

EasyClub

USER MANUAL

**Induction Heating System For Manufacture
and Repair of Golf Clubs**

Document No. 9USR-745-110-00 Rev. A01

IMPORTANT NOTES:

- 1) This manual is valid for the following Model and the associated Revision number(s):

MODEL NO: EC-1.2/180A-PFC

REV. NO: A00

- 2) A Change Page may be included at the end of the manual. All applicable changes are documented with reference to the equipment Revision and Serial number. Before using this Instruction Manual, check your equipment nameplate to identify your Model and Revision number. If in doubt, contact your nearest UPT Representative.
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- 4) Data subject to change without notice.

PREFACE

YOU AND NOT THIS MANUAL ARE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS

Please, contact the UPT Service Department before servicing any UPT equipment.

All Information contained in this manual is the latest information available at the time of printing. The right is reserved to make changes at anytime without notice. UPT Corp. makes no warranty of any kind with regard to this material and assumes no responsibility for any errors that may occur in this manual.



Dangerous voltages may be present in equipment surrounding and/or connected to the EasyClub. Read the following warnings carefully and study this entire manual before operating the system. Failure to observe warnings may result in equipment damage, serious personal injury, or death.

If the equipment is used in a manner not specified by this manual, the protection provided by the equipment may be compromised and damage to the unit may occur.

- 1 Only qualified persons who have been trained in the operation of the EasyClub and are familiar with its technology should be permitted to operate the system. Failure to comply will void the warranty..
- 2 Always have the Power Supply completely powered off and locked out before performing any service, inspection or maintenance.
- 3 Even with the Power Supply off, live voltages still exist within the case. Always power off and lock out the external power source to ensure no one can accidentally energize it.
- 4 Ensure that all external wiring conforms to applicable codes.
Obey all warnings and use good common sense.

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SECTION 1 - SAFETY INSTRUCTIONS

1.1. INSTALLATION, OPERATION AND SERVICE PRECAUTIONS

Hazardous voltages are present within this product during normal operation. The product should never be operated with the cover removed unless equivalent protection of the operator from accidental contact with hazardous internal voltages is provided.

There are no operator serviceable parts or adjustments within the product enclosure.

1.2. GROUNDING

This product is a Class 1 device which utilizes protective earthing to ensure operator's safety.

1.3. ELECTRICAL SHOCK HAZARDS

This product outputs hazardous voltage and energy levels as a function of normal operation. Operators must be trained in its use and exercise caution as well as common sense during use to prevent accidental shock.



This symbol appears adjacent to any external terminals at which hazardous voltage levels as high as 500V D-C may exist in the course of normal or single fault conditions. Source power must be removed from the product prior to performing any servicing

SECTION 2 – INTRODUCTION

This manual is written for personnel familiar with the technology pertaining to the operation of induction heating equipment. Such personnel should be thoroughly familiar with the hazards associated with this equipment and electrical equipment in general, and they should have received proper safety procedure training.

2.1 MANUAL ORGANIZATION

Section 1:	Safety Instructions	Discusses hazards and safety precautions.
Section 2:	Introduction	Identifies the purpose and organization of this manual.
Section 3:	Manufacturer Information	Contains information about the manufacturer and its sales and service representatives.
Section 4:	Description	Specifies electrically and mechanically the system.
Section 5:	Installation	Provides installation procedures.
Section 6:	Operation	Explains how to set different parameters and how to use the inductor head. This section also gives explanation for the whole.
Section 7:	Maintenance	Provides instructions for periodic inspection and maintenance.
Section 8:	Service	Explains the service procedures and provides manufacturer contact information.

The manual also uses WARNING and CAUTION.

A WARNING symbol alerts you to a hazard that may result in equipment damage, personal injury, or death. Carefully read the instructions provided WARNING and follow all safety precautions.

A CAUTION symbol alerts you that the system may not operate as expected if instructions are not followed.

Extra user information is provided in the text following this sign.

SECTION 3 - MANUFACTURER INFORMATION

3.1 MANUFACTURING AND SERVICE

ULTRAFLEX POWER TECHNOLOGIES

154-1 Remington Blvd
Ronkonkoma, NY 11779
Tel 631-467-6814
Fax 631-980-4065

SECTION 4 – DESCRIPTION

4.1 OVERVIEW

The UPT EasyClub is a unit designed to work in conjunction with inductor head designed exclusively for it. The unit is digitally controlled through a membrane keypad located on the front panel. The Power Supply is enclosed in a compact case. ON/OFF switch is installed on the back side of the enclosure to power up and down the unit. Waterproof connectors are interfacing the power supply with the inductor head and the foot switch. The power level is automatically adjusted depending on the actual value of the load. The unit is equipped with Power Factor Corrected (PFC) front end module to meet the CE mark, thus optimizing the line current utilization and reducing power bill cost.

Note:

- 1) A tool is required to gain access to the Power Supply. This is to prevent accidental exposure to the internal high voltages.
- 2) See section ACCESSORIES for optional equipment.

4.2 SPECIFICATIONS

The PFC EasyClub system's electrical and mechanical specifications are listed in Table 1.

MAIN FEATURES

Size:	7" wide x 12" high x 9.5" deep (180 x 300 x 240 mm)
Weight:	14 lb (6.4 kg)
Max operating ambient temperature:	97°F (36°C)
Universal Input line voltage:	110 - 230 Volts AC, 50/60 Hz, single phase
Max output power rating:	1.2 kW
Nominal output frequency:	50 -200 kHz
Thermal protection	Built in thermal protection with automatic fan control

CONTROL PANEL AND USER FEATURES

Displays, LED's	"Heat-On" , Alarm, Time and Power status lights, 3digit, 7segment LED
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Timer control:	0.2 - 9.9 sec. 0.1sec/step (10 - 60 sec. 1 sec/step)
Power regulator step:	Power control: 10 - 120% PWM (1% step)

OTHER FEATURES

End of cycle and Fault audible signal
Heat On indicating LED on the back side of the inductor head
Power monitoring and automatic power limiting capability
Dry flexible lead connects the power supply to the inductor head

Table 1: Specifications

4.3 MECHANICAL SPECIFICATIONS

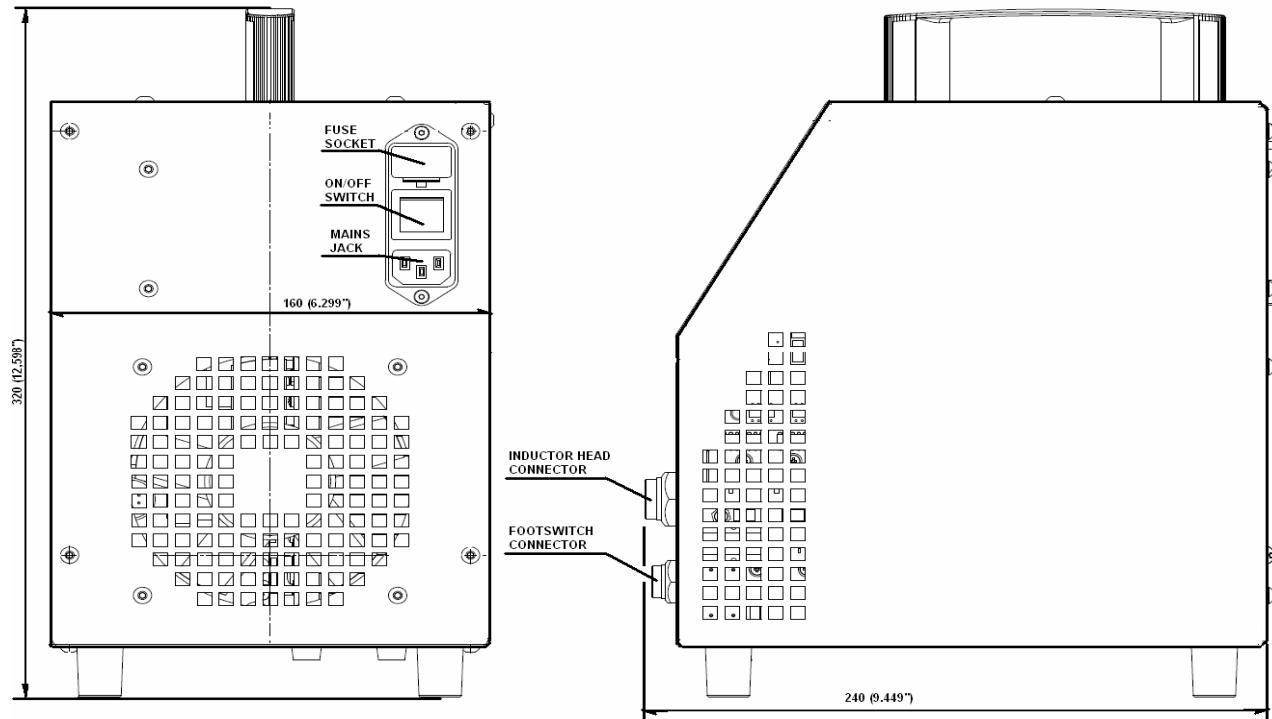


Fig. 2: Mechanical Outline Drawing. All dimensions stated as follows: mm (inch)

4.4 ENCLOSURE

The enclosure has been designed with NEMA 2 and IP 21 standards in mind.

4.5 FEATURES

4.5.1 CONTROL

Control of the EasyClub Power Supply is done via a local panel integrated in the unit enclosure. 4-wire bus secures the power supply of the panel as well as the RS-485 connectivity. The panel has user friendly interface with 3 digit LED display and membrane keypad based on a digital state of the art microprocessor technology. Individual status LED's are placed for indicating the mode of operation. On board audible alarm helps easier detecting of fault and unstable operating conditions. A simple multifunction 5-button membrane keypad secures easy programming in real time mode as well as retrieving user preset programs. Remote control is also available through a supplied footswitch. (For more details see section 4.6 Accessories).

4.5.2 PROTECTION

- 1 Overpower protection: Tracks output power; activated if the output goes out of tolerance
- 2 Over current protection: Tracks output current; activated if the output goes out of tolerance
- 3 Input Over current protection: Tracks input current; activated if the input goes out of tolerance
- 4 Over temperature: Activated when the internal temperature exceeds a safe operating threshold

4.6 ACCESSORIES

The following accessories are available for system enhancement and customization.

ACCESSORY	Ultraflex P/N
Foot Switch	1ACC-737-500-00

Power Cord (US style NEMA 5-15) 8ft.	4KAB-000-018-00
Inductor Head	1ACC-745-100-00

Table 2: Accessories

SECTION 5 – INSTALLATION

5.1 INSTALLATION PROCEDURE

The installation procedure consists of the following steps:

1. Unpacking the equipment.
2. Selecting the site where the equipment will be used.
3. Connecting the inductor head to the Power Supply.
4. Connecting the foot switch (if necessary).
5. Completing the power and Ground/Earth connections.



Power and ground/earth connections must be made last. Failure to do so will create a hazardous condition that may result in equipment damage, personal injury, or death.

NOTE: UPT Corporation has a staff of field engineers that is available to supervise the installation of the equipment. If installation service is required, contact the UPT Technical Service Department for additional information.

Provisions for facility electrical power service are customer furnished. Requesting UPT field engineering assistance before customer furnished provisions are installed at the equipment site could delay equipment installation and cause unnecessary expense.

5.2 UNPACKING AND INSPECTION

This equipment has been thoroughly inspected and tested prior to packing and is ready for operation. After careful unpacking, visually inspect for shipping damage before attempting to operate. If any indication of damage is found, file an immediate claim with the responsible transport service and advise your UPT representative.

WARNING



Inspect equipment before installing. Damaged equipment may result in improper operation and create a hazardous condition resulting in personal injury or death. The carrier is responsible for all damage caused in shipment including concealed damage.

5.3 SELECTING THE POWER SUPPLY SITE

Consider the following when choosing a location for the Power Supply.

1. Make sure the unit is installed in a debris free zone.
2. The Power Supply has to be connected to a power source.
3. The Power Supply has to be in a location to allow an attached inductor head to reach the workplace.
4. Make sure the unit is easily accessible by the operator.
5. The Power Supply has to be seated on a mechanically secure surface.

5.4 COOLING

The power transistors and rectifiers in the EasyClub Power Module are maintained within their safe operating temperature range by means of forced cooling by 120x120mm fan. For this reason the fan inlet must be kept clean from obstructions in order to insure proper air circulation. If installed in confined spaces, care must be taken that the ambient temperature (the temperature immediately surrounding the Unit does not rise above the limit specified 98°F (37 deg. C). Periodic cleaning of the Unit exterior is recommended.

5.5 A-C INPUT CONNECTION

The EasyClub connects to the power network through 8 ft. NEMA 5-15 power cord (supplied). If you are using this equipment in a country other than USA, please supply proper power cord compatible with your power network outlet. A list of available power cords is shown in Table 2.

Note: If you supply a cable cord on your own, please make sure it is rated 15A and above.

The unit has a built in fuse protection on each line rated at 20A. With its allowable 95-245 VAC input, it could see a maximum current of 13A a-c. It is highly recommended that the unit is connected to a separate protected power branch on the in-house power network. 16A fuse or circuit breaker on that power branch is a good choice since it will trip before and instead of the internal protection. A mechanical 30 A switch is also recommended within the operator's range and vision and possibly closer to the Power Supply. (See Fig. 2 for details).

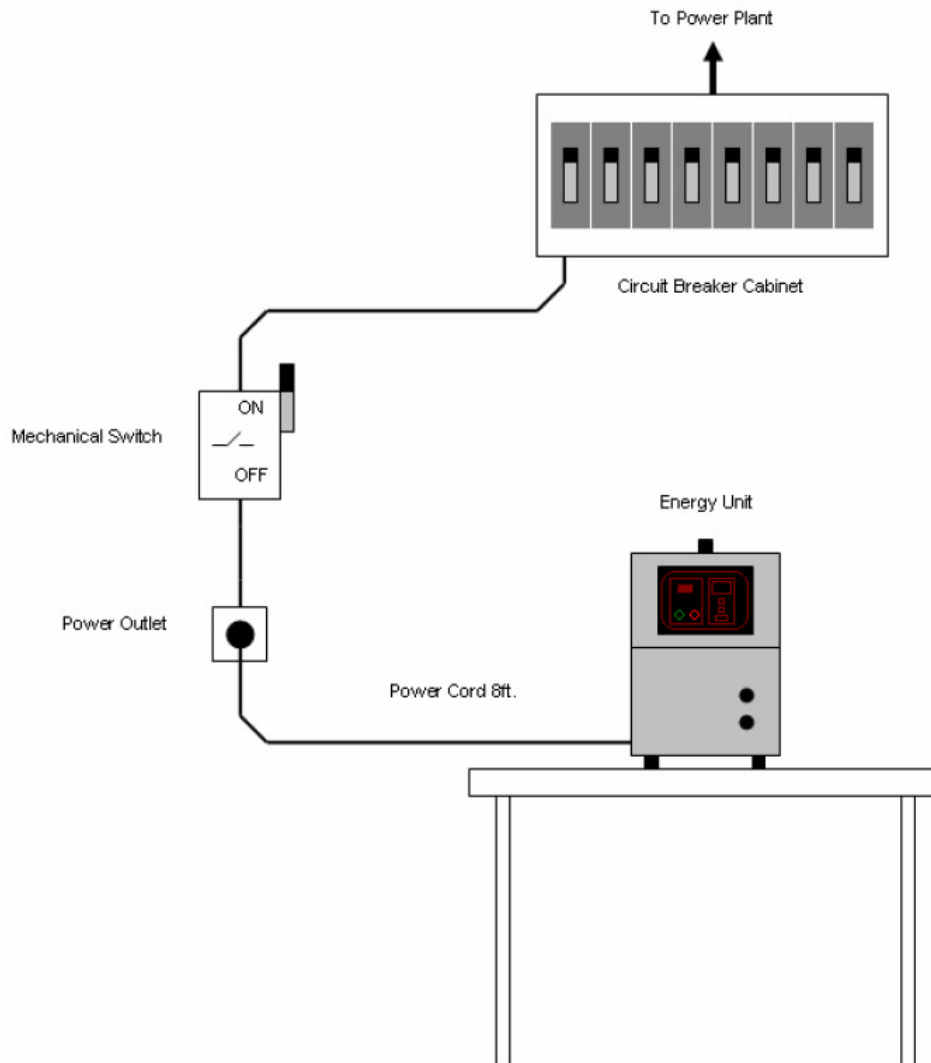


Fig.2: Power Line Connection

NOTE: Local codes may have stringent requirements. It is the customer's responsibility to be familiar with and to comply with all applicable codes concerning conductor ratings and wiring procedures. An electrician familiar with the local regulations should determine proper wiring connections. The energy unit can operate on an input voltage of 95-245 VAC.

SECTION 6 – OPERATION

6.1 CONTROL PANEL OVERVIEW

The main design objective of the Control Panel is easy access to all the operational and setting functions of the EasyClub power supply, as well as displaying device state data to the user in ergonomic manner.

The panel is situated on the upper front side of the power supply case. It has five control buttons, indicator LED's and a 3 digit LED display. They are situated as follows:

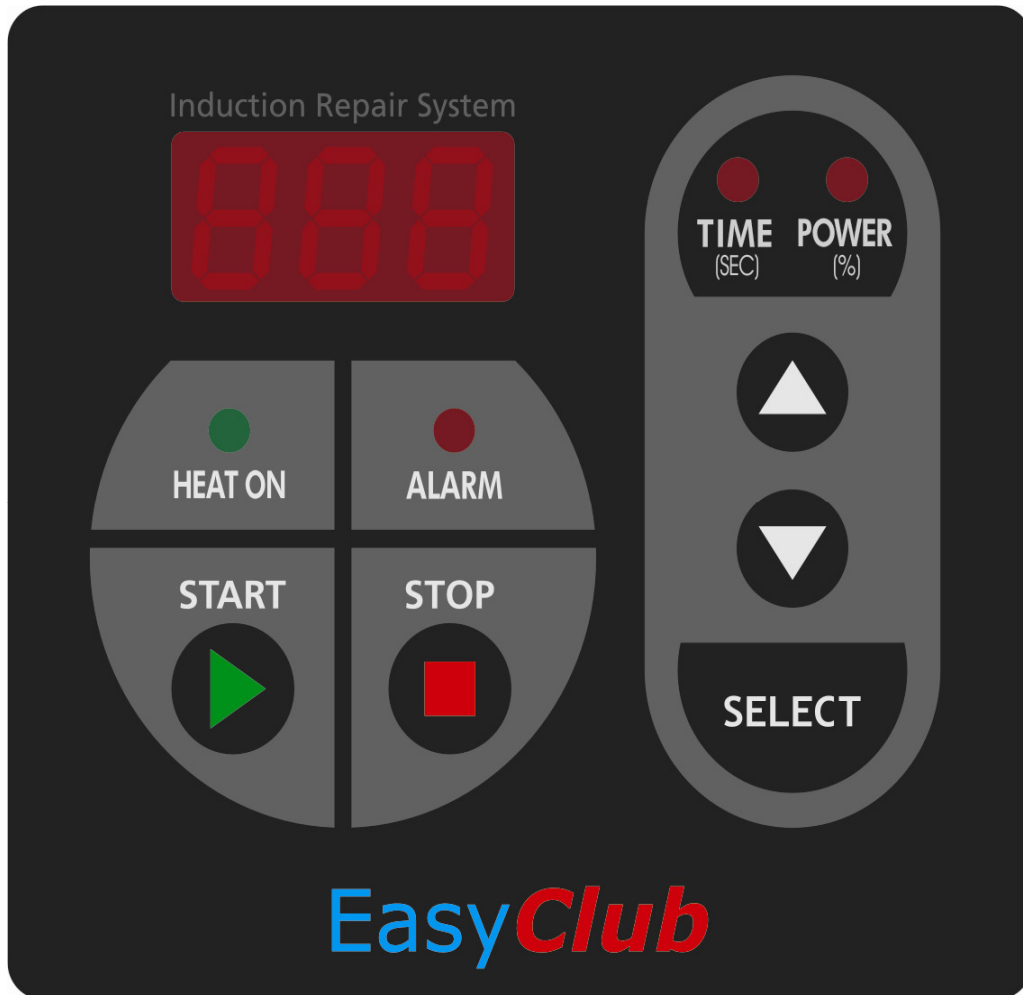


Fig.3 -Control Panel Layout

6.1.1 MENU

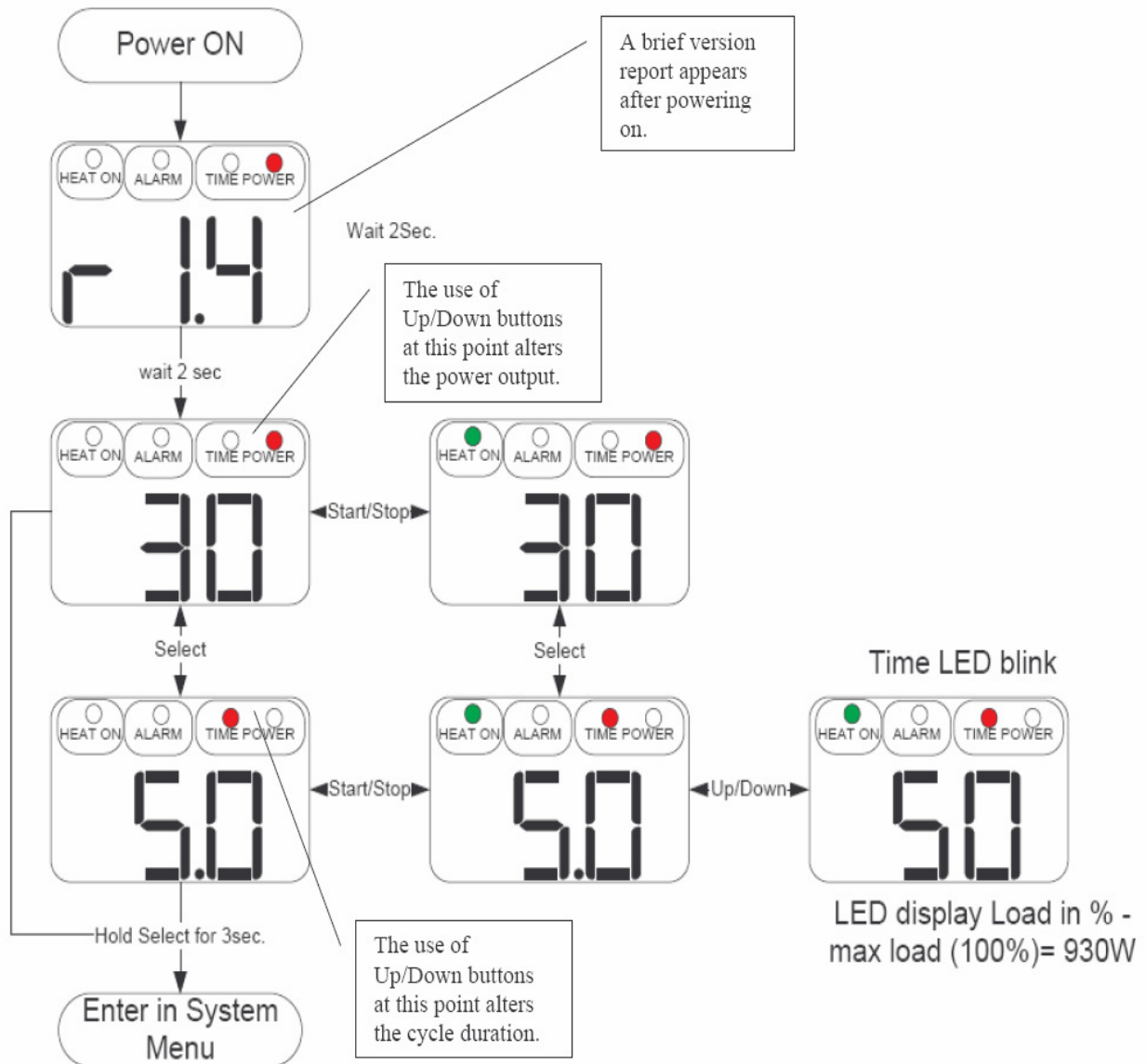
The menu structure is simple, but very useful as well. It's structure is shown in a flowchart (Fig. 4a & 4b).

After powering the device on, the control panel software revision is displayed for a period of 2 seconds (See user menu structure -Fig.4b). Then the unit enters in power setting mode which allows setting the power output by pressing the Up/Down buttons. Confirmation of the setting is done by pressing the Select

button. Then the duration of the “Heat-On“ cycle might be set. Up/Down buttons are altering cycle duration (in seconds). At this point the unit might be started with all the parameters set.

Pressing the select button when in “Heat-On“ mode toggles display of both the parameters of power and duration. Holding the Select button for more than 3 seconds brings the user to the system menu (Fig.4b). The system menu features that could be of use to the EasyClub operator are the Control Panel (CP) and Control Board (CB) version check menus. There the system software versions info could be obtained, which is useful when contacting UPT Service Department. When in system menu, the user may toggle between the items using the Up/Down buttons. Selecting and Exiting an item is done by pressing the Select button. The user may exit the system menu by toggling to the “End“ item and then pressing Select to confirm going back to the user menu.

Fig. 4a – User Menu structure



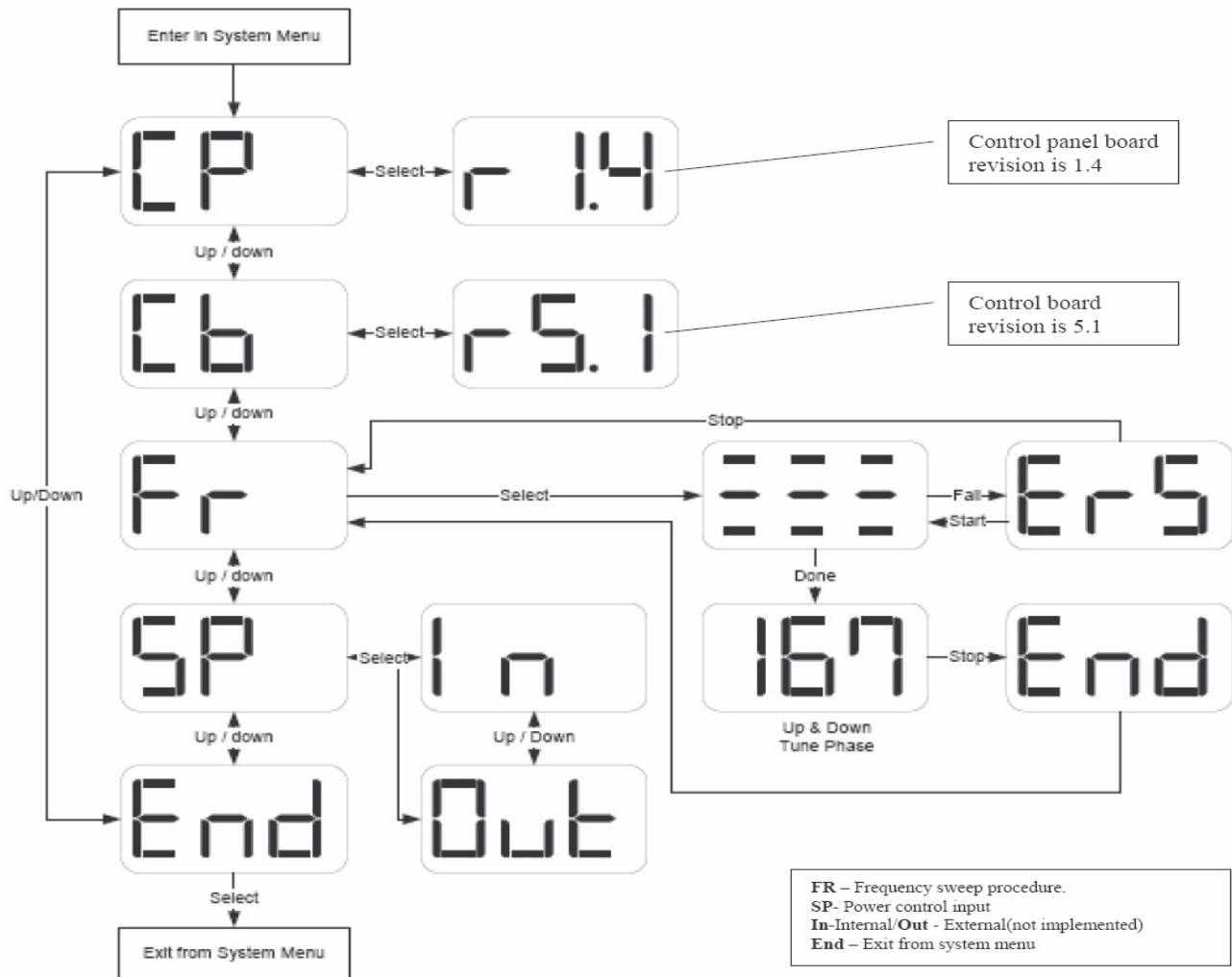


Fig.4b -System menu structure

6.1.2 HOW DOES IT WORK, AND WHAT THE USER SHOULD KNOW?

The device described in this manual is intended for production and repair of golf clubs in industrial as well as in small workshop environment. The device works by applying alternating magnetic field to the hosel. The magnetic field induces electric current inside the material which has certain resistance, therefore the area exposed to the inductor head heats up.

After performing all the installation steps in the manual Ch.5 you are ready to work with the EasyClub.



Despite that the device is quite easy to operate, the operator should at all times abide by the precautions and safety measures specified in this document. Avoid contact with heated parts of the golf club due to burn injury hazard.



When using the device be aware that the head and shaft are becoming hot and clamps or some additional gear might be needed in order to pull the club head off.

6.1.3 STARTING THE SYSTEM

NOTE: Before proceeding, complete all the required electrical connections.

1. Attach the inductor head cable to the Power Supply using the 10-pin connector located on the front side of the unit.

2. Make sure the Power supply is properly wired and that power to the unit is available.
3. Turn the ON/OFF switch on the back of the Power Supply to the ON or "1" position to turn it on. As mentioned in 6.1.1 After turning the device ON it displays the software version number and enters in power setting mode (See user menu structure -Fig.4b). Set the timer and power output according the club hosel size and the heat amount you want to reach. Take the inductor head and position it over the hosel so that it covers the place that has to be heated (Fig.5). The deeper the hosel gets into the inductor gap the better it's heated.

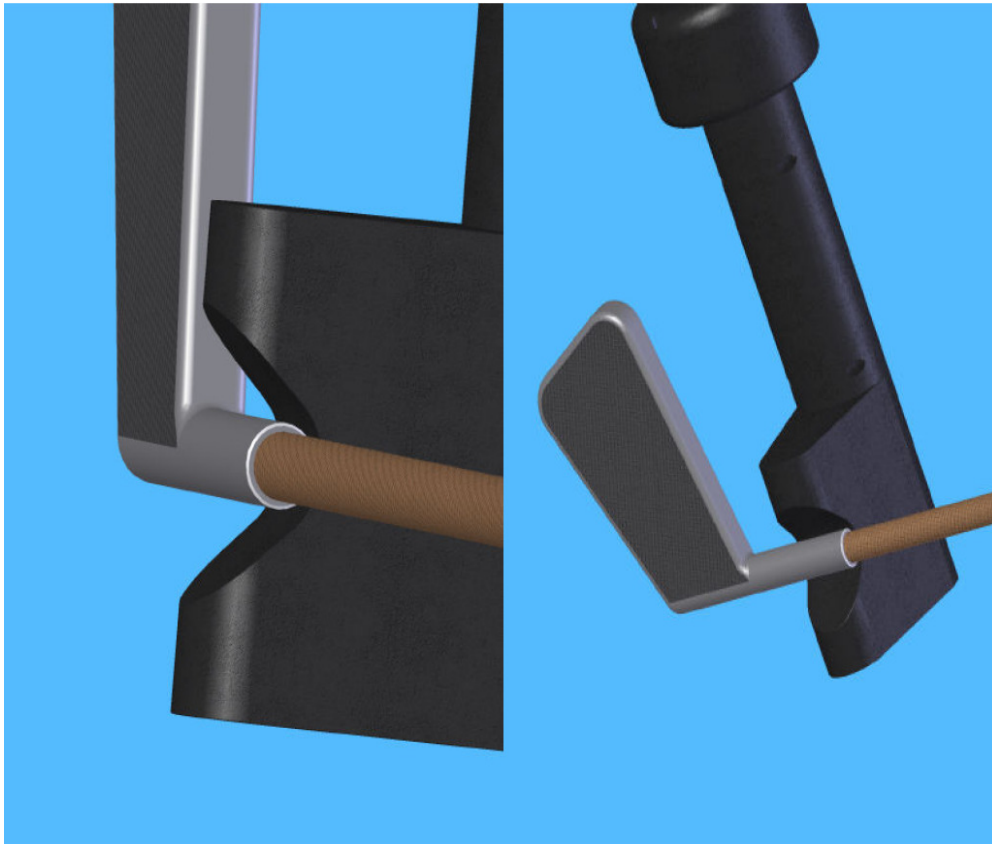


Fig.5 Inductor head alignment

With the timer and power output already set, EasyClub is ready to be started, by pressing the footswitch or the front panel's start button. The "HEAT ON" LED is lit and the timer counts down to zero, after which the unit stops and HEAT ON" LED goes off. If the power is set for 100% or less it may be immediately restarted. The minimum "HEAT ON" time is 0.2sec. The output power can be set between the limits of 10% and 120%.

If the power is set between 100% and 120%, the unit will automatically turn itself off in 5 seconds. It will not allow to be restarted for another 5 seconds.

The time can be set for up to 5.0 sec. As the set power output raises, the pause duration needed between "HEAT ON" cycles increases, leaving the unit to cool down. (Example: for 120% power output and time 5.0 sec.-after one "HEAT ON" cycle there must be at least a 5.0 sec pause, while for 110% power output and ON time of 5 sec. the power supply must rest for at least 2.5 sec).

6.2 ALARMS, FAULTS AND WARNINGS

The following are possible alarms, faults and warnings that the customer may encounter.

6.2.1 PHASE FAULT



The primary current and voltage of the Power Supply are set —“in phase“ at the factory. This subjects the semiconductor devices to the least amount of stress and reduces heat build up and extends the life of the devices. This fault results when the current and voltage fall out of phase enough to possibly cause damage to the devices. Continued occurrence of this fault could be an indication of Power Supply failure. Contact UPT Service Department.

6.2.2 CURRENT FAULT



As a safety feature, the current that runs through the main output circuitry supplying energy to the inductor head is monitored. If that current exceeds a preset limit, a current fault condition will occur. This fault can be indicative of a bad semi-conductor device or a possible short in the wiring. Contact UPT Service Department.

6.2.3 FREQUENCY FAULT



The Power Supply is programmed to run within a certain frequency range. When the unit attempts to run outside the proper frequency range, a frequency fault is realized. A couple of reasons for this could be a drastic change in the inductance of the attached coil or possibly a capacitor that has gone bad. Contact UPT Service Department.

6.2.4 TEMPERATURE FAULT



Making use of the temperature sensor within the MOSFET device and some external circuitry, should the MOSFET device get too hot, the unit will stop running and produce this fault. Allow the unit to cool before trying to run it again. If the fault keeps occurring, make sure the fan is working properly and that none of the vents allowing air to flow through the unit are blocked. If everything checks out well, contact UPT Service Department.

6.2.5 AUTO TUNE FAILED



This message is displayed if the unit fails in automatic recognition of inductor head. Please turn the unit off, wait for few seconds until all the panel lights go off and then reconnect the inductor head. Turn the unit on and try running it again. If there is no positive result, contact UPT Service Department.

6.2.6 COMMUNICATION FAULT



The Control Panel and the Control Board inside the unit, have microprocessors, which need to communicate with each other to work properly. This fault occurs if there is a loss of communications between these two microprocessors. An unplugged due to a mechanical shock internal cable, broken wire or weak contact might be the reason for such a fault. If the error occurs frequently or the unit fails to start at all, contact UPT Service Department.

6.2.7 INDUCTOR HEAD MISSING



The message above indicates that the inductor head is disconnected from the power supply. Check for loose connection between them and then restart. If the error keeps occurring, unplug the unit off the mains socket and inspect connector for traces of dirt or other obstacles that might prevent electrical contact. If this doesn't help, contact UPT Service Department.

6.2.8 POWER OVERLOAD



This message is shown when the output voltage reaches unsafe limit because the unit got overloaded. Use this device only for golf club repairing or assembly. If this error occurs while no load is present, or at normal loading conditions, contact UPT Service Department.

6.2.9 POWER SUPPLY FAULT



This message will be displayed when the PFC module fails or when a general fault in the Power Supply occurs. Turn the unit off for about 30 seconds and then try turning it on after making an inspection of cables, connections and sealing head state. If the error persists, contact UPT Service Department.

SECTION 7 - MAINTENANCE

7.1 SCHEDULING

The UPT Power Supply is designed for continuous service and minimum maintenance requirements. The frequency of any maintenance program is a function of environment, degree of equipment use, and product experience.

7.2 PERSONNEL

Qualified personnel must perform inspection and maintenance procedures only. Personnel must read and be thoroughly familiar with all safety precautions discussed in this manual.

7.3 INSPECTION AND MAINTENANCE PROCEDURE

Note: Always follow approved lockout / tag out procedures before performing any service, inspection or maintenance.

The following describes inspection procedures to be performed on a daily, weekly, and monthly basis.

7.3.1 DAILY AND WEEKLY INSPECTION

It is good practice to do a quick visual inspection of the unit, wiring and connections on a daily and/or weekly basis. Report any apparent changes in performance to responsible personnel so that potential problems can be investigated.

7.3.2 MONTHLY INSPECTION

Perform the following on a monthly basis:

1. Ensure all wiring connections are secure. Visually inspect for any wear on cabling.
2. Verify that none of the enclosure hardware has become loose.
3. Remove any build-up debris that may occur around the fan inlet using a cloth or a vacuum cleaner. Use of compressed air is not recommended.
4. Wipe the Control Panel with a damp cloth to remove any dirt, prints or smudges.
5. Wipe the enclosure down with a damp cloth or using stainless steel cleaner, if desired.

SECTION 8 – SERVICE

8.1 GENERAL

There are no user serviceable parts inside the EasyClub unit. If for some reason the unit fails in the field it is advisable that the unit be serviced by the manufacturer or its authorized service representative. Should that happen, please contact us immediately. See Par. 8.2 for Service Contact Information. Please have the following information about your unit available upon calling:

- 1 Unit Serial and Revision Number. See label in Section 4 for these numbers identification.
- 2 Line Voltage and frequency.
- 3 Date of Delivery
- 4 Detailed description of the problem encountered.
- 5 Detailed description of the actions taken.
- 6 Approximate time in service.

If our technical staff is unable to help you over the phone, then a return authorization number (RA#) will be issued for you. With this number enclosed in you return package you can ship the unit back for repair. See Par. 8.3 for Service Shipping Information.

Note: No unit should be sent back for service without valid RA #.

8.2 SERVICE CONTACT INFORMATION

For technical service questions, please call:

631-467-6814

You may also fax your questions or request at:

(631) 980-4065

Note: Please, include you contact information so that you can be easily reached if necessary.

8.3 SPARE PARTS LIST



Recommended spare parts for this unit are listed in table 3.

Item	Ultraflex PN:
Fuse	3FFT-000-016-00
Line Cord	4KAB-000-018-00

Table 3: Spare Parts List

UPT Corporation maintains a stock of replacement parts that are available upon request. Contact UPT Corporation for further information on obtaining replacement parts.

8.4 FUSE REPLACEMENT

There are two fuses, one for each line on the PFC EasyClub Power Supply. They are located on the backside of the unit in plastic screwable holders.



Power down and unplug the unit before replacing the fuse. Failure to do so will create a hazardous condition that may result in equipment damage, personal injury, or death.

- Unscrew the plastic holder with flat screwdriver to gain access to the fuse.



Note1: Replace a burnt fuse only with the same type of fuse. It is recommended that a factory certified fuse is used for replacement. For fuse ordering information, please see Par. 6.4 Note 2: Do not overrate the fuse. That is fire hazardous and may cause personal injury or death. Make sure the fuse you are installing is rated 20A/250V.

- Put a new fuse in the fuse holder and screw it back to the unit. Secure the fuse screw by applying adequate screw torque.



Loose fuse screw may cause local overheating, unit damage or fire. If the fuse fails second time immediately or short after been replaced, please contact the factory prior taking any other actions.