

INSTALLATION INSTRUCTIONS



Fabco Power

The Originators of Belt Driven & Hydraulically Powered AC Generators



Fabco Power generators in use on Air Force I

Our History

As the premier global supplier of belt-driven and hydraulic generators, and with over 50 years' experience in the industry, Fabco Power is the innovation leader that has set the standard in mobile power. In the 1950's, we designed and patented a unique vehicle-mounted generator, the Powermite generator, the benchmark to which all under-the-hood generators are compared. Recent advancements in technology have led to another patent on the unique Powermite voltage regulator.

In the 60's we designed a new concept in mobile power units, hydraulically driven AC generators, which was the first utilized in the telephone and utility companies in New York City. While it took 10 years before this new concept was widely accepted, it has now, once again, revolutionized the mobile power industry. Since that time our generators have replaced electric engine generator sets in an increasing variety of industries. We have several patents on a new innovative system of electronically controlled generator systems for the fire industry and mining industry, and are the worldwide supplier of mobile power.

Fabco Power generators have been used by the United States Military in both war and peace time for the past 50 years as well. Manufacturing to rigid government specifications, our facility had to conform to tough quality control requirements of MIL standard 9859A, as well as strict ISO 9000 standards. This has allowed us to have generators on some of the military's most sophisticated weapons systems. At one time, we even had one of our generators on Air Force One during the Ford presidency. Most recently Fabco was called upon to supply our generators in Operation Iraqi Freedom. After the tragedy of September 11th, Fabco Power was called upon to supply our generators to the US military in Afghanistan. We are proud to have served as a supplier of generators to our country from the time of Vietnam, through Desert Storm and Iraq, to today in Afghanistan. It is that same commitment to strict quality control and reliability that makes Fabco generators suitable for use by the US military. It is that same commitment that makes Fabco generators the choice for mobile power needs in all industries.

We have come a long way in the past 50 years. With three generations of the Fury family working in the business, founder Bob Fury Sr. is still active in the operation, and we strive to remain the worldwide leader in mobile power. We do so by commitment to quality, on time delivery, excellent service, and competitive pricing.

POWER MITE®

INSTALLATION INSTRUCTIONS

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INTRODUCTION

The Power-Mite® 110 and P/M/ 220 AC Electric Generator is a unique miniature power source that mounts easily on any gasoline or diesel engine. The Power-Mite® provides AC power whenever and wherever you need it. For over 50 years the Power-Mite™ 110 has proven to be a reliable, miniature heavy-duty power source. This unique generator will operate all AC and AC/DC tools and appliances efficiently & safely. The Power-Mite® features an isolated ground which provides safe operation for the user.

**PLEASE READ ALL THE INSTRUCTIONS
IN THIS MANUAL CAREFULLY
PRIOR TO INSTALLATION**

UNPACKING

Remove packing foam on the top and lift the unit up carefully, firmly grasping the two silver mounting ears on the generator. Place the unit down and remove the plastic bag, remove the rest of the packing material, brackets and hardware and layout on a clean surface. Save the box and packing material in case the unit was damaged in shipment and has to be returned.

MOUNTING

The Installation Must Be Performed By A Qualified Mechanic using the standard mounting hardware supplied. The installer should figure how to use the component parts furnished with the unit before attempting the installation. (REFER TO THE ILLUSTRATIONS ENCLOSED IN THIS MANUAL FOR PART DESCRIPTIONS AND IDENTIFICATION) **NOTE: ONLY USE ONE BELT TO DRIVE THE POWER-MITE GENERATOR. THE BELT WIDTH SHOULD BE 7/16" WIDE.**

The **#1 Base Plate**, may be attached to any part of the engine block, either by direct attachment or by use of the **#4 strips** furnished with the kit. The **#4 strips** may be connected to the manifold bolts and the **#1 Base Plate** mounted on the strips. The **#4 Strips**, may be welded, bent, drilled or cut to accomplish the installation of the generator within the confines of the engine compartment. **Aligning the generator with the drive belt is very important and it must be precisely aligned.** Both **#4 strips** are used to hold the **#1 Base Plate**. They support the platform for a rigid and secure mount.

The **#2 Saddle Bracket** is used to hold the generator. Fasten it to the **#1 Base Plate**. Notice that the slots in the **#1 Base Plate** are cut opposite in direction to the slots in the **#2 Saddle Bracket**. This permits positioning of the generator both laterally and horizontally, thereby assuring both proper belt tension and proper belt alignment. As a further aid to the installation, the **#1 Base Plate** has slots cut instead of holes, this permits the use of the Base Plate on different centered holes. Use lockite on bolts on all diesel engine installations.

The **#3 belt tension strip** has a long slotted hole that enables the generator to move enabling belt tension adjustments. Attach the **#3 strip** with the bolt supplied through the slotted hole directly to the generators front end bell and mount the opposite end directly to the engine block.

CAUTION
The Generator, Base Plate and ALL supports
MUST be mounted to the engine.

Mounting to the engine permits the generator to become an integral part of the driving engine, isolated from the engines' floating mounts. This precaution does not include the throttle or control panel, these may be placed in the most convenient and accessible places. The Power-Mite® generator is supplied with a double groove pulley for installation convenience, only one belt is necessary. Be sure that the fan belt used will have a minimum of a 90° enclosed angle or wrap from the AC generator and a 90° enclosed angle or wrap from the driving engine pulley. If the engine has a serpentine belt and no air conditioning, you can mount the generator in the spot the air conditioner would have occupied. If the vehicle has air conditioning, you can purchase an after market pulley and mount it to the harmonic vibration damper, then use a separate V-belt to drive the Power-Mite®. Any snow plow dealer, such as Fisher Plow, can supply a pulley for your particular engine.



CONTROL PANEL WIRING

SEE PAGE # 10 FOR OPTIONAL VOLTAGE REGULATOR

The AC generator control panel furnished is used for control and monitoring for the AC generator. The Power Panel has two double AC grounding type receptacles and a voltmeter which monitors the AC output voltage. It also has a current overload protection device. The Direct Current field supply is controlled by a heavy duty on-off switch. A red light is illuminated to indicate field current draw, controlled by the switch, this also is a warning that the current is on, safeguarding the battery when generator is not in operation.

The control panel should be mounted on or near the existing engine controls, so the operator can turn the unit on and off and observe the volt meter and field power operating light. **The control panel switch should always be turned off when generator is not in use.**

Connect the **Red wire** from the control panel to the hot side (+) of the battery using an in-line series 25 amp fuse, or the side of the battery that is not grounded to the frame. The cable from the generator to the control box has three wires (refer to FIGURE #1). The **Green wire** is the field wire for the generator and should be connected on the switch as shown. The **White wire** should be connected on the vacant **Silver** screw of the 110 volt outlet as shown. The **Black wire** should be connected on the vacant screw of the 110 volt **Overload Trip**, as shown. This completes the installation of your AC generator.

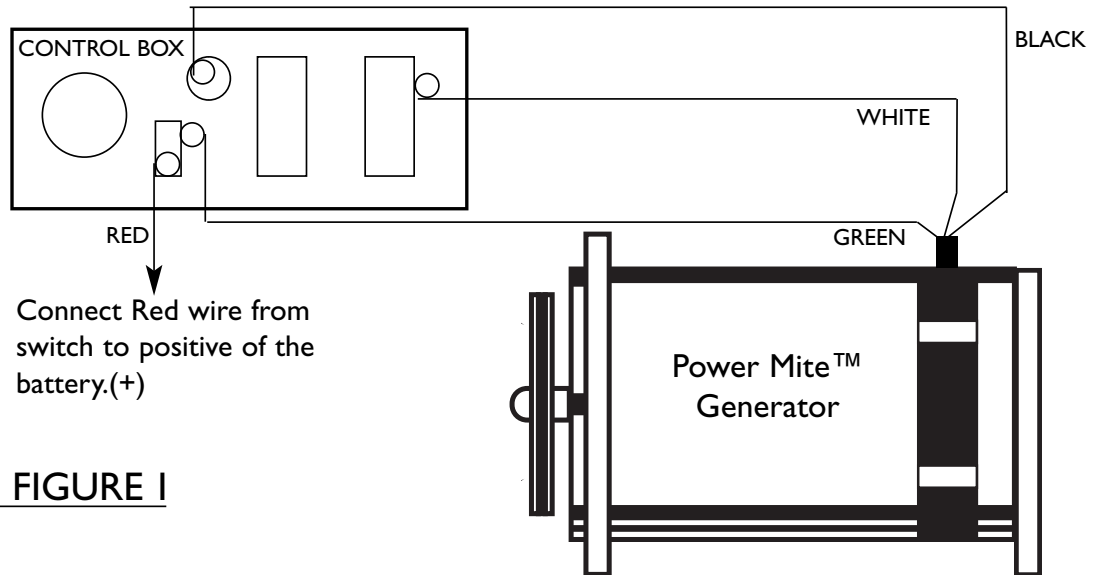


FIGURE I

INITIAL START UP AND OPERATION PROCEDURE

Every AC generator has been thoroughly tested and inspected before it leaves the factory. Only a minimum of service is necessary for the AC generator to give years of satisfactory power output. Every unit has a shielded sealed and special grease packed bearings on each end. Keep the drive belt only as tight as necessary to prevent power loss.

A "LOOSE" OR "TOO TIGHT" DRIVE BELT CAN DAMAGE THE BEARINGS. ALWAYS BE SURE THAT THE PULLEY NUT AND ALL MOUNTING BOLTS AND HARDWARE ARE SECURELY TIGHT TO PREVENT DAMAGE TO THE BEARINGS.

NEVER START GENERATOR WITH AN AC LOAD "ON"

To check the operation of the AC generator, start the engine. Place the **Control Switch** to the ON position. The voltage output of the Unit varies with your engine speed. Look at the Voltmeter. If your engine is idling slowly, you will notice no voltage. Accelerate your engine slowly, the voltmeter will respond instantly and should approach the maximum reading. This demonstrates the operation of the AC generator. The desired voltage for the operation of tools, appliances, lights, etc, is between 110-130 volts AC. This voltage range is indicated when the needle is in the green area of the voltmeter. Get your voltage up to the green area before turning on any AC load.

ANSWERS TO SOME FREQUENTLY ASKED QUESTIONS

- Q: Can I operate a three phase motor?
ANS: No, only single phase motors up to 1 horse power.
- Q: Will it charge a battery?
ANS: No. AC POWER cannot be used to charge a battery, however it will operate a 120 VAC input DC battery charger.
- Q: Is our AC generator an inverter?
ANS: No, it is an AC Generator or alternator.
- Q: Will the Power-Mite® A.C generator discharge my battery
ANS: No. Not if the engines DC generator is working properly to keep the battery charged while the Power-Mite® is operating.
- Q: What speed does my engine turn to operate the Power Mite® generator at 3600 RPM?
ANS: Usually from 1200 to 1600 RPM, this is necessary to properly circulate the air, oil and water to keep engine cool.
- Q: How much horsepower is required when my Power-Mite® is turned on?
ANS: Approximately SEVEN horsepower is required at full load and a fraction of a horsepower when it is not activated.
- Q: If I am using 500 watts and add 1000 watts, my voltage drops and the increased engine speed fails to bring my voltage up, instead it continues to drop. What causes this?
ANS: This is the most common of all “low voltages”. The belt is not tight and the increase load causes it to slip, as the belt slips this creates heat, the belt stretches and causes it to slip more causing the output voltage to continue to drop.
- Q: Can my original engines' alternator belt cause “Low Voltage”?
ANS: Yes, if it is loose. Be sure all of the engine belts are tight so it can keep the battery charged.
- Q: Why does the voltage drop when more wattage or load is added?
ANS: The increase load on the engine causes it to slow down. The wattage being used by additional tools, set of lights or appliances would reduce the output voltage. If increasing the engine speed does not increase the output voltage, reduce the load.
- Q: If the Power-Mite® is running over 10,000 rpm will it damage hand tools or lights?
ANS: No, tools and lights are AC/DC and they run more efficient at higher cycles up to 75 HZ. The Power Mite can withstand intermittent speeds up to 10,000 RPM with out damage, if properly installed.

OPERATION

Start engine, switch Power-Mite® on, adjust speed control for needle in “HIGH GREEN” area, and keep in green, readjust engine speed if necessary. Turn off Power-Mite® before shutting engine off. Never leave switch in the “on” position when engine is not running. (Check belt tension frequently).

NOTE: *The voltage will increase when the tool or load is turned OFF, but will decrease when tool is again turned ON. You DO NOT HAVE TO READJUST the engine speed between intermittent periods varying load conditions.*

Many appliances or devices have no OFF-ON Switch. In this event increase your engine speed until the voltmeter on the Control Panel indicates in the “HIGH GREEN” area. Then plug in the appliance. Readjust the engine speed to keep needle in green area, if necessary. *Do not leave appliances without an ON-OFF switch plugged into the unit when the generator is not up to operating speed. Also never plug them in until the generators output voltage is in the green operating range.*

If you have a **specific use for 60 cycle frequency**, the shaft of the AC generator must turn at **3600 RPM**, at this speed the AC generator will produce exactly 60 cycles.

Note: *The engine speed would be approximately 1200 to 1600 rpm to obtain 60 cycles at full load. If the engine is equipped with a tachometer it would not give a true indication of the AC generators output frequency because of different pulley sizes. The shaft speed of the Power-Mite™ must be turning at exactly 3600 rpm. The speed can be measured by using a stroboscopic thahometer or by plugging an AC frequency meter into the power outlet.*

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
NO VOLTAGE OUTPUT	BRUSHES WORN POWER SWITCH DEFECTIVE DEFECTIVE VOLTMETER DEFECTIVE RECEPTACLE	REPLACE BRUSHES REPLACE SWITCH REPLACE METER REPLACE RECEPTACLE
UNSTABLE VOLTAGE	LOOSE CONNECTION LOOSE BELT	CHECK CONNECTIONS CHECK BELT TENSION
NOISY GENERATOR	DEFECTIVE BEARING BROKEN FAN BELT WORN	REPLACE BEARING REPLACE FAN REPLACE BELT
GENERATOR WILL NOT HOLD THE LOAD	DEFECTIVE OVERLOAD LOAD EXCEEDS RATING LOOSE BELT	REPLACE OVERLOAD REDUCE THE LOAD TIGHTEN BELT

REPLACEMENT PARTS

<u>PART #</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
572024	Housing	1
572025	End Plate MP-2	1
572026	End Plate MP-1	1
572027	Field Poles	2
572028	Field Pole screws	2
572029	Field Coils	2
572030	Brush Holder	4
572031	Brushes	4
572032	Brush Holder Caps	4
572033	Armature w/Slip Rings	1
572198	Armature/Blue Max	1
572236	Armature 220 Volt	
572035	Thru-Bolts	2
572036	Bearings	2
572037	Fan	1
571275	Pulley STD. 2&3/4"	1
572038	Space- Small	1
572039	Spacer- Large	1
572040	Woodruff Key	1
572041	Washer	1
572042	Nut	1
572043	Retainer Disc (Rear)	1
572044	Washers	6
572045	Band Assembly	1
572046	Screws	6
572047	Retainer (Bearing)	1
572048	Throttle Control Kit	1
572049	Dust Filter	1
572050	Mounting Brackets (SET)	1
572051	Toggle switch	1
572052	Meter 0-150 VAC	1
572093	Meter 0-300 VAC	1
572053	Power Cord	1

572054	Dual Receptacle 120 VAG	I
	Dual Receptacle 120 VAG	
572341	Twist Lock Receptacle 240 VAC	
572345	Pulley 3" Single Groove	
572055	Lamp Assembly	I
572056	Complete Control Panel	I
572259	Complete Control Panel W GFI	I
572057	Control Box shell	I
572058	Adjustable Arm Bracket	I
572074	Circuit Breaker (OVERLOAD)	I
572020	Mounting Plate 4'x 8"	I
572075	U-Bracket	I
572084	Pulley Large 3-1/4" Double Groove	I
572242	Pulley Serpentine 6 Groove	I
572255	Pulley Serpentine 8 Grooved	I
572247	Large Pulley S Groove 3 5/8"	I
572256	PM Only	I
572257	Blue Max Only	I

OPTIONAL PMVR 120-C AC VOLTAGE REGULATOR

The PMVR 120-C AC voltage regulator is a solid state control device which controls the sum total of current entering the Direct Current fields of the Power-Mite®. The regulator senses the AC output voltage drop when a load is applied, or a voltage increase when the load is removed. This is accomplished instantaneously by the AC preset output voltage which is electronically compared to the input DC voltage applied to the field through the voltage regulator. The AC output voltage is factory calibrated at 120 VAC. During variable load applications the voltage regulator will hold the AC output voltage steady at between 110 and 130 VAC. The PMVR 120-c Solid State Voltage Regulator is ruggedly designed for severe commercial use; because of high quality parts and expert factory assembly and testing. There are no moving parts or no relays or moving electrical contacts or transformers. This device compensates for all over-voltage conditions for

use with most electronic equipment. The PMVR, patent applied for, comes from the factory ready for use with any Negative ground, 12 volt DC system, however, it can easily be adapted to a Positive Ground system in the field in a matter of minutes.

The voltage regulators are available with 24 VDC field inputs with 120 or 220 VAC outputs, the 12 VDC field input units can also produce 220 VAC outputs when used with the corresponding Power-Mite® generator models ask your local dealer.

WARRANTY TERMS

EACH FABCO POWER GENERATOR IS WARRANTED TO THE ORIGINAL OWNER TO BE FREE FROM DEFECTS IN MATERIAL OR WORKMANSHIP UNDER NORMAL USE AND SERVICE FOR ONE (1) YEAR FROM THE DATE OF PURCHASE.

OUR OBLIGATION UNDER THIS WARRANTY IS LIMITED TO REPLACING OR REPAIRING, AT OUR OPTION, ANY PART OR PARTS PROVED TO BE SO DEFECTIVE WHICH ARE RETURNED FREIGHT PREPAID

Fabco Power manufactures a full line of VEHICLE MOUNTED hydraulic powered generators from 3,000 to 12,000 watts. The hydraulic driven generators are used in many industries where reliable portable electric power is needed such as Telephone & Utilities, Fire & Rescue, Construction, Night Paving, Public Works, Airline Maintenance, Plastic Pipe Fusion, Mining and Much More!

The FABCO HYDRO SERIES GENERATORS are lightweight and compact; they are one-third the size of an engine driven generator of the same power output. They are QUIET, ENVIRONMENTALLY CLEAN, NON-POLLUTING AND MAINTENANCE FREE. (YOU NEVER HAVE TO WORRY IF THE GENERATOR WILL START)! The generator is brushless and has built-in overload protection, it is easily RE-CONNECTABLE for 120 or 240 volts AC. The output voltage regulation is within +/- 3% from no load to full load without a voltage regulator. For more information call us at (845) 469-9151, Fax (845) 469-7871 or visit our **Web Site www.fabcopower.com**

OTHER INNOVATIVE FABCO POWER PRODUCTS

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The Fabco EAGLE 6 POWERSTATION, is a MULTI-FUNCTION POWER GENERATION SYSTEM. 6 functions in 1 Hydraulically driven generator: 6000 watt generator, 300 amp DC welder, 12V, 24V, 36V Jumpstarter, CC & CV, Battery Charger, Rotary Screw Air Compressor 40CFM - 120 PSI.

For more information call us at (845) 469-9151,
Fax (845) 469-7871 or visit our **Web Site www.fabcopower.com**

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To view all Fabco Power's innovative products
visit our web site at **www.fabcopower.com**

GFCI GENERAL INFORMATION

The Powermite 110 belt-driven generator system was introduced in 1962. Over the years there have been questions about using it in conjunction with Ground Fault Current Interrupters, also known as GFI's or GFCI's.

In a residential or industrial setting, there are the three conductors in a standard 120 volt electric outlet (240 volts in most countries outside the US) HOT, NEUTRAL and GROUND. The ground terminal is affixed to a water main and/or a ground rod. The hot and neutral provide the 120 volt power to home appliances. The neutral line is tied to the ground at only ONE POINT inside the circuit breaker panel.

Since the Powermite 110 is mounted in a motor vehicle, there is no earth ground in the system. As with portable gasoline generators, the Powermite 110 has an ISOLATED circuit, meaning that both legs of the 120 volt circuit are floating and not connected to the ground, which is the chassis of the vehicle. This is standard practice and we believe is the safest approach.

It is still a good practice to place a GFCI outlet on the output of the Powermite 110 because if at any point, one of the output terminals were to accidentally become grounded, due to a defective appliance connected to it, or miswiring by personnel, the opposite leg of the output could have a potential of 120 volts to ground, creating potential dangerous condition.

Using an isolated circuit is much safer, but does create confusion with GFCI testers.

It's best to test the wiring of the GFCI as suggested by the GFCI manufacturer (Enclosed). The GFCI manufacturer recommends this testing procedure, rather than using a "tester" which may or may not show a correct reading on isolated ground systems.

*This information is reprinted from
the Leviton GFCI manufacturer*

LEVITON

For Technical Assistance Call:
1-800-824-3005 (U.S.A. Only)
1 800 405-5320 (Canada Only)
www.leviton.com

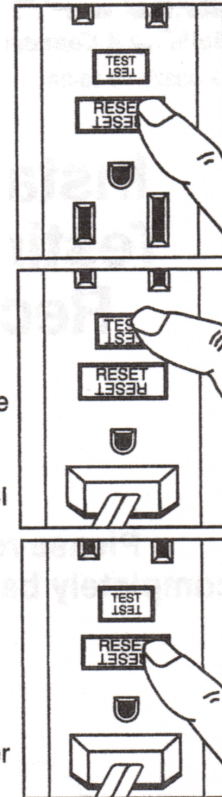
8. Test your work

Why perform this test?

- If you miswired the GFCI it may not prevent personal injury or death due to a ground fault (electrical shock).
- If you mistakenly connect the LINE wires to the LOAD terminals, the GFCI will not reset and will not provide power to either the GFCI receptacle face or any receptacles fed from the GFCI.

Procedure:

- (a) This GFCI is shipped from the factory in the tripped condition and cannot be reset until it is wired correctly and power is supplied to the device. Plug a lamp or radio into the GFCI (and leave it plugged in). Turn the power ON at the service panel. Ensure that the GFCI is still in the tripped condition by pressing the TEST button. If the indicator light on the GFCI receptacle face is ON and the lamp or radio is OFF go to the Troubleshooting section because LINE and LOAD wiring connections have been reversed. You will not be able to RESET the GFCI in this condition.
- (b) Press the RESET button **fully**. If the lamp or radio turns ON and the Indicator Light turns ON, the GFCI has been installed correctly. If the GFCI cannot be reset, go to the Troubleshooting section.
- (c) If you installed your GFCI using step 7B press the TEST button, then plug a lamp or radio into surrounding receptacles to see which one(s), in addition to the GFCI, lost power when you pressed the TEST button. DO NOT plug life saving devices into any of the receptacles that lost power. Place a "GFCI PROTECTED OUTLET" sticker on every receptacle that lost power, then press the RESET button to reset the GFCI.
- (d) Press the TEST button (then RESET button) every month to assure proper operation. If the Indicator light does not go out and come back on or if the GFCI cannot be reset, then it must be replaced.



TROUBLESHOOTING

Turn the power OFF and check the wire connections against the appropriate wiring diagram in step 7A or 7B. Make sure that there are no loose wires or loose connections. Start the test from the beginning of step 8 if you rewired any connections to the GFCI.