

Autowerks **Training inc**

AWPS-90 Operators and Instruction manual



Specifications, Operation, Mounting and precautions are found within this manual.
Read the entire manual before operating this device.

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Low Ripple Power Supply

The Autowerks AWPS-90 Power Converter/Battery Charger converts 120 volts nominal A/C to 13.6 volts D/C. As a power supply, its tightly controlled regulation allows the user to operate any 12 volt nominal D/C load up to the converter's rated output current with extremely low A/C ripple. This power supply is highly recommended for live servicing and on-board vehicle programming.

Low Ripple Battery Charger

As a battery charger, the AWPS-90 converter will maintain the battery and deliver its full-rated current when battery capacity falls sufficiently low. The voltage is set to deliver its maximum current for the necessary period of time that minimizes undue stress to the battery caused by heating of its cells. This helps to ensure the longest possible life of the battery. Over time and as the battery nears its full capacity, the converter will float-charge the battery to prevent self-discharge of its cells. The AWPS-90 is also recommended for maintain an entire gang of batteries in the service centre.

Protection Features

The AWPS-90 Power Converter/Battery Charger is designed with high quality components to help ensure years of continuous use. The unit is protected by multiple protection features for a long, trouble-free life.

(A) Reverse Battery Polarity Protection.

(B) Brown-Out Input Protection.

(C) Over-Current Protection - cycle by cycle peak limiting as well as rated current limiting to maximize the life of the converter.

(D) Over-Temperature Protection. In addition, it is designed with a unique "proportional" dual fan control circuit. Fan speed is directly proportional to the converter's internal ambient temperature. This enables the fans to turn on and off very slowly, minimizing unwanted fan-starting noise.

AWPS-90 Specifications

DC Output Voltage (No Load) approx.	13.6V (DC)	Short Circuit Protection	Yes
Output Voltage Tolerance (No Load)	+ or - .7%	Overload Protection	>100%
Output Amperage, Max Continuous	90 Amps	Line Regulation	100 mV rms
Output Voltage (Full Load) approx.	>14.6V (DC)	Load Regulation	<1.5%
Maximum Power Output, Continuous	1000 Watts	Fan Control (Dual)	Dual Proportional
Ripple and Noise	<150 mV rms	Thermal Protection	YES
Input Voltage Range	108 - 132 AC	Working Temperature Range	0 - 40C
Input Voltage Frequency	47-63	Storage Temperature	-20 to 80C
Maximum AC Current (@108Vac)	21 Amps	Withstand Voltage	1240V @ leads
Typical Efficiency	>80%	Dimensions in Inches and Centimeters	13" x 6.5" x 3.4" 33.03 x 16.51 x 8.64 cm
Max Inrush Current, Single Cycle	50 Amps	Weight in pounds and KG	7.8 lbs 3.54 kg



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WARRANTY

The AWPS-90 Power Converters/Battery Chargers are warranted from defects in materials or workmanship for two years from date of retail purchase, and limits the remedies to repair or replacement. This warranty is valid only in the continental United States and Canada. For complete warranty details, contact the following:
Autowerks Training Inc. or Euro Systems Automotive Training Inc.

INSTALLATION GUIDELINES – Please read carefully

There are no components within the AWPS-90 Power Converters/Battery Chargers that, in their normal operation, produce arcs or sparks. However, all electronic devices have some potential for generating sparks in the event of failure. Therefore, never install this device in the same compartment with flammable items such as gasoline or batteries.

MOUNTING LOCATION

The AWPS-90 Power Converter/Battery Charger can be mounted in any position within an enclosed or interior compartment. Users must provide sufficient air space to allow unrestricted airflow in and around the unit at all times.

INSTALLATION

Disconnect the positive side of the battery before installation. Connect the positive (red) and negative (black) terminal lugs to battery or load. Always use the proper size wire based on the amperage of the converter and the battery. When connecting to a battery, a breaker should be installed within 18" of the battery, connecting the battery positive to the line side of the breaker, and the AWPS-90 unit to the load side. Connect "Chassis Bonding Lug" on the AWPS-90 unit to vehicle chassis or other grounding source.

120 VOLT A.C. INPUT

Plug the unit A/C input cord into a 120 volt 3 wire grounded source. See chart for maximum current draw and required input voltages.

REVERSE POLARITY FUSES

The AWPS-90 Battery Charger/Power Supply is protected against reverse polarity on the DC output. If a battery or the unit is hooked up incorrectly, the fuses will blow and can be easily replaced. Always use the same size and style fuse that came with the converter. To change the fuses, use a screwdriver to loosen the screws and remove the fuses. Always replace the fuses with the same type and rating. After inserting the new fuses, tighten the screws firmly. Apply 5 inch-pound maximum torque. **DO NOT OVERTIGHTEN.**

TWO-STEP VOLTAGE JACK or Switch (If enabled)

The two-step voltage switch allows switching from a long-term float voltage of 13.6vdc up to 14.6vdc. When the included dual voltage switch is enabled, the voltage rises to 14.6vdc for occasional fast charging. When the switched off, the voltage drops to 13.6vdc to reduce battery water loss. **WARNING:** To avoid battery damage, disengage the Dual Voltage Switch when quick-charging is complete. **NOTE:** If the unit is equipped with an internal IQ4 smart charger, two-step charging is not needed and the Dual Voltage Switch is disabled.

Notices, Cautions and Warnings

CAUTION AND IMPORTANT: All operators and users of this device must follow state or provincial safety rules when installing or using this device. Maintain this manual with the device at all times.

Warning: Do not smoke or have this device and or battery near or in contact with open flames. Battery posts, terminals and any related accessories that contain lead and or lead compounds, known to the state of California, the continental US and Canada are cancer causing with birth defects and other reproductive impairments. Wash your hands after handling this device and battery related connections.

Be aware that while working with Lead-Acid batteries, it is extremely dangerous. Batteries produce explosive gases during normal battery and charging operations. All precautions must be understood and applied while the battery is in a charged or discharged state. Follow this operating manual and read all safety and operating instructions.

NOTE:

Remove the wall connection when this device (AWPS-90) is not in use at all times.

Use the supplied ON – OFF switch at all times!

Connecting:

Always connect the positive cable first, negative cable second and wall connection last.

Disconnecting:

Always power OFF and disconnect the wall connection first, ground second and positive last.

- I. Read and follow the battery manufacturer's safety instructions including any and all test equipment that is intended to be used while testing battery, battery charging and diagnostic systems. This must also include on-board battery management diagnostic and maintenance systems.
- II. Read all precautions for these systems and test equipment involved in battery, battery charging and diagnostic systems.
- III. To reduce the risk of personal injury, employee injury, customer injury and vehicle damage, charge **LEAD-ACID** type rechargeable batteries **only** with this device. If this device is used on other types, these batteries may burst causing severe personal injury and damage to property.
- IV. If you the operator is not certain of the type of battery, contact the manufacturer or reseller of that type of battery.
- V. If you the operator is not certain of the type of battery recharging procedures, contact the manufacturer or reseller of that type of battery.
- VI. Never use unauthorized or untested adaptors that are not recommended from the battery manufacturer, testing manufacturer for testing or charging. Unauthorized or untested use of such devices may result in serious personal injury or property damage.
- VII. Always use inspected and secured wall connections for this device (AWPS-90).
- VIII. Position this device (AWPS-90) away from moving objects, away from water and other contaminates and in a position that is stable and secure.
- IX. Avoid placing this device (AWPS-90) in traffic areas keeping in mind the attaching cables must not be stepped on, tripped over, rolled over, pinched or cut.

- X. Avoid placing this device (AWPS-90) on hot engines, hot radiators or near exhaust systems. This system must be protected from all sources of heat, oil and other contaminants.
- XI. If this device (AWPS-90) is damaged or dropped in any fashion, do not use until it is inspected or repaired by qualified service personal.
- XII. Do not open this device for any service, maintenance or repair unless by qualified service personal. Incorrect service or repair may cause serious personal injury or property damage. All device damage **MUST BE REPAIRED!**
- XIII. Never overcharge a battery or operate an overcharged battery.
- XIV. Charge all batteries in dry, well ventilated areas.
- XV. Use of an extension cord should not be considered unless it is absolutely necessary. The extension must be of the same grade and quality as the device (AWPS-90).
- XVI. Notice and inspect all facility First Aid Stations. Keep plenty of clean, fresh water with soap on hand, for battery acid contact to eyes, skin and clothing. This also includes cleaning any equipment that is in contact with the acid. Use manufacturer instructions for cleaning and neutralizing battery acid.
- XVII. Wear recommended eye and clothing protection. Wear rubber shoes, protect against acid spillage and sprays. Avoid touching eyes and skin when working with battery acid and or battery connections. This includes terminal cleaning.
- XVIII. If in contact with battery acid, seek medical attention immediately.
- XIX. Be cautious of short circuiting any and all live battery connections.
- XX. Be cautious of personal clothing and jewelry when working with any and all electrical or electronic components and circuits. Serious personal injury and property damage may result.
- XXI. Use distilled water only when refilling batteries. Follow the battery manufacturer's specifications and precautions when attempting any refill procedure.
- XXII. Never charge a non tagged battery. Never install a non tagged battery.
- XXIII. Refer to the vehicle owner's manual for any battery replacement or adaptation.
- XXIV. Refer to the manufactures cautions and restrictions when on-board charging needs to be accomplished that have battery management systems.
- XXV. Never alter any installed component, adjustment or program within the device (AWPS-90).
- XXVI. Use qualified staff when using this device. Use qualified staff when testing battery, charging and energy management systems.
- XXVII. The device (AWPS-90) is **NOT** a toy.

Minimum AWG Size for Extension Cords Attached to Battery Chargers

AC Input Rating - Amperes		Extension AWG Size			
		Cord length in meters and (feet)			
= to or > than	Less than	7.6 (25)	15.2 (50)	30.5 (100)	45.6 (150)
8	10	18	14	12	10
10	12	16	14	10	8
12	14	16	12	10	8
14	16	16	12	10	8
16	18	14	12	8	8