

INSTRUCTION MANUAL

Orion® Dynamo™ Pro 12

#2302 Rechargeable 12V DC Mobile Power Station

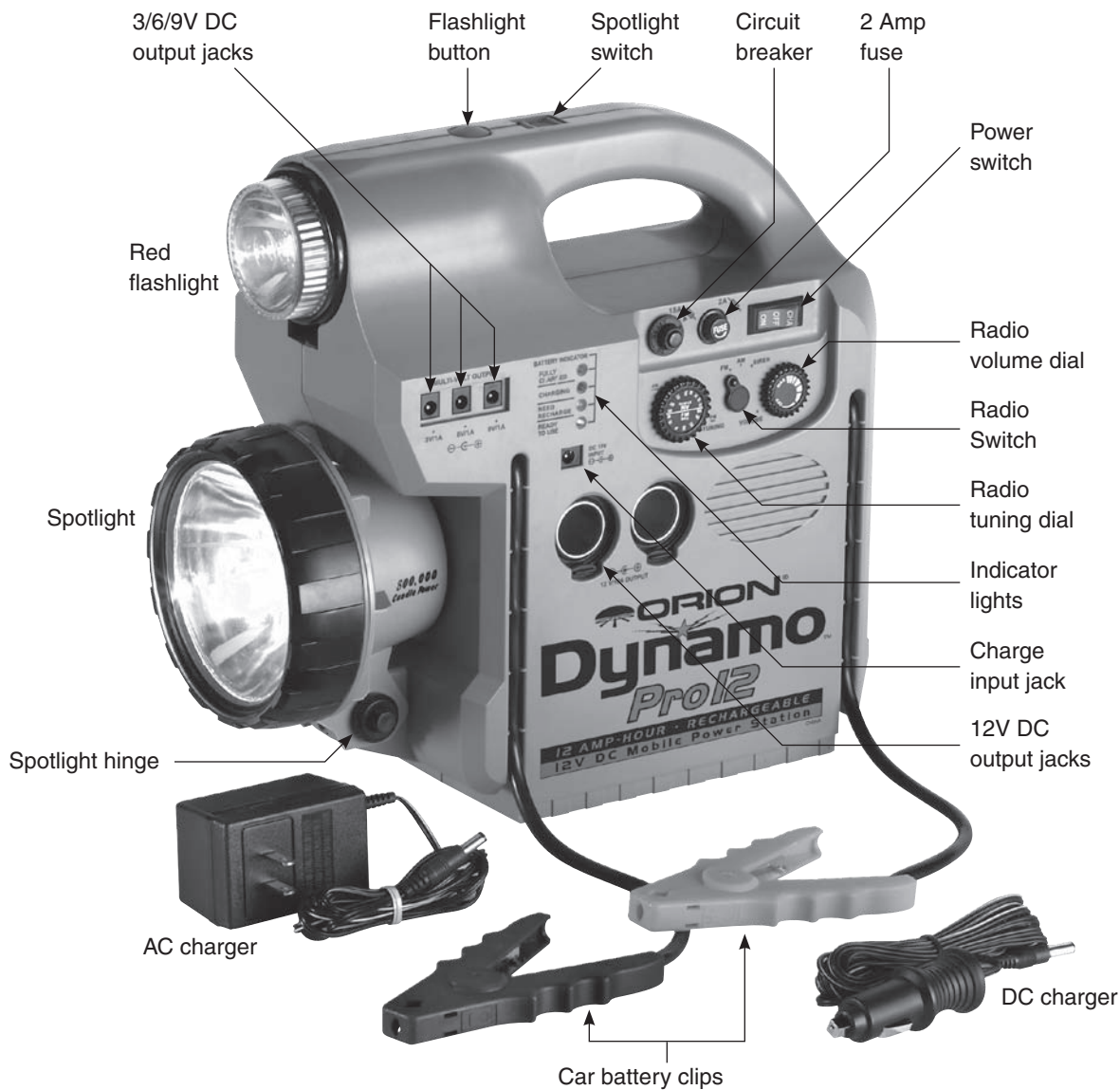


Figure 1. The Dynamo Pro 12 Rechargeable 12V DC Mobile Power Station.

Congratulations on your purchase of an Orion Dynamo Pro 12. The generous 12 amp-hour battery size provides ample power to run your telescope and accessories in a lightweight design for easy portability. In addition to powering your astronomical instruments, the Dynamo Pro 12 also serves as a power supply for a multitude of devices. It includes a red lens flashlight for night-vision preservation, as well as an 800,000-candlepower halogen spotlight. The built-in radio will keep you entertained while observing and informed during emergencies. The Dynamo Pro 12 can even charge a drained car battery!

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1. Operation

**Fully Charge the Dynamo before first use.
The initial charge may take up to 16 hours.**

Powering 12-Volt Devices

The Dynamo Pro 12 will operate up to two devices that are powered by a 12V DC car cigarette lighter-type plug. If your 12V DC device does not have a cigarette lighter-type plug, then you will need to purchase an adapter (contact Orion or your local electronics store). The tip of the plug will receive the positive charge (tip positive) from the Dynamo Pro 12, so make sure the device to be powered is also tip positive. If the device is tip negative, then an adapter is needed. (Some cigarette lighter-type plug adapters allow you to switch between tip positive and tip negative.) If both of the 12V sockets are being used simultaneously, the total amperage of the 12V devices together must not exceed 10 Amps.

Switch the power switch (Figure 1) to the "ON" position and the green "READY TO USE" power indicator LED should shine. Slide open the door to one of the 12V DC output jacks and insert the device's 12V power plug.

Powering 3/6/9-Volt Devices

The Dynamo Pro 12 has three separate output jacks that can be used respectively to power devices requiring 3, 6, or 9 volts DC and no more than 1 Amp. The jacks accept standard DC power plugs with a 2.1mm inner diameter and 5.5mm outer diameter. The output from these jacks is tip positive. Using more than one of the 3/6/9V output jacks at once is not recommended due to the 1 Amp power limit.

To use these jacks, simply turn the Dynamo Pro 12 power switch to the "ON" position and insert the device's plug into the appropriate output jack.

Operating the Flashlight

The flashlight located on the top of the Dynamo Pro 12 is a medium-power light that can be used to provide illumination to a small area. It has a red lens to preserve night vision under dark skies. The flashlight can also be removed from the body of the Dynamo Pro 12. Simply grab hold of the front of the flashlight, and pull it out. You will notice that the flashlight is tethered by a 10-foot long cable. For your convenience, there is a cable-winder built into the rear of the flashlight. To expose the cable-winder, fold back the rear cover of the flashlight. You will also notice that there is a magnet on the rear cover; this can be used to attach the flashlight to a metal surface for "hands-free" applications.

To operate the flashlight, the Dynamo Pro 12 power switch must be in the "ON" position. Press the flashlight button (Figure 1) once to produce a constant light. Pressing the button a second time will cause the flashlight to flash on and off steadily. Pressing the button a third time will turn the flashlight off.

Operating the Spotlight

The spotlight is an 800,000 candlepower halogen light. Although it has many useful applications, the use of such a powerful light at astronomical gatherings is not advised.

To operate the spotlight, the Dynamo Pro 12 power switch must be in the "ON" position. Flip the spotlight switch (Figure 1) to the "ON" position. The spotlight can be rotated about its hinge (Figure 1) for easy positioning of its beam. Simply take hold of the spotlight and move it to the position you want.

Operating the Radio

To use the radio, the power switch must be in the "ON" position. The radio switch (Figure 1) allows you to select between FM radio, AM radio, or the internal siren. The internal siren is for emergency situations.

To turn the radio on, rotate the volume dial clockwise until it clicks on. The tuning dial allows you to adjust the frequency to the desired radio station signal. To turn the radio off, rotate the volume dial counterclockwise until it clicks into the off position.

2. Recharging the Dynamo Pro 12

If the yellow "NEEDS CHARGING" LED indicator light is shining, the battery power is low and requires recharging. The battery can be recharged from an AC outlet or from a DC source, such as a car cigarette lighter.

Recharging the Dynamo Pro 12 with AC Current

Recharging the Dynamo Pro 12 with an AC current outlet requires the included AC adapter. Do not use substitute AC adapters. The AC adapter is stored in the compartment above the car battery clips.

Press the power switch into the "CHA", or charge position. Then plug the small end of the AC adapter into the charge input jack located below the LED Indicator panel, and plug the other end of the adapter into a 110V AC wall outlet. The red "CHARGING" LED light should come on indicating that the battery is charging.

Charging should take around 8-10 hours, depending upon how drained the battery is. The green "FULLY CHARGED" LED light should shine when the battery is fully charged. Unplug the adapter from the Dynamo Pro 12, and the "READY TO USE" LED should shine again once the power switch is in the "ON" position.

Recharging the Dynamo Pro 12 with DC Current

Recharging the Dynamo Pro 12 with DC current should be done with the cigarette lighter outlet in an automobile. The car's engine must be operating during charging. The DC recharging adapter is stored in the compartment above the car battery clips.

Press the power switch into the “CHA” position. Plug the small end of the DC adapter into the charge input jack located at the rear of the Dynamo Pro 12. Make certain the car engine is running, then plug the other end of the DC adapter into the cigarette lighter in the car. The red “CHARGING” LED light will come on indicating the battery is charging.

Charging should take about 5-8 hours. The green “FULLY CHARGED” LED light should shine when the battery is fully charged. Unplug the adapter from the Dynamo Pro 12, and the “READY TO USE” LED should shine again once the power switch is in the “ON” position.

3. Using the Dynamo Pro 12 to Start a Vehicle

The Dynamo Pro 12 can be used to recharge a drained car battery. It may not have sufficient power to charge a severely drained, or extremely large (greater than 4000cc engine), car battery. This function can be performed with the power switch in the ON or OFF position.

- 1) Attach the POSITIVE clip of the Dynamo Pro to the POSITIVE post of the vehicle battery.
- 2) Attach the NEGATIVE clip of the Dynamo Pro to the NEGATIVE post of the vehicle battery.
- 3) Leave the Dynamo Pro connected to your car battery for approximately 20 minutes.
- 4) Disconnect the Dynamo Pro from the NEGATIVE post of the vehicle battery.
- 5) Disconnect the Dynamo Pro from the POSITIVE post of the vehicle battery.

This should provide sufficient power to start your vehicle. Place the Dynamo Pro in a safe location away from the engine when starting your vehicle.

To avoid the risk of fire do not attempt to start your vehicle with the Dynamo Pro still connected to your car battery!

4. Storage and Maintenance

To optimize the lifetime of the Dynamo Pro 12, several steps should be taken for its proper storage and maintenance. Make certain the Dynamo Pro 12 power switch is in the “OFF” position before putting it in storage. Keep the Dynamo Pro 12 stored in a dry, cool area when not in use. Fully charge the Dynamo Pro 12 before putting it into storage. If you are going to store the Dynamo Pro 12 for long periods of time, you should occasionally recharge it (about every three months). Failure to do so will void your warranty.

Resetting the Circuit Breaker

If the power indicator LED light does not come on when you turn the power switch, the circuit breaker (Figure 1) will need to be reset. Turn the power switch to the “OFF” position and press the circuit breaker button to reset it. Keep in mind that if you are drawing more than 15 Amps through the 12V DC adapters you will always cause the circuit breaker to break.

Replacing the 2 Amp Fuse

If the fuse for the 3V/6V/9V DC power jacks should blow, it can be replaced with a new 2 Amp (5mm x 20mm long, 250 VAC, fast acting) fuse. Turn the power switch to the “OFF” position, then turn the fuse securing knob (Figure 1) in the indicated direction to free the old fuse. Replace it with the new fuse. Replace the fuse securing knob.

Replacing the Flashlight Bulb

Should the flashlight bulb break or burn out, it can be replaced with a 12V, 0.5A Krypton bulb, available at most hardware stores. Make certain the power switch is in the “OFF” position before replacing the bulb.

To replace the bulb, unthread the flashlight head by turning it counterclockwise. Replace the old bulb with the new bulb and thread the flashlight head back onto the flashlight.

Replacing the Spotlight Bulb

Should the spotlight bulb break or burn out, it can be replaced with an H3 12V 55W halogen bulb, available at most hardware stores. Make certain the power switch is in the “OFF” position before replacing the bulb.

To replace the bulb, unthread the spotlight head by turning it counterclockwise. Make certain the old bulb and the reflector have had plenty of time to cool down before you touch either one. Separate the reflector from the bulb by removing the clip shown in Figure 2. The entire bulb assembly, including its cord (color white), is removed by detaching the end of the cord from the connecting clip within the spotlight housing. Replace the bulb assembly, and reassemble the spotlight.



Figure 2. Remove the clip to separate the bulb assembly from the reflector.

5. Specifications

Primary DC output: Two 12V cigarette-lighter type sockets, maximum 10 Amp total, tip positive

Primary DC output regulation: 15 Amp circuit breaker

Secondary DC output: 3V, 6V, and 9V output jacks, maximum 1 Amp output, tip positive

Secondary DC output regulation: 2 Amp fuse. (5mmx20mm long, 250 VAC, fast acting)

Internal battery: 12V DC/12Ah rechargeable sealed lead-acid battery

Recharging current requirements: 120v, 60Hz AC or 14.5 to 15.5V DC

Flashlight: 12V 0.5 A Krypton bulb, with red lens

Spotlight: H3 12V 55W Halogen bulb, 800,000 candlepower, angle adjustable

Operating temperature: 32° F to 86°

Weight: 13.5 lbs

Dimensions: 12.6" x 5.2" x 11.9"

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.

Changes of modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.
 - A shielded cable must be used when connecting a peripheral to the serial ports.
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