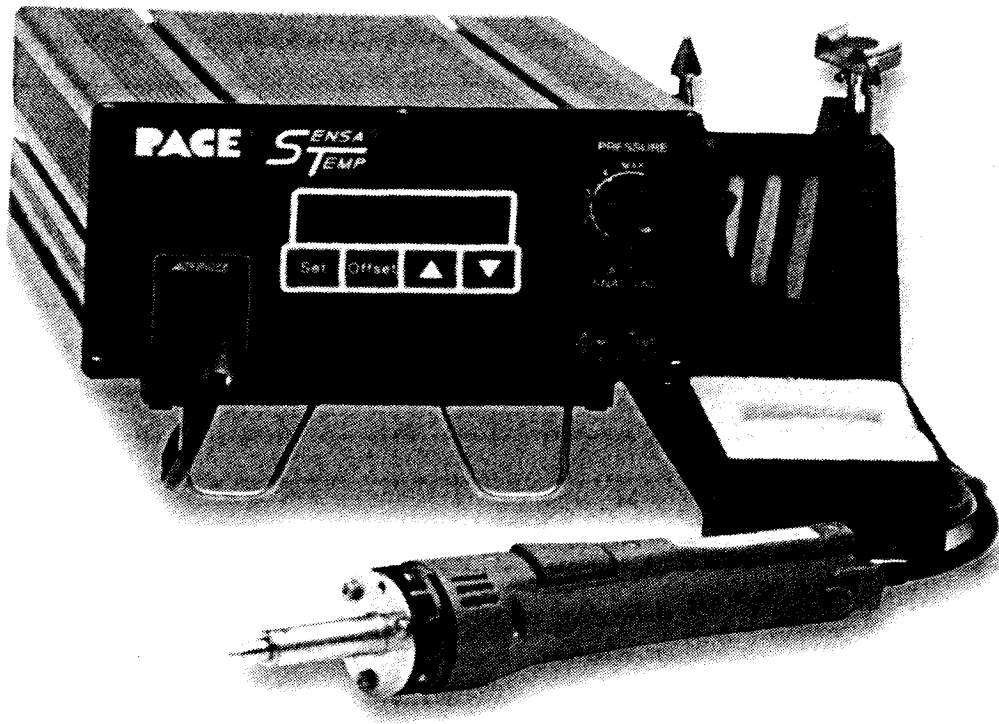


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ST 105 Systems



Operation & Maintenance Manual

TABLE OF CONTENTS

| <i>TITLE</i> | <i>PAGE</i> |
|---|--------------------|
| General Information | 2 |
| Introduction | 2 |
| Parts Identification | 2 |
| Specifications | 3 |
| Safety | 4 |
| Set-Up | 4 |
| System | 4 |
| Heater Burn In | 6 |
| Quick Start - Basic Operation | 8 |
| Quick Start Procedure | 8 |
| Operation | 9 |
| Auto Tip Temperature Compensation | 9 |
| Password | 9 |
| Basic Operation | 9 |
| Temperature Setback | 15 |
| Auto Off Safety System | 16 |
| Set-Up Mode | 17 |
| Introduction | 17 |
| Factory Settings | 17 |
| Entering Set-Up Mode | 18 |
| Operation | 18 |
| Repair | 19 |
| Digital Readout Accuracy | 19 |
| Repair Procedure | 19 |
| Digital Readout Message Codes | 20 |
| Corrective Maintenance | 21 |
| Disassembly/Assembly | 22 |
| Assembly Detail | 24 |
| Wiring Diagram | 25 |
| Schematic | 26 |
| Spare Parts | 28 |

| <i>TABLE</i> | <i>PAGE</i> |
|---|--------------------|
| Table 1 Factory Settings | 17 |
| Table 2 Digital Readout Message Codes | 20 |
| Table 3 Power Source Corrective Maintenance | 21 |
| Table 4 Spare Parts | 28 |

MANUAL NUMBER 5050-0434

REV. A

SYSTEM QUICK START

The ST 105 system is very easy to operate and can be quickly set up for use in standard desoldering/soldering operations. **To begin operation of your new system quickly, perform the "Set-Up" and "Quick Start - Basic Operation" procedures detailed on pages 4-8 of this manual.** A shaded title bar on each of these pages highlight their location.

For any questions regarding this Operation & Maintenance Manual, contact your local authorized PACE distributor or contact PACE directly at:

Telephone (301) 490-9860, Fax (301) 604-8782

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9893 Brewers Court
Laurel MD 20723-1990**

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General Information

Introduction

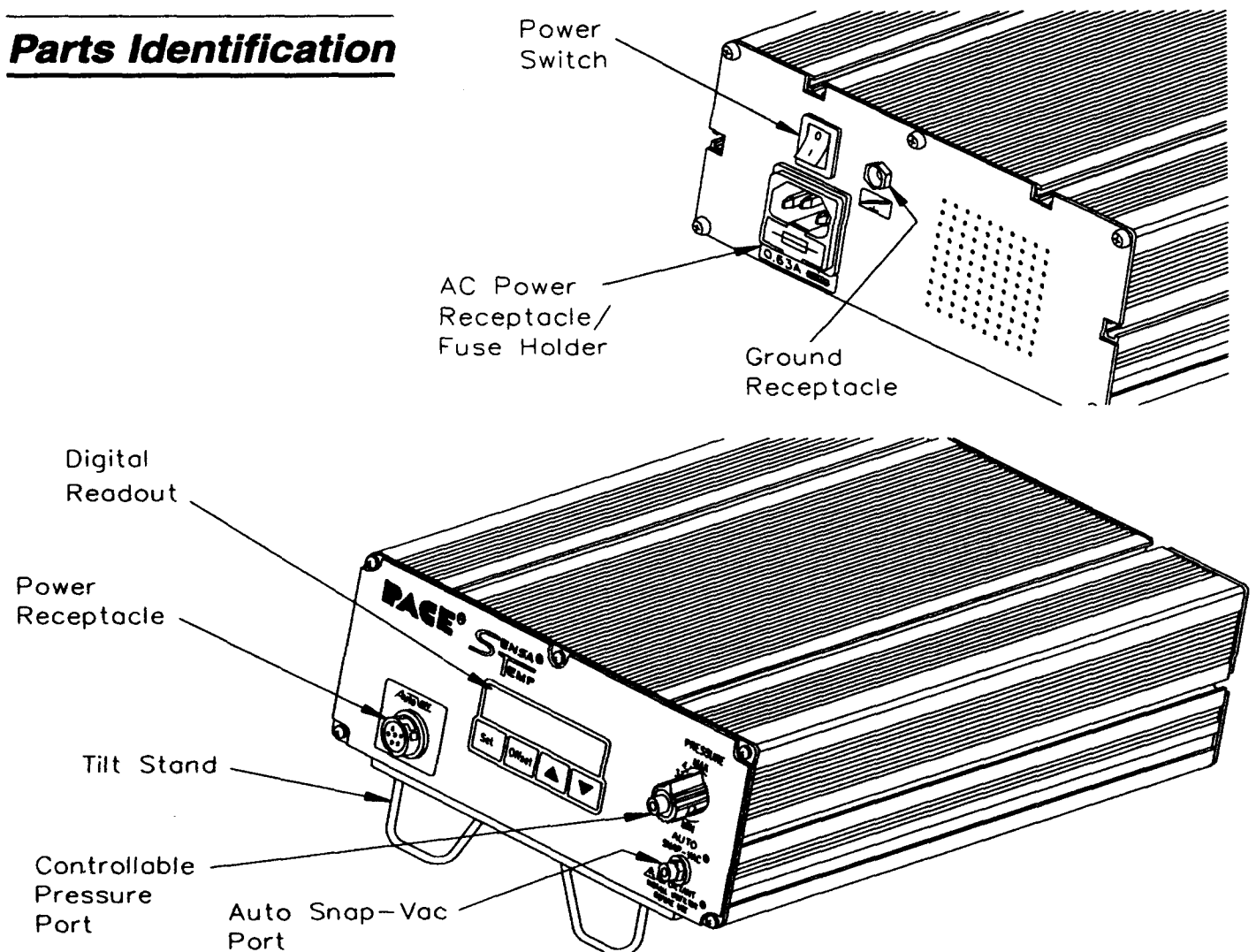
Thank you for purchasing the PACE model ST 105 Digital Desoldering System. This manual will provide you with the information necessary to properly set up, operate and maintain the ST 105 system.

The ST 105 system utilizes the model PPS 105 power source which incorporates a highly responsive SensaTemp (closed loop) control system providing up to 80 Watts of total power to a single output channel.

The standard SX-70 Sodr-X-Tractor handpiece provides thermally enhanced thru-hole desoldering, safe removal of TQFP (Thin Quad FlatPack) and TSOP (Thin Small Outline Package) surface mount components and continuous removal of old solder from surface mount lands.

Other PACE SensaTemp handpieces may be used with the ST 105 system to perform a wide variety of advanced surface mount & thru-hole component removal/replacement operations. These include: SP-2A Sodr-Pen, DTP-80 Dual ThermoPik, TT-65 ThermoTweez, TP-65 ThermoPik, TJ-70 Mini ThermoJet

Parts Identification



Specifications

System power sources are available in either the 115 VAC or 230 VAC version.

The 115 VAC version system conforms to all the requirements of FCC Emission Control Standard, Title 47, Subpart B, Class A. This system has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense.

The 230 volt system bears the Conformity Marking which assures the user that it conforms to all the requirements of (EU) directive EMC 89/336/EEC & 73/23/EEC.

System Power Source Power Requirements:

PPS 105 (ST 105 system) Operates on 97-127 VAC, 50/60Hz
120 Watts maximum at 115 VAC, 60Hz

PPS 105E (ST 105E system) Operates on 197-264 VAC 50/60Hz
120 Watts maximum at 230 VAC, 50Hz

Temperature Specifications:

Tip Temperature Range: 38°C to 482°C (100°F to 900°F) nominal.

Temperature Stability: ±1.1°C (±2°F) at idle from set tip temp.

NOTE - Actual minimum and maximum Operating Tip Temperatures may vary depending on Handpiece, Tip selection and application.

Vacuum And Air (Measurements at front panel AUTO SNAP-VAC and CONTROLLABLE PRESSURE Ports)

Vacuum Rise Time: 200 ms average as measured by PACE
PPM 100 Process Monitor.

Vacuum: 51 cm Hg. (20 in. Hg.) (nominal)

Pressure: 1.44 Bar (21 P.S.I.) (nominal at MAX setting)

Air Flow: 6 SLPM (0.22 SCFM) maximum

EOS/ESD Specifications:

The specifications shown below apply except on "Soft Ground Systems" which have a 1 meg ohm current limiting resistance and a label placed on the power source front panel referring to EN 100015-1.

Tip-To-Ground Resistance: Less than 2 ohms.

AC Leakage: Less than 2 Millivolts RMS from 50Hz to 500Hz.

Safety

The following are safety precautions which personnel must understand and follow when using or servicing this product.

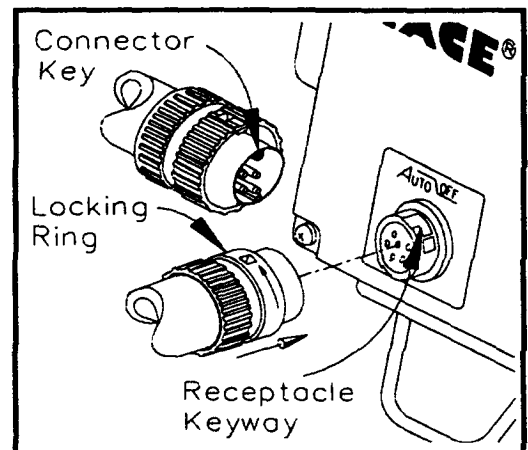
1. Handpiece heaters and installed tips are hot when the handpiece is powered on. **DO NOT** touch the heater or tip. Severe burns may result.
2. Utilize all standard electrical safety precautions when using this equipment.
3. Connected handpiece heater and storage accessory (Portability Kit Cubby or Tip & Tool Stand) are hot when the system is in use. **DO NOT** touch handpiece heater or handpiece storage accessory when in use. Severe burns may result!
4. Always use this system in a well ventilated area. A fume extraction system such as those available from PACE are highly recommended to help protect personnel from solder flux fumes.
5. Use proper precautions when using materials (e.g., fluxes, solder paste). Refer to the Material Safety Data Sheet (MSDS) supplied with each material. Follow all safety precautions recommended by the manufacturer.
6. Do not leave the ST 105 unattended when in use.
7. **POTENTIAL SHOCK HAZARD** - Repair procedures should be performed by Qualified Service Personnel only. Line voltage parts will be exposed when the equipment is disassembled. Service personnel must avoid contact with these parts when troubleshooting the power source.

Set-Up

System

Place the power source on a work bench and set up your system using the following instructions plus manuals and instructions shipped with your system & accessories.

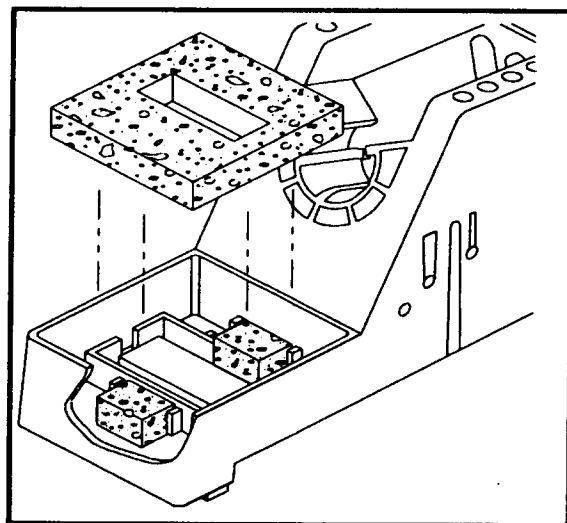
1. Install the handpiece in the following manner.
 - a) Turn the Locking Ring counterclockwise.
 - b) Align Connector Key with Receptacle Keyway.
 - c) Insert connector into power receptacle.
 - d) Turn Locking Ring clockwise to lock in place.



2. Set up Tip & Tool Stand in the following manner. Complete instructions are supplied with the accessory.

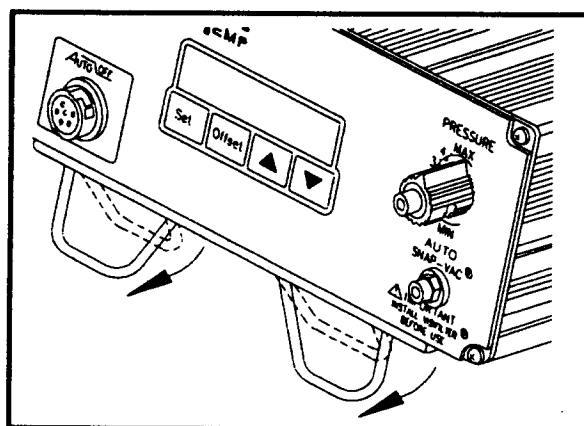
- a) Place 4 Rubber Feet (packed with small accessories) on the bottom corners of the Tip & Tool Stand.
- b) The Tip & Tool Stand does not attach to the power source. Place any Tip & Tool Stand on either side of the power source. If a Portability Kit has been purchased, install the kit using instructions supplied.
- c) Place the sponge in the Tip & Tool Stand in the following manner:

- 1) Remove the 2 small punched out center portions of the sponge & place into the sponge well of the stand.
- 2) Place the large sponge section into the well.
- 3) Dampen the sponges with water.



3. Refer to the Operation & Maintenance Instructions included with each handpiece for detailed instructions on connection of any handpiece air hose.

4. A Tilt Stand mounted to the bottom of the power source raises the front of the power source for easy viewing of the digital readout. Insure that the metal foot on this Tilt Stand is pulled down in position.



Set-Up

System Power Up

5. Insert the female end of the power cord into the AC Power Receptacle at the rear panel of the power source.
6. Plug the the prong end (male end) of the power cord into a 3 wire grounded AC supply receptacle. The system is now ready for operation.

CAUTION

To insure operator safety, the AC supply receptacle must be checked for proper grounding before initial operation.

7. Read the "Operation" section of this manual thoroughly before operating the system.

Heater Burn In

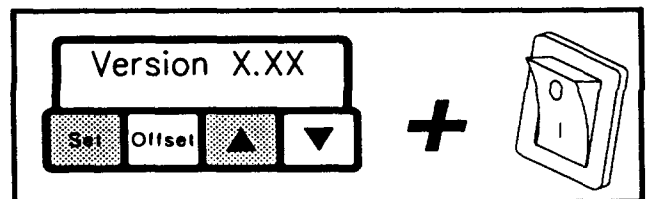
To insure optimum performance and long life, new handpieces must undergo a burn in procedure. A Red tag is attached to each handpiece and with replacement heater assemblies which describes the proper procedure. The ST 105 system however, has a Burn In feature which, when activated will burn in the heater in a similar manner as is described on the tag. Use this feature when setting up a new ST 105 system (burn in all handpieces) or when replacing a handpiece heater assembly.

NOTE

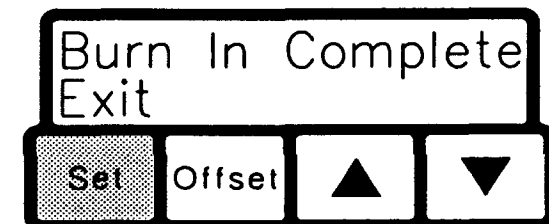
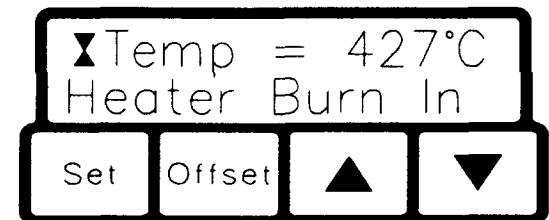
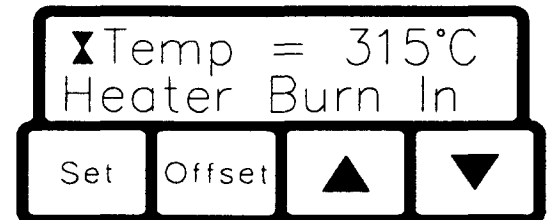
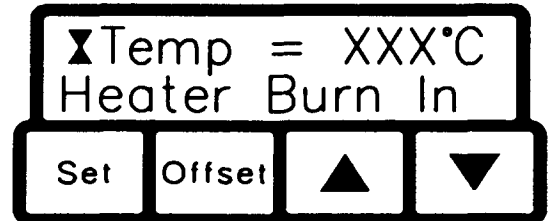
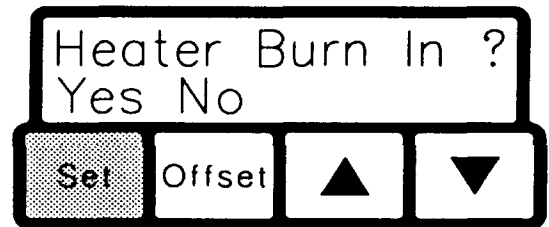
Ensure that the system is placed in a well-ventilated area. Smoke will be emitted from the heater assembly during the burn in cycle.

Use the following instructions to perform the Heater Burn In procedure.

1. Place the Power Switch in the "OFF" (0) position.
2. Ensure that the handpiece is connected to the system power source.
3. Some handpieces heater assemblies are shipped with a plastic cap installed on the end of the heater assembly. If this cap is present, remove the cap and discard. The cap is used for shipping purposes only.
4. Press and hold the Set and Scroll Up (▲) keys together.
5. Place the Power Switch in the "ON" (I) position. The Digital Readout will display "VERSION X.XX".
6. Immediately release the Set and Scroll Up (▲) keys.



7. Press **Set Key** to enter Heater Burn In.
8. The system is now in the Burn In Mode. The handpiece heater will begin to heat up with the temperature displayed (in °C or °F) on the Digital Readout. The message "Heater Burn In" (flashing off and on) and an hour glass graphic will appear and will continue to be displayed until the conclusion of the burn in cycle.
9. The temperature of the heater will stabilize at 315°C (or 600 °F) and remain at that temperature for 10 minutes.
10. At the conclusion of the 10 minute period, the heater temperature will increase to 427°C (or 800°F) and remain at that temperature for 15 minutes.
11. At the conclusion of the 15 minute time period, power is removed from the heater. The Digital Readout will display "Burn In Complete". Press and release the **Set Key** to "EXIT" Heater Burn In and return the system to the Temperature Display Mode (normal operation).



NOTE

The microprocessor circuitry within the unit monitors the system to insure proper results. If any abnormalities are encountered, the Burn In cycle will be interrupted and an error message displayed. If this situation should occur, turn the system off and perform the procedure again. If the cycle is interrupted a second time, refer to the handpiece operation manual and check for handpiece malfunction. If a second handpiece is available, perform the procedure using that handpiece.

Quick Start - Basic Operation

Quick Start Procedure

The ST 105 system can be quickly set up for standard soldering/desoldering operations. Perform the following Quick Start Procedure to begin operation.

1. Insure that the Set-Up procedure has been performed. Check to insure that the handpiece is connected to the power source. The power cord must be connected to a properly grounded house AC supply receptacle.
2. Turn the Power Switch "On" ("I").
3. Select & install the appropriate handpiece & Tip for your application.
4. Perform the following to set handpiece tip temperatures on the handpiece.

a) Press the Set Key.



b) Immediately press the Scroll Up (▲) Key or the Scroll Down (▼) Key to decrease the desired Tip Temperature. **NOTE:** Unit will return to normal operation if a key is not pressed within 5 seconds.

c) Press the Set Key.

5. If using a Surface Mount Removal Tip, locate the Tip Offset Constant for your handpiece/tip combination using the Tip & Temperature Selection System Booklet chart (P/N 5050-0251).

6. Press and release the **Offset** Key. Enter the Tip Offset Constant value using the Scroll Keys then immediately press and release the **Offset** Key again to enter the value into system memory and display the actual tip temperature (normal operation).



7. Observe the Digital Readout as the Set Tip Temperature stabilizes at the desired Tip Temperature.

NOTE

Read the "Operation" and "Set-Up Mode" sections of this manual to utilize the full capabilities of the system. This is especially important when using large soldering tips or other SensaTemp handpieces.

Auto Tip Temperature Compensation

Differences between the temperature settings and true tip temperatures are negligible when using Thru-Hole, desoldering tips. With any heating system however, True Tip Temperatures can differ greatly from temperature settings when using larger SMT removal (or installation) tips. This difference is called Tip Temperature Offset. The ST 105 Auto Tip Temperature Compensation feature lets you set and display true tip temperatures regardless of size and type of tip or handpiece. PACE recommends the use of the Tip & Temperature Selection System booklet (PACE P/N 5050-0251) as a guide to accurately set and maintain a true tip temperature for any size and type of SMT tip.

Password

The Password feature of the ST 105 system, when activated, will prevent unauthorized alteration of stored system temperature parameters and feature settings (refer to Table I, "Factory Settings"). If a Password has been installed, the Digital Readout will display an instruction to enter the Password (a 4 key sequence of the keys on the system front panel) when a setting change is attempted.

Entry of the correct Password at this point will allow the operator to proceed with the desired changes. Once the correct Password has been entered, the operator can continue to make changes to Tip Temperature and Tip Temperature Offset settings. To reactivate the Password protection, simply press either the Scroll Up or Scroll Down key when the system is in the Temperature Display Mode (normal operation). The Password protection will also be reactivated if the system is turned off and then back on. Refer to the "Set-Up Mode" section of this manual for instructions on entering, changing or removing a Password.

Basic Operation

The ST 105 system is very easy to adjust and operate. The following instructions direct the operator to adjust temperature settings to levels that are arbitrary to familiarize the operator with the system. The illustrations depict temperature in °C.

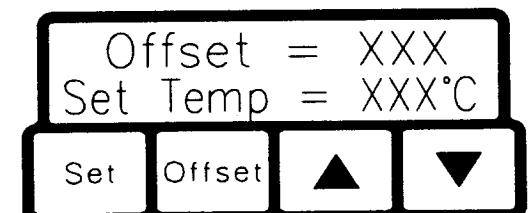
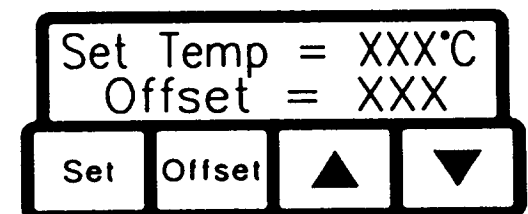
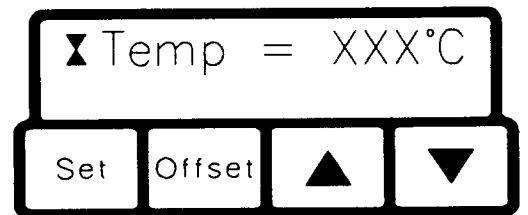
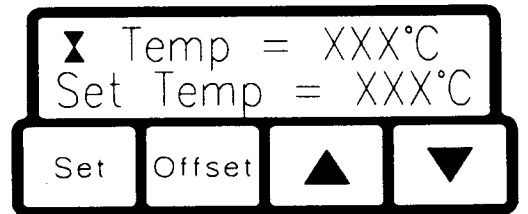
1. Insure that the system is properly prepared for operation. Refer to the "Set-Up" portion of this manual. The handpiece selected for your application should be connected to the unit.

Operation

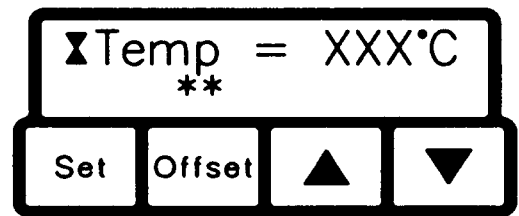
Digital Readout Operation

2. The Digital Readout provides a 2 line LCD display of the temperature information. The Digital Readout will show:

- a) The software version of the system power source for 2 seconds on initial power up.
- b) Temperature display in °C or °F (programmable in Set-Up Mode).
- c) The Operating Tip Temperature ("Temp = XXX") and the Set Tip Temperature ("Set Temp = XXX").
- d) The Operating Tip Temperature when it stabilizes. The Set Tip Temperature will disappear and only the Operating Tip Temperature display will remain. The system is now in Temperature Display Mode (normal operation).
- e) An hour glass icon at the top left corner of the Digital Readout if the Temperature Setback/Auto Off features are enabled. This icon will flash 1 minute prior to Temperature Setback and will continue flashing in Temperature Setback.
- f) The Set Tip Temperature ("Set Temp = XXX") in the Tip Temperature Set Mode, and the Tip Offset Constant value ("Offset = XXX") for offset values greater than 0.
- g) The Tip Offset Constant ("Offset = XXX") above the Set Tip Temperature ("Set Temp = XXX") in the Tip Offset Mode.



- h) "***" in Temperature Display Mode, if the stored Tip Offset Constant value is greater than 0.
- i) A variety of text messages to denote system status (e.g., time to setback, Password entry instruction etc.).



Power Up

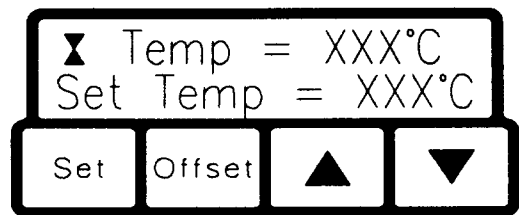
3. Turn the Power Switch ON ("1").

NOTE

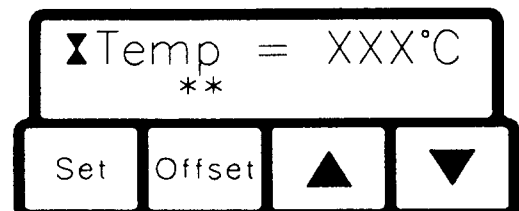
If the Power Receptacle does not have a handpiece attached, "Open Sensor Check Handpiece" will be displayed on the Digital Readout.

Panel Controls

4. With a handpiece connected to the system, the Digital Readout will display the stored Set Tip Temperature and the Operating Tip Temperature. If the Digital Readout displays "Set Temp = OFF" (factory setting), proceed to step 5.



Allow sufficient time for the handpiece to heat and the Operating Tip Temperature ("Temp = XXX") to stabilize at the Set Tip Temperature. The Digital Readout will now display only the Operating Tip Temperature (plus "***" if the stored Tip Offset Constant is greater than 0).

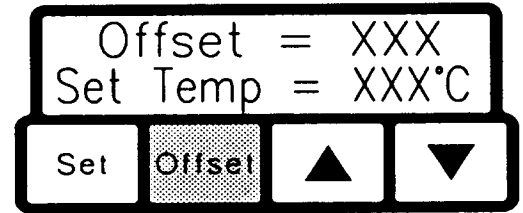


NOTE

The Tip Offset Constant feature is enabled as received from the factory. This feature can be easily disabled or enabled in the Set-Up Mode.

Operation

5. Press the **Offset Key**. The Digital Readout will display the Tip Offset Constant value (which is "0" as received from the factory or the key may be disabled).

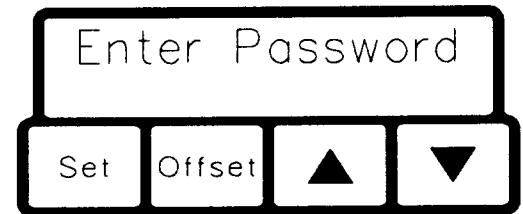


If this **Offset Key** is disabled, skip to step 9 or proceed to the Set-Up Mode portion of this manual to enable this feature.

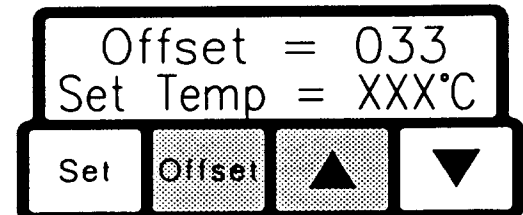
If the **Offset Key** is immediately pressed again, or if no other operation occurs within 5 seconds, the Digital Readout will revert to the Temperature Display Mode (normal operation).

NOTE

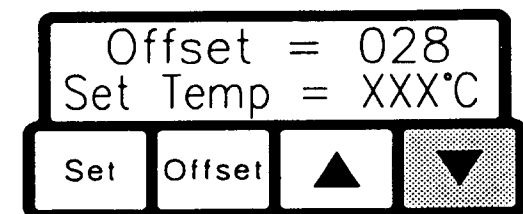
If a Password has been previously programmed into the system, a message will be displayed on the Digital Readout (when a setting change is attempted) requiring the operator to enter the correct Password before adjusting the system parameters. Refer to "Password" in the "Operation" portion of this manual.



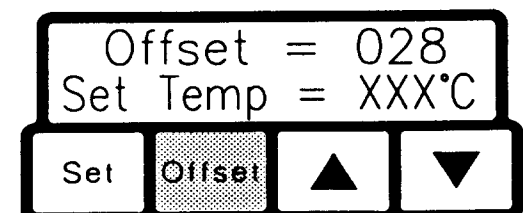
6. If the Digital Readout reverts to the Temperature Display Mode (normal operation), press the **Offset Key** once to enter Tip Offset Mode. Immediately press and hold the Scroll Up (**▲**) Key. Observe the displayed Tip Offset Constant value increase, first in 1° and then in 10° increments. Release the key when the Tip Temperature Offset value reads "033" for °C ("060" for °F).



7. While still in the Tip Temperature Offset Mode, press and hold the Scroll Down (**▼**) Key. Observe the displayed Tip Offset Constant decrease first in 1° and then in 10° increments. Release the key when the Digital Readout displays "028" for °C ("050" for °F).



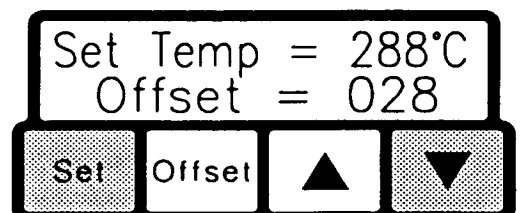
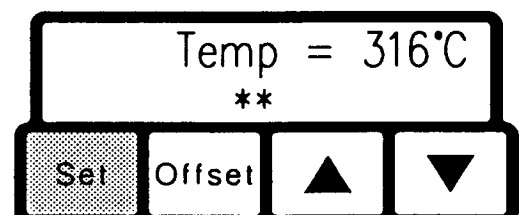
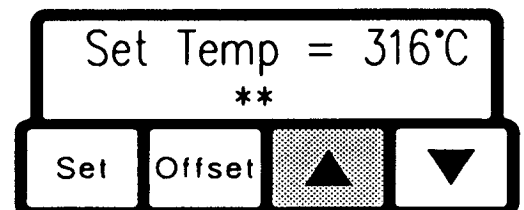
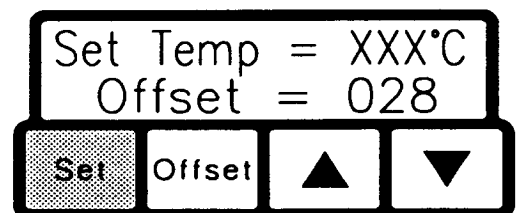
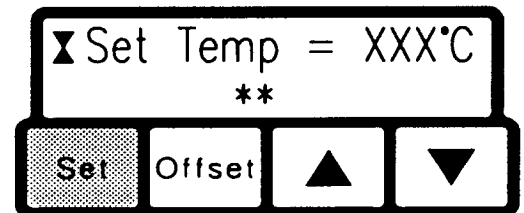
8. Immediately press the **Offset Key** to exit the Tip Offset Mode and enter the new Tip Offset Constant into the system memory.



NOTE

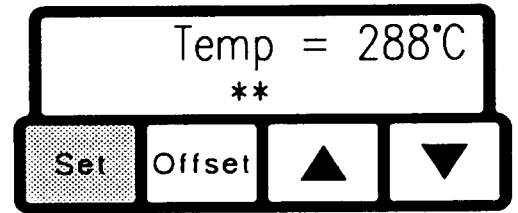
“**” appears on the Digital Readout if a Tip Offset Constant value greater than 0 (the default) has been stored in system memory. Refer to “Auto Tip Temperature Compensation” for a complete discussion of Tip Temperature Offset function.

9. Press the **Set Key**. This is Tip Temperature Set Mode. As received from the factory, the Digital Readout will display “Set Temp = OFF”. If the **Set Key** is immediately pressed again, or if no other operation occurs within 5 seconds, the Digital Readout will revert to the Temperature Display Mode (normal operation).
10. If the Digital Readout reverts to the Temperature Display Mode (normal operation), press the **Set Key** once to enter Tip Set Mode. Immediately press and hold the **Scroll Up (▲) Key**. Observe as the displayed Set Tip Temperature increases first in 1°, then in 10° increments (°C or °F). Release the key when the Digital Readout reads 316°C (or 600°F). Immediately press the **Set Key** once again. Observe the Digital Readout as the Operating Tip Temperature reaches 316°C (or 600°F). The Digital Readout will display both the Set Tip Temperature and the (true) Operating Tip Temperature. When the Operating Tip Temperature reaches the Set Tip Temperature and stabilizes, only the Operating Tip Temperature will be displayed.
11. Press the **Set Key** once to enter the Tip Temperature Set Mode. Immediately press & hold the **Scroll Down (▼) Key**. Observe as the displayed Set Tip Temperature decreases first in 1° and then in 10° increments (°C or °F). Release the key when the Digital Readout displays 288°C (550°F).



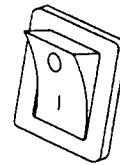
Operation

12. Immediately press the **Set Key** (or wait 6 seconds) to exit the Tip Temperature Set Mode and observe the Operating Tip Temperature decrease to 288°C (550°F).

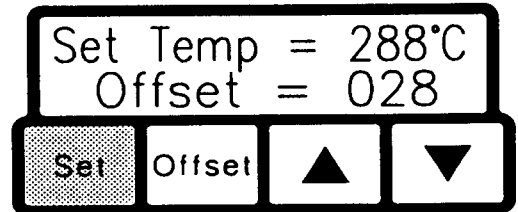


13. The system will retain the stored Set Tip Temperature and Tip Offset Constant even when power is removed.

14. Turn the Power Switch to the OFF ("0") position. Turn the switch back to the ON ("1") position.



15. Press the **Set Key**. Notice that the system has retained the stored Set Tip Temperature and Tip Offset Constant in memory. Immediately press the **Set Key** once again to exit Tip Temperature Set Mode.



NOTE

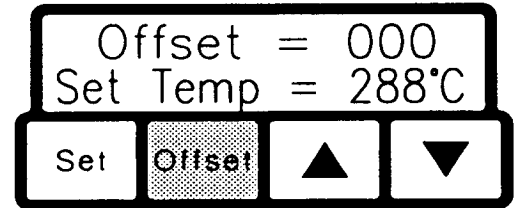
If the **Offset Key** has been disabled (in Set-Up Mode), the key will not function. Skip to step 19.

16. In order to prevent a handpiece/tip combination from inadvertently operating at an incorrect Tip Temperature, the system will not retain a stored Tip Offset Constant if a handpiece is disconnected with power on. The Tip Offset Constant will return to the default value of "0" (for °C or °F). Disconnect the handpiece. Reconnect the handpiece.

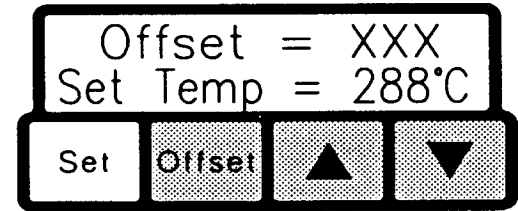
IMPORTANT

Always set the appropriate Tip Offset Constant (refer the Tip & Temperature Selection System booklet, PACE P/N 5050-0251) for the selected handpiece/tip combination before entering the desired Set Tip Temperature. The maximum possible Offset is "139" for °C ("250" for °F). The Set Tip Temperature + the Dynamically Adjusted Tip Offset value (usually different from the entered Tip Offset Constant) cannot exceed 489°C (912°F). If this limit is exceeded, the system will automatically lower the maximum possible Set (and Operating) Tip Temperature accordingly.

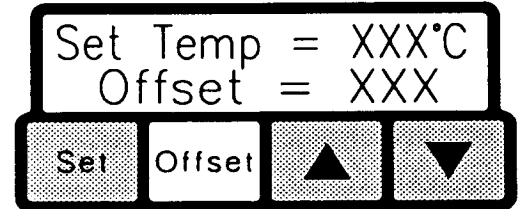
17. Press the **Offset Key**. Notice that the Tip Offset Constant has now changed to the default value of “000” (for °C or °F). Whenever the channel has no connected handpiece, the Tip Offset Constant automatically reverts to the default.



18. Use the Scroll Up (▲) and Scroll Down (▼) Keys to set Tip Offset Constant value as desired. Press and release the **Offset Key** to exit Tip Offset Mode and enter this value into system memory.



19. Press the **Set Key** and use the Scroll Up (▲) and Scroll Down (▼) Keys to enter your desired Set Tip Temperature. Press the **Set Key** again to enter normal operation.



Temperature Setback

To preserve tip life and save energy, the ST 105 system can be programmed to automatically set back its Tip Temperature to 177°C (350°F) after a selected period of handpiece inactivity (adjustable 5-120 minutes in Set-Up Mode). Refer to the “Set-Up Mode” section of this manual to disable or adjust the time-out period of this feature. The Auto Off Safety feature is also enabled automatically when Temperature Setback is enabled.

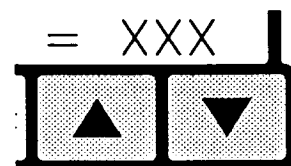
NOTE

If the SetTip Temperature is less than 177°C (350°F), the system will remain at the lower temperature in Temperature Setback.

Activation

There are two ways in which the system will activate the Temperature Setback feature.

1. **AUTOMATIC ACTIVATION** - The system memory can be programmed so that the system will automatically activate Temperature Setback after a selected period (5-120 minutes) of handpiece inactivity. See the “Set-Up Mode” section for details on programming this feature.
2. **MANUAL ACTIVATION** - The operator can manually force the system to place the system in Temperature Setback by performing the following procedure.
 - a) Press and hold the Scroll Down (▼) Key.
 - b) Press the Scroll Up (▲) Key.
 - c) Release both keys.



Operation

Operation

Temperature Setback is indicated by the following.

1. The hour glass icon at the top left corner of the Digital Readout will start flashing 1 minute before entering Temperature Setback and continue to flash while in Temperature Setback.
2. The Operating Temperature will stabilize at 177°C (350°F) unless the Set Tip Temperature is lower (see NOTE above).
3. The bottom line of the Digital Readout will display the time remaining to Auto Off in hours and minutes.

Exiting Temperature Setback

Press and release either Scroll Key (▲ or ▼). This is the preferred method but you can turn the Power Switch “OFF” (0) and then back “ON” (1).

Do not use the attached handpiece until the Set Tip Temperature is achieved.

Auto Off Safety System

The Auto Off safety system of the ST 105 system removes power 30-120 minutes (adjustable in Set-Up Mode) after entering Temperature Setback. This feature is automatically enabled when Temperature Setback is enabled.

Operation

When the system has entered Temperature SetBack, an Auto Off timer within the system circuitry will start running:

1. If any key is pressed during the selected time out period, the Auto Off timer is reset.
- 2 The bottom line of the Digital Readout displays “X:XX to Auto OFF” (“X” = 0 thru 9), alerting the operator as to the length of time remaining (in hours and minutes) before the system enters Auto Off.
- 3 At the end of the time out period, the system will enter Auto Off. Power is removed and “System is OFF Press Any Key” will be displayed.

Exiting Auto Off

Auto Off can be exited; returning to normal operation by

1. Pressing any key

OR

2. By turning the Power Switch OFF (“0”) and then back ON (“1”).

Introduction

The menu driven Digital Readout of the ST 105 system in the Set-Up Mode allows you to easily customize your system. In most cases, the operator is directed as to which key to press in order to proceed. In cases where specific instructions are not displayed, simply press the **Set Key** to proceed to the next step. No calibration adjustments are necessary to maintain the accuracy of the system.

In Set-Up Mode, you can:

1. Change the Upper and Lower Temperature limits.
2. Set the Default Temperature scale to °F or °C as desired.
3. Disable or enable the **Offset Key**.
4. Enable or disable the Temperature Setback/Auto Off features.
5. Adjust the time-out period of the Temperature Setback & Auto Off features.
6. Enter, remove or change a Password.

FACTORY SETTINGS

The ST 105 system comes equipped with a number of features which may be adjusted, enabled or disabled as desired by the user. Listed below are the features and factory settings of each.

| FEATURE | FACTORY SETTING |
|--|------------------------|
| Password | Disabled |
| Temperature Setback | Enabled |
| Setback Time | 90 Minutes |
| Auto Off (Enabled automatically when Temperature Setback is enabled) | Enabled |
| Time To Auto Off (after entering Setback) | 30 Minutes |
| Default Temperature Scale (°C/°F) | °F |
| Set Tip Temperature | "OFF" |
| "LO" (lower) Temperature Limit | 204°C (400°F) |
| "HI" (upper) Temperature Limit | 482°C (900°F) |
| Offset Key Enable/Disable | Enabled |
| Tip Offset Constant | "0" |

Table 1. Factory Settings

Repair

Digital Readout Message Codes

Listed below are message codes which may be displayed on the Digital Readout if a mistake is made by the operator (e.g., wrong Password entry) or if the system has malfunctioned.

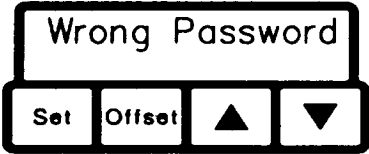
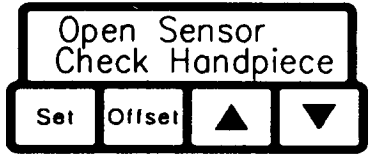
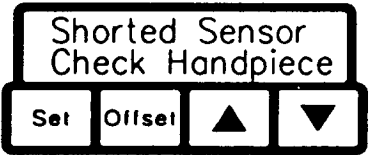
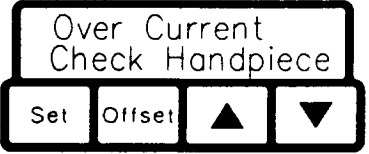
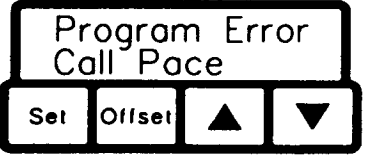
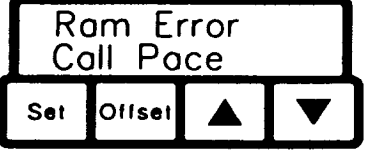
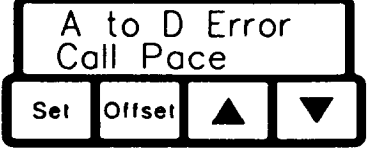
| DISPLAY MESSAGE | DESCRIPTION |
|---|---|
|  <p>Wrong Password</p> <p>Set Offset ▲ ▼</p> | <p>The incorrect Password has been entered. The displayed message will time out after 6 seconds and revert to normal operation. Enter the correct Password.</p> |
|  <p>Open Sensor Check Handpiece</p> <p>Set Offset ▲ ▼</p> | <p>No handpiece connected to the Power Receptacle. Connect handpiece.</p> <p>Handpiece heater assembly sensor is open. Refer to "Corrective Maintenance" in handpiece manual to check handpiece. The displayed message may be flashing.</p> |
|  <p>Shorted Sensor Check Handpiece</p> <p>Set Offset ▲ ▼</p> | <p>Handpiece heater assembly sensor is shorted. Refer to "Corrective Maintenance" in handpiece manual to check handpiece. The displayed message may be flashing.</p> |
|  <p>Over Current Check Handpiece</p> <p>Set Offset ▲ ▼</p> | <p>The handpiece heater assembly may be defective. Refer to "Corrective Maintenance" in handpiece manual to check handpiece. The displayed message may be flashing.</p> |
|  <p>Program Error Call Pace</p> <p>Set Offset ▲ ▼</p> | <p>Power source malfunction. Call the PACE Service Department for assistance.</p> |
|  <p>Ram Error Call Pace</p> <p>Set Offset ▲ ▼</p> | <p>Power source malfunction. Call the PACE Service Department for assistance.</p> |
|  <p>A to D Error Call Pace</p> <p>Set Offset ▲ ▼</p> | <p>Power source malfunction. Call the PACE Service Department for assistance.</p> |

Table 2. Digital Readout Message Codes

Digital Readout Accuracy

No adjustments are necessary to maintain the accuracy of the system.

Repair Procedure

The "Repair" section of this manual provides the technician with the information necessary to determine the source of a malfunction and take the necessary steps to correct it. In order to perform the most expedient repair, the technician must follow the process listed below step by step, in order. Failure to do so will make the diagnosis and repair much more difficult.

1. **Periodic Maintenance** - Required on any PACE handpieces used. Regular cleaning of heater bores and solder collection chambers plus replacement of worn tips and VisiFilter elements is essential. Refer to the Operation Manual shipped with each handpiece for specific instructions. No periodic or special maintenance is required on the power source.
2. **Digital Readout Message Codes** - Many operation errors or system malfunctions are detected by the system and displayed on the Digital Readout. Check the Digital Readout for error messages and refer to the Digital Readout Message Codes table (Table 2).
3. **Corrective Maintenance** - A guide for resolving minor malfunctions. Locate the "Symptom" in the Corrective Maintenance Table which best describes the malfunction. Check each point described under "Solution" in order of listing.
4. **Disassembly/Assembly** - Contains simple instructions which enable the technician to open/close the unit for servicing.
5. **Repair Drawings** - Exploded power source, wiring diagram and schematic are included as aides in troubleshooting and repair.
6. **PACE Service Department** - If the cause for malfunction has not been determined at this point, call the PACE Service Department at tel.1-888-535-PACE (toll free) or FAX 301-483-7030.

Disassembly/Assembly

To remove the ST 105 power source cover, perform the following procedure step by step, in sequence using the accompanying illustrations as a guide.

CAUTION

POTENTIAL SHOCK HAZARD - Disassembly of the ST 105 system power source (PPS 105) exposes line voltage parts. Replacement of the Pump Assembly must be performed by qualified service personnel only. Service personnel must insure that the AC power cord is disconnected prior to disassembly. Contact the PACE Service Department for assistance at tel. 1-888-535-PACE (7223), FAX 1-301-483-7030.

1. Place the unit on a suitable work surface with the front of the power source facing forward.
2. Disconnect the AC power cable from the unit (if present).

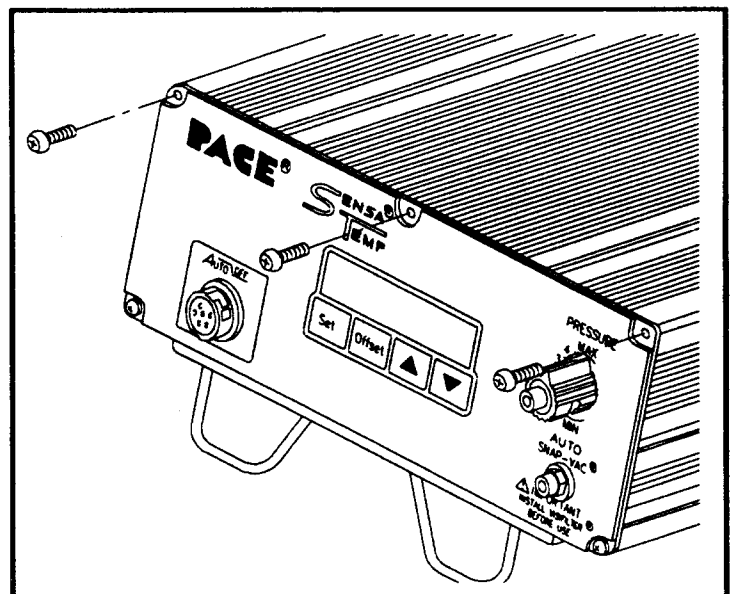
NOTE

Use all ESD control precautions when servicing the ST 105 system. The power source contains a PCB assembly utilizing static sensitive components.

NOTE

At this point, you may wish to remove any accessories attached to the power source to ease removal of the 2 Cover Mounting Screws (step 6).

3. Remove the 3 upper Front Panel mounting screws.
4. Reposition the unit with the rear of the power source facing forward.



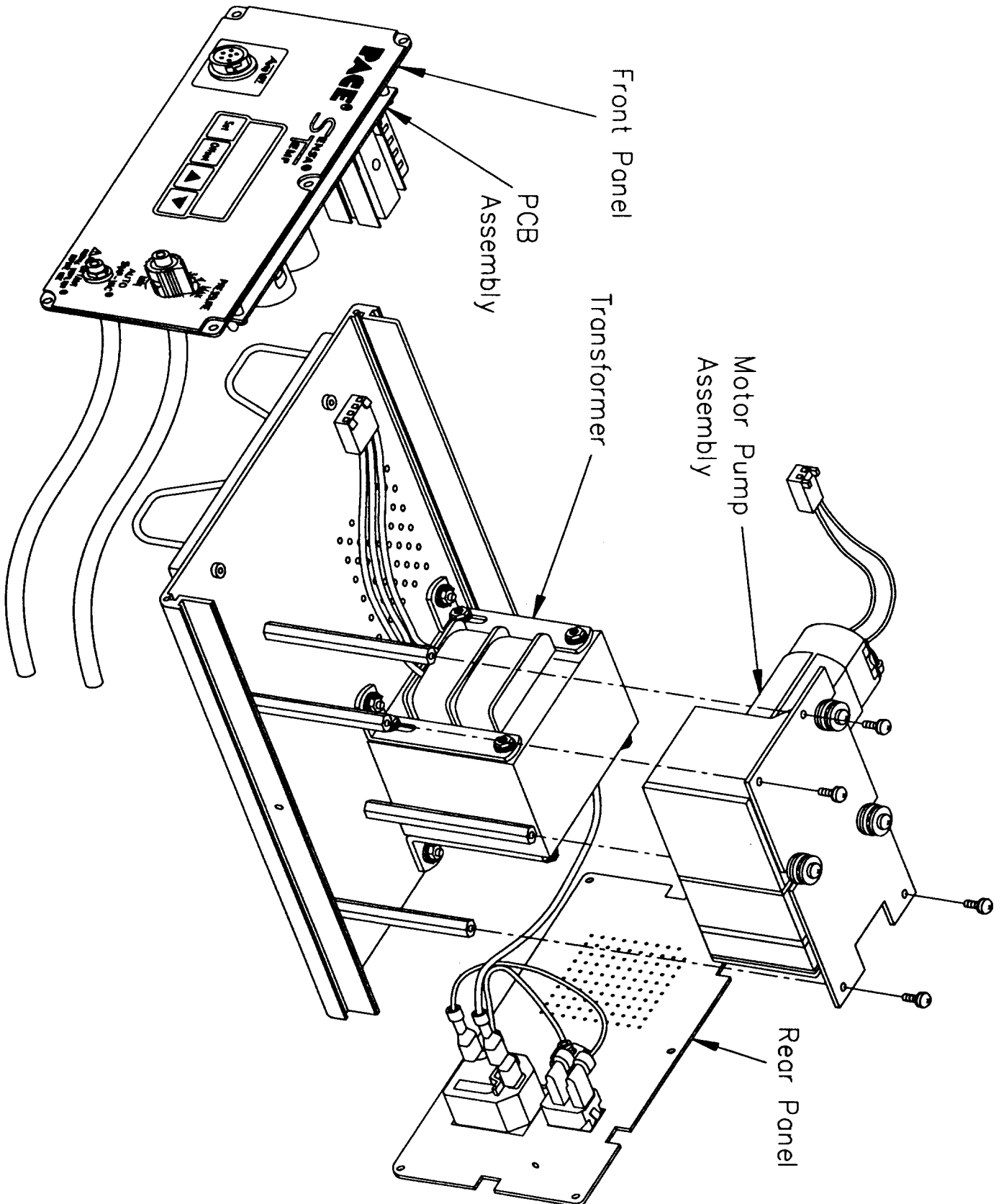
Corrective Maintenance

Most malfunctions are simple and easy to correct. Refer to Table 3 below to clear these malfunctions.

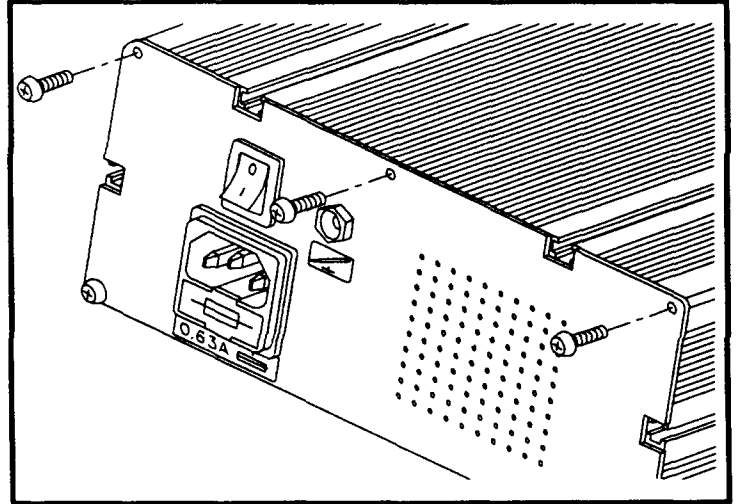
| Symptom | Probable Cause | Solution |
|--|---|--|
| No power to system. Digital Readout is blank. | Blown Fuse | Check handpiece using "Corrective Maintenance" in handpiece manual. Replace fuse located in AC Receptacle/Fuse Holder. |
| Insufficient SNAP-VAC (vacuum) or air pressure. Motor Pump runs. | Handpiece air hose has a kink or hole in hose. | Check handpiece hose. Replace air hose if necessary |
| | VisiFilter or handpiece filter clogged. | Replace VisiFilter or handpiece filter. |
| | Handpiece chamber not seated properly in handpiece. | Check handpiece. Reseat chamber if necessary. |
| | Defective Motor Pump Assembly. | Check vacuum and air pressure at Motor Pump Assembly air hose connections. Replace Motor Pump Assembly if necessary. |
| No AUTO SNAP-VAC (vacuum) or air pressure. Motor Pump does not run. | Defective handpiece. | Check handpiece using "Corrective Maintenance" in handpiece manual. |
| | Defective Motor Pump Assembly. | Check for 12 VDC at motor terminals with handpiece switch actuated. Replace Motor Pump Assembly if defective. |
| | Defective Main PCB Assembly | If there is no 12 VDC at Motor Pump Assembly, repair or replace Main PCB Assembly. |
| No heat on handpiece. | Defective Heater | Refer to "Corrective Maintenance" in handpiece manual. |

Table 3. Power Source Corrective Maintenance

Assembly Detail

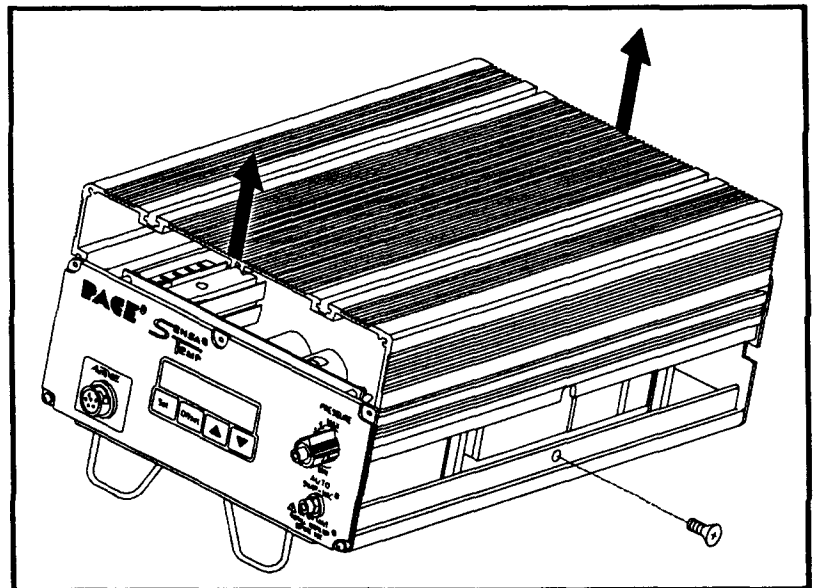


5. Remove the 3 upper Rear Panel mounting screws.



6. A Cover Mounting Screw is located on each side of the power source (positioned bottom center). Remove the 2 Cover Mounting Screws.

7. Lift the Cover from the power source. Set Cover aside.

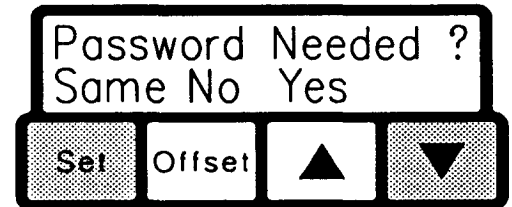


8. The power source components are now exposed for servicing. When replacing the Main PCB Assembly or the Motor Pump Assembly, separate instructions are supplied with the part.
9. To assemble the power source, perform steps 1 through 7 in reverse order, installing parts (e.g., screws) instead of removing.

Set-Up Mode

Entering Set-Up Mode

1. Place Power Switch in the "OFF" ("0") position.
2. Press and hold the **Set** and **Scroll Down (▼)** Keys together.
3. Place Power Switch in the "ON" ("1") position. The Digital Readout will display "VERSION X.XX" and change to read "Password Needed ?"



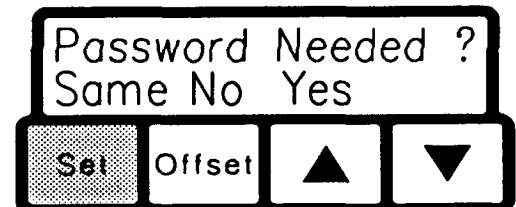
4. Release the **Set** and **Scroll Down (▼)** Keys. The system is now in Set-Up Mode. "Enter Old Password" will be displayed if a Password is currently stored in system memory.

Operation

5. If a Password has been previously stored in system memory, enter the 4 key sequence Password.

6. At this point the Digital Readout will ask you:

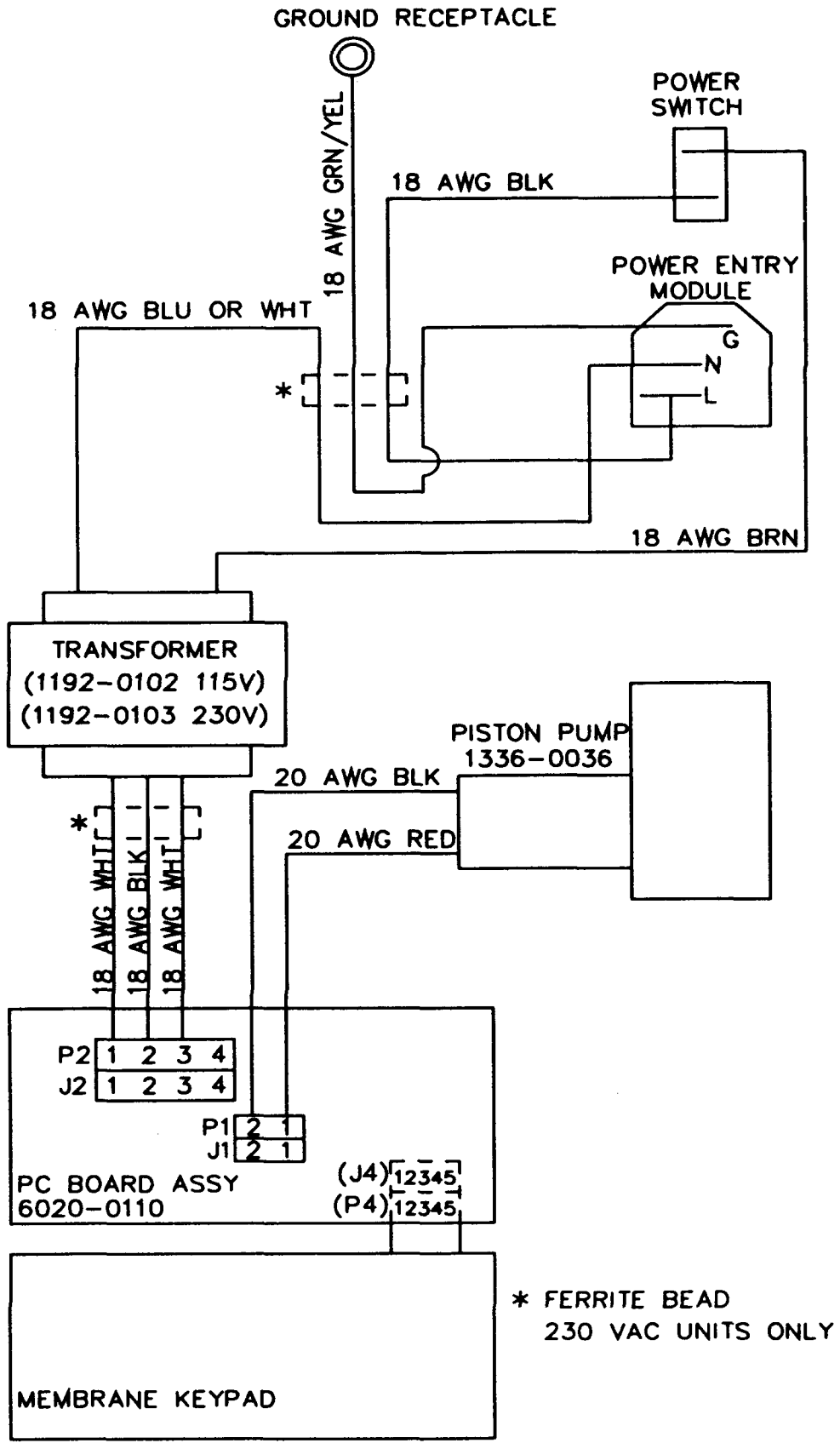
- a) If you would like to retain the "Same" Password (if previously stored) in the system. If you wish to retain the "Same" Password, press the Key directly beneath the word "Same" (**Set Key**).



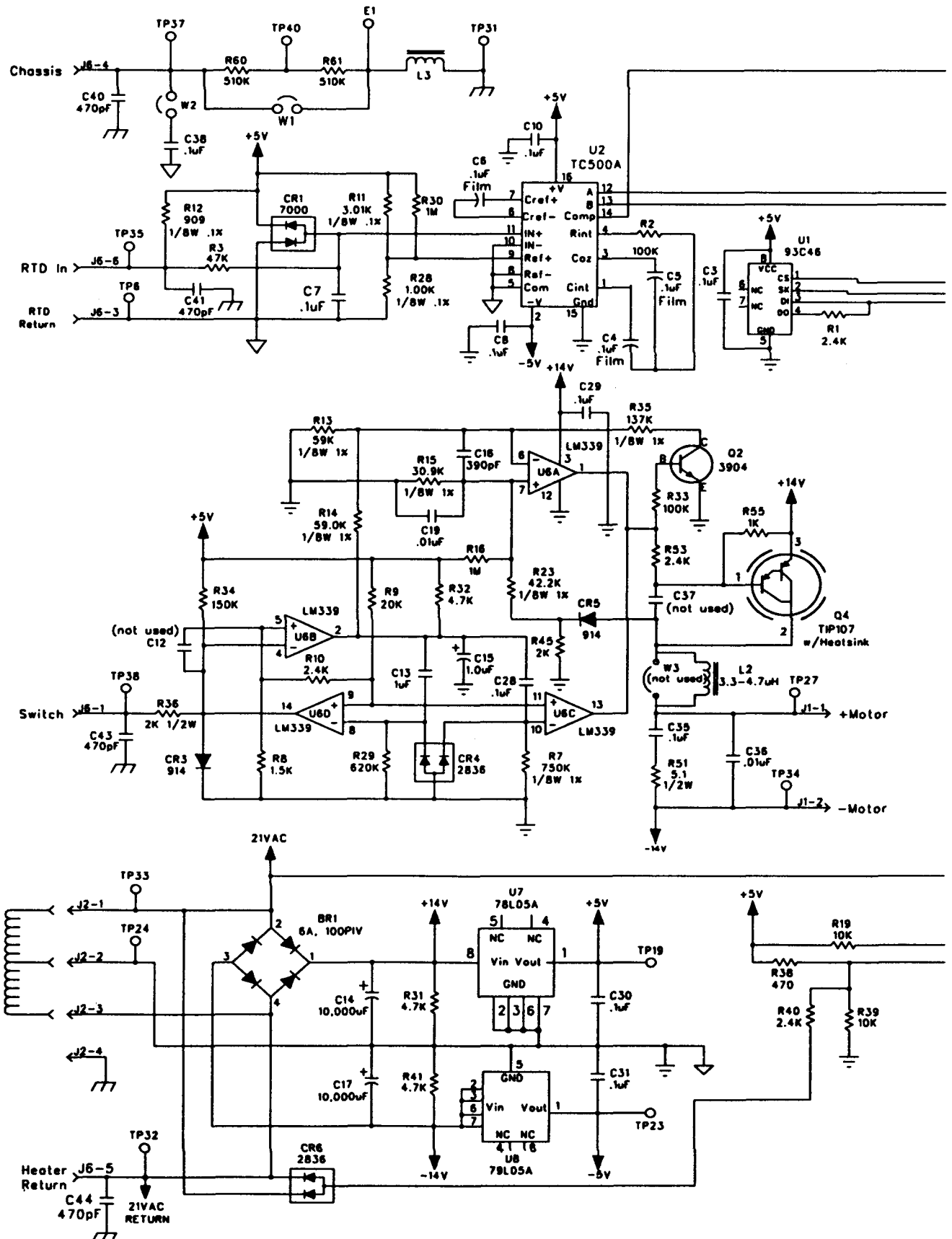
- b) If you do not wish to have a Password stored in the system, press the key directly beneath the word "No" (**Offset Key**) on the Digital Readout. Any previously stored Password will be removed from the system.
- c) If you wish to enter a new Password, press the key directly beneath the word "YES" (**Scroll Up (▲) Key**) on the Digital Readout. The Digital Readout will display "Enter New Password". Enter a new 4 key sequence Password. As each key is pressed, an asterisk (*) will be displayed.

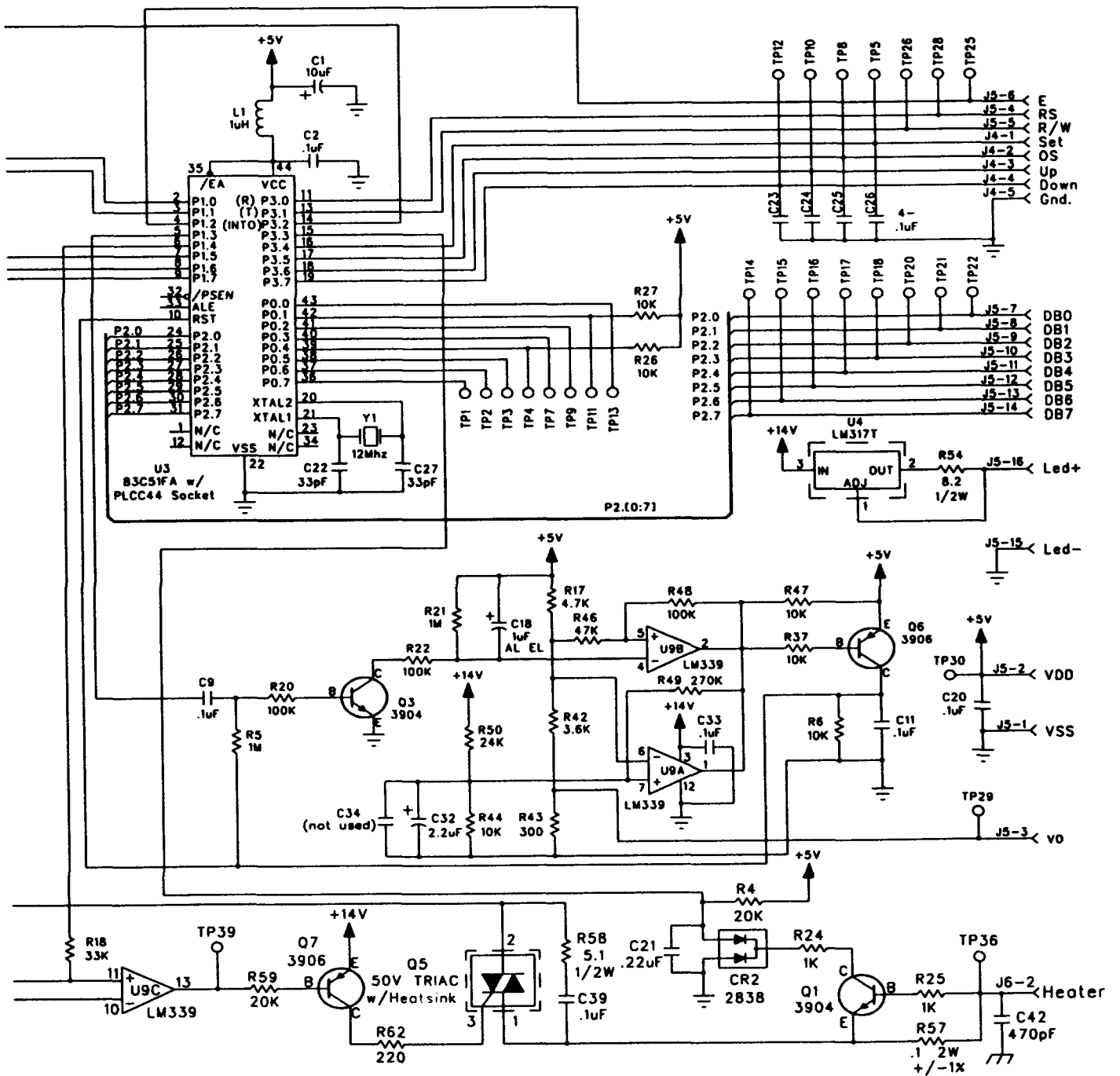
7. Perform the procedure as directed by the displayed messages. The steps of this procedure move you forward through the Set-Up Mode options. In most cases, the operator is directed as to which key to press (displayed directly above key) in order to proceed. In cases where specific instructions are not displayed, simply press the **Set Key** to proceed to the next step. You may also step backward (to this point only) by pressing the **Offset Key**.
8. All settings selected are stored in system memory when exiting the Set-Up mode.

Wiring Diagram



Schematic





Spare Parts

Listed below are spare parts which may be purchased from your local, authorized PACE distributor.

| Item # | Description | Part Number | |
|--|--|-------------------------------------|-----------|
| <i>Power Source Replacement Parts</i> | | | |
| 1 | Fuse,(F1), | 1.25 Amp Time Lag, 115 Volt Systems | 1159-0251 |
| | | 0.63 Amp Time Lag, 230 Volt Systems | 1159-0252 |
| 2 | Power Cord | 115 Volt Systems | 1332-0094 |
| | | 230 Volt Systems | 1332-0095 |
| 3 | Power Switch | 1157-0081 | |
| 4 | Bumpon (rubber foot) | 1274-0021 | |
| 5 | PCB Assembly | 6020-0110-P1 | |
| 6 | Motor Pump Assembly | 1336-0036-P1 | |
| <i>Accessories & Spare Parts (partial list, complete listing in catalogue)</i> | | | |
| 7 | Portability Kit | 6018-0109-P1 | |
| 8 | Tip & Temperature Selection System Booklet | 5050-0251 | |
| 9 | SX-70 Sodr-X-Tractor Handpiece | 6010-0077-P1 | |
| 10 | SP-2A Sodr-Pen Handpiece | 6025-0014-P1 | |
| 11 | DTP-80 Dual ThermoPik Handpiece | 7029-0001-P1 | |
| 12 | TT-65 ThermoTweez Handpiece | 7025-0001-P1 | |
| 13 | TP-65 ThermoPik Handpiece | 7024-0001-P1 | |
| 14 | TJ-70 ThermoJet Handpiece | 7023-0002-P1 | |

Table 4. Spare Parts

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Since 1958, PACE Incorporated has provided advanced technology training in all aspects of hand soldering, rework and repair.

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**PACE Incorporated
Sales Administration
9893 Brewers Court
Laurel MD 20723-1990**

**(301) 490 - 9860
(301) 498 - 3252 Fax**

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PACE warrants that this equipment will be free of defects in materials and workmanship for a period of one (1) year from the date of receipt by the first user. This warranty does not cover repair or replacement required as a result of misuse, mishandling or improper storage. Failure to perform recommended routine maintenance, alterations or repairs made other than in accordance with PACE's directions, or removal or alteration of identification plates in any way will void this warranty. This warranty is available only to the first user, but the exclusions and limitations therein apply to all persons and entities.

This warranty does not apply to consumable items, such as tips, filter elements, hoses, collection chambers etc., except that heaters are normally warranted for a period of six (6) months from the date of receipt by the first user.

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Do NOT return defective equipment or parts to PACE without obtaining prior authorization.

Any warranty or other claim with respect to the equipment must be made in writing and delivered to PACE (or local authorized PACE Distributor outside the U.S.) within a reasonable time of the expiration date of this warranty. Sufficient evidence of purchase and date of receipt must also be included, otherwise user's rights under this warranty shall be deemed waived.

For warranty service, contact the appropriate PACE company listed below

PACE Inc. 9893 Brewers Court, Laurel, Maryland 20723-1990
Tel. (888) 535-7223 (toll-free), (301) 490-9860
FAX 301 483 7030

PACE Europe Ltd. Sherbourne House Sherbourne Drive Tilbrook
Milton Keynes Buckinghamshire England MK7 8HX
Tel. (44) 01908 277 666 FAX (44) 10908 277 777

To register your purchase with PACE, fill in the form below and mail or FAX to the applicable PACE address listed above.

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EQUIPMENT WARRANTY REGISTRATION CARD

| | | | |
|---------------------------------|-----------------------------|--------------------|-----------------|
| Model No. | Serial No. | Date of Receipt | |
| Purchased from | | | |
| Company Name | | | |
| Mailing Address | | | |
| City | State/Province | Country | Zip/Postal Code |
| Telephone number with area code | FAX number | Internet Address | |
| Full Name | Authorized Signature, Title | | |

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