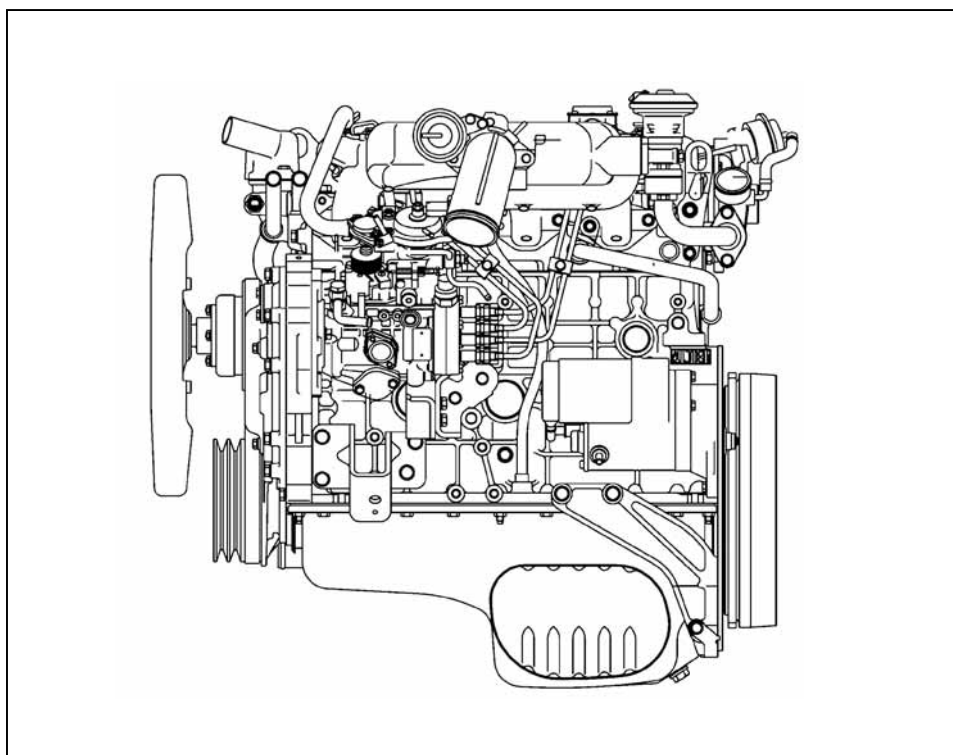


# 4JB1-TC ENGINE

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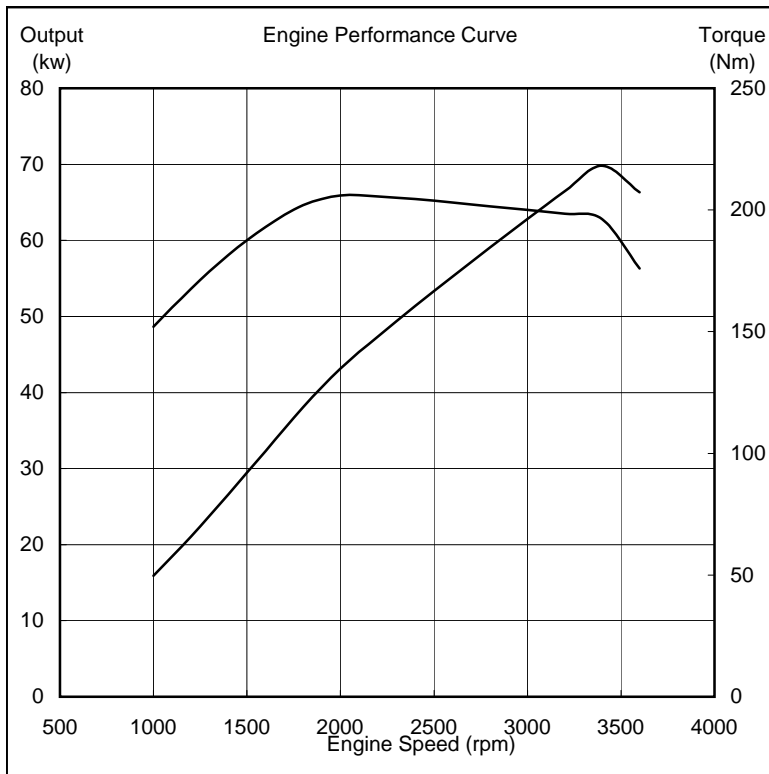
## *Mechanical Specification & Structure*

*Applicable To N\*R*

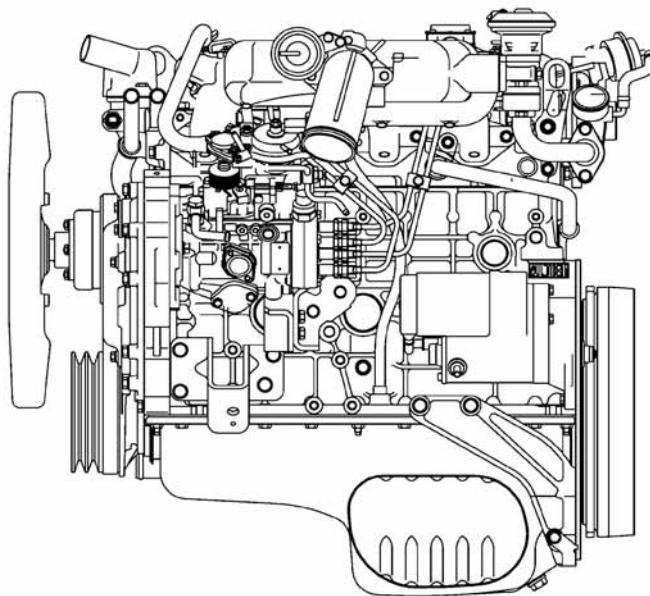


**ISUZU**  
ISUZU MOTORS LIMITED

## OUTLINE



	4JB1-TC
Applicable Emission	Euro 2
Maximum Output	70kw/3400rpm (95PS/3400rpm)
Maximum Torque	206Nm/2000rpm (21.0kgm/2000rpm)



The four cycle direct injection 4JB1-TC engine features two valves per cylinder that are operated via a single camshaft fitted to the engine block.

Auto-thematic pistons with cast steel struts are used to reduce thermal expansion and resulting engine noise when the engine is cold.

Chrome plated dry type cylinder liners provide the highest durability.

The crankshaft has been tufftrided to provide a longer service life. Because the crankshaft is tufftrided, it cannot be reground.

The 4JB1-TC engine is equipped with the VE type mechanical fuel injection pump made by Bosch

**ENGINE MAIN DATA & SPECIFICATION**

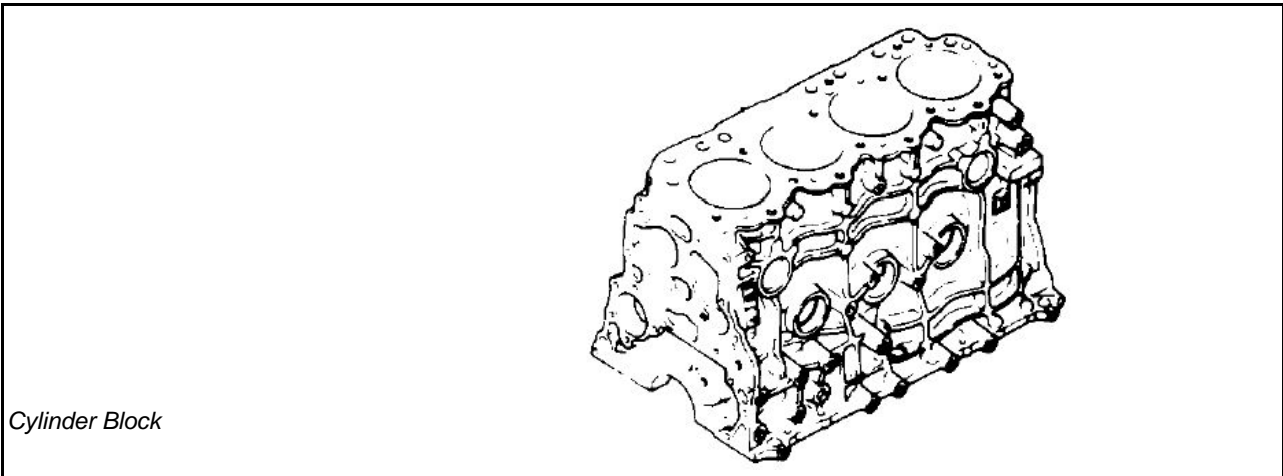
<b>General</b>	
Engine Model	4JB1-TC
Engine Type	Diesel, Four Cycle, Overhead Valve, Water Cooled
Engine Weight (Kg) (With Cooling Fan, Clutch Disc)	Approximately 256
Cylinder Layout - Number of Cylinders	Inline-Four Cylinders
Fuel Injection Order	1-3-4-2
Bore x Stroke (mm)	93.0 x 102.0
Total Displacement (cc)	2771
Combustion Camber Type	Direct Injection
Cylinder Liner	Dry Type
Idle Speed (rpm)	750 ± 25
<b>Fuel System</b>	
Injection Pump Type	BOSCH Distributor VE Type
Governor Type	Mechanical Variable All Speed
Injection Nozzle Type	Hole Nozzle
Number of Injection Hole	5
Diameter of Injection Hole (mm)	0.20
1st Stage Injection Nozzle Operating Pressure (Mpa)	19.5
2nd Stage Injection Nozzle Operating Pressure (Mpa)	26.5
Fuel Filter Type	Cartridge Paper Element and Water Separator
<b>Valve System</b>	
Valve Layout	Overhead Valve
Drive Type	Gear Drive
Intake Valve Open At BTDC (deg)	24.5
Intake Valve Close At ABDC (deg)	55.5
Exhaust Valve Open At BBDC (deg)	54.0
Exhaust Valve Close At ATDC (deg)	26.0
Intake Valve Clearance At Cold (mm)	0.4
Exhaust Valve Clearance At Cold (mm)	0.4
<b>Cooling System</b>	
Cooling Method	Water Cooled
Water Capacity (Litters) (Including Radiator)	10
Water Pump Type	Centrifugal
Water Pump Pulley Ratio (Crank / Pump)	1.2
Thermostat Type	Wax Pellet With Jiggle Valve
Thermostat Initial Opening Temperature (deg. C)	82
Thermostat Full Opening Temperature (deg. C)	95

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<b>Lubricating System</b>	
Lubricating Method	Pressure Circulation
Oil Pump Type	Gear
Oil Capacity (Litter)	6.6 - 7.1
Oil Filter Type	Cartridge Paper Element
<b>Starting System</b>	
Starter Motor Output (V-kW)	12 - 2.0 or 12 - 2.2
<b>Charge System</b>	
Alternator Output (V-A)	12 - 50 or 12 - 60
Regulator Type	IC

## MAIN CONSTRUCTION PARTS

### CYLINDER BLOCK



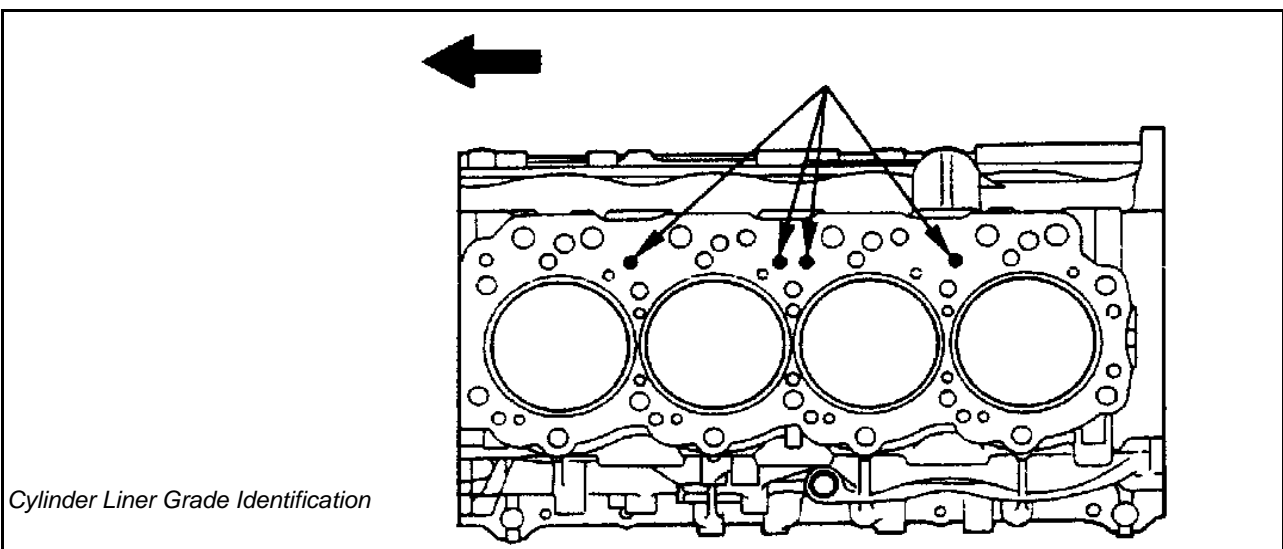
The cylinder block is a complex structure with cooling water and lubricating oil passages, and crankshaft supports in the lower part. The cylinder block is made of cast iron because it has to be strong enough to resist not only high temperatures, but also the high pressure gasses generated in the cylinders. It also needs to have sufficient corrosion resistance to withstand these gasses.

The water cooled cylinder block can be divided into a one-piece cast type and a liner type. In the liner type liners are inserted into the cylinder portion of the block. Furthermore, liners can be divided into a dry type and a wet type according to the cooling method employed.

With the dry liner type, thin sleeve is pressed into place inside the cylinder. When worn, the liner can be easily replaced. With dry liner type there is no possibility of cooling water leakage. When replacing liners, it is necessary to measure the liners to make sure that the dimensions meet the requirement, because heat conduction decreases if the liners do not closely fit the cylinder block.

With cylinder liners, the wear is greatest near the top of piston ring at top dead center, and the wear decreases towards bottom dead center. This is due to piston slapping, side pressure, and thermal expansion.

The sulfur contained in light oil is burnt to form  $\text{SO}_2$ , part of which is oxidized into  $\text{SO}_3$ . When the water vapor in the burnt gas reaches the dew point, sulfuric acid is generated by the reaction ( $\text{H}_2\text{O} + \text{SO}_3 = \text{H}_2\text{SO}_4$ ). The carbon generated by combustion absorbs the sulfuric acid, and causes serious chemical corrosion.



Production Line Use	Measurement in Service		Service Parts	
	Cylinder Body Bore Diameter Average (mm)	Liner Outside Diameter (mm)	Liner Grade ( Without Piston )	Liner Bore Diameter (mm)
1	95.001 – 95.010	95.011 – 95.020	1-AX (For piston size AX)	93.035 – 93.050
			1-CX (For piston size CX)	93.051 – 93.066
2	95.011 – 95.020	95.021 – 95.030	2-AX (For piston size AX)	93.035 – 93.050
			2-CX (For piston size CX)	93.051 – 93.066
3	95.021 – 95.030	95.031 – 95.040	3-AX (For piston size AX)	93.035 – 93.050
			3-CX (For piston size CX)	93.051 – 93.066
4	95.031 – 95.040	95.041 – 95.050	4-AX (For piston size AX)	93.035 – 93.050
			4-CX (For piston size CX)	93.051 – 93.066

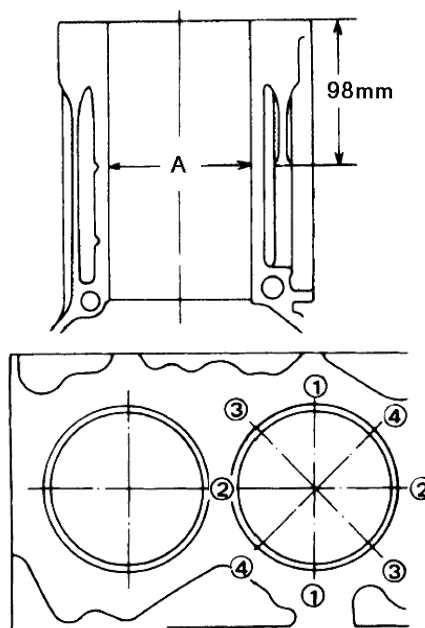
The 4JB1 engine employs chrome plated dry type cylinder liner. Marks are made on top of the cylinder block to indicate the cylinder liner diameter.

This information is important when cylinder liners need to be replaced. The production line stamped cylinder liner grade on the top of cylinder body, the cylinder liner outside diameter grade 1, 2, 3 and 4.

If you find cylinder liner outside diameter grade "1" on the cylinder body and piston outside diameter "B" on the piston top or result of measurement of each parts, you will select service parts grade for cylinder liner "1-AX" grade and piston "AX" grade.

**Inspection Item**

**Cylinder Body Bore Measurement**



Required Tool: Cylinder Indicator

Measure the point "A" across - , - , - and - .

Calculate the average value of the four measurements.

Service Standard: 95.001 - 95.040mm