

Product Quality Warranty Manual

Diesel Engine for Generating Set

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Important Notice Diesel Engine for Generating Set

Thank you for purchasing the engine made by AGG POWER TECHNOLOGY (FUZHOU) CO.,LTD (hereinafter referred to as). In order to ensure the normal use of the engine, please read carefully the relevant *Operation and Maintenance Manual of Diesel Engine* and relevant supplemented operational instructions (hereinafter collectively referred to as the “Manuals”) before using. Proper use and timely maintenance of the engine are required to ensure the best performance and operational reliability of the engine.

1. At the early stage of use, a new diesel engine can be operated under full load only after 60h running-in under 50%-80% full load. During the running-in period or normal operation period after running-in, it is inadvisable to run the diesel engine at idle speed and under low load for a long time, thus avoiding early wear or poor performance due to carbon deposits. It is recommended not to idle the engine for over 5 minutes.
2. The new diesel engine must carry out the First Maintenance as per the *Manuals*. Customer must purchase the genuine AGG special maintenance service parts from the AGG authorized sales service provider and carry out the First Maintenance. Refer to the *Manuals* for maintenance items and methods. You will bear all the consequences of faults if failure to carry out First Maintenance.
3. Antifreeze shall be used for diesel engine for generating set in any kind climate. Before starting the diesel engine, customers shall check the coolant level and supplement when necessary. Customer shall wait for 3-5 minutes and then recheck the level after filling. It is recommended to check the coolant level 10 minutes after the operation to avoid the overheating of the engine and piston scuffing due to insufficient coolant resulting from air block.
4. Run the starter motor according to the time and the time interval specified in the *Manuals* when starting the engine. If the engine cannot start up in 10 seconds, make another starting after 2 minutes. If the engine cannot start up for three times, stop starting and find cause. Do not try to start the engine again until troubles have been removed. Do not run the starter motor repeatedly for a long time so as to prevent it from being damaged due to overheating. Besides, high current will damage the ECU.
5. Strictly choose the special lube oil for AGG's products with required specifications specified in the *Manuals*. It is strictly prohibited to mix lubricating oil of different specifications (designations). When changing the lubricating oil, it is required to drain the lubricating oil completely while the engine is in warm.
6. The customer shall select the fuel of specified designation in strict accordance with the *Manuals*. The customer shall keep the newly purchased fuel unused for 72 hours for deposition and then add it into the fuel tank. Ensure the cleanness of the tank and the inner wall of the fuel pipe.
7. The engine should be equipped with genuine A G G air filter. Make sure the element of air filter meets A G G 's requirement and is free of damage. Check and clean the element timely to keep it free from dust. Check piping, joints, clamps and gaskets regularly and make sure they are in good connection and reliable sealing, and also make sure that the indicator of the air filter is installed and functional to avoid dust into cylinder to prevent premature engine wear.
8. When the engine operates under the excessive dust conditions, the period of each level maintenance shall be greatly shortened, and the dust deposit shall be cleared on a daily basis. The customer shall purchase the filter element of specified model manufactured by the factory designated by A G G to avoid premature engine wear.
9. Check the joints of the engine pipeline for connection conditions to ensure reliable sealing. In case the leakage of fuel occurs, timely and completely trouble shooting shall

be required to avoid air entering through the leaking position when the diesel engine is not in operation. Air in the fuel system can cause difficulty to start the engine due to poor fuel suction.

10. The abnormal wear of the turbocharger will occur if the vehicle is running at idle speed for a long time, or the poor lubrication occurs (incorrect designation, or long oil change interval, etc.), or the timely maintenance of the air filter is not carried out as specified in the *Manuals*, or the filter element is not replaced in time.
11. Overloading and other violation operations are strictly prohibited so as to avoid engine faults that will shorten the service life of the engine.
12. Do not cut battery power supply when starting switch is on to avoid damage to ECU, sensors, etc.
13. Keep electrical parts from oil, fuel and water, and never pull out connectors. Flushing engine is strictly forbidden.
14. Do not carry out welding with the chassis as grounding when the engine is under operation to avoid damage to the ECU and sensors.
15. The maintenance of the fuel filter, oil filter and air filter shall be carried out according to the *Manuals*.
16. AGG provides free parts in warranty period and non-free engine life-long service. You can contact a AGG authorized sales service provider for such service. You are required to provide your engine model, engine serial number and engine order number when asking for repair service. AGG won't take responsibility for customer's economic loss caused by engine stop due to engine fault(s). If the engine is out of the warranty period, AGG will charge the customer the cost of repairing, components and relevant material. If the engine is within the warranty period, but the faults are caused by overload or running in heavily dusty environment, AGG can send service personnel to the customer and offer instruction and assistance in repair, and the customer will bear the cost for all components replacement.
17. AGG has adopted the latest technology and high-quality parts for the engine. The genuine AGG spare parts are recommended to be used for repair and maintenance. Please contact AGG's after-sale service center service@aggpowersolutions.com for service parts.
18. If you are confronted with any use, maintenance and service problems during your use of the engine, or you want to know related information on the engine, please contact AGG's after-sale service center service@aggpowersolutions.com
19. During the maintenance, the customer shall give help to the serviceman, such as work site, tools, means of transport, lifting, etc. to ensure the smooth maintenance so that the engine can be put into use as soon as possible.
20. AGG will provide after-sales service for the engine according to the *Product Quality Warranty Manual of Diesel Engine for Generating Set*.
21. The manual is subject to change without notice

Quality Warranty Manual Diesel Engine for Generating Set

Subject

This Manual specifies the principles, period and scope of quality warranty services provided by AGG POWER TECHNOLOGY (FUZHOU) CO.,LTD. (AGG).

This Manual clearly states that any troubles or damage to components of the engine caused by defective manufacturing, assembling or materials occur under specified engine operation conditions and within specified period will be provided with free parts to ensure normal operation.

Applicable Scope

This Manual is applicable for the quality warranty service of the diesel engine for generating set manufactured by AGG, and is referenced for implementation of after-sales service by AGG and AGG authorized service providers. This Manual, as a kind of agreement, can also server as the basis for judgment of customer's warranty and responsibility for quality issues as well as resolution of disputes on quality issues.

Principles of Quality Warranty

1. The warranty service should be provided free parts , within the specified warranty period, for engine malfunction or parts and components damage due to unacceptable or defective product manufacturing, assembly and materials, as long as the customer operates and maintains the engine strictly pursuant to the relevant *Operation and Maintenance Manual of Diesel Engine* as well as relevant supplemented operational instructions (hereinafter collectively referred to as the "Manuals") and it is confirmed by the service personnel of AGG or AGG sales service provider that AGG shall take the responsibility for such kind of malfunctions or damages.
2. The failure parts and components will be recovered by the service personnel for analysis with the view to improving the product quality. It will be deemed by AGG that customers waive their quality warranty requirements if they refuse to return the failure parts and components. If the damaged engine is caused by serious quality defects and cannot be repaired, the replacement of the engine should be made after being reviewed by AGG sales company and approved by its leader in charge.

Determination of Warranty Period

1. Warranty period is determined based on the timer. The purchase date is determined on the basis of the date noted on the purchase invoice for original equipment or diesel engine, or the delivery date if an installment plan is applied.
2. The customer should present or provide the *Product Quality Warranty Manual* and the purchase invoice (of diesel engine or original equipment) when applying for quality warranty or maintenance service; If no invoice is not available (or the engine/original equipment is purchased by installment plan), the purchase date is determined on the basis of the manufacture date noted on the nameplate of the engine or equipment, or the delivery date.
3. If the timer is damaged or in failure and disputes on service time occur, the warranty period of the engine for generating set is calculated according to the assumption that the engine runs 10 hours per day and 30 days per months.
4. If the engine is replaced during the quality warranty as per the AGG specifications, the warranty period will not be changed in principle, i.e. the warranty period specified for the

original engine should still apply.

5. Within the warranty period of main parts and components, the parts and components once replaced freely due to failure or damage caused by quality issues should be provided with warranty as well according to the relevant regulations, but in no case should the warranty periods for such parts and for the engine be extended.
6. The warranty periods for genuine AGG service parts sold by the parts distribution center of AGG's after-sales service department or the AGG authorized service providers are as the same as those of the components in "Table 2" and no longer than 12 months. Refer to "Customer Service Management Manual" for detailed warranty implementation rules of service parts.

Warranty Period of Engine

1. See Table 1 for the engine warranty period of the diesel engine for generating set under normal working environments and proper maintenance and operation conditions.

Table 1 **List of Engine Warranty Period**

Category	Warranty period
Diesel Engine for Generating Set	Same as the OEM warranty period, and no longer than 3000 hours or 24 months, but for standby Genset, the maximum warranty period is no longer than 1000 hours or 48 months.

Note: The engine warranty period is calculated based on hours or months, whichever comes first.

2. Special working environment (high altitude, high and low temperature, corrosion, vibration, etc.), please first register in the company's sales department or agents.

3. If otherwise agreed by AGG and OEMs, the quality warranty period for diesel engine (including engine and parts) should be implemented as per the valid document concluded by both parties.

Warranty Period of Main Parts and Components

1. See "Table 2" for warranty period of main parts and components.

Table 2 **List of Parts Warranty Periods**

Group	Components	Diesel engine for generating set
I	Cylinder block, Crankshaft, Connecting rod, Camshaft, Gear housing, Flywheel, Flywheel housing, Cylinder head	24 months
II	Connecting rod bolt, Piston, Piston ring, Piston pin, Connecting rod bearing, Main bearing, Camshaft bearing, Cylinder liner, Intake/exhaust valves, Valve spring, Valve Spring Retainer, Intake/exhaust valve seat inserts, Intake/exhaust valve guides, Valve cover, Push-rod, Tappet, Rocker lever, Rocker lever support, Rocker lever shaft, Piston pin circlip, Gear shaft, Ring gear, Oil pump, Intake/exhaust manifolds, Oil pan, Engine support, Belt pulley, Flange, Radiator, Fuel injection pump(except plunger couple and fuel delivery valve couple), Fuel injector(except needle couple), Fuel injection pump bracket, Coupling, Cylinder head gasket, Water pump, Oil cooler, Fan frame, Gear, Vibration damper, Metal oil pipe, Metal water pipe, Metal pipe joint, Crankcase vent filter assy, ECU, Common rail tube, High pressure fuel pipe, Air filter base, Fuel filter base, Oil filter base, Thrust bearing, Oil dipstick tube, Piston cooling jet, Pressure relief valve, Oil dipstick, Fuel leakage alarm	24 months
III	Crankshaft oil seal, Turbocharger, Turbocharger gasket, Expansion connector, Fan, Thermostat, Tensioner, Fuel supply pump, Injector fuel return pipe, Injector spacing sleeve, Electrical governor board, Electrical governor, Bowl plug, Intake/exhaust manifold gasket, Oil pan gasket, Seal rings, Hoses, Bolts and screws, Other types of oil seals, Pneumatic motor atomized lubricator	12 months
IV	Starting motor, Alternator, Engine wiring harness, Relay, Electronic pre-oil supply pump, Starting preheater, Solenoid valve, Sensors, Electronic foot pedal, Instrument, Monitor, Fuel shutoff solenoid	6 months
V	Belt, Plunger couple and delivery valve couple of fuel injection pump, Injector couple, Clamp	3 months or 500 hours whichever comes first

2. The warranty period in Table 2 is calculated based on running time (hours or months whichever comes first). Warranty periods of the components that are not listed in the table are as the same as those of the components in the Group II in the table.

3. Except for the gaskets listed in Table 2, wearing parts (such as gaskets, rubber parts and various filter elements) are not covered in the warranty.

Situations Excluded from Quality Warranty

1. No quality warranty is provided for the engine in case that the Product Quality Warranty Manual is not presented or provided, or the engine model and serial number stated on the Certificate of Product Conformity are not in line with those on the engine nameplate.
2. The engine malfunctions or parts and components damage due to the maintenance that is not made in line with the *Manuals* or improper operation of the engine are excluded from the quality

warranty.

3. No quality warranty is provided if the engine has not had the First Maintenance as per the *Manuals* by using the genuine AGG special maintenance service parts purchasing from the AGG-authorized sales service provider.

4. The engine is excluded from the quality warranty if the engine is damaged due to the modification or refitting for other purposes, installation of other additional devices or overload operation.

5. No quality warranty is provided for the engine if repair, inspection, analysis and assessment of malfunctions is refused or hindered.

6. If during the warranty period, user or any other non-AGG-authorized serviceman disassembles (tears down) or readjusts engine parts, assemblies or some parts and components which are not permitted to be adjusted, e.g. the lead locker on the fuel injection pump of mechanical fuel pump diesel engine, and fails to reassemble the engine or assemblies according to the specified technical requirements (e.g. injection timing of mechanical fuel pump diesel engine, torques for key bolts), resulting in malfunction of and damage to relevant components, the quality warranty is not provided to the parts and components involved.

7. The quality warranty will not be provided if the common rail fuel system or electronic unit pump fuel system is damaged due to the replacement of any part in the system by the customer without permission.

8. If the cylinder head or block is deformed and damaged, piston/rings/liner scuffed or the engine damaged as the result of lack of coolant, all the parts and components involved or the engine is excluded from the quality warranty.

9. If shaft(s) is seized, cylinder liner (s) scuffed or moving part (s) severely worn or even the engine damaged due to insufficient lube oil, or lube oil being ineffective or failure to use special lube oil for AGG's product of right specifications specified in the *Manuals*, the quality warranty is not be provided to the parts and components involved or to the engine.

10. If the looseness of the connecting rod bolt(s) is caused by unauthorized disassembling and assembling the bolt(s), the quality warranty is not provided to the parts and components involved.

11. The plunger and barrel assembly, delivery valve assembly, nozzle assembly abnormally worn due to the usage of fuel not in compliance with the quality requirements or dirty fuel are excluded from the warranty.

12. The quality warranty will not be provided if the common rail fuel system or electronic unit pump fuel system is damaged due to customer's using fuel under quality or dirty fuel.

13. The engine or related parts and components damaged due to use of spare parts that are not approved by AGG are excluded from the warranty.

14. If the engine is not shut down immediately in case of any abnormalities (such as unusual noises, as well as incorrect coolant temperature, oil temperature and oil pressure) for inspection and troubleshooting, and the malfunction is extended to other parts, no warranty is provided for those related parts where the malfunction is extended.

15. The quality warranty will not be provided to parts and components or the engine damaged due to Force Majeure.

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