

# SERVICE MANUAL

## E215C EVO Crawler Excavator

Part number 48034215  
English  
June 2016





# **SERVICE MANUAL**

**E215C EVO Crawler excavator LC version (TIER 3) - LATAM Market**

# Contents

---

## INTRODUCTION

Engine.....	10
[10.001] Engine and crankcase .....	10.1
[10.102] Pan and covers .....	10.2
[10.106] Valve drive and gears .....	10.3
[10.101] Cylinder heads .....	10.4
[10.105] Connecting rods and pistons.....	10.5
[10.103] Crankshaft and flywheel.....	10.6
[10.216] Fuel tanks .....	10.7
[10.206] Fuel filters .....	10.8
[10.218] Fuel injection system.....	10.9
[10.202] Air cleaners and lines .....	10.10
[10.250] Turbocharger and lines.....	10.11
[10.254] Intake and exhaust manifolds and muffler .....	10.12
[10.501] Exhaust Gas Recirculation (EGR) exhaust treatment.....	10.13
[10.400] Engine cooling system .....	10.14
[10.414] Fan and drive .....	10.15
[10.310] Aftercooler.....	10.16
[10.304] Engine lubrication system.....	10.17
[10.408] Oil cooler and lines.....	10.18
Hydraulic systems.....	35
[35.000] Hydraulic systems.....	35.1
[35.300] Reservoir, cooler, and filters.....	35.2
[35.104] Fixed displacement pump.....	35.3
[35.106] Variable displacement pump .....	35.4
[35.102] Pump control valves.....	35.5
[35.359] Main control valve.....	35.6

**<https://www.ebooklibonline.com>**

Hello dear friend!

Thank you very much for reading.

Enter the link into your browser.

The full manual is available for immediate download.

**<https://www.ebooklibonline.com>**

[35.357] Pilot system .....	35.7
[35.355] Hydraulic hand control .....	35.8
[35.356] Hydraulic foot control.....	35.9
[35.352] Hydraulic swing system .....	35.10
[35.353] Hydraulic travel system .....	35.11
[35.354] Hydraulic central joint .....	35.12
[35.736] Boom hydraulic system .....	35.13
[35.737] Dipper hydraulic system.....	35.14
[35.738] Excavator and backhoe bucket hydraulic system.....	35.15
[35.360] Hammer and rotating bucket hydraulic system .....	35.16
<b>Frames and ballasting .....</b>	<b>39</b>
[39.140] Ballasts and supports .....	39.1
<b>Tracks and track suspension.....</b>	<b>48</b>
[48.130] Track frame and driving wheels .....	48.1
[48.100] Tracks .....	48.2
[48.134] Track tension units .....	48.3
[48.138] Track rollers .....	48.4
<b>Cab climate control .....</b>	<b>50</b>
[50.100] Heating .....	50.1
[50.200] Air conditioning.....	50.2
<b>Electrical systems .....</b>	<b>55</b>
[55.000] Electrical system .....	55.1
[55.100] Harnesses and connectors.....	55.2
[55.525] Cab engine controls.....	55.3
[55.015] Engine control system.....	55.4
[55.201] Engine starting system .....	55.5
[55.301] Alternator.....	55.6
[55.302] Battery.....	55.7

[55.202] Cold start aid .....	55.8
[55.010] Fuel injection system .....	55.9
[55.014] Engine intake and exhaust system.....	55.10
[55.989] Exhaust Gas Recirculation (EGR) electrical system .....	55.11
[55.012] Engine cooling system .....	55.12
[55.013] Engine oil system .....	55.13
[55.640] Electronic modules .....	55.14
[55.512] Cab controls.....	55.15
[55.036] Hydraulic system control .....	55.16
[55.051] Cab Heating, Ventilation, and Air-Conditioning (HVAC) controls.....	55.17
[55.050] Heating, Ventilation, and Air-Conditioning (HVAC) control system.....	55.18
[55.416] Swing control system .....	55.19
[55.417] Travel control system .....	55.20
[55.530] Camera.....	55.21
[55.518] Wiper and washer system.....	55.22
[55.404] External lighting .....	55.23
[55.514] Cab lighting .....	55.24
[55.408] Warning indicators, alarms, and instruments .....	55.25
[55.992] Anti-theft system .....	55.26
[55.DTC] FAULT CODES.....	55.27
<b>Booms, dippers, and buckets .....</b>	<b>84</b>
[84.910] Boom.....	84.1
[84.912] Dipper arm .....	84.2
[84.100] Bucket.....	84.3
<b>Platform, cab, bodywork, and decals .....</b>	<b>90</b>
[90.150] Cab.....	90.1
[90.156] Cab windshield and windows .....	90.2
[90.120] Mechanically-adjusted operator seat.....	90.3

[90.100] Engine hood and panels ..... 90.4



# INTRODUCTION

---

## **Foreword - Important notice regarding equipment servicing**

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The manufacturer reserves the right to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions, and illustrative material herein are as accurate as known at time of publication but are subject to change without notice.

In case of questions, refer to your NEW HOLLAND CONSTRUCTION Sales and Service Networks.

## Safety rules


### Personal safety





This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

 WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

 CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

**FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.**

### Machine safety

**NOTICE:** Notice indicates a situation that, if not avoided, could result in machine or property damage.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

### Information

**NOTE:** Note indicates additional information that clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

## **Safety rules - General information**

### **Cleaning**

Clean the metal parts with cleaning solution that meets the standard and steam cleaning. (except for bearings)

After cleaning, dry well, and inject oil in all parts.

Also inject oil into the bearings after drying.

### **Inspection**

When disassembling parts, check all the parts.

If there are any worn or damaged parts, replace them.

Inspect carefully to prevent initial breakdowns.

### **Bearing**

Replace any loose bearings.

Air dry bearings before installing them.

### **Needle bearing**

When inserting needle bearings, be very careful not to damage them.

Apply grease to the section where the needle bearing will be inserted.

### **Gear**

Check that there is no wear and no damage.

### **Oil seal, O-ring, gasket**

Always install new oil seals, O-rings, and gaskets.

Apply grease to sections where oil seals and O-rings will be inserted.

### **Shaft**

Check that there is no wear and no damage.

Check the bearings and check for damaged oil seals on the shaft.

### **Service parts**

Install NEW HOLLAND CONSTRUCTION genuine service parts.

When placing an order, check the parts catalog. It contains the NEW HOLLAND CONSTRUCTION genuine part numbers.

Any breakdowns arising from the installation of non-genuine parts are not covered by the warranty.

### **Lubricants (fuel, hydraulic oil)**

Use the oil from the specified company or specified in the operator's manual or service Manual.

Any breakdowns arising from any fuel or hydraulic oil other than those specified are not covered by the warranty.



# **SERVICE MANUAL**

## **Engine**

**E215C EVO Crawler excavator LC version (TIER 3) - LATAM Market**

## Engine - General specification

### Engine main data

Item		Engine model 4HK1
Type		Diesel / 4-cycle / water cooling, inline 4 cylinder OHC
Shape of combustion chamber		Direct injection type
Cylinder liner type		Dry type
Cylinder bore x stroke		<b>115 mm (4.528 in) x 125 mm (4.921 in)</b>
Displacement		<b>5.193 L (316.89 in<sup>3</sup>)</b>
Compression ratio		17.5
Compression pressure		<b>3.04 MPa (440.95 psi) 200 RPM</b>
Idling rotation speed		<b>800 RPM</b>
Valve clearance	In	<b>0.4 mm (0.016 in)</b> (while engine is cool)
	Out	<b>0.4 mm (0.016 in)</b> (while engine is cool)
Ignition type		Compression ignition
Injection order		1, 3, 4, 2
Lubricant system		
Lubricating type		Pressure type
Oil pump type		Gear type
Lubrication oil amount		<b>13.0 - 20.5 L (3.434 - 5.416 US gal)</b>
Oil filter type		Full flow filter with integral bypass valve (cartridge type)
Oil cooled type		Built-in, water cooled
Cooling system		
Cooling type		Water cooled
Radiator type		Corrugated fin (pressure type)
Water pump type		Spiral, belt type
Thermostat type		Wax type unit
Thermostat valve opening temperature		<b>76.5 °C (170 °F)</b> without jiggle valve
		<b>82 °C (180 °F)</b> with jiggle valve
Coolant capacity		<b>14 L (3.70 US gal)</b>
Fuel system		
Injection pump type		Electronic control common rail type
Governor type		Electronic type
Timer type		Electronic type
Injection nozzle type		Porous type, 7 holes
Charging system		
Generator type		AC type
Output		<b>24 V/ 50 A</b>
Regulator type		IC
Start system		
Starter type		Reduction type
Output		<b>24 V / 5.0 kW</b>
Preheat system type		Glow plug
Glow plug standard voltage		<b>23 V/ 3.5 A</b>

### Cooling system main data

Item	Data
Water pump	Centrifugal impeller type
Pulley ratio	<b>0.850</b> :
Thermostat	Wax pellet type
Valve opening temperature	<b>76.5 °C (170 °F)</b> without jiggle valve
	<b>82 °C (180 °F)</b> with jiggle valve
Full-open temperature	<b>90 °C (194 °F)</b> without jiggle valve
	<b>95.0 °C (203 °F)</b> with jiggle valve

### Electrical system main data

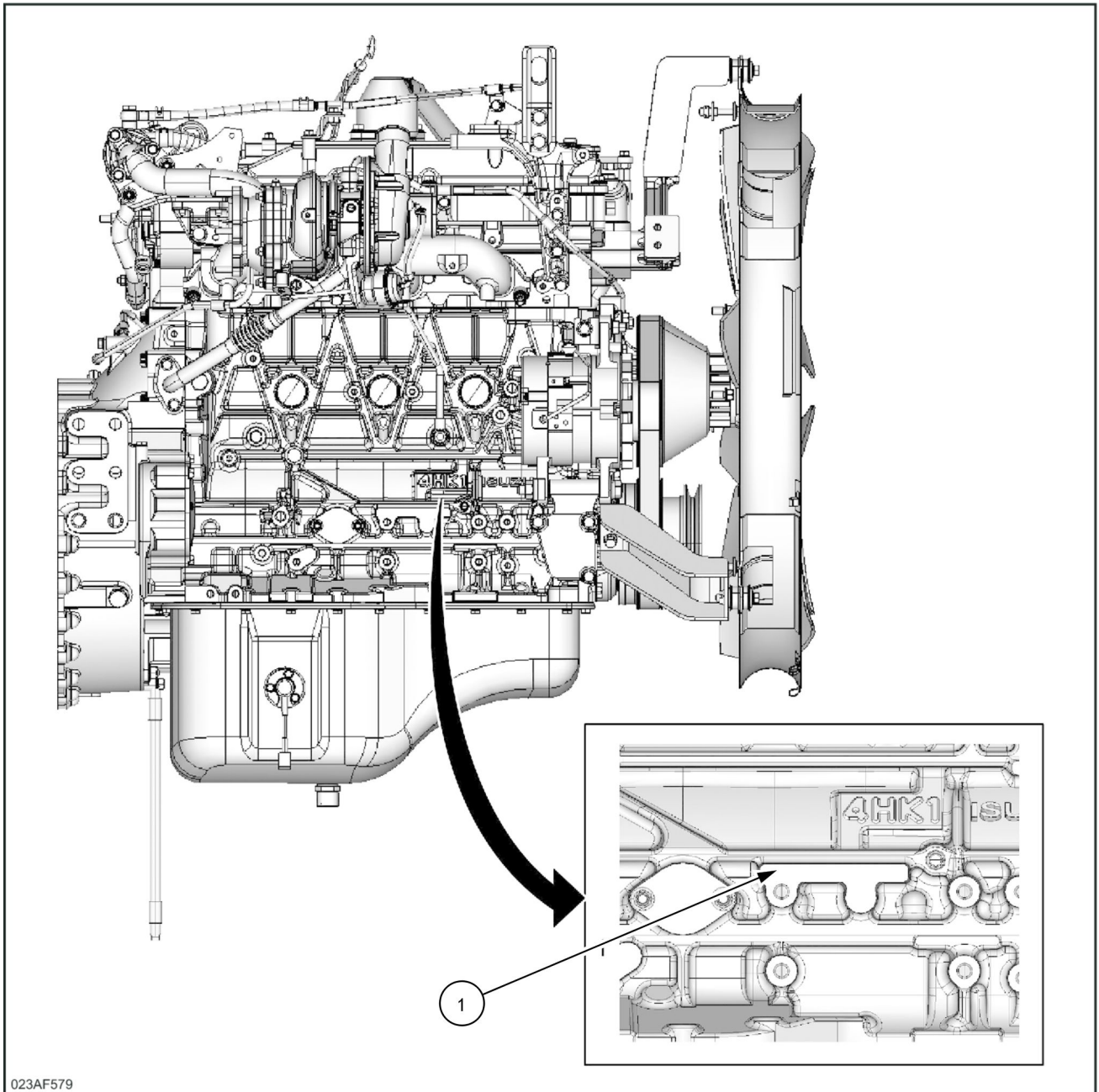
Generator	
Item	Data
Isuzu parts number	8980921161
Nominal output	<b>24 V/ 50 A</b>
Rated speed	<b>5000 RPM</b>
Regulator type	IC type
Regulated voltage	<b>28.5 V</b>
Weight	<b>9.5 kg (20.9 lb)</b>

Starter		
Type (Manufacturer)	Nikko	
Rated	Voltage	<b>24 V</b>
	Output	<b>5 kW (6.8 Hp)</b>
	Time	<b>30 s</b>
No. of pinion gears	13	
Direction of rotation (toward pinion)	Right	
Weight (approx.)	<b>8.0 kg (17.6 lb)</b>	
No-load characteristics	Current/voltage	<b>85 A or less/ 23 V</b>
	Speed	<b>3300 RPM</b> or more
Load characteristics	Current/voltage	<b>400 A/ 18.5 V</b>
	Torque	<b>28.4 N·m (20.95 lb ft)</b> or more
	Speed	<b>1250 RPM</b> or more
Locking characteristics	Current/voltage	<b>1400 A or less/ 9 V</b>
	Torque	<b>88.2 N·m (65.05 lb ft)</b> or more

Glow plug	
Item	Type
Preheat unit model	Glow plug
Glow plug rated voltage	<b>23 V</b>

## Engine - Identification

### Engine number



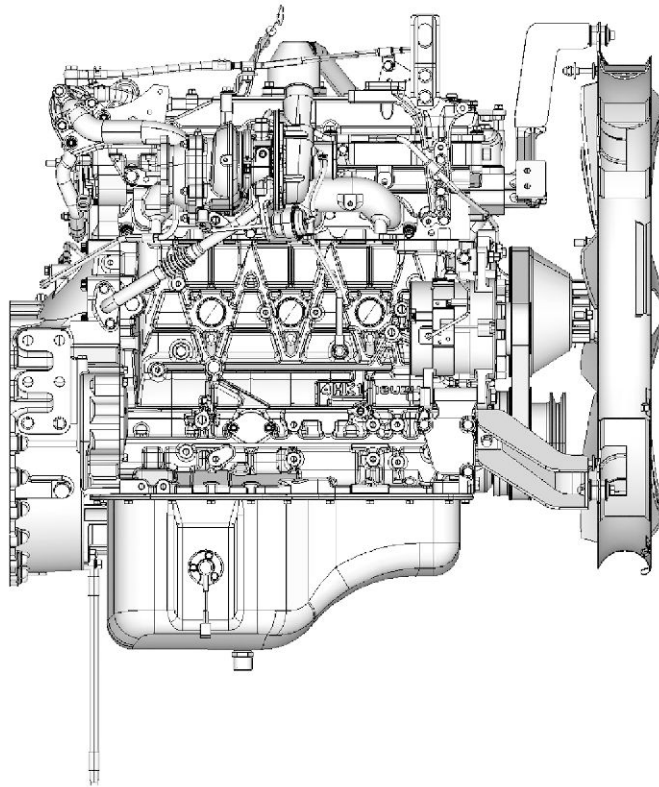
023AF579

023AF579 1

1. Engine number stamping

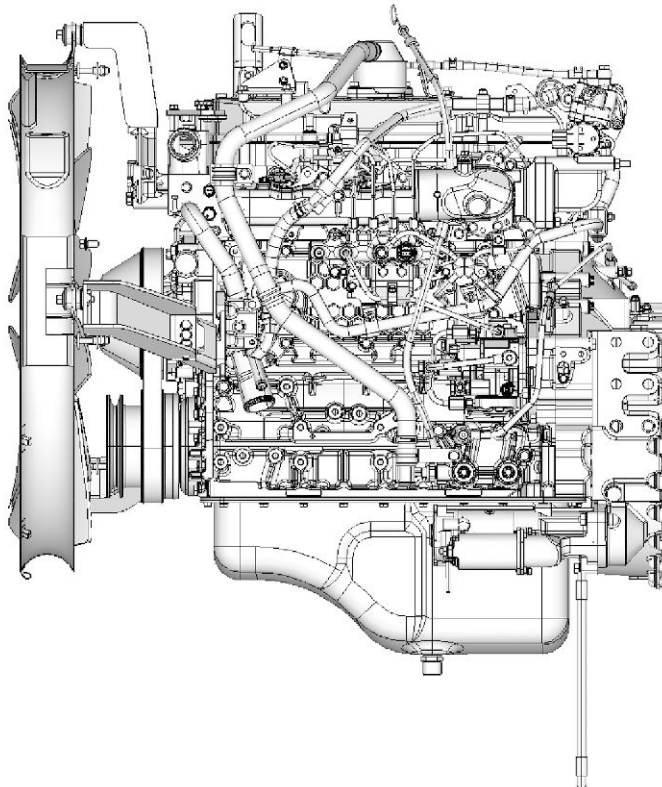
## Engine - External view

### Engine structural diagram



03F011FB

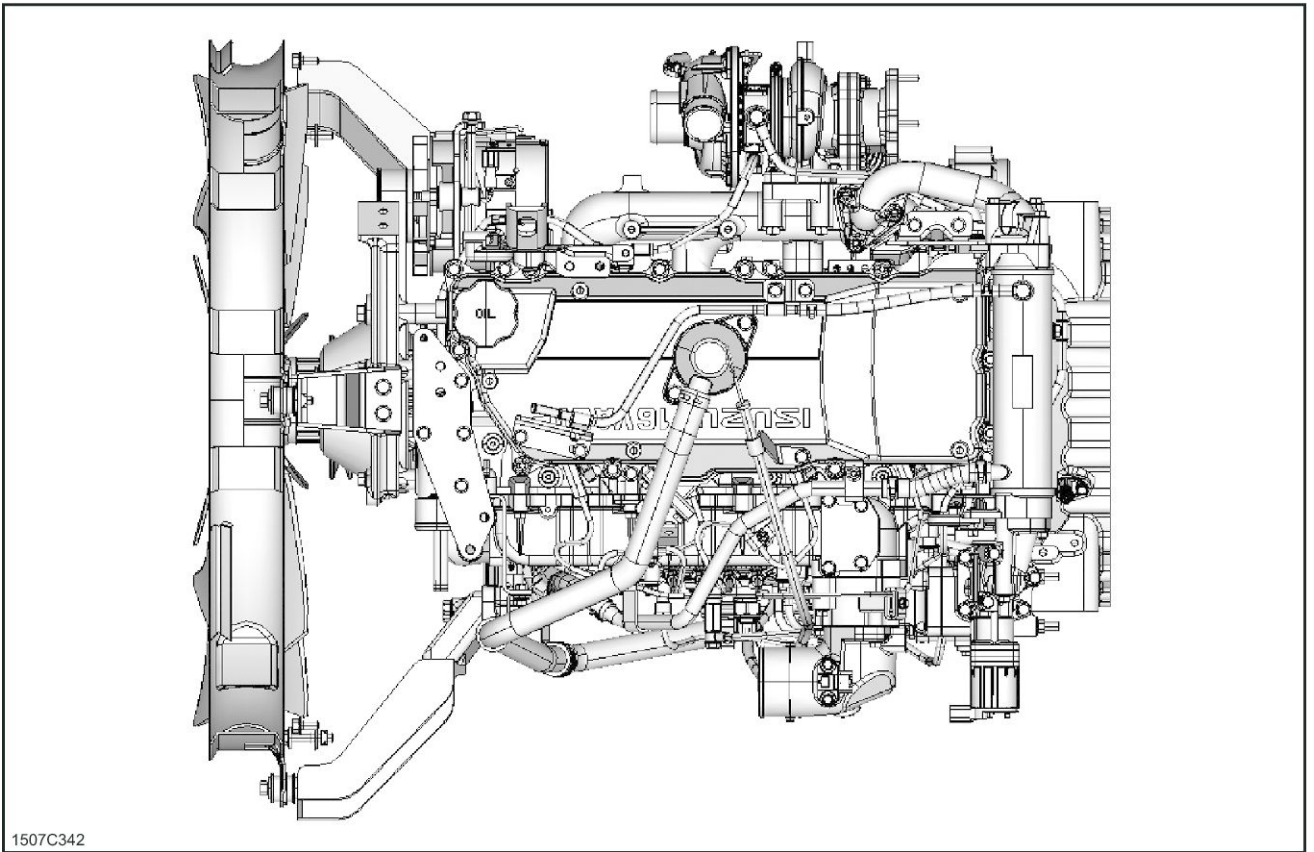
03F011FB 1



05210A95

05210A95 2

Engine - Engine and crankcase



1507C342

1507C342 3



**Suggest:**

**If the above button click is invalid.**

**Please download this document**

**first, and then click the above link**

**to download the complete manual.**

**Thank you so much for reading**

## **Engine - Static description**

### **Engine electronic control**

The ECM controls the range from injection to intake and exhaust, including the fuel injection quantity, injection timing, intake air restriction, EGR and idling speed.

### **Cylinder block**

The cylinder block is made of cast iron, with equal center distance for each bore and has high rigidity and the center of the crankshaft matches the center of the block. The bearing caps have a ladder frame structure and are tightened to its plastic region by the turn-of-nut method.

### **Cylinder liner**

The cylinder liner is selected to match the bore inner diameter of the cylinder block. The ID number is stamped on the left side of the cylinder.

### **Piston**

The pistons are made of an aluminum alloy and use autothermatic pistons with cast struts. The combustion chamber is the round re-entrant type

### **Cylinder head**

The cylinder heads are made of cast iron and each cylinder has 4 valves. The cylinder head bolts use the angle tightening method to further improve reliability and durability.

### **Crankshaft**

The crankshaft uses tufftrided steel, and each of the journal diameter grades are marked on the No. 1 balance weight.

### **EGR system**

The EGR system is controlled by the engine control module (ECM) based on the coolant temperature, engine speed or engine load, and other data. It purifies the emission gas by recirculating it. The main components are the EGR valve, EGR cooler, and sensors.

### **Connecting rod cap bolt**

The connecting rod cap bolts use the angle tightening method to further improve reliability and durability.

### **Common rail (fuel rail) type electronic control injection system**

The common rail type electronic control injection system consists of the fuel supply pump, which supplies fuel at the target pressure value set for high-pressure fuel, the common rail, which measures the high-pressure fuel, and the fuel injector, which turns the fuel into a fine mist and inject it. Each is controlled by the ECM based on signals. The injection timing and injection quantity are controlled according to the operating conditions.

### **Fuel injector**

The fuel injectors use 7-hole nozzles. The fuel injection quantity and injection timing are adjusted by opening and closing the electromagnetic valve at the injector head portion.

The ECM corrects for variance in fuel injection quantity between the fuel injectors according to the ID code data in memory. When fuel injectors are adjusted, the ID code data must be recorded in the ECM.

### **Fuel filter with sedimenter**

The fuel filter with sedimenter uses the difference in specific gravity between diesel and water to remove any water from the fuel. When the filter fills up with water, an indicator notifies the operator.

**<https://www.ebooklibonline.com>**

Hello dear friend!

Thank you very much for reading.

Enter the link into your browser.

The full manual is available for immediate download.

**<https://www.ebooklibonline.com>**