

ROADPOWER

8 KW, 120 VOLT, 60 Hz
POWER GENERATION SYSTEM

OWNER'S MANUAL

MEPS

MOBILE ELECTRIC POWER SOLUTIONS
Garland, Texas

When properly installed, this **ROADPOWER** system is designed to provide the user with many hundreds of hours of high-quality, low-maintenance, reliable power. The output provided is suitable for powering air-conditioners, computers, lights, power tools, and appliances that operate on 120 volts, 60 Hz, AC power. Within the operating range, the output voltage and frequency are independent of alternator (and engine) speed.

CAUTION: The voltage and power produced by this system are potentially lethal. Proper procedures must be employed to reduce the probability of personnel coming into contact with this power.

I. Installation:

Installation of a **ROADPOWER** system usually requires construction of suitable alternator brackets, and associated hardware, for mounting the **ROADPOWER** alternator, and for alignment of the drive components. Additionally, some expertise is required for mounting the Power Converter and for wiring the system. There exist a number of capable installers who are available to perform these installations.

A. Alternator (generator)

Proper installation of the alternator is of utmost importance. Without proper installation, the power output, system life, and belt life may be severely compromised.

1. Mounting:

The **ROADPOWER** alternator may be mounted to the driving engine block **in addition to** the standard battery charging alternator/generator (recommended), mounted to the driving engine block **in place of** the existing battery charging alternator/generator, or mounted adjacent to the driving engine. If the **ROADPOWER** alternator is not mounted directly to the engine block, care must be taken to insure that the alternator does not move in relation to the driving pulley of the engine. In addition, the alternator must be grounded (case) to the engine block.

For any type mounting, the **ROADPOWER** alternator must be securely attached so that there is no movement of the housing when the loading is changed (a good test of this is to observe the **ROADPOWER** alternator when an air conditioner is switched on and off line).

2. Pulley type:
It is of extreme importance that the driving pulley on the engine be compatible with the pulley on the **ROADPOWER** alternator. Typical pulleys used for this application include “V” belt types and “poly-groove” types. Other types have been used with varying degrees of success. The alternator pulley is usually specified when the system is ordered.
Often, there are unused grooves, suitable for driving the **ROADPOWER** alternator on the engine drive pulley. If such grooves are not suitable, an additional pulley may be mounted to the crankshaft/pulley arrangement.
3. Pulley alignment:
With **improper** pulley alignment, the life of the driving belt(s) and the life of the **ROADPOWER** alternator will be **severely compromised**. The angle of the driving pulley shaft and that of the **ROADPOWER** alternator shaft must be identical. The pulley locations along the shafts must be in alignment, such that there is no change of belt side angle where the belt(s) intersect the pulleys. Additionally, there must be adequate belt “wrap” around each pulley. Inadequate belt “wrap” typically leads to over-tightened belts to prevent belt slippage. Over-tightening a belt will reduce its service life, and may damage other components (particularly bearings) as well.
4. Pulley ratios:
Engine speed range (RPM) dictates the range of pulley sizes suitable for a particular installation. Technical personnel at **MEPS** will be happy to consult with you regarding the suitability of existing engine drive pulleys, drive belt types, and alternator pulleys, as well as providing answers to your other technical questions.
5. Belt types:
Belt types must be compatible with pulley types. Because of placement restrictions, belt wrap, etc., the belt type is often selected prior to pulley selection. Typically, better wrap can be realized with a “poly-groove” belt than with a “V” belt, because “poly-groove” belts can be used with “outside” idlers. Again, **MEPS** technical staff will be happy to consult with you regarding belt and pulley selection.

B. Power Converter:

Installation of the **ROADPOWER** Power Converter box is not difficult, however; careful selection of the location may yield higher reliability and longer life.

1. Mounting:

The **ROADPOWER** Power Converter may be mounted in any orientation, but the preferred mounting is on a vertical surface (wall, bulkhead, etc.) with the fan facing downward. The chosen location should be clean, dry, and well ventilated. It is imperative that the airflow into the fan and the exhaust on the opposite end of the box be unrestricted. Care should be exercised to prevent dust and other contaminants from being drawn into the **ROADPOWER** Power Converter box.

2. Connections:

All connections to the **ROADPOWER** Power Converter box are made through “plugs and sockets”. All of these connectors are pre-wired except for the AC power output cable. This cable should be assembled by using three-conductor, stranded, #10 AWG cable (not supplied, but available from electrical supply houses, or **MEPS**). The # 10 AWG wires are soldered (using rosin-core electrical solder) into the three silver-plated connector pins. Care should be taken to insure that the solder does not run down the outside of the connector pin. In the event that solder does run on the outside of the pin, it must be removed (with a knife, file, etc.). In particular, any solder collected on the “latching lip” must be removed to insure that the pin will remain locked into the housing. The pins are then latched into the connector housings with:

Black wire (HOT) to the black housing
White wire (NEUTRAL) to the white housing
Green wire (GROUND) to the green housing

The other end of the wire is connected to the electrical distribution system.

IMPORTANT!

If any other power source (Power Company, genset, inverter, etc.) is connected to the distribution system, a power transfer switch must be used to isolate these sources from the output of the ROAD POWER system.

Battery connections are made to the red (+), and the black (-) leads connected to the six-pin plug.

Fuses are provided in both the positive and negative leads. These fuses must not be defeated by removing the fuse-holders, or by shorting across the fuses. Serious damage, including fire, may result from improperly wiring the battery connections!

The positive battery lead should be connected through a switch (preferably through the ignition switch or other switch that is routinely turned “OFF” when the **ROADPOWER** system is not in use).

Failure to disconnect battery power from the ROADPOWER system, when it is not in use, will not only cause depletion of the battery, but may cause internal damage to the ROADPOWER converter box.

C. Remote Panel:

The remote panel is designed to indicate operational characteristics of the **ROADPOWER** system.

1. Mounting:

The **ROADPOWER** Remote Panel should be mounted in a protected area and so that it will be visible to the operator. Typically, the **ROADPOWER** Remote Panel will be mounted into another panel, or bulkhead, through a cutout (2.375 X 5.75 inches) and attached to the panel or bulkhead with screws.

2. Connections:

The **ROADPOWER** Remote Panel is connected to the **ROADPOWER** Converter box by using the cable with the 15 pin, SUB-D connectors. The screws provided in the cable securely hold the connectors.

II. Operation:

Operation of the **ROADPOWER** system is straightforward and uncomplicated, requiring a minimum of operator interface. Typically, when the ignition switch (or other switch) applies battery voltage to the **ROADPOWER** system, and the driving engine is started, the system will perform some diagnostic tests and will then produce output power. If, during diagnostic tests, a problem is discovered, the system will not start, and the remote panel will display one or more illuminated light-emitting diodes (LED's) which will help to determine the nature of the problem.

A. Description of LED indicators:

1. The green LED labeled **ON** indicates that the system is producing AC output, and the fan should be turning.
2. When the system is operating normally, with some amount of load, the green LED labeled **ON** will be illuminated, and some green bars of the bar-graph will also be illuminated. The **bar-graph** is an indication of the amount of available power that is being used. Notice that when an idling or low-speed engine is accelerated to higher RPM, fewer bars are illuminated (when the load remains constant). Notice also that if load is removed from a constant speed engine, fewer bars are illuminated. If a large load is applied to the **ROADPOWER** system when the engine is operating at a relatively low speed, the yellow (tenth bar) will be illuminated. If this condition is not corrected (by increasing engine speed, or reducing the load) the **ROADPOWER** system may turn **OFF** and illuminate the **POWER FAULT** LED.
3. The **POWER FAULT** LED indicates that the load is requiring more power from the **ROADPOWER** system than is available at that particular RPM, or the load is in excess of rated full load.
4. The **LOW BATTERY** LED indicates that the battery is severely discharged. Internal protective circuitry will not allow the **ROADPOWER** system to operate when the battery is severely discharged.
5. When illuminated, the **OVERLOAD LED** indicates that an extremely high load has been applied, or that a short-circuit has been detected in the output wiring.

6. Illumination of the ***HIGH TEMP CONVERTER*** LED indicates that the internal temperature of the Converter box is excessively high. Inadequate airflow or very high-temperature ambient air most often causes this condition.
7. ***Standby*** LED illumination occurs when the Remote Panel switch is positioned to ***OFF***.
8. The Remote Panel switch controls the system output when battery voltage is applied and the driving engine is operating.

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