PACE®
WORLDWIDE

Operation and Maintenance Manual for the ST 25 & ST 35 Soldering Systems

P/N 5050-0452
Rev D

TITLE TEST ..... PAGE

Introduction

Thank you for purchasing the PACE model ST 25 or ST 35 Digital Soldering System. This manual will provide you with the information necessary to properly set up, operate and maintain the ST 25 or ST 35.

The ST 25 and ST 35 systems are available in either 115 VAC or 230 VAC versions, which incorporates a highly responsive SensaTemp (closed loop) control system providing up to 80 Watts of total power to a single output channel. The 230 VAC version system bears the CE Conformity Marking, which assures the user that it conforms to EMC 89/336/EEC.

The 115 VAC version systems conform to FCC Emission Control Standard, Title 47, Subpart B, Class A. This standard is designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

Specifications

System Power Source Power Requirements

ST 25 or ST 35	Operates on 97-127 VAC, 50/60Hz, 90 Watts maximum at 115 VAC, 60Hz
ST 25E or ST 35E	Operates on 197-253 VAC 50/60Hz, 80 Watts maximum at 230 VAC, 50Hz

Temperature Specifications

Handpieces	Tip Temperature Range: 204 to 455°C (400 to 850°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.

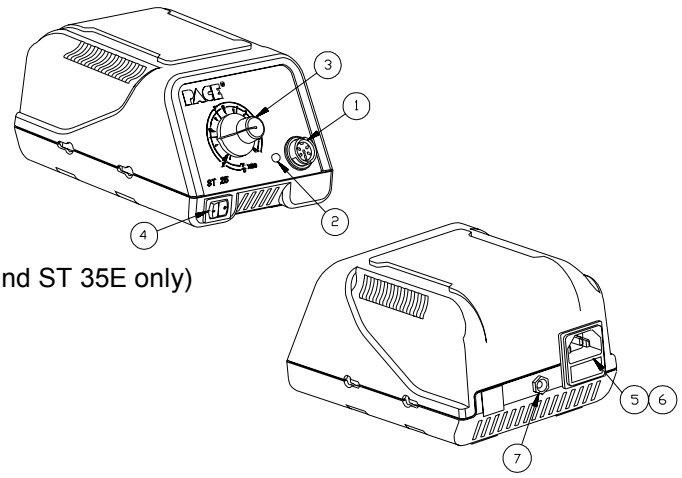
EOS/ESD Specifications

The specifications shown below apply except on "Soft Ground Systems" which have a 1meg 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 10MHz.
Transient Level: Less than 500mV peak, out to 100MHz.

Parts Identification (ST 25 shown)

① Power Receptacle
② Front Panel LED
③ Temperature Selection Dial
④ Power Switch
⑤ AC Power Receptacle/Fuse Holder
⑥ Fuse
⑦ Earth Ground Receptacle (ST 25E, ST 35 and ST 35E only)



English Language Safety Guidelines

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

1. **POTENTIAL SHOCK HAZARD -** Repair procedures on PACE products should be performed by Qualified Service Personnel only. Line voltage parts may be exposed when the equipment is disassembled. Service personnel must avoid contact with these parts when troubleshooting the product.
2. To prevent personnel injury, adhere to safety guidelines in accordance with OSHA and other applicable safety standards.
3. SensaTemp handpiece heaters and installed tips are hot when the handpiece is powered on and for a period of time after power off. **DO NOT** touch either the heater or the tip. Severe burns may result.
4. PACE Tip & Tool Stands and handpiece cubbies are designed specifically for use with the associated handpiece and houses it in a manner that protects the user from accidental burns. Always store the handpiece in its holder. Be sure to place the handpiece in its holder after use and allow for cooling before storing.
5. Always use PACE systems 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.
6. Exercise proper precautions when using chemicals (e.g., solder paste). Refer to the Material Safety Data Sheet (MSDS) supplied with each chemical and adhere to all safety precautions recommended by the manufacturer.

Directives de Sécurité, Française Langue

Les précautions suivantes, sont celles que le personnel doit comprendre et suivre lorsqu'il utilise, effectue la maintenance ou se sert d'un produit PACE.

1. **Danger potentiel de choc èlectrique -** Les procédures de réparation sur les produits PACE doivent être effectuées seulement par du personnel qualifié. Des parties de l'équipement désassemblées peuvent être sous tension. Le personnel de maintenance doit éviter tout contact avec ces parties en réparant le produit.
2. Pour prévenir tout préjudice, le personnel adhère au guide de sécurité en accord avec OSHA (équivalent à des normes françaises de sécurité) et d'autres standards de sécurité applicable.
3. La mise sous tension des outils SensaTemp comporte des éléments chauffants (buse). Ces derniers, gardent la chaleur même après la mise hors tension pendant un certain temps. **Ne pas** toucher les parties chaudes aux extrémités des outils. Des brûlures sévères peuvent en résulter.
4. Les outils PACE et leurs pannes ainsi que le support sont dessinés de manière spécifique afin de protéger l'utilisateur/opérateur de brûlures accidentelles. Reposer toujours les outils après chaque utilisation dans leurs étuis/supports afin de permettre leur refroidissement.
5. Utiliser toujours les stations Pace dans unlieu bien ventilé. Des extracteurs de fumée Pace sont hautement recommandés pour protéger votre personnel des vapeurs de soudure/flux.
6. Prenez les mesures nécessaires quand vous utilisez des produits (ex: solder paste) chimiques. Reportez-vous au document (fiche technique/sécurité) du fabricant fourni avec chaque produit. Respectez toutes les procédures de sécurité recommandées par le constructeur.

Sicherheit Korrekturlinien, Deutsche Sprache

Die nachfolgenden Sicherheitsvorschriften sollten vom Bedien- un Servicepersonal verstanden und befolgt werden.

1. **Entladung spannungsfuehrender Teile -** Reparaturen an PACE Produkten sollten nur von qualifizierten Personal durchgefuehrt werden. Spannungsfuehrende Teile koennen sich bei gezogenen Netzstecker entladen. Servicepersonal muss den Kontakt dieser Teile vermeiden.
2. Um moegliche Gefahren fuer Personen auszuschliessen, muessen alle Sicherheitsvorschriften in Uebereinstimmung mit OSHA und anderen anwendbaren Sicherheitsstandards eingehalten werden.
3. Angeschlossene SensaTemp Heizelemente von Handwerkzeugen und installierte Loetspitzen sind heiss wenn das System eingeschaltet ist oder erst vor kurzer Zeit ausgeschaltet wurde. Heizelement und Loetspitze nicht beruehren. Verbrennungsgefahr.
4. PACE Tip & Tool und andere Handwerkzeugablagen sind so konstruiert, dass ein versehentliches Beruehren des dazugehoerendes Handwerkzeuges vermieden wird. Bewahren Sie das Handwerkzeug nach Gebrauch stets in der Ablage auf. Bevor das Handwerkzeug an einem anderen Ort gelagert werden muss, lassen Sie es in der Werkzeugablage vollstaendig abkuehlen.
5. Benutze PACE Systeme nur in gut beluefteten Raeumen. Ein Loetrauchabsaugsystem, wie es z.B. von PACE erhaeltlich ist, hilft Bedienpersonen von den Gefahren von Loetrauch zu schuetzen.
6. Wenn Chemikalien (z.B.: Lotpaste) verwendet werden, muessen alle die in den Sicherheitsdatenblaettern des Herstellers ausgewiesenen Sicherheitsvorschriften eingehalten werden.

Misure di Sicurezza, Italiana Lingua

Le seguenti instruzioni sono misure di sicurezza che il personale deve comprendere e seguire quando utilizza o ripara I prodotti PACE.

1. **EVENTUALI RISCHI DI SHOCK ELETTRICO**- Si consiglia di far eseguire le operazioni di riparazione dei prodotti PACE, da un servizio di personale qualificato. Quando la stazione non é assemblata le parti sottoposte alla tensione di linea potrebbero essere scoperte. Il personale deve evitare il contatto con queste parti durante manutenzione del prodotto.
2. Per evitare eventuali pericoli al personale, attenersi alle norme di sicurezza previste dalla guida, in conformitá all'OSHA e agli altri Standard di Sicurezza applicabili.
3. Le resistenze PACE Sensatemp e le punte installate sono calde quando la stazione é accesa e per un periodo successivo allo spegnimento. Non toccare la resistenza e la punta. Puó comportare gravi ustioni.
4. I supporti PACE sono specificamente costruiti insieme alla corrispondente impugnatura e progettati per un uso che protegge gli utenti da ustioni accidentali. Mettere sempre l'impugnatura nel propio supporto dopo l'utilizzo e lasciarla raffredare prima di riporla.
5. Utilizzare sempre I stazioni PACE in una zona be aerata per proteggere il personale dai fumi. É fortemente raccomandato un sistema di aspirazione (dei fumi) come quello disposta dalla PACE.
6. Usare precauzioni quando si utilizzano sotanze chimiche (es. Pasta di stagno). Fare riferimento al Material Safety Data Sheet (MSDS) fornita con ogni sostanza chimica e seguire tutte le misure di sicurezza raccomandate dal fabbricante.

Guidelines de Segurança, Portuguese Lingua

Segeum-se precauções de segurança que os operadores devem compreender e seguir ao utilizar ou reparar produtos PACE.

1. **Perigo de choque eléctrico -** Os procedimentos de reparação em produtos PACE, devem ser apenas efectuados por pessoal qualificado. Linhas de alimentação podem ficar expostas ao desmontar o equipamento. Pessoal de reparação deve evitar o contacto com essas partes ao reparar o produto.
2. Para evitar danos pessoais, siga as normas de segurança OSHA ou outras normas aplicáveis.
3. Resistencias de aquecimento dos ferros e as pontas instaladas estão quentesquando o ferro está alimentado, e mesmo durante algum tempo após ser desligado. **NUNCA TOCAR** nem na resistencia de aquecimento nem na ponta. Pode resultar em queimaduras severas.
4. Os suportes para pontas e ferros da PACE, foram concebidos para uso especifico, e para proteger o operador de queimaduras acidentais. Coloque sempre os ferros nos respectivos suportes. Tenha a certeza de colocar sempre o ferro no respectivo suporte após cada utilização e deixe-o arrefecer antes de o guardar.
5. Utilize sempre os sistemas da PACE em locais bem ventilados. Um Sistema de extracção de fumos, como os Sistemas disponiveis na PACE, são altamente recomendados para a protecção dos utilizadores contra os fumos produzidos pela solda e fluxo.
6. Tenha precauções apropriadas ao utilizar produtos quimicos (ex. pasta de soldar). Lêr sempre atentamente os normas de segurança fornecidas com cada produto químico e siga sempre todas as precauções de segurança recomendadas pelo fabricante.

Guias de Consulta de Seguridad, Espãnol Lenguaje

Lo siguiente es precauciones de seguridad que el personal debe entender y debe seguir al usar o reparar productos de PACE.

1. **RIESGO de SHOCK POTENCIAL -** Los procedimientos de la Reparación en productos de PACE sólo deben ser realizados por Personal de Servicio Calificado. Pueden exponerse partes de voltaje de línea cuando el equipo se desmonta. El personal de servicio debe evitar contacto con estas partes al arreglar el producto.
2. Para prevenir lesión del personal, adhiera a las reglas de seguridad de acuerdo con OSHA y otras normas de seguridad aplicables.
3. Las herramientas SensaTemp tienen sus calentadores y las puntas instaladas calientes cuando la herramienta esta encendida y por un periodo de tiempo después de apagar el equipo. **No toque el calentador o la punta**. Las quemaduras severas pueden resultar.
4. El Soporte de punta y Herramienta PACE se diseñan específicamente para el uso con las herramientas asociadas y las almacena de una manera que protege al usuario de las quemaduras accidentales. Siempre guarde la herramienta en su soporte. Esté seguro de poner la herramienta en su soporte después del uso y permita que la herramienta enfríe antes de guardar.
5. Siempre use sistemas de PACE en una área bien ventilada. Un sistema de extraccíon de humo como esos disponibles de PACE se recomiendan para ayudar a protejer al personal contra los humos de flujo de soldadura.
6. Ejercicie las precauciones apropiadas al usar químicos (ej., pasta de la soldadura). Refiérase a la Hoja de Datos de Seguridad de Material (MSDS) proporcionadó con cada químico y adhiere a todas las precauciones de seguridad recomendadas por el fabricante.

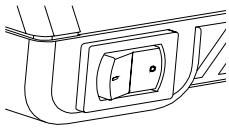
Säkerhetsföreskrifter, Svenska

Följande säkerhetsföreskrifter måste förstås och följas av personal som använder eller utför service på PACE produkter.

1. **RISK FÖR STRÖMSTÖT** - Service / Reparation av PACE produkter får endast utföras av aktoriserad service personal. Strömförande delar kan kommas åt när produkten är isärplockad. Iaktag aksamhet när felsökning görs för att undvika strömstötar.
2. För att undvika personskada rekommenderas att OSHA eller andra liknande arbetssäkerhets standarder följs.
3. SensaTemp verktygselement och installerade spetsar är heta när strömmen är påslagen och en tid efter att strömmen slagits av. **RÖR EJ** element eller spets. Risk för brännskador!
4. PACE Spets och Verktygshållare är speciellt utformade för att passa PACE respektive verktyg så att risken för brännskador kan undvikas. När verktyget ej används bör det alltid förvaras i sin hållare.
5. Tillse att ventilationen är god där PACE System används. Ett lödröksutsug system som t.ex. PACE tillhandahåller rekommenderas för att skydda användaren för giftig lödrök.
6. Tillse att gällande säkerhetsföreskrifter följs vid användning av kemikalier, t.ex. lodpasta.Se säkerhetsdatabladen som medföljer kemikalierna och följ de rekommenderade säkerhetsföreskrifterna från respektive tillverkare.

System Set-Up

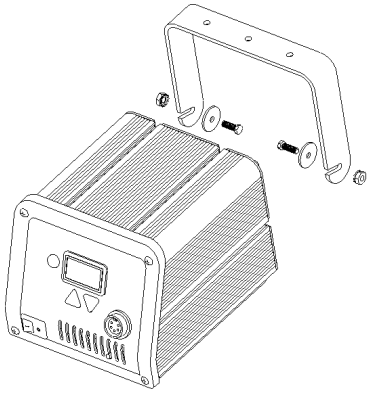
Set up the ST 25 or ST 35 system using the following steps and associated drawings.



1. Store the shipping container in a convenient location. Reuse of these containers will prevent damage if you store or ship your system.
2. Place the Power Switch in the “OFF” or “0” position.

Mounting Options

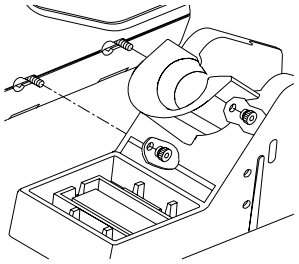
The ST 25 and ST 35 can be placed directly on a work bench and can be stacked if more than one system is used. The ST 35 can also be mounted under a workbench or shelf to conserve space. To mount the system in this way:



1. Mount the bracket in the desired location (fasteners not supplied).
2. Insert the 2 Mounting Screws (head first) into the power source mounting slots.
3. Place the washers over the screws.
4. Fit the power source between the bracket’s support arms and place the screws into the slots on the support arms.
5. Place the nut on the screw and tighten by hand.
6. Angle the power source so the operator can see the display easily.
7. Tighten the nuts with a wrench or pliers.

Tip & Tool Stand

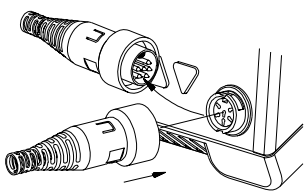
The Tip & Tool Stand can be mounted to the power source. If the system will be placed on the workbench, this is recommended. If the ST 35 is to be mounted under the workbench or shelf, the Tip & Tool Stand should not be mounted to the power source.



1. To attach the stand to the power source:
    a) Insert the 2 Mounting Screws (head first) into the power source mounting slots (plastic case shown). Slide the screws toward rear of the power source.
    b) Place the Tip & Tool Stand beside the power source. Insert ends of the 2 Mounting Screws into the 2 Tip & Tool Stand mounting holes as shown.
    c) Install a Thumb Nut onto the end of each Mounting Screw and tighten Thumb Nuts.
2. Place the handpiece into its Tip & Tool Stand.

Handpiece Connection

Connect the handpiece connector plug into the Power Receptacle in the following manner.



1. Align guide on connector with slot on power receptacle.
2. Insert connector into power receptacle.
3. Turn the connector housing clockwise to lock in place.

System Power Up

1. Insert the female end of the power cord into the AC Power Receptacle on the rear panel of the power source.

2. Plug the prong end (male end) of the power cord into an appropriate 3 wire grounded AC supply receptacle.

   CAUTION: To insure operator and ESD/EOS safety, the AC power supply receptacle must be checked for proper grounding before initial operation.

   NOTE: Ensure that the system is placed in a well-ventilated area. Smoke will be generated during the burn in cycle and while soldering. Fume extraction equipment is recommended

Burn In Procedure

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

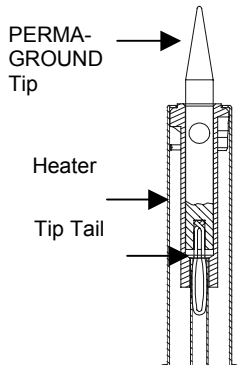
1. Place the Power Switch in the "OFF" (0) position.
2. Ensure that the handpiece is connected to the power source. If a plastic cap is present on the heater assembly, remove it and discard. The cap is used for shipping purposes only. Place the handpiece in the Tip & Tool Stand.
3. Turn on the power source.
4. Turn the Temperature dial to 315°C (600 °F) for 10 minutes.
5. Next, increase the temperature to 427°C (800°F) for 15 minutes.
6. Turn off the power source.

   CAUTION: The heater will be hot at the conclusion of the Burn In procedure.

   This procedure should be performed whenever a new handpiece or new heater is connected to the system.

PS-70/PS-90 Tip Installation

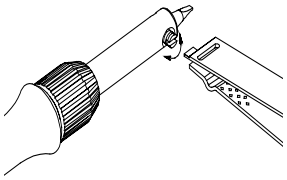
For maximum productivity and proper fit, install tips into your soldering iron when the heater is hot. **CAUTION:** To avoid burns or potential injury, always hold the handpiece with the heater pointed at an angle up to prevent injury.



Installing PERMAGROUND Tips

1. PERMAGROUND Tips should be inserted into the heater with the tail of the tip pointing towards the heater.
2. PERMAGROUND Tips can be used once the tip has been fully inserted into the heater. The set screw is not required to hold the PERMAGROUND Tip in the heater.
3. If proper Tip orientation is required, the set screw can be tightened to hold the tip in place. Also, heat transfer will improve when the set screw is used.

Installing Non-PERMAGROUND Tips

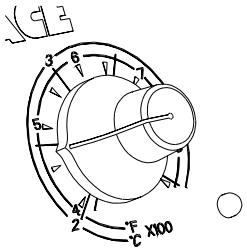


1. Insert the Tip fully into heater bore using the supplied Tip Tool.
2. Gently tighten the heater Set Screw.
3. Recheck the tip Set Screw periodically to insure that it remains snug.

NOTE: Periodically, clean the heater bore with a properly sized wire brush (3/16" O.D. to insure optimum heat transfer and proper tip grounding when non-PERMAGROUND tips are used.

Operation

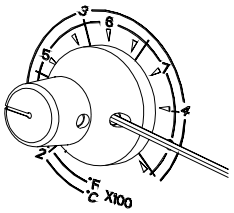
Variable Temperature Control



Adjust the Variable Temperature Control Knob to the desired temperature setting. Notice that the control dial has a White graphic scale denoting temperature in °C (Celsius) and a Yellow graphic scale denoting temperature in °F (Fahrenheit). These numerical scales denote the set tip temperature times 100 (e.g., “3” on the White scale is 3 x 100 or 300°C).

Temperature/Dial Lock

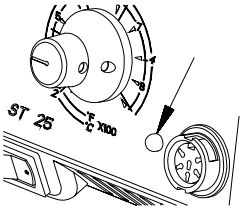
The Variable Temperature Control Knob can be locked in position to avoid accidental or unauthorized changes of the temperature setting.



1. Adjust the Temp. Control Knob to the desired temperature setting.
2. Using the Temp. Locking Key (hex key supplied with system), tighten the set screw on the Temp. Locking Ring closest to the front panel.

LED Operation

The Green colored LED on the power source front panel indicates System Status and Power Receptacle output status (LED OFF, ON or Flashing).



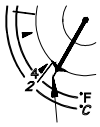
LED Full On **-** Continuous power is being delivered to the handpiece. This condition is evident when the system is first powered up (handpiece heater cold) or the Variable Temperature Control setting is increased.

LED Flashing **-** Indicates that the set tip temperature (as set on the Variable Temperature Control) has been reached. Power to the handpiece is cycling Off and On to maintain set temperature.

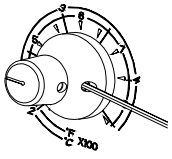
LED Off **-** No power is being delivered to the handpiece heater. This condition is evident for a short period of time when set temperature is reached and stabilizing or if the Variable Temperature Control setting is decreased. If the LED <u>never</u> illuminates, check for a faulty handpiece (see Corrective Maintenance section). Also, if no handpiece is connected to the power source, the LED will not illuminate.

Temperature Dial Adjustment

The ST 35 system is tested for temperature accuracy at the factory and can be checked for calibration according to PACE requirements. Also, a temperature setting normally used by the operator can be adjusted to the precise temperature indicated on the Dial/Display. No internal adjustments can be made to the power supply. To verify calibration of the Temperature selection dial, perform the following procedure.

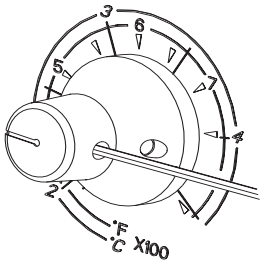


1. Install a tip with an embedded thermocouple into the handpiece connected to the system. Tips with K type thermocouples are available from PACE.
2. Connect the thermocouple assembly to an appropriate temperature meter.
3. When set fully counterclockwise, the pointer of the Variable Temperature Control knob will align to the Calibration Mark as shown. With the system turned on, adjust the Variable Temperature Control to obtain a stable tip temperature of 300°C (for PACE factory specifications) or the temperature setting normally used by the operator.
   If the temperature displayed on temperature meter is within ±15°C (27°F), perform steps 4 thru 6 to obtain a precise reading. If the



temperature is off by more than ±15°C, the handpiece may require maintenance. Recheck the temperature using a second handpiece.

4. Carefully lock the Variable Temperature Control in position by tightening the inner set screw (closest to front panel).
5. Loosen the outer set screw on the Variable Temperature Control knob (furthest from front panel) using the Temp. Locking Key (hex key) supplied with the system. Position the knob with the pointer aligned to match the temperature indicated on the temperature meter. Secure the knob in position by tightening the outer set screw.
6. Loosen the inner set screw to unlock the Variable Temperature control if adjustment of operating tip temperature is desired.



Corrective Maintenance

Power Source

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

Symptom	Probable Cause	Solution
No power to system	Blown Fuse	Check handpiece using table 4. Replace the fuse (located in the AC Receptacle Fuse Holder) with one of the same rated value (see Table 6, Spare Parts)
Handpiece will not heat	Defective Heater	See Table 4.
	Power Source Malfunction	Contact PACE

Table 1: Power Source Corrective Maintenance

Handpieces

The following "Heater Assembly Checkout Procedures" (Table 2) is applicable to all PACE SensaTemp handpieces used with the ST 25 or ST 35 system except for the TT-65 and DTP-80 handpieces. Refer to the applicable manuals for troubleshooting procedures pertinent to these handpieces.
Perform the procedures with the handpiece heater at room temperature. If the heater is warm, resistance readings will be different from those shown in Table 2. Disconnect the handpiece from the power source. Use a meter to check resistance across the handpiece connector plug pins as outlined in the "Checkout Procedure" column.

Problem	Checkout Procedure	Cause	Solution
Handpiece does not heat	Check resistance: Pin 2 to Pin 5. Refer to heater specifications below if resistance is high, see Solution	Open Heater	Replace Heater Assembly
	Check resistance: Pin 3 to Pin 6. If circuit reads open, see Solution	Open Sensor	Replace Heater Assembly
Handpiece Overheating	Check Resistance: Pin 3 to Pin 6. Resistance should be 110 ohms. If resistance is less than 105 Ohms, see Solution	Shorted Sensor	Replace Heater Assembly
Fuse blows when power source is turned on	Check resistance: Pin 2 to Pin 5. Refer to heater specifications below if resistance is low, see Solution	Shorted Heater	Replace Heater Assembly and Fuse

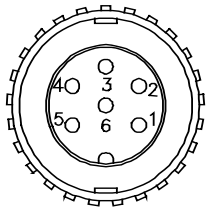
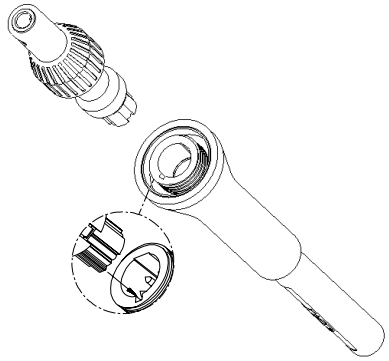
No Ground on Tip	Check resistance: Pin 4 to a new tip. Resistance should be less than 2 ohms, if not see Solution	Oxidation build-up in heater Bore	Clean Heater Bore using wire brush
		Defective Heater	Replace Heater Assembly
Heater Specifications: PS-90 = 8-10 ohms PS-70 = 11.3-12.3 ohms			
Connector Plug Pin-Outs			

Table 2: Heater Assembly Diagnostic Procedures

PS-70/PS-90 Heater Replacement

Ensure that the installed heater of the PS-70/90 handpiece is defective by referring to Table 4 (Heater Assembly Checkout Procedures). If replacement becomes necessary, perform the following procedure to ensure optimum performance and maximize the life expectancy of the heater.

1. Allow the heater to cool.
2. Remove the Heater Retaining Nut.
3. Pull the Heater Assembly from the Handle. Discard defective Heater Assembly.
4. Align the connector key on the handle end of the replacement Heater Assembly with the keyway slot on the handle.
5. Push the Heater Assembly fully into the handle.
6. Replace the Heater Retaining Nut and tighten by hand.



Packing List

			Quantity Supplied					
			ST 25 or ST 35 with PS-70		ST 25 or ST 35 with PS-90		ST 25 TT	
Item #	**Description**	**Part Number**	**ST 25 ST 35**	**ST 25E ST 35E**	**ST 25 ST 35**	**ST 25E ST 35E**	**ST 25**	**ST 25E**
1	System Power Supply	------	1	1	1	1	1	1
2	PS-70 Handpiece Kit (37W)	6993-0236-P1	0	0	1	1	0	0
3	PS-90 Handpiece Kit (51W)	6993-0199-P1	1	1	0	0	0	0
4	TT-65 Handpiece (74W)	7025-0001	0	0	0	0	1	1
5	Power Cord, 115V	1332-0094	1	0	1	0	1	0
6	Power Cord, 230V	1332-0093	0	1	0	1	0	1
7	TT-65 Tip & Tool Stand	-----	0	0	0	0	1	1
8	ST TT Accessory Kit	-----	0	0	0	0	1	1
9	Tip Tool	1100-0206	1	1	1	1	1	1
10	Operations Manual	5050-0452	1	1	1	1	1	1
11	TT-65 Operation Manual	5050-0336	0	0	0	0	1	1

Table 3: Packing List

Spare Parts

Item #	Description	PACE Part Number
1	Fuse, 1.0 Amp Time Lag (ST 45 and ST 55)	1159-0246-P5
	Fuse, 1.0 Amp Time Lag (ST 45E and ST 55E)	1159-0213-P5
2	PS-70 Heater, 21V, 37W	610-0128-P1
3	PS-90 Heater, 21V, 51W	6010-0095-P1

4	Retaining Nut for PS-70/PS-90	1410-0122-P5
5	Tip & Temperature Selection Chart	5050-0251
6	Replacement PCB Assembly	6020-0120-P1

Table 4: Spare Parts

Service

Please contact PACE or your local distributor for service and repair.

Warranty Information:

LIMITED WARRANTY

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 original purchaser.

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 original purchaser, 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 original purchaser.

PACE MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

PACE will, at its option, repair or replace any defective equipment or parts at its facility or other location approved by PACE at no charge to the user, or provide parts without charge for installation by the user in the field at user's expense and risk. User will be responsible for all costs of shipping equipment to PACE or other warranty location for warranty service.

EXCEPT FOR THE REMEDY ABOVE DESCRIBED, UNLESS OTHERWISE REQUIRED BY APPLICABLE LAW, PACE WILL HAVE NO OTHER OBLIGATION WITH REGARD TO ANY BREACH OF WARRANTY OR OTHER CLAIM WITH RESPECT TO THE EQUIPMENT, OR LIABILITY FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, OR INCIDENTAL LOSS OR DAMAGE CAUSED BY OR OCCURRING IN CONNECTION WITH ANY OF THE EQUIPMENT.

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.

PACE, Incorporated retains the right to make changes to specifications contained herein at any time, without notice.

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