

CASE

PROFESSIONAL PARTNER

SERVICE MANUAL

4JG1 ISUZU ENGINE

9-93710 NA

Issued 04-2005



SERVICE MANUAL

4JG1 ISUZU ENGINES

CNH America, LLC reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

All data given in this publication is subject to production variations. Dimensions and weights are only approximate. Illustrations do not necessarily show products in standard condition. For exact information about any particular product, please consult your Dealer

REVISION HISTORY			
Issue	Issue Date	Applicable Machines	Remarks
First Edition	04-2005	4JG1 ISUZU ENGINES	9-93710

TABLE OF CONTENTS	
SECTION	DESCRIPTION
1	General Information
2	Maintenance
3	Disassembly
4	Inspection and repair
5	Reassembly
6	Lubricating system
7	Cooling system
8	Fuel system
10	Troubleshooting
11	Special tools
12	Repair standards

NOTES

SECTION 1

GENERAL INFORMATION

TABLE OF CONTENTS

ITEM	PAGE
General repair instructions	1-2
Notes on the format of this manual.....	1-2
Main data and specifications	1-6
Tightening torque specifications	1-7
Major component mounting nuts and bolts.....	1-9
Identification	1-16

GENERAL REPAIR INSTRUCTIONS

1. Before performing any service operation with the engine mounted, disconnect the grounding cable from the battery.
This will reduce the chance of cable damage and burning due to short circuiting.
2. Always use the proper tool or tools for the job on hand.
Where specified use the specially designed tool or tools.
3. Use genuine CASE parts, referring to the CASE PARTS CATALOG for engine safety.
4. Never reuse cotter pins, gaskets, O-rings, lock washers, and self locking nuts. Discard them as you remove them. Replace them with new ones.
5. Always keep disassembled parts neatly in groups. This will ensure a smooth reassembly operation.
It is especially important to keep fastening parts separate. These parts vary in hardness and design, depending on their installation position.
6. All parts should be carefully cleaned before inspection or reassembly.
Oil ports and other openings should be cleaned with compressed air to make sure that they are completely free of obstructions.
7. Rotating and sliding part surfaces should be lubricated with oil or grease before reassembly.
8. If necessary, use sealing compound on gaskets to prevent leakage.
9. Nut and bolt torque specifications should be carefully followed.
10. Always release the air pressure from any machine-mounted air tank(s) before dismounting the engine or disconnecting pipes and hoses. To not do so is extremely dangerous.
11. Always check and recheck you work. No service operation is complete until you have done this.

NOTES ON THE FORMAT OF THIS MANUAL

1. Find the applicable section by referring to the Table of Contents at the beginning of the Manual.
2. Common technical data such as general maintenance items, service specifications, and tightening torques are included in the "General Information" section.
3. Each section is divided into sub-sections dealing with disassembly, inspection and repair, and reassembly.
The section ENGINE ASSEMBLY is an exception. This part is divided into three sections to facilitate quick indexing.

4. When the same servicing operation is applicable to several different units, the manual will direct you to the appropriate page.
5. For the sake of brevity, self-explanatory removal and installation procedures are omitted. More complex procedures are covered in detail.
6. Each service operation section in this Service Manual begins with an exploded view of the applicable area. A brief explanation of the notation used follows.

Parts marked with an asterisk (*) are included in the repair kit.

Parts within a square frame are to be removed and installed as a single unit.

All parts within an irregularly shaped frame form a single assembly. They are considered to be a "major component". Individual parts within the irregularly shaped frame are considered to be "minor components".

The number indicates the service operation sequence.

Removal of unnumbered parts is unnecessary unless replacement is required.

The "* Repair Kit" indicates that a repair kit is available.

The parts listed under "Reassembly Steps" or "Installation Steps" are in the service operation sequence.

The removal or installation of parts marked with a triangle (▲) is an important operation. Detailed information is given in the text.

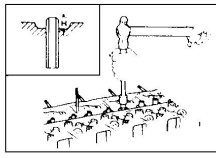
Disassembly Steps - 2

<ul style="list-style-type: none"> 1. Water by-pass hose 2. Thermostat housing 3. Water pump ▲ 4. Injection nozzle holder 5. Glow plug and glow plug connector 6. Cylinder head cover ▲ 7. Rocker arm shaft and rocker arm 8. Push rod ▲ 9. Cylinder head 	<ul style="list-style-type: none"> 10. Cylinder head gasket ▲ 11. Crankshaft damper pulley with dust seal 12. Timing gear case cover 13. Timing gear cover 14. Timing gear oil pipe 15. Idler gear "B" and shaft ▲ 16. Idler gear "A" ▲ 17. Idler gear shaft
--	--

Inverted Engine

1-4 GENERAL INFORMATION

7. Below is a sample of the text of the Service Manual



Valve Guide Installation

1. Lubricate the valve guide outer face with engine oil.
2. Attach the installer to the valve guide.
3. Use a hammer to drive the valve guide into position from the cylinder head upper face.
4. Measure the height of the valve guide upper end from the upper face of the cylinder head.

Valve Guide Upper End Height (H)	mm(in)
	14.1 (0.56)

Note:
If the valve guide has been removed, both the valve and the valve guide must be replaced with new ones as a set.
Be absolutely sure to discard the used valves and valve guides.

This is the item shown in the illustration. It is marked with a triangle (▲) on the Major Components page.

Letters and numbers contained in a circle refer to the illustration.

Symbols indicate the type of service operation or step to be performed. A detailed explanation of these symbols follows.

Service data and specifications are given in this table.

8. The following symbols appear throughout this Service Manual. They indicate the type of service operation or step to perform.



Removal



Adjustment



Installation



Cleaning



Disassembly



Important Operation Requiring Extra Care



Reassembly



Specified Torque (Tighten)



Alignment (Marks)



Commercially Available Tool Use Required or Recommended



Directional Indication



Lubrication (Oil)



Inspection



Lubrication (Grease)



Measurement



Sealant Application

9. Measurement criteria are defined by the terms “standard” and “limit”.

A measurement falling within the “standard” range indicates that the applicable part or parts are serviceable.

“Limit” should be taken as an absolute value.

A measurement which is outside the "limit" indicates that the applicable part or parts must be either repaired or replaced.

10. Components and parts are listed in the singular form throughout the Manual.

11. Directions used in this Manual are as follows:

Front: The cooling fan side of the engine viewed from the flywheel.

Left: The left hand side viewed from the same position.

Right: The right hand side viewed from the same position.

Rear: The flywheel side of the engine.

Cylinder numbers are counted from the front of the engine.

The front most cylinder is No. 1 and rear most cylinder is the final cylinder number of the engine.

The engine’s direction of rotation is counterclockwise viewed from the flywheel.

1-6 GENERAL INFORMATION

MAIN DATA AND SPECIFICATIONS

Note:

1. These specifications are based on the standard engine.
2. Specifications for items marked with an asterisk (*) will vary according to the type of equipment on which the engine is installed.

If you are unable to locate the data applicable to these specifications, please contact Isuzu Motors LTD through your machine supplier.

Item	Engine Model 4JB1
Engine type	Water cooled, four-cycle, in-line, overhead valve
Combustion chamber type	Direct injection
Cylinder liner type	Dry
No. of cylinders - bore x stroke mm (in)	4 - 95.4 x 107
Total piston displacement cm ³ (cid)	3.059 (186.7)
Compression ratio	18.6
* Engine dimensions mm (in)	739 x 625 x 746
Length x width x height	(29.1 x 24.6 x 29.4)
* Engine weight (Dry) kg (lb)	248 (547)
Fuel injection order	1 - 3 - 4 - 2
Fuel injection timing (B.T.D.C) degrees	16
Specified fuel	Diesel fuel
Injection pump	In-line plunger, Bosch A type
Governor	Variable speed mechanical type
Low idle speed (rpm)	850-1000
Injection nozzle	Multi-hole type
Injection starting pressure MPa (kg/cm ² /psi)	18.1 (185/2630)
Fuel filter type	Cartridge paper element
Water sediment decanter (if so equipped)	Sediment water level indicating type
Compression pressure MPa (kg/cm ² /psi)	3.04 (31/441)
Valve clearances (When cold)	
Intake mm (in)	0.40 (0.0157)
Exhaust mm (in)	0.40 (0.0157)
Lubrication method	Pressurized circulation
Oil pump	Trachoid type
Main oil filter type	Cartridge paper element, full flow
Partial oil filler	Not equipped
* Lubricating oil volume lit. (qts)	7.6-9.6 (oil pan)
Oil cooler (if so equipped)	Water cooled built in oil filter
Cooling method	Pressurized forced circulation
Coolant volume (engine only) lit. (qts)	5.0 (5.3)
Water pump	Belt driven impeller type
Thermostat type	Wax pellet type
* Generator V-A	12-50
* Starter V-KW	12-2.2

Thank you so much for reading.
Please click the “Buy Now!”
button below to download the
complete manual.



After you pay.

You can download the most
perfect and complete manual in
the world immediately.

Our support email:

ebooklibonline@outlook.com