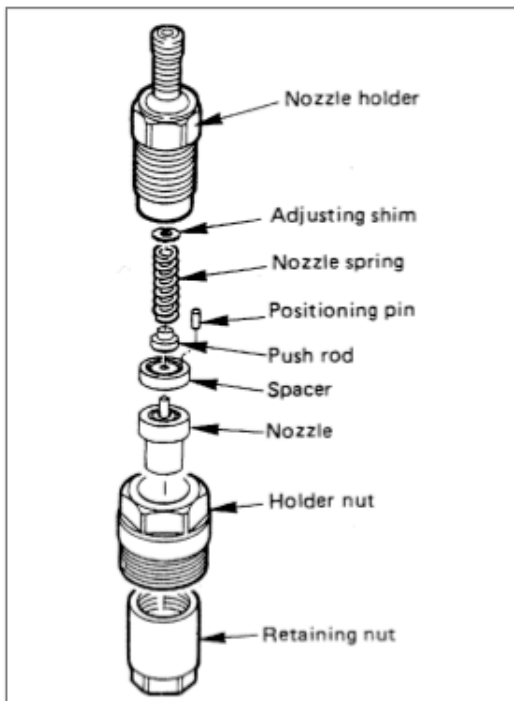
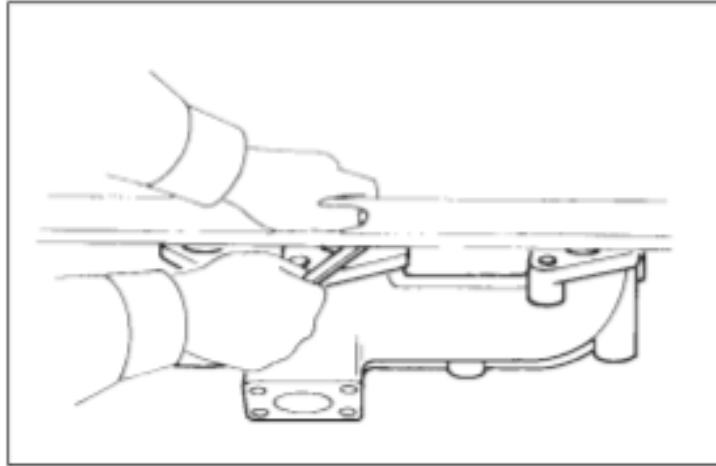
IMPORTANT NOTE

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.

NOTE: If the exhaust manifold is re surfaced, make sure the manifold bolts do not “bottom out” in the cylinder head.



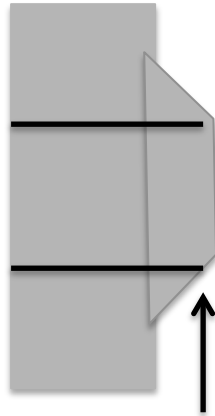
REASSEMBLY (4JG2 Engine)

To reassemble, follow the removal steps in the reverse order, noting the following point.

CAUTION

- Be careful to fit spacer because positioning pins are set off.

Isuzu 4JG2 Injector Thick Copper Washer Modification

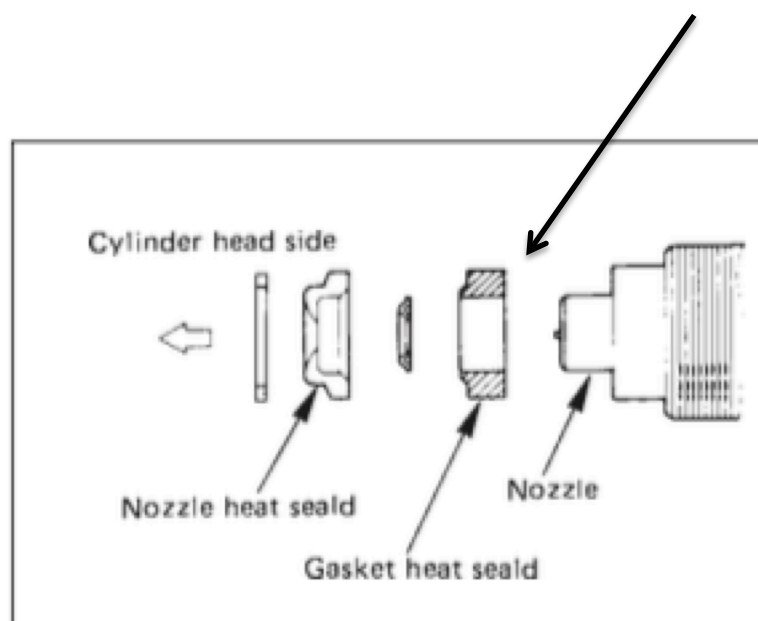


Washer with tapered
seat

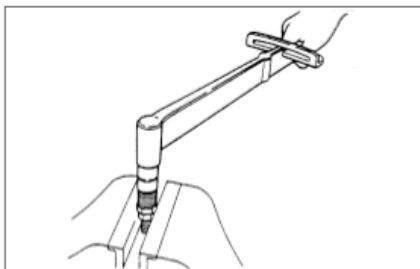


File taper off with
a file

There were two designs of this washer, one with a tapered seat and one without, unfortunately the without is not available and a simple modification will allow it to fit properly into the "pintle cap" base



6C - 12 ENGINE FUEL



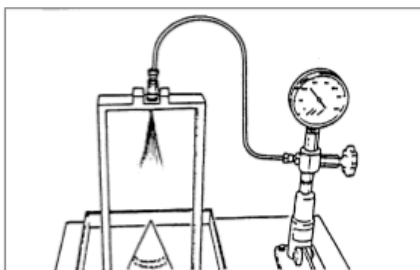
6C-11-1.1F



- Install retaining nut and tighten nut to the specified torque.

N·m (Kg·m/lb·ft)

39 (4.0/32)



6C-11-2.1F



ADJUSTMENT OF INJECTION OPENING PRESSURE (4JG2 Engine)

- Set nozzle holder assembly on a nozzle tester.
- Apply hydraulic pressure by operating tester handle, and make sure fuel can be injected under the following pressure.

Kpa (Kg/cm²/psi)

14,710 (150/2,133)



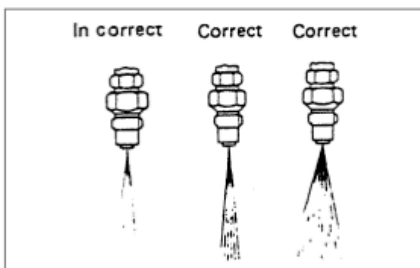
CAUTION

- If not injected under the specified pressure, adjust with adjusting shim.

Ref.

Types are available in the 1.0 mm - 1.75 mm thickness range (on a 0.01 mm basis).

- Unless extremely deformed spray is seen, there is no problem.

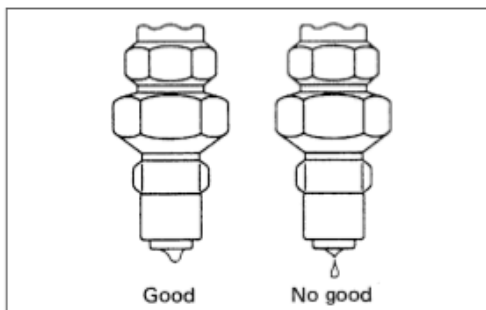


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CAUTION

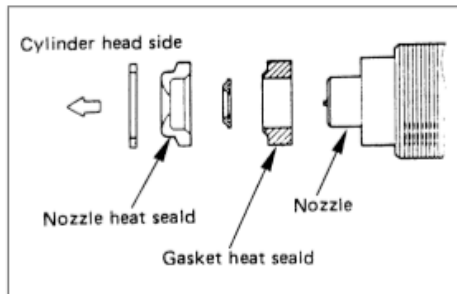
- The spray condition, when judged with a nozzle tester, is deemed as normal so long as the spray form is not excessively deformed.



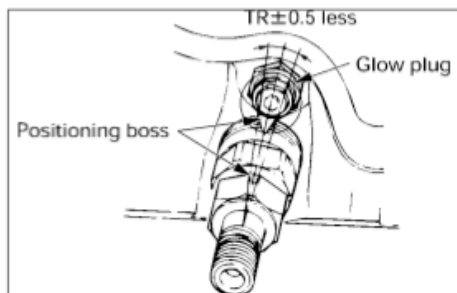
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Oil tight test (4JG2 Engine)

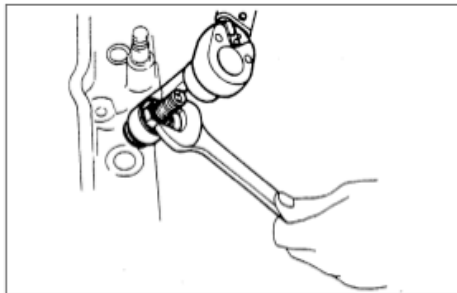
- 1) After completion of the adjustment of injection pressure, wipe off light oil at the tip of the nozzle with waste.
- 2) With pressure 1,961 Kpa (20 kg/cm²/284 psi) less than the specified injection pressure applied, check to see if an oil drop trickles off the tip of the nozzle within 10 seconds after application of pressure. (There is no problem with the nozzle when oil gathers at the tip, but does not drop off.)
- 3) When an oil drop trickles, clean the nozzle thoroughly. Then reassemble it to check for any dropping of oil. When oil still drops, change it with a new one.



6C-12-1.1f



04DLX016.1f



6C-12-3.1f

INSTALLATION (4JG2 Engine)

CAUTION

- Nozzle and assembling should be as illustrated.
- Use new heat shield and new corrugated washer.

3. Injection Nozzle (4JG2 only)

- Lightly tighten the holder nut to such extent that the nozzle holder can turn one word and one word.
- Set positioning confirmation drilled hole ($\phi 2$) within a nozzle turning angle of $\pm 5^\circ$ against the cylinder head-side positioning boss.
- Apply a wrench as illustrated and tighten the holder nut to the specified torque using a special tool.

CAUTION

- After tightening the holder nut, make sure that the drilled hole makes $\pm 5^\circ$ or smaller with the cylinder head-side positioning boss.
- When mounting leak off pipe, injection nozzle and pipe, clean then with air so that dust may not enter.

Nozzle Fixing Torque	N·m (Kg·m/lb·ft)
64 (6.5/47)	

Wrench: nozzle holder 5-8840-0259-0

2. Leak Off Pipe

- Mount using a new copper washer
- Tighten nut to the specified torque.



Pipe Nut Torque	N·m (Kg·m/lb·ft)
29 (3.0/22)	

1. Injection Pipe

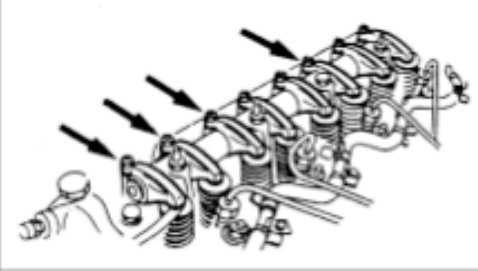
- Connect injection pipe to nozzle holder.
- Tighten the injection pump side.



Sleeve Nut Torque	N·m (Kg·m/lb·ft)
29 (3.0/22)	

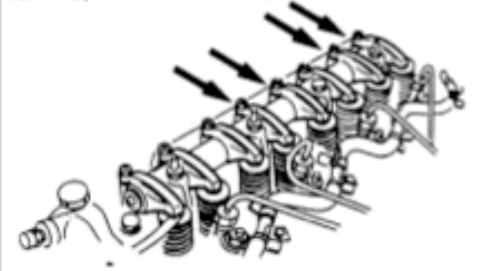
- Fit pipe clip in specified position.

No. 1 Cylinder T.D.C. (Compression stroke)

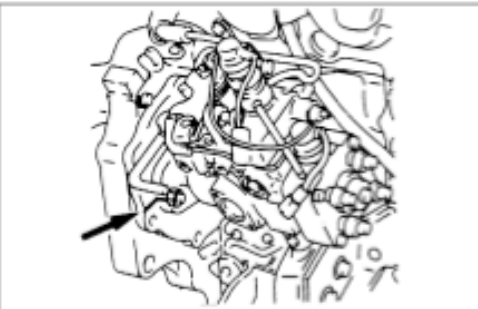


0045-1.1F

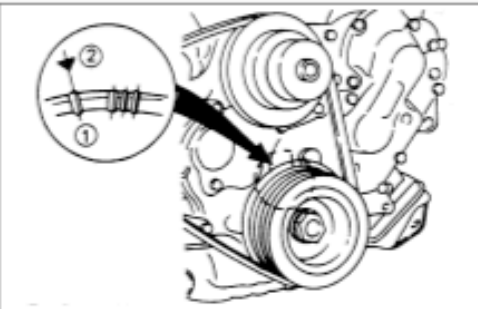
No. 4 Cylinder T.D.C. (Compression stroke)



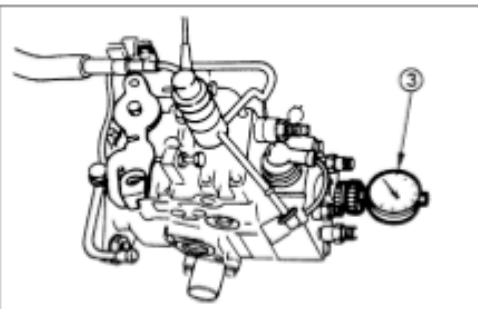
0045-2.1F



0045-3.1F



0045-4.1F



0045-5.1F

Adjust the No. 1 or the No. 4 cylinder valve clearance while their respective cylinders are at TDC on the compression stroke.

Valve Clearance (At Cold)	mm (in)
0.4 (0.016)	

- Loosen each valve clearance adjusting screw as shown in the illustration.
- Insert a feeler gauge of the appropriate thickness between the rocker arm and the valve stem end.
- Turn the valve clearance adjusting screw until a slight drag can be felt on the feeler gauge.
- Tighten the lock nut securely.
- Rotate the crankshaft 360°.
- Realign the crankshaft damper pulley TDC notched line with the timing pointer.
- Adjust the clearance for the remaining valves as shown in the illustration.



INJECTION TIMING ADJUSTMENT

- Check that the notched line on the injection pump flange is aligned with the front plate or the timing gear case notched line.



- Bring the piston in the No. ① cylinder to TDC 1 on the compression stroke by turning the crankshaft until the crankshaft pulley TDC line is aligned with the timing mark ②.

Note:

Check for play in the No. 1 intake and exhaust valve push rods.

If the No. 1 cylinder intake and exhaust valve push rods have play, the No. 1 piston is at TDC on the compression stroke.



- Disconnect the injection pipe from the injection pump.
- Remove one bolt from the distributor head.
- Insert a screwdriver into a hole in the fast idle lever and turn the lever to release the W-C.S.D. function. (If so equipped)
- Install the static timing gauge ③.

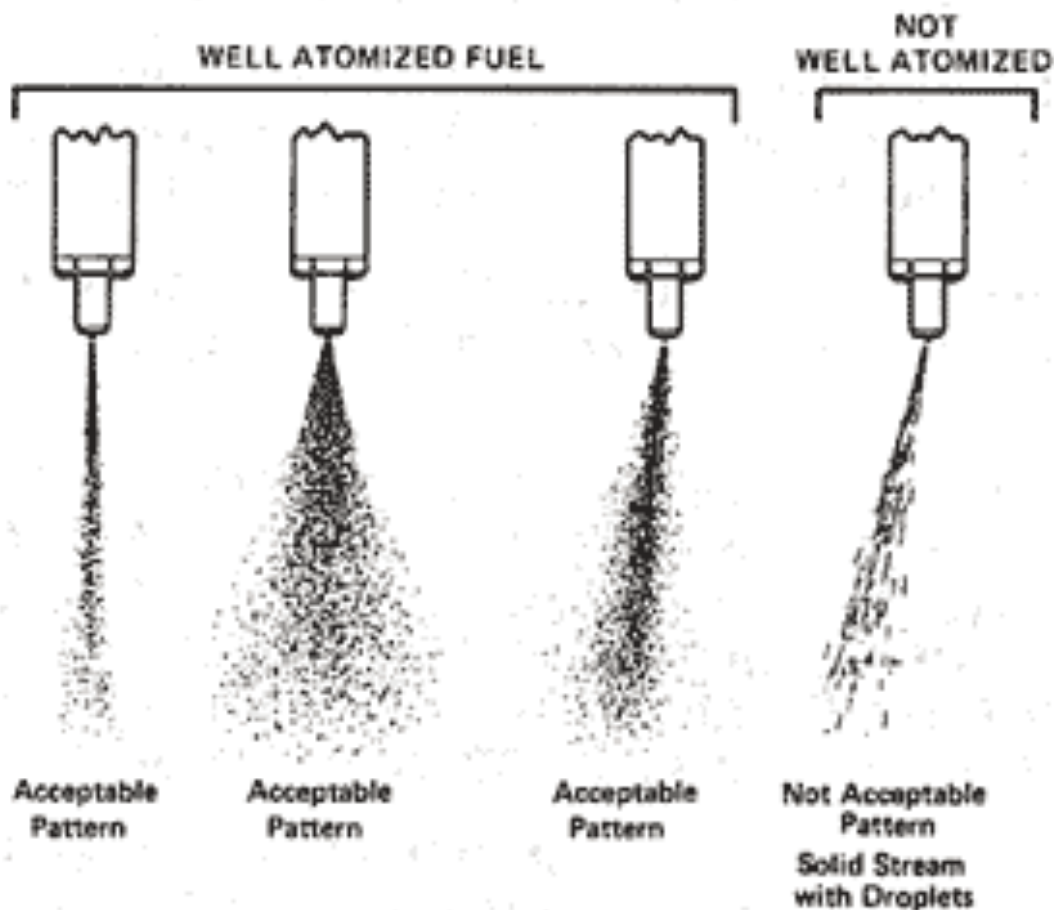
The probe of the gauge should be depressed inward approximately 2 mm (0.079 in).

Static Timing Gauge : 5-8840-0145-0 (J-28827)

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.



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

Phone: 0800-549-429

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- ☒ Manifold Sets
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- ☒ Timing Belt Kits
- ☒ Timing Chain Sets

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- ☒ EGR Coolers
- ☒ Engine Valves
- ☒ Cam Shafts
- ☒ Valve Shims
- ☒ Valve Train Components
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