



WP7 Euro VI Vehicle Diesel Engine Operation & Maintenance Manual and User Service Guide

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Foreword

WP7 Euro VI vehicle diesel engines are developed based on a new design concept and meet the Euro VI emission standard. WP7 diesel engines feature compact structure, reliable operation, high economy indexes and power performance, quick startup, easy operation and convenient maintenance and are the ideal power for the middle/heavy-duty trucks and middle/large buses.

This manual, as reference, describes methods of operation and maintenance, inspection essentials and service guide for WP7 diesel engines.

To make best use of WP7 diesel engines, users are expected to carefully read and learn the diesel engine structure, maintenance and operation methods. The diesel engine service life can be significantly prolonged if the users can follow this manual during maintenance.

With the increasing numbers and improving of the variants of WP7 vehicle diesel engines, users are expected to timely pay attention to the technical information released by Weichai. Any revision will not be notified in advance. For more information about new products, please visit <http://en.weichai.com>.

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Special instructions

- 1) It is very dangerous to increase the power by modifying the ECU data. Any change of ECU data without permit will lead to invalid “Three guarantees” and so on, and all losses and the legal responsibilities arising therefore would be borne by the users.
- 2) Common-rail fuel pump, turbocharger, urea solution injection system and other components, as the precision parts, should not be impacted or dismantled without permission; otherwise the "Three guarantees" will be invalid.
- 3) Please use Weichai designated fuel strainer and fine filter; otherwise any damage to the common-rail system will not be covered by the “Three guarantees”.
- 4) For Euro VI Diesel Engine, in order to make sure the normal operation of the SCR processor, please add urea solution produced by formal manufactures timely. It is forbidden to use urea solution mixed privately or other solutions, otherwise, all losses and the legal responsibilities arising therefrom would be borne by the users.
- 5) Please go to the formal fuel station to refill the stipulated fuel, otherwise any damage to the fuel system due to fuel quality will not be covered by the “Three guarantees”.
- 6) For Euro VI diesel engine, special Euro VI diesel fuel should be used, otherwise any problems arising therefrom, such as the emissions exceeded the limits of standard, should be borne by the users.
- 7) Any service such as repair or maintenance should be done at the designated service station and spare parts specified by Weichai Power should be used; otherwise, any damage to the diesel engines should be borne by the users.
- 8) The product norm follows Q/WCG 100.

Notice

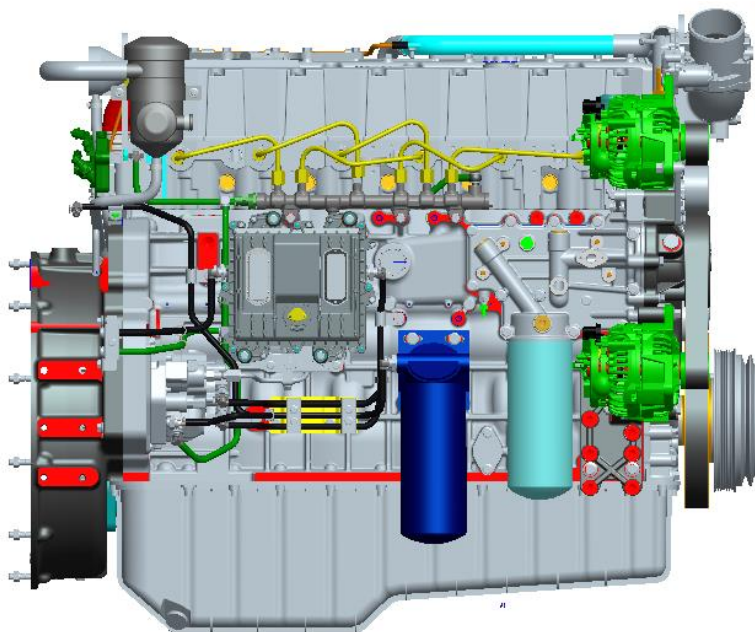
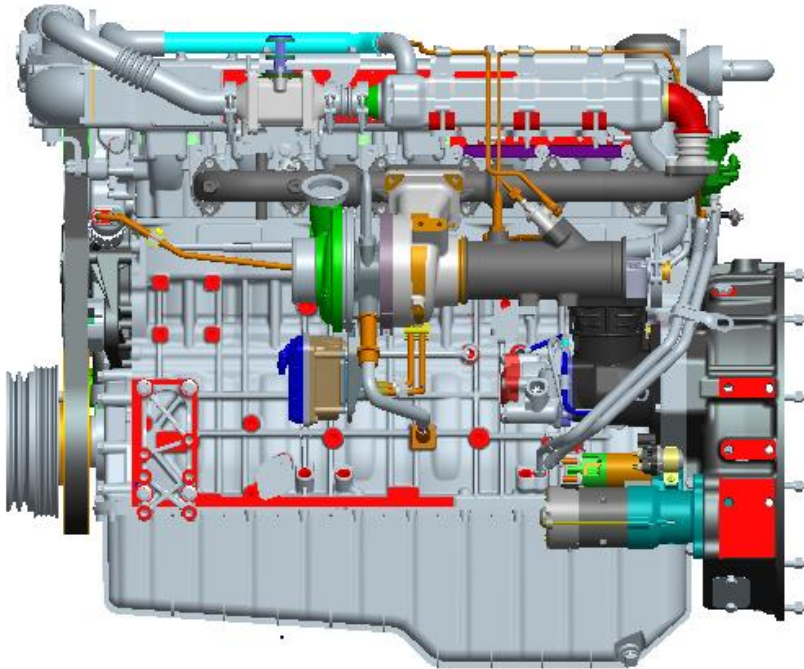
1. Before the first use, the engine should go through a 50h trial run. For more information, refer to the running-in requirements.
2. After the cold start, the engine should slowly increase the speed. Don't let the engine run at idle speed for a long time or suddenly speed up. After running with heavy load, do not immediately stop. It is necessary to idle for 5-10 min at low speed.
3. It is prohibited to work without air filters which could prevent air from entering the cylinder without being filtrated. The air filter should be regularly maintained or replaced, otherwise power reduction, parts wearing and other problems would happen.
4. Please select specified grades of fuel and oil and use the special and clean containers. The fuel and oil should be filtrated with the strainer before being added.
5. If the diesel engine fails to start within 15s, repeat after at least 2 min.
6. It is prohibited to fill the diesel engine with water rather than antifreeze, which could greatly reduce the engine life and leads to damage of the after-treatment system and other parts.
7. Before the start, please ensure the antifreeze, urea solution and oil are at the proper levels.
8. The strainer of urea solution tank must be cleaned regularly, otherwise the OBD system will giving alarm.
9. When the vehicle is parked for a long time and the ambient temperature is lower than the freezing point of antifreeze, it is necessary to drain the water out through the discharge valve of the air compressor.
10. It is not allowed to reuse the cylinder head gasket and all kinds of asbestos or metal coated sheet gaskets.
11. Feedback of engine quality information

Our company performs the quality-trace filing for WP7 diesel engines, therefore users are expected to fill the card and send it back to our company for further service based on the card.

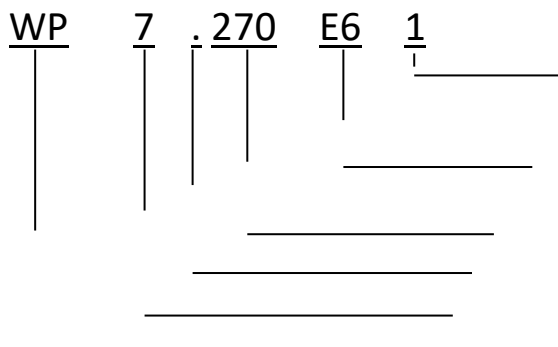
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WP7 Euro VI diesel engine outside view



The meaning of diesel engine model



transmutation type

emission level

E6 stands for Euro VI emission

rated power (horsepower)

space, no meaning

displacement

Weichai Power company

Diesel Base Parameter

the Parameter of WP7 Euro VI diesel engine

Model	Unit	WP7.270E61
Type		6 cylinder Inline
Intake		TDI
Bore × Journey	mm ×mm	108×136
displace	L	7.47
Rated power/ speed	kW/r/min	199/2100
BSFC @rated speed	g/kW·h	205
Max torque/speed	n·m/r/min	1050/1200~1700
Max speed	r/min	2500±50
Idle speed	r/min	700±50
Fire order		1-5-3-6-2-4
Noise	dB(A)	≤118
weight	kg	700 ± 20
Life of B10	km	800,000
Period of oil change	km	20,000



Tools and equipments:

torque wrench	sleeve wrench	adjusted wrench
depth gauge micrometer	piston ring plier	dial indicator
screwdriver	copper hammer	orientation sleeve
pressure oil spot	filler gauge	diameter gauge micrometer

I. Operation & Maintenance Manual for WP7 Euro VI Vehicle Diesel Engines

1 Fuel, lubricating oil, antifreeze and auxiliary material for the diesel engines

1.1 Fuel

Summer: use the #0 diesel fuel.

Winter: use the #-10 diesel fuel under general conditions, use the #-20 diesel fuel when the atmospheric temperature is below -15°C, and #-35 diesel fuel when below -30°C.

The fuel to be filled should meet the standard in appendix C.6 of national standard GB 17691-2005.

1.2 Lubricating oil

1.2.1 For WP7 Euro VI series diesel engines, use oil with higher grade than CI-4 or CJ-4.

1.2.2 It is allowed to use the oil of higher grade instead of oil of lower grade.

1.2.3 If the ambient temperature is -15°C or higher, use the 15W/40 oil; if the ambient temperature is -15°C or lower, use the 5W/20 oil.

(Weichai Power special oil should be used, see sections from 1.5 to 1.8)

Before the startup of diesel engine, check the oil level in the oil sump.

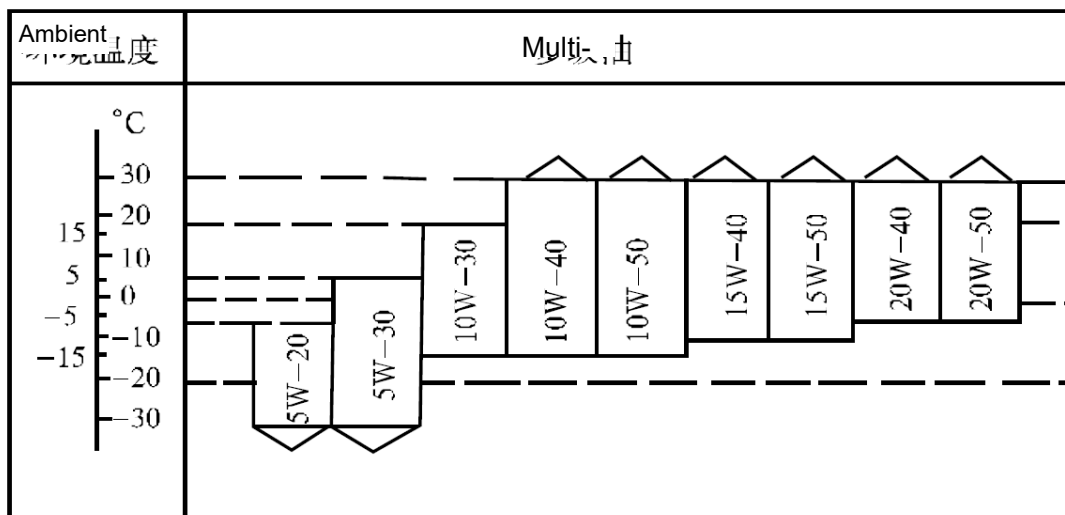


1. Do not check the oil level during operation.
2. It is not allowed to mix the oils of different grades.

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Table 1-1 Selection of oil grade



Due to the flat viscosity curve, the multi-grade oil has excellent lubricating characteristics at lower and higher temperatures.

1.3 Antifreeze

1.3.1 The cooling system should be filled with long-lasting antifreeze for rust-proofing and antifreezing.

1.3.2 For the long-lasting antifreeze formulation, please refer to the instruction of antifreeze. Some domestic long-lasting antifreezes are shown in Table 1-2.

Table 1-2 Domestic long-lasting antifreeze.

Item \ Grade	JFL-318	JFL-336	JFL-345
Glycol content %	33	50	56
Specific gravity (15.6°C)	1.05	1.074	1.082
Boiling point °C	104.5±1	108.5±1	110.0±1
Freezing point °C	-18±1	-36±1	-45±1
Applicable lowest temperature °C	-10	-26	-35

1.4 Urea Solution

Product Properties for urea solution as per the revised ISO22241 standard. See Table 1-3 for details.

Table 1-3 Requirements on Urea solution (Refer to ISO22241)

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Items	Unit	Min limit	Max limit
Urea content	% by weight	31.8	33.2
Density at 20℃	kg/m ³	1,087	1,093
Refracting index at 20℃	-	1.3814	1.3843
Alkalinity as NH ₃	%	-	0.2
Biuret	%	-	0.3
Aldehyde	mg/kg	-	5
Insolubles	mg/kg	-	20
Phosphate (PO ₄)	mg/kg	-	0.5
Calcium	mg/kg	-	0.5
Iron	mg/kg	-	0.5
Copper	mg/kg	-	0.2
Zinc	mg/kg	-	0.2
Chromium	mg/kg	-	0.2
Nickel	mg/kg	-	0.2
Aluminium	mg/kg	-	0.5
Magnesium	mg/kg	-	0.5
Sodium	mg/kg	-	0.5
Potassium	mg/kg	-	0.5

1.5 Features of Weichai Power special oil

1.5.1 High-qualified lubricating oil

Adopt fine imported hydrocracking base oil and composite additives to ensure the high quality of lubricating oil.

1.5.2 At normal use, the oil-change interval can be increased by 3,500~7,000km (10,000km for CH-4); excellent oxidation resistance at high temperature and excellent TBN retention will also prolong the engine life.

1.5.3 Professional protection to extend the engine life

Through a lot of performance and durability tests on Weichai diesel engines, a professional oil formula suitable for high power and high load engines is worked out. The special oil can provide the Weichai engine with special protection and can significantly prolong their service life (by 30~40% in contrast with others).

1.5.4 Better performance

It features of better wear resistance, TBN retention, anti-rust performance, antioxidation, better fuel consumption control, shear stability and can reduce sediments in the turbocharger.

1.5.5 Energy-saving

“Low viscosity + Multi-grade + Friction modifiers”, energy-saving formula, high oil viscosity index, high oil-film strength and elasticity, thus the engine

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can run stably with low resistance and low fuel consumption.

1.6 Difference between the Weichai Power special oil and common oils

Item	Special oil	Common oil
Base oil	Adopt the imported class IV hydrocracking basic oil.	Most oils adopt domestic class I base oil, a few adopt class II base oil
Additive	Mainly adopt the imported high-quality composite additive.	Domestic additive
Performance	With targeted professional formulation, the special oil features good lubricating and cleaning performance, and effectively improves the fuel economy (saving fuel by 3~8%) and provides professional protection for the diesel engine even in severe working conditions such as heavy load and dusty environment (heavy load or heavy dust)	Only meet the common lubricating requirements
Oil change interval	At normal use, it can be extended by 3,500~7,000km (for CH-4, 10000km can be extended).	Normal interval

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1.7 Some Common Products of Weichai Power Special Oils

Type	Oil grade	Viscosity grade	Package capacity
Diesel engine oil	WP-E1(CD)	15W/40 20W/50 10W/30	4L, 18L, 200L
	WP-E2(CF-4)	15W/40 20W/50 10W/30	4L, 18L, 200L
	WP-E3(CH-4)	5W/30 15W/40 20W/50 10W/30	4L, 18L, 200L
	WP-E4(CI-4)	15W/40	4L, 18L
Gear oil of heavy-duty vehicles	GL-5	85W/90 80W/90	4L, 18L

1.8 Corresponding table between the Weichai Power special oil and engine models

Type	Special oil grade	Applicable engine models
High-speed diesel engines and high-power medium-speed diesel engines	WP-E1 (CD)	Medium-speed diesel engine sets
	WP-E2 (CF-4)	China I and China II diesel engine; construction machineries such as 50 and 30 loaders; WD618/WD12 series, WD615/WD10 series; 226B and medium-speed engine; 15T or more heavy-duty trucks
	WP-E3 (CH-4)	Euro VI diesel engines; Landing engine series; extra-large heavy-duty trucks and buses; WP4/WP6(165~270HP), WP10(240~375HP), WP12(336~460HP), WD10, WD12 and WP5/WP7(160~300HP)
Natural gas engine	CNG	Compressed natural gas engine; Coach, generator sets and others equipped with compressed natural gas diesel engines.

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1.9 How to select proper viscosity

Lubricating oil	SAE Viscosity grade	Applicable ambient temperature (°C)
	5W/30	-30~35
	10W/30	-25~35
	15W/40	-20~40
	20W/50	-15~50
Gear oil	85W/90	-15~49
	80W/90	-25~49
	85W/140 (viscosity higher than 85W/90)	-15~49

1.10 Auxiliary materials

The applicable positions are shown in the following table:

Table 1-4 Auxiliary materials for WP7 Euro VI diesel engines

S/N	Name	Color	Usage and Application
1	Molybdenum disulfide, oil solution	Dark gray	Acting as a lubricant before the lubricating oil pressure is built up. For example: coated on the intake valve stem etc.
2	Loctite 242	Blue	Coated on the threads and outside surface of bearings to prevent against any potential looseness due to vibration, with medium strength.
3	Loctite 262	Red	Coated on the outside surface of threads, playing the role of locking, sealing and resistance to looseness due to shock, with high strength.
4	Loctite 275	Green	Coated on the pipeline and connection portion
5	Loctite 510	Red (Orange)	Coated on the shiny metal surface to function as sealing. For example: the joint faces of the cylinder block and flywheel housing.
6	Loctite 277	Red	Suitable for sealing the space between core and hole and applied to the oil chamber and oil passage, such as the cylindrical surface of bowl-plug.
7	(Loctite 648)	Green	Coated on the shining metal surface to function as fixing, such as the inside hole of tensioning bearing and outside surface of the shaft etc.

2 Regular inspection and maintenance of diesel engine

Table 2-1 Working conditions of matched vehicles

(WG I)	(WG II)	(WG III)
Working under severe conditions (extremely cold or hot; dusty; short distance transport; working on construction site and city buses, municipal construction vehicles, snow sweeper vehicles or fire trucks) or annual mileage is less than 20,000 km or annual working hours is less than 600h	Annual mileage is less than 60,000 km; short or medium distance transport (goods transport)	Annual mileage is longer than 60,000 km; long distance transport

Table 2-2 Intervals for 1st inspection, regular inspection and maintenance

Working condition Item	(WG I)	(WG II)	(WG III)
1 st inspection	Having traveled 1,000-1,500km or having worked for 30-50h	Having traveled 1,500-2,000 km	Having traveled 1,500-2,000 km
Regular inspection	Every 5,000km or every 150h	Every 10,000 km	Every 15,000 km
Grade 1 maintenance	Every 10,000 km or every 300h	Every 20,000 km	Every 30,000 km
Grade 2 maintenance	Every 20,000 km or every 600h	Every 40,000 km	Every 60,000 km
Grade 3 maintenance	Every 40,000 km or every 1,200h	Every 80,000 km	Every 120,000 km
Grade 4 maintenance	Every 80,000 km or every 2,400h	Every 160,000 km	Every 240,000 km

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Table 2-3 Oil changing interval according to vehicle maintenance specifications

Item \ Working condition	(WG I)	(WG II)	(WG III)
	Annual mileage less than 20,000 km	Annual mileage less than 60,000 km	Annual mileage longer than 60,000 km
1 st inspection	Having traveled for 1,000-2,000km	Having traveled 1,500-2,000 km	Having traveled 1,500-2,000 km
P	Every 5000km	Every 10,000 km	Every 15,000 km
WD1	Every 10,000 km	Every 20,000 km	Every 30,000 km
WD2	Every 20,000 km	Every 40,000 km	Every 60,000 km
WD3	Every 40,000 km	Every 80,000 km	Every 120,000 km
WD4	Every 80,000 km	Every 160,000 km	Every 240,000 km

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Table 2-4 Oil changing intervals determined by oil working condition (changes with the oil consumption)

Normal oil working condition (at normal oil consumption)		Severe oil working condition (at normal oil consumption)
Ambient air temperature: -10°C to +30°C Sulfur content of fuel: less than 0.5% (by weight)	A	Tropical or frigid zone (temperature is always higher than +30°C or lower than -10°C)
	B	Sulfur content of fuel: 0.5%-1.0%
	C	Sulfur content of fuel: 1.0%-1.5%
Oil working condition	Working condition	
Normal condition	WG I WG II WG III	Every 5,000 km Every 10,000 km Every 15,000 km
Severe condition A	WG I WG II WG III	Every 5,000 km Every 5,000 km Every 5,000 km
Severe condition B	WG I WG II WG III	Every 5,000 km Every 5,000 km Every 10,000 km
Severe condition C	WG I WG II WG III	Every 5,000 km Every 5,000 km Every 5,000 km
Severe condition A+B	WG I WG II WG III	Every 5,000 km Every 5,000 km Every 5,000 km
Severe condition A+C	WG I WG II WG III	Every 2,500 km Every 2,500 km Every 2,500 km

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Table 2-5 Maintenance specification of the engine

Item	1st inspection	Regular inspection	Level 1 maintenance	Level 2 maintenance	Level 3 maintenance	Level 4 maintenance
Change oil (at least once per year)	●	●	●	●	●	●
Replace the oil filter element	Each time when changing diesel engine oil					
Inspect and adjust the valve clearance	●		●	●	●	●
Replace filter element of the fine fuel filter			●	●	●	●
Wash coarse fuel filter or replace the element			●	●	●	●
Inspect coolant amount and add to required amount	●	●	●	●	●	●
Change the coolant	Once a year					
Tighten clips on cooling pipe	●					
Tighten air inlet pipe, hose and flange connections	●		●	●	●	●

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Item	1st inspection	Regular inspection	Level 1 maintenance	Level 2 maintenance	Level 3 maintenance	Level 4 maintenance
Inspect maintenance indicating light or indicator of air filter			●	●	●	●
Wash the dust cup of air filter (excluding the auto dust-removal type)		●	●	●	●	●
Wash the air filter main element	When the indicator is on					
Replace the air filter main element	Please refer to related regulations in the vehicle instruction manual					
Replace the air filter safety element	After the main element has been washed for 5 times					
Inspect and tighten the belt	●	●	●	●	●	●
Inspect the clearance of turbocharger bearings						●

Note: ● indicates that maintenance is required.

Engine shut down and stored for more than 6 months shall be maintained as required. Suggestion or advice will be given based on the user's requirements.

3 Common failures and Troubleshooting

3.1 The engine fails in starting

Causes	Troubleshooting
1. Fuel pipe is blocked	Check and remove the blockage and check if the fuel is clean
2. There is air in the fuel system	Release the air and check air tightness of joints
3. High pressure fuel pipe is damaged and fuel leaks out	Repair it or replace it with a new one
4. The ambient temperature is too low	Use auxiliary start device
5. There is few fuel or no fuel left in the tank	Check and refuel

3.2 The engine stops soon after starting

Causes	Troubleshooting
1. Fuel filter is blocked	Disassemble the filter to clean and dry the inside; or replace it if necessary
2. There is air in the fuel system	Check the tightness of fuel pipes and the joints; check if the bleed screw is tightened; release the air
3. Fuel is of poor quality, containing too much water	Wash the filter and use high quality fuel

3.3 Engine Power is insufficient

Causes	Troubleshooting
1. Air inlet pipe is blocked (air filter is blocked)	Check and clean the air filter and air inlet pipe or replace the element
2. Exhaust back pressure is high	Check if the exhaust pipe is blocked
3. The pressure of turbocharging system is insufficient	Check and remove any leakage with the exhaust pipe
4. Fuel pipe leaks or is blocked	Check the tightness of fuel pipes and the joints; check the fuel pipes and check if the filter is dirty; Repair or remove any blockage; replace the filter element
5. Poor fuel quality	Wash the fuel tank, filter parts and fuel pipes; replace the fuel
6. High oil level	Release the extra lubricating oil

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3.4 High fuel consumption

Causes	Troubleshooting
1. Air inlet pipe is blocked (air filter is blocked)	Check the air filter and air inlet pipe to ensure smooth air-inlet
2 Exhaust back pressure is high	Check the exhaust pipe and braking valve to ensure smooth exhausting
3. Poor fuel quality	Replace the fuel as specified
4. Fuel pipe is blocked	Check and remove the blockage
5. Fuel pipe leaks	Check the leaking location and replace the pipe to ensure good sealing performance

3.5 Dark smoke in the exhaust

Causes	Troubleshooting
1. Air inlet is blocked or exhaust back pressure is high	Check the inlet and exhaust pipe to ensure the pipes are not blocked
2. Poor fuel quality	Wash and replace
3. Wrong valve timing or injection timing	Adjust as required
4. Injection pump injects too much fuel	Check and adjust (by specialized operator)
5. The pressure of turbocharging system is insufficient	Check if there is any leakage with the pipes and joints
6. Malfunction of turbocharger	Check and replace the turbocharger assembly
7. Intercooler is damaged or there is leakage	Replace or repair
8. Wrong working point of smoke limiter	Re-adjust (by specialized operator)

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3.6 White or blue smoke emission

Causes	Troubleshooting
1. Poor quality fuel that contains too much water	Change the fuel
2. Coolant water has low temperature	Check working temperature of the thermostat or replace it when necessary
3. Wrong valve timing or injection timing	Check and adjust
4. Injector nozzle poor atomization	Check and repair
5. Low compression pressure, incomplete combustion or cylinder scuffing	Check the piston ring, cylinder liner and cylinder head gasket and repair them
6. Poor running-in between piston rings and the cylinder liner	Running-in for more time
7. Openings of piston rings are not staggered	Adjust or re-assemble
8. Piston oil ring failure	Replace
9. Excessive clearance between the piston and cylinder liner	Repair or replace
10. Sealing ring of turbocharger is worn	Repair or replace
11. Turbocharger thrust bearing is worn	Check and replace
12. Turbocharger oil outlet pipe is blocked	Wash or repair

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3.7 Unstable speed

Causes	Troubleshooting
1. Poor quality fuel, containing too much water or wax	Clean the fuel system and replace the fuel
2. Air comes into the fuel suction pipe	Check the tightness of fuel pipes and the joints; release the air
3. Governor weight and spring do not work normally	Check and repair (by specialized operator)
4. Uneven fuel supply	Check and adjust (by specialized operator)
5. Poor atomization of the injector nozzle	Check and repair
6. The turbocharger surges	Check the compressor flow passage and remove the blockage, remove the carbon deposit in the exhaust path
7. Turbocharger bearing is broken	Replace

3.8 Low oil pressure

Causes	Troubleshooting
1. Low oil level in the oil sump or lack of oil	Check the oil level and leakage; repair and add oil
2. Failure of pressure regulator in the main oil passage	Check, clean and repair the valve
3. Oil strainer, oil pipe, joint gaskets are blocked or broken	Check the oil strainer and joints, repair the casting shrinkage porosity if any
4. Unqualified oil grade	Replace with qualified grade
5. Oil inlet pipe of the engine oil pump leaks	Examine the oil pipe, joints; repair or replace
6. The temperature of water in cooling system is too high, and temperature of lubricating oil is too high	Check the working conditions of cooling system, and correct
7. The resistance of oil filter is too big	Replace with a new element
8. Oil cooler is blocked	Check and remove the blockage
9. The main oil passage is blocked	Check and remove the blockage
10. Excessive bearing clearance or the bearing is damaged	Check and repair
11. Excessive wear of parts, overhaul is required	Check the working hours of the engine and carry out an overhaul

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3.9 High temperature of cooling water

Causes	Troubleshooting
1. Low water level in water tank	Check if there is any leakage and add water
2. The water tank is blocked	Check the water tank to clean or repair
3. The water pump belt is loose	Tighten the belt as specified
4. Water pump gasket is damaged and the pump impeller is worn	Check and repair or replace
5. The thermostat failure	Replace
6. The water pipe is broken and air comes into the pipe	Check the water pipe, joints, gaskets, etc; replace the damaged ones
7. Low oil level in the oil sump or lack of oil	Check the oil level and leakage; repair and add oil

3.10 Early wearing of parts

Causes	Troubleshooting
1. Unqualified or damaged air filter element	Check, replace with a qualified element
2. Short-circuit of the air inlet system	Check the air inlet pipe, gasket, connecting sleeve, repair or replace
3. Low oil level in the sump or lack of oil	Check the oil level and leakage; repair and add oil
4. Oil passage is blocked	Remove blockage in the oil passage
5. Unqualified oil grade	Change the oil as specified
6. Piston ring is broken or worn	Replace the damaged parts
7. Cylinder liner or piston is worn or scuffing	Disassemble the piston and cylinder liner, repair or replace;
8. Oil filter element is not replaced in time	Replace as required
9. Excessive wear of parts, requiring overhaul	Check the mileage and determine to carry out overhaul
10. The crankshaft is not coaxial with the main shaft of driven parts	Check the mounting bracket, and repair if necessary
11. Unqualified oil	Adopt oil of right grade

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3.11 Loud noise

Causes	Troubleshooting
1. Poor fuel quality	Replace the fuel
2. Cooling water has low temperature	Check the thermostat or replace it if necessary
3. Wrong valve timing or injection timing	Adjust
4. Injector nozzle has poor atomization	Check and repair
5. Injection pump injects too much oil	Check and adjust (by specialized operator)
6. Shock absorber is damaged	Check if the absorber is damaged; check the connecting bolts and replace them if necessary
7. The valve has leakage or improperly adjusted	Disassemble the valve and adjust
8. Too large gap between gears or some tooth is broken	Check and replace the damaged parts
9. Cylinder liner or piston is worn or scuffing	Check, repair or replace
10. Push rod is bent or broken	Replace
11. Piston ring is broken or worn	Replace
12. Bearing is worn seriously	Replace
13. Excessive crankshaft thrust bearing clearance	Replace
14. Main bushing is not concentric	Replace
15. The crankshaft is not coaxial with the main shaft of driven parts	Check the bolts on the mounting bracket and repair
16. Parts are worn seriously, requiring an overhaul	Overhaul
17. Turbocharger surges	Remove dirt and blockage in the compressor flow passage and accumulated carbon in the exhaust path
18. Sealing ring of the turbocharger is burnt	Replace
19. Turbocharger bearing is damaged; moving part rubs against fixed part	Replace
20. Foreign matters come into the turbine or the compressor impeller of turbocharger	Replace

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3.12 The starter motor does not work

Causes	Troubleshooting
1. The battery is not fully charged	Examine, charge or replace the battery
2. Wires are not well connected	Well connect the wires
3. Fuse is burnt	Replace the fuse
4. Electric brush has poor contact	Clean the brush surface or replace the brush
5. The motor itself is short circuited	Repair the motor or replace the assembly

3.13 The generator does not work at all

Causes	Troubleshooting
1. Wires are open or short circuit or the connectors are loose	Check the wiring of the generator and ampere meter and repair
2. Rotator and stator coils are open or short circuit or grounded	Repair or replace the assembly
3. Rectifier tube is damaged	Replace the assembly
4. The paper insulation of the terminal post is damaged, the wire is disconnected	Repair
5. The voltage of adjuster is too low	Repair
6. Contacts of adjuster are burnt	Repair or replace the assembly

3.14 Undercharged generator

Causes	Troubleshooting
1. Wires are open or short circuit or the connectors are loose	Repair
2. Rotator and stator coils are open or short circuit or grounded	Repair or replace the assembly
3. Generator belt is loose	Repair and adjust the belt tension
4. Damaged generator rectifier tube or poor contact of brush	Repair
5. The voltage of adjuster is too low	Adjust
6. Disconnected field coil or resistor wire of the adjuster	Repair or replace
7. Insufficient electrolyte or the battery is old	Add electrolyte or replace the battery

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Vehicle Diesel Engine



3.15 Unstable generator charging current

Causes	Troubleshooting
1. The stator or rotor coil is about to open or short circuit	Repair or replace.
2. Poor contact of brush	Repair
3. The terminal is loosened with poor contact	Repair
4. The voltage adjuster is damaged	Repair
5. The voltage is improperly adjusted	Check and adjust.

3.16 Overcharged generator

Causes	Troubleshooting
1. Internal short circuit of battery	Repair or replace
2. High adjuster voltage	Repair and adjust
3. Poor grounding of adjuster	Repair
4. Contact failure or contamination of adjuster; the voltage coil or resistor wire is open	Repair or replace

3.17 Abnormal generator sound

Causes	Troubleshooting
1. Improper installation of generator	Repair
2. Damaged bearing	Replace the bearing
3. Moving part interferes with the fixed part	Repair or replace
4. Rectifier short circuit	Replace
5. Stator coil short circuit	Repair or replace

3.18 Abnormal pressure of the urea solution pump

Causes	Troubleshooting
1. The filter element of urea solution pump is blocked	Wash or replace the filter element
2. Poor urea solution quality, containing too much impurity	Replace the urea solution and wash the urea solution tank
3. Urea solution nozzle is blocked	Replace

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3.19 Abnormal indication of the urea solution level

Causes	Troubleshooting
1. Liquid level sensor of urea solution-tank is failure	Check and replace

3.20 Urea-crystal appear at the nozzle position on the exhaust pipe

Causes	Troubleshooting
1. Wrong urea solution nozzle mounting size	Check and adjust
2. The nozzle has leaked	Check and replace



II. User Service Guide (warranty card)

Weichai Power Product Warranty Card (Kept by user)

Item	Content	Item	Content
Model		User's name	
Order No.		Zip code	
Number:		Address	
Purchasing date		Office phone	
Distributor		Home phone	

Respected users:

Thank you for using Weichai products, and we appreciate your trust! In order to correctly use and maintain the diesel engine, please carefully read this manual and closely follow the specifications. In case of any failure, please timely contact with the Weichai Maintenance Center or Customer Service Center and we will delivery effective service on time.

“Service Registration Form” should be filled by the Maintenance Center during service and then kept by the user.

Weichai Power Co., Ltd.

Address: No. 26 Minsheng East Street, Weifang, Shandong, China

Zip code: 261001

Website: <http://cn.weichaigroup.com>

Engine sale phone: 0536-8232488; 0536-8233371

Spare part sale phone: 0536-2297313; 0536-2297319

Service Hotline:

400 Free Service Hotline: 400-6183066 } 24h service phone
800 Free Service Hotline: 800-8603066

Customer Service Center: 0536-8235369 (Fax)

Customer service center complaint phone: 0536-2297335



Service Registration Form (filled by the service staff)

Item	Content	Item	Content
Model		User's name	
Order No.		Zip code	
Number:		Address	
Purchasing date		Office phone	
Dealer		Home phone	

Service Center Name	Date	Maintenance items	Replaced parts	Quantity	Signature of service staff	Signature of user

Warranty Explanations

1. Service commitment

In the service area of our service centers, after receiving the calls for help from the users and confirmed that the service is needed, service personnel of Weichai will arrive at the service site within 3h (cities), 24h (general areas) and 48h (remote areas) (force majeure excluded).

2. Special notes

- The diesel engine operators must read the operation and maintenance manual carefully to get familiar with the structure, strictly observe the technical operation and maintenance regulations, and pay attention to the warning notes and signs.
- Before delivery, the diesel engine has been tested strictly according to the test specifications, the test ECU data shall not be changed after delivery; otherwise, Weichai will not undertake the liability for warranty.
- There are strict torque requirements and use times for all bolts of the diesel engine, so do not loosen the main bearing bolts or the connecting rod bolts at will. Refer to the operation and maintenance manual for the specific requirements.
- Carry out 50h test run before normal using of the new engine.
- After cold start of the diesel engine, increase the speed slowly; do not speed up suddenly or idling for a long time.
- It is prohibited to run the diesel engine if no air filter is equipped, otherwise, the unfiltered air may enter the cylinder. When the diesel engine works under severe environment, increase the cleaning or replacement frequency of the filter element to avoid early wear of the diesel engine.
- The fuel and oil should be filtered before filling. And the fuel and oil grade should be selected according to the manual. Weichai Power special oil must be used.

3. “Three guarantees” principle and provisions

(1) “Three guarantees” principle

- For Weichai product or engine equipped with Weichai product purchased by the users, under normal operation and maintenance conditions, Weichai will provide “three-guarantee” service during the “three-guarantee” period for damages caused by product manufacture and assembling.
- For damages of diesel engine and parts, repair will mainly be provided or corresponding parts be replaced if repair is impossible; the diesel engine can be replaced only if the replacement conditions are met and should be submitted for

approval of the leader.

(2) Three guarantee period

- For the Weichai's end products, the three-guarantee service and warranty start from the purchasing date and take the Weichai invoice and warranty card or dealer's invoice as the basis (the warranty period of marine engine starts from the commissioning date).
- For the engines matching with vehicles, the three-guarantees service and warranty should be implemented in accordance with the agreement. If the vehicle manufacturer has specific provisions on the "Three Guarantees" warranty of diesel engine, the provisions of vehicle manufacturer shall be followed firstly based on the warranty card attached. Otherwise, the provisions of Weichai shall be followed. The "Three guarantees" service and warranty period shall start from the actual purchasing date of the vehicle and shall be based on the sales invoice and warranty card.
- For damages of Weichai spare parts due to original quality problem, the "three-guarantees" period of assemblies is 3 months, that of basic parts is 1 year, and no warranty is provided for the wear parts, rubber parts, piston rings, oil seals, bearings, bolts and fuel injector matching parts once they are mounted on the engine. For quality problems of basic parts during within "three-guarantee" period, after site confirming and getting effective photos by service personnel of stationed abroad service center and effective photos, the working hours fee for "three guarantees" service will be charged for "three-guarantee" service. The "three -guarantees" period of spare parts is based on the date of the purchasing invoice issued by the central warehouse storage or authorized service center. For quality problems due to assembling, Weichai will not provide the "three guarantees" service.

4. No "three guarantees" for the following situations

- Engine failures caused by improper operation, maintenance and matching; Damages or failures caused by loading/unloading during user' transportation; operation conditions exceeding the range specified in the operating manual of the product, mismatching, overload or overspeed operation, running-in and maintenance not carried out according to the operating manual, or use of inferior oil/fuel, antifreeze and filters (air, fuel and oil).
- Failures caused by self modifying, adjusting or dismantling any parts which are not allowed in Manual.
- Oil, antifreeze, filter element, hose, belt and fuel injector matching parts which are replaced in normal use, consumption or maintenance.
- No warranty card, invoice or cannot demonstrate that the products are still within



“Three guarantees” period. The product model and type on the “Three guarantees” certificate or invoice are not consistent to that claimed to be guaranteed by “Three guarantees”, or the “Three guarantees” certificate or invoice is modified.

- The original state of damage is not kept causing that the reason of fault cannot be identified.
- Failures caused by improper operation.
- Damage caused by force majeure, such as war or natural disaster etc.
- Engine is damaged by the traffic accidents.

“Three guarantees” period for diesel engine of Weichai Power

S/N		Product model	Three guarantees period	Remarks
I. Diesel engine				
1		Diesel engine for road vehicle	1 year or 60,000km	
2		Diesel engine for engineering vehicle	6 months or 30,000km	
3		Diesel engine for bus	1 year or 100,000 km	
4		Natural gas engine for bus	1 year or 100,000 km	
II. Diesel engine parts				
1	Basic parts	Cylinder block, crankshaft, engine base, connecting rod	2 years or 200,000km (due to original manufacture defects, such as sand inclusions)	Subject to the actual purchasing date and based on the invoice, warranty card or timer. Three guarantees period or mileage (hour), whichever comes first.
2	Key parts	Cylinder head, flywheel, flywheel housing, connecting rod bolt, piston, piston ring, piston pin, connecting rod bearing shell, main bearing, cam bearing, camshaft, cylinder liner, valve, valve spring, valve seat, valve guide, valve cover, tappet, tappet, push rod, rocker arm and shaft, gears and gear shafts, tensioner, gear ring, oil pump, intake/exhaust manifold, oil sump, belt pulley, injection pump, fuel injector body, air compressor, cover plates and shim plates, water pump, oil radiator, silicone oil clutch, relief valve, shock absorber, crankshaft balancing mechanism, metal oil/water pipes and pipe joints, steering pump, thermostat, oil-gas separator, cylinder gasket, ECU, common rail pipe, air filter body, diesel filter body, oil filter body, muffler, distributor, starting valve, intercooler, heat exchanger, air bottle, thrust plate, strainer, dipstick component, coolant nozzle and etc.	Same with the three guarantees period of the diesel engine.	
3	Common parts	Front oil seal and other oil seals; turbocharger, intake manifold gasket, exhaust manifold gasket, turbocharger gasket, valve cover gasket, rubber hose, return pipe of injector, fuel delivery pump, oil dipstick, fan, waterproof rubber ring, oil-proof rubber ring, bowl-shape plug.	Road vehicle: 6 months or 30,000km. Engineering vehicle: 3 months or 15,000km. Passenger car: 6 months or 50,000km.	
4	Electric parts	Starter, generator, instrument, sensors, electronic speed controller, accelerator pedal, harness, solenoid valve, flame preheater.	Road vehicle: 6 months or 30,000km. Engineering vehicle: 3 months or 15,000km. Passenger car: 6 months or 50,000km.	
5	Wear parts	Belt, fan shroud, nozzle, plunger and barrel assembly, other gaskets; braided hoses, clamp, timer.	5,000km; or within the mandatory maintenance period; for passenger car: 1 month or 10,000km	
Remarks: 1. If the odometer of the road vehicle is damaged, the three-guarantee period of the diesel engine will be calculated as per 325km per day; 2. If the odometer of the engineering vehicle is damaged, the three-guarantee period of the diesel engine will be calculated as per 300km per day; 3. If the odometer of the passenger car is damaged, the three-guarantee period of touring coach diesel engine will be calculated as per 400km per day and that of public bus will be calculated as per 200km per day; 4. The road vehicles include transportation trucks, truck-mounted crane, cement mixer; and the engineering vehicles include dump trucks, etc. 5. The provisions of vehicle manufacturer shall be observed if explicitly stipulated.				

Weichai international marketing service network

Weichai International Marketing Service Network

Area	Office (country)	Office (city)	No.	Service in charge	Mobile	China mobile	E-mail	Address
CIS	Russia	Moscow	1	An Pengfei	0079267519073 0079647932613	13869608008	russiaweichai@163.com weichai@mail.ru	
			2	Zhang Mingli	0079651290588	13806468357		
			3	Yang Chunhui	0079251070970	15866537430		
			4	Sun Shouli	0079651298369	15953614932		
			5	Ge Tiannan	0079258219103	18765633071		
			6	Ma Shizhu		18660616360		
			7	Meng Xiangchen	0079036815065	18365681128		
			8	Cao Meng		13153660087		
	Mongolia	Ulaanbaatar	9	Sun	0097699602398	18953658057	mongoliaweichai@163.com	
			10	Shi Xiaochuan	0097694800661	15965090504		
	Kazakhstan	Almaty	11	Zhang Meng		15153682611	kzweichai@126.com	
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			13	Shi Guopeng	0077013522786	15965090719		
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	Azerbaijan	Baku	17	Shan Hongwu	0077011725466	13964631238	weichaiaze@163.com	
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	Indonesia	Jakarta	19	Li Hao	006281213421256	13696364283	indonesiaweichai@163.com	
			20	Wang Zhi				
			21	Li Guotao				
			22	Yan Dezhong	006281212562558	18953611016		
	Philippines	Manila	23	Zhang	0063 9053389899	13695368355	philippinesweichai@gmail.com	
			24	Liu Ningyu	006309327870038 (Cebu)	18953658101		
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			30	Yang Yongbo	0066-924461323	15265816007		
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			34	Zhang	0084916681084	15964585240		
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			36	Wang Xiujun	00917387523070	18953658050		
			37	Lin Shilong	00917757004650	18615080279		
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WP7 Euro VI Vehicle Diesel Engine User Service Guide



Weichai International Marketing Service Network

Area	Office (country)	Office (city)	No.	Service in charge	Mobile	China mobile	E-mail	Address
Middle East	Iran	Tehran	40	Luan	00989122146779	18663666289	iranweichai@aliyun.com	
			41	Song Weihua	00989124048462	13953675677		
			42	Wang Dong		15265617851		
	United Arab Emirates	Dubai	43	Chen Yun	00971509420629	15965081508	uaweichai@163.com	
			44	Wang	00971502616210	15165366953		
	Saudi Arabia	Riyadh	45	Sui Zhen	00966562108200	15866165882	saudiweichai@gmail.com saudiweichai@aliyun.com	
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47			Yu Chunbo	966532738055	15866504651			
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			50	Gu Yingchun	0021-3555477841	15165360725		
			51	Ren Shunli		18953621166		
	Libya		52	Liu Hui		18615918089		
	Turkey	Istanbul	53	Zhang Lei		13706468642		
East Africa	Kenya	Mombasa	54	Cai Lei	00254-705978578	13583683720	kenyaweichai@163.com	
			55	Zhao Yukuan	00254717540993	13563666046		
			56	Guo Yuhua	00254-0718922892	15169643957		
			57	Li Zhonghua		15153607233		
	Tanzania		58	Wang Dongmin	00254712299408 00255-758355846	13475660013		
		Ethiopia	Addis Ababa	59	Hu Xiaoqun	00251924909463		13475680218
			60	Zhao		18764697679		
		the Sudan	Khartoum	61	Ma Xiaoxiao	00249922868539 00249 908750077	15095105086	sudanweichai@126.com
62				Wang Yushuai	00249968126616	15165645631		
South Africa	South Africa	Johannesburg	63	Guan Feng	0027837673902	13706468624	nanfeiveichai@163.com	
			64	Xun	0027-834252377	15153633170		
	Angola	Luanda	65	Fu Yongsheng	00244924771275	13696363763	angolaweichai@163.com	
			66	Du Wenchao	00244934192717	15165600735		
			67	Yan		18606365360		
West Africa	Nigeria	Lagos	68	Song Zhiping		13678660757	nigeriaweichai@126.com	
			69	Hou Jie		18953610203		
			70	Yu Qianjun	00234-8109983128	15165363587		
	Ghana		71	Zhang Haisheng	00233544430761	15006652638	ghanaweichai@126.com	
			72	Wang Jiaquan	002348155777771	18663671909		
			73	Du	00989124048461	15866188500		
South America	Brazil	Sao Paulo	74	Chen	005511976427085	13515405118	brazilweichai@qq.com	
			75	Han Pengji		18953658011		
			76	Zhang Lei	005511976427085	13475685957		
	Chile	Santiago	77	Lin Chuanmei	0056965146276 (Chile) 00593992848964 (Ecuador)	15964585510	chileweichai@163.com	
			78	Zhang	0051984131788	15863619226		
	Peru	Lima	79	Li Peng	0051943058834	15628706366	peruweichai@163.com	
			80	Qin Shude		13853660409		
	Ecuador		81	Wang		18765360251		



The European Union representative office

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CS50001 FR-13711 Cassis France

Linkman: Zhang Guoping (Paul. Zhang)

Mobile(in China): 008618953658085

Email: zhanggp@weichai.com

WP7 Euro VI Vehicle Diesel Engine User Service Guide



Diesel engine mandatory maintenance card

License plate number		Manufacturer		First copy
User's name		Diesel engine No.		
Detailed address		Date of mandatory maintenance		
		Mileage of mandatory maintenance		
Purchaser		Purchasing date		Sub
Identifier:	Signature of user:		Weichai Power special oil label:	
Official seal of service station:	Valid documentation:			
	Phone:			

Friendly reminder: The mandatory maintenance card should be filled out triplicate and must be signed by the user. Omission of items will cause the card invalid.

Weichai Power supervisory phone: 400-6183066 800-8603066

After mandatory maintenance, this card and the Customer Satisfaction Questionnaire will be collected by the service station and submitted to the regional office.

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License plate number		Manufacturer		First copy
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WP7 Euro VI Vehicle Diesel Engine User Service Guide



Diesel engine mandatory maintenance card

License plate number		Manufacturer		2nd copy, kept by Weichai for filing
User's name		Diesel engine No.		
Detailed address		Date of mandatory maintenance		
		Mileage of mandatory maintenance		
Purchaser		Purchasing date		
Identifier: Official seal of service station:	Signature of user: Valid documentation: Phone:		Weichai Power special oil label:	

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		Mileage of mandatory maintenance		
Purchaser		Purchasing date		
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Diesel engine mandatory maintenance card

License plate number		Manufacturer		3rd copy kept by the service station
User's name		Diesel engine No.		
Detailed address		Date of mandatory maintenance		
		Mileage of mandatory maintenance		
Purchaser		Purchasing date		
Identifier: Official seal of service station:	Signature of user: Valid documentation: Phone:		Weichai Power special oil label:	

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Customer Satisfaction Questionnaire

Item	Evaluation factor	Excellent	Good	Acceptable	Bad	Not acceptable
Diesel engine product quality	Appearance					
	Performance					
	Reliability					
Diesel engine delivery quality	Engine completeness					
	Attached spare parts and tools					
	Attached engine documents					
	Delivery time					
Diesel engine service quality	Service promptness					
	Service quality					
	Service attitude					
Others	Customer cancellation					
	Return of products					
	Additional transportation					
	Other opinions of users					
Customer's seal						
MM, DD, YY						
Customer Service Center, Weichai Power Co., Ltd. Address: No. 26 Minsheng East Street, Kuiwen District, Weifang City, Shandong Province Zip code: 261001 Phone: 400-6183066 (for mobile phone or landline) 800-8603066 (for landline) Fax: 0536-8235369						

Note: please mark the “√” in the corresponding “column”.