

FALCON® ELECTRIC, INC.

SMP Series™ SBS User's Guide

500-1000VA

SMP500-xC, SMP700-xC, SMP1.0K-xC



FALCON® ELECTRIC, INC.
5116 Azusa Canyon Road
Irwindale, CA 91706
Tel. 626-962-7770
Fax. 626 962-7720



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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important instructions which must be followed during the installation, operation and maintenance of this SBS and its batteries. Please read all instructions before operating this equipment and save this manual for future reference.

CAUTION

All of the models presented herein are designed for installation and use in a controlled environment free of contamination.

CAUTION

This SBS utilizes voltage that may be hazardous. Do not attempt to disassemble. This unit contains no user replaceable parts. Refer all servicing to Falcon Electric, Inc.

CAUTION

This SBS is not intended to be used in conjunction with life support or operating room equipment.

CAUTION

Always unplug this SBS prior to cleaning and never apply liquid or spray detergent on the SBS.

CAUTION

Never attempt to service batteries. High voltage exists within the unit, which could cause electrical shock. Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries. When replacing the SBS batteries, use the same number and type of batteries.

IMPORTANT

Allow at least 24 hours, after the SBS is first installed and turned on, to fully charge the internal battery and assure the maximum backup time is available.

DO NOT

DO NOT plug this SBS into its own output as this may damage the SBS.

DO NOT remove or unplug the input cord when the SBS is turned on. This removes the safety ground from the SBS and the equipment connected to the SBS.

CAUTION

This SBS contains its own energy source (batteries). The output receptacles may carry live voltage even when the SBS is not connected to an AC source.

CHAPTER 1

FALCON[®] SMP Series - Overview

FALCON[®] SMP models incorporate a unique two stage buck and boost Automatic Voltage Regulator (AVR) circuitry and provide an improved $\pm 5\%$ output voltage regulation.

The Line-interactive or Automatic Voltage Regulator (AVR) feature provides output voltage regulation, while the SBS is operating from the utility power. This keeps the connected equipment's operating voltage within reasonable limits during abnormal utility power conditions such as brown-outs, high line voltages and surges.

All SMP models are microprocessor controlled. A Liquid Crystal Display (LCD) is conveniently located on the front panel. This display gives immediate and detailed SBS and power information without having to connect an expensive monitoring computer. An intelligent RS-232 computer interface port is also located on the SBS rear panel in the event remote monitoring or unattended computer shutdown is required. An optional external SNMP/HTTP agent is available, giving the ability to manage the SBS remotely across a LAN, WAN or via the Internet.

Unlike many other line-interactive SBSs on the market, the SMP models produce a pure sinewave output voltage, just like the incoming utility power. This assures your delicate electronic equipment will always receive the sinewave power it was designed for.

All models have an advanced two-stage battery charger providing safe, fast battery recharging while yielding a longer battery life.

All models have advanced surge protection circuitry to prevent damaging power line transients from reaching your equipment. Additional surge protected, RJ11 telephone jacks are provided on the SBS rear panel.

CHAPTER 2

Installation

Inspecting the Equipment

If any FALCON® equipment has been damaged during shipment, keep the shipping cartons and packing materials for the carrier and file a claim for shipping damage. If you discover damage after acceptance, file a claim for concealed damage.

To file a claim for shipping damage or concealed damage: 1) File with the carrier within 15 days of receipt of the equipment; 2) Send a copy of the damage claim within 15 days to the Falcon® Service Department.

SBS Setup

1. Verify that the following is included in the SBS shipping carton: SBS, Software CD, Power Cord, Owner's Manual, SBS/Computer Cable and Battery connection jumper plug.
2. Verify that the SBS unit is configured for the proper input/output voltage. This information is stated on the nameplate label located on the rear panel of the unit.
3. This SBS has been shipped with the battery connection jumper removed to meet new transportation regulations.

IMPORTANT

THE BATTERY CONNECTION JUMPER MUST BE INSTALLED PRIOR TO PLUGGING IN AND ATTEMPTING TO TURN ON THE SBS.

4. Select a suitable location for the SBS, near enough to the computer or equipment to allow connection of the equipment power plug to the receptacles located on the rear panel of the SBS.
5. If you are connecting the SBS to a PC Computer, you may want to install the supplied SBSilon shutdown and management software on your computer after connection the SBS interface cable to the RS-232 interface connector located on the SBS rear panel. Then connect the mating end of the cable to an unused serial port located on the computer rear panel. Before the SBS will be able to communicate properly with your computer, install the supplied computer monitoring and shutdown software.

Communications Interface

The SBS provides both a contact closure and a true RS-232 computer interface.

The definition and setup for RS-232 is as follows:

Baud Rate : 2400 bps
Data Length : 8 bits
Stop Bit : 1 bit
Parity : None

Pin #6 : RS-232 data Tx out
Pin #7 : Common for Pin #6 and Pin #9
Pin #9 : RS-232 data Rx In

The definition and setup for DB9 (optional) is as follows:

Pin #2 : AC Power Failure
Pin #4 : Common GND of Pin #2 & Pin #5
Pin #5 : SBS Battery Low
Pin #6 : Turn off SBS
Pin #7 : GND for Pin 6

The computer interface pin-out is stated above for reference only. Use Pin #4 as the common for Pins #2 and #5. Pins #2 and #4 are normally closed and will open when the utility fails. Pins #5 and #4 are normally open and will close at the low battery indication.

The SBS will shut down when a 5-12 Vdc voltage is applied across Pins #6 and #7 for three seconds, while the SBS is on battery mode.

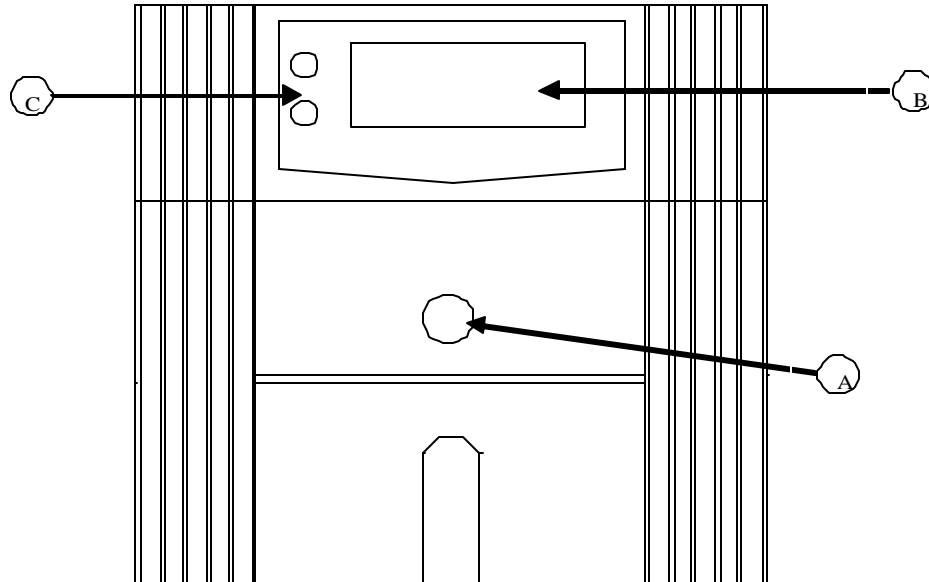
IMPORTANT

6. **DO NOT BLOCK SBS AIR VENTS. THE SBS MUST NOT BE INSTALLED IN AN ENCLOSED AREA.**
7. If you have not already done so, connect the equipment to be protected to the SBS output receptacles located on the rear panel. Verify that the connected equipment does not exceed the rated output (in watts) of the SBS.
8. Plug the SBS power cord into the nearest grounded wall outlet. If the SBS does not power up automatically, depress and hold the control button located on the SBS front panel until the SBS turns on.

CHAPTER 3

Controls, Displays & Functions

FRONT PANEL



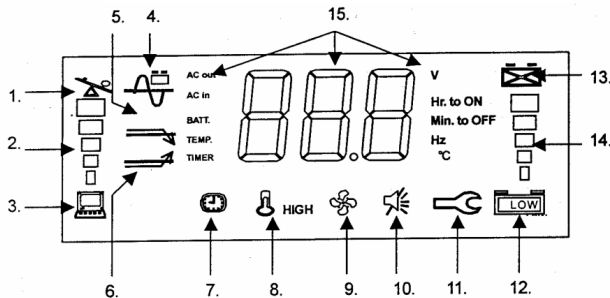
- A. Main Control Button - This button is used to turn the SBS on and off, to perform a SBS self test, or to reset and silence an audible alarm. Refer to page 10 for operation instructions.
- B. A Liquid Crystal Display (LCD) is provided. Please reference the number designation for the display function and the function descriptions referenced in this manual. Refer to pages 6-8 in this manual.
- C. Two LCD metering function select buttons are provided. The upper button scrolls the display through the metering functions in an upward direction, the lower button in a downward direction. Refer to "LCD Metering Display Modes" referenced on page 8 of this manual.

LCD SYMBOL DESCRIPTIONS

No.	Symbol	Indication
1.		Over load
2.		Load level
3.		UPS is loaded
4.		Normal mode
		Battery mode
		Test mode

No.	Symbol	Indication
6.		Buck mode
6.		Boost mode
7.		Timer is enabled
8.		Thermal alarm
9.		Fan is "ON"
10.		Alarm off
11.		UPS fault
12.		Battery normal
		Battery low

LCD DISPLAY



1. **Over Load** --The connected load exceeds the SBS output rating. Remove some of the load from the SBS to correct this condition.
2. **Load Level** --Bar graph indicates the percent of SBS load capacity remaining.
3. **SBS is loaded** - This symbol is displayed when the SBS output load exceeds 30 watts and disappears when the load is under 25%.
4. **Normal Mode** - The sinewave symbol will be displayed when the SBS is operating normally from the utility line.
Battery Mode - The sinewave and battery symbols will blink when the SBS is operating on its internal battery.
Test Mode - The sinewave symbol will display steadily and the battery symbol will blink during a SBS self test.
5. **Buck Mode** - The Automatic Voltage Regulator (AVR) is reducing the SBS output voltage due to a high utility voltage condition. The sinewave symbol is also displayed to indicate that the SBS is operating normally from the utility line.

6. **Boost Mode** - The AVR is increasing the SBS output voltage due to a low utility voltage condition or "Brown-out". The sinewave symbol is also displayed to indicate that the SBS is operating normally from the utility line.
7. **Timer is enabled** - This symbol will be displayed during the following conditions:
 - a) The SBS has been programmed to automatically turn on or off using the supplied remote monitoring software.
 - b) The green mode is enabled and the SBS output load is under 25 watts. The SBS will turn off after a 30 second delay.
8. **Over Temperature** - The temperature inside the SBS has exceeded 55°C. If the end-user does not reduce the SBS output load or correct the cause of the SBS overheating, the temperature will continue to rise and upon reaching 60°C the SBS will shutdown to prevent damage due to excessive overheating.
9. **Fan off** - This symbol is used on special extended backup models only.
10. **Alarm off** - The audible alarm has been silenced. To reset the alarm during backup mode, briefly depress the control button.
11. **SBS fault** - Attempt to perform a SBS reset by depressing the control button and holding it for ten seconds. If the SBS resets and operates normally, no further action is required. If the SBS fault indicator is still displayed, the SBS has failed and must be repaired.
12. **Battery low** - When the battery charge level is low, the word "LOW" will be displayed inside the battery normal symbol.
13. **Battery normal** - During normal utility operating this symbol indicates a charged battery.
14. **Battery level** - When the battery is fully charged, all five bar graph segments will be dark. As the battery discharges, the segments will disappear starting from the top segment and end with the bottom segment.

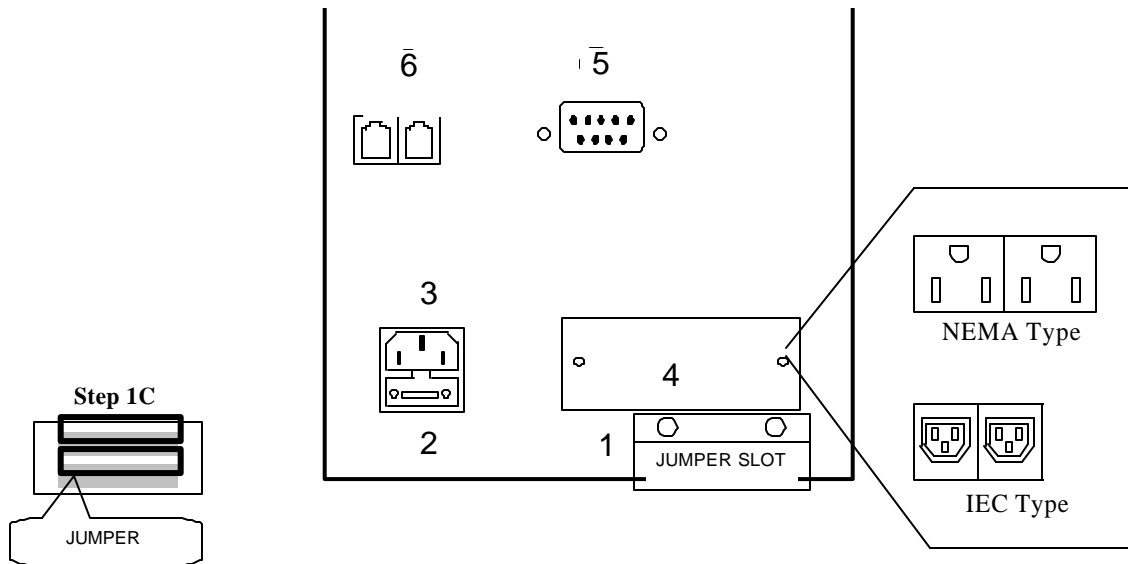
15. **LCD Metering Display** - When the SBS is turned on, this portion of the LCD display indicates the AC output voltage initially. Depressing the downward scroll button will indicate the following each time it is depressed:

LCD Metering Display Modes

(use display scroll buttons to change modes; modes are in descending order)

Mode	Value	Display Description
AC Output	Voltage	AC Output Voltage
AC Input	Voltage	AC Input Voltage
AC Output	Frequency (Hz)	AC Output Frequency
Battery	Voltage	DC Battery Voltage
Temperature	°C	Internal UPS Temperature
Timer	Minutes to off	The UPS will turn off when the displayed value reaches zero.
Timer	Hours to on	The UPS will turn on when the display reaches zero.
Battery	Minutes to off	The estimated remaining battery run time while in battery backup mode.

TYPICAL SBS REAR PANEL



1. **Battery Disconnect Jumper** - To install the Jumper use the following procedure.
 - a) Using a #1 Phillips screwdriver remove the two screws securing the battery disconnect cover.
 - b) Remove the battery disconnect jumper plug from the plastic bag.
 - c) Press the disconnect jumper into the socket visible through the hole exposed after removal of the cover. A small popping sound may occur; this is normal.

2. **Input Fuse** - Always replace with the same fuse type and rating.
3. **Inlet** - for connection of incoming power cord.
4. **SBS output receptacles** - The top NEMA type receptacles will be found on all domestic (120V) models. IEC type receptacles will be found on international (230V) models.
5. **DB-9 RS-232** computer interface connector.
6. **Surge protected, RJ11 type telephone jacks** - To provide surge protection for your fax, modem or other telecommunications devices. Connect the incoming telephone line to one of the jacks. Then, connect the fax, modem or other device to be protected to the other jack.
7. **Audible Alarms** - Reference the following table.

	ALARM	PERIOD	STATUS INDICATED
UPS OFF	No Beep	LCD flashes every 2 seconds	Utility Good
	No Beep		Utility Loss
	No Beep		Timer on, refer to operation section #9
UPS TURNED ON	No Beep	Continuously	Normal (utility good)
	Beep (Can be silenced)	One beep every 4 seconds	Operating on battery mode (no load)
		2 beeps every 4 seconds	Operating on battery mode (loaded)
	Beep (Cannot be silenced)	4 beeps per second	Operating on battery mode (LOW BATTERY)
	Beep	8 beeps per second	DEFECTIVE BATTERY

CHAPTER 4

Operation

1. **Turning The SBS On and Off**

Depending on how the SBS was turned off, it may automatically turn on when the input plug is plugged in. If it does not turn on automatically, depress the control button located on the front panel for four seconds until the SBS turns on. To turn the SBS off press and hold the control button for five seconds or until the SBS turns off. ***SBS batteries will still continue to recharge after the SBS has turned off.***
2. **SBS Self Test**

Depressing the control button for one second while the SBS is turned on will initiate a self test sequence.
3. **SBS Overload Condition**

To ensure that your computer equipment will be protected during a utility failure, it is important to make sure that the maximum power required from the equipment is not over the rated capacity of the SBS. The LCD overload indicator will be displayed and an audible alarm will sound if the load is over 120% of the SBS's rated output. If the over load is greater than 120% , the SBS will shut down immediately to protect the itself. After three seconds, if the overload is removed the SBS will automatically turn on again. IF the overload is still present the SBS will turn off and stay off, requiring the SBS be manually restarted. Always correct any overload condition immediately.
4. **DC Start, Cold Start**

To start the SBS when utility power is not available, press and hold down the control button twice for one second each time. The SBS will start up and run on its internal battery until discharged. If you do not depress the control button to turn the SBS off during battery operation, the SBS will automatically restart when utility voltage is reapplied. The SBS batteries should not be left discharged for long periods of time or battery damage may occur.

Always reconnect the SBS to a utility source, turn the SBS on and allow the batteries to recharge for eight hours after the batteries have been fully discharged due to DC operation.
5. **Green Mode Function**

The SBS is equipped with a Green mode function. If no load is present at the SBS output receptacles (no equipment connected or the load is less than 25 watts), the SBS will shut down within 12 seconds. Should the utility AC be lost during the shut down, the SBS will automatically restart and again shut down after another two minutes of no load being applied.

6. **Battery Charging**

This SBS is shipped from the factory with its batteries fully charged. However, some charge may be lost due to the self discharge characteristics of the internal sealed lead-acid battery. Always allow the SBS to recharge for 24 hours prior to use. To recharge, simply connect the SBS line cord to a powered receptacle. The SBS does not have to be turned on for batteries to recharge. During normal use, the SBS will self recharge should the battery be depleted due to a loss of utility power.

7. **SBS Reset**

In the event the SBS will not accept commands and appears to be locked up, depress the control button for and hold for 10 seconds. The SBS CPU will be reset.

8. **Remote Control**

The SBS can be set for an automatic daily shutdown and start up. This command must be set through the RS-232 interface using the supplied software. When this function is set, a timer inside the SBS will begin to run.

The load will be turned off according to the shutdown and start up schedule set in the software, which is then transferred and stored in the SBS memory. During the period of turn off to the next turn on, the status LCD "time entered" symbol will blink.

CHAPTER 5

Maintenance & Technical Support

1. **Care & Maintenance**

Falcon® SMP Series SBSs are designed to be maintenance free.

They can be cleaned with a damp cloth or non-abrasive cleanser, providing the SBS is turned off and the input plug is disconnected from the utility source.

On a regular basis, check the vents to make sure they are kept free from accumulation of dust, dirt or lint.

2. **Battery Replacement Warning**

Momentarily depressing the SBS control button while the SBS is operating normally from utility power will place the SBS into self-test. In the event the SBS batteries are weak, an alarm will sound as an indication that the batteries need to be replaced. For full battery life, keep the SBS close to an ambient temperature of 77°F. The batteries should never be exposed to temperatures below 40°F and above 85°F.

3. **Battery Replacement**

This SBS contains sealed maintenance-free batteries (VRLA). When situated in a typical office environment, with the proper charging and limited cycling, these batteries can last many years. **In home, office or computer room environments, the batteries should be replaced every three to five years.**

WARNING

Never attempt to service batteries. High voltage exists within the unit, which could cause electrical shock. **Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions.** Keep unauthorized personnel away from batteries.

When replacing the SBS batteries, use the same number and type of batteries.

NEVER

A. **NEVER** dispose of batteries in a fire, as batteries will explode.

B. **NEVER** dispose of used batteries or the SBS in the trash or landfill as it is against federal and state laws. **The SBS and Batteries must be recycled.**

For SBS and battery recycling information, please contact our service department for the name and address of the nearest battery recycling facility.

CAUTION

A. Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

B. A battery can present a risk of electrical shock and high short circuit current. **REFER ALL BATTERY SERVICING OR REPLACEMENT TO A QUALIFIED SERVICE TECHNICIAN. NEVER ATTEMPT TO REPLACE THE BATTERIES.**

NECESSARY PRECAUTIONS

The following precautions should be observed by a qualified technician when working with batteries:

1. Remove watches, rings, or other metal objects.
2. Use tools with insulated handles.
3. Wear rubber gloves and boots.
4. Do not lay tools or metal parts on top of batteries

4. **Storing the SBS and Batteries**

Should you need to store the SBS for a long period, fully recharge the battery just prior to storage and recharge the battery every 6 months by plugging the SBS into a power outlet. It is recommended that the batteries charge for 24 hours after long-term storage.

5. **FCC Considerations**

This equipment generates and uses radio frequency energy and if not installed and used properly in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. All models covered in this manual have been tested and found to comply with the limits for a Class A computing device, in accordance with the specifications in FCC regulations, Part 15, Subpart J, which are designed to provide reasonable protection against such interference.

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 correcting the interference by one or more of the following measures:

- a. Reorient or relocate the receiving antenna.
- b. Increase the separation between the equipment and the receiver.
- c. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- d. Consult the dealer or an experienced radio/television technician for assistance.

6. **Technical Support**

Your FALCON® Electric SMP Series SBS is backed by one of the finest customer service teams assembled. Write, call, fax or email should you require technical assistance or service.

FALCON ELECTRIC, INC.
5116 Azusa Canyon Road
Irwindale, CA. 91706
Voice 626.962.7770
Fax 626.962.7720
Service 800.842.6940
Email: service@falconUPS.com
WWW.FALCONUPS.COM

Should service be desired, you must first obtain a Return Material Authorization number (RMA) and return shipping instructions from our customer service department. Please have your SBS model, serial numbers and date of purchase on hand prior to the call. (This information is located on the identification label on the rear panel of the unit.) The information is essential in retrieving your unit's historical records.

The RMA number issued must appear on the outside of the shipping carton. The original shipping container must be used when returning any SLP/SMP Series product. Falcon® Electric will not assume any responsibility for shipping damage. In the event of shipping damage you will be charged for repairs due to the damage.

All units must be returned prepaid. The address and shipping instructions will be given to you at the time the RMA is issued.

7. **Requesting Technical Information or Support.**

You may request technical information or support by email or telephone.

Please send your technical or support questions by email to:

SUPPORT@FALCONUPS.COM

You may contact a FALCON support engineer directly by calling the FALCON support line between 9:00 am and 4:00 pm PST.

626.962.7770

8. **FALCON Web Support**

Product data sheets, specification and owner's guides are available in Adobe .PDF format on our corporate website.

WWW.FALCONUPS.COM

WARRANTY

1. TIME AND SCOPE OF WARRANTY:

- 1.1 FALCON® hereby warrants parts shipped under this Agreement to be free from defective workmanship for a period of **one year** following date of shipment. Accidental damage, misuse or normal wear and tear shall not be construed as a defect.
- 1.2 The date of shipment as used herein will be the date on the Bill of Lading. If no Bill of Lading is issued, the date of shipment shall be shown on seller's shipping document.
- 1.3 No provision of this warranty shall cover equipment which has been altered or modified from the originally specifications manufactured unless authorized in writing.
- 1.4 No provision of this warranty shall cover batteries. However, battery manufacturer's warranties will be passed through to the customer whenever applicable.

2. LIMITS OF "IN WARRANTY" SERVICE LIABILITY:

- 2.1 FALCON® is obligated during the in-warranty period to provide service and/or adjustments to equipment returned to the factory at the expense of buyer (the term "factory" as used here-in shall also include any field service centers which may be established by FALCON®) and to repair or replace any part(s) thereof which in the opinion of authorized FALCON® personnel are found to have been defective during the warranty period.
- 2.2 Equipment requiring in-warranty services must be returned to the factory with all transportation charges prepaid, clearly tagged, stating the nature of the trouble experienced, and the disposition of the equipment after repair. The equipment will be returned freight collect by FALCON® to the location specified via the best and least expensive carrier available or via customer's shipping instructions.
- 2.3 During the in-warranty period, no service charges shall be payable by the buyer for service performed other than for service necessitated by accident, misuse, theft, abnormal line or source voltage fluctuations, abnormal conditions of operation, damage by the elements or damage resulting from adjustments, repairs, modifications made by anyone other than FALCON® authorized personnel, or the buyer's failure to reasonably maintain the equipment.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES OF BUYER SHALL BE LIMITED TO THOSE PROVIDED HEREIN. IN NO EVENT WILL SELLER BE LIABLE FOR COLLATERAL OR CONSEQUENTIAL DAMAGES. No person is authorized to assume on behalf of FALCON® any obligation or liability in connection with the sale, warranty or service policy of any products manufactured and/or marketed by FALCON® beyond the warranty description on the face hereof.

3. FALCON® ELECTRIC reserves the right to make changes, additions, and/or improvements in its products without incurring any obligation to install them on its products previously sold. This Warranty is valid for FALCON® product as sold.