How does access to electricity organize the library? Electric Campfire seeks to address the growing need for power sources in libraries. As a mobile, wireless electricity hub, it has the potential to encourage the use of underused areas of the library by providing a highly valued resource. It is also designed to gather and rearrange library patrons in ways that encourage social interaction.

Electric Campfire is a low-tech option that can be easily replicated and personalized. The version seen in this booklet comes in the form of a cubical table arrayed on each side with wireless power outlets, but can come in many forms. This manual provides details on how to produce your own version. For more information, visit:

https://github.com/library-test-kitchen/electric-campfire

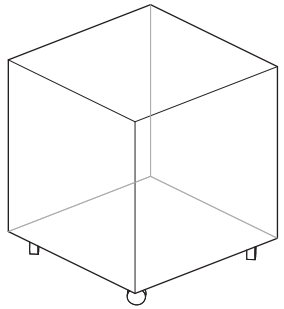
Electric Campfire and its accompanying booklet is a project designed and created by Jenny Hong in collaboration with Jeff Goldenson as a part of Harvard University's Library Test Kitchen and Labrary

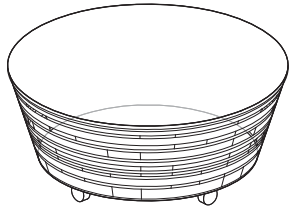
LIBRARY TEST KITCHEN

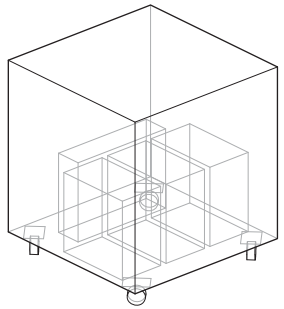
LABRARY

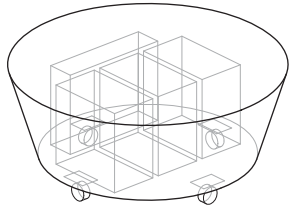
HOW TO MAKE YOUR OWN Electric Campfire

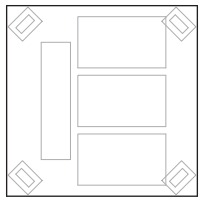
How does access to electricity organize the library? Electric Campfire seeks to address the growing need for power sources in libraries. As a mobile, wireless electricity hub, it has the potential to encourage the use of underused areas of the library by providing a highly valued resource. It is also designed to gather and rearrange library patrons in ways that encourage social interaction.

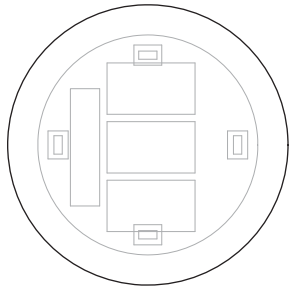




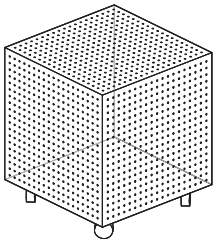


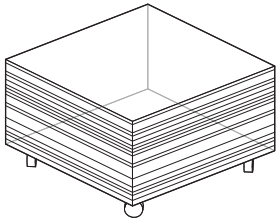


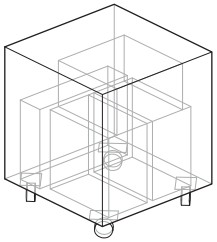


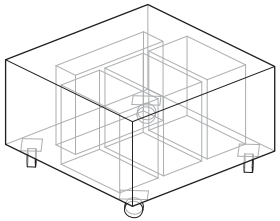


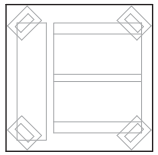
WHAT WILL YOUR ELECTRIC CAMPFIRE LOOK LIKE?

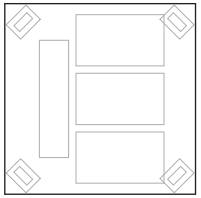


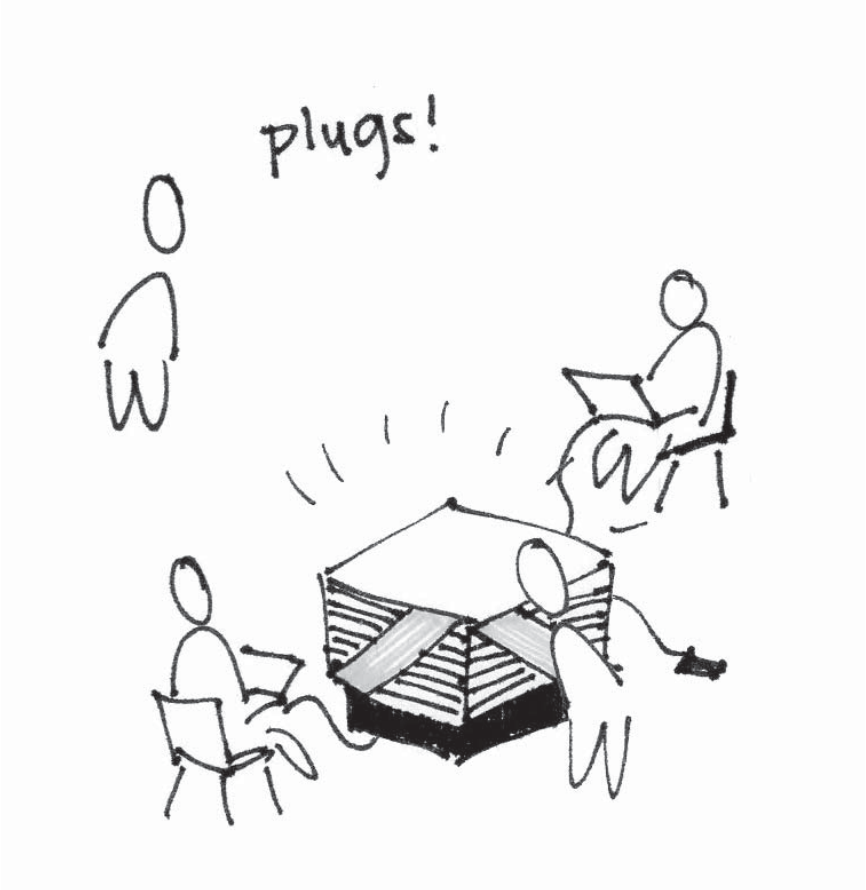












Electric Campfire (EC) is a low-tech option that can be easily replicated and personalized. The version seen in this booklet comes in the form of a cubical table arrayed on each side with wireless power outlets, but can come in many other forms. This manual provides details on how to produce your own version.

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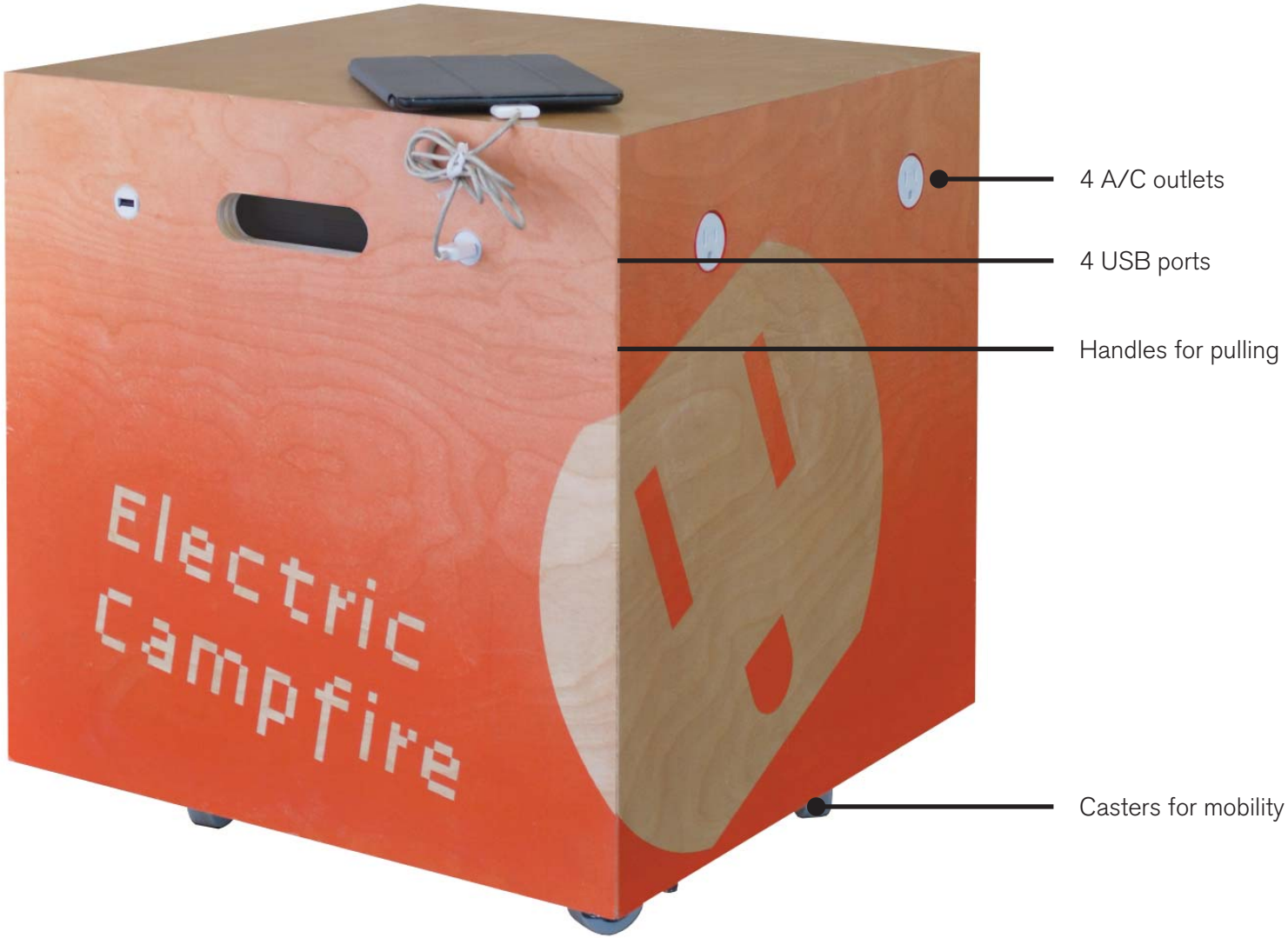
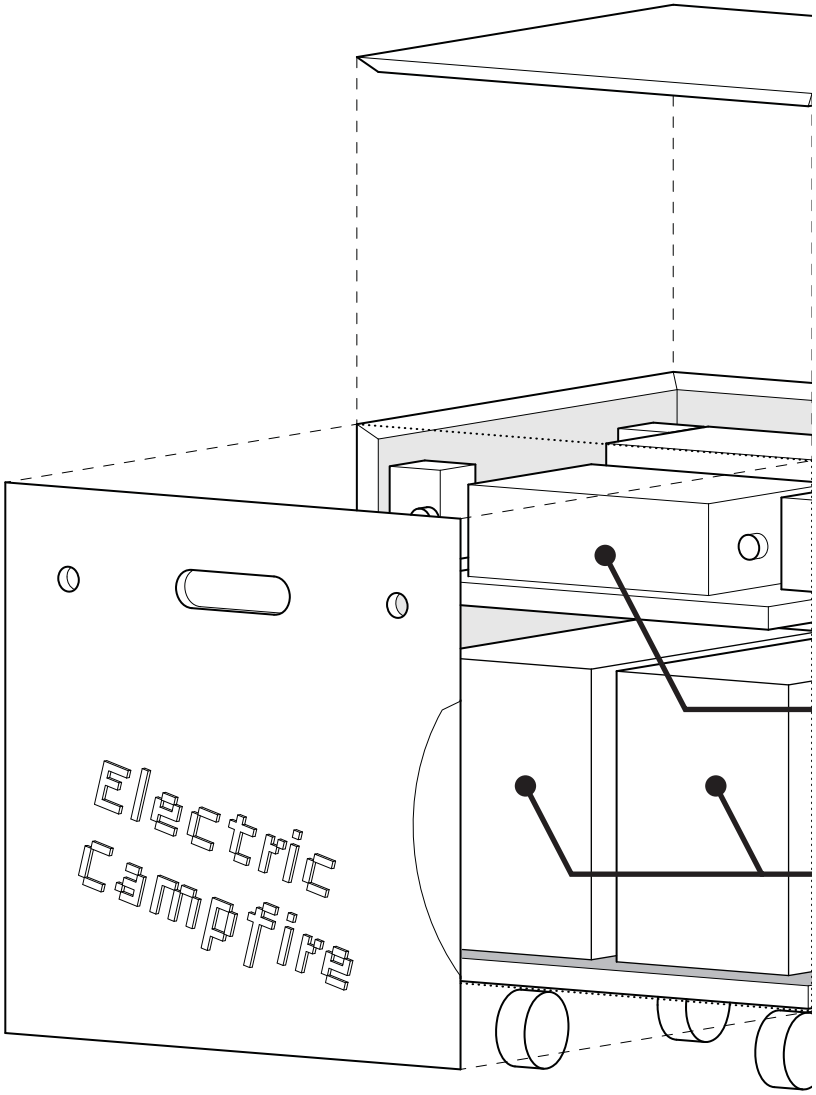
FEATURES AND PARTS

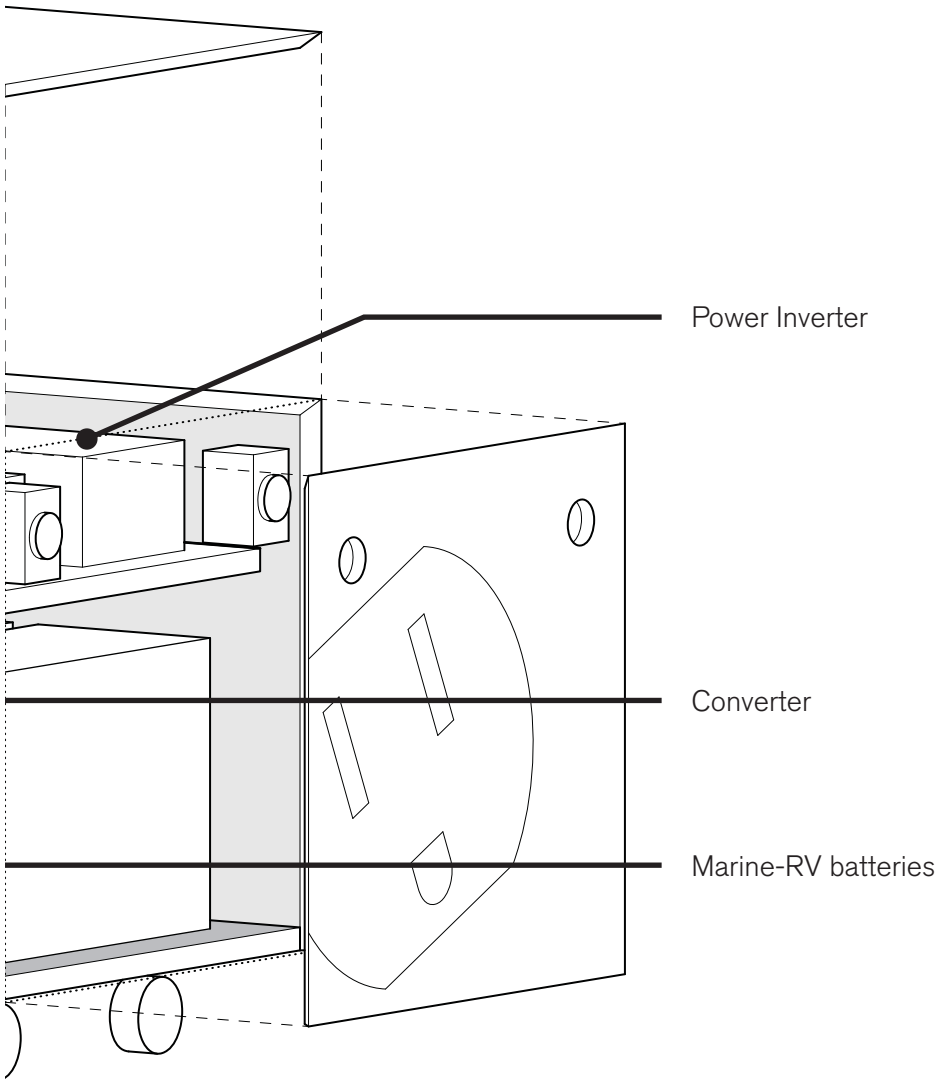

Electric
Campfire
4 A/C outlets
4 USB ports
Handles for pulling
Casters for mobility

FEATURES AND PARTS



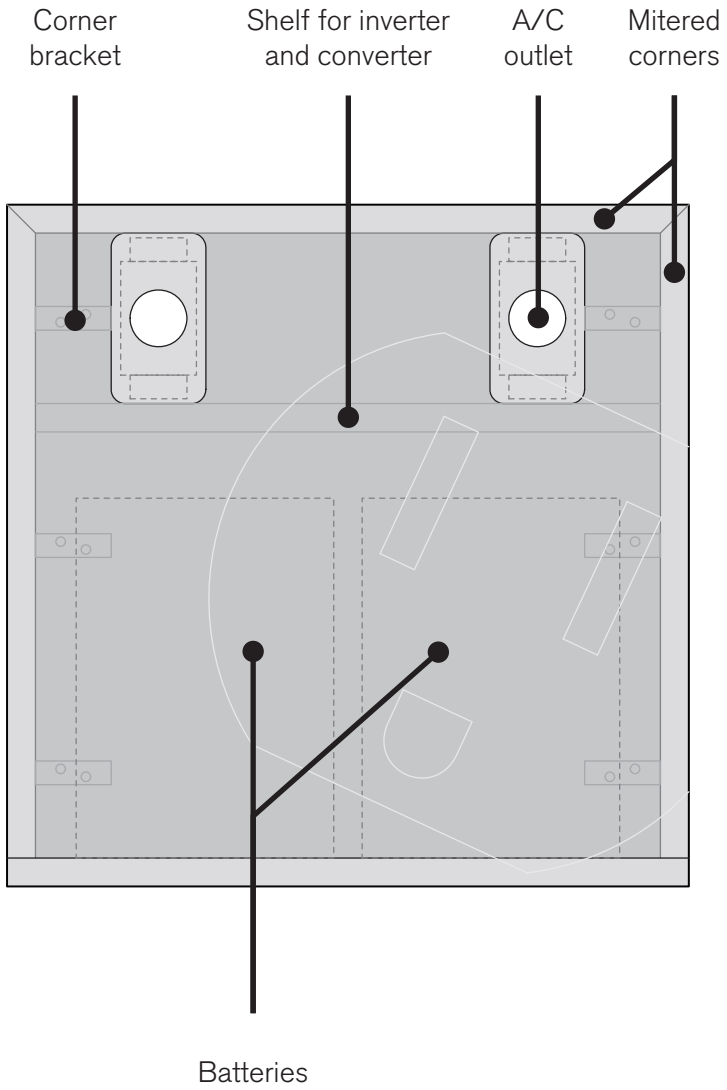
C

ASSEMBLY



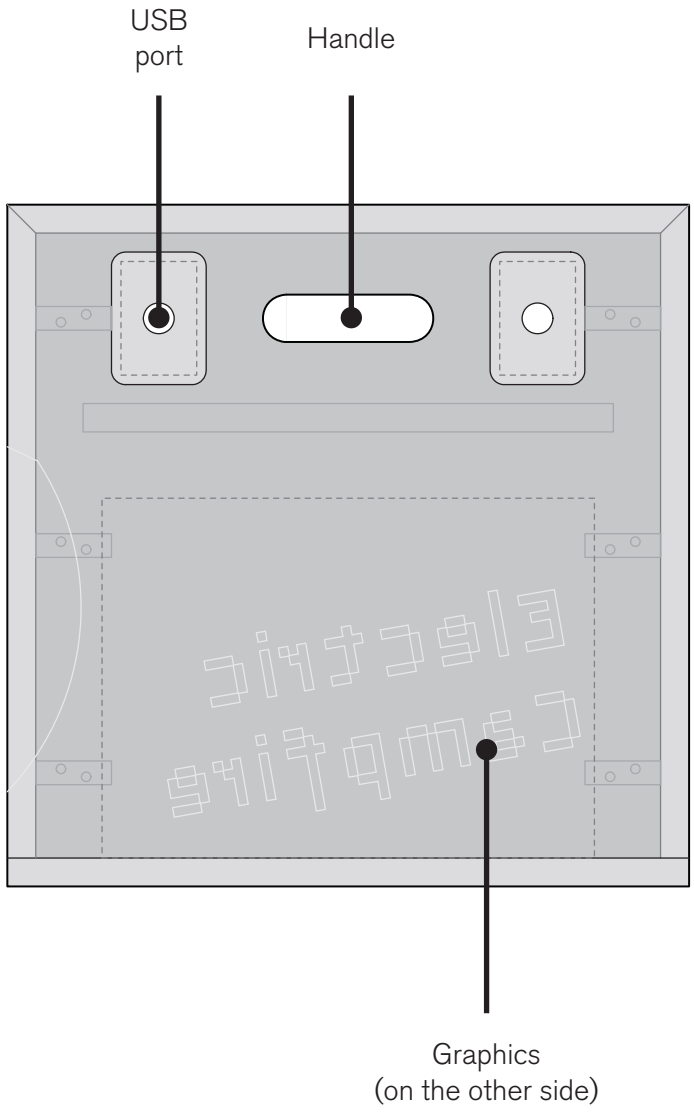
8. Place lid on top and you're done! When you need to recharge the batteries or perform any maintenance, lift the lid to pull out the recharger cord which can plug into any A/C outlet. In this version, the lid relies on gravity and the weight of the plywood to stay shut and retain a seamless appearance. You can reach through the handles to push the lid upward to remove it.

FEATURES AND PARTS



Triple outlet adapter	1	

ASSEMBLY



7. Connect USB cords and wires from outlet boxes. Again, tidiness is key; splice and cut cords to make them the appropriate length if you feel comfortable.

WHAT WE USED

While not exhaustive, this list outlines the major items used to make the Electric Campfire.

ITEM	QTY	DESCRIPTION
	4	Switch box We used a shallower box to save space: 1.5" deep x 3" x 2"
	4	15 Amp tamper resistant outlet
	4	USB mountable cable Mounting may require extra details specific to the cable you buy.
	1	4-gauge battery cable You will need 1 roll each of red and black cable.
	12	Lug terminals For 2 batteries. Add 4 more if you have a third battery. Cap the battery cable with the terminals

Progressive Dynamics PD 9200 Series Pendant Constantly monitors RV battery voltage for optimal recharging	1	
Progressive Dynamics PD9260CV Inteli-Power 9200 Series 60 Amp Converter/Charger	1	
Energizer 1100 Watt Power Inverter Converts 12V DC to 120 V AC	1	

ASSEMBLY

6. Place inverter and converter on shelf, strap through loops in a criss-cross to prevent shifting (again, optional).

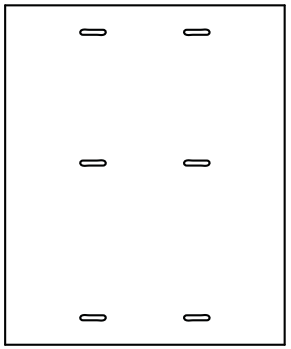
DESCRIPTION	QTY	ITEM
DieHard Marine-RV battery Group Size 31M Calculate power consumption to determine how many batteries are needed	2-3	
Progressive Dynamics PD 9200 Series Pendant Constantly monitors RV battery voltage for optimal recharging	1	
Progressive Dynamics PD9260CV Inteli-Power 9200 Series 60 Amp Converter/Charger	1	
Energizer 1100 Watt Power Inverter Converts 12V DC to 120 V AC	1	
Triple outlet adapter	1	

WHAT WE USED

ITEM	QTY	DESCRIPTION
	4	Lashing strap Optional for keeping batteries, charger, and inverter in place.
	4	L-shaped shelving hardware Used to accommodate a top shelf in the EC.
	20	Corner brace Mount as necessary to brace the inside of the EC.
	1	48” x 96” x 3/4” plywood Depending on the size of your EC, you can create the shell with a single piece of plywood.
	4	3” Swivel caster with brake Choose casters according to their bearing capacity.

L-shaped shelving hardware — 4

Used to accommodate a top shelf in the EC.



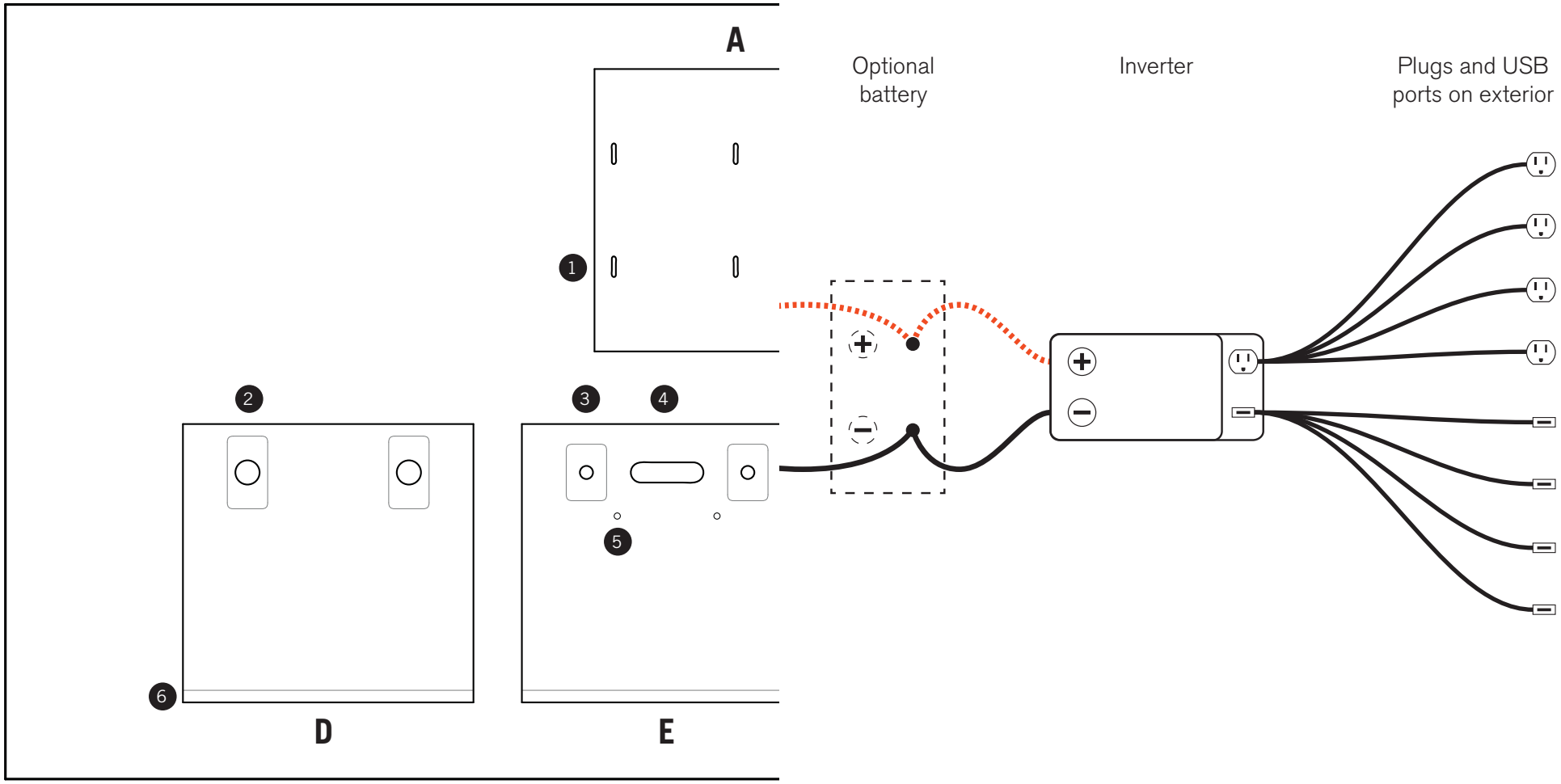
B

ASSEMBLY

5. Install upper shelf. The gaps on the sides will allow for wires to pass from below to the upper shelf. The slits were designed to accommodate straps but are not necessary.

DESCRIPTION	QTY	ITEM
Rustoleum High Performance Enamel Spray Safety orange	1	
Painter's tape Good for all-purpose applications but also helpful for applying graphics	1	
Polycrylic Apply two coats when your graphics are complete to seal and protect the wood	1	

PLYWOOD SHELL

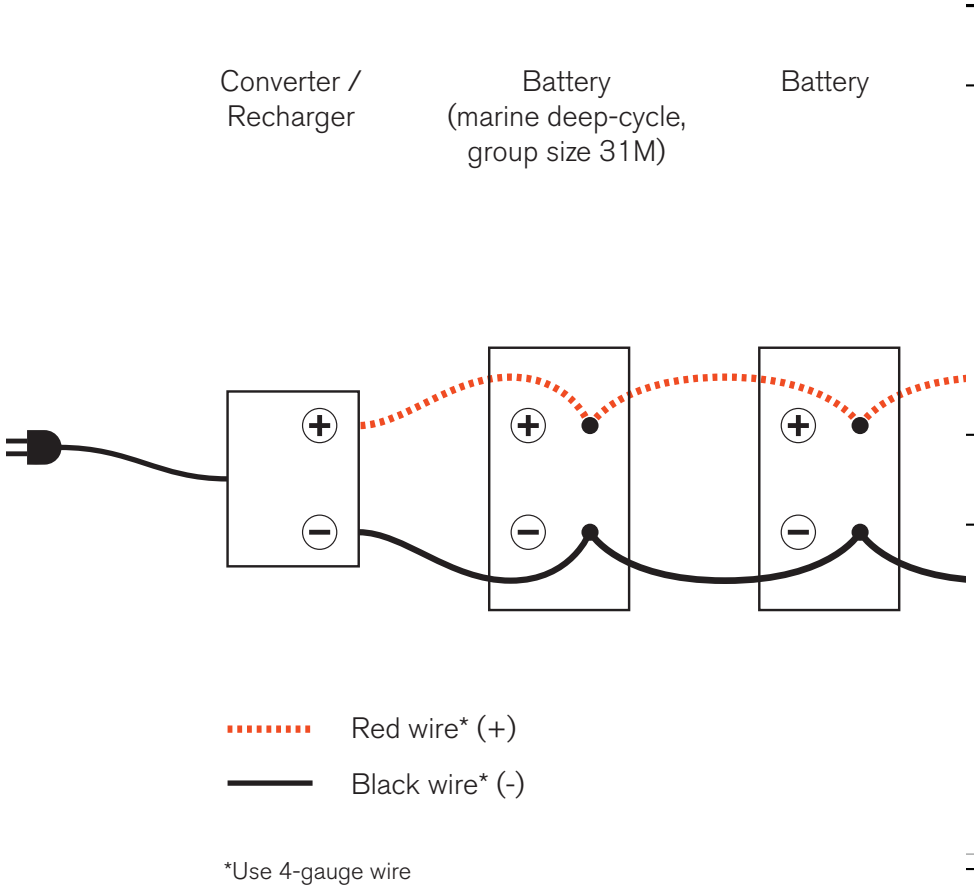


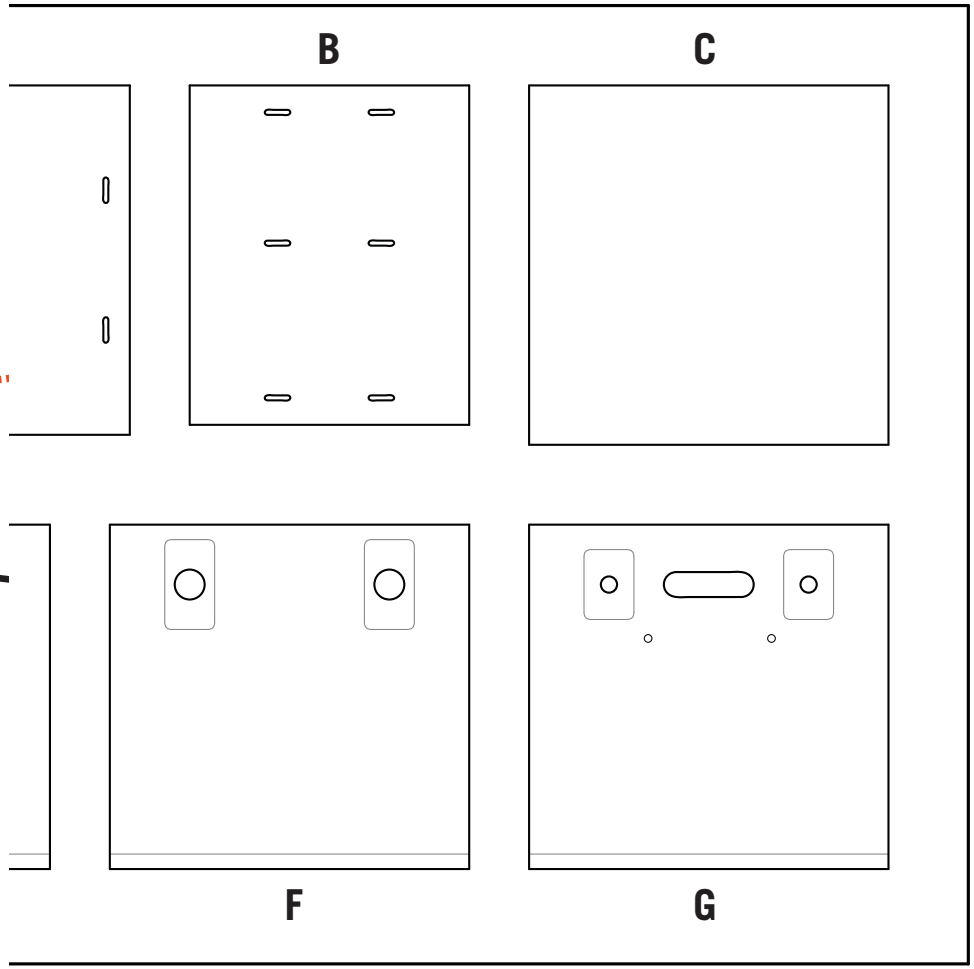
1. Slits to accommodate straps to secure batteries
2. (backside) Recessed area to accommodate plug box and face
3. (backside) Recessed area to accommodate USB connection
4. Handle
5. Holes drilled to accommodate shelf hardware
6. Groove for plywood sides to rest on bottom base

As space may be a premium in the EC, try and keep cords tidy. Try to buy cords of the appropriate length. Splitters are also useful for managing multiple cords.

A dry run of the entire circuit is highly recommended before beginning to install and integrate it with the outer shell.

ASSEMBLY - WIRING



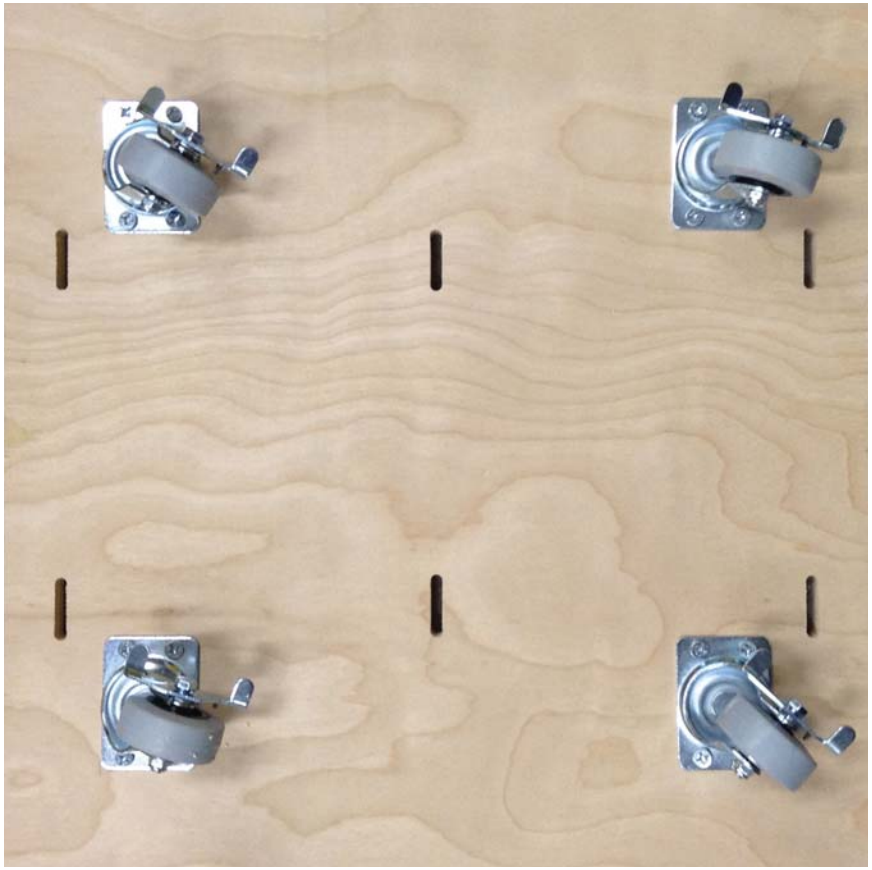


The converter allows the EC to be recharged through a plug. It's best to charge overnight during off hours. The 18-inch cubic Electric Campfire can accommodate 2 marine deep-cycle batteries, but more batteries can be added to the circuit for additional power capacity. In this version of the EC, the converter and inverter are on the top shelf and batteries below, but can be positioned in other ways as long as the circuit remains as seen above.

The plywood shell can be made with a single sheet of 3/4 in x 4 ft x 8 ft plywood. The Electric Campfire used Grade A plywood. As an 18-inch cube, the EC is the minimum size that can accommodate all the necessary parts.

The pieces were cut with a CNC (Computer Numeric Control) mill, but can also be cut with a table saw, manual mill, and standard woodshop tools. After milling, miter joints were cut on the table saw for seamless corners.

ASSEMBLY



1. Once pieces have been cut, you can begin assembling the box. Shown is the bottom of the Electric Campfire with casters attached 2" from the perimeter. Make sure the casters don't overlap with the slits that accomodate the straps.

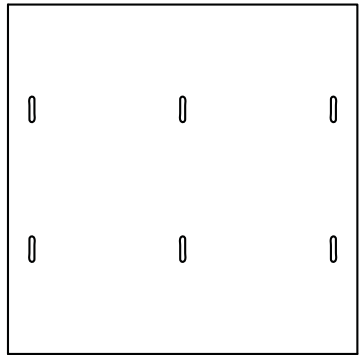
Switch box We used a shallower box to save space: 1.5" deep x 3" x 2"	4	
15 Amp tamper resistant outlet	4	
USB mountable cable Mounting may require extra details specific to the cable you buy.	4	
4-gauge battery cable You will need 1 roll each of red and black cable.	1	
Lug terminals For 2 batteries. Add 4 more if you have a third battery. Cap the battery cable with the terminals	12	

ASSEMBLY

4. Wire the batteries to one another and install the A/C outlets and USB ports. Be careful not to punch through the outside surface with screws and try to keep cords tidy. See next page for wiring details.

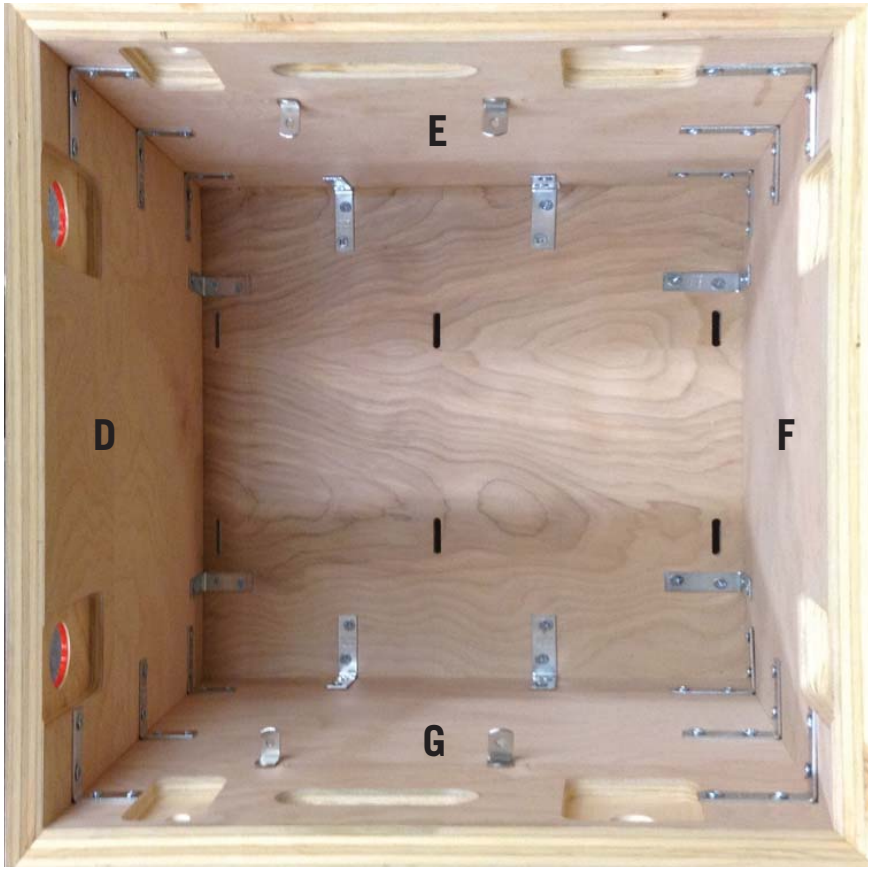
3" Swivel caster with brake — 4

Choose casters according to their bearing capacity.



A

ASSEMBLY

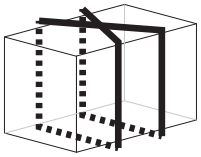


DieHard Marine-RV battery Group Size 31M Calculate power consumption to determine how many batteries are needed	2-3	
Lashing strap Optional for keeping batteries, charger, and inverter in place.	4	

2. Assemble box with mitered corners before attaching it to the bottom piece. Join their corners with glue, a nail gun and reinforce with brackets. Now is a good time to add graphics to the outside of the box, which was detailed in the previous spread. Insert shelf brackets to hold upper shelf. Next, attach to base, gluing, nailing and reinforcing with brackets. Note: you can get away with using fewer brackets; the amount used were for good measure, considering that the batteries weigh about 50 pounds each.

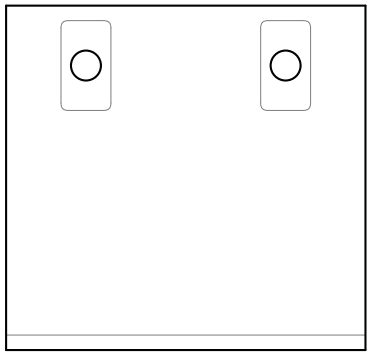
ASSEMBLY

3. Place batteries inside box. Strap through loops in a criss-cross to prevent shifting. The straps are optional in this case, considering the tight space and weight of the batteries.



Corner brace — 20

Mount as necessary to brace the inside of the EC.



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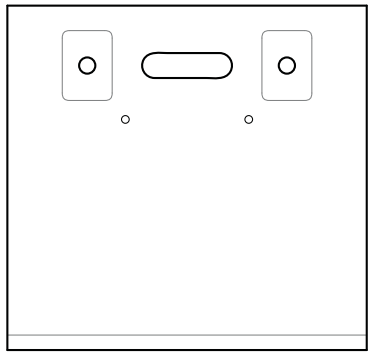

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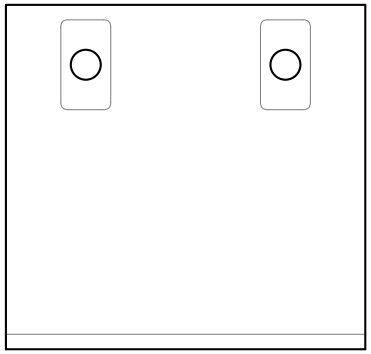

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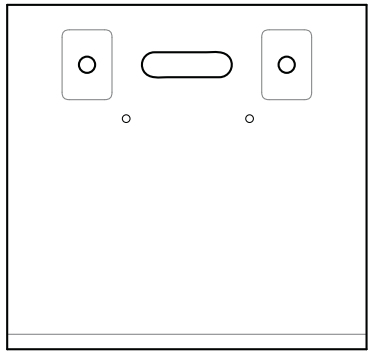
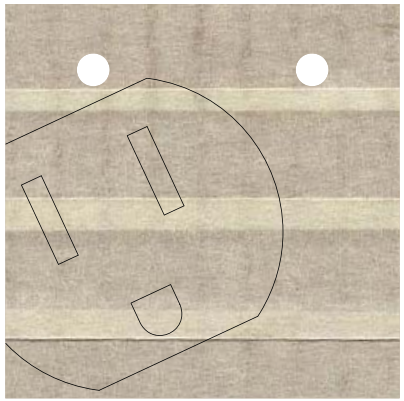
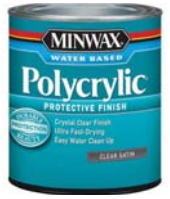


G

GRAPHICS



Rustoleum High Performance Enamel Spray Safety orange	1	
Painter's tape Good for all-purpose applications but also helpful for applying graphics	1	
Polycrylic Apply two coats when your graphics are complete to seal and protect the wood	1	

Depending on the graphics, painting is best done when the 4 sides are already assembled to get a consistent paint application. Graphics for the original Electric Campfire were made by spray paint and laser cut tape stenciling. Before applying graphics, sand and clean each surface until smooth. After paint job is finished, add the polycrylic sealant over the wood. Sand in between coats.

Original graphics can be downloaded at https://github.com/library-test-kitchen/electric-campfire.

Do tests often and apply in a ventilated space. When masking the graphic, overlap the tape layers to prevent bleeding through.