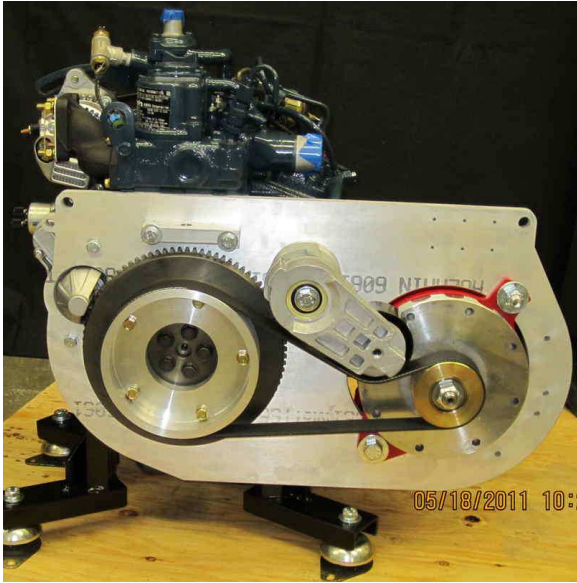


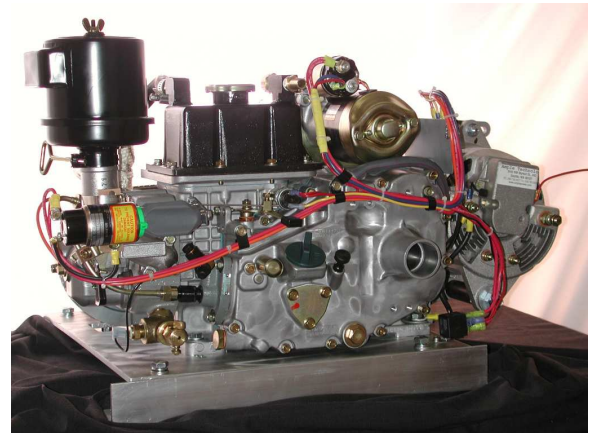
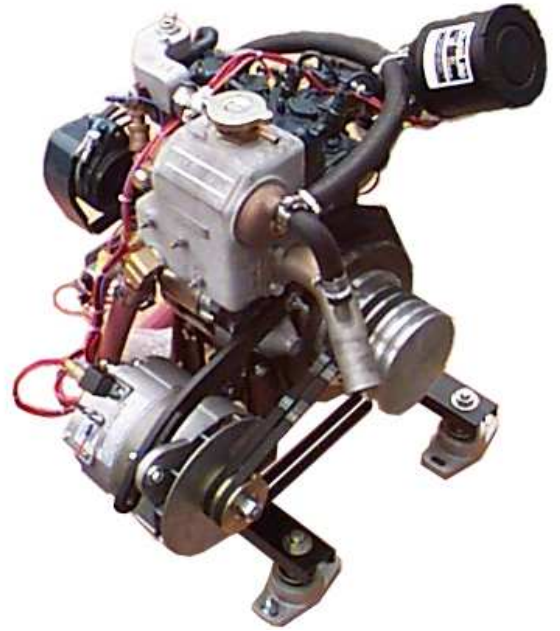
# Ample Power Company

## (Bio)Diesel Battery Chargers . . . DC Amps at 12/24/48 Volts



Flat

Plate Design. . . Never out of alignment.  
. . . Automatic belt tensioning.





## Watertight EnerMatic Controller

### Introduction

What is a diesel battery charger, (DBC)? It's a small diesel engine driving a high output alternator to minimize engine horsepower and fuel consumption when compared to an AC generator with a subsequent electronic battery charger. It is also smaller and weighs less than the AC generator and electronic battery charger. Modern inverters provide AC power of a higher quality than public utilities. An AC generator almost never produces the right frequency or voltage and most often is wasting fuel running at light loads.

### Seven Standard Models

There are seven standard models to choose from, covering a range of voltages and power.

The standard models are shown in the table below. The kilo-Watt rating is calculated using rated Amps and the absorption setpoint voltage.

Voltage	Rated Amps	kW	Part #
12	150	2.2	DBC12-150
12	280	4.0	DBC12-280
24	90	2.2	DBC24-90
24	150	5.0	DBC24-150
24	300	8.5	DBC24-300
48	100	5.7	DBC48-100
48	200	11.5	DBC48-200

Every DBC comes with the watertight EnerMatic Controller. Included are the alternator and battery shunts and the battery temperature sensor. Additional relays or modules may be required to control solar panels and/or wind/hydro generators.

The watertight EnerMatic Controller uses connectors rated to IP-67 so it is ready to go into an ocean buoy, or a mountain top communications shack.

### Fuel

All of the DBCs will run on petroleum diesel or good quality biodiesel. Fuel pre-heat may be required.

### Cooling

The diesel battery charger can be cooled by several means:

- with a conventional radiator and engine mounted fan;
- a remote radiator with an electric fan;
- a marine heat exchanger with wet exhaust; or
- a keel cooler with dry exhaust.

### Better By Design

What makes the Ample Power DBC the best diesel charger available? Compare the features and benefits against other similar units.

- Smart Alternator Regulation with temperature compensation . . .
  - Battery service life is much greater when they are charged at correct voltages for their temperature.
- Efficient large frame alternator . . .
  - A large frame alternator is more efficient than a small frame unit which means that more current can be delivered for less horsepower and fuel consumption.
- Electronic alternator current limiting . . .
  - Rather than attempt to match alternator output and engine horsepower with pulley ratios, electronic current limiting allows for precise setting at higher amperage output than provided by mechanical means.
- Engine power matched variable current limiting . . .
  - When the engine also drives another apparatus, such as a refrigeration compressor, alternator output is reduced automatically to free up some power for the other load. The alternative, used by others, is to shut the alternator completely off. Typically, the DBC can produce 50–70% of its output Amps while powering a second load.
- Remote radiator with EnerMatic fan control allows an effective sound enclosure with sufficient cooling. . . .
- Full electric start/stop from EnerMatic Controller . . .
  - Unlike other units that offer electric starting, the DBC doesn't require manual throttle control before starting, and to stop the engine.
- Automatic shutdown for low oil pressure or high temperature . . .
  - Warning buzzers offered by others are fine as long as you're there to hear them, and you can get to the engine to turn it off before permanent damage occurs.
- Advanced regulator can drive two alternators . . .

### Dimensions and Weights

The table below show dimensions in inches(centimeters) and pounds(kilograms).

Model #	Length	Width	Height	lbs/(kgs)
DBC12-150	30(76)	16(40)	16(40)	156(71)
DBC12-280	20(51)	18(46)	24(61)	185(84)
DBC24-90	30(76)	16(40)	16(40)	139(63)
DBC24-150	20(51)	18(46)	24(61)	190(86)
DBC24-300	29(64)	30(76)	26(66)	270(123)
DBC48-100	20(51)	18(46)	24(61)	204(93)
DBC48-200	29(64)	30(76)	26(66)	290(132)

## Web Server Option



### EnerMatic Web Server

The EnerMatic Controller has two serial ports. Both serial ports provides complete access to all data and functions of the unit.

One serial port provides a terminal interface to be used with any PC or laptop computer.

The other serial port communicates via a *Remote Access Protocol* that allows another computer to interact with the EnerMatic. The *RAP* protocol is published so that anyone can write a program to communicate with the EnerMatic.

Ample Power provides a small, very low power web server, called *Rap-Web* which communicates with the EnerMatic and formats information into web pages that represent data and control panels. A user can aggregate data and control functions into panels of their own choosing.

*Rap-Web* has an ethernet port, USB ports, and additional serial ports. It can be connected to an intranet, and routed to the world via a firewall/router.

The user can also select data items to be logged and plotted periodically for web presentation. This allows tracking parameters over time, such as battery voltage, engine RPM, or alternator Amps.

*Rap-Web* software uses javascript to build web pages and has been tested with popular browsers for compatibility.

## Intake Silencer Option

There's a lot more to noise reduction than just enclosing an engine. An enclosure that allows the engine to pull hot intake air will lead to premature engine failure. The engine must get ambient intake from outside the enclosure(s).

Without an intake silencer, noise levels will be dramatically higher. In many remote applications, that may not be a problem.

We have tested many solutions before settling on the intake silencer offered as an option.

## Hot Water Option

While the DBCs are efficient, there is waste heat which can be used to make hot water, or heat living spaces. Distributing this heat is done with a circulating pump which is turned on and off by the EnerMatic Controller. The controller senses engine coolant temperature and turns on the pump when the engine is warm enough.

The DBC hot water system can be connected to the same coolant circuits as the passive solar panels, however great care must be taken to keep the liquid circuits full at all time.

Heating a water tank can be quickly accomplished by using an inverter to drive the AC heating element, and the DBC to circulate coolant through the coils in the tank. The inverter represents a significant load for the DBC, so not only does it provide heat via the AC element, but it also causes the engine to heat and thus provide more energy for the hot water tank.

The Hot Water Option requires the EnerMatic Controller and includes the DC circulating pump;

## Remote Cooling Options

Standard units are built using the factory radiator mounted to the engine. To be effective, the radiator needs to be mounted against an exterior wall such that ambient air is pulled through the radiator. The air pulled must also be exited from the compartment to avoid overheating. Adequate ventilation for the engine generally means that noise levels are noticeable.

A remote radiator or marine heat exchanger can be used to reduce air circulation requirements, and subsequently reduce noise levels. The air intake to the engine should always be drawn from ambient temperature . . . never from inside a hot enclosure.

A custom aluminum remote radiator is available. An electric fan is included. Fans are more efficient pulling air than pushing air. Either fan can be ordered. The EnerMatic Controller can be programmed to run prior to starting the engine and for a specified time after the engine is stopped.

A marine heat exchanger can be used, where engine coolant is circulated on one side and raw water is circulated on the other side. A marinized unit requires the heat exchanger, a raw water pump, and a custom header to cool the exhaust.

## Marine Installation Kit Option

The Marine Installation Kit includes parts necessary to plumb raw water to the heat exchanger.

- Water Lift Muffler
- Water Strainer
- Intake Through-Hull Fitting
- Intake Ball Valve
- Exhaust Through-Hull Fitting
- Exhaust Ball Valve

## Fuel System Kit

All engines need well filtered fuel.

Most engines have an mechanical diaphragm pump, which has a limited lift range. Even so, an electric fuel pump is useful to pre-charge/bleed the fuel system.

The EnerMatic Controller can operate the fuel pump continuously, or in a pre-charge mode where it operates before cranking the engine and for a programmed time after the engine starts.

The fuel system kit includes a Racor housing and cartridge and a fuel pump.

### BioDiesel Battery Chargers with EnerMatic Controller . . . Ordering Information

Model # (Volts-Amps)	List Price (\$)
DBC12-150	7,690
DBC12-280	9,950
DBC24-90	8,090
DBC24-150	9,950
DBC24-300	15,950
DBC48-100	13,950
DBC48-200	15,950

### Optional BioDiesel Battery Charger Items . . . Ordering Information

Item	List Price (\$)
HOT-WATER	439
REMOTE-RADIATOR-PULL	1,350
REMOTE-RADIATOR-PUSH	1,350
MARINE-COOLING (see note below)	2,100
INTAKE-SILENCER	190
FUEL-KIT	295
MARINE-INSTALL-KIT	389
SHIPPING-CRATE	198
GAUGE-PANEL	579

Notes: The Gauge Panel is only available for manually controlled Genies . . . not applicable to units with the EnerMatic Controller.

The Marine Cooling option is not required for G12-150 and G24-75. This option includes a fresh water cooled exhaust manifold, raw water pump, and a marine heat exchanger.

### Rap-Web Sever . . . Ordering Information

Item	List Price (\$)
RAP-WEB-SERVER	3,999