ALPHAGEN

DCX3000 Portable Generator

Operation Manual

3.0kW, 36/48V, DC Portable Generator

Effective: September 2006

Alpha Technologies

Power

Alpha Technologies

AlphaGen DCX3000
3.0kW, 36/48V DC Portable Generator
Operation Manual

041-028-B0-003, Rev. C

Effective Date: September 2006

Alpha Technologies, Inc.

member of The Group™

NOTE:

Photographs contained in this manual are for illustrative purposes only. These photographs may not match your installation.

NOTE:

Operator is cautioned to review the drawings and illustrations contained in this manual before proceeding. If there are questions regarding the safe operation of this powering system, please contact Alpha Technologies or your nearest Alpha representative.

NOTE:

Alpha shall not be held liable for any damage or injury involving its enclosures, power supplies, generators, batteries, or other hardware if used or operated in any manner or subject to any condition not consistent with its intended purpose, or is installed or operated in an unapproved manner, or improperly maintained.

Contacting Alpha Technologies: *www.alpha.com*

or

For general product information and customer service (7 AM to 5 PM, Pacific Time), call

1-800-863-3930

For complete technical support, call

1-800-863-3364

7 AM to 5 PM, Pacific Time or 24/7 emergency support

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Safety Notes

Review the drawings and illustrations contained in this manual before proceeding. If there are any questions regarding the safe installation or operation of this product, contact Alpha Technologies or the nearest Alpha representative. Save this document for future reference.

To reduce the risk of injury or death, and to ensure the continued safe operation of this product, the following symbols have been placed throughout this manual. Where these symbols appear, use extra care and attention.

ATTENTION:

The use of ATTENTION indicates specific regulatory/code requirements that may affect the placement of equipment and /or installation procedures.

NOTE:

A NOTE provide additional information to help complete a specific task or procedure.

CAUTION!

The use of CAUTION indicates safety information intended to PREVENT DAMAGE to material or equipment.

WARNING!

WARNING presents safety information to PREVENT INJURY OR DEATH to the technician or user.

General Safety Information

- The manufacturer cannot anticipate every circumstance that may involve a hazard, therefore, these warnings are not all inclusive.
- Do not use the generator or any of its parts as a step.
- Generator must be properly grounded.
- Do not place or operate the generator in standing water, or expose to a forced spray of water.
- Do not make or break **any** connections while generator is running.
- Fuel spillage cleanup is the responsibility of the operator and should comply with local codes and regulations.
- Do not refuel the generator while engine is running. Allow generator to cool before refueling.
- For fire safety, the generator must be properly connected, maintained, and in compliance with applicable codes and regulations.
- Engine exhaust contains carbon monoxide gas, which can be deadly in closed or poorly ventilated areas.
- Prior to each use, inspect the generator for leaks and damage. Immediately repair or replace any damaged parts.
- Never operate the generator near combustible materials.
- Ensure cables do not cross hot surfaces or sharp edges. Inspect cables before and after each use.
- Drain oil and empty the fuel tank before transporting. Fuel can leak from the filler cap if the generator is tilted.
- Never refuel the generator in the vicinity of open flames of heat sources. Do not smoke near the generator.
- The generator should be operated on level ground. If necessary, it may be operated on a grade <15°.
- Use only vendor-authorized repair parts.
- Do not operate generator unattended.

ATTENTION:

- Alpha Technologies' products are subject to change through continual improvement processes. Therefore, specifications and design layouts may vary slightly from descriptions included in this manual. Updates to the manual are issued when changes affect form, fit or function.
- This product is manufactured to conform to the Federal Communications Commissions (FCC) Part 15, Class A regulations. It is intended to be used for commercial, industrial or business environments.
- This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1.0 Introduction

The Alphagen DCX3000 portable DC generator supplies DC power to a power node battery bus during AC line interruptions. Upon loss of commercial AC power, the existing battery strings supply the power supply inverters. After some interval of battery discharge, the operator deploys the portable generator at the site to supply power to the DC bus. The generator delivers continuous, high-quality power throughout the commercial AC interruption period. After restoration of commercial AC power, the operator disconnects and removes the generator.

1. Status LEDs
2. Engine Switch
3. Choke
4. Fuel Valve
5. Voltmeter
6. Output Off Button
7. DC Out
8. Pull-start
9. Fuel Tank

Fig. 1-1, DCX3000 Overview

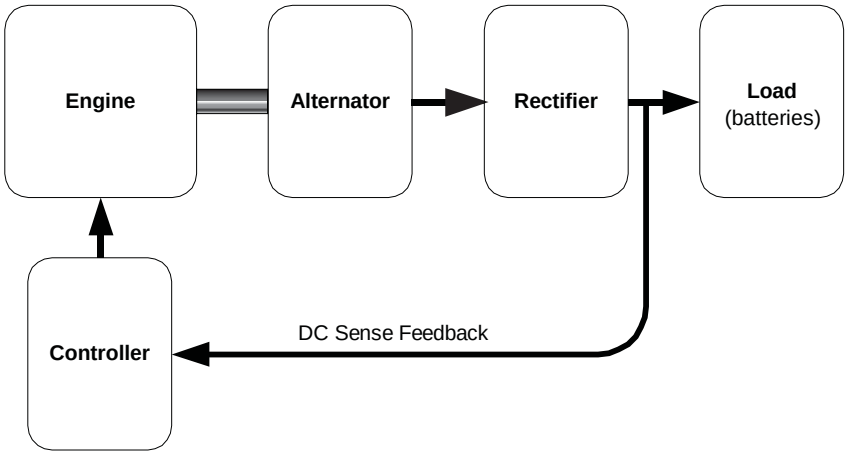


Fig. 1-2, Basic Block Diagram

2.0 Specifications

Engine	Honda GX 200 6.5 hp, air-cooled, OHV, single cylinder, manual recoil starting, manual choke
Fuel/Fuel Tank	Unleaded gasoline/3.5 gallon metal tank with level gauge
Rated Power	2800W continuous, 3000W maximum
Alternator	Permanent magnet, brushless, bearingless
Output Voltage Dual range selector	36V: 39.5VDC, nominal at generator output connector 48V: 52.5VDC, nominal at generator output connector
Output Regulation	+/-1VDC
Control Features	Automatic Voltage Regulation
	Electronic Governor
	Overcurrent Protection
	Analog voltmeter with back light
Cable Interface	Anderson type SBE-80 connector
Runtime	@25% load (48V): 15.4 hours @25% load (36V): 17.5 hours @100% rated load: 6.5 hours
Audible Noise	Approximately 65dBA @ 7 meters under full load
Frame	Fully enclosed
Dry Weight	117 lb
Dimensions	22" H X 17.6" W X 25.9" D (557mm x 447mm x 657mm)
Operating Temp	5°F to 104°F (-15°C to 40°C)
Required Accessories	Output Interface Cable: Available in 10', 30', or 50' lengths
	Battery Interface Cable: Choose Ring Lug, Heavy-duty Alligator Clamp, or Y-adapter (Connects the power supply's battery input directly to the generator. See Section 3.0 for more information)
Agency Compliance	CSA 22.2 No. 100-95 FCC part 15B Class A CARB UL 50, Section 30 NFPA 37, 70 EPA
Optional Accessories	Portable Generator Wheel Kit: P/N 745-793-20 Punch Tool Kit for Enclosures, 2.5" dia: P/N 745-131-20 Enclosure Upgrade Kit: P/N 745-131-21 Cable Bag and Cable Key Lanyard: P/N 745-764-21 Locking Handle: P/N 745-792-20

NOTE:

Please refer to www.alpha.com for available options and data sheets.

3.0 Battery Cable Connections

3.1 Enclosures with Generator Access Door

Tools and Materials Needed:

- Portable Generator Battery Cable Kit
- DC Multimeter

Procedure:

1. Open the enclosure's battery compartment and locate the battery pack connections for the positive and negative battery cables leading to the power supply.
2. Observing polarity (red to positive, black to negative), connect the Battery Pack Adapter Cable to the connections located in Step 1. Attach Ring Lug or Alligator Clamp connections directly to the battery post. See Fig. 3-5 and Fig. 3-6 for Novus-style and Y-style connections. **Do not** connect the extension cable to the DC OUT jack on the front panel of the generator at this time.
3. Route the extension cable (10', 30', or 50') into the enclosure's battery compartment. Protect cable from chafing against sharp edges.
4. Connect the Battery Pack Adapter Cable to the extension cable. Extension cables are equipped with in-line fuses. Replace only with 100 Amp 300VAC fuse (Alpha P/N 460-191-10).

CAUTION!

Inspect cable sets before each use for damage and wear. Use only cable sets that are designed for this generator.

Fig. 3-1, Generator Access Door and Battery Pack Adapter Cable

3.2 Enclosures without Generator Access Door

Tools and Materials Needed:

- 2.5" Punch Tool Kit for Enclosures (Alpha P/N 745-131-20)
- 2.5" Enclosure Upgrade Kit (Alpha P/N 745-131-21)
- Electric drill
- #7 Drill bit (.2010”) or #9 drill bit (.1960”)
- #2 Phillips screwdriver

WARNING!

Disconnect all sources of service power to the enclosure before drilling holes. Ensure the area is clear of wires and electrical boxes. Do not locate the hole above electrical boxes to prevent damage from water intrusion while the plug is removed.

Procedure:

1. If not previously installed, punch or cut a 2.5” hole in the enclosure (shown below) to route the generator’s battery cable. Ensure area is clear of electrical wires and boxes.
2. Install the grommet into the hole, and install the weatherproof plug into the grommet.
3. Using the #7 or #9 drill bit, drill a hole approximately 2” below and to one side of the grommet, attach the lanyard on the inside of the enclosure with the #10 bolt and nut provided.

Fig. 3-2, Enclosure without Generator Access Door

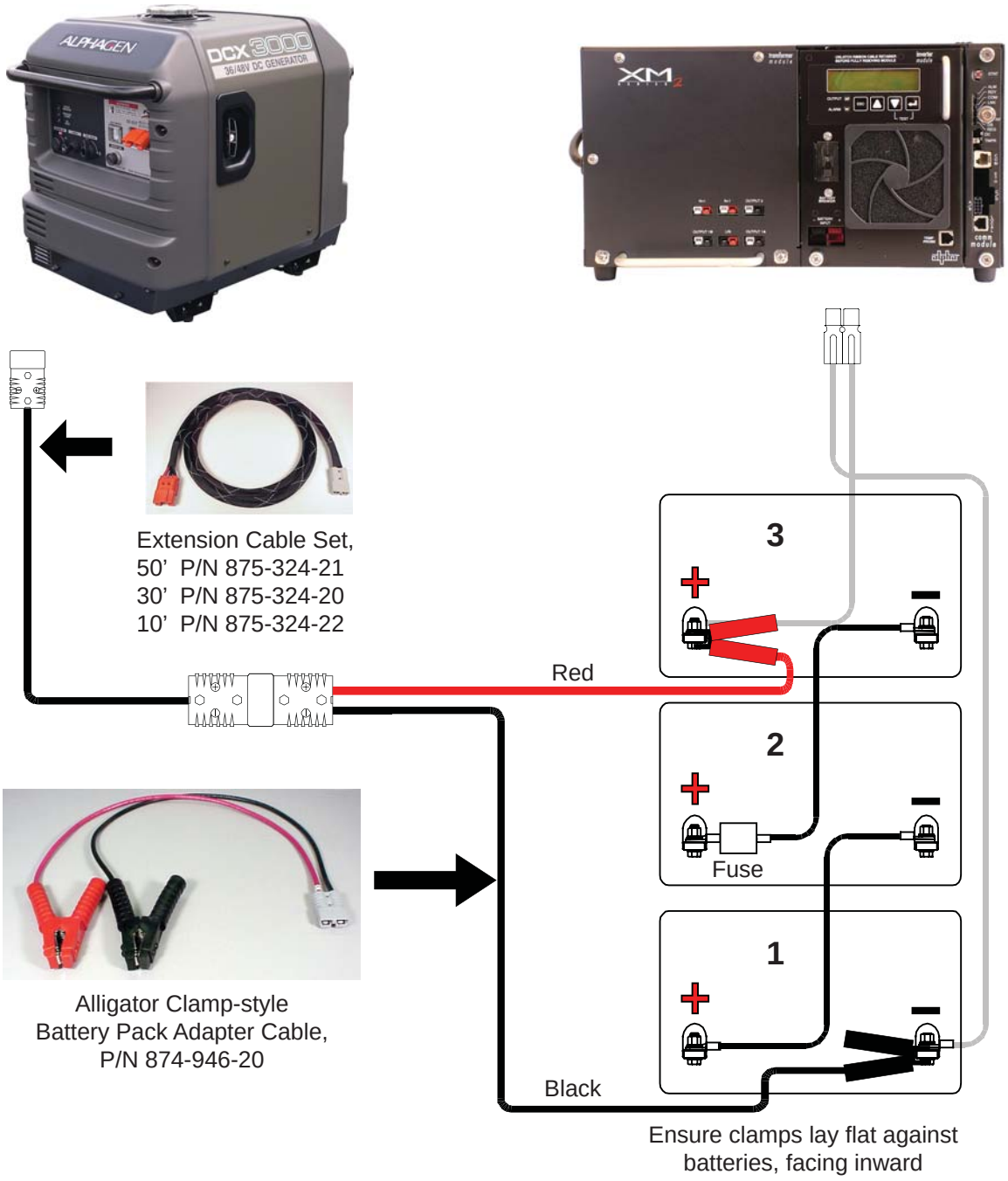


Fig. 3-3, Alligator Clamp-style Connection

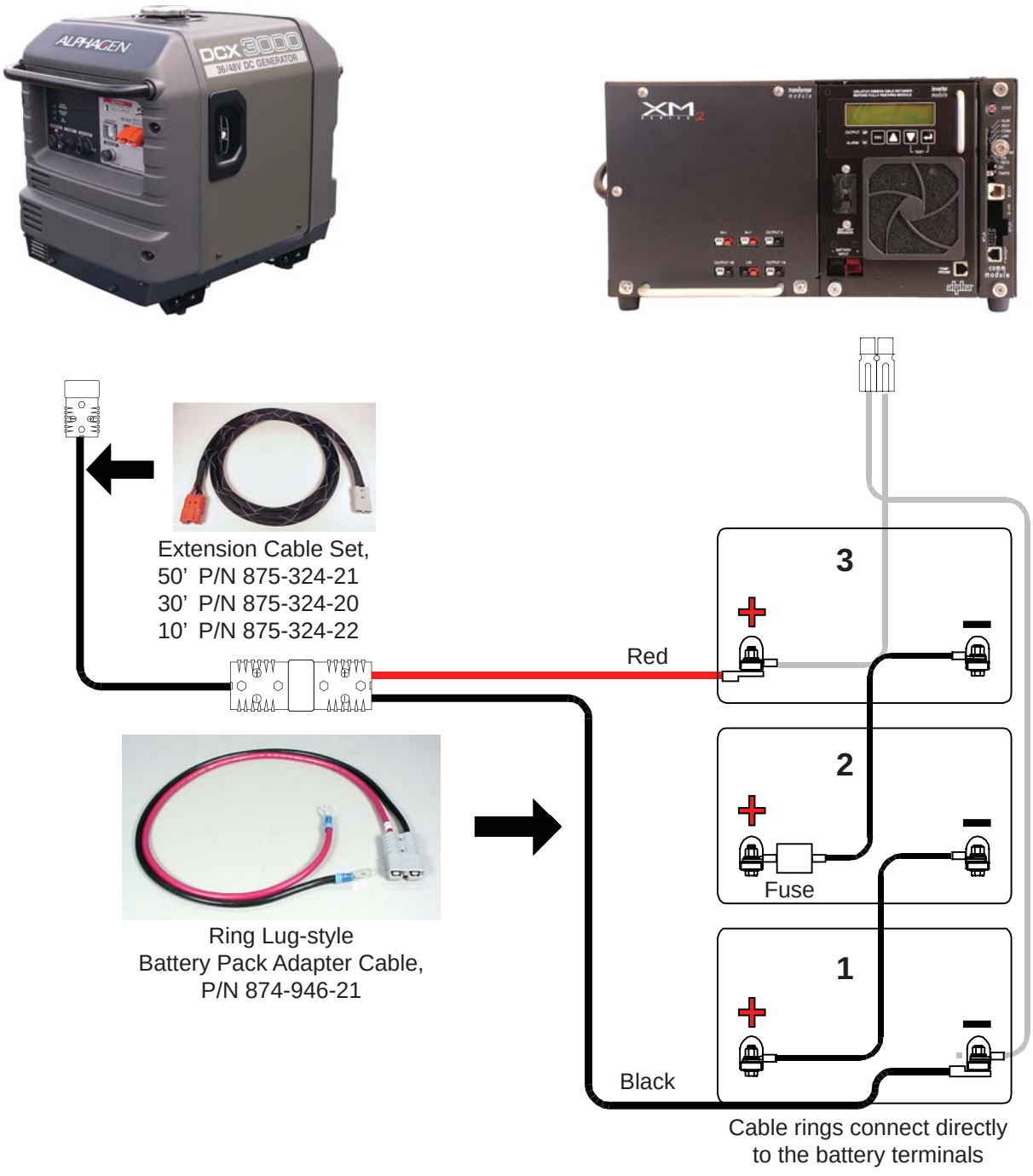


Fig. 3-4, Ring Lug-style Connection

3.0 Battery Cable Connections, continued

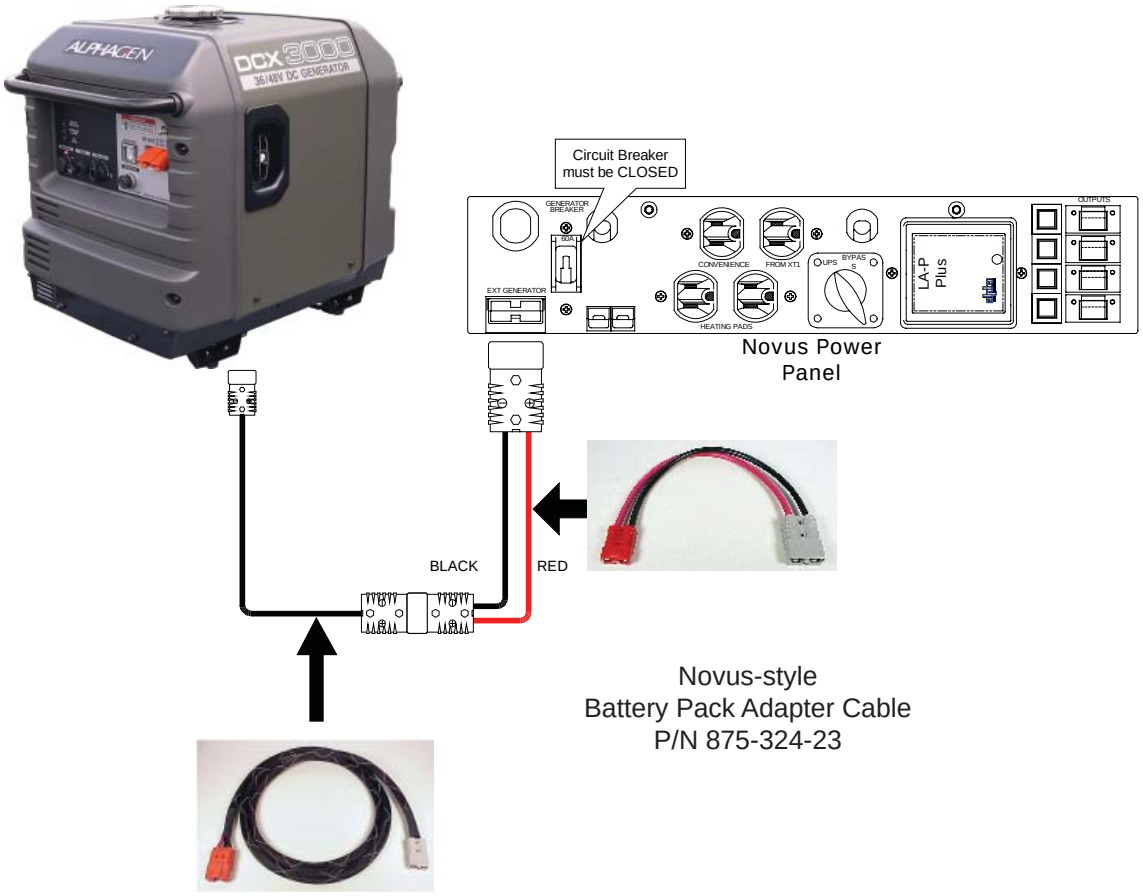


Fig. 3-5, Novus-style Connection

3.0 Battery Cable Connections, continued

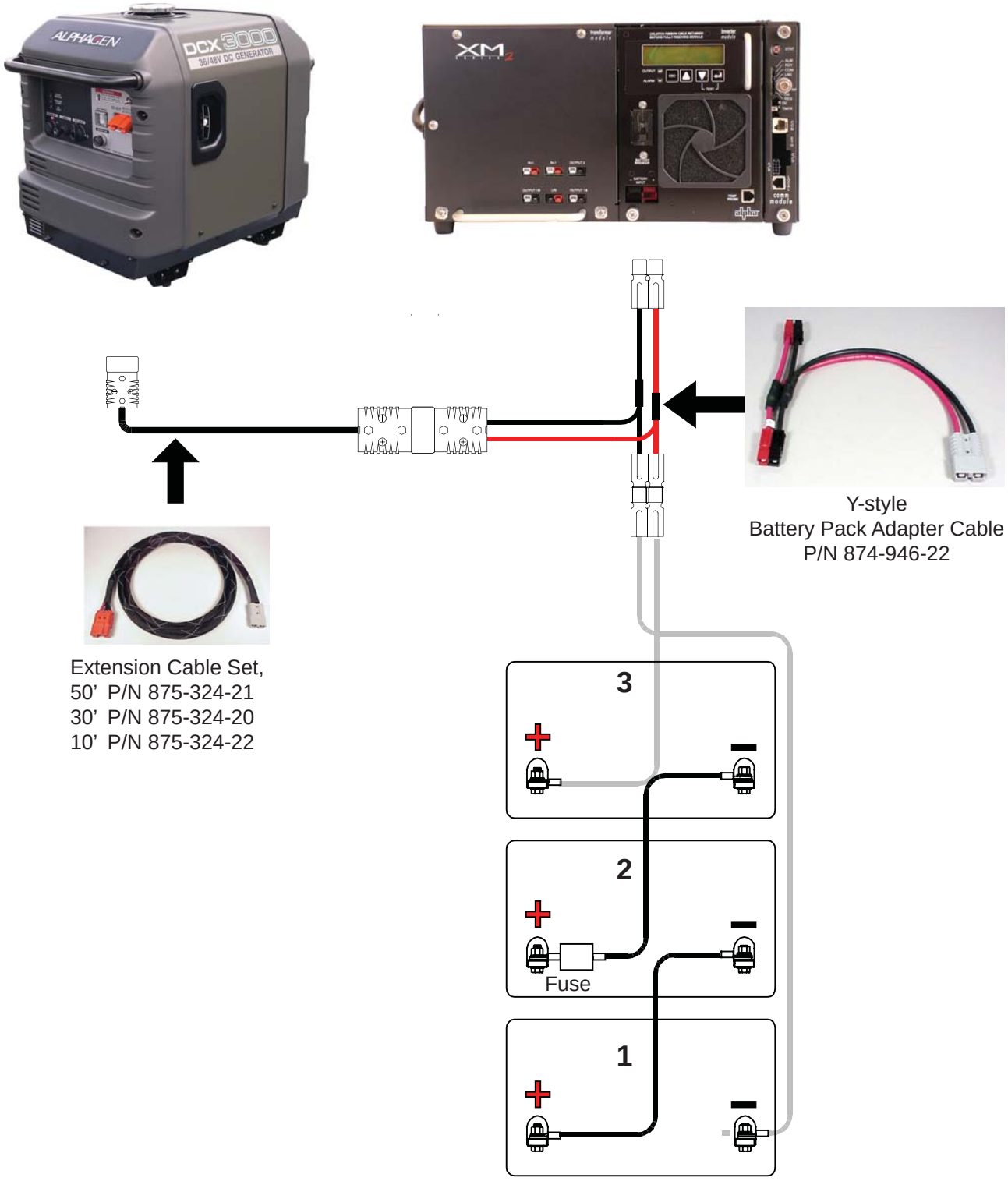


Fig. 3-6, Y-style Connection

3.3 Grounding

Tools and Materials Needed:

#8AWG copper ground wire and clamps

Procedure:

1. Read and thoroughly understand the Engine Owner's Manual before operating this equipment.
2. Before starting the generator, follow all instructions outlined in the **BEFORE OPERATION** section of the Engine Owner's Manual.
3. Attach #8AWG copper grounding wire between the generator grounding lug and the service entrance grounding bar, or directly to the utility grounding rod.

WARNING!

To prevent injury, the generator must share a common ground with the enclosure service entrance.

Fig. 3-7, Generator Grounding

3.0 Battery Cable Connections, continued

WARNING!

To prevent injury, the generator MUST share a common ground with the enclosure service entrance.

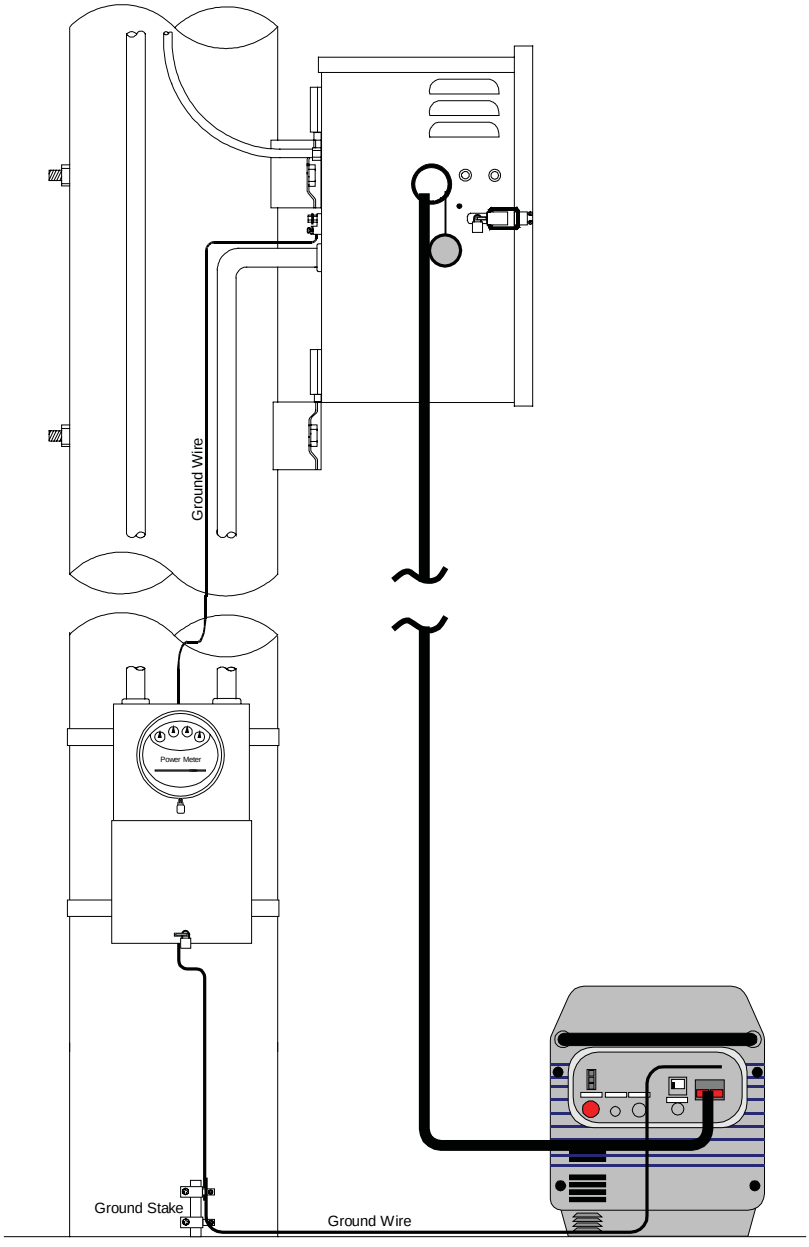


Fig. 3-8, Overview of PWE Installation

4.0 Starting the Engine

Prior to starting the generator, review the Safety Information on page 6 of this manual.

Set the generator on a flat, level surface, free of standing or running water, or combustible materials. Operating the generator at an angle of more than 15 degrees may result in the oil level dropping below a safe level. This may cause the low oil sensor to trip, or failure of the generator to shut down.

This generator runs very quietly. It is not always possible in ambient-noise situations to determine whether it is running simply by sound. Verify that the generator is OFF before proceeding with the following procedure.

Tools and Materials Needed:

#2 Flat-tip screwdriver (to open side panel)

Procedure:

1. Verify fuel is in the fuel tank.
2. Open the maintenance cover on the left side panel of the generator. Set the Voltage Select switch to match the battery pack voltage (36V or 48V). Close cover before starting engine.

3. Verify polarity and battery voltage continuity on extension cables. Connect the extension cable coupler to the DC OUT jack on the generator. Verify the voltmeter indicates the voltage of the battery pack.

NOTE:

Set correct voltage on Voltage Select Switch. Generator will not engage with incorrect voltage setting.

4. Insert key and turn the ENGINE SW to the ON position.
5. If the engine is cold, pull the CHOKE knob out.
6. Turn the FUEL VALVE to the ON position.
7. Pull the starter handle (right side panel) until the engine starts. Verify the OUTPUT INDICATOR LED is a steady green (not blinking). If the OUTPUT INDICATOR LED is flashing red, a voltage mis-match has occurred, or the battery pack is excessively discharged. Refer to the voltage table on page 19 for more information.
8. As the engine warms, push the CHOKE knob in.

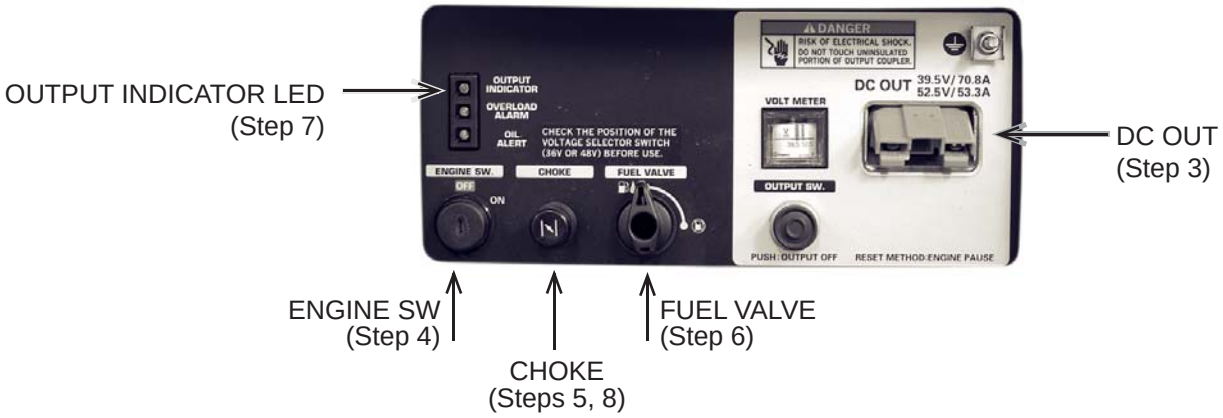


Fig. 4-1, Starting the Engine

4.0 Starting the Engine, continued

Battery Voltage[1]	Voltage Select Switch Position	Output Indicator (Green LED)	Overload Alarm (Red LED)	Forced Output[2]
0V to 2V	36V	OFF	OFF	Not Available
	48V	OFF	OFF	Not Available
2V to 27V	36V	OFF	**FLASHING**	**ENABLED**
	48V	OFF	**FLASHING**	**ENABLED**
27V to 42V	36V	**ON**	OFF	Not Available
	48V	OFF	**FLASHING**	**ENABLED**
42V to 55V	36V	OFF	**FLASHING**	Not Available
	48V	**ON**	OFF	Not Available
>56V	36V	OFF	**FLASHING**	Not Available[3]
	48V	OFF	**FLASHING**	Not Available[3]

1 All battery voltage measurements are ± 1V

2 To enable forced output when the Overload Alarm LED is flashing, press the output button for at least 5 seconds. The Overload Alarm LED stops flashing. Release the output button, and then press it again for at least five seconds. The Output Indicator LED turns on steady, and power output begins. The operator may then release the output button.

3 Engine shuts down after 1 second.

Table 4-1, Battery Voltage and Output Indications

NOTE:

To manually disconnect the Output Voltage, press the OUTPUT SW momentarily to remove voltage from the battery pack. See Step 1 of Section 5.0, Engine Shutdown and Cable Removal.

To re-establish output voltage after manual or automatic disconnection, turn the ENGINE SW counter-clockwise to OFF. After the engine stops, turn the ENGINE SW to ON and follow the procedures in Section 4.0, Starting the Engine.

5.0 Engine Shut-Down and Cable Removal

WARNING!

Engine block and muffler become extremely hot during normal operation.

Procedure:

1. Press the OUTPUT SW to remove voltage from the battery pack.
2. Turn the ENGINE SW OFF.
3. Turn the FUEL VALVE OFF.
4 Disconnect the battery pack adaptor from the extension cable.
5. Remove the extension cable from the front panel of the generator.
6. Remove the battery pack adaptor from the battery pack.
7. Remove #8AWG copper ground wire.

5.1 Long-term Storage

If the generator is not going to be operated for an extended period of time, follow the storage instructions in the TRANSPORTING/STORAGE section of the Engine Owner's Manual.

CAUTION!

Drain fuel system before extended storage. Inspect fuel system and cable sets prior to restarting generator after extended storage.

5.2 Scheduled Maintenance

Refer to the Honda Engine Owner's Manual and follow all instructions in the MAINTENANCE section.

5.3 Transporting the Generator

Refer to the Engine Owner's Manual and follow all instructions in the TRANSPORTING/ STORAGE section.

5.4 Fuse Replacement

Tools and Materials Needed:

- 10mm and 8mm socket
- Ratchet handle
- Torque wrench
- Replacement fuse: Alpha P/N 460-273-10, Hinode Electric Co. P/N 350GH-80

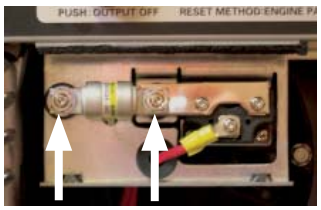
Procedure:

1. Set the ENGINE SW to OFF. Disconnect the extension cable from the DC Out jack.
2. Remove the four 10mm nuts from the front plastic housing, and remove the housing.

3. Locate the fuse cover below the OUTPUT SW.

4. Remove the two 8mm bolts on the bottom of the fuse cover. Remove the cover.

5. Remove the two 10mm nuts holding the fuse onto the fuse holder. When reassembling, carefully tighten nuts to the following torque specifications:
   3.2 to 6.4 N m
   2.4 to 4.7 ft-lbs.
   28 to 56 in-lbs.
6. Replace fuse, and reassemble the generator in reverse order.



6.0 Maintenance Record

Use the following form to log maintenance and repair of your DCX3000.

Maintenance Record (Refer to engine owners manual for service requirements and intervals)			
Model Number		Serial Number	
Date	**Hour Meter**	Action	Initials

Power

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