

HOW TO SELECT A GENERATOR

When selecting a power generator it is important that it is capable of meeting your energy requirements. Both starting and running!

DETERMINE THE STARTING WATTS REQUIRED - When a motor is first turned on, the power required to start the motor can exceed the power required to normally run the motor. The amps on the nameplate of the motor are the full load running amps and not the higher starting amps. To determine the generator size necessary use the following formulas:

Hmmm... How many watts do I really need to start and run this rig?



For single phase
WATTS = Amps x Volts x 2

For three phase
WATTS = Amps x Volts x 3.5

STARTING WATTS VS RUNNING WATTS - Most generators have an intermittent 25% overload capacity. IE: a 2,000 watt generator will carry a 2,500 watt load for a short period, such as during start up. Motors starting under a heavy load (such as air compressors, refrigeration systems and those which must bring a heavy cutting tool up to speed) will require significantly more wattage to start. This higher demand must be considered when estimating power needs. This is particularly important when more than one motor is used at one time.

EXAMPLE:

Motor	Starting Watts	Running Watts
3/4HP Air Compressor	4300	1250
7 1/4" Circular Saw	-	1500
1 1/2" Rotary Hammer	-	800
Light String (10-100 Watt Bulbs)	-	1000
		4550

In the above example, a 5,000 watt unit would be ample, but only when the air compressor was started before the other tools were started. If the other tools were in use and the air compressor started after they were on line the power requirement would jump to 7800 watts which the unit may not be capable of.

POWER OUTPUT VS ALTITUDE

Less oxygen at higher altitudes reduces engine efficiency and power output. Unless otherwise specified by the manufacturer this unit should be derated to the following values:

Alternator Rating	Peak Power	Altitude in feet above sea level					
		2000'	3000'	4000'	5000'	6000'	7000'
1250	1375	1275	1220	1155	1100	1045	980
1750	1925	1750	1690	1615	1540	1465	1385
2500	2750	2500	2420	2300	2200	2090	1980
3650	4160	3650	3650	3500	3300	3160	2980
4000	4400	4000	3870	3700	3520	3340	3170
5000	5500	5000	4840	4620	4400	4170	3960
7500	8000	7500	7500	7500	7200	6850	6480

APPROXIMATE POWER CONSUMPTION OF VARIOUS CONSTRUCTION TOOLS & APPLIANCES

- Window Fan
- Jigsaw
- Belt Sander
- Screwdriver
- Chain Saw
- Circular Saw (7-1/4" - 8-1/4")
- Circular Saw (10")
- Cutoff Saw
- Portable Band Saw
- 2.5 HP Masonry Saw
- Impact Wrench (1/2" & 3/4")
- Impact Wrench (1")
- 1/4" Drill
- 3/8" Drill
- 1/2" Drill
- 1" Drill
- 15 Amp Core Drill
- 18 Amp Core Drill
- 20 Amp Core Drill
- 1/2" Hammer Drill
- 5/8" Hammer Drill
- 3/4" Hammer Drill
- 7/8" Rotary Hammer
- 1" Rotary Hammer
- 1-1/2" Rotary Hammer
- 2" Rotary Hammer
- 1-1/8" / 1-1/4" Breaker
- Water Pump - 3000 GPH
- Water Pump - 5000 GPH
- Water Pump - 10000 GPH
- Water Pump - 20000 GPH
- Wet Dry Vacuum
- Water Pump (Submersible) 3000 GPH
- Water Pump (Submersible) 5000 GPH
- Water Pump (Submersible) 10000 GPH
- Water Pump (Submersible) 20000 GPH
- Concrete Vibrator (3/4 HP)
- Concrete Vibrator (1HP)
- Concrete Vibrator (3HP)
- Air Compressor - 3/4HP
- Air Compressor - 1-1/2HP
- Concrete Saw - 5HP

MOTOR STARTING & RUNNING WATTAGE

Motor Size	Running Watts	Universal Induction** Capacitor Start** Induction Motors		
		Motors Starting Watts	Motors Starting Watts	Induction Motors Starting Watts
1/4	400	500	850	1050
1/3	450	600	975	1350
1/2	600	750	1300	1800
3/4	850	1000	1900	2600
1	1000	1250	2300	3000
1-1/2	1600	1750	3200	4200
2	2000	2350	3900	5100
3	3000		5200	6800
5	4800		7500	9800

** Utilizes a commutator and is generally used in power tools and small appliances.
 *** Brushless motor that has a large starting torque with less starting current. Generally used on pumps, compressors, freezers.
 **** An induction motor which uses capacitors to start (and in some cases run) the motor. Used on pumps, compressors and refrigeration equipment.

PORTABLE GENERATOR SAFETY AT DI-TECH

PORTABLE GENERATORS ARE VIRTUALLY INDESTRUCTIBLE – EVEN FOR DI-TECH EMPLOYEES. BESIDES THROWING IT OFF A CLIFF, THERE ISN'T MUCH YOU CAN DO TO WRECK A GENERATOR,

HOWEVER, THERE ARE SIMPLE STEPS TO MAINTAINING A GENERATOR AND BASIC SAFETY PROCEDURES TO BE SURE THE GENERATOR WORKS WHEN YOU NEED IT AND IT WORKS IN A MANNER SAFE TO EVERYONE IN THE AREA OF USE.

FUEL

A COMMON PROBLEM WITH GENERATORS IS DIRTY FUEL.

CAUSED BY: Improper fuel storage, Dusty refilling conditions
EFFECTS: Clogs fuel lines and carburetors, causing damage.

STORE FUEL IN AN APPROPRIATE RECEPTICLE AWAY FROM TRAFFIC AND DUST.
REFILL GENERATOR IN NON WINDY, NON DUSTY AREA.

*******NEVER REFUEL WHILE THE GENERATOR IS RUNNING!**

Gas vapours can ignite near hot areas such as the muffler, exhaust fumes, and sparks causing an explosion.

*******ALWAYS COOL GENERATOR BEFORE REFUELING.**

Overfilling the tank and spillage can also cause an explosion.

*******KEEP FUEL LEVEL TO ½" BELOW TIP OF TANK.**

LUBRICATION

GENERATORS REQUIRE OIL!

Oil level should be checked before each use. 'Top Up' oil as indicated.

PORTABLE GENERATOR'S REQUIRE REGULAR OIL CHANGES.

Di-Tech will number portable generators and track oil changes.

General recommendation: every 75 +/-25 HOURS.

WAYS TO TRACK HOURS:

1. Use factory installed hour meter, if available.
2. User to keep log. Running log on daily sheets handed into office.
3. Visually inspect oil. Black, opaque oil is due for a change.

VISUAL INSPECTION OF GENERATOR

1. AIR FILTER: Open cleaner assembly. If air filter is dirty or plugged, replace it.
2. WITH ENGINE RUNNING, INSPECT UNIT FOR LOOSE OR VIBRATING PARTS. If adjustments are required, stop engine and tighten or adjust parts to secure.
3. IF GENERATOR IS DIRTY, wipe with clean cloth or brush to remove dust and debris. DO NOT WASH WITH HOSE OR PRESSURE WASHER. If water enters cooling slots, internal damage may result.
4. Check PLUG in back of generator to ensure it is securely plugged in. Sometimes when a generator appears to be not working, this is a simple fix to the problem.

PORTABLE GENERATOR SAFETY AT DI-TECH

OPERATING AREA

1. ALWAYS OPERATE ON LEVEL SURFACE.

Angles cause lube system to fail and displace fuel in the carburetor causing disruption of spark plugs, pistons and the crankcase.

2. AVOID SOFT, SANDY, DUSTY GROUND.

Vibration from the generator will dig the generator into soft ground causing an uneven surface. (see above)
Discharged air from the generator stirs up dust. The dust is sucked up into the air cleaner causing it to plug.
Dust is also trapped in the cooling air, damaging the rotor and windings.

IN THESE CONDITIONS, PLACE GENERATOR ON TOP OF PLYWOOD OR STABLE PLATFORM.

3. AVOID RAIN AND ICE, BUT DO NOT USE AN ENCLOSED AREA. Water conducts electricity which can cause ELECTRICAL SHOCK to the operator. Shelter the generator from the elements, but do not enclose.

4. NEVER OPERATE GENERATOR IN AN ENCLOSED AREA. Carbon monoxide is produced by generators. It is clear and odorless, but DEADLY when inhaled.
The generator will also recycle its own 'air' in a small space. Carbon Monoxide will also suffocate the generator's air system causing the engine to overheat and catch fire. If you have already died from Carbon Monoxide inhalation, you may be cremated for free.

STORAGE FOR EXTENDED NON-USE

WHEN STORING A GENERATOR FOR 30 DAYS OR MORE:

-DRAIN FUEL TANK COMPLETELY.

-CLEAN GENERATOR WITH CLEAN CLOTH OR BRUSH, DO NOT HOSE OR PRESSURE WASH.

-REMOVE BATTERY AND CLEAN POSTS.

-CHECK AIR COLLING SLOTS ARE OPEN AND UNOBSTRUCTED.

A stored generator should be exercised by starting and running for 10-15 minutes carrying a load. This burns off settled moisture and prevents corrosion.

DI-TECH PORTABLE GENERATOR QUIZ

Name: _____

Date: _____

1. Portable Generators are indestructible. True or False.

2. Dirty Fuel is:
 - a) A reason for the Generator to blow up.
 - b) An X rated movie.
 - c) Caused by improper fuel storage or dusty refilling conditions.
 - d) An alcoholic beverage, consumed for pleasure.

3. What four operating area considerations are there for portable generators?
 1. _____
 2. _____
 3. _____
 4. _____

4. Oil changes for portable generators should be done:
 - a) occasionally
 - b) when John is the shop.
 - c) Every 50-100hours.
 - d) On your lunch break

5. Generator hours can be tracked three ways:
 - 1) _____
 - 2) _____
 - 3) _____

- 6) Operating a generator in an enclosed space:
 - a) will give you a great high.
 - b) Can cause DEATH
 - c) Will not damage the generator
 - d) Will get you promoted.

- 7) Using a pressure washer is a great way to make sure your portable generator is really clean.

True or False.