INDUSTRIAL DIESEL ENGINE

AU-4LE2
BV-4LE2
MODEL

ISUZU

WORKSHOP MANUAL

ISUZU MOTORS LIMITED

MidWestTech | JCB Isuzu AU-4LE2, BV-4LE2 Industrial Diesel Engine Service Manual | Pu... Order the manual at mid-west-tech.com >

General Information

General Information

Table of Contents

General Information 0A-2
Service Precautions 0A-2
Reading the Model 0A-7
General Information 0A-8
Recommended Lubricant 0A-14
List of Trouble Symptom 0A-15
Repair Standard 0A-24

MidWestTech | JCB Isuzu AU-4LE2, BV-4LE2 Industrial Diesel Engine Service Manual... Order the manual at mid-west-tech.com >

Engine

4LE2 Engine Mechanical

Table of Contents

ISUZU Diesel Engine 1A-2
Service Precautions 1A-2
How to Read the Model 1A-3
Explanations on Functions and Operation 1A-3
Function Check 1A-4
Specifications 1A-12
Engine Accessories 1A-13
Components 1A-13
Removal 1A-14
Installation 1A-15
Torque Specifications 1A-17
Engine Exterior Equipment 1A-18
Components 1A-18
Removal 1A-23
Installation 1A-29
Torque Specifications 1A-38
Rocker Arm Shaft 1A-39
Components 1A-39
Removal 1A-40
Disassembly 1A-40
Inspection 1A-41
Reassembly 1A-43
Installation 1A-44
Torque Specifications 1A-45
Cylinder Head 1A-46
Components 1A-46
Removal 1A-47
Disassembly 1A-48
Inspection 1A-48
Reassembly 1A-53
Installation 1A-56
Torque Specifications 1A-57
Piston, Connecting Rod 1A-58
Components 1A-58
Removal 1A-58
Disassembly 1A-60
Inspection 1A-60
Reassembly 1A-65
Installation 1A-66
Torque Specifications 1A-69
Flywheel 1A-70
Components 1A-70
Removal 1A-70
Installation 1A-71
Torque Specifications 1A-72
Crankshaft Front Oil Seal 1A-73
Components 1A-73
Removal 1A-73
Inspection 1A-75
Installation 1A-75
Torque Specifications 1A-77
Crankshaft Rear Oil Seal 1A-78
Components 1A-78
Removal 1A-78
Installation 1A-79
Torque Specifications 1A-80
Timing Gear Train 1A-81
Components 1A-81
Removal 1A-81
Inspection 1A-82
Installation 1A-83
Torque Specifications 1A-85
Camshaft 1A-86
Components 1A-86
Removal 1A-86
Inspection 1A-87
Installation 1A-89
Torque Specifications 1A-90
Crankshaft 1A-91
Components 1A-91
Removal 1A-91
Disassembly 1A-92
Inspection 1A-92
Reassembly 1A-95
Installation 1A-95
Torque Specifications 1A-97
Cylinder Block 1A-98
Components 1A-98
Removal 1A-98
Inspection 1A-99
Installation 1A-100
Special Tool 1A-101
List of Special Tool 1A-101

MidWestTech | JCB Isuzu AU-4LE2, BV-4LE2 Industrial Diesel Engine Service Manual... Order the manual at mid-west-tech.com >

Engine

4LE2 Cooling System

Table of Contents

Cooling System 1B-2
Service Precautions 1B-2
Explanations on Functions and Operation 1B-2
Function Check 1B-4
Water Pump 1B-7
Components 1B-7
Inspection 1B-7
Thermostat 1B-8
Inspection 1B-8
Fan Clutch, Cooling Fan 1B-9
Inspection 1B-9

MidWestTech | JCB Isuzu AU-4LE2, BV-4LE2 Industrial Diesel Engine Service Manual... Order the manual at mid-west-tech.com >

Water pump

Item to be checked		Standard value	Service limit	Repairing procedure	Remarks
Play of the water pump ball bearing (radius direction)		0.008 — 0.010 {0.00031 — 0.00040}	0.2 {0.008}	Replace.	
Discharge amount (L/min)	Pump speed: 2,800 rpm Coolant temperature is normal. Full pressure: 0.035 MPa {3.5 m·Aq}	70			4LE2N
	Pump speed: 1,900 rpm Coolant temperature is normal. Full pressure: 0.045 MPa {4.5 m·Aq}	61			4LE2X
Deflection of the fan belt	With two belts: (approx. 98 N {22 lb})	Approx. 7.5 — 8.5 mm {0.295 — 0.335 in}			
	With one belt: (approx. 98 N {22 lb})	Approx. 5.5 — 6.0 mm {0.217 — 0.236 in}			Generator 30A model
		Approx. 8.0 — 10.0 mm {0.315 — 0.394 in}			Generator 50A model
Thermostat working start temperature (at barometric pressure)		82°C {180°F}			Replace the thermostat if its working is incomplete.
Thermostat full-open temperature (at barometric pressure)		95°C {203°F}		The temperature when thermostat lift amount is 8.0 mm {0.315 in} or more	

Fuel feed pump

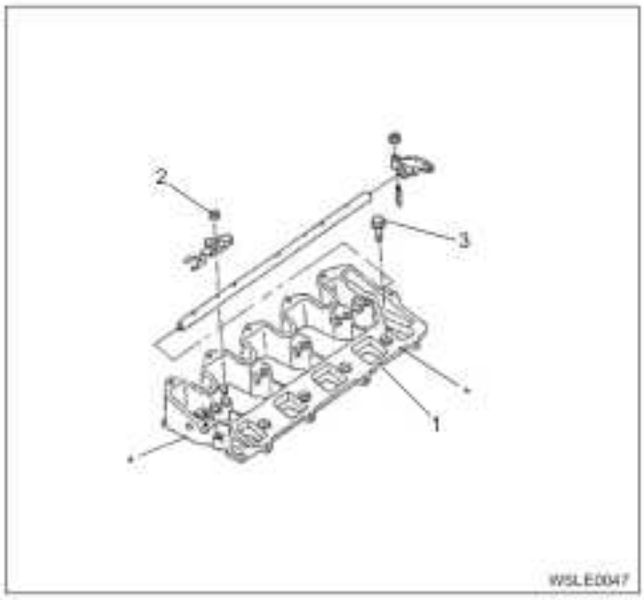
Item to be checked		Standard value	Service limit	Repairing procedure	Remarks
Discharge amount (L/min)	At 28.4 kPa {4.1 psi}	1.35 or more		Repair or replace.	
	At 17.7 kPa {2.6 psi}	0.70 or more			
	At 13.7 kPa {2.0 psi}	1.41 or more			
Airtight (98.1 kPa {14.2 psi})		Be sure that there is no leakage.		Repair or replace when there is leakage.	

MidWestTech | JCB Isuzu AU-4LE2, BV-4LE2 Industrial Diesel Engine Service Manual... Order the manual at mid-west-tech.com >

Removal

1. Remove the EGR cooler.
   Refer to 1A-23, "Removal, Engine Exterior Equipment".
2. Remove the cylinder head cover.
   Refer to 1A-23, "Removal, Engine Exterior Equipment".
3. Remove the water pipe.
   Refer to 1A-23, "Removal, Engine Exterior Equipment".
4. Remove the rocker arm bracket ASM.
   (M6 × 1.0: 5 bolts, 6 nuts)

Note:
Since liquid gasket is used on the mating surface to the cylinder head, be careful not to damage the rocker arm bracket when removing it.
* With screws for replacer (M8 × 1.25)



Name
1. Rocker Arm Bracket
2. Nut
3. Bolt

5. Pull out the eight push rods.

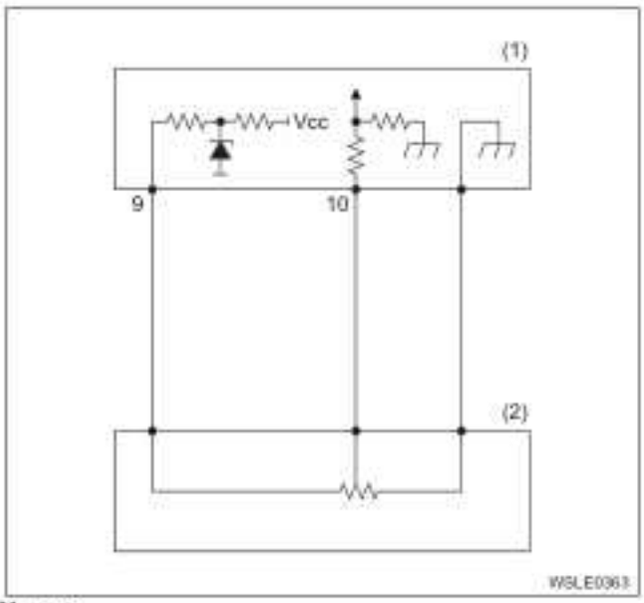
Disassembly

1. Remove plug of the rocker arm shaft.
2. Pull out the rocker arm shaft backward.

CAUTION:
When reinstalling the rocker arm, prepare tags written down the cylinder numbers and symbols to distinguish "intake" and "exhaust", to avoid installing the improper position.

MidWestTech | JCB Isuzu AU-4LE2, BV-4LE2 Industrial Diesel Engine Service Manual... Order the manual at mid-west-tech.com >

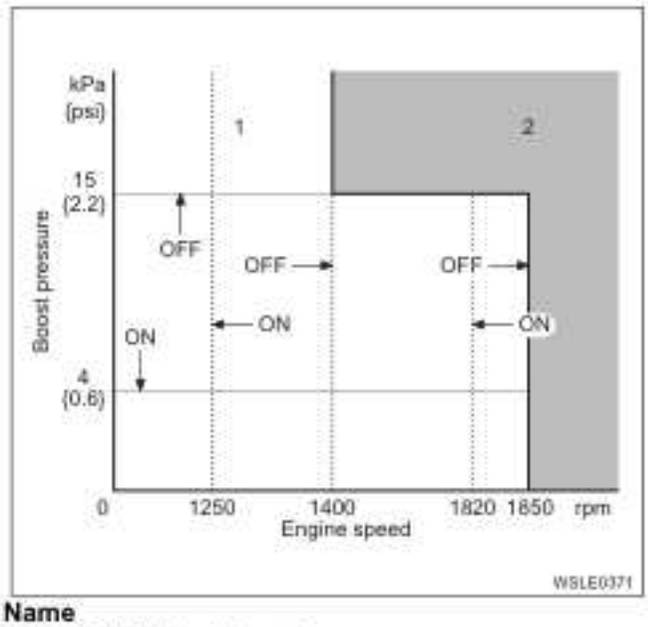
Boost Pressure Sensor Circuit Diagram



Name

1. EGR Cut Controller
2. Boost Pressure Sensor

Engine Speed and Boost Pressure Control



Name

1. EGR Valve Closed
2. EGR Valve Open

Engine Coolant Temperature Control

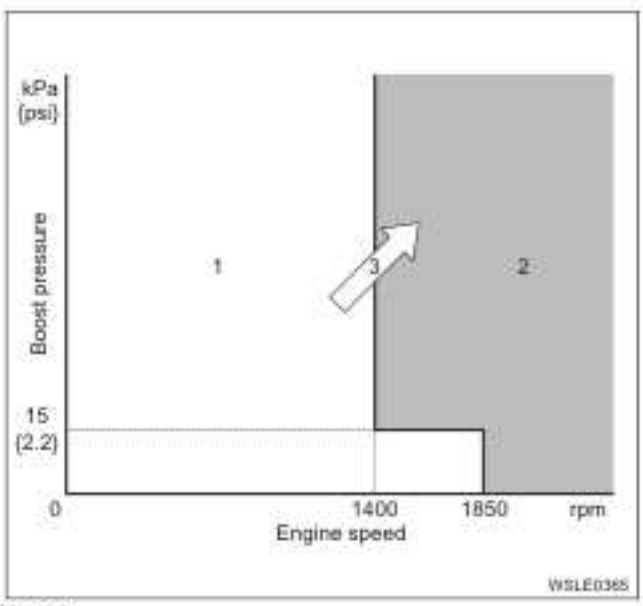
The EGR valve is opened when the engine coolant temperature becomes 60°C {140°F} or more, and is closed when 55°C {131°F} or less.

Control When the Sensor Has an Open Circuit

The following sensors perform backup control when they have an open circuit. In this case, EGR valve operates according to other normal sensors.

Sensor	Backup control when open circuit occurs
Engine coolant temperature sensor	Control as the engine coolant temperature is 60°C {140°F} or more.
Tachosensor	Control as the engine speed is between 1,400 and 1,850 rpm.
Boost pressure sensor	Control as the boost pressure is 15 kPa {2.2 psi} or more.

When the engine speed and boost pressure increase



Name

1. EGR Valve Closed
2. EGR Valve Open
3. Engine Speed and Boost Pressure Increase

MidWestTech | JCB Isuzu AU-4LE2, BV-4LE2 Industrial Diesel Engine Service Manual... Order the manual at mid-west-tech.com >