



## AIR-COOLED DIESEL GENERATOR

### OWNER'S MANUAL

This manual contains  
important safety  
information.

TDG2500E

TDGW7000E

TDG7000SE

TDG4500E

TDG8000-3

TDG7000SE-3

TDG7000E

TDG8000E

TDGW7000SE

TDG7000E3

TDGW8000E

TDG8000SE-3

TDG8000SE-3

TDGW8000SE

## PREFACE

Thank-you for purchasing products from our company. We appreciate your business. The following manual is only a guide to assist you and is not a complete or comprehensive manual of all aspects of maintaining and repairing your generator. The equipment you have purchased is a complex piece of machinery. We recommend that you consult with a dealer if you have doubts or concerns as to your experience or ability to properly maintain or repair your equipment. You will save time and avoid the inconvenience of having to go back to the store if you choose to e-mail or call us concerning missing parts, service questions, operating advice, and/or assembly questions.

The air-cooled diesel generators are widely used when electrical power is scarce. The generators provide a portable mobile solution in supplying power for field operations during project construction and among other projects. They are widely used for both commercial and residential purposes.

*If you have any questions or suggestions about this manual, please contact your local dealer or us directly. Consumers should notice that this manual might differ slightly from the actual product as more improvements are made to our products. Some of the pictures in this manual may differ slightly from the actual product as well. This generator manual reserves the right to make changes at any time without notice and without incurring any obligation.*

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# TECHNICAL SPECIFICATIONS AND DATA

GENERATOR		TDG7500SE
Frequency	50 HZ	60 HZ
Max.AC Output	5.5 KVa	6.0 KVa
Rated.AC Output	5.0 KVa	5.5 KVa
Phase	SINGLE PHASE	
Insulation	F	
Rated.AC Output	115/230	220.230.240 /110.120.
	110/220.	120/240
ENGINE		
Model	186FA	
Engine Type	Air Cooled, 4 Stroke, OHV Diesel Engine, Single Cylinder	
Max. Power Output	10 HP	
Displacement	420.cc	
Compression Ratio	2.0:1	
Engine Speed	3000RPM	3600RPM
Starting System	Electric	
Fuel Tank capacity	16L	
Noise Level (at 7m)	66db(A)	
N.W / G.W	150 / 170 KG	
Packing Dimensions	37" x 22" x 29"	

# **SAFETY**

In order to operate the generator safely, please follow all the instructions provided in this manual carefully. Doing otherwise may lead to accidents and or equipment damage.

## ***Fire prevention***

The proper fuel for the diesel generator is light diesel fuel. Do not use gasoline, kerosene and or other fuels other than light diesel fuel. Keep all flammable fuels away from the generator as the generator may spark and ignite these gases.

In order to prevent fires from occurring, provide adequate ventilation, keep the generator at least one meter (three feet) away from buildings and other equipment during operation.

Always operate your generator on a leveled surface. If the generator is on an incline, the lubricating system within the engine will not perform well and may lead to failure of the engine. Do not place the generator indoors while the engine is hot.

If your generator is installed with an ATS switch please ensure that the machine remains uncovered at all time due to automatic back-up starting.

## ***Preventing exhaust gas inhalation***

The exhaust gases contain toxic carbon monoxide. Never operate the generator in places with poor ventilation. In order to operate this machinery indoors, a suitable ventilation system is needed to draw the poisonous exhaust gases out.

## ***Preventing accidental burns***

Never touch the muffler and its cover when the diesel engine is running or, just after use. The muffler remains hot for an extended period of time after use.

## ***Electric shock and short circuits***

Never touch the generator if the generator is wet or if your hands are wet. This machine is not waterproof therefore, it should not be placed in a location where it will be exposed

to rain, snow or water. Use of the generator in a wet location may cause short circuits and electric shock during operation.

To prevent electrical shocks, the generator should be grounded. Use proper wiring to connect the grounding end of the generator to the grounding surface of choice.

**Note: When connecting devices to the generator, make sure all other devices are rated lower than the generators output. Any generator socket should not be overloaded over its regulated limit.**

### ***Other safety points***

Before operating this generator, all operators should have a good knowledge of how to break the circuit if any accidents occur. Also, all operators should be familiar with all the switches and functions of the generator before using this machine.

While operating the generator, wear safe shoes and suitable clothes during operation.

Always keep children and animals away from the generator.

### ***When charging the battery***

The electrolytic liquid of the battery, also known as battery acid, contains sulfuric acid. Wear protective gear when working with the battery to protect your eyes, skin and clothing. If you come in contact with the electrolytic liquid, wash it immediately with clean water and get prompt medical attention.

Batteries generate hydrogen gas, which can be highly explosive. Do not smoke or allow flames or sparks near a battery, especially during charging. Charge the battery in a fully ventilated place.

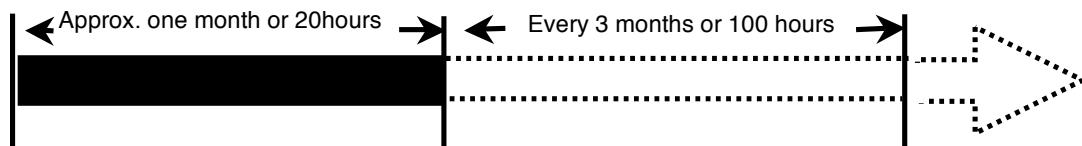
# PREPARATIONS FOR STARTING THE GENERATOR

## ***Selection and handling of the fuel oil***

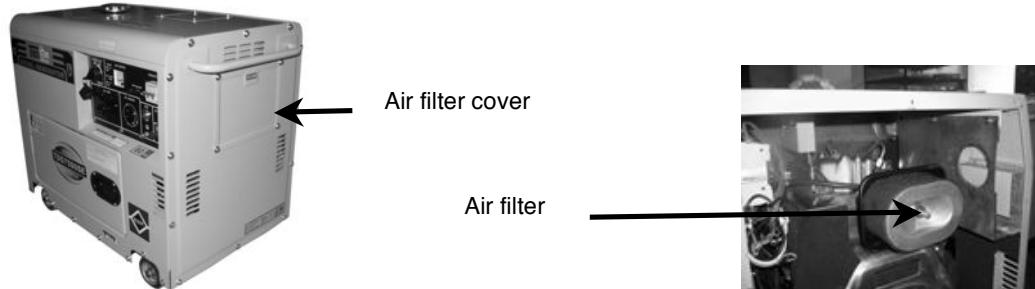
Use only light diesel fuel. The fuel should be filtered clean. Never let dust and water mix with the fuel tank; this may clog the fuel lines and oil nozzles. It may also damage your pressure pump.

**Note:** It is dangerous to overfill the fuel tank. Do not fill the tank beyond the top of the red plug inside the fuel oil filter. After refueling make sure the filler cap is securely closed. Refuel in a well-ventilated area with the engine stopped. If any fuel is spilled, make sure the area is dry before starting the engine.

Remove the dipstick from the engine. Make sure the generator is on level ground, and fill the engine with 15W40 engine oil. Place the dipstick back in the oil tank to check the engine oil level. The engine may be damaged if operated with insufficient engine oil, it is also dangerous to refill too much engine oil as sudden increase in engine speed may be caused by its combustion. Engine oil is the most important factor in determining the life of your generator engine. If you use poor engine oil or if you do not change the oil regularly, the piston and cylinder will wear easily or seize to work. Also, the life of the other parts in your engine such as bearings, and other rotating parts will shorten considerably. If the oil level is low fill it before starting the engine. A good time to drain the oil from the engine is when the diesel engine is still hot. If the engine is fully cooled, it is more difficult to drain all the oil out and some impurities will remain. The first oil should be changed in about 1 month or 20hours of use, then changed every 3 months, or 200 hours.



## **Check the air filter**



- (1) Loosen the wing nut, take the cover of the air filter off and take the air filter element out. Do not use detergent to wash the air filter element. When the performance of the engine deceases or when the color of the exhaust gases is dark, exchange the filter element. Never start the engine without the air filter as foreign objects may enter the intake and damage the engine.
- (2) After replacing the air filter element replace the cover and tighten the butterfly nut firmly.

## **Fill the fuel tank and engine**

The fuel and oil in a new engine is drained before sold. Before you start the engine, please fill the fuel tank and engine oil first. Then, check to see if there are air bubbles in the engine. If there are, loosen the connecting nut between the oil injection pump and oil pipe. Bleed the air from the system until there are no more bubbles. Then replace the connecting nut and tighten it.

## ***How to open the case door/cover***



- 1) Open the case door. Pull the handle outward and open the door. Do these checks daily.
- 2) Loosen the outer cover bolt of the air filter and outer cover of the oil nozzle, and then check the air filter.
- 3) Check the outer cover of the oil nozzle. Loosen the butterfly nut and open the outer cover.

## ***Engine break- in***

The break in period for a new generator is about 20 hours. To properly break-in your engine:

- 1) Warm up the engine for 5 minutes after the initial start. Run the engine at low speed and zero load before the engine becomes warm.
- 2) Avoid applying any heavy loads during the break-in period. We recommend running the engine at 3000r/min with 50% load in the break-in period. Replace the engine oil on time.
- 3) Replacing the engine oil while the engine is warm after 20 hours of running, will ensure the oil will be drained out completely.

# STARTING THE GENERATOR

## ***Recoil starting***

- 1) Open the front door.
- 2) Set the engine speed lever at the “RUN” position.
- 3) Pull out the recoil starter handle. If you feel a resistance return it back to the initial position. Press down the decompression lever. It will return automatically when the recoil starter is pulled.
- 4) Pull out the recoil starter handle briskly with both hands. Do not allow the handle grip to snap back against the engine. Return it gently to prevent damage to the starter. When the engine is difficult to start in cold weather, remove the screw plug from the cylinder head cover and add 2cc engine oil.

## ***Electric starting***

- 1) Open the front door to put the speed handle to the “ON” position.
- 2) Turn the ignition switch of the engine to the “START” position for 1-2 seconds.
- 3) After starting the engine, loosen the ignition switch and it will return to the “ON” position automatically and the engine will start to work.
- 4) If it fails to start, restart the engine and repeat the above steps after 15 seconds.

## ***Battery***

Check the battery electrolyte level every month. Refill with distilled water when the level has dropped to the low indicator.

## ***Operating the diesel engine***

- 1) Warm up the engine without load for 3 minutes. The generator has a Low Warning System, and the Oil Alarm Lamp will be activated by low oil pressure or engine oil shortage; the warning system will shut down the engine if the oil pressure is too low.
- 2) Do not adjust the speed limit regulation bolt or the fuel adjustment bolt. These bolts have been set by the factory; changing them will affect the properties of the engine performance.
- 3) Check to see if there are abnormal noises and if the performance is good. Check the color of the exhaust gases. If there are abnormal noises, poor performance or dark exhaust gases, stop the engine and find the cause of the problem, or contact your nearest dealer.

# LOADING

Exert loads with the specified parameters. Do not start two or more machines simultaneously. Start them one by one. Do not use floodlights with other machines.

## ***AC application***

1. Make sure to run the generator at the suggested speed.
2. After switching on the air switch, observe the voltmeter on the panel of the control cabinet; it should point to 230V + 5%(50Hz) for the single-phase generating set; 400V + 5%(50Hz) for the three-phase generating set, then the loading can be carried out.
3. When the double voltage generator changes over the voltage, the air switch should be set at the “OFF” position. Otherwise the generator and the electrical devices will be burned out and damaged.
4. Connect the equipment to the generator in order. The heavy-duty motor should be connected first, then the light-duty motors. If the operation is false, the generator will lag or stop suddenly. It is necessary to unload the generating set immediately and turn off the main switch and do checks.
5. For the three-phase generator: Balance three phases during the operation. Stop the engine to check if the tolerance exceeds 20%. Be sure to keep the tolerance among the three phases less than 20%. The load for each phase must be below the rated load as well as the current must be less than rated current. A, B, C, D (or U, V, W, N) phase arrangement should be from left to right, or clockwise.
6. When connecting devices to the generator, make sure to connect these devices in order: Connect the large loads onto the generator first. If everything is functional, smaller loads can then be added. If the generator shuts off, it may be because the load being drawn by all the various devices are too high. In this event, decrease the number of small devices until everything is functional. The total drawn power should not exceed the maximum output power of the generator. In order to reset the generator after overdrawn power, let it sit for several minutes. If the indication of the voltmeter is too high or too low, adjust the speed accordingly. If there are problems, stop the generator immediately and fix the issue.

## STOPPING YOUR GENERATOR

1. Disconnect the load from the generator.
2. Turn off the air switch of the generator.
3. Set the speed lever at “RUN” position, and run the generator without the load for 3 minutes. Do not stop the engine suddenly, otherwise the temperature will increase abnormally, the nozzle will be blocked and the generator will be damaged.
4. Press down the stop lever.
5. Turn the electric starter key to “OFF”.
6. Turn the fuel cock lever to the “S” position.
7. Pull out the recoil starter handle until you feel resistance (at this position, both the intake/exhaust valves are closed) and leave the handle in this position. This prevents the engine from rusting.

## WARNING

If the engine keeps on running even after the speed lever is placed at the “STOP” position, either turn the fuel cock to the “CLOSE” position or loosen the nut of the high pressure fuel pipe on the side of the pump to stop the engine.

Do not stop the engine with the decompression lever.

Do not stop the generation set with load. Stop it after the load is removed

# MAINTENANCE

## *Maintenance schedules*

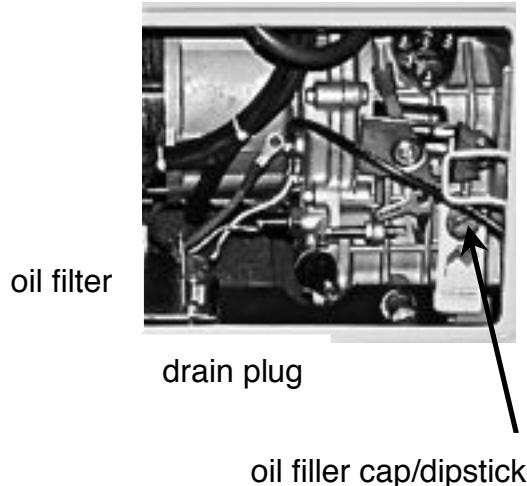
Keeping your generator well maintained will prolong the life of your product.

Time Item	Everyday	After 1 month or 50hours	Every 3 month or 200 hours	Every 6 month or 400 hours	Every 1year or 1000 hours
Check the fuel level and refill	<input type="radio"/> Before starting				
Drain the fuel tank		<input type="radio"/>			
Check and fill enough engine oil	<input type="radio"/>				
Clean the fuel filter			<input type="radio"/>		
Check fuel oil leakage	<input type="radio"/> after every operating				
Check and screw each fastened part	<input type="radio"/>			<input type="radio"/> screw the bolt of cylinder head firmly	
Check injector				<input type="radio"/>	
Check injection pump					<input type="radio"/>
Check fuel pipe				<input type="radio"/> If necessary exchange it	
Check the lube. oil level in the oil pan and refill	<input type="radio"/> before starting				
Replace the lube. oil		<input type="radio"/> the first time	<input type="radio"/> the second time and afterward		
Clean lube. Oil filter		<input type="radio"/> the first time	<input type="radio"/> the second time and afterward		
Check the air cleaner element		<input type="radio"/> the first time	<input type="radio"/> the second time and afterward		
Change the core of air filter	If damaged or smearable, change it in time				
Check the battery liquid level and refill	<input type="radio"/>				
Adjusting the intake and exhaust valve clearance		<input type="radio"/> the first time		<input type="radio"/> the second time and afterward	
Grind air intake and air exhausted gate					<input type="radio"/>
Exchange piston ring					<input type="radio"/>
Check electric brush and slide ring				<input type="radio"/>	
Check insulation resistance	The time of stop is over 10 days <input type="radio"/>				

Note: the quality period of the injector and injection pump is 1500 hours or two years. Thereinto,  means it should operate with special tools, or can be checked by dealer.

## **Replace engine oil**

Remove the oil filler cap. Remove the drain plug and drain the old oil while the engine is still warm. The plug is located on the bottom of the cylinder block. Tighten the drain plug and refill with the recommended oil.



## **Air filter maintenance**

Clean the air filter every 6 months or 500 hours of operation, whichever comes first. If necessary, exchange it. Do not use detergent to clean the air filter element.

**Note: Never start the engine without the air filter. This can cause serious damage to the engine if foreign objects enter the intake system. Always change the air filter on time.**

The fuel filter should be cleaned often to keep the engine running at maximum performance. The recommended time period for cleaning the fuel filter is 6 months or 500 hours of operation whichever comes first.

To clean the fuel filter, first drain the fuel from the fuel tank. Loosen the small screws on the fuel switch and remove the fuel filter from the port. Use diesel fuel to clean the fuel filter. Also, remove the fuel injector and clean the carbon deposit around it. The recommended time period for this is 3 months or 100 hours, whichever comes first.

## **Cylinder head bolt tensions**

A qualified person should tighten the cylinder head bolts. Please seek professional assistance.

## **Battery check**

Make sure the battery acid is full. The engine uses a 12V battery. Due to numerous starting cycles, the battery acid may be used up. Also, before filling, verify that the battery is not damaged in any way. Add distilled water to the battery when filling. Perform checks on the battery once a month.

**Note:** The battery contains sulfuric acid. Protect your eyes, skin and clothing. In case of contact, flush thoroughly with water and get prompt medical attention. The battery emits hydrogen gas, which can be highly explosive. Do not smoke or allow flames or sparks near the battery, especially during charging.

## **Long-term storage**

If you store the generator for long periods of time, the following preparations should be taken:

- 1) Operate the engine for about 3 minutes and then stop.
- 2) Stop the engine. Drain the engine oil while the engine is still warm and fill with fresh oil.
- 3) Remove the screw plug on the cylinder head cover and refill 2cc engine oil; replace plug.
- 4) Recoil starting: Push the decompression lever down (non-compression position) and hold it while you pull the recoil starter 2-3 times. (Do not start the engine.)
- 5) Pull the decompression lever up. Pull the recoil starter slowly. Stop when you feel resistance. At this point, both intake/exhaust valves are closed to prevent the engine from the rust.
- 6) Wipe off the oil and dirt from the engine and store in a dry place

## TROUBLESHOOTING

	Causes of malfunction	Remedy
Diesel cannot be started	Not enough fuel	Add enough fuel
	The switch of fuel is not at "OPEN" position.	Turn the switch of fuel to "OPEN" position.
	High-pressure pump and nozzle do not inject fuel or the injected amount is less	Disassemble the nozzle and adjust it at test table.
	Speed control lever is not at "RUN" position.	Turn speed control lever to "RUN" position.
	Check level of lubrication oil.	The standard oil amount of lubricating oil should be between high graduation "H" and low graduation "L".
	It is not quick and powerful to pull reactive starter.	Start diesel engine in accordance with the requirements of "start operation procedures".
	Nozzle exist dirt.	Clean the nozzle.
Generator does not generate electricity or cannot generate voltage	Accumulator has not electricity.	Charge the accumulator or exchange it.
	Master switch (NFB) is not be switched on.	Turn master switch handle to "ON" position.
	Carbon brush of generator was worn. The contact is bad.	Exchange the carbon brush.
	The contact of socket is bad.	Adjust the contact feet of socket.
	The rated revolution of engine cannot be reached.	Make it reach to the rated revolution in accordance with the requirements.
	AVR automatic governor is damaged.	Exchange it.
Genset	Bometer of current regulation for electric welding is damaged.	Exchange it.

If you are still having trouble, please contact with your nearest dealer or with our company directly if necessary.

### 4-2 Questions and doubts

If you do not understand anything or have any questions, please feel free to contact your local dealer or with our company directly. Below is a list of some information you should have ready before contacting your local dealer or us.

1. Model of diesel engine generator and engine model number.
2. State of residency.
3. Number of hours of operating equipment along with the problem that occurred.
4. A detailed condition and time when the problem occurred, in other words, climate and atmosphere.