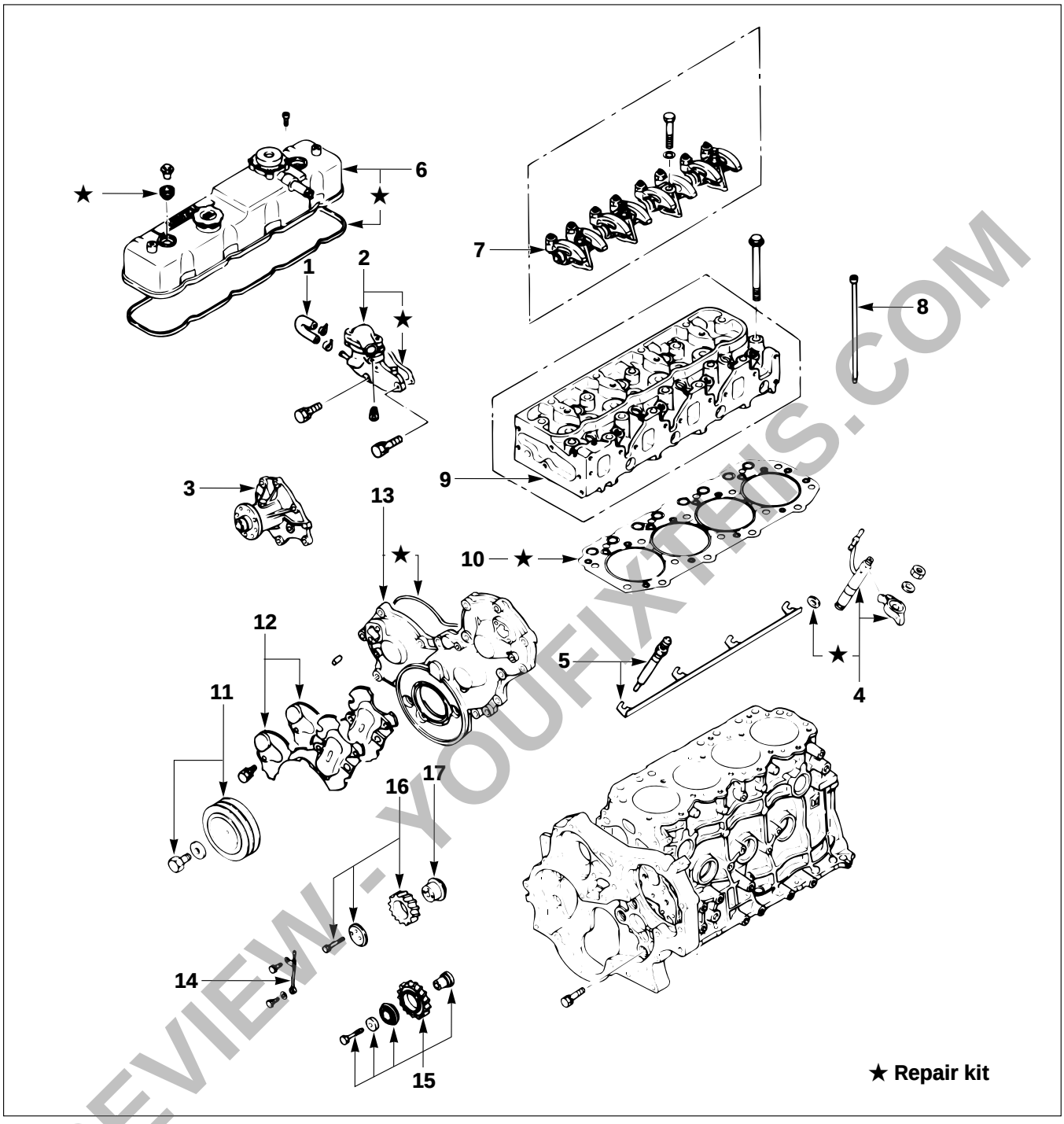
TABLE OF CONTENTS

SECTION 1.	GENERAL INFORMATION	1
SECTION 2.	MAINTENANCE	17
SECTION 3.	ENGINE ASSEMBLY (1) (DISASSEMBLY)	29
SECTION 4.	ENGINE ASSEMBLY (2) (INSPECTION AND REPAIR)	47
SECTION 5.	ENGINE ASSEMBLY (3) (REASSEMBLY)	81
SECTION 6.	LUBRICATING SYSTEM	109
SECTION 7.	COOLING SYSTEM	121
SECTION 8.	FUEL SYSTEM	127
SECTION 9.	ENGINE ELECTRICALS	141
SECTION 10.	TROUBLESHOOTING	169
SECTION 11.	SPECIAL TOOL LIST	195
SECTION 12.	REPAIR STANDARDS	199
SECTION 13.	CONVERSION TABLE	213

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



PREVIEW - YOUFIXTHIS.COM

Disassembly Steps - 2

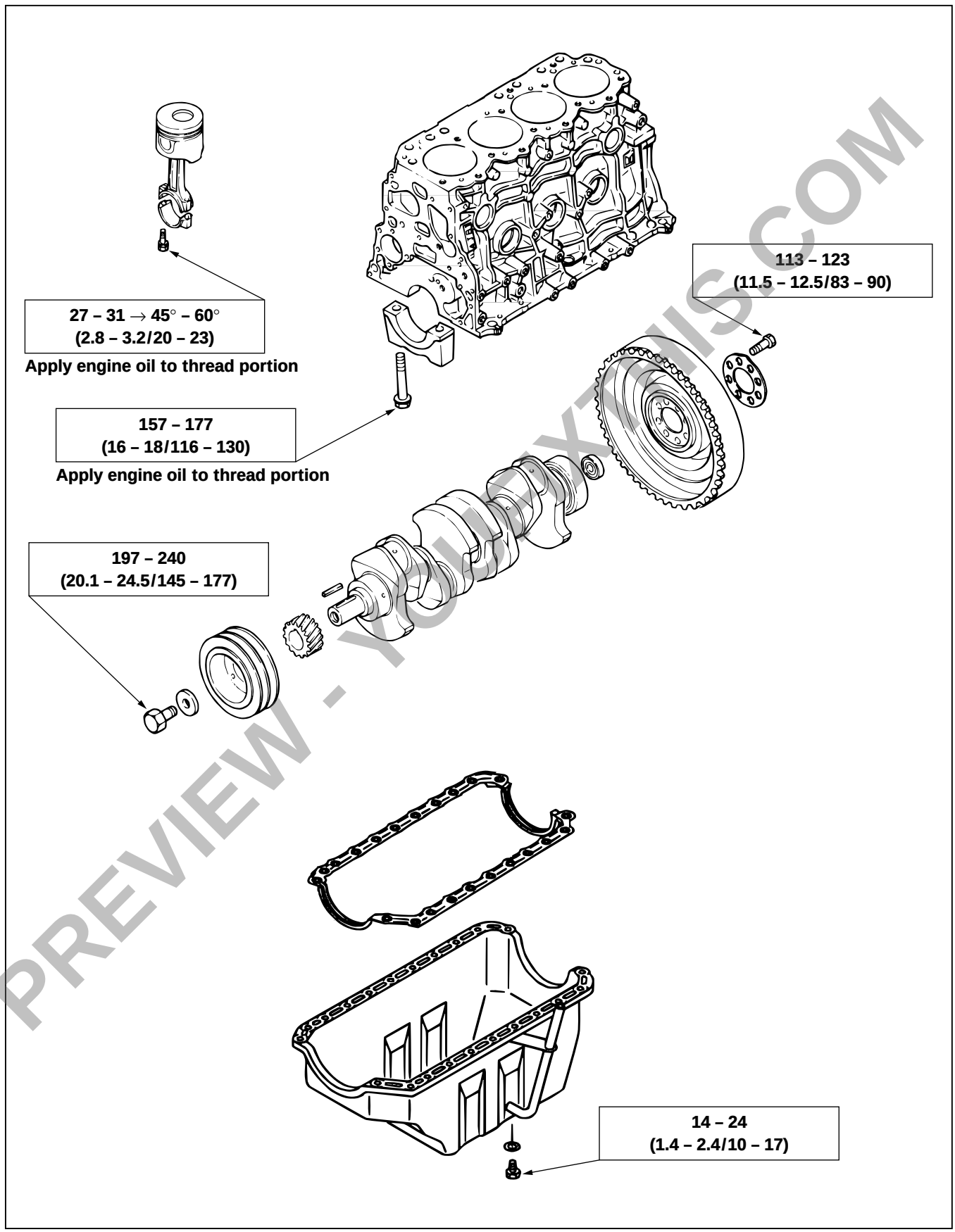
1. Water by-pass hose
2. Thermostat housing
3. Water pump
- ▲ 4. Injection nozzle holder
5. Glow plug and glow plug connector
6. Cylinder head cover
- ▲ 7. Rocker arm shaft and rocker arm
8. Push rod
- ▲ 9. Cylinder head
10. Cylinder head gasket
- ▲ 11. Crankshaft damper pulley with dust seal
12. Timing gear case cover (Option)
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

Download full manual at youfixthis.com

Crankshaft Bearing Cap, Connecting Rod Bearing Cap, Crankshaft Damper Pulley, Flywheel, and Oil Pan

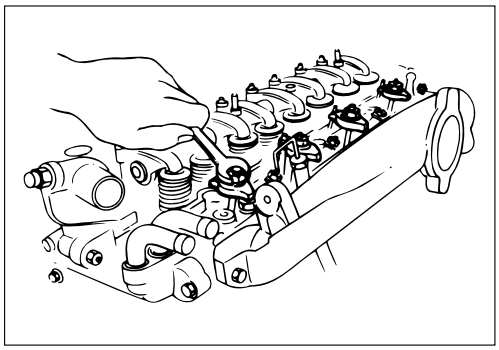
N·m (kgf·m/lb.ft)



PREVIEW - YOUFIXTHIS.COM

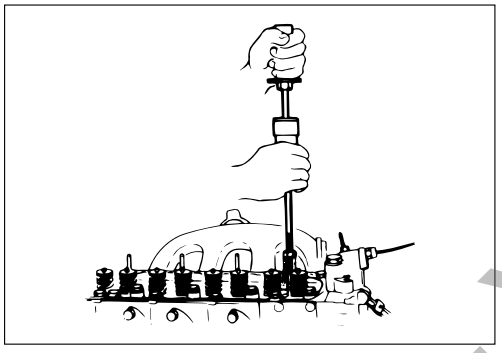
Download full manual at youfixthis.com

Important Operations (Disassembly Steps - 2)



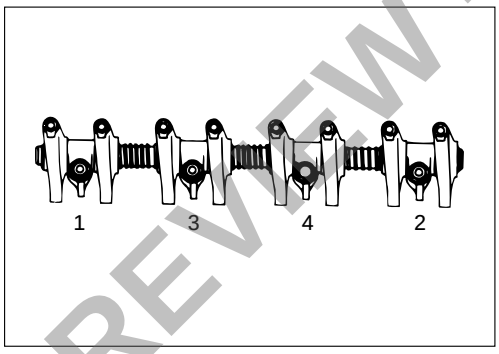
4. Injection Nozzle Holder

1) Remove the nozzle holder bracket nuts.



2) Use the nozzle holder remover and the sliding hammer to remove the nozzle holder together with the holder bracket.

Nozzle Holder Remover: 5-8840-2034-0
Sliding Humme: 5-8840-0019-0

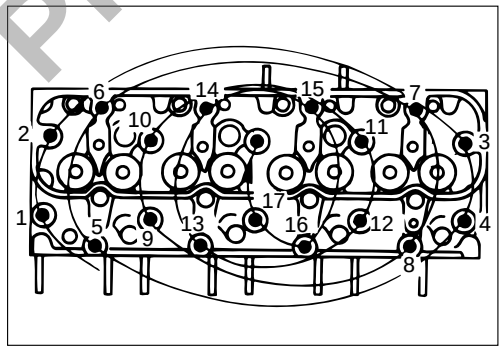


7. Rocker Arm Shaft and Rocker Arm

Loosen the rocker arm shaft bracket bolts in numerical order a little at a time.

Note:

Failure to loosen the rocker arm shaft bracket bolts in numerical order a little at a time will adversely effect the rocker arm shaft.



9. Cylinder Head

Loosen the cylinder head bolts in numerical order a little at a time.

Note:

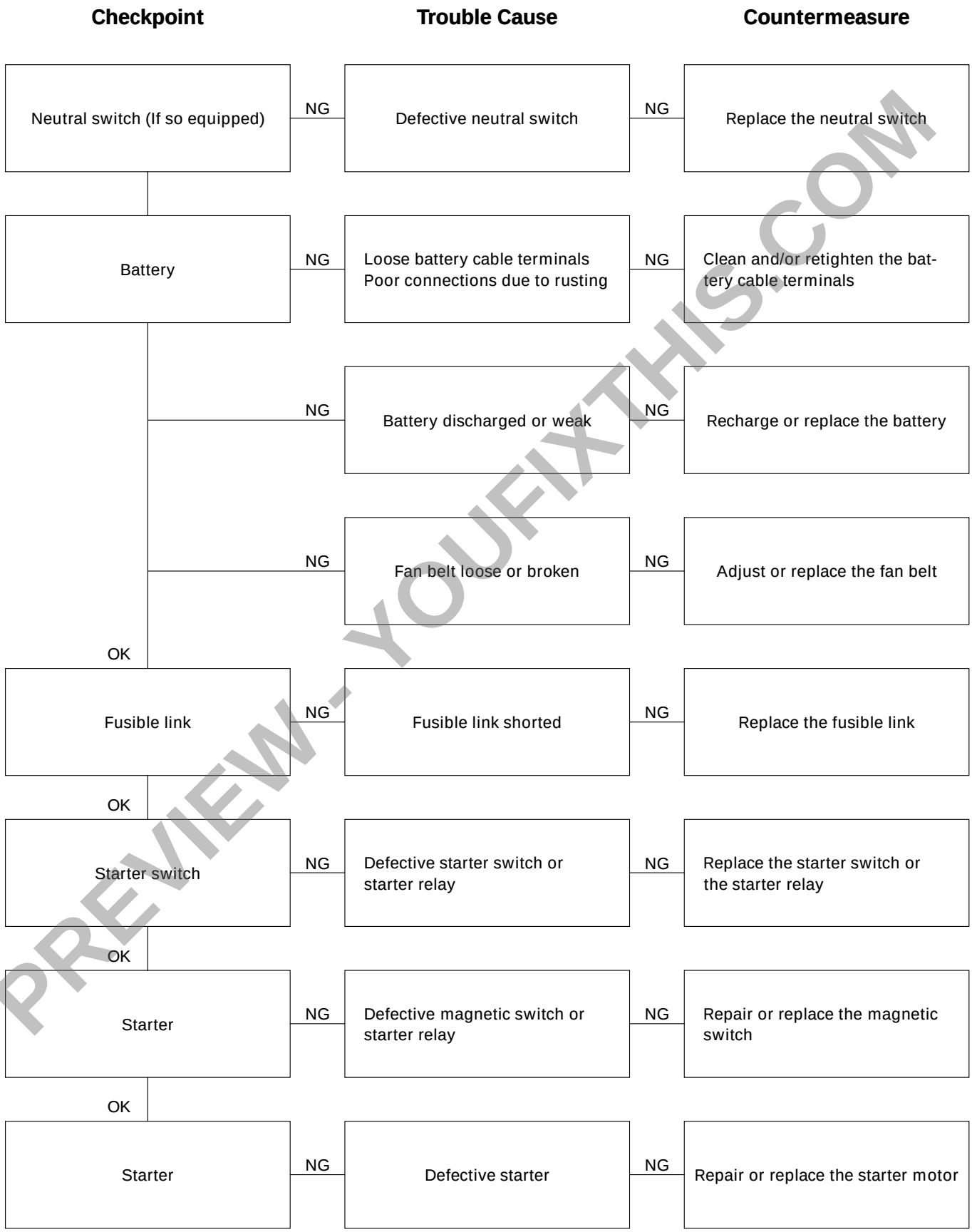
Failure to loosen the cylinder head bolts in numerical order a little at a time will adversely effect the cylinder head lower surface.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

1. HARD STARTING

1. STARTER INOPERATIVE



PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

MAIN DATA AND SPECIFICATIONS

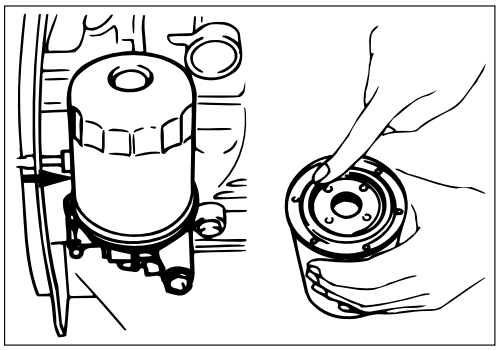
Item \ Engine Model		A-4JG1
Engine type		Water cooled, four-cycle, in-line, overhead valve
Combustion chamber type		Direct injection
Cylinder liner type		Dry
No. of cylinders - Bore x Stroke	mm(in.)	4 - 95.4 x 107
Total piston displacement	lit(cid)	3.059 (186.7)
Compression ratio (To 1)		18.6
*Engine 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	min^{-1}	850 – 1,000
Injection nozzle		Multi-hole type
Injection starting pressure	MPa(kgf/cm^2/psi)	18.1 (185/2630)
Fuel filter type		Cartridge paper element
Water sedimentor (if so equipped)		Sediment/water level indicating type
Compression pressure	MPa(kgf/cm^2/psi)	3.04 (31/441)
Valve clearance (at cold) Intake	mm(in.)	0.40 (0.0157)
Exhaust	mm(in.)	0.40 (0.0157)
Lubrication method		Pressurized circulation
Oil pump		Trochoid type
Main oil filter type		Cartridge paper element, full flow
Partial oil filter		Not equipped
*Lubricating oil volume	lit.(qts)	7.6 – 9.6 (8.0 – 10.1) (Oil pan)
Oil cooler (if so equipped)		Water cooled built in oil filter
Cooling method		Pressurized forced circulation
Coolant volume	lit.(qts)	5.0 (5.3)
Water pump		Belt driven, impeller type
Thermostat type		Wax pellet type
*Alternator	V-A	12 – 50
*Starter	V-kW	12 – 2.2

Specifications marked with an asterisk (*) will vary according to engine application.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

4. Clean the oil cooler fitting face.
   This will allow the new oil filter to seat properly.
5. Apply a light coat of engine oil to the O-ring.
6. Turn in the new oil filter until the filter O-ring is fitted against the sealing face.

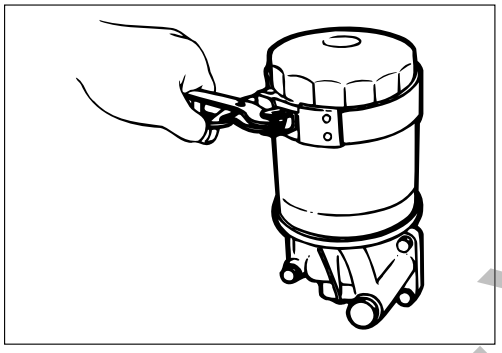


7. Use a filter wrench to turn in the filter an additional 1 and 1/4 of a turn.
   Filter Wrench
8. Check the engine oil level and replenish to the specified level if required.
9. Start the engine and check for oil leakage from the main oil filter.

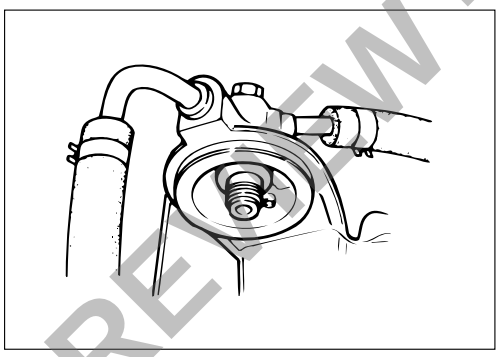
FUEL SYSTEM

Fuel Filter

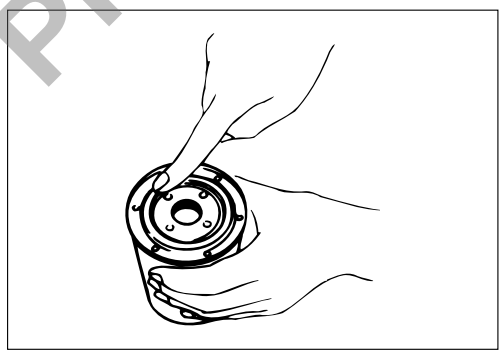
Replacement Procedure



1. Loosen the used fuel filter by turning it counterclockwise with the filter wrench.
   Filter Wrench



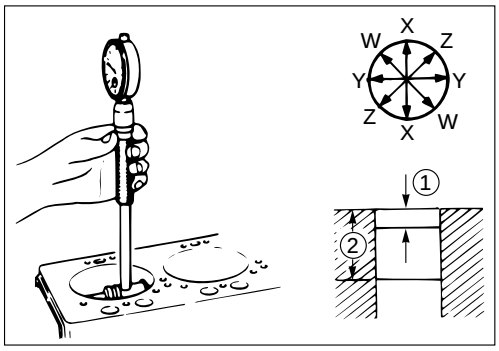
2. Clean the upper cover fitting face.
   This will allow the new fuel filter to seat properly.



3. Apply a light coat of engine oil to the O-ring.
4. Supply fuel to the new fuel filter to facilitate bleeding.
5. Turn in the new fuel filter until the filter O-ring is fitted against the sealing face.
   Be very careful to avoid fuel spillage.
6. Use a filter wrench to turn in the fuel filter an additional 1/3 to 2/3 of a turn.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



Piston Grade Selection

Measure the cylinder liner bore. Then select the appropriate piston grade for the installed cylinder liner.

1. Measure the cylinder liner bore.

   There are two measuring points (① and ②).

   Measure the cylinder liner bore in four different direction (W – W, X – X, and Z – Z) at both measuring points.

   Calculate the average value of the eight measurements to determine the correct cylinder liner bore.

Measuring Points ① : 20 mm (0.79 in)
② : 160 mm (6.30 in)

Cylinder Liner Bore mm(in)

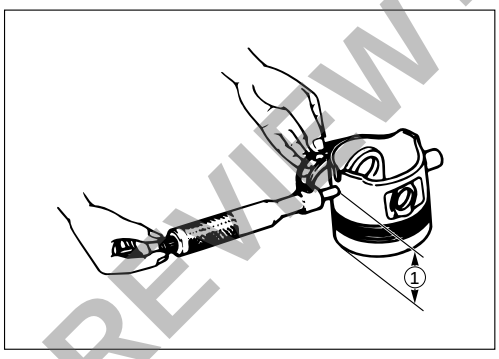
Standard	Limit
95.421 – 95.460 (3.7567 – 3.7583)	95.5 (3.7598)

Relation between Liner Bore and Piston Grade mm(in)

Liner Bore Diameter	Piston Grade
95.421 – 95.440 (3.7567 – 3.7575)	AX
95.441 – 95.460 (3.7575 – 3.7583)	CX

Note:

It is most important that the correct piston grade be used. Failure to select the correct piston grade will result in engine failure.



2. Measure the piston outside diameter.

Piston Measuring Point ① : 71 mm (2.79 in)

Piston Outside Diameter mm(in)

Outside Diameter	Piston Grade for Service
95.365 – 95.384 (3.7545 – 3.7553)	AX
95.385 – 95.404 (3.7553 – 3.7561)	CX

Cylinder Liner and Piston Clearance mm(in)

0.037 – 0.075 (0.0015 – 0.0030)

Note:

:Cylinder liner kit clearances are preset. However, the cylinder liner installation procedure may result in slight decreases in cylinder liner clearances. Always measure the cylinder liner clearance after installation to be sure that it is correct.

PREVIEW - YOUFIXTHIS.COM

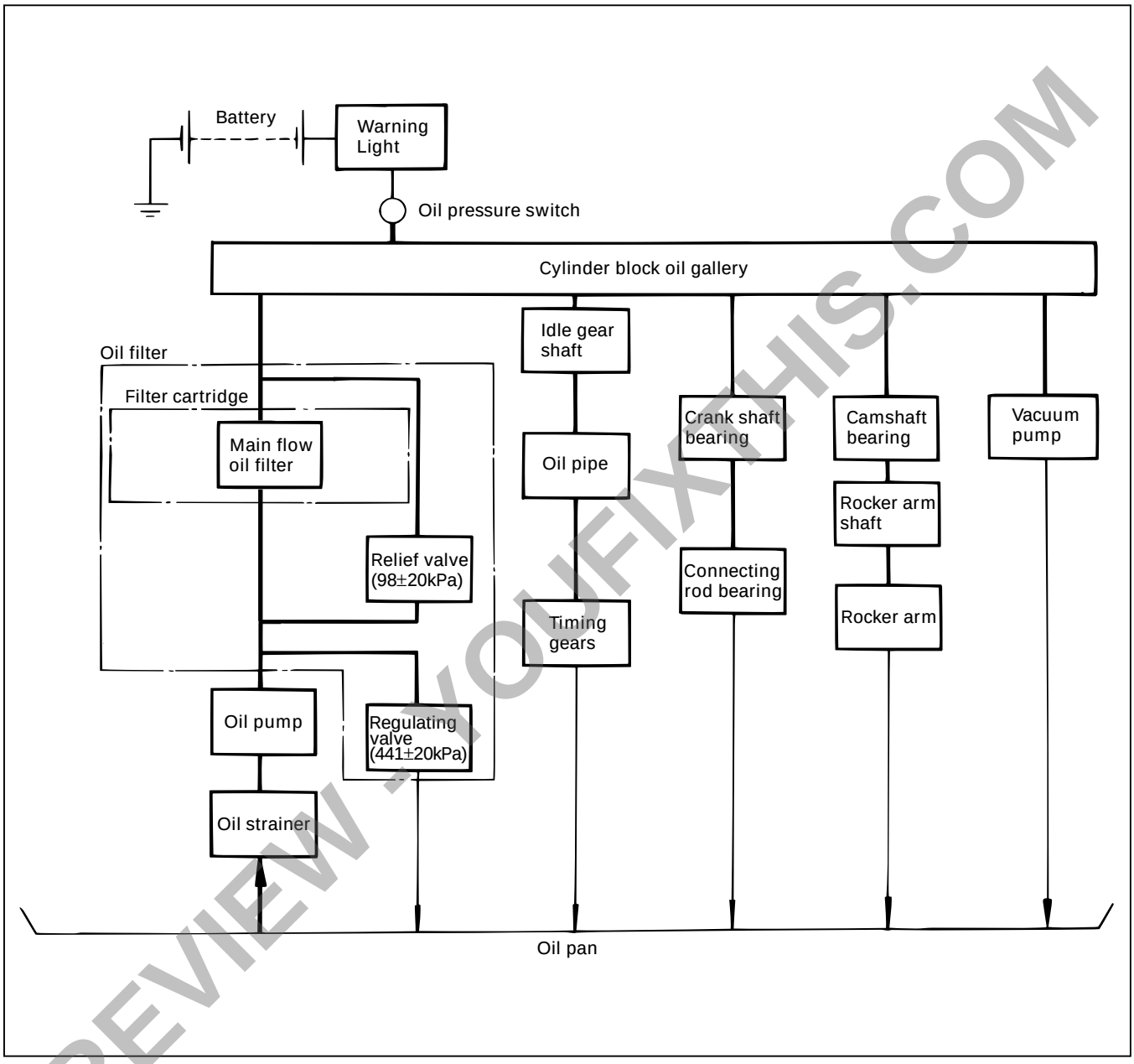
Download full manual at youfixthis.com

GENERAL DESCRIPTION

LUBRICATING OIL FLOW

This illustration is based on 4J Series engine with oil cooler (option).

Lubricating oil flow may vary according to the engine specification.



The 4J Series engine lubricating system is a full forced circulation type.

Lubricating oil is pumped from the oil pump to the cylinder body oil gallery through the oil cooler and the oil filter. It is then delivered to the vital parts of the engine from the cylinder body oil gallery.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

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 at hand.

   Where specified, use the specially designed tool or tools.
3. Use genuine ISUZU parts.
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 a sealer 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 your work. No service operation is complete until you have done this.

NOTES ON THE FORMAT OF THIS MANUAL

This Workshop Manual is applicable to ISUZU industrial engine or engines which is or are stated in the title.

When more than two engine models are dealt in the manual, such engines have common parts and components as well as data and specifications, unless otherwise specified.

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.

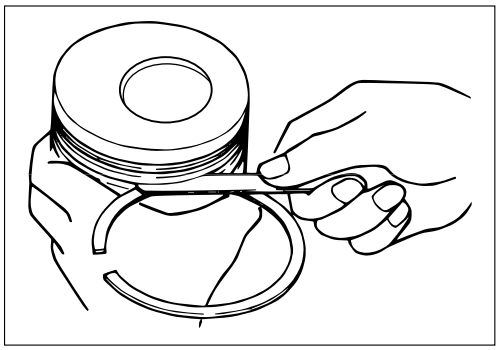
   The section ENGINE ASSEMBLY is an exception. This parts are divided in three sections to facilitates indexing.
3. Each section is divided into sub-sections dealing with disassembly, inspection and repair, and reassembly.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Piston Ring Gap mm(in)

	Standard	Limit
1st Compression Ring	0.2 – 0.35 (0.008 – 0.014)	1.5 (0.059)
2nd Compression Ring	0.37 – 0.52 (0.015 – 0.020)	
Oil Ring	0.2 – 0.4 (0.008 – 0.016)	



Piston Ring and Piston Ring Groove Clearance

Use a feeler gauge to measure the clearance between the piston ring and the piston ring groove at several points around the piston.

If the clearance between the piston ring and the piston ring groove exceeds the specified limit, the piston ring must be replaced.

Piston Ring and Piston Ring Groove Clearance mm(in)

	Standard	Limit
1st Compression Ring	0.09 – 0.130 (0.0035 – 0.0051)	0.15 (0.006)
2nd Compression Ring	0.05 – 0.090 (0.002 – 0.0035)	
Oil Ring	0.03 – 0.07 (0.0012 – 0.0028)	

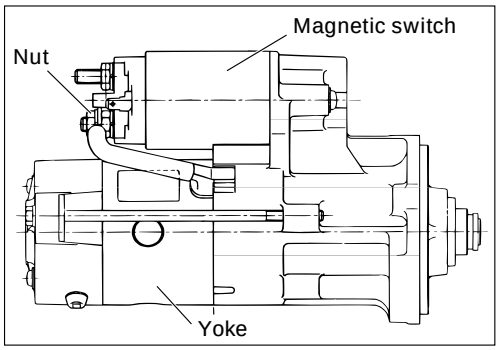
Visually inspect the piston. If a piston ring groove is damaged or distorted, the piston must be replaced.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

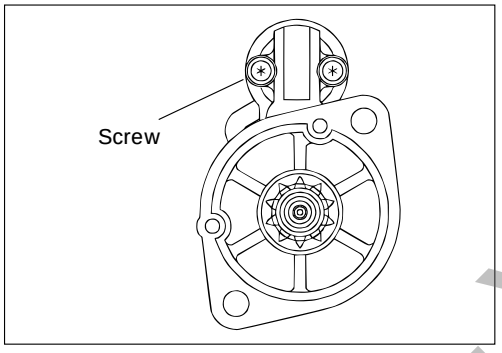
Disassembly

When disassembling the starter motor, to make reassembling easier, mark to match the magnet switch and the yoke.



1. Nut (M terminal)

Remove the nut of the magnet switch "M" terminal and then the cable.



2. Screw

Remove the screw.

3. Magnet Switch

Remove the magnet switch and the plunger.

4. Pinion

Removing the pinion requires simple tools. A set consists of 3 parts (1 bolt, 1 nut and 1 small tin plate).

These tools are not used during assembly. The pinion is assembled using the puller.

- Pull the lever with the bolt instead of the plunger and push out to where the pinion can be moved forward. In order to fix the lever and the pinion, fix the bolt to the small plate.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 12 of 223 pages

The full manual includes:

- All 223 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Isuzu A-4JG1 Workshop Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual