



# HUSKY

The Toughest Name In Tools

HSK043HD

## 750 WATT POWER INVERTER

**NEW**  
SOFT START  
TECHNOLOGY



### OWNER'S MANUAL & WARRANTY INFORMATION

THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING SAFETY, OPERATION, MAINTENANCE AND STORAGE OF THIS PRODUCT. BEFORE USE, READ AND UNDERSTAND ALL CAUTIONS, WARNINGS, INSTRUCTIONS AND PRODUCT LABELS, PLUS YOUR VEHICLE'S BATTERY MANUFACTURER GUIDELINES. FAILURE TO DO SO COULD RESULT IN INJURY AND/OR PROPERTY DAMAGE.

**4140 SW 28TH WAY, FT. LAUDERDALE, FL 33312**  
**TEL 954-584-4446 • FAX 954-584-5556**

## **IMPORTANT SAFETY INSTRUCTIONS**

To ensure reliable service, your power inverter must be installed and used properly. Please read the installation and operating instructions thoroughly prior to installation and use. Pay particular attention to the WARNING and CAUTION statements in this manual. The CAUTION statements advise against certain conditions and practices that may result in damage to your inverter. The WARNING statements identify conditions or practices that may result in personal injury.

***Read All Instructions Before Using This Power Inverter!***

### **WARNINGS:**

*TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, EXPLOSION OR INJURY:*

- Do not connect to AC distribution wiring
- Remove appliance plug from outlet strip or turn off inverter before working on the appliance. Multiple outlet power strips with switches and circuit breakers only interrupt power to the "hot" receptacle terminals. The "neutral" terminals remain powered with respect to the "ground" terminals
- Do not make any electrical connections or disconnections in areas designated as IGNITION PROTECTED. This includes DC cigarette lighter type plug connections, and ring terminal connections
- This is not a toy - keep away from children

### **CAUTIONS:**

- Do not use with positive ground electrical systems (the majority of modern automobiles, RVs, trucks and boats are negative ground). Reverse polarity connection will result in a blown fuse, may cause permanent damage to the inverter and will void warranty
- This inverter will not operate high wattage appliances or equipment that produce heat, such as hair dryers, microwave ovens and toasters
- Grounding the Neutral will cause the inverter to shut down. Do not operate this inverter if it is wet. Do not install in engine compartment - install in a well ventilated area
- This inverter is not tested for use with medical devices

### **IMPORTANT CABLE INFORMATION**

Substantial power loss and reduced battery operating time results from inverters installed with cables that are not able to supply full power. Symptoms of low battery power can result from cables that are either excessively long or an insufficient gauge. Marine installations are also subjected to vibration and stresses that exceed those of other mobile installations. Therefore, the installer/operator should be especially aware of the requirements to maintain secure, tight, water-resistant electrical connections and to provide for strain relief for DC cables and appliance wiring. Cable insulation must be the appropriate type for the environment.

## CONTENTS

1. INTRODUCTION .....	4
2. CONTROLS, INDICATORS AND CONNECTORS .....	4,5
3. HOW YOUR INVERTER WORKS .....	5
3.1 Principal of Operation .....	5
3.2 The Power Inverter Output Waveform .....	6
4. INSTALLATION.....	6
4.1 Power Source Requirements .....	6
4.2 Connection to Power Source.....	7,8
4.3 Connection to Load .....	8,9
4.4 Placement of Inverter .....	9
5. OPERATING TIPS .....	10
5.1 Rated Versus Actual Current Draw of Equipment.....	10
5.2 Battery Operating Time.....	10
6. PROTECTIVE FEATURES OF INVERTER .....	11
7. COMMON PROBLEMS .....	12
8. TROUBLESHOOTING .....	12,13
9. FUSE REPLACEMENT .....	13
10. SPECIFICATIONS .....	14
11. GOLD SEAL WARRANTY .....	14,15,16

## **1. INTRODUCTION**

Your new Husky POWER INVERTER is one in a series of the most advanced DC to AC inverters available. With proper care and appropriate usage, it will give you years of dependable service in your car, truck, RV or boat.

The POWER INVERTER supplies 750 watts of continuous power, with a 1500 watt peak, in the form of two household-type outlets that are ready to deliver 110 volt AC power whenever and wherever you need it! The heavy-duty inverter has enough power to run most household or electronic appliances. It also comes equipped with battery clips to handle higher amperage/load applications, such as power tools, stereo amplifiers, vacuums, etc. Added safety features include automatic shutdown and a low battery alarm to prevent damage to your battery.

This Power Inverter is configured with the latest Soft Start Technology (SST). Before introduction of Soft-Start, high start-ups currents from large inductive loads could shut down the inverter. Soft Start improves inverter operation. Three major features incorporated in SST include: first, gradual voltage ramp-up during inverter start-ups. This eliminates failed cold starts under load. Second, output that momentarily dips in voltage and quickly recovers to allow large motorized loads to start. This eliminates almost all shutdowns from momentary overloads. Last, the inverter automatically restarts when an overload that causes inverter shutdown is removed. Previously, manual reset was required.

This power inverter also incorporates a new cooling technology that directly benefits our customers. The new design more efficiently cools the power transistors, and combined with Soft Start, dramatically increases reliability and the life of the product.

Given proper care and appropriate use, your inverter is covered by a 2-year initial warranty. You may extend the warranty an additional two full years by paying a small fee. See the Warranty Information at the end of this manual.

## **2. CONTROLS, INDICATORS AND CONNECTORS**

Figure 1 details the front panel of the inverter. The front panel provides two LED indicators. A green LED shows proper operation when lit. The red LED shows inverter shutdown from overload, over voltage or over temperature. Power is supplied through two grounded standard North American outlets. Outlets accommodate either two or three pin AC plugs. An On/Off Switch turns the inverter circuitry On and Off. The switch is used to force a reset of inverter circuits if it is switched Off, then On.

## FIGURE 1

1. RED SHUT DOWN LED
2. GREEN OPERATING LED
3. 2 (110) RECEPTACLES
4. ON/OFF SWITCH



## FIGURE 2

1. HIGH SPEED COOLING FAN
2. (+) DC POWER CONNECTIONS
3. (-) DC POWER CONNECTIONS



## 3. HOW YOUR HUSKY INVERTER WORKS

The inverter converts low voltage DC (direct current) from a battery or other power source to standard 110 volt AC (alternating current) household power.

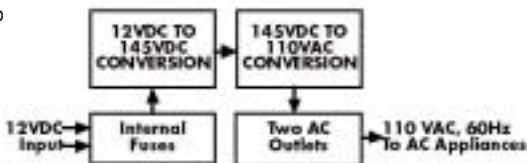
### 3.1 PRINCIPLE OF OPERATION

The inverter converts power in two stages. The first stage is a DC-to-DC conversion process that raises the low voltage DC at the inverter input to 145 volts DC. The second stage is the actual inverter stage that converts the high voltage DC into 110 volts, 60 Hz AC.

The DC-to-DC converter stage uses modern high frequency power conversion techniques that have replaced the bulky transformers found in less technologically-advanced models. The inverter stage uses advanced power MOSFET transistors in a full bridge configuration. This ensures excellent overload capability and the ability to operate reactive loads like lamp ballasts and small induction motors.

## FIGURE 3

Principle of Op

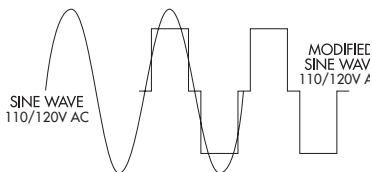


## 3.2 THE POWER INVERTER OUTPUT WAVEFORM

The AC output waveform of the POWER INVERTER is known as “modified sine wave”. It is a waveform that has characteristics similar to the sine wave shape of utility power. This type of waveform is suitable for most AC loads, including linear and switching power supplies used in electronic equipment, transformers, and motors.

The modified sine wave produced by the POWER INVERTER has an RMS (root mean square) voltage of 110 volts, which is the same as standard household power. Most AC voltmeters (both digital and analog) are sensitive to the average value of the waveform rather than the RMS value. They are calibrated for RMS voltage under the assumption that the waveform measured will be a pure sine wave. These meters will not read the RMS voltage of a modified sine wave correctly. They will read about 20 to 30 volts low when measuring the output of the inverter. For accurate measurement of the output voltage of this unit, use a true RMS reading voltmeter such as a Fluke 87, Fluke 8060A, Fluke 77/99 series, Beckman 4410, or Triplet 4200.

**FIGURE 4**



Modified Sine Wave and Sine Wave Comparison

## 4. INSTALLATION

### 4.1 POWER SOURCE REQUIREMENTS

The power source must provide between 11 and 14.5 volts DC and must be able to supply the necessary current to operate the load. The power source may be a battery or a well-regulated DC power supply. To obtain a rough estimate of the current (in amperes) the power source must deliver, simply divide the power consumption of the load (in watts AC) by 10.

Example: If a load is rated at 750 watts AC, the power source must be able to deliver:  $750 \text{ divided by } 10 = 75 \text{ amperes}$

**CAUTION:** The POWER INVERTER must be connected only to batteries with a nominal output voltage of 12 volts. The unit will not operate from a 6 volt battery and will sustain permanent damage if connected to a 24 volt battery.

## 4.2 CONNECTION TO POWER SOURCE

The POWER INVERTER comes equipped with battery clip cables for connection to the power source.

**CAUTION:** Do not use with positive ground electrical systems (the majority of modern automobiles, RVs, and trucks are negative ground).

To operate at full 750 watts output, either use the battery clip cable (supplied) or directly wire to the power source with user supplied wire and fuse. Use wire #8AWG for lengths of four feet or less and #6 AWG for lengths to 10 feet.

**CAUTION:** Reverse polarity connection will result in a blown fuse and may cause permanent damage to the inverter.

### *Connecting to a Power Source Using Provided Cables:*

Use the provided cables to connect the POWER INVERTER directly to the 12 volt power source using the following guidelines:

1. Check to be sure the POWER INVERTER power switch is turned off and that no flammable fumes are present.
2. Connect the black cable to the black post marked “(-)” on the back of the inverter. Connect the battery clip to the negative terminal of the battery.
3. Connect the red cable to the red post marked “(+)” on the back of the inverter. Connect the battery clip to the positive terminal of the battery.
4. Check to be sure that all connections between battery clips and terminals are secure.

### *Direct Hardwiring to Power Source:*

Use #8 AWG wire if the inverter to power source connection is 4 feet or less. For longer cable lengths use #6 AWG wire. In either case, protect the positive (+) wire from shorts by installing a 150 to 200 Amp fuse or circuit breaker close to the DC power source (battery) terminal.

1. Check to be sure the inverter's power switch is turned off and that no flammable fumes are present.
2. Identify the positive (+) and negative (-) DC power source (battery) terminals.
3. Install a fuse holder or breaker close to the positive (+) terminal of the DC source (battery).
4. Connect a length of wire on one side of the fuse holder or circuit breaker. Connect the other end of the wire to the Positive (+) terminal of the inverter.
5. Connect a length of wire between the inverter's negative (-) terminal and the DC power source negative (-) terminal.
6. Connect a short length of wire to the other terminal of the fuse holder or circuit breaker. Mark it "POSITIVE" or "+".
7. Connect the free end of the fuse or breaker wire to the positive terminal of the DC power source (battery).
8. Insert a 150 to 200 Amp fuse in the fuse holder.
9. Test the inverter by turning it on and plugging in a 100 watt lamp or equipment.
10. If the inverter is not properly operating, then refer to the troubleshooting sections of this manual.

**CAUTION:** Loose connectors may cause overheated wires and melted insulation. Check to make sure you have not reversed the polarity. Damage due to reversed polarity is not covered by our warranty.

### 4.3 CONNECTION TO LOAD

The POWER INVERTER is equipped with dual standard North American AC power receptacles. Plug the cord from the equipment you wish to operate into the AC receptacle(s). The green LED indicator lights to indicate that the inverter is functioning. Make sure the combined load requirement of your equipment does not exceed 750 watts.

The POWER INVERTER is engineered to be connected directly to standard electrical and electronic equipment in the manner described above. Do not connect the Power Inverter to household or RV AC distribution wiring. Do not connect the Power Inverter to any AC load circuit in which the neutral conductor is connected to ground (earth) or to the negative of the DC (battery) source.

**WARNING:** Do not connect to AC distribution wiring!



## **CAUTION: RECHARGEABLE APPLIANCES**

Certain rechargeable devices are designed to be recharged only by plugging them directly into an AC receptacle. These devices may damage the inverter. Do not use the inverter to recharge items that can be plugged directly into an AC receptacle.

This problem does not occur with the majority of battery-operated equipment. Most of these devices use a separate charger or transformer that is plugged into an AC receptacle. The POWER INVERTER is easily capable of running most chargers and transformers.

## **4.4 PLACEMENT OF THE INVERTER**

For best operating results, the inverter should be placed on a flat and/or solid surface. A power cord measuring 3 feet (1.0 meter) has been provided for easy positioning of the inverter. The inverter should only be used in locations that meet the following criteria:

**DRY** - Do not allow water and/or other liquids to come into contact with the POWER INVERTER.

**COOL** - Ambient air temperature should be between 30° F (-1° C) non-condensing, and 105° F (40° C). Do not place the inverter on or near a heating vent or any piece of equipment which is generating heat above room temperature. Keep the inverter away from direct sunlight, if at all possible.

**VENTILATED** - Keep the area surrounding the inverter clear to ensure free air circulation around the unit. Do not place items on or over the inverter during operation. A fan is helpful if the inverter is operating at maximum power outputs for extended periods of time. The unit will shut down if the internal temperature exceeds 90° C. The unit will restart after it cools.

**SAFE - Do not use the inverter near flammable materials or in any locations that may accumulate flammable fumes or gases.**

## 5. OPERATING TIPS

### 5.1 RATED VERSUS ACTUAL CURRENT DRAW OF EQUIPMENT

Most electrical tools, appliances and audio/video equipment have labels that indicate the power consumption in amps or watts. Be sure that the power consumption of the item you wish to operate is rated at 750 watts or less (If the power consumption is rated in amps AC, simply multiply by the AC volts (110) to determine the wattage). The inverter has overload protection, so it is safe to try to operate equipment rated at 750 watts or less. The inverter will shut down if it is overloaded. The overload must be removed before the inverter will restart. Resistive loads are the easiest for the POWER INVERTER to run. However, larger resistive loads, such as electric stoves or heaters, usually require more wattage than the POWER INVERTER can deliver on a continuous basis. Inductive loads, such as TV's and stereos, require more current to operate than do resistive loads of the same wattage rating. Induction motors, as well as some televisions, may require 2 to 6 times their wattage rating to start up. The most demanding in this category are those that start under load, such as compressors and pumps. Testing is the only definitive way to determine whether a specific load can be started and how long it can run. The unit will simply shut down if it is overloaded. To restart the unit after a shutdown due to overloading, remove the overload.

**CAUTION:** This inverter will not operate high wattage appliances or equipment that produce heat, such as hair dryers, microwave ovens, and toasters.

### 5.2 BATTERY OPERATING TIME

With a typical vehicle battery, a minimum operating time of 2 to 3 hours can be expected. In most instances, 5 to 10 hours of operating time is achievable. However, Husky recommends that the operator start the vehicle every 2 to 3 hours to recharge the battery system. This will guard against any unexpected shut-down of the equipment and will ensure that there is always sufficient battery capacity to start the vehicle's engine. The inverter will sound it's alarm when DC voltage drops to 10.6V.

The inverter may be used whether or not the vehicle's engine is running. However, the inverter may not operate while the engine is starting since the battery voltage can drop substantially during cranking. The inverter draws less than 0.3 ampere from the battery when it is not supplying power to a load. In most instances, the inverter can be left connected to the battery when not in use since it draws so little current. However, if the vehicle is to remain unused for several days, disconnect the inverter from the battery.

## 6. PROTECTIVE FEATURES OF THE INVERTER

Your POWER INVERTER monitors the following potentially hazardous conditions:

**Low Battery Voltage** - This condition is not harmful to the inverter but could damage the power source. An audible alarm will sound when input voltage drops to 10.6. The POWER INVERTER automatically shuts down when input voltage drops to 10.0 volts. When the condition is corrected, the unit may be restarted.

**Over Voltage Protection** - The POWER INVERTER will automatically shut down when the input voltage exceeds 15 volts DC.

**Short Circuit Protection** - Reverse polarity or a short circuit condition will usually result in an external or internal fuse being blown.

**Overload Protection** - The inverter will automatically shut down when the continuous draw exceeds 750 watts. When the overload is removed the inverter will self-start.

**Over Temperature Protection** - When the temperature sensor inside the POWER INVERTER reaches 150 degrees F, the unit will automatically shut down. Allow the unit to cool for at least 15 minutes before restarting after a heat-related shutdown. Unplug unit while cooling.

**Low Battery Alarm** - An alarm will sound when the voltage from the battery drops to 10.6 volts. This is an indication that the battery needs to be recharged. The user should stop operation of the electronic device at this time, since the inverter will shut down automatically shortly thereafter, when the battery voltage drops to 10 volts. Start your engine to recharge the battery.

If the low voltage alarm sounds when the battery is fully charged, follow the steps for solving lack of output power in the Troubleshooting Guide. The alarm will sound when the inverter is overloaded, in thermal shutdown, or if there is an excessive voltage drop between the battery and inverter.

**NOTE:** It is normal for the alarm to sound while the unit is being connected to, or disconnected from, the power source. This is not indicative of a problem.

## 7. COMMON PROBLEMS

“Buzzing” sound in audio systems:

Some inexpensive stereo systems and “boom boxes” emit a buzzing sound from their speakers when operated from the POWER INVERTER. This occurs because the power supply in the electronic device does not adequately filter the modified sine wave produced by the inverter. The only solution to this problem is to use a higher quality sound system that incorporates a higher quality power amplified supply.

Television Interference:

The Husky POWER INVERTER is shielded to minimize interference with TV signals. However, in some instances, some interference may still be visible, particularly with weak TV signals. Try the following corrective measures:

- Position the inverter as far as possible from the television, the antenna and the antenna cables. Use an extension cable, if necessary
- Adjust the orientation of the inverter, the antenna cables and the TV power cord to minimize interference
- Make sure that the antenna feeding the television provides an adequate (“snow free”) signal and that high quality, shielded antenna cable is used

## 8. TROUBLESHOOTING GUIDE:

TABLE 1 - INVERTER POWER SWITCH TURNED ON

<b>TROUBLE/ INDICATION</b>	<b>POSSIBLE CAUSE</b>	<b>SUGGESTED REMEDY</b>
No AC output – red LED lit	DC input below 10 Volts	Recharge or replace battery
No AC output – red LED lit	Excessive appliance load-thermal shutdown then turn On	Reduce load-wait for inverter to cool. Turn Off,
No AC output without load for a few Reconnect load.	Inverter cold inverter. Operate inverter	Disconnect load from minutes.
No AC output – Green LED not lit	Inverter input fuse open	Check fuse and wiring. Repair and replace fuse.

TROUBLE/ INDICATION	POSSIBLE CAUSE	SUGGESTED REMEDY
Low battery alarm sounds continuously	Bad connection or wiring	Tighten all DC connections
Low battery alarm sounds	Low battery voltage	Recharge battery. Remove load from inverter while recharging battery
Motorized power tool	Excessive start-up load won't start	If appliance does not start, then appliance is drawing excessive wattage and will not work with inverter
Motorized power tool does not operate at correct speed	Purely inductive load	Make the load not purely inductive. Operate an incandescent lamp at same time as motor
Television/Radio interference	Snow in picture, buzz in speaker	Keep inverter and antenna distant from each other. Use shielded antenna cable. Connect antenna to amplifier

## 9. FUSE REPLACEMENT

If external fuses blow, (or breakers trip), then there is a short or overload in the DC wiring. Find and fix the problem before replacing the fuses (or resetting the breaker). After fuse replacement, reconnect the inverter.

This power inverter is equipped with multiple internal fuses. Normally, these fuses will not blow unless there is a serious problem inside the unit. Internal fuses are replaceable, however, only electronically knowledgeable people should attempt fuse replacement. If the unit is damaged during fuse replacement, the warranty may be voided. Husky recommends contacting Technical Support for guidance. Based on experience, it is best to return the unit to Husky for repair. Husky Technical Support can be reached by calling 954-584-4446, extension 19.

## 10. SPECIFICATIONS

Output Connection .....	Dual North American Standard Receptacles
Output Voltage.....	Approx 110 VAC RMS 60 Hz
Output Current .....	6.8 Amps
Output Waveform .....	Modified Sine Wave
Input Voltage Range .....	10.5 to 14.7 VDC
Low Voltage Alarm .....	10.5 VDC
Low Voltage Shutdown.....	10.0 VDC
Input Fuses .....	Internal
Input Cables .....	Battery Clip Cable
Additional Protection .....	Overload, Overvolt, Overtemp
Weight .....	3 lbs (1.35 kg)
Length .....	10.7 in. (27.2 cm)
Width .....	6.25 in. (15.9 cm)
Height .....	1.75 in. (4.5 cm)

## 11. WARRANTY

### HUSKY 2 YEAR LIMITED WARRANTY PROGRAM

The Home Depot warrants this Husky Power Product to the original user to be free from defects in material and workmanship for a period of two years from the date of purchase. If you believe that this unit is defective during its original two-year warranty period, return the unit, with proper proof of purchase to The Home Depot store or send the product to Husky Power Products at the address below.

This Husky Power Products is warranted, to the original purchaser only, to be free of defects in materials and workmanship for two years from the date of purchase without additional charge. This warranty may be extended to four years from date of purchase by paying an Extended Warranty fee (see below). The warranty does not extend to subsequent purchasers or users. Husky Power Products will not be responsible for any amount of damage in excess of the retail purchase price of the product under any circumstances. Incidental and consequential damages are specifically excluded from coverage under this warranty.

This product is not intended for commercial or rental application, only a 90 day warranty will apply in this instance. This warranty does not apply to accessories or damage to units from misuse or incorrect installation. Misuse includes wiring or connecting to improper polarity power sources.

**RETURN/REPAIR POLICY:** If you believe that the product is defective during the it's two year Limited Warranty period, return the unit, with proof of purchase to the Home Depot Store. Defective products, may also be returned postage prepaid to Husky Power Products. Any defective product, other than accessories, that is returned to Husky Power Products within 30 days of the date of purchase will be replaced free of charge. If such a product is returned more than 30 days but less than two years from the purchase date, Husky Power Products will repair the unit or, at its option, replace it free of charge.

If the unit is repaired, new or reconditioned replacement parts may be used, at Husky Power Products' option. A unit may be replaced with a new or reconditioned unit of the same or comparable design. The repaired or replaced unit will then be warranted under the terms of the remainder of the warranty period.

The customer is responsible for the shipping charges on all returned items. During the warranty period, Husky Power Products will be responsible for the return shipping charges.

**LIMITATIONS:** This warranty does not cover accessories, bulbs, fuses and batteries, defects resulting from normal wear and tear (including chips, scratches, abrasions, discoloration or fading due to usage or exposure to sunlight), accidents, damage during shipping to our service facility, alterations, unauthorized use or repair, neglect, misuse, abuse, failure to follow instructions for care and maintenance, fire, flood, and Acts of God.

If your problem is not covered by this warranty, call Husky Power Products Technical Support Department at toll-free 866-584-5504 for general repair information and charges if applicable.

**STATE LAW RIGHTS:** This warranty gives you specific legal rights. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the exclusions or limitations stated herein may not apply. This warranty gives the purchaser specific legal rights; other rights, which vary from state to state, may apply.

**TO REQUEST WARRANTY SERVICE FOR THIS PRODUCT:** Contact Husky Power Products Technical Support by telephone, fax or mail. We suggest that you keep the original packaging in case you need to ship the unit. When returning a product, include your name, address, phone number, dated sales receipt (or copy), and a description of the reason for return and product serial number. After replacing the unit, we will return it to you within four weeks.

**WARRANTY ACTIVATION:** Please complete Warranty Activation Card and mail to Husky Power Products. All products must be registered within (30) days of purchase. To activate this warranty, mail completed registration form to:

ATTN.: CUSTOMER SERVICE / HUSKY POWER PRODUCTS  
4140 SW 28th Way, Ft. Lauderdale, FL 33312 • TOLL-FREE 866-584-5504  
WARRANTY IS NON-TRANSFERABLE AND NON-REFUNDABLE.  
THE HOME DEPOT, USA, INC.



**HUSKY**  
The Toughest Name In Tools

© 2004 HUSKY PROFESSIONAL TOOLS  
FT. LAUDERDALE, FL 33312 MADE IN CHINA