



USERS MANUAL

W-TG 3000

- 3000 RPM -

Portable Diesel Generating set 230V / 50Hz



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INTRODUCTION

GENERAL

The W-TG 3000 Portable Diesel Generating set is manufactured and marketed by WhisperPower.

It is important to read this manual before installing and operating the generating set. Both safety and durability rely very much on the correct identification, installation and a good understanding of ratings, features, design, maintenance and operation procedures.

The information, specifications, illustrations and statements contained within this publication are given with our best intentions and are believed to be correct at the time of going to press.

Our policy is one of continued development and we reserve the right to amend any technical information without prior notice.

Whilst every effort is made to ensure the accuracy of the particulars contained within this publication neither the manufacturer, distributor, or dealer in any circumstances shall be held liable for any inaccuracy or the consequences thereof.



WARNING

A warning symbol draws attention to special warnings, instructions or procedures which, if not strictly observed, may result in damage or destruction of equipment, severe personal injury or loss of life.



DANGER

This danger symbol refers to electric danger and draws attention to special warnings, instructions or procedures which, if not strictly observed, may result in electrical shock which will result in severe personal injury or loss of life.

SERVICE AND MAINTENANCE

Regular service and maintenance should be carried out according to the directions in this manual. For service and maintenance one can appeal to the manufacturer or the dealers.

GUARANTEE

WhisperPower guarantees that this generating set has been built according to good workmanship, according to the specifications in this manual and according to European Community safety regulations.

During production and prior to delivery, all of our generating sets are tested and inspected.

The correct functioning of this generating set is subject to guarantee. The period and conditions of this guarantee are laid down in the general conditions of delivery as registered with the Chamber of Commerce and Industries for the North of the Netherlands number 01120025 and are available on request. The guarantee period is two years, limited to 1000 running hours. Some aspects of our guarantee scheme are given here in more detail:

Guarantee period 1000 running hours or 24 months whichever occurs first. Warrantee does not cover failures that are caused by misuse, neglect or a faulty installation.



DAMAGE CAUSED BY THE INGRESS OF WATER IS NEVER COVERED BY GUARANTEE

For Example : Neglect

When one find serious damage after weeks of neglect guarantee claims will not be honoured.

WhisperPower cannot be held responsible for damage caused by the unattended running generator.

Warranty means that faulty parts are repaired or replaced free of charge. If necessary the whole generator unit will be exchanged.

Travel expenses and travel hours are not covered.

There is no cover for labour needed to get access to the generator, for example to remove equipment or bulkheads etc.

Goods to be delivered under guarantee will be invoiced. Only after the faulty goods are returned will the invoice be credited. Payment in advance may be required or guaranteed by credit card. If after the faulty goods are returned, it is indicated that the failure was not covered by guarantee a credit will not be issued.

Freight costs to deliver spares by normal mail or carriers is covered under guarantee. Special services like express mail, overnight delivery etc. are not covered. Taxes and duties are not covered. For shipments to remote off shore areas any additional costs incurred over normal carriage will be invoiced to the customer.

The cost for returning faulty goods is not covered under guarantee.

If any problem arises which could be subject of guarantee, procedures should be followed as described in the guarantee conditions, unauthorised repairs could lead to further damage and violate the guarantee conditions.



Should work take place, which is not in accordance with the guidelines, instructions and specifications, then damage may occur and the generating set may not fulfil its specifications. In all these cases the guarantee may become invalid. Use original spareparts only!

LIABILITY

WhisperPower does not accept responsibility for damage, injuries or casualties which are the result of operation of the generating set in specific conditions which brings dangers which could not be foreseen, or could be avoided by additional measures. WhisperPower does not accept liability for damage due to use of the generator, possible faults in the manuals and the results thereof.

IDENTIFICATION



Identification plate

General

Before using this generating set it is very important to identify the set correctly. To communicate for service or ordering parts it is also essential to correctly identify the generating set. Also for the daily operation of the generating set it is necessary that the operator knows the correct specifications.

Identification plate

All required identification data are on the identification plate. For location of the identification plate see figure 1.

Fig. 1: Location identification plate.

1 RATED OUTPUT

The identification plate gives the nominal maximum continuous load in kVA (= kW). The power should never exceed the nominal power as shown on the identification plate. Power is rated at an ambient temperature of 40°C. For higher temperatures the generating set has to be derated.

2 VOLTAGE shows the nominal voltage.

This voltage should be within the specified tolerance at the nominal frequency.

3 FREQUENCY is shown in Hz and is determined by the speed of the engine (RPM). 50 Hz correlates with 3000 rpm.

4 POWER FACTOR

When calculating a load one should always take into account the power factor or cos. phi of this load.

5 The identity of the generating set is given by the SERIAL NUMBER. When this number is available the

manufacturer can trace the specifications of the generating set. On the identification plate are also some basic features of the set:

6 CE-marking: the “CE” symbol shows that the generating set is built according to European Community safety regulations. This includes the regulations regarding the safety of pleasure craft, safety of machinery, electric safety and electric magnetic compatibility (EMC) and other relevant directives.

Safety also relies on the installation, application and circumstances. See also the remarks in this manual under SAFETY

Before changing a factory setting you are advised to consult the manufacturer. When the generating set you have to identify is not new you have to take into account the possibility that former users may have changed the settings. Check the settings (voltage, frequency, rpm) when there is any doubt.

INFORMATION

SAFETY

General

When correctly installed and used in normal circumstances this generating set fulfils EC safety regulations. This generating set could be part of an installation or could be used in a way that additional regulations of the EC or other authorities have to be taken into account.



Circumstances could make it also necessary to take additional measures. Be aware of wet conditions and hazardous environments caused by explosive gases etc.

Electrical safety



The voltage of 230 Volt generated by this generating set is dangerous and if instructions and procedures are not strictly observed may result in electrical shock which will result in severe personal injury or loss of life.

- Check all wiring at least once a year. Defects, such as loose connections, burned cables etc. must be repaired immediately.
- Do not work on the electrical system if it is still connected to a current source. Only allow changes in your electrical system to be carried out by qualified electricians.
- Connection and protection must be done in accordance with local standards.



Warning signs indicate parts which could be live.

Installation



Installation includes measures to be taken to outlet exhaust fumes which contain carbon monoxide and are extremely dangerous. Carbon monoxide (CO) is an invisible odourless gas. Inhalation produces headache, nausea or death. Installation includes measures for proper ventilation, safe electric connections, safe installation of the starting battery, proper fitting of the fuel pipes etc. Refer to the installation manual.

Refuelling precautions

- Do not refuel indoors or in a poorly ventilated area.
- Be sure to stop the generator before refuelling.
- Do not overfill the fuel tank.
- If fuel is spilt wipe it away carefully before starting the engine.

Operation

External moving parts are covered by the soundshield and therefore the W-TG 3000 is very safe when the soundshield is closed.



Nevertheless take note of the signs on the generating set which show symbols in a triangle indicating danger.



When service has to be carried out while the engine is running, be aware of moving parts like V-belts.

- The generating set should be operated by authorised personnel only.
- Be aware of hot parts and especially parts of the exhaust system.
- If the generating set is unsafe, fit danger notices and disconnect the battery positive (+) lead so that it cannot be started until the condition is corrected.
- Do not attempt to operate the generating set with a known unsafe condition. Disconnect the battery positive (+) lead prior to attempting any repairs or cleaning inside the enclosure.
- Always consult the manual before carrying out maintenance.
- Do not change the settings without consulting the manufacturer. Keep a record of setting changes in this manual.

Fire and explosion



Fuels can be flammable. Proper handling limits the risk of fire and explosion.

- Avoid refilling the fuel tank while the engine is running. When oil or fuel is leaking do not use the generating set.
- Do not run the engine close to explosives or gasses.
- Hydrogen gas generated by charging batteries is explosive. Ensure for proper ventilation. Do not smoke or allow sparks, flames, or other sources of ignition around batteries.
- Keep a fire extinguisher on hand.

- Poor electrical connections or using wiring which is not suited for the rated currents can cause overheating and possibly fire.

Chemicals

- Fuels, oils, coolants, and battery electrolyte can be hazardous to personnel if not treated properly. Do not swallow or have skin contact with these liquids. Do not wear clothing that has been contaminated by fuel or lubricating oil.
- Gaskets may be manufactured from asbestos. Particles of this material should not be inhaled as this may result in fatal diseases.
- On no account allow any unprotected skin to come into contact with the injector spray as the fuel may enter the blood stream with fatal results.
- Engines may be fitted with seals or O-rings manufactured from "viton" or similar material. When exposed to abnormal high temperatures in excess of 400°C an extremely corrosive acid is produced which cannot be removed from the skin. If signs of decomposition are evident, or if in doubt, always wear disposable heavy duty gloves.

TRANSPORT, LIFTING AND STORAGE



When lifting the generating set avoid any risk of personal injuries, do not stand under the generating set.

- Use soft slings to avoid damage
- After transporting the generating set check for damage before installation.
- Long term storage can have detrimental effects on the engine. The engine should be put through an engine preservation procedure. (Refer to the maintenance chapter)
- After removing the generating set from long term storage perform an insulation check.
- While the battery is stored it should be recharged every 12 weeks.



Other safety precautions

- **Where to use the generator.**
Use it more than 1m away from buildings or any other facilities
- **When using the generator.**
Do not tip or move.
Do not cover it with a box or fence around it.
Never unscrew the dipstick when using the generator set, or else scald will be caused by ejective oil.
Do not touch the generator in the rain. And also do not splash water or touch with a wet hand.
- To avoid an electric shock, ground the generator from the ground terminal.

- Avoid using the generator at a place where the ground is not firm.
- Never connect the generator to the wiring of a power company.

The W-TG 3000

Documentation

Included in the delivery is:

- This users manual (number: 40200021)

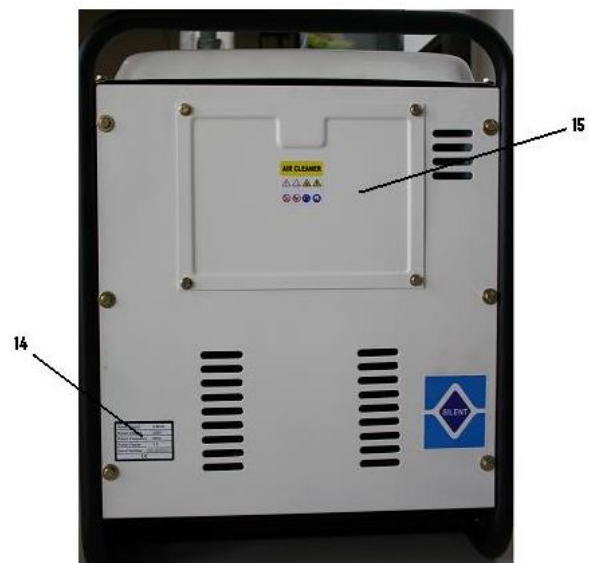
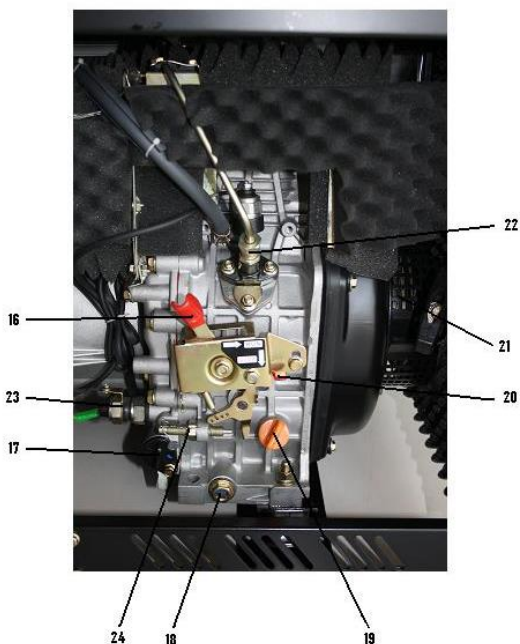
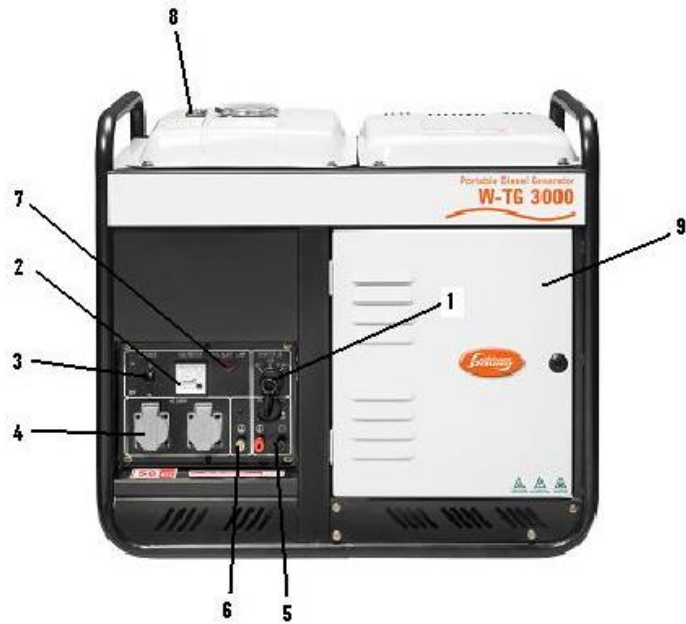
However in this manual there is a list of important parts for maintenance and spare parts as well as a chapter on maintenance and problem solving.

COMPONENTS

Main components to identify

1. Starter key
2. Volt meter
3. 230V breaker
4. 230V connection
5. 12V connection
6. Ground connection
7. Low oil alarm indicator
8. Fuel tank
9. Front door
10. Back doors
11. Muffler
12. Fuel filler cap
13. Fuel meter
14. Identification plate
15. Air filter
16. Engine speed lever
17. Oil filter
18. Oil drain plug
19. Oil filler cap/dipstick
20. Engine stop lever
21. Recoil starter
22. Fuel pump
23. Oil sensor
24. Fuel injection limiting bolt

Overview W-TG 3000





TECHNICAL INFORMATION

Engine

The W-TG 3000 generating set is based on 178 FA 1 cylinder 4 stroke diesel engine. The engine is directly injected. The engine is air cooled.

Alarms and shut down

In the event of malfunctioning this will be indicated by the failure light, details will be shown on the display and the engine will be shut down. There is one function guarded: low oil level.

All alarm switches are closed when no malfunction occur. A contact is cut in the event of an alarm. This means that the generating set will not work when the alarm switches are broken or there is a loose wire. The system therefore is intrinsically safe. The panel will display details about the alarm.

Control

The generating set can be operated by a key on the panel of the generator. To start the generator you have to follow the next procedure.

- Open the fuel cock.
- Turn the starting key clockwise to the "START" position.
- Remove your hand from the key as soon as the engine starts.
- If the engine doesn't start after 10 seconds, wait a while (for about 15 seconds) Before attempting to start again.

Fuel specification

The engine must only be used with diesel fuel oil which conforms to the standards for use in modern diesel engines. Keeping the fuel free from water and contaminants is of the utmost importance.

Oil information

1 Specification:

The oil must be suitable for oil changes as specified in the maintenance chapter. The engine must be run on heavy duty lubricating oil meeting the requirements of API class CC or CD.

It is very important to use the correct oil specification. Very often local oil suppliers recommend a higher class, because they assume that a higher class is allowed. This is not the case. One should not follow these recommendations.

Using the wrong specification will cause high oil consumption.

2 Oil viscosity:

We recommend a multigrade oil 10W40.

3 Oil capacity:

The content of oil including the oil filter is 1.1 l.

Do not overfill with lubricating oil as this may have a detrimental effect on engine performance.



Technical data

GENERAL

Model	W-TG 3000
RPM	3000
Engine	Air cooled direct injection diesel engine
Number of cylinders	1 cylinder 4 stroke
Displacement	306 cm ³
Bore X stroke	78x64 mm
Continuous power engine	5 HP
Cooling system	Forced air cooling
Fuel tank capacity	12.5 L
Running time at full tank	12 hours @ 1 kW
Control	AVR

ELECTRICAL SPECIFICATIONS

Output voltage	230VAC 12VDC/8.3 A
Output rating	2.8 kVA at powerfactor $\cos \phi = 1.0$
Maximum power	3 kVA
Maximum current	13A
Nominal speed	3000 rpm
Nominal frequency	50 Hz
Voltage regulation:	AVR

MECHANICAL SPECIFICATIONS

Dimensions hwxwd	630x480x720 mm
Colour	Black and white
Weight	106 kg including battery
Max. installation angle	20 degrees
Standard supplies	Automatic air bleeding mechanism, AC Voltmeter, AC circuit breakers, additional DC output, DC over current protection, extra large fuel tank with fuel gauge, large capacity exhaust silencer, starter battery



OPERATION

GENERAL

The generating set is operational after full installation and filling up with: fuel, engine lubricating oil, filling the starter battery with acid, connecting the battery to earth.

OPERATING INSTRUCTIONS

Summarised operating instructions (daily use)

Routine "pre-start" checks:

- 1 Check oil level (refer to fig. 8).
- 2 Switch on battery switch (when installed).
- 3 Fuel valve: open.

Starting:

Make sure that the engine speed lever is in the "RUN" position.

Turn the starter key to the start position, remove your hand from the starter key when the engine is on.

Extended operating instructions

Check when starting the first time or after a longer period of rest:

- 1 If there is any damage caused by transport or installation.
- 2 Check if the installation conforms to the installation instructions.
- 3 Ensure the generating set is free to turn without obstruction.
- 4 Check all hoses and hose connections for leaks.
- 5 Check all cables and cable end terminal connections.
- 6 Check the engine and generator mounting bolts.

Routine "pre-start" checks:

- 1 Check engine oil level.

The generator switches off in the event of insufficient oil-pressure. Even when the oil level is too low the oil pressure can be high enough. Do not run the generator with the oil below the lowest mark in the, because a smaller volume of oil will become contaminated considerably quicker than a larger volume. Therefore we recommend daily oil-checks.

Check oil level prior to starting the engine or at least 5 minutes after the engine has stopped.

- 2 Check for leaks.
- 3 Switch on the battery switch.

In operation checks:

- 1 Check for abnormal noise or vibration
- 2 Check the voltage
- 3 Before loading the generating set up to maximum, have it run warm. Continuous load should be restricted to 70 % of maximum load.

Stopping generator:

- 1 Switch off all electrical devices (consumers). If the generating set has been running under full load for a longer period, do not shut it down abruptly. Reduce the electrical load to about 30% of the rated load and let it run for approx. 5 minutes.
- 2 Turn the starter key to the off position. Do not stop the engine with the decompression lever.
- 3 Close the fuel cock.

Engine load during longer operation:

Please ensure that the generating set is not overloaded. Overloading occurs when the electrical load (demand) is so high that the generator cannot be turned around properly by the diesel engine. Overloading causes the engine to run rough, while using oil and excessive fuel and producing soot by the exhaust. The engine can even stop.

The generator should therefore only be loaded at the maximum rated power for short periods (2-3 hours) only!

The high peak current is meant for the ability to start electrical devices that need a high current for starting especially electric motors and compressors (from a still stand state).

Do not run the generator for very long periods at no load or at very low load. When this is necessary do load the generator at least one hour in 10 hours for minimum 70%. Long term running at too low load will cause the exhaust to be choked by carbon.



Never remove the battery while the engine is running or any electrical cable while the battery is connected in the circuit. Only disconnect the battery with the engine stopped and all switches in "OFF" position.

MAINTENANCE

ENGINE

Preliminary instructions

All regular maintenance can be carried out when the enclosure is open. When oil and dirt has gathered in the enclosure measures have to be taken to avoid spilling oil and polluting the environment.

The first service on the engine should be carried out after 20 hours of its life and after a major overhaul. In the first 20 hours the engine should receive special attention:

Long periods of light or no load running in the first 20 hours may lead to cylinder glazing and high oil consumption.



For the same reason it is of the greatest importance to use the right oil specification

The first time starting up or after running out of fuel it could be necessary to prime the fuel system.

Valve clearance

When the engine is in cold condition both valves (inlet and outlet) should have a clearance between 0.10 and 0.15 mm. The adjustment has to be done at TDC.

Replacing fuel filter

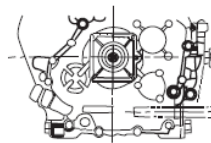
Filter change depends on contamination of the fuel, but should be done however, at least every 300 running hours. A clogged filter results in a lack of output of the generating set.

Replacing oil filter

The oil filter is in front of the service side. Replacement has to be executed according to the schedule in this manual. Drain the oil using a sump pump and put some tissues under the filter.

Replacement of lube oil filter

Clean	Every 3 months or 100 hours
Replace	Every 1,000 hours or during engine disassembly



Pull out the filter with pliers.

REGULAR MAINTENANCE

CHECK DAILY:

- Oil level (see fig. 13)

Make sure that the oil level is never below the mark. Do not add oil when the level is still above the mark

- 1 Maximum oil level
- 2 Minimum oil level

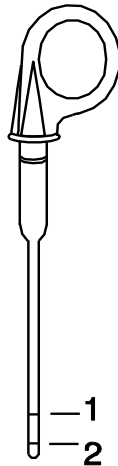


Fig. 13

CHECK DAILY:

- Hoses for loose connections or deterioration.



When the generator set runs less than 100 hours a year the oil should be changed yearly.

Maintenance schedule

Item	Operation hours	Daily	First month	Every 3 months	Every 6 months	Every year or
			or 20Hrs	or 100Hrs	or 300Hrs	Every 1000Hrs
Check and tighten bolt and nuts		<input type="radio"/>				
Check and resupply engine oil		<input type="radio"/>				
Replace engine oil			<input type="radio"/> 1 st time	<input type="radio"/> 2nd time and thereafter		
Clean and replace oil filter				<input type="radio"/>	<input checked="" type="radio"/> Replace if necessary	
Check oil leakage		<input type="radio"/>				
Replace air cleaner element			Service more frequently when used in dusty areas		<input type="radio"/>	
Drain the fuel tank			Monthly			
Clean and replace fuel filter				<input type="radio"/> Clean	<input type="radio"/> Replace	
Check fuel injection nozzle					<input checked="" type="radio"/>	
Check fuel injection pump					<input checked="" type="radio"/>	
Check fuel piping					<input type="radio"/> Replace necessary	
Adjust intake/exhaust valves head clearance			<input type="radio"/> 1 st time		<input type="radio"/>	
Check and lap intake exhaust valve seat						<input checked="" type="radio"/>
Replace piston rings						<input checked="" type="radio"/>
Check battery liquid			Monthly			

Putting out of service

When not using the generating set for a longer period it is recommended to execute an engine preservation procedure.

- 1 Clean the engine.
- 2 Drain the fuel tank and fill with preservation diesel. Start the engine and run the engine warm.
- 3 Drain the hot engine oil and refill with preservation oil.
- 4 Remove the plastic plug on the rocker arm cover and add about 2cc of lube oil, put the plug back into place.
- 5 Push the decompression lever to non compression position and turn around the engine for about 2-3 seconds with the key switched to start.
- 6 Pull the decompression lever up and pull the recoil starter up slowly until it feels tight. This closes the valves and prevents from forming rust.
- 7 Disconnect the battery and store it in a dry place free of frost and charge it regularly.
- 8 Close inlet- and outlet openings with tape.
- 9 Protect the generating set against the influences of bad weather conditions.

This method of preservation will be sufficient for 6 months. Repeat steps 1,3,4 and 9, every 6 months. Change oil before using the engine again.



TROUBLESHOOTING

If there occurs any trouble starting the generator make sure that you check all of the following points in the schedule below.

When the engine will not start:

- (1) Is there enough fuel?
- (2) Is the fuel cock at the "O"(OPEN) position?
- (3) Is diesel fuel reaching the fuel injection pump or nozzle?
- (4) Is the speed control lever in the "START" position?
- (5) Is the lube oil level correct?
- (6) Is the fuel injection nozzle working properly?
- (7) Is the recoil starter pulled sufficiently quickly and firmly?
- (8) Is the spark arrester clogged by carbon?
- (9) Is the battery discharging?



WARNING:

Keep away from the injection nozzle when performing the injection spray test.

NOTE: Always pull the recoil starter quickly and firmly.

(See the section, "How to start your engine".



SPARE PARTS LIST

No.	Art no.	Description	Qty.
1	40290020	Starter battery W-TG3000	1
2	40401329	Air filter element	1
3	40401398	Oil filter included O-ring	1
4	40402074	Fuel oil filter gasket	1
5	40402075	Filter element assy.	1
6	40222204	WPL- 10W40 GENERAL	

