

TITAN INDUSTRIAL

P.O.Box 791, Travelers Rest, S.C. 29690

Phone 864-834-7212

Service/Replacement Parts 800-845-4141



OWNER'S MANUAL MODEL TG 8500ESC Industrial Generator

The Emission Control System for this generator is warranted for standards set by the Environment Protection Agency.

IMPORTANT!

It is extremely important to read and understand the entire contents of this Owner's Manual for the Titan Industrial Model TG 8500ESC before attempting to operate the generator. This is a gas engine powered, industrial strength generating unit of electrical power. The gas engine and the generator are both potentially extremely hazardous and could cause physical injury or even death if improperly used.

WARNING!

Do Not Operate Equipment until reading & understanding Owner's Manual!
Disconnect all loads before starting or stopping generator.
Allow to run for a few minutes with no load before stopping.

**IMPORTANT !
READ FIRST**

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TITAN INDUSTRIAL shall not be responsible for any consequences resulting from improper use of this equipment. The operator is required to read the entire contents of this manual before attempting to operate the unit. If the operator does not completely understand the instructions and all of the hazards of operating this unit after reading this manual, he/she must call the factory at 1-800-845-4141 to answer these questions to he/she complete satisfaction before proceeding.

READ AND COMPLETELY UNDERSTAND entire contents of this Owner's Manual and become familiar with the unit before attempting to start using this equipment! It is your responsibility to know its applications, limitations, and hazards! Call the factory at 1-800-845-4141 with any questions.

FOR OUTDOOR USE ONLY! Never use this unit inside any enclosure including the generator compartment of a recreation vehicle (RV) or inside any building. No modifications will eliminate the danger of possible carbon monoxide poisoning, fire, or explosion.

TWO (2) FEET OF CLEARANCE on all sides is required even while using outdoors.

THIS UNIT IS SOLD SOLELY FOR THE PURPOSE OF PORTABLE POWER. OTHER APPLICATIONS COULD VOID WARRANTY. USER ACCEPTS RESPONSIBILITY FOR INJURIES AND/OR DAMAGE RESULTING FROM OTHER APPLICATIONS.

This Manual contains information to ensure your safety and to prevent any equipment problems. Various terms such as 'WARNING', 'CAUTION', 'DANGER', 'IMPORTANT', and the SYMBOL  are all used to signify information that is essential for the operator of this equipment to understand and to practice!

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MODEL TG 8500ESC GAS POWERED ELECTRIC GENERATOR

Model	TG 8500ESC
Voltage	120/240
Current	20/30
Frequency	60Hz
Surge Watts	8400

DESCRIPTION

THE TITAN INDUSTRIAL INC. MODEL TG 8500ESC is a gas engine driven, revolving field, alternating current (AC) generator designed to supply electrical power for compatible electrical tools, motors, appliances, and lighting (see wattage reference guide on page 10).

The Model TG 8500ESC operates at 120 volt and/or 240 volt, single phase, 60 Hz and will operate devices that require up to 8400 surge watts up to 20 Amps at 120 Volts or 30 Amps at 240 Volts.

Figure # 1 - Grounding Lug Block



CONNECTING LOADS

The Model TG 8500ESC operates at 120 volt and/or 240 volt, single phase, 60 Hz and will operate devices that require up to 8400 surge watts.

Add up the Watts of all devices you connect to the TITAN INDUSTRIAL GENERATOR at one time. Do not exceed 7200 Watts on TITAN INDUSTRIAL Generator Model TG 8500ESC (see wattage reference guide).

The rated Watts of most electrical devices can be found on its nameplate. The rated Watts of lights can be taken from the light bulbs. In cases where only Volts and Amps are shown on the nameplate, simply multiply Volts by the Amps to get Watts (Volts X Amps = Watts).

Some electric motors require about three times the rated Watts of power for start-up. This surge of power is required for only a few seconds. Be sure to allow for this high starting wattage when selecting electrical devices to connect to the generator.

First, figure the watts needed to start the largest motor. Add to that figure the running watts of all other connected loads.

Please see the Wattage Reference Guide. It provides an estimated approximation of running watts, to help determine which devices to select to connect to the generator.

CAUTION! Do not tamper with engine governed speed. The TITAN INDUSTRIAL GENERATOR supplies correct rated frequency and voltage when running at the proper governed speed. Incorrect frequency and/or voltage could damage connected electrical devices.

GROUNDING THE GENERATOR

It is required by The National Electrical Code to have the frame and all external conductive parts of the generator connected to an earth ground. Proper grounding also satisfies most local electrical codes.

Connect a No. 12 AWG standard copper wire to the Grounding Lug Block (See Figure 1). The grounding lug can be found inside the rear access panel near the oil cap. Connect the other end of the wire to an earth driven copper or brass grounding rod (electrode).

CAUTION! Do not connect ground to a preexisting ground rod, water pipe, or building frame.

Consult with a licensed electrician in your area because local codes vary. Properly grounding the generator helps prevent electrical shock if a ground fault condition exists in the generator or in connected electrical devices. This will also help to dissipate static electricity resulting from ungrounded devices.

SAFETY

This generator was designed for specific applications. **DO NOT** attempt to modify the unit in any way or use it for any application that it was not designed to do. Ask the dealer or contact the factory if you have any questions concerning the generator's application.

Warnings and cautions in this manual and on decals and tags on the unit are not all inclusive. It would be impossible to anticipate every circumstance that might involve a hazard. Handling, operating, or servicing this unit by any procedure not recommended by the manufacturer may render this equipment unsafe and may pose a threat to you or to others.

- The generator produces a very powerful voltage that can cause extremely dangerous electrical shock. Avoid contact with bare wires, terminals, etc. never permit an unqualified person to operate or service the generator.
- Never handle any kind of electrical cord or device while standing in water, while barefoot or with wet hands or when feet are wet. Dangerous electrical shock could result.
- The National Electric Code requires that the frame and external conductive parts be properly connected to an approved earth ground. Local electrical codes may vary. Check with an electrician for local grounding requirements.
- Use a ground fault circuit interrupter in any damp or highly conductive area such as metal decking or steel work.
- Do not use worn, bare, frayed or otherwise damaged electrical cords or wiring with the generator. A defective cord may result in electrical shock or may cause damage to equipment.
- Do not expose unit to excessive moisture, dirt or corrosive vapors. Unit must be operated on a level surface.
- Do not overfill the fuel tank. Always allow room for fuel expansion. Fuel could overflow and cause fire or explosion if tank is overfilled. Allow for a 20 minute cool down before refueling. Never refuel tank while engine is running.
- Only operate this unit outside with adequate ventilation. This generator's exhaust produces carbon monoxide gas that can cause unconsciousness or even death.
- Never store a generator with fuel in the tank where fuel vapors could be ignited by a flame, spark, or pilot light from an appliance such as a furnace, water heater, or clothes dryer.
- Always allow a minimum of 2 feet of clearance on all sides for ventilation while unit is operating. Allow 2 feet of clearance from all combustibles.
- Generator must always be stopped or started with all loads unconnected. Start the engine and let it stabilize before connecting any loads. Disconnect all loads before shutting down the generator.
- Never insert any object through the cooling slots of the engine. You could damage the unit or cause injury.
- **NEVER OPERATE THE GENERATOR:**
 - In rain
 - In an enclosed compartment
 - If connected devices overheat
 - If electrical output is lost
 - If engine or generator sparks
 - If flame or smoke is observed
 - If unit vibrates excessively

Caution: Customer takes full responsibility for use of this unit as a home generation system.

CAUTION! The engine exhaust contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

CAUTION! If it is your first time starting the generator, allow it to run for 30 minutes before connecting electrical loads. This is for wet seating purposes

OPERATION OF THE GENERATOR

Starting the engine

- Always check the oil level and air filter before starting the engine. This unit is equipped with a low oil shutdown system.
- **NOTE:**
(If starting manually).
Do not allow the handle grip to snap back against the engine. Always return it gently to prevent damage to the starter.
- **NOTE:**
(If electric starting).
Release key and allow it to return to the "ON" position as soon as engine starts. Key must be in the "ON" position to generator to run.
- **NOTE:**
Allow generator to settle. Run before connecting any electrical loads or appliances. Failure to do so may result in generator damage!

Connecting electrical loads

- Let engine stabilize and warm up for at least 3 minutes.
- Make sure devices to be connected are in good working order and in the "OFF" position before connecting to the generator.
- Make sure to plug in desired devices into the correct receptacle.
- DO NOT connect 240 Volt loads to the 120 Volt duplex receptacles.
- DO NOT connect 3 phase loads to the generator.
- DO NOT connect 50 Hz loads to the generator. This is a 60Hz System.
- DO NOT overload the generator. Add up the rated Watts of all loads to be connected. This total should not exceed the total watts of the generator.

Stopping the engine

- Turn off all electrical devices connected to the generator.
- **WARNING:**
DO NOT start or stop generator with electrical devices plugged in.
- Allow the generator engine to run at a 'No Load' condition for several minutes to stabilize internal engine temperature before stopping
- If using the electric start, turn key to the "OFF" position.

Generator maintenance

(see maintenance table for list).

- Keep the generator clean and dry. Use a damp cloth to clean exterior surfaces. Remove caked on dirt with a soft brush.
- Never spray with water. Water can contaminate the engine fuel system and cause serious problems in the generator.
- Damage may occur if engine or carburetor cleaning products are used.



Storage

- **IMPORTANT:**
Empty fuel system if unit is to be stored for 90 days or more. This will help prevent gum deposits from forming in fuel system such as the carburetor, fuel filter, fuel hose, and fuel tank during storage.

Wattage Reference Guide

Device	Running Watts	Device	Running Watts
*Air Conditioner (12,000 BTU)	1700	Impact Wrench	500
Battery Charger (20 Amp)	500	*Jet Pump	800
Belt Sander (3")	1000	Lawn Mower	1200
Chain Saw	1200	Light Bulb	100
Circular Saw (6-1/2")	800 to 1000	Microwave Oven	700
Coffee Maker	1000	*Milk Cooler	1100
Compressor (1 HP)	2000	Oil Burner on Furnace	300
Compressor (3/4 HP)	1800	Oil Fired Space Heater (140,000 BTU)	400
Compressor (1/2 HP)	1400	Oil Fired Space Heater (85,000 BTU)	225
Curling Iron	700	Oil Fired Space Heater (30,000 BTU)	150
*Freezer	500	*Airless Paint Sprayer (1/3 HP)	600
Disc Sander (9")	1200	Handheld Airless Paint Sprayer	150
Edge Trimmer	500	Radio	50 to 200
Electric Nail Gun	1200	Refrigerator	600
Electric Range (one element)	1500	Slow Cooker	200
Electric Skillet	1250	*Submersible Pump (1-1/2 HP)	2800
*Furnace Fan (1/3 HP)	1200	*Submersible Pump (1 HP)	2000
Hair Dryer	1200	*Submersible Pump (1/2 HP)	1500
Hand Drill (1")	1100	Sump Pump	600
Hand Drill (1/2")	750 to 1000	*Table Saw (10")	1750 to 2000
Hand Drill (3/8")	500	Television	200 to 500
Hand Drill (1/4")	250	Weed Trimmer	500

***Allow 3 times the listed Watts for starting these devices**
These wattages shown are approximate and may vary with each specific device

Maintenance Guide

	DAILY	EVERY MONTH/ 20 HRS	EVERY 3 MONTHS/ 100 HRS	EVERY 6 MONTHS/ 500 HRS
Check/Refill Fuel	X			
Drain fuel from tank			X	
Check/Refill Oil	X			
Check for oil leakage	X			
Check battery fluid		X		
Change oil		*	X	
Clean/Replace oil filter			X	
Replace air filter		X*	X*	
Clean/Replace fuel filter				X

*First oil change should be after the first (5) hours of use. After initial break-in period change oil every 30 hours.
 Use SAE 30 oil.

X* Air filter may need to be replaced frequently, due to adverse conditions. Check filter frequently.

TROUBLESHOOTING

Problem	Cause	Solution
Engine is running but no power output is available.	<ol style="list-style-type: none"> 1. Circuit breaker is open. 2. Poor connection or defective cord set. 3. Connected device is bad. 4. Fault in generator. 	<ol style="list-style-type: none"> 1. Reset the circuit breaker. 2. Check & repair. 3. Connect another device that is in good condition. 4. Contact service center.
Engine runs good until loads are connected, then bogs down.	<ol style="list-style-type: none"> 1. Short circuit in a connected load. 2. Overloaded generator. 3. Engine speed is too slow. 4. Short in generator circuit. 	<ol style="list-style-type: none"> 1. Disconnect shorted load. 2. See 'Connecting Electrical Loads' section of manual. 3. Contact service center. 4. Contact service center.
Engine will not start or engine starts but runs rough.	<ol style="list-style-type: none"> 1. On/Off Switch is turned 'OFF'. 2. Battery is dead 3. Dirty air cleaner. 4. Not enough speed or force is used for recoil start. 5. Water in fuel. 6. Speed control is not set to "RUN". 7. Low oil level. 8. Engine has lost compression. 	<ol style="list-style-type: none"> 1. Turn On/Off Switch to 'ON'. 2. Charge or replace it. 3. Clean air filter 4. Read and follow directions. 5. Drain and refill tank. 6. Move speed control to "RUN" position. 7. Add oil to proper level. 8. Contact service center.
Engine shuts down during operation.	<ol style="list-style-type: none"> 1. Out of fuel. 2. Fault in engine. 	<ol style="list-style-type: none"> 1. Fill fuel tank. 2. Contact service center
Engine lacks power	<ol style="list-style-type: none"> 1. Load is too high. 2. Dirty air filter. 3. Engine needs to be serviced. 	<ol style="list-style-type: none"> 1. See 'Connecting Electrical Loads' section of manual. 2. Replace the air filter. 3. Contact service center.

Service
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CONTROL PANEL

The TG8500ESC model is equipped with two 120 volt 20 amp NEMA 5-20R deluxe receptacle and one 240 volt 30 amp twist lock receptacle. Simultaneous loading of any circuits should not exceed the continuous duty rating of the generator. The circuit breaker protects against severe overloads or short circuits. If the circuit breaker trips, the cause should be determined and corrected prior to continuing use.

LOAD APPLICATION

The continuous duty rating should not be exceeded for long periods of time. Always be sure that the voltage, amperage and frequency requirements of the equipment to be used can be satisfied by the generator. To avoid damage, the generator should not be operated at the intermittent rating for more than 10 minutes out of every hour.

CABLE SIZE

Equipment damage can result from low voltage. Therefore, to prevent excessive voltage drop between the generator and the equipment, the cable should be of adequate gauge for the length used. The cable selection chart gives the maximum cable length for various gauges of wire which can adequately carry the loads shown.

CURRENT IN AMPERES	LOAD IN WATTS		MAXIMUM ALLOWABLE CABLE LENGTH				
	AT 120 VOLTS	AT 240 VOLTS	#8 WIRE	#10 WIRE	#12 WIRE	#14 WIRE	#16 WIRE
2.5	300	600		1000 ft.	600 ft.	375 ft.	250 ft.
5	600	1200		500	300	200	125
7.5	900	1800		350	200	125	100
10	1200	2400		250	150	100	50
15	1800	3600		150	100	65	
20	2400	4800	175 ft.	125	75	50	
25	3000	6000	150	100	60		
30	3600	7200	125	65			
40	4800	9600	90				

CONTROL PANEL

The TG8500ESCB model is equipped with two 120 volt 20 amp NEMA 5-20R deluxe receptacle and one 240 volt 30 amp twist lock receptacle. Simultaneous loading of any circuits should not exceed the continuous duty rating of the generator. The circuit breaker protects against severe overloads or short circuits. If the circuit breaker trips, the cause should be determined and corrected prior to continuing use.

LOAD APPLICATION

The continuous duty rating should not be exceeded for long periods of time. Always be sure that the voltage, amperage and frequency requirements of the equipment to be used can be satisfied by the generator. To avoid damage, the generator should not be operated at the intermittent rating for more than 10 minutes out of every hour.

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2.5	300	600		1000 ft.	600 ft.	375 ft.	250 ft.
5	600	1200		500	300	200	125
7.5	900	1800		350	200	125	100
10	1200	2400		250	150	100	50
15	1800	3600		150	100	65	
20	2400	4800	175 ft.	125	75	50	
25	3000	6000	150	100	60		
30	3600	7200	125	65			
40	4800	9600	90				