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RADIANCY

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1. INTRODUCTION TO THE SYSTEM

Mistral is a Light and Heat Energy (LHE®) based multi-application device for the treatment of:

- Hair Removal (HR)
- Skin Photo Rejuvenation (SPR) (skin texture, fine lines)
- Pigmented lesions (sun spots, age spots)
- Vascular lesions (telangiectasias, spider veins)
- Acne Clearance (AC)
- Psoriasis Care (PSOR)
- Skin Tightening (ST)

Mistral consists of a console, a Footswitch, and up to 7 interchangeable Handpieces. Each Handpiece contains a pulse switch, a ready indicator light and an application specific lamp. The Handpiece is held by the operator and placed directly upon the treatment area. In this manual, the term operator applies to all qualified personnel trained to operate the Mistral system.

Important Note – Please check which version/type of Mistral you are servicing and refer to relevant sections in this Service Manual.

Refer to Appendix A (Alpha Units) to determine the type you are currentley servicing

2. SYSTEM DESCRIPTION

This chapter provides a detailed description of the Mistral system; its main components, controls, and technical specifications. Please review this material to familiarize yourself with the controls, ports and connectors as well as the consumable items used during treatment.

2.1. System Components and Controls:

The Mistral system consists of the following main components (**Error! Reference source not found.**):

- System console (main unit)
- Interchangeable handpieces
- Footswitch



Figure 1: Mistral Main System

2.1.1. Main Unit (System Console)

The main unit controls the operation of the entire system.

Front Panel:

- Computer Interface / LCD Touch Screen
- USB Ports
- On/Off Switch
- Emergency Stop Switch



Figure 2: Front Panel

Back Panel:

- Power inlet
- Main power switch
- Fuse drawer
- Handpiece cradle
- Footswith port
- System fan
- Air exhaust port



Figure 3: Back Panel

Right Side Panel:

• Handpiece power and air connections.



Connected Handpiece

Handpiece Connections

Figure 4: Right Side Panel

2.1.2. Handpieces

The Handpieces are connected to the main unit by a spiral cable containing electrical wiring and an air suction hose. Each Handpiece consists of an application specific lamp, pulse switch and pulse counter. When not in use, the Handpiece should be stored in its cradle on the right side of the main unit. The main unit will automatically detect the type of handpieces attached to the unit and configure itself to conform to the attached handpiecees.

Warning: Always make sure the handpiece is secure. Do not drop. This may cause damage to the lamp and handpiece.



Figure 5: Handpiece

Each handpiece is color coded for easy identifications. Please refer to Table 1: Handpiece Color Identification .

Handpiece	Color
Hair Removal	
Hair Removal V-VI	
Hair Removal (XL Spot Size)	
Hair Removal V-VI (XL Spot Size)	
Skin Photorejuvenation	
Acne Clearance	
Psoriasis Care	
Skin Tightening	

When handpieces are not in use or attached to the device, store them in their cases to prevent damage.

2.1.3. Footswitch

The footswitch arrives connected to the main unit. The system will emit a pulse only if the footswitch and handpiece buttons are pressed simoultaeneously.



Figure 6: Footswitch

2.2. Technical Information

Table 2: Technical Specifications

Technical Specifications			
Light Source	Light & Heat Energy (LHE)		
Wavelength Range			
Hair Removal	400-1200 nm		
Hair Removal V-VI (optional)	550-1200 nm		
Skin Photo Rejuvenation	400-1200 nm		
Acne Clearance (optional)	430-1100 nm		
Psoriasis Care (optional)	350-1100 nm		
Skin Tightening (optional)	780-1800 nm		
Fluence	4-15 J/cm ²		
Pulse Duration	Up to 80 ms		
Spot Size			
Basic	25 x 50 mm		
Adaptor Sizes	13 x 50 mm; 13 x 35 mm; 13 x 12 mm		
XL HR (optional)	35 x 50 mm		
Pulse Generation Method	Capacitor bank electrical discharge switch		
Physical Dimensions	40x47x32 cm (w/d/h): 15.8x18.5x12.6 in. (w/d/h)		
Weight	16.8 kg./37 lbs.		
Electrical Requirements	Single phase 100-120 VAC ±10%, 10A, 50-60 Hz		
	Single phase 220-240 VAC ±10%, 8A, 50-60 Hz		
Operation Conditions			
Temperature	5°-30° C		
Humidity	30%-80% RH		
Transport & Storage			
Temperature	-20°- 80° C		
Humidity	0%-95% RH; 0.1-1.5 atm.		

2.2.1. Safety Features

Many of the Mistral features were built-in to help insure the safety of the user and patient. The following are a few examples:

- "Ready" indicator lights on the console and handpiece advise the user when the system is charging or ready to emit a pulse.
- Emergency Stop Button
- The Footswitch prevents accidental pulses.
- An internal and independent safety electronic circuit shuts down pulse flashing ability in the event of a disabled blower.
- Major Precautions & Warnings

2.3. Major Precautions & Warnings

2.3.1. Precautions

- Verify that Mistral's nominal voltage (see label at the bottom of the system console) conforms to the electrical voltage of your electrical outlet. Make sure that the electrical outlet has proper grounding.
- Do not open Mistral's outer case as dangerous voltages are present inside the system. Only Radiancy certified personnel are authorized to perform service within the protective covers of Mistral.
- To perform routine maintenance always shut down the system, disconnect power and wait a minimum of 5 minutes. Performing maintenance procedures while the system is connected, or less than 5 minutes from disconnection may be hazardous to the operator and destructive to the system.
- Never use any flammable substance such as acetone or alcohol on the skin prior to treatment.
- Never use flammable substances or harsh chemicals to clean or disinfect any part of the Mistral system.

- Always make sure to completely lift the Handpiece off the patient's skin between pulses in order to avoid excessive heating of the handpiece or skin.
- When the Handpiece is replaced, repeat testing procedures for each patient during the first 500 pulses.

2.3.2. Warnings

- Verify that all safety measures are working properly to ensure proper safety.
- Delivering excessive energy to the treatment site may cause thermal damage to the skin, resulting in burns, crusting, or abnormal pigmentation.
- As a safety precaution, always have a first aid kit equipped to treat burns at your disposal.
- Operator should wear safety goggles when operating the device.
- Although Mistral is considered an "eye-safe" device when operated according to instructions, supplying patients with protective eyewear during facial treatment will provide extra protection against discomfort from light exposure.
- Never look directly at the light coming from the handpiece as this may cause temporary eye discomfort.
- Looking away during the flash will further prevent discomfort.
- Never allow the Handpiece to emit a pulse into 'free space'. Always make sure that the Handpiece is pointed at and in full contact with the skin during treatment.
- Even when the Energy level on touch screen is set at "0", the system can still trigger a pulse. Therefore be aware of the position of the Handpiece at all times to avoid accidental flashing.

- Always remain in visual contact with the computer screen to ensure that the established energy is the correct "working energy" setting.
- Pigmented moles and beauty spots and any suspicious (abnormal) pigmented lesion should be covered with a non-flammable white sticker.

2.4. Labels

This section describes the labels affixed to Mistral. It is recommended that users review the meaning of these labels for everyday use and in case any details are needed for service.

The table below briefly reviews a number of the internationally recognized symbols that are found on the Mistral main unit and its external package.

Symbol	Meaning	Comments
\triangle	Attention, consult accompanying documents before use	
Ĩ	Attention, consult accompanying documents before use	
***	Manufacturer	
EC REP	Authorized representitive in the European community	
۸	Degree of protection against electric shock: Type BF applied part	

Table 3: International Standards Labels

X	Protect the environment by not disposing of this product with household Waste (2002/96/EC). Check your local authority for recycling advice and facilities (Europe only).	
	CE mark represents the compliance to the European Medical Device Directive 93/42/EEC, Class IIa device. The number (0344) is of the notifying body, KEMA Notified Body.	
N22151	The C-Tick mark represents compliance to Australian EMC Regulations.	
100-240 VAC	Voltage sticker	Appears on outer package

Additional stickers found on the main unit and the handpieces include serial numbers of system parts and usage warnings.

Label	Location and Comments
RADIANCY* Model: Matrait ** PN: 3005710 Soling TableTat Ac-Annowated 225209/C 454-500000 SM MOLYPROSENENT SM CONTRACTORS	Located on the back of the system this label includes manufacturer details, voltage information, and the system's serial number.
Located on Mistral Handpieces	
RADIANCY Weres, HR Hugeness PR 3990000 SN Hornsauce PR 3990000 SN Hornsauce PN 300000 SN Hornsauce PN 300000 SN Hornsauce	HR Handpieces: Basic and optional XL
RADIANCY Milma, HR Y-VI Hadwitz PN 200003 SM Hourseaux PM 20000 SM Hourseaux	HR V-VI Handpiece (optional): Basic and XL
RADIANCY Merced BR Measurest PR 306441 BR Bernweiter	SPR Handpiece
RADIANCY Minina, Adva Hudekex PM 3005350 SR Armeesexex	AC Handpiece (optional)
RADIANCY Marto, Protoco Posteria PN 200599 38 Formation	PSOR Handpiece (optional)
LINE R.35E 01/07/070 230/MC 84 (SB) 115/AC 10A (SB)	On rear panel, above power inlet. On 100- 120V systems, and on 220-240V systems, respectively.
CANCER AND INFORMATION OF THE AND	On rear panel.
Warning De not look directly et the emited light	This warning appears on all handpiecess, next to opening.

Table 4: Additional Labels

2.5. International Standards Compliance

The Mistral complies with the following international standards and directives:

EMC Standards:

IEC 60601-1-2:2001 + A1:2004

Clause 36.201 (Emission);

Clause 36.202 (Immunity);

Harmonized Standards:

Medical Electrical Equipment – Part 1:

General Requirements for Safety:

IEC60601-1:1988 + A1:1991 + A2: 1995

EU Directives:

- Low Voltage Directive 2006/95/EC
- Electromagnetic Compatibility Directive

2004/108/EC

- Medical Device Directive 93/42/EEC -

Class IIa device marked as CE 0344 of the KEMA Notified Body (only for the Acne Clearance and Psoriasis Care applications)

3. INITIAL SET UP

3.1. Unpacking Mistral

The Mistral system is supplied with the following components:

- Main Unit (console)
- 1 HR Standard Handpiece
- 1 SR Standard Handpiece
- Optional Handpieces
 - ST Handpiece
 - AC Handpiece
 - PSOR Handpiece
 - HR XL Handpiece
 - HR Sensitive Handpiece
 - HR Sensitive XL Handpiece
- Client Safety Goggles
- 3 Area Adaptors
- 2 Packs of Hygienic Rings (10 hygienic rings per pack)
- Footswitch
- Power Cable
- User Manual
- 2 Fuses
- Treatment Coat
- Touch Screen Stylus
- Electrical Requirements

Before unpacking Mistral, make sure the work site meets the following electrical requirements. Mistral requires a separate single phase supply line with nominal voltage (according to the local line voltage):

- Single phase 100-120 VAC ±10%, 25A, 50-60 Hz; or
- Single phase 220-240 VAC ±10%, 16A, 50-60 Hz

Mistral is grounded via the grounding conductor in the power cable that is plugged into the wall power outlet. Good grounding is essential for safe operation of the device.

It is recommended that the system's power cable not be placed on the same circuit as devices with heavy variable loads, such as air conditioning units. The fuses located within the unit are rated:

- 5x20T 125V 10A for 100-120VAC
- 5X20T 250V 6.3A for 220-240 VAC.

Be sure to use the appropriate fuse for your region's electrical requirements. When a fault in the system occurs, the fuse will burn out and the system will not run.

3.2. Installation

Mistral is designed for easy installation and does not require any site preparation. Installation is carried out as follows:

- Unpack the system and place it in a designated location. It should be placed on a flat, stable surface, such as table, counter or sturdy cart.
- Verify that the system is intact and that all its components are present.
- Verify that the nominal voltage, recorded on the underside of the unit, conforms to the electrical voltage of your country (100-120V/220-240V).

3.2.1. Handpiece Connection

If necessary, connect the Handpiece according to the following instructions (Figure 7):

- 1. Align the Handpiece power and air connectors with its power outlet and air suction inlet. Use the metal prongs as a guide.
- 2. Snap into place.



Figure 7: Handpiece Connection

To remove handpiece:

- 1. Push button on back of connector
- 2. Gently pull and pop out connection.

Note: Turn the system off when replacing or exchanging handpieces.

After the handpiece/s are connected:

- 1. Plug the system into a designated electrical outlet.
- 2. Test the system for proper operation.

Again, always make sure the handpiece is secure. Do not drop. This may cause damage to the lamp and handpiece.



3.3. MISTRAL BLOCK DIAGRAM

Diagram 1: Mistral Block

4. SYSTEM OVERVIEW

The Mistral is built on a computer platform and is comprised of HW modules as well as Software enviorment.

The SW enviorment requires (in general) a soft start up since it needs to be uploaded in a well determined sequence.that is why the method of feeding the Main AC to the platform and another push button for soft start up is present in computers and specifically incoporated in the mistral.

4.1. Module Overview and Initial Comments

The following pictures will illustrate the positioning of various modules within the Mistral.

Attention!

For SW upgrade Please refer to Appendix A For further details



Figure 8: Top View



4.2. Modules Description and Role

 <u>12v DC Power Supply:</u> Receives 115-230VAC and outputs 2 Voltages: 5VDC and 12VDC.

These Voltages are supplied to various points inside the machine, mostly to sub-units such as CPU and Backlight illumination Panel and for "soft start" of the Unit.

- <u>24v DC PS</u>: Supplies 24 VDC to the blower controller for blower operation. (Doesn't Exsist in Alpha type units)
- <u>PS Splitter:</u> Receives 115-230VAC from the MB and splits it into 2 separate major entities: The Blower and the Capacitor Charging PS. Its main goal is to shut down the Voltage to the Charger and Blower when System enters STBY to lower the current consumption while on STBY.
- <u>Capacitor Charging PS:</u> Receives 115-230VAC from the Splitter and acts as a current source to charge the capacitors via the MB.
- <u>Line Filter:</u> Screens out noise from the outer AC network.
- <u>Pulsed Capacitors:</u> The Energy Storage Pack is comprised of 3 Capacitors connected individualy to the MB. It is charged by the PS Charger via the MB.
- <u>Emergency Button</u>: Connected to the MB, it shuts down the pulse generating mechanism as well as the blower when activated (pressed).
- <u>Blower Unit +Controller</u>: Pulls air from the outside through the Lamps into the HP to cool the HP and LUA. It is fed from the PS Splitter with 115-230VAC. (In Alpha type machines the contoller and blower are embedded together and the Blower can operate on AC)
- <u>Tacho Unit:</u> A tacho generator is a precision generator used to sense the mechanical speed of rotation of a motor, hence

the blower. The signal is then fed to the MB in order to accurately maintain Blower speed .

- <u>Two way manifold:</u> This unit will direct the air flow according to the operational HP
- Display Module : Consists of
 - o Touch Screen
 - o TFT LCD
 - Computer On Module : COM
- <u>The COM module</u> communicates on a constant basis with the MCU and acts as the system master. The COM initiates queries to the MCU, which determines which status or Events are reported to the COM.
- <u>The Main Board (MB)</u>: The MB includes the major processing unit (MCU) and sub-modules that monitor the behaviour of the complete system. The MB communicates with all other modules on a constant basis, such as the COM (Computer On Module) which resides on the Display Module.
- <u>Backlight PCB</u>: Provides 12VDC to illuminate the backlight of the display
- <u>HP:</u> 2 HPs can be connected to the base unit. Only one is operational during use.

Each HP is comprised of :

- Internal Pulse Counter Counts the number of pulses delivered by that handpiece
- Pulse Trigger Unit Helps to trigger a pulse from the lamp
- Lamp The "Load" which emits LHE.

5. MISTRAL STARTUP SEQUENCE (EMERGENCY NOT ENABLED)

5.1. System Startup



Flow Chart 1: Mistral Startup A



Flow Chart 2: Mistral Startup B

After inititating start-up, the system will automatically begin with a short introductory loading page.

When the introduction is finished the user will be automatically directed to the logon screen. Using the numbers on the LCD screen, enter your password and press enter. (Figure 10)

Login		
ſ		Enter Password Here
Password:	****	
	7 8 9	Backspace
	4 5 6	
	1 2 3	
	0	
0	Turn Off System	

Figure 10: Password Entry

You will be directed to the Home Page (Figure 11). On the home page you will usually a, as atechnitian, navigate "Direct Treatment". Gently tap the screen where you wish to go next.

		~
	Training	0
	Settings	C
Enter Password		ř
Data base Treatment		
	Enter Password Data base Treatment	Training Settings Enter Password Data base Treatment

Figure 11: Home Page

Settings (Figure 12) – It is recommended to set the language preference and system parameters upon first startup.

Interface language	l'ngith	Exit
Input language	English 😸	
Current date	0. eps-2017 p 💌	Export DB
Current time	1 👿 29 👿 PH 💌	Import DB
Require password	\checkmark	Screen
General volume	V Enable 💭 Low 🕚 High	Children
Beep volume	📀 Low 💦 🕐 Medium 🔿 High	Tech info
Screen brightness	Low Medium 🙆 High	

Figure 12: Settings Page

6. SCREEN CALIBRATION

Screen Calibration should be performed once every 6 months.

- 1. Carefully press or touch stylus on center point of target. Using the stylus for calibration is highly recommended.
- 2. Hold in place until target moves.
- 3. Follow the target around the screen until calibration is complete.
- 4. After calibration, tap the screen once to save data or wait 30 seconds to keep old data. You will be automatically directed to the settings page.

7. TECHNICAL INFORMATION

This section is password protected and only accessible by a certified technician.

Once your settings have been entered, they will be automatically saved and available the next time you use the system. Select "Exit" to return to the home page.

8. MODULES REPLACEMENT

8.1. HP Replacement

Note: Turn the system off before replacing or exchanging handpieces.

The handpiece must be replaced every 50,000 pulses. Remove the handpiece from the system and return it to your Radiancy representitive for a replacement.



Figure 13: HP Replacement

To remove handpiece:

- 1. Push button on back of connector
- 2. Gently pull and pop out connection.
- 3. The Area Adaptors are used when treating different size and shape areas. For hygienic reasons, clean the area adaptor between each patient with a soft, damp cloth, as you would the handpiece.
8.2. Area Adaptor Placement

Area adaptors come in 4 sizes (Figure 14) to help pinpoint treatment areas and deliver more efficient treatments without affecting the surrounding skin.



Figure 14: Mistral Adaptor Sizes

Attaching the Area Adaptor:

Hold the adaptor in one hand and the handpiece in the other. Place the adaptor on the handpiece as shown in Figure 15. Aline the two tabs with the openings on the small ends of light unit. Gently press until you hear a clicking sound ans adaptor is firmly in place.

Removing the Area Adaptor:

Hold the adaptor in one hand and the handpiece in the other and gently pull off the adaptor



Figure 15: Area Adaptor Replacement

8.3. Fuse Replacement

To replace the fuse and restore the energy after a fuse is blown, turn off the unit and disconnect the system from the electrical outlet. Wait 5 minutes. Pull out the fuse drawer located in the back panel. Replace the fuse and push the drawer back into position.



Figure 16: Fuse Location

9. REPAIR INSTRUCTIONS

9.1. Main Board Replacement

To replace the Main Board of the Mistral, perform the following:

- 1. Turn off the system, unplug the power cable from the wall and wait for 5 minutes.
- 2. Remove the machine's top cover.
- Use the Bleeding Resistor (Supplied) to discharge Main Capacitor Bank according to Parag 10.1, page 41
- 4. Release all connectors to the MB
- 5. Remove the allen screws securing the MB to the chassis (Figure 17).



Figure 17: Main Board

- 6. Remove the old MB and replace it with a new one
- 7. Return all screws and connectors and secure in place.
- 8. Perform FTP according to Parg. 10 page 40.

9.2. Splitter Replacement

- 1. Turn off the system, unplug the power cable from the wall and wait for 5 minutes.
- 2. Remove the machine's top cover.
- 3. Use the Bleeding Resistor (Supplied) to discharge Main Capacitor Bank according to Parag 10.1 page 41.
- Disassemble the 12vDc PS and its connectors and Studs.Refer to paragraph 9.3, page 29
- 5. Release all connectors to the Splitter
- Remove allen screws securing the Splitter to the chassis (Figure 18).



Figure 18: Splitter

- 7. Remove the old splitter and replace it with a new one
- 8. Return all screws and connectors and secure in place.
- Reassemble the 12vDc PS and its connectors and studs.Refer to Paragraph 9.3, page 29.
- 10. Perform FTP according to Paragraph 10, page 40.

9.3. 12V LVPS Replacement

- 1. Turn off the system, unplug the power cable from the wall and wait for 5 minutes.
- 2. Remove the machine's top cover.
- Use the Bleeding Resistor (supplied) to discharge the Main Capacitor Bank according to Parag 10.1 page 41.
- 4. Release all connectors to the 12V LVPS
- Remove the allen screws securing the 12V LVPS to the chassis (Figure 19)



Figure 19: 12V LVPS

- 6. Remove the old PS and replace it with a new one.
- 7. Return all screws and connectors and secure in place.
- 8. Perform FTP according to Parg. 10 page 40.

9.4. 24 V LVPS replacement)

- 1. Turn off the system, unplug the power cable from the wall and wait for 5 minutes.
- 2. Remove the machine's top cover.
- 3. Use the Bleeding Resistor (Supplied) to discharge Main Capacitor Bank according to Parag 10.1 page 41.
- 4. Release all connectors to the 24 V LVPS
- 5. Remove the allen screws securing the 24 V LVPS to the ramp (Figure 20).



Figure 20: 24 V LVPS

- 6. Remove the old 24 V LVPS and replace it with a new one.
- 7. Return all screws and connectors and secure in place.
- 8. Perform FTP according to Parg. 10 page 40.

9.5. Capacitor Replacement

- 1. Turn off the system, unplug the power cable from the wall and wait for 5 minutes.
- 2. Remove the machine's top cover.
- Use the Bleeding Resistor (Supplied) to discharge the Main Capacitor Bank according to Parag 10.1 page 41.
- 4. Release all connectors to the MB (Figure 21).



Figure 21: Capacitor

5. Remove the allen screws securing the capacitors' cover (Figure 22).



Figure 22: Allen screw placement

- 6. Remove the capacitors and replace them with new ones.
- 7. Return all screws and connectors and secure in place.
- 8. Secure the upper cover
- Perform FTP according to Parg. 10 page 40.

Important!!! – All 3 capacitors must be of the same type (or A ;or B ;or C). Check the writing on the capacitor to determine which type it is. (Figure 23). NEVER MIX BETWEEN CAPACITOR TYPES.



Figure 23: Example of Type B Capacitor

9.6. Display Module Replacemet

The display module is comprised of several sub-modules.

MCU and Display PCB replacement

- 1. Turn off the system, unplug the power cable from the wall and wait for 5 minutes.
- 2. Remove the machine's top cover.
- 3. Use the Bleeding Resistor (Supplied) to discharge the Main Capacitor Bank according to **Parag 10.1 page 41.**
- 4. Release all connectors from the Pheripherials to the Display PCB and remove all all screws (Figure 24).



Figure 24: Display Module

The copper braids (Figure 24) are very delicate and need to be handled with care. First realease the locking mechanism with a flat headed screw driver and then gently remove the braid (Figure 25).



Figure 25: Copper Braid Removal

- 5. Remove the old MCU and Display PCB and replace with new ones.
- 6. Reconnect all braids, connectors and screws and secure into place.
- 7. Perform FTP according to Parg. 10 page 40.

9.7. Backlight PCB replacement

- 1. Turn off the system, unplug the power cable from the wall and wait for 5 minutes.
- 2. Remove the machine's top cover.
- 3. Use the Bleeding Resistor (Supplied) to discharge the Main Capacitor Bank according to Parag 10.1 page 41.
- 4. Release all connectors from the Pheripherials to the Backlight PCB and remove all screws (Figure 26).



Figure 26: Backlight PCB

- 5. Remove the old Backlight PCB and replace it with a new one.
- 6. Reconnect all braids, connectors and screws and secure into place.
- 7. Perform FTP according to Parg. 10 page 40.

9.8. PS Charger Replacement

- 1. Turn off the system, unplug the power cable from the wall and wait for 5 minutes.
- 2. Remove the machine's top cover.
- Use the Bleeding Resistor (Supplied) to discharge the Main Capacitor Bank according to Parag 10.1 page 41.
- Remove/Loosen the screws from the metal plate and 12VPS (Figure 27)



Figure 27: PS Charger – Screw Placement

5. Remove the 12VPS

6. Remove the AC/DC Splitter screws and the 2 back studs (Figure 28).



Figure 28: PS Charger – Studs & Screws

- 7. Remove all braids.
- 8. Remove the AC/DC Splitter.
- 9. Remove the last screw in the metal plate (Figure 29).



Figure 29: PS Charger – Ties & Screws

- Cut any tie wraps that might interfere with lifting the plate. Refer to Figure 29: PS Charger – Ties & Screws for examples tie wrap placement.
- 11. Remove any additional braid, connector or screw that might interfere with lifting the plate (Figure 30).



Figure 30: PS Charger – Remaining Connections

- 12. Gently lift and move the metal plate to the right until the PS Charger is exposed enough for disassembly.
- 13. Remove the PS Charger and replace it with a new one.
- 14. Reconnect all braids, connectors and screws and secure into place.
- 15. Return the metal plate to its place and secure it.
- 16. Reconnect all braids to the Charger.
- 17. Secure any released braid with tie wraps.
- 18. Perform FTP according to Parg. 10 page 40.

10. MACHINE FTP

The machine must be tested after each service action performed.

Below are step-by-step instructions for testing.

10.1. Software Installation / Upgrade

<u>Before</u> performing system FTP, please ensure that the Comm and MCU software is the latest avilable version.

Contact your Radiancy representitive for more information about software upgrades.

Please refer to Appendix A for complete instructions regarding software installation.

10.2. Bleeding the Capacitors

Prior to ANY service action, you must bleed out all energy stored in the capacitors. We have supplied a bleeding resistor (2.2K) with each Tech Kit for this specific purpose.

Bleeding Instructions

- 1. Turn off the system, unplug the power cable from the wall and wait for 5 minutes.
- 2. Remove the macine's upper cover.
- 3. Use an allen key to disassemble the Cap Pack Cover (Figure 31).



Figure 31: Screw Placement

- 4. Take the bleeding resistor and connect one end to the (-) sign and the other end to the (+) sign of each single capicitor.
- 5. Wait 2 minutes before disconnecting the reisitor from the capacitor.
- 6. Repeat for all capacitors.



Figure 32: Bleeding Resistor and Capacitor

10.3. Hardware "Hot" Tests

Use a calibrated DVM to measure the voltages at the below TP's.

If the measurment does not comply to the ratings stated below, an error will occur in the related module or function.

TP Number	Voltage Measured (DC)	Related Module/Function				
Turn main SW on for STBY (Standby) mode.						
C3 left leg vs TP7 (gnd) +Leds D18&D9 are lit	+5v	LVPS (12V;5V)				
C66 left leg vs TP7 (gnd) +Leds D18&D9 are lit	+12V	LVPS (12V;5V)				
Use soft start button to initiate start-up.						
TP4 vs TP7 +D8 Led is lit	5v	LVPS (12V;5V)				
TP10 vs TP7	12V	Voltage for IGBT drivers				
TP5 vs TP7	12V	Filtered Voltage				
TP15 vs TP16 (Floating Voltages)	+12V	MB (Pulse control Function)				
TP12 vs TP14 (Floating Voltages)	+12V	MB (Pulse control Function)				
TP17 vs TP7 + LED D8 is lit	5V	MCU Operating				

Table 5: Hot Test

10.4. Final Test Procedure

- 1. Connect the "Master" HR Basic HP (Supplied) and all other accessories when machine is shut down.
- 2. Turn on the machine.
- 3. Upon startup, you will notice on the bottom right side the COM sw version currentley installed (Figure 33).Write it down for future reference.



Figure 33: SW Version

- 4. After inititating start-up,the system will automatically begin with a short introductory loading page.
- 5. When the introduction is finished you will be automatically directed to the login screen (Figure 34). Using the number pad, enter your password and press enter (default is 123456).



Figure 34: Login Screen

6. The following screen will appear (Figure 35). Push the Settings button.



Figure 35: Settings

7. The following screen will appear (Figure 36). Push the Tech Info button.

Interface language	trgidi 📃	Exit
Input language	English	
Current date	8 wpterer 2007 p. +	Export DB
Current time	1 💌 29 👿 PH 💌	Import DB
Require password		Screen
General volume	💟 Enable 🕥 Low 🛛 😐 High	Californido
Beep volume	🕘 Low 🕜 Medium 🔿 High	Tech info
Screen brightness	Law Medium 😐 High	

Figure 36: Tech Info

8. The following screen will appear (Figure 37). Using the number pad, enter your password (Default is 654321) and press enter.



Figure 37: Tech Info Password Entry

9. The following screen will appear:



Figure 38: Internal SW Version

10. Write down the version numbers of both SW. (Comm and MCU)

45

- 11. Compare both versions to the ones avilable from Radiancy. If they are <u>not identical</u>, upgrade your current SW to the latest version.
- 12. Refer to Appendix A for instructions on how to upgrade SW.
- 13. If you have the latest versions of SW or you have just finished with the upgrade, restart your machine and proceed to Chapter 11.

11. HW TESTS

11.1. General Test

#	Test	Required Outcome
1	Audible beep sounds upon soft startup	\checkmark
2	Blower RPM starts high and decreases	\checkmark
3	Touch screen response	\checkmark

11.2. Manifold & Blower Functional Test

#	Test	Required Outcome
1	1. Upon reaching the "Direct" treatment Screen.	1. Machine identifies HR & SR applications.
	 Upon connecting the HR handpiece to Port 1 and the SR <u>Dummie</u> handpiece to Port 2 	2. Blower starts upon pressing the footswitch
	 Upon selecting HR, medium pulse width and 60% energy. 	 Machine pulses while footswitch is pressed and the pulse trigger is pushed
	4. Upon running the machine (click $$)	 Both machine and HP counters are progressing in increments of 1 at each pulse
2	Upon connecting the HR handpiece to Port 1, the SR handpiece to Port 2 and selecting SR	Air flow is from Port 2 only
3	Upon checking the volumetric flow rating according to paragraph 11.3, page 47	• 240L/H is measured.

11.3. Blower Calibration

Perform blower calibration only if the measured volumetric flow is **below 210L/H** (or after each service repair):

- 1. Before attempting calibration
 - a. Check that the MCU SW is higher than 3.4.6.
 - b. If it is lower or identical, Upgrade the SW, calibration is not possible with this or lower versions.
 - c. Perform paragraph **B** through **H** and jump to **appendix A** for SW upgrade.
- 2. Install the air flow meter SW on your computer according to Appendix A, parag. 1.3, page 72. (One time installation)
- 3. Remove the machine cover while machine is shut down.
- 4. Locate SW2 on the MB .Use small head screw driver to toggle up the second and third dip switch. The default position is down.



Figure 39: Calibration

- 5. Search for the controller dipswitch (See pic below)
- 6. Toggle the **Pin 4 downwarth** on the Controller.(If not down already)



Figure 40: Calilbration 2

7. Locate the calibration trimmer on the controller:



Figure 41: Calibration Trimmer

- 8. Turn trimmer counter clockwise until you hear a "click".
- 9. Turn trimmer clockwise 7 full turns.
- 10. Connect Flow meter to port 1 when the sleeve adaptor is placed on the air inlet of machine.



3 Head Cable

Figure 42: Air Flow

11. Take the "3 head" cable (9 pin Dsub to 9 pin circular and USB) and connect one end to the Flow meter (See above)and the other 2 connectors to your computer



Figure 43: Air Flow Connection

USB To computer

12. Turn on your computer.The following screen appears. Change the Upper Scale limit to 300 and the Sample Rate to 500. (Figure 44)



Figure 44: TSI Flow Adjustment Screen 1

13. Click on **"OFF**"button in order to enable the **Run** command. The software will integrate the Airflow Meter and display the model and serial number in both the Machine and HP counters are progressing in 1 at each pulse he designated rubrics. (Figure 45)

TSIFlow.vi			
<u>File E</u> dit <u>O</u> perate <u>W</u> indows <u>H</u> elp			TSI
الله الله الله الله الله الله الله ال			Flow
200.0		Eleuwate	
250.0-			Volume
200.0 -		0.00	
150.0-		SLPM	
100.0 -			Begin trig level Begin trig slope
50.0 -			0.25 LPM Positive
0.0-			
152.38	252.38	sec	End trig level End trig slope
30.0-	_	Tomporatura	0.10 LPM Negative
25.0 -			
20.0 -		29.31	
15.0-		C	Run ON
10.0-			
5.0-			
0.0-	252.20		Serial Number
	202.00	, <u>sec</u>	H02110819004
200.0 -		Pressure	Model Number
150.0-		101.30	40211
130.0			milliseconds/sample
100.0-		NG	±500
50.0-			
			Gas Com Port
152.38	252.38	3 sec	⊒ Air ⊒ 1
			· · · · · · · · · · · · · · · · · · ·

Figure 45: TSI Flow Adjustment Screen 2

- 14. Turn on the machine
- 15. When suction starts, the SW will display the Aiflow rate both through Graphic and Numeric data



Figure 46: TSI Flow Adjustment Screen 3

- 16. Calibrate Blower volumetric flow to 240.
- 17. Exit software
- 18. Disconnect Cables
- 19. Return the second and third dip switch on the MB to its originally position (down),and remove jumper J3.



Figure 47: Dip Switches' Final Position

- 20. Restart the machine
- 21. Verify SW update according to Page 43 Parag.7.

11.4. Safety Tests

#	Test	Required Outcome
1	 Connect Hr Hp And Run Machine Press on the "Panic" Red button while machine is working 	Machine Shut's Down immediately
2	Connect Hr Hp And Run Machine Try to trigger a pulse WITHOUT pressing on the FS	Machine doesn't Pulse
	T	

Table 6: Safety Tests

12. ENERGY TESTS



1. Log on to the following Screen and choose "Direct Treatment"

Figure 48: Password Entry

- 2. Choose HR HP:
- Only applications that are related to the attached handpieces will be accessible, all other applications will be greyed out. (Figure 49)

	Select Ap	plication			1	Activated Treatment mode
(Hair Removal	Skin Rejuvenation	Acne	Psoriast		
	V-VI Hair Removal	V-VI Skin Rejuvenation			1	Non-activated treatment mode
					6	

Figure 49: Select Application Screen

4. Select Med Pulse interval. (Figure 50)



Figure 50: Select Pulse Level Screen

12.1. Configure Energy Settings:

- 1. Enter the energy level: Use the arrows or number pad to enter the energy level according to HR table Below
- 2. Confirm Selection: After confirming your selection, the green check mark will be replaced by an orange sun.

	0		Test Mode
Ī	8		Select Application
7	8	9	
4	5	6	
1	2	3	
	0		6
	7 4 1	 0 √ 7 8 4 5 1 2 0 	0 7 8 9 4 5 6 1 2 3 0 0 0

Figure 51: Confirm Selection

3. Place the special supplied **Basic Adaptor Window** (Figure 52) on top of the Ophir meter Sensor.(Please disassemble any other adpator which is currentley installed before that)



Figure 52: Basic Adaptor Window

- 4. Apply pulse to the Ophir Meter Sensor. Wait for the audible ready signal, press the foot switch then the one of the handpiece pulse switches.
- 5. Multiply the result by **0.42** and compare to the ranges in Table 7.
- 6. Repeat above procedure for any HP type by first choosing it and using appropriate Ophir Meter Adaptor. The multiplying factor is the same for all applications (0.42)

Application Vs %	0% J/cm^2	50% J/cm^2	100% J/cm^2
HR	<mark>3.7-4.3</mark>	<mark>8.2-9.4</mark>	<mark>14.1-15.9</mark>
Acne	3.9-4.5	6.3-7.1	9.2-10.4
Psoriasis	3.9-4.5	6.6-7.5	9.9-11.2
SR	2.3-2.9	5.5-6.3	9.4-10.6

Table 7: Energy Levels

13. TROUBLESHOOTING

Situation/Symptom	Possible Cause	Solution	
	The "On/Off" switch on the front panel of the system is in the Off position	Toggle the "On/Off" switch to the On position.	
The system does not turn on (Numbers are not shown on the display and the lights are off)	Energy disconnected	Toggle the "On/Off" switch to the Off position. Check that the energy cable is plugged into the electrical outlet and connected to the main unit energy inlet.	
	The Emergency Stop button is pushed.	Turn towards the right, in the direction of the arrows.	
	Blown fuse	Check the fuse inside the fuse drawer. Replace fuse if blown.	
The system starts but the system's cooling	The Footswitch has not been pressed to activate the system's cooling unit	Press the Footswitch to activate the system's cooling unit	
unit has not turned on	The Footswitch is not connected or is connected incorrectly	Connect the Footswitch	
The cooling unit was on but later stopped working	The Footswitch was not pressed for the past 60 seconds	Press the Footswitch to start the system again	
The "Ready" beep is not heard when the system is ready	The "Mute" switch on the LCD screen is On	Press the "Mute" button to turn it Off	
A pulse is not triggered when pressing on one of the Handpiece pulse	The Footswitch was not pressed	Simultaneously press the Footswitch and one of the Handpiece pulse switches	
Switches	The main unit has not completed the recharging cycle	Wait for the Ready indicator to be activated on the LCD screen	
	One of the Handpiece pulse switches was	Release the pulse switch on the Handpiece. Then	

Situation/Symptom	Possible Cause	Solution
	pressed down before pressing the Footswitch	simultaneously press and hold the Footswitch and one of the Handpiece pulse switches
	The handpiece is worn out	Check the number of pulses that were performed with the handpiece. Replace If over 50,000 pulses.
	Improper locking of lamp into Handpiece caused darkening of contact points	Stop system operation. Call Radiancy service immediately
Darkened plastic near the lamp on the Handpiece	The Handpiece was not lifted from the treatment area after each pulse	After each pulse, make sure to lift the Handpiece away from the treatment area. Hold the Handpiece so that air can freely enter the lamp for at least 10 seconds before applying the next pulse
The patient feels that the handpiece placed on the treatment site is hot prior to triggering a pulse	The cooling airflow is blocked because hair has accumulated in the filter	Replace the filter
The cooling air-flow is	Rupture in the Handpiece spiral tube	Replace the Handpiece
weak	Rupture in the Handpiece spiral tube	Replace the Handpiece

14. MISTRAL SERVICE

Radiancy Israel	Radiancy (Israel) Ltd. 9 Gan Rave St., P.O. Box 13111 Ind. Par, Yavne 81223, ISRAEL	Tel: 972-8-943-3100 Fax: 972-8-943-8020 service@radiancy.com
Radiancy North America	Radiancy Inc. 40 Ramland Road South, Ste. 200 Orangeburg, NY 10962, USA	Toll Free number: 888-661-2220 Tel: 1-845-398-1647 Fax: 1-845-398-1648 info@radiancy.com

15. APPENDIX A

15.1. MCU Module

All SW's in this Manual are installed on WinXp Platform

15.2. "FDT" Installation procedure (Handles *.mot files)

1. Open E8 Disk (provided)

ROFODOBAKCEONSE (D+)					E 10 😢
Pile Edit Very Pavaritae Toole	THE				R
Q test - () - (7 ,) 3	laardt 📴 Falders 💷 🔻				
Adves Gori					- 🔁 😡
Febber X Deviates Hy Documents Image: Hy Documents He Consultor Image: Hy Document He Consultor Image: Hy D	Files Conventing on the CO	Austre at	delibat Mendinatria.	e rendulta, renduk	Pa. portesta.

Figure 53:

2. .Open "Flash Development Toolkit" (Error! Reference source not found.) sub-folder and run Exe. file (Figure 54).



3. The following will appear (Figure 55). Select OK.



Figure 55:

The following will appear (

4. Figure 56). Select Next.



Figure 56:

5. Select your language. Then select next. (Figure 57)

Renesas Flash Development Toolkit (v4.00) - InstallShield Wizard 🛛 🛛 🔀
Select Language	RENESAS
Language selection will determine the langu	age of the installed help and user documentation.
International [English] Asia (Japanese)	
Asia (English)	
	Release Notes
InstallShield	
	< <u>B</u> ack <u>N</u> ext> Cancel

Figure 57:

6. Read and accept the terms of the license agreement then select next (Figure 58

Renesas Flash Development Toolkit (v4.00) - InstallSh	ield Wizard 🛛 🛛 🔀
License Agreement Please read the following license agreement carefully.	Renesas
Software User License Agreement The customer (hereafter referred to as "Licensee") and Renesas Technology Corp.(hereafter referred to as "Licensor") do hereby agree to the terms and conditions as specified in this Software User License Agreement(hereafter referred to as "Agreement") concerning the enclosed this software and its explanatory manua ARTICLE 1. Definition 1.1 "Licensed Software" shall mean the main unit of the C compil Assembler, Simulator and related executable programs, the "Libray" as defined in Section 1.3 below and documentation such as explanatory manuals for the Licensed Software and al I accept the terms of the license agreement I add the terms of the license agreement AstallShield 	Is. er, Print

Figure 58:

7. Select the features you wish to install then select Next. (Figure 59).

elect the features you want to install, and deselect the features you do not want to install. ■

Figure 59:

8. Select all options pictured in Figure 60. Then press next.

Renesas F	lash Development Toolkit (v4.00) - InstallShield Wizard	X
Select O	Iptions RENES/	12
Setup re	equires you to make the following choices:	
📃 Clear	n up old settings. This option removes any existing settings before installing.	
Associat	te data files. Data files will open in FDT.	
✓.a20	✓ .fpr	
.a37		
💌 .bin	J.rec	
.cde	.s2	
.ddi 🔽		
	< <u>₿</u> act <u>N</u> ext > Cancel	

Figure 60
9. Choose the files destination location. You may browse to customize the location, but we recommend you use the default setting. Select 'Next'. (Figure 61)

Renesas Flash Development Toolkit (v4.00) - Inst	allShield Wizard 🛛 🛛 🔀
Choose Destination Location Select folder where setup will install files.	RENESAS
Setup will install Renesas Flash Development Toolkit (v4.00	I) in the following folder.
To install to this folder, click Next. To install to a different fol- another folder.	der, click Browse and select
C:\Program Files\Renesas\FDT4.00	Browse
< <u>₿</u> ack	Next> Cancel

Figure 61

10. Click install to begin program installation (Figure 62).



Figure 62:

11. The following screen will then appear with the Setup Status (Figure 63).

Renesas Flash Development Tool	lkit (v4.00) - InstallShield Wizard	
Setup Status	RENES	542
Renesas Flash Development Toolkit ((v4.00) is configuring your new software installation.	2
InstallShield	Ca	ncel

Figure 63:

12. When instalaltion is complete, the following screen will appear. Select Finish to complete installation (Figure 64).



Figure 64:

13. Connect one end of your E8a Emulator to your computer via the USB and other end to the MB inside the machine (J5).The

following screen (Figure 65) will appear. Select 'Yes, this time only' then select 'Next'.



Figure 65

- Found New Hardware Wizard

 Image: Second state of the second s
- 14. Select automatic installation than 'Next'.

Figure 66:

15. The following screen while the Wizard performs a search (Figure 67).

Found New Hardware Wizard			
Please wait while the wizard search	2 \$		Ð
◆ E8a			
	3		
	< <u>B</u> ack	<u>N</u> ext >	Cancel

Figure 67:

16. When the search is complete, the following screen will appear. Select E8a then 'Next' Figure 68.

Found	Found New Hardware Wizard				
Plea	Please select the best match for your hardware from the list below.				
	🔶 ^{E8a}				
	Description	Version	Manufacturer	Location	
	E8a	1.1.8.0	Renesas Technology Corp.	c:\windows\inf\e8a.inf	
	E8a	1.1.8.0	Renesas Technology Corp.	d:\e8a emulator debugg	ger\driv
	<				>
	This driv Tell me w	ver is not hy driver si	digitally signed! gning is important		
			< <u>B</u> ac	k Next >	Cancel

Figure 68:

17. While the wizarf installs the software, the following screen will appear (Figure 69).

Found New Hardware Wizard	
Please wait while the wizard installs the software	Ø,
E8a	
Setting a system restore point and backing up old files in case your system needs to be restored in the future.	
< <u>B</u> ack <u>N</u> ext > (Cancel

Figure 69

18. The following screen will appear when installation is complete. Select 'Finish' to finalize (Figure 70).



Figure 70:

19. To Run the FDT SW on your computer, go to - :Start > Programs > Renesas > Flash Development Toolkit > Flash Development Toolkit 4.00 Basic (Figure 71).



Figure 71:

20. Select M30280F8 then 'Next' (Figure 72).

Choose Device /	And Kernel			X
The FLASH Dev	velopment Toolkit supports a n	umber of Renesas FLASH	l devices.	
Select the devic	ce you wish to use with this pro	ject from the list below.		
Filter:				Other
Туре	Full Name	Kernel Version	Info	~
M16C	M30280F6	1 0 00		
M16C	M30280F8	1_0_00		
M16C	M30280FA	1_0_00		
M16C	M30280FC	1_0_00		
M16C	M30281F6	1_0_00		-
M16C	M30281F8	1_0_00		
M16C	M30281FA	1_0_00		
M16C	M30281FC	1_0_00		
M16C	M30290FA	1_0_00		
M16C	M30290FC	1_0_00		
M16C	M30291FA	1_0_00		~
<				>
		< <u>B</u> ack	<u>N</u> ext >	Cancel

Figure 72

21. Select E8a from the drop-down window (Figure 73)

Communications Port		X
Workspace Workspace Display Device Image Target files Comme mot Device Image Comme mot Device Image Comme mot Device Image Comme mot Device Image Device Image Comme mot Device Image Comme mot Device Image Comme mot	The FLASH Development Toolkit supports connection through the standard PC Serial port and the USB port. Use this page to select your desired communications port. All settings may be changed after the project is created. Select port: E8 E8 E8 E8 E8 E8 E8 E8 E8 E8 E8 E8 E8	
	< Back Next > Cance	

Figure 73

22. The following screen will appear. Select the default settings then 'Next' (Figure 74).

Connection Type	
Workspace Industrial Constant Workspace Industrial Constant Display Target files Comme moto Comme moto Device Image Comme moto Device Image Comme moto Device Image Comme moto Device Image Comme moto Device Image Comme moto Device Image	The FLASH Development Toolkit can connect to your device in a number of different ways. All the options on this page may be changed after the Project has been created. Select Connection: BOOT Mode BOOT Mode Kernel already running Kernel already running In BOOT Program mode the device erases its FLASH prior to connection. The Toolkit downloads programming kernels to the device as required. The Recommended Speed setting is based on the current device and clock. The user may also input their own, if this is supported by the kernel (and the interface board). Recommended Speeds: Clock Sync V Use Default User Specified: Kernel Alter Specified: Kernel Schwart Schw

Figure 74

 Select 'Autiomatic' for the protection level and 'Standard' for messaging. Then select 'Finish' to complete installation (Figure 75).

Workspace	The FLASH Development Toolkit offers a device protection system, plus an advanced messaging level for use with hardware and kernel development. What level of device protection would you like?
Display	Protection • Automatic C Interactive C None
Comme Motor Control	When programming the device, any blocks found to have been written previously will automatically be erased.
Target files	Messaging • Standard Advanced
C TO 58 70 3 Algorithm.m C D 94 DZ 47 5 64 05 97 C 4 D4 4D 75 54 AD 20 75 C 47 D4 4D 75 54 AD 20 75	The Toolkit will display messages pertaining to general purpose use,
	2

Figure 75:

15.3. File Installation/Update of MCU CPU on the MB

- 1. Download Relevant *.mot file and save it on your computer.
- The file will look as follows and its name will indicate the SW version (ie: Version 1_4_2.mot)
- 3. Open the machine cover when it is **Shut down**, and Connect the supplied E8 Emulator (Figure 76) to the **USB** connection of your compter to one end, and the other to the connector on the MB (J5) (Figure 77).



Figure 76: E8 Emulator



Figure 77: MB Connection

4. Place the black jumper (Figure 78) to cover the pins on the MB.





5. Start Up Mistral and upload the FDT BASIC onto your computer then browse for the relevant file - *.mot (Figure 79)

FDT Simple Interfa	ace (Unsupported Freeware Version)	
Options		
	BASIC FILE PROGRAMMING	Exit
Device :	M30280F8 Port : E8	1
File Selection		
Ownload File		
🔽 User / Data Are	a C:\Renesas\i2c.mot	
🗖 User Boot Are	a	
	Program Flash	Disconnect
This is an unsupported	d freeware version	
FDT API initialised: ve	rsion 3, 05, 0, 11	

Figure 79:

6. Search for and select the project file. Select 'Open' (Figure 80).

Open		? 🔀
Look jn: 🖙	KINGSTON (E:)	
<mark>Pⁱi2c</mark>		
File <u>n</u> ame:	ji2c	<u>0</u> pen
Files of type:	Project Files	✓ Cancel
	-	

Figure 80:

7. The file is selected and resides at the address shown. Now select 'Program Flash' (**Error! Reference source not found.**).

FDT Simple Interf	ace (Unsupported Freeware Version)	
Options		
Γ	BASIC FILE PROGRAMMING	Exit
Device :	M30280F8 Port : E8	
File Selection		
C 5 1 10		
 Download File 		
🔽 User / Data Arr	ea E:\i2c.mot	
User Boot Are	a	
	Braggan Flack	Disconnect
	riogram hash	Disconnect
		
I his is an unsupporte	d freeware version	
FDT API initialised: ve	ersion 3, 05, 0, 11	

Figure 81:

8. The following sceen will appear. Press 'OK' (Figure 82)



Figure 82:

9. The following screen will appear- Press 'OK' (Figure 83).

Select USB Device	
1 USB device located	
E8a: 7KS008323	<u>C</u> ancel
1	

Figure 83:

10. Select "Program Flash" (Figure 84).

FDT Simple Interface (Unsupported Freeware Version)					
Options					
BASIC FILE PROGRAMMING	Exit				
Device : M30280F8 Port : E8					
File Selection					
Ownload File					
✓ User / Data Area E:\i2c.mot					
🗖 User Boot Area					
Program Flash Disconnect					
This is an unsupported freeware version					
FDT API initialised: version 3, 05, 0, 11					

Figure 84:

11. If no error message is displayed – Burn-in is is complete.

12. Turn back Black Jumper on the MB to its deafault position and put it on one pin , so one leg is open and there is no short between 2 legs (Figure 85).



- 13. Exit "FDT" software.
- 14. Disconnect Emulator from the Main Board and your computer and return it to the technical kit.
- 15. Continue to SBC SW update on page 74.

15.4. TSI AIR FLOW METER SW INSTALLATION

1. Explore supplied disk on key and run 'TSI Flow_Zipped'. the following will appear SW (Figure 86)

🙀 ZipMagic Self-Extracting Archive	×
Extract Archive Files	
This program will extract its files to the target directory	
Click 'Next' below to select the target directory	
This archive contains 2 file(s) totaling 1,410,897 bytes	
Next >	Cancel

Figure 86:

2. Click Next. The following will appear (Figure 88).

🙀 ZipMagic Self-Extracting Archive				
Destination Directory				
The archive will be extracted to the following directory:				
C:\DOCUME~1\udi\LOCALS~1\Temp	Browse			
Click 'Next' below to extract the files from the archive				
If you wish to extract the archive to a directory other than the one displayed above, enter the new directory name and its full path.				
< Back Next >	Cancel			

Figure 87:

3. Using the Browse option, change directory to : C:\Program Files\TSI and click "Next" (Figure 88).

🙀 ZipMagic Self-Extracting Archive	×			
Destination Directory				
The archive will be extracted to the following directory:				
C:\Program Files\TSI Browse	\mathbb{D}			
Click 'Next' below to extract the files from the archive				
If you wish to extract the archive to a directory other than the one displayed above, enter the new directory name and its full path.				
< Back Next > Cancel				

Figure 88:

4. The following screen will appear. Select 'Finish' to complete extraction (Figure 89)



Figure 89

16. SBC MODULE

The following SW are to be installed prior to any SBC SW update

16.1. 1. "USB M LINK" Installation procedure

1. Copy the **UsbMLink.exe** file (Figure 90) to your computer to a designated folder of your choice.



Figure 90:

- 2. Create a shortuct of the file to your desktop.
- 3. "Actyve Sync" installation procedure (*.cfg files)
- 4. Download the Actyve Sync SW to your computer
- 5. Double Click on the exe. file. The following screen will appear. Select 'Run' (Figure 91).

Open Fi	Open File - Security Warning 🛛 🔀				
Do you	Do you want to run this file?				
- A	Name:	setup.msi			
187	Publisher: <u>Microsoft Corporation</u>				
	Type: Windows Installer Package				
	From:	Z:\Service Udi\Mistral\Sw			
		<u>B</u> un Cancel			
✓ Always ask before opening this file					
:	While files from the Internet can be useful, this file type can potentially harm your computer. Only run software from publishers you trust. What's the risk?				

Figure 91:

6. When the nest screen appears, select 'Next' (Figure 92).



Figure 92:

 Read and accept the liscence agreement then select 'Next' (Figure 93).



Figure 93:

8. When the next screen appears, enter the relevant details (Figure 94), then enter 'Next'.

Hicrosoft ActiveSync 4.5	
Customer Information Please enter your information.	N. A.
User Name: Technitian Name Organization: Company Name	
	< Back Next > Cancel

Figure 94:

9. When the following screen appears, accept the default settings and enter 'Next' (Figure 95).

6	Microso	ft Active	Sync 4.5				
D	estinati Click Nex	on Folder «t to install	to this folder,	or click Chang	e to install to	a different folder.	
		Install Mi C:\Progra	rosoft ActiveS am Files\Micros	ync 4.5 to: oft ActiveSync	4	C	Change
	Volume		Disk Size	Available	Required	Differences	
	■C:		51GB	22GB	29MB	22GB	
				<	Back	Next >	Cancel

Figure 95:

10. Enter 'Install' when the next screen appears (Figure 96).

Hicrosoft ActiveSync 4.5	
Ready to Install the Program The wizard is ready to begin installation.	1
Setup is ready to begin installing Microsoft ActiveSync 4.5	
< Back	Install Cancel

Figure 96:

11. The following screan will appear as the program is installed. When it is finished, enter 'Next' (Figure 97).

🙀 Microso	ft ActiveSync 4.5
Installing The proc	Microsoft ActiveSync 4.5 gram features you selected are being installed.
i de la companya de l	Please wait while the Setup Wizard installs Microsoft ActiveSync 4.5. This may take several minutes. Status:
	< Back Next > Cancel

Figure 97:

12. When the next screen appears, enter 'Finish' and **Restart** the system.

16.2. "TeraTerm" INSTALLATION PROCEDURE

- 1. Extract the ttermp23 fileto a designated folder on your computer
- 2. Run the Setup.exe file.TSelect your language and press 'Continue' (Figure 98).



Figure 98:

3. Press 'Continue' when the next screen appears (Figure 99).



Figure 99:

4. Allow for the default settings and press 'Continue' (Figure 100).



Figure 100:

5. Press 'OK' (Figure 101) then create a shortcut on your desktop (Figure 102).



Figure 101:



16.3. Installation of the SplashImageUpdater_0_4_59_7

Copy the SplashImageUpdater_0_4_59_7 folder to your computer

16.4. SBC Software update procedure

- 1. Make sure the system is shut down.
- 2. Copythe SBC SW folder to your computer. (Avilable on the FTP or Disk-On-Key)
- 3. Connect your computer (on which you installed the SW) to the SBC inside the Mistral using the supplied 9 pin D-sub cable (Figure 103).



Figure 103:

4. Connect your computer to the USB link on Mistral's front panel (Figure 104)



Figure 104:



Figure 105:

- 5. Go to Parg 11.3 on page 47 and perform sections B through I
- Put a jumper on J3, turn pin 2 on SW2 upwards, and enter 'Run'.The following will screen will appear (Figure 106). Browse for the *nand.in* file located at SBC Folder>SW Version.

🔒 UsbMLink	
Status	Control
	Update ARMmon
	Update Configuration Backup Configuration
	Update NOR Backup NOR
	Update NAND Backup NAND
	Update NAND (Partial) Backup NAND (Partial)
	Address (Sectors) 0
	Length (Sectors) 0
	Verify writing
	- Working directory
	C:\Documents and Settings\Udi Browse
Operation Progress Terminate	
	About

Figure 106:

7. When you have located the file, select it and press 'Open' (Figure 107).

Open			? 🛛
Look in: 💽	version - 0.4.59.0	🔽 🔇 🤌 📂	•
🔤 nand.in			
File <u>n</u> ame:	nand.in		<u>O</u> pen
Files of type:	Llodata Eilea (* INI)		Canad

Figure 107:

8. Narrow down the SW window and run the Tera term Pro.Ink file (Figure 108).



Figure 108

9. When the following window appears (Figure 109), select Serial and COM1, then press 'OK'..

Tera Term: New connection						
○ <u>I</u> CP/IP	H <u>o</u> st;	myhost.mydomain	T			
		▼ Telnet TCP po	rt#: 23			
• Serial	Po <u>r</u> t:	СОМ1 -				
\bigcirc	ОК	Cancel <u>H</u> elp				

Figure 109

10. On Main Window, go to Setup > Serial port. The following window will appear (Figure 110) Change the "Baude Rate" to 38400 and press 'OK'.

Tera Term: Serial port setup					
<u>P</u> ort:	СОМ1 -	ΟΚ			
Baud rate:	38400 -				
<u>D</u> ata:	8 bit 🔻	Cancel			
P <u>a</u> rity:	none 💌				
<u>S</u> top:	1 bit 💌	<u>H</u> elp			
Elow control:	none 💌				
Transmit delay 0 msec/ <u>c</u> har 0 msec/ <u>l</u> ine					

Figure 110:

11. Operate Machine .The following will start to run (Figure 111).

File Edit Setup Control Window Help Record at vaddr Øx80F9B5CC of size 229880. Record at vaddr Øx80F9B5CC of size 235281. Record at vaddr Øx80F037C4 of size 235281. Record at vaddr Øx8100C40C of size 353812. Record at vaddr Øx8100C40C of size 234756. Record at vaddr Øx810E3DA8 of size 211812. Record at vaddr Øx810E3DA8 of size 211812. Record at vaddr Øx811E3DA8 of size 24832. Record at vaddr Øx8112760A of size 549588. Record at vaddr Øx8112C6B4 of size 120208. Record at vaddr Øx8132C6B4 of size 12799844. Record at vaddr Øx813E7BDC of size 2075336. Record at vaddr Øx8162E6A4 of size 181536. Record at vaddr Øx8160EBC4 of size 125568. Record at vaddr Øx816047B4 of size 1268616. Record at vaddr Øx816047B4 of size 1268618. Record at vaddr Øx816047B4 of size 1268618. Record at vaddr Øx816047B4 of size 12680. Record at vaddr Øx816047B4 of size 12680. Record at vaddr Øx816047B4 of size 12688. Record at vaddr Øx816047B4 of size 121686. Record at vaddr Øx	🖳 Tera Term - COM1 VT	
Record at vaddr 0x80F9B5CC of size 229880. Record at vaddr 0x80F9B5CC of size 223520. Record at vaddr 0x8100C40C of size 2353812. Record at vaddr 0x8100C40C of size 294532. Record at vaddr 0x810E3DA8 of size 234756. Record at vaddr 0x810E3DA8 of size 211812. Record at vaddr 0x8111790C of size 423828. Record at vaddr 0x81120B40 of size 549588. Record at vaddr 0x81120B474 of size 549588. Record at vaddr 0x81321C6B4 of size 1799844. Record at vaddr 0x81321C6B4 of size 1799844. Record at vaddr 0x813258 of size 81540. Record at vaddr 0x8160EBC4 of size 181536. Record at vaddr 0x8160EBC4 of size 128536. Record at vaddr 0x8160EBC4 of size 1285588. Record at vaddr 0x8160EBC4 of size 128558. Record at vaddr 0x8160EBC4 of size 128568. Record at vaddr 0x8160F564 of size 1268. Record at vaddr 0x8160F564 of size 1248536320. Finished reading NAND flash. Time: 11 seconds.	<u>File Edit S</u> etup Control <u>W</u> indow <u>H</u> elp	
Nied de addeur beskien	Record at vaddr 0x80F9B5CC of size 229880. Record at vaddr 0x80F9B5CC of size 232520. Record at vaddr 0x8100C40C of size 353812. Record at vaddr 0x81062A20 of size 294532. Record at vaddr 0x810A8A4 of size 234756. Record at vaddr 0x8110F30A8 of size 211812. Record at vaddr 0x8117F90A of size 423828. Record at vaddr 0x8112F0A0 of size 423828. Record at vaddr 0x8112F0A0 of size 24832. Record at vaddr 0x8112F0A0 of size 249588. Record at vaddr 0x811851A0 of size 549588. Record at vaddr 0x8121C6B4 of size 1799844. Record at vaddr 0x813D3D58 of size 81540. Record at vaddr 0x815E26A4 of size 181536. Record at vaddr 0x815E26A4 of size 181536. Record at vaddr 0x81664BEC4 of size 125568. Record at vaddr 0x81669564 of size 168616. Record at vaddr 0x81602504 of size 258980. Record at vaddr 0x81602504 of size 125568. Record at vaddr 0x81602504 of size 128536. Record at vaddr 0x81602504 of size 248536. Record at vaddr 0x81602504 of size 128568. Record at vaddr 0x81602504 of size 12858. Record at vaddr 0x81602504 of size 1268. Record at vaddr 0x81602504 of size 1248536320. Finished reading NAND flash. Time: 11 seconds.	

Figure 111:

12. Reset the SBC using the reset switch (Figure 112) then immediately press CTRL C on your keyboard.



Figure 112:

13. The following window will appear (Figure 113).

🕮 Tera Term - COM1 VT	
<u>File E</u> dit <u>S</u> etup C <u>o</u> ntrol <u>W</u> indow <u>H</u> elp	
	~
Welcome to ARMmonitor running on Compulab CM-X270. Copyright Compulab 2002, 2003, 2004, 2005, 2006 (c).	
Built at: Mon Oct 30 10:07:55 IST 2006 on 89	
CM-X270 hardware configuration:	
SDRAM size	
NAND flash	
Ethernet on CORE present	
2700G Graphics	
AC'97 CODECpresent BTCpresent	
,	
ARMmon >	×

Figure 113:

14. Wait for few Seconds and then press "Enter" once on your keyboard. The following message will appear (Figure 114).

🛄 Tera Term - COM1 VT	
Eile Edit Setup Control <u>Wi</u> ndow <u>H</u> elp	
NAND MFG: 0×EC, ID: 0×F1801540	~
CM-X270 hardware configuration:	
SDRAM size	
NAND flash	
PCI bridge Ethernet on CORE present	
Ethernet on BASE	
AC'97 CODEC present	
RTC present	
ARMmon >	
Illegal command! ARMmon > Starting manufacturing link	
Initialization complete.	
Welcome to manufacturing mode!	
	~

Figure 114:

15. Open the Task Manager. Go to processes and end the process named **"Wcescomm.exe"** (Figure 115).

3	🖳 Windows Task Manager						
<u>F</u> ile	<u>O</u> ptions <u>V</u> iew <u>H</u> el	P					
Ap	plications Processes	Performance Ne	tworking				
	Image Name	User Name	CPU	Mem Usage	^		
	svchost.exe	LOCAL SERVICE	00	4,572 K			
	svchost.exe	SYSTEM	00	4,208 K			
	System	SYSTEM	00	240 K			
	System Idle Process	SYSTEM	99	16 K			
	taskmgr.exe	Administrator	01	5,172 K			
	tfswctrl.exe	Administrator	00	3,812 K			
	TPHKMGR.exe	Administrator	00	4,688 K			
	TPONSCR.exe	Administrator	00	2,576 K			
	TpScrex.exe	Administrator	00	2,548 K			
	ttermpro.exe	Administrator	00	4,248 K			
	tvtsched.exe	SYSTEM	00	5,256 K			
	UsbMLink_CULtexe	Administrator	00	7,484 K			
	VPTray.exe	Administrator	00	8,176 K			
	wcescomm.exe	Administrator	00	5,168 K	/		
	.xiplogon.exe	SYSTEM	00	792 K	-		
	WINWORD, EXE		00	5,056 K			
	wmiprvse.exe	SYSTEM	00	4,828 K			
	wuaucit.exe	SYSTEM	00	7,660 K	~		
Show processes from all users							
Proc	Processes: 50 CPU Usage: 1% Commit Charge: 387M / 1247M						

Figure 115:

16. Open the **"**USB M LINK" SW and press "Update ARMmon" (Figure 116). The update will begin running and is completed when the "Flash updated" message is displayed in the left side of the window.

🖁 UsbMLink	
Status Block 30000 Erased Finished successfully, Finished reading file. Flash updated Commanications test completed successfully Testing communication. In case of any problems, use a shorter cable, or USB HUB.	Control Update ARMmon Update Configuration Backup Configuration Update NOR Backup NOR Update NAND Backup NAND Update NAND (Partial) Backup NAND (Partial) Address (Sectors) 0 Length (Sectors) Verify writing Working directory C:\Documents and Settings\Udi
Operation Progress Comm terminated Terminate	
	About

Figure 116

17. Press "Update NAND". The left side of the window will show the progress of the update (Figure 117).

atus	Control
ilock uploaded. Address = 732160.	Update ARMmon
llock uploaded. Address = 675840.	
llock uploaded. Address = 619520.	Update Configuration Backup Configuration
ilock uploaded. Address = 563200.	
llock uploaded. Address = 506880.	Lindate NOP Backup NOP
llock uploaded. Address = 450560.	Contract Deckep Werk
ilock uploaded. Address = 394240.	
llock uploaded. Address = 337920.	Update IVAIND Backup IVAIND
llock uploaded. Address = 281600.	
ilock uploaded. Address = 225280.	[Lindata MAND (Dautial)] [Daalu a MAND (Dautial)
llock uploaded. Address = 168960.	(Updace NAND (Partial)) [Backup NAND (Partial)
lock uploaded. Address = 112640.	
lock uploaded. Address = 56320.	Address (Sectors)
llock uploaded. Address = 0.	
ormatting NAND flash	Length (Sectors) 0
communications test completed successfully	and the second
esting communication.	Verify writing 🛛 🗹 Test connection
n case of any problems,	Working directory
ise a shorter cable, or USB HUB.	working directory
	C:\Documents and Settings\Udi
	Browse
peration Progress Commactive Term	nate S
peradori Progress Commactive Lionn	ideo j

Figure 117:

 Update is concluded when message "Finished successfully" appears in the left side of the "UsbMLink" window (Figure 118).

Status			Control	
Finished successfully.	201/2000	^	Update ARMmon	
Finished reading file.	= 20100000		Update Configuration	Backup Configuration
Block uploaded, Address = Block uploaded, Address = Block uploaded, Address =	= 28103680, = 28047360, - 27091040		Update NOR	Backup NOR
Block uploaded. Address = Block uploaded. Address = Block uploaded. Address =	= 27934720. = 27878400.		Update NAND	Backup NAND
Block uploaded. Address = Block uploaded. Address =	= 27822080. = 27765760.			
Block uploaded. Address = Block uploaded. Address =	= 27709440. = 27653120.		Update NAND (Partial)	Backup NAND (Partial)
Block uploaded. Address = Block uploaded. Address =	= 27596800. = 27540480.		Address (Sectors)	0
Block uploaded. Address = Block uploaded. Address =	= 27484160. = 27427840.		Length (Sectors)	0
Block uploaded, Address = Block uploaded, Address =	= 27371520. = 27315200.		Verify writing	Test connection
Block uploaded, Address = Block uploaded, Address =	= 27258880, = 27202560,	~	C:\Documents and Set	tings\Udi
Operation Progress	Comm terminated	Terminate	<u> </u>	Drowse

Figure 118:

19. Disconnect **the cables from USB** ports and reset the SBC. Then, press CTRL C until the following window appears (Figure 119).

🛄 Tera Term - COM1 VT	
<u>File E</u> dit <u>S</u> etup C <u>o</u> ntrol <u>W</u> indow <u>H</u> elp	
	~
Welcome to ARMmonitor running on Compulab CM-X270. Copyright Compulab 2002, 2003, 2004, 2005, 2006 (c). Built at: Mon Oct 30 10:07:55 IST 2006 on 89	
CM-X270 hardware configuration:	
SDRAM size	
Ethernet on CORE present Ethernet on BASE not present 2700G Graphics not present AC'97 CODEC present BTC present	
ARMmon >	

Figure 119:

- 20. In the "TeraTerm" window (Figure 119), enter the command "STEP BY STEP > Setboot OS > Save > Y
- 21. Close "TeraTerm"

- 22. Close the "USBMlink" window.
- 23. Run the "SplashImageUpdater.exe" set-up file.The following window will appear (Figure 120). Press 'Start Update'.

	oplash Image Updater	
	Splash Image Path: ocuments an	d Settings\Ud\Desktop\MISTRAL\SBC\SplashImageUpdater_0_4_59_7\SplashImageUpdater\uploads.uue
(Start Update	Terminate Update
	Current Status:	
	Log:	
	Port name:	COM1
	Port baud rate:	38400
	Port timeout, ms:	500
	Log file: Settings\Udi\Desktop\ \SplashImageUpdater\u	C:\Documents and MISTRAL\SBC\SplashImageUpdater_0_4_59_7 updater.log
	NAND Address: NOR Address:	0x&1000000 0x&0000
	File Size:	0xBB800
	LCD Register: LCD Register: LCD Register:	lccr0 0x3008F8 lccr1 0x3131271F lccr2 0x2D0D0DF
	LCD Register:	lccr3 0x470FF01

Figure 120

24. Reset the SBC module once the command appears (Figure 121)..

	Splash Image Upd	ater	
	Splash Image Path:	$[ocuments and Settings \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	Auploads.uue
	Start Updal	Terminate Update	
	Current Status:	PRESS RESET ON YOUR DEVICE	
	Log:		
	Opening port Port opened :	- Name: COM1, Baudrate: 38400, Timeouts, ms: 500 successfully	
	**************************************	ON YOUR DEVICE	
\frown	Step started	: Waiting for message: ARMmonitor	
			~

Figure 121

Splash Image Updater		
Splash Image Path: ocuments	s and Settings\Udi\Desktop\MISTRAL\SBC\SplashImageUpdater_0_4_59_7\SplashImageUpdater\up	loads.uud
Start Update	Terminate Update	
Current Status: Executing: Stop device OS loading (sending Ctrl+C)		
Log:		
Record at vaddr O	0x80A01A40 of size 63792.	~
Record at vaddr O	Dx80A12000 of size 221176.	
Record at vaddr O)x80148000 of size 81148.	
Record at vaddr O	0x80A5C000 of size 107164.	
Record at vaddr O)x80A77000 of size 104.	
Record at vaddr O)x80A78000 of size 114776.	
Record at vaddr O	Dx80A95000 of size 4116.	
Record at vaddr O	Dx80A97000 of size 8956.	
Record at vaddr U	JX8UA9AUUU of size 8400.	
Record at vaddr U	JX8UA9DUUU of size 168.	
Record at Vaddr U	JX80A9E000 OI SIZE /56.	
Record at Vaddr U	JX80A9FUUU OI SIZE 8.	
Record at vaddr U	JX80440000 OI S128 4112.	
Record at vaddr 0	JX800442000 01 S128 402440.	
Record at Waddr 0	000000000 of size 48	
Record at vaddr 0	1x00000000 01 5122 40.	
Record at vaddr 0	N80B38000 of size 192512	
Record at vaddr 0	1x80B67000 of size 824432.	=
		~

25. After Reset , the update will continue as shown in Figure 122.

Figure 122:

26. The update is complete when the following message appears:--Finished Successfully (Figure 123).



Figure 123:

27. Disconnect all the cables

28. Perform steps I through T on page 48

17. APPENDIX B

17.1. Mistral ALPHA type

This service manual was designed for Mistrals that came out from the assembly line with most recent modifications embdded inside them.

There may be some Mistrals that went out to the field before these miodifications – these are called Alpha Units (with Priliminary Design).



Mistral ALPHA Block Diagram

Flow Chart 3

17.2. Main Differences between the Alpha and Current Units

17.2.1. Hardware

1. Alpha units have different Blower with an embedded controller (Figure 124).



Figure 124

- 2. Alpha units do not have 24V PS.
- 3. Different Module Layout inside the machine (Figure 125)



17.2.2. Software Updates



17.2.3. Blower Calibration

- 1. Open machine cover while machine is shut down.
- 2. Locate SW2 on the MB .Use small head screw driver to toggle up the third mini switch (Figure 126). The default position is down.



Figure 126

3. Close the cover and connect the Volumetric flow meter to port

- 4. Turn on the machine. The Blower should start automatically.
- 5. Check suction. If it's below 200L/H use the Pot on the Blower to raise suction until 200L/H is reached. (Figure 127)



Figure 127

18. MODULES REPLACEMENTS (UNIQUE TO ALPHA TYPE UNITS)

18.1. Splitter Replacement

- 1. Turn off the machine, take out the voltage cable and wait for 5 minutes.
- Bleed the energy from the capacitors according to Parag 10.1 page 41.
- 3. Remove the machines top cover.
- 4. Release all connectors to the Splitter
- 5. Unscrew the allen screws securing the Splitter to the chassis (Figure 128).



Figure 128

- 6. Take out the old Splitter and replace it with the new one
- 7. Reattach all conenctors.

8. Perform FTP according to Parg. 10 page 40 in this Service manual.

18.2. 12V LVPS Replacement

- 1. Turn Off Machine ,take out the voltage cable and wait for 5 minutes.
- 2. Remove the machines top cover.
- Bleed the energy from the capacitors according to Parag 10.1 page 41.
- 4. Release all connectors to the 12V LVPS
- 5. Unscrew the allen screws securing the 12V LVPS to the chassis (Figure 129).



Figure 129

- 6. Replace the PS and retighten the screws.
- 7. Connect all connectore back
- 8. Perform FTP according to Parg. 10 page 40 in this Service manual.

18.3. 24 V LVPS replacement\External Blower Controller

1. Turn off the machine and take out the voltage cable. Wait for 5 minutes.
- 2. Remove the machines top cover.
- Bleed the energy from the capacitors according to Parag 10.1 page 41.
- 4. Release all connectors to the 24 V LVPS\Controller
- 5. Unscrew the allen screws securing the 24 V LVPS\Controller to the Ramp (Figure 130).



Figure 130

- 6. Remove and replace the 24 V LVPS\Controller.
- 7. Reattach all connecitons.
- 8. Perform FTP according to Parg. 10 page 40 in this Service manual.

18.4. PS Charger Replacement

- 1. Turn off the machine and take out the voltage cable. Wait for 5 minutes.
- 2. Remove the machines top cover.

 Bleed the energy from the capacitors according to Parag 10.1 page 41.



4. Open the Charger's top cover (Figure 131).

- 5. Release all connectors to the PS Charger.
- 6. Remove the allen screws securing the PS Charger to the chassis (Figure 132).



Figure 132

- 7. Remove and replace the PS Charger.
- 8. Perform FTP according to Parg. 10 page 40 in this Service manual.

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