PACE®
INCORPORATED
Systems for PCB Repair Anywhere™

OPERATION AND MAINTENANCE INSTRUCTIONS FOR THE

MBT™

Systems

MODELS

MBT-210 MBT-210E

MANUAL NO. 5050-0207

REV. A

GENERAL INFORMATION

Before using your PACE® MBT™ MicroBenchTop® System(s), read the following instructions and procedures to become familiar with its proper operation and maintenance. Used and maintained properly, it will perform reliably for many years.

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PRODUCT APPLICATION:

The following sections of this manual will familiarize you with the parts and operation of the unit. This product is very versatile, and may be used to satisfy a variety of application requirements. If you require assistance in the use of this product for your particular application, contact your local authorized PACE dealer or call PACE Applications Engineering at (301) 490-9860.

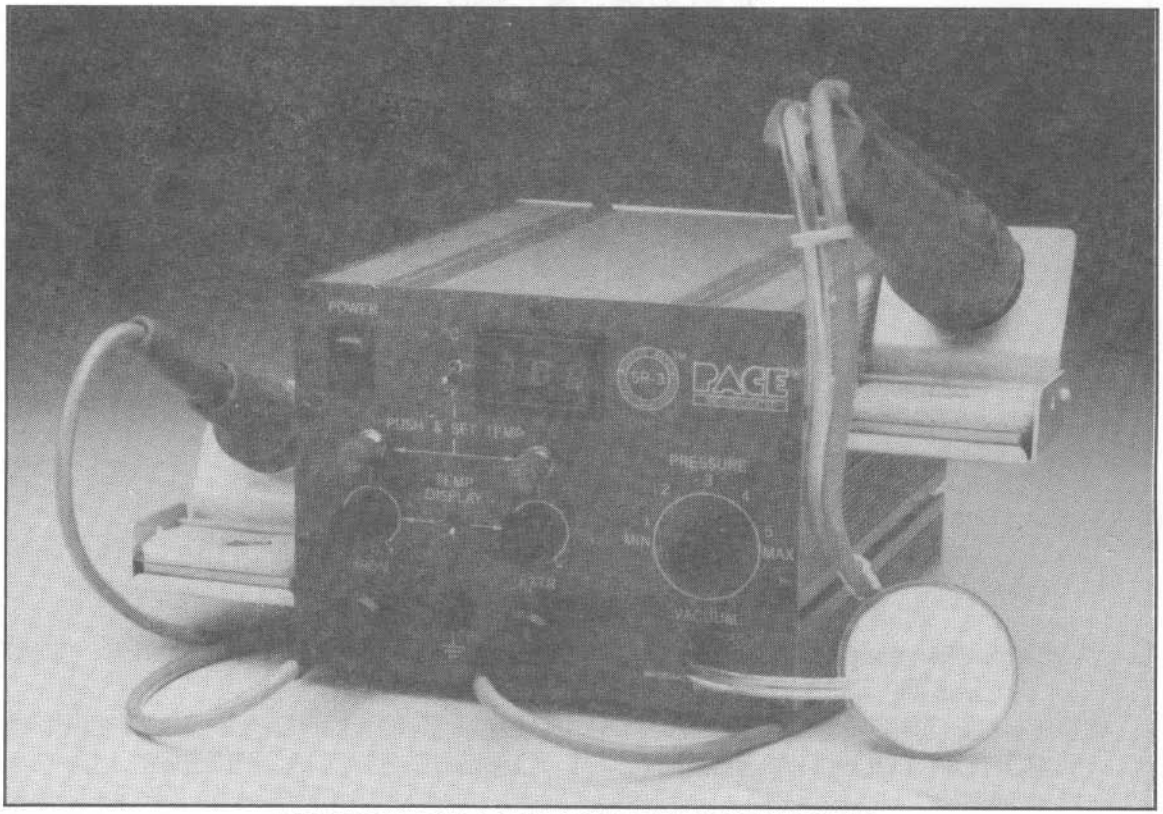


FIGURE 1. PACE MBT SYSTEMS (MBT-210/210E)

GENERAL INFORMATION

INTRODUCTION:

The PACE MBT-210 and 210E incorporate quick-recovery, closed loop temperature control with digital LED readout of set and operating temperatures. This feature allows the operator to set and maintain the proper idling/operating tip temperature, even with continuous use on high thermal mass multilayer boards. In addition, the MBTs contain PACE's new patented Snap-Vac™ quick-rise vacuum generation system that removes molten solder from joints quickly and easily.

The "SR-3"™ "Safety Rated" designation on the front panel is your assurance that the MBT meets or exceeds all applicable DoD-2000 and WS-6536 specifications as well as other PACE standards essential to high quality/high reliably electronic repair. These specifications and standards are as follows:

- Closed-loop temperature control with 3 digit LED display of set and operating temperatures (°F or °C).
- Idle Tip Temperature Stability
  Within ±10°F (±5.5°C) of set point **independent** of line voltage fluctuations.
- AC leakage less than 2mV.
- Tip-to-ground impedance less than 2 ohms with unit operating.
- Transient Levels
  All zero power (voltage) switching used.
  Transient levels out to 100MHz are less than 500mV peak.
- Static Control
  All metal chassis with earth ground terminal and static dissipative handpiece.
- Desoldering/Soldering Tool Holders
  Tool holders are non heat sinking, protect personnel from burns and do not apply excess mechanical stress on handpieces.

SPECIFICATIONS:

- **Power Requirements:**
  MBT-210 — Domestic version operates on 100-115VAC, 50/60Hz, 150W, 1.3A (maximum).
  Model-210E — Export version operates on 220-240VAC, 50Hz, 150W, 0.65A (maximum).
- **Vacuum and Air:**
  Quick-rise vacuum pump ready for continuous operation. Achieves solder removal in less than 100ms.
- **Physical Parameters:**
  MBT-210/210E — 5.3"H x 6.5"W x 9.5"D (13.5 cm H x 16.5 cm W x 24.1 cm D), 8.38 lbs. (3.8 kg)
  Extractor Handpiece — 8.6"L (21.8 cm L), 6.1 oz. (172gm)
  Soldering Iron Handpiece — 6.7"L (17.0 cm L), 4.1 oz. (117gm)
- **Extractor Tip Temperature:**
  Minimum setting — 600°F (316°C) nominal
  Maximum setting — 900°F (482°C) nominal
- **Display:**
  Indicates Set and Operating Temperatures for Soldering Iron or Extractor (°F or °C) with a one (1) degree resolution.

GENERAL INFORMATION

PARTS IDENTIFICATION

TABLE 1. MBT SYSTEMS (MBT-210/210E) PARTS IDENTIFICATION

- VARIABLE TEMPERATURE CONTROL (J1)—provides variable temperature control for the Extractor Handpiece Tip temperature.
- VARIABLE TEMPERATURE CONTROL (J2)—provides variable temperature control for the Soldering Iron Tip temperature.
- MAIN POWER SWITCH—controls input power within MBT System.
- PRESSURE CONTROL—air control for hot-air jet mode.
- VACUUM FITTING—vacuum flow for solder removal.
- OUTPUT POWER RECEPTACLE (J1)—connects power from MBT System to the Soldering Iron Handpiece.
- OUTPUT POWER RECEPTACLE (J2)—connects power from MBT System to the Extractor Handpiece.
- VISIFILTER® —collects and prevents foreign matter from entering the Motor Pump Assembly.
- EXTRACTOR HANDPIECE—tool used for desoldering, hot air pressure (blind side solder removal) and hot-air jet mode (removes solder connections and shrinks tubing).
- VACUUM CONTROL SWITCH—Extractor Handpiece "ON/OFF" switch activates Motor Pump.
- EXTRACTOR TIP—heats and extracts solder from joints.
- HEATER ASSEMBLY—provides heat to Extractor Handpiece Tip.
- HOT CUBBY—conveniently stores Extractor and Soldering Iron Handpieces.
- EARTH GROUND TERMINAL—provides a ground between the MBT System and PCB, thus preventing static charge from damaging sensitive components.
- AC POWER RECEPTACLE—provides AC power to MBT System from AC outlet through Power Cord.
- POWER CORD—provides main power from AC outlet to AC Power Receptacle.
- LINE FUSE (F1)—provides overload protection for MBT System.
- SOLDERING IRON HANDPIECE—tool used for soldering functions.
- TEMPERATURE DISPLAY—provides a three (3) digit readout of the Extractor/Soldering Iron Tip temperature.
- DISPLAY SWITCH—selects Extractor or Soldering Iron Tip temperature for Temperature Display.
- SET TEMPERATURE BUTTONS—displays set idling/operating temperature for the Extractor or Soldering Iron when adjusting to desired operating temperature.
- °C/°F SWITCH—provides centigrade or farenheit temperature readout on Temperature Display.
- FOOT PEDAL RECEPTACLE—an input for optional Foot Pedal actuation of vacuum.

Figure 2 identifies the controls and indicators required for operation on the MBT System(s) (MBT-210/210E). Refer to Table 1 and Figure 2 for location and identification of each part.

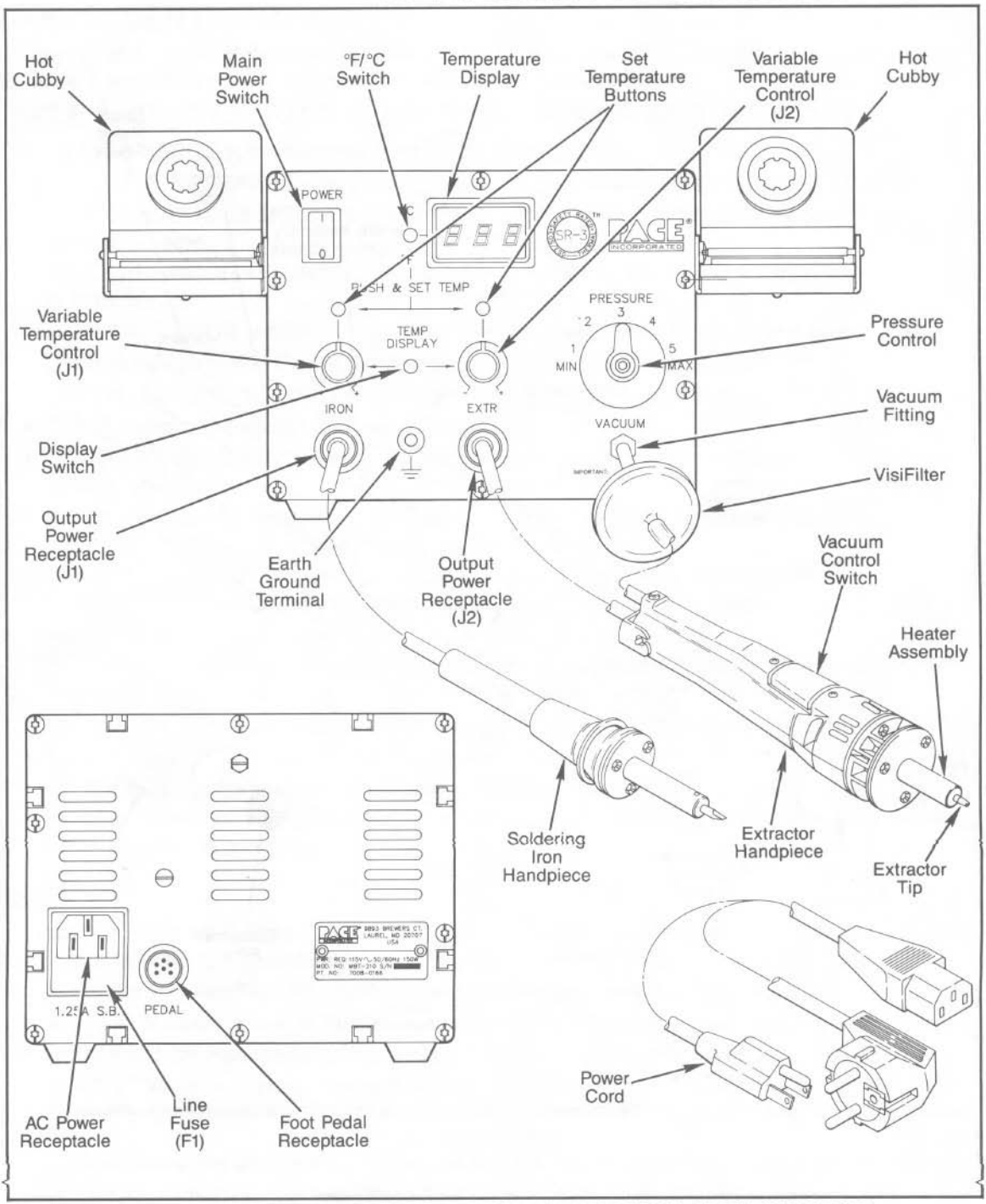


FIGURE 2. PACE MBT SYSTEM (MBT-210/210E) PANEL IDENTIFICATION

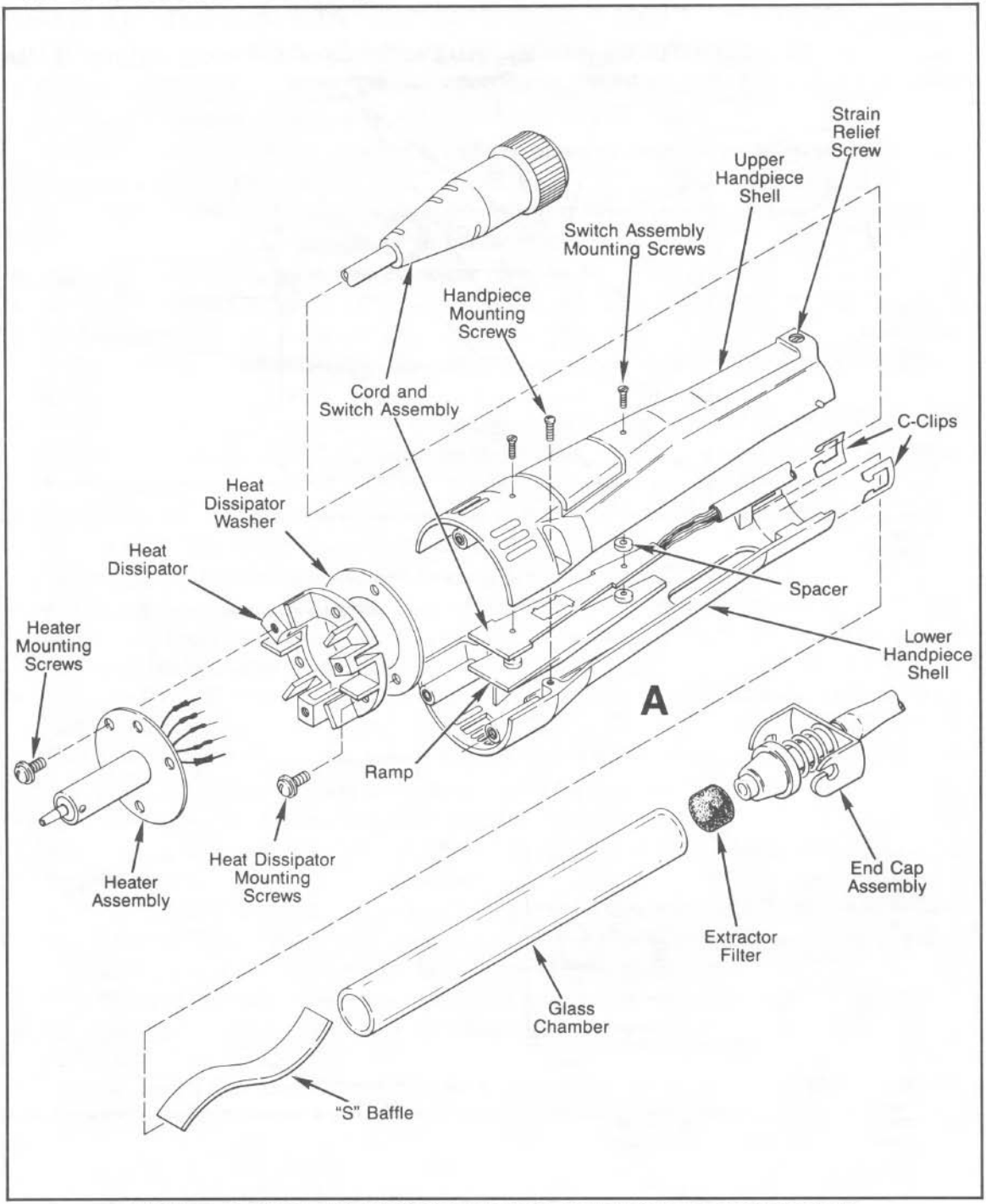


FIGURE 3. SX-65 EXTRACTOR HANDPIECE PARTS IDENTIFICATION

PARTS IDENTIFICATION

Table 2 and Figure 3 identifies the parts that make up the SX-65 Extractor Handpiece. Refer to Table 2 and Figure 3 for location and identification of each part.

TABLE 2. SX-65 EXTRACTOR HANDPIECE PARTS IDENTIFICATION

- HEATER ASSEMBLY—supplies heat to the Extractor Tip.
- HEAT DISSIPATOR—reduces heat transfer from the Heater Assembly to the Handpiece.
- HEATER ASSEMBLY MOUNTING SCREWS—mounting screws for attaching Heater Assembly to Heat Dissipator.
- HEAT DISSIPATOR MOUNTING SCREWS—mounting screws for attaching Heat Dissipator to Handpiece.
- HEAT DISSIPATOR WASHER—spacer separates Heat Dissipator from the Handpiece.
- LOWER HANDPIECE SHELL—lower section of Extractor Handpiece.
- UPPER HANDPIECE SHELL—upper section of Extractor Handpiece.
- RAMP—alignment guides for Glass Chamber.
- CORD AND SWITCH ASSEMBLY—supplies low voltage power from Power Source to Extractor Handpiece.
- SPACER—provides positioning of the Cord and Switch Assembly within Upper Handpiece Shell.
- C-CLIPS—retaining clips holding Upper and Lower Handpiece Shells together.
- SWITCH ASSEMBLY MOUNTING SCREWS—mounting screws for attaching Cord and Switch Assembly to Upper Handpiece Shell.
- HANDPIECE MOUNTING SCREWS—mounting screws for attaching Upper and Lower Handpiece Shells together.
- END CAP ASSEMBLY—provides a vacuum line attachment from Power Source to Extractor.
- GLASS CHAMBER—collection chamber for extracted solder.
- "S" BAFFLE—breaks up extracted solder in Glass Chamber.
- SODR-X-TRACTOR FILTER—prevents extracted solder and/or contaminants from entering Power Source Motor Pump.

SET-UP:

Place the PACE MBT System on a workbench or suitable work surface. Perform the following steps prior to placing the system into operation; refer to Figure 2:

- assemble and install the Hot Cubby (refer to 5050-0208 assembly and installation instructions).
- attach 2" Vacuum Hose to VisiFilter, push and turn on Hose to seat properly.
- attach Extractor Handpiece Vacuum Hose to VisiFilter, push and turn on Hose to seat properly.
- attach 2" Vacuum Hose to Vacuum Fitting, push and turn on Hose to seat properly.

IMPORTANT

When removing any Vacuum Hose, pull and turn to remove. *DO NOT* attempt to pull Hose directly off. Damage or breakage to Vacuum Fitting or VisiFilter fitting may occur.

OPERATION

SET-UP:

- attach Extractor Handpiece Power Connector to Output Power Receptacle (EXTR), push and turn to lock into place.
- attach Soldering Iron Handpiece Power Connector (IRON), push and turn to lock into place.
- plug Power Cord into a convenient AC outlet.
- system is now ready for operation.

OPERATION:

Perform the following steps to place system into operation, refer to Figure 2.

- the Extractor and/or Soldering Iron Tip should protrude approximately 3/8" beyond the Heater Assembly body. If Tip is protruding more than 3/8", reposition using the Tip Tool.
- set °C/°F Switch to the desired temperature readout.
- place the Main Power Switch to the "ON" position. (**NOTE:** Red marking on switch exposed).
- select the "IRON" position on the Display Switch.
- depress and hold the "IRON" Set Temperature Button. Rotate "IRON" Variable Temperature Control knob until desired Tip temperature is shown on Temperature Display. Release the Set Button.
- select the "EXTR" position on the Display Switch.
- depress and hold the 'EXTR" Set Temperature Button. Rotate "EXTR" Variable Temperature Control knob until desired Tip temperature is shown on Temperature Display. Release the Set Button.

IMPORTANT

The Extractor Tip temperature is now shown on the Temperature Display. In order to read the Soldering Iron Tip temperature, set the Display Switch to the "IRON" position.

- allow sufficient time for warm-up. (**NOTE:** Extractor and/or Soldering Iron should be at operating temperature within minutes).
- the system is now ready for desoldering/soldering. (**NOTE:** Depress the Extractor Handpiece Vacuum Control Switch to activate the vacuum mode of the Motor Pump).

IMPORTANT

If your system is used for desoldering and/or soldering on a printed circuit board containing static sensitive components, connect a ground wire between the Earth Ground Terminal and a common ground on the PCB. This will eliminate static discharge to these components. In addition, you should use a wrist strap tied to the Earth Ground Terminal.

- position Main Power Switch to the "OFF" position when system is not used for any lenght of time. (**NOTE:** Red marking on switch is not exposed).

USING THE EXTRACTOR HANDPIECE

- Grasp the Extractor Handpiece in the same manner as you would a pencil or pen.
- Position your index finger just to the front of the Vacuum Control Switch. With a rocking motion, your finger will make contact with the Switch . This will activate the "ON" and "OFF"position of the Switch (refer to Figure 4).
- For better control of the Extractor, your hand or arm should be resting on a flat work surface before you begin operation.

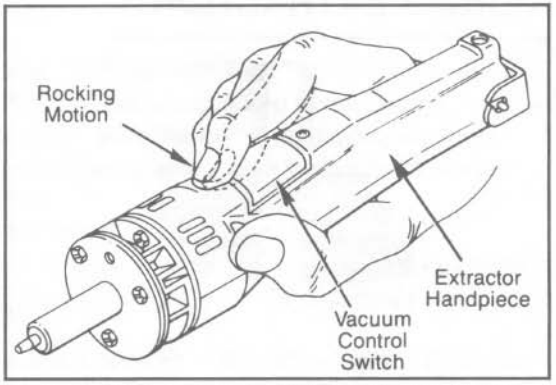
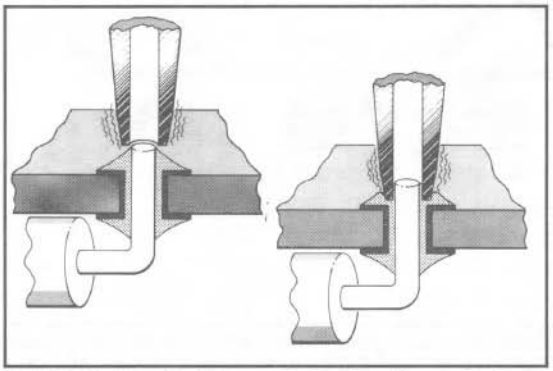


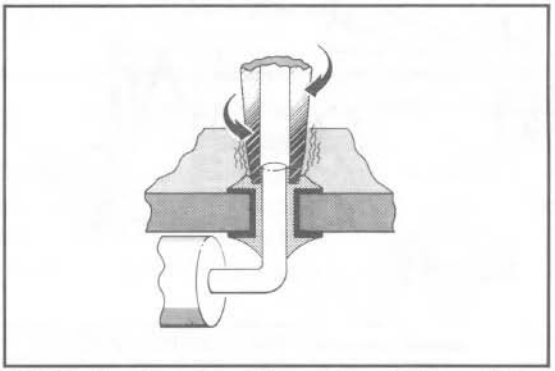
FIGURE 4. USING THE EXTRACTOR

VACUUM EXTRACTION

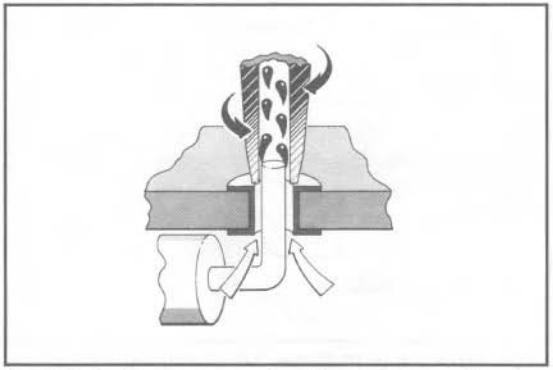
When performing a desoldering operation, the following steps should be followed for best results.



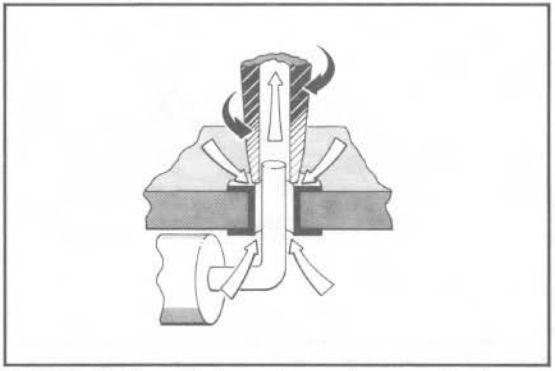
STEP 1. Position the Tip over the lead making contact with solder. As the solder melts, allow the Tip to gently rest on a film of solder between solder and Tip.



STEP 2. Move Tip with a stirring motion, dwelling until lead moves freely within the board hole. Free movement of the lead indicates complete solder melt.



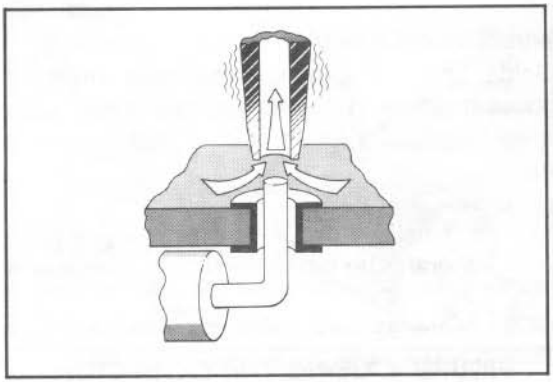
STEP 3. Apply vacuum and continue stirring action during vacuum application. To remove solder, maintain light contact. (**NOTE:** Pressure can damage or lift the pad).



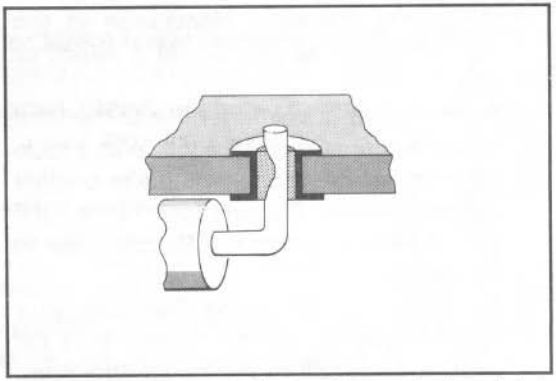
STEP 4. Continue stirring action and vacuum flow to cool joint area.

OPERATION

VACUUM EXTRACTION:

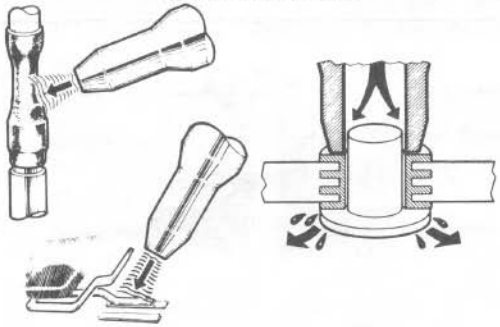


STEP 5. Continue vacuum flow one or two additional seconds after removing Tip from the board to assure complete transfer of the solder to Chamber.



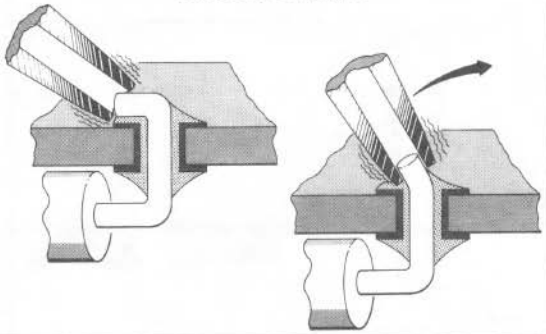
STEP 6. Check your work. If any solder remains in a plated-thru hole (PTH) after extraction, resolder and extract again. Allow cool down between resoldering and extraction.

HOT-AIR PRESSURES



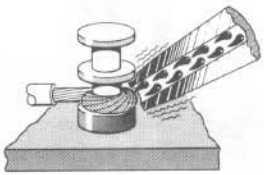
Hot-air pressure mode removes solder from blind side of thru-hole joints; hot-air jet mode melts planar component leads, solder connections and shrinks tubing.

CLINCHED LEADS



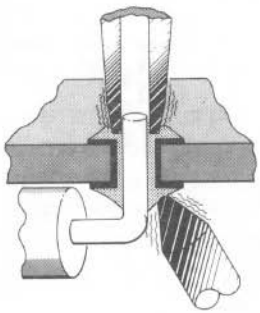
To unclinch leads, place Tip on lead until solder melts. Move Tip to end of lead and lift to straighten. (**WARNING:** Lift, *don't pry*!). Extract solder as described in Steps 3 through 6.

TERMINALS



Place Tip in contact with wire and solder. Watch for complete melt. Wiggle wire and apply vacuum to extract solder. Keep wire moving during cool down.

AUXILIARY HEATING



Solder extraction on multilayer boards may require application of a second heat source at the joint on the component side. Use a PACE Conductive Heating System or hot soldering iron tip for auxiliary heat.

MAINTENANCE:

Following are the maintenance procedures for your MBT System(s):

CLEANING SOLDER COLLECTION CHAMBER—Solder and flux build-up in the Glass Chamber depends on usage. To clean the Glass Chamber, proceed with the following steps (see Figure 5):

- remove End Cap Assembly from rear of Extractor Handpiece (push and turn to unlock).
- remove Glass Chamber from End Cap Assembly.
- remove "S" Baffle and Sodr-X-Tractor Filter from Glass Chamber.
- clean Glass Chamber and "S" Baffle with large nylon bristle brush. Wet brush with solvent to remove heavy flux residue from Chamber. Apply mineral oil to brush and lightly coat inside of Chamber and "S" Baffle.
- replace Sodr-X-Tractor Filter when brown coloration becomes noticeable. This assures maximum air flow and keeps contaminants from reaching the vacuum source.
- reassemble "S" Baffle and Filter into Glass Chamber.

IMPORTANT

The "S" Baffle should have enough tension to maintain a constant position within the Chamber. Adjust Baffle by bending between your fingers. *DO NOT* attempt to bend the Baffle while inside the Chamber.

- seat baffle just in front of the End Cap Assembly, leaving enough room for Filter. The front end of the Baffle must be positioned at least 1" from the Front Surface Seal (see Figure 5).
- hold the Extractor Handpiece with the Vacuum Control Switch in the upright position.
- insert Glass Chamber into Extractor Handpiece. Slide along the bottom inside edge of the Extractor ramps. Ramps will align Chamber with the front seal and properly seat in place.
- inspect for properly seated Glass Chamber through Extractor Handpiece ports. (**NOTE:** Loss of vacuum will result if not properly seated).
- attach End Cap Assembly by pushing and turning to lock into place.

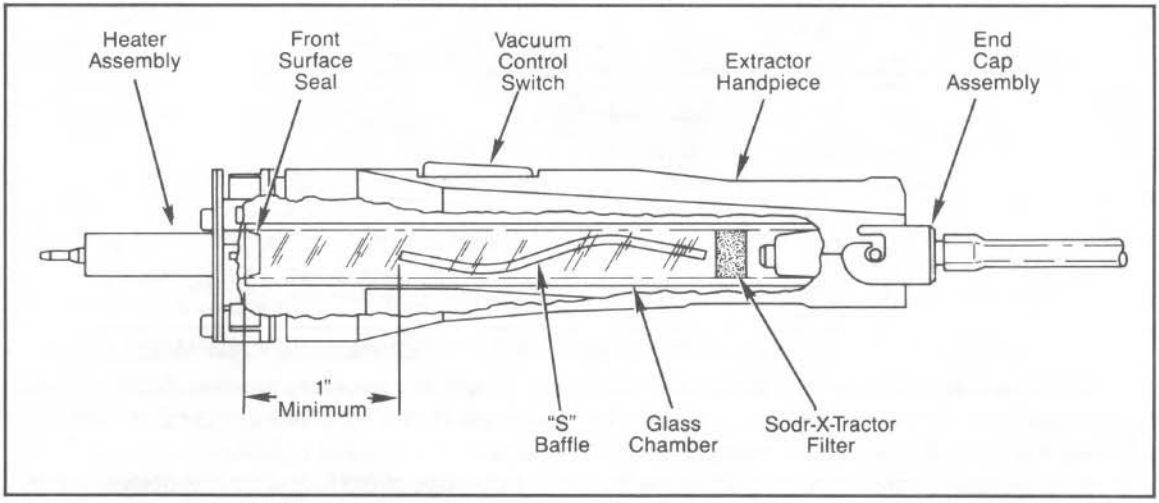


FIGURE 5. CUTAWAY OF EXTRACTOR HANDPIECE AND GLASS CHAMBER

MAINTENANCE

VISIFILTER REPLACEMENT

Replace VisiFilter when it becomes clogged or discolored. To replace VisiFilter, proceed with the following steps:

- gently pull and turn the Extractor Vacuum Hose while holding VisiFilter.
- gently pull and turn the VisiFilter while holding the 2" Vacuum Hose.

IMPORTANT

When removing any Vacuum Hose, pull and turn to remove. *DO NOT* attempt to pull straight off for this may break or damage the Vacuum Fitting or VisiFilter fitting.

- discard old or discolored VisiFilter.
- replace new VisiFilter by gently turning and pushing 2" Vacuum Hose onto VisiFilter fitting.
- replace Extractor Vacuum Hose by gently turning and pushing onto VisiFilter fitting.

EXTRACTOR HANDPIECE HEATER REPLACEMENT

When replacement of the Extractor Heater becomes necessary (refer to Table 4. Corrective Maintenance), proceed with the following steps:

- disconnect Extractor Handpiece Power Cord and Vacuum Hose from MBT System.
- remove End Cap Assembly and Glass Chamber (refer to Figure 6).
- remove three (3) screws on the Heater Assembly flange (refer to Figure 6), let Heater Assembly hang loose. (**NOTE:** *DO NOT* pull Heater Assembly from Handpiece at this time).
- using Tip Tool or needle nose pliers, disconnect the five (5) leads plugged into the Cord and Switch Assembly (refer to Figure 6). Remove defective heater Assembly from Handpiece.
- using Tip Tool or needle nose pliers, carefully plug the three (3) color coded leads of the new Heater Assembly into the color coded receptacles of the Vacuum Control Switch board.
- plug "tan" leads into the remaining receptacles of the Vacuum Control Switch board.

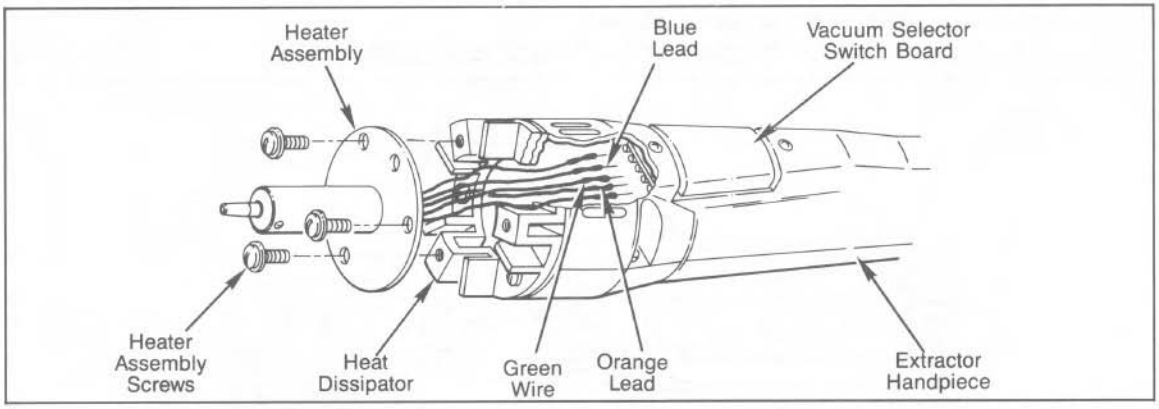


FIGURE 6. EXTRACTOR HANDPIECE HEATER ASSEMBLY REPLACEMENT

- attach Heater Assembly to Handpiece using the previously removed screws, (**NOTE:** Make certain that the five (5) leads are against the Extractor Handpiece sides and out of the way. Visually inspect through Extractor Handpiece ports).
- replace Glass Chamber, sliding along the bottom inside edge of the Extractor Handpiece ramps. Ramps will align the Glass Chamber with the front seal and properly seat in place.

- inspect Glass Chamber for proper seating through Handpiece ports. (**NOTE:** Loss of vacuum will result if not seated properly).
- attach End Cap Assembly by pushing and turning to lock into place.

SOLDERING IRON HANDPIECE HEATER REPLACEMENT

When replacement of Soldering Iron Heater becomes necessary (refer to Table 3. Corrective Maintenance), proceed with the following steps:

- disconnect Soldering Iron Handpiece Power Cord from MBT System.
- loosen Strain Relief Screw. (**NOTE:** Screw is located under label).
- remove three (3) screws from Heater flange and let Heater hang loose, refer to Figure 7.
- gently push Power Cord through Handpiece to expose connectors.
- using Tip Tool or needle nose pliers, disconnect the five (5) leads from Soldering Iron Power Cord (refer to Figure 8). Remove Heater Assembly from Handpiece.
- using Tip Tool or needle nose pliers, carefully plug the three (3) color coded leads (orange, blue and green) into matching color coded receptacles of the Soldering Iron Power Cord.
- plug "tan" leads into remaining receptacles of the Soldering Iron Power Cord.
- grasp and pull Power Cord back through Handpiece, tighten Relief Screw and replace label.
- attach Heater Assembly using the previously removed screws.

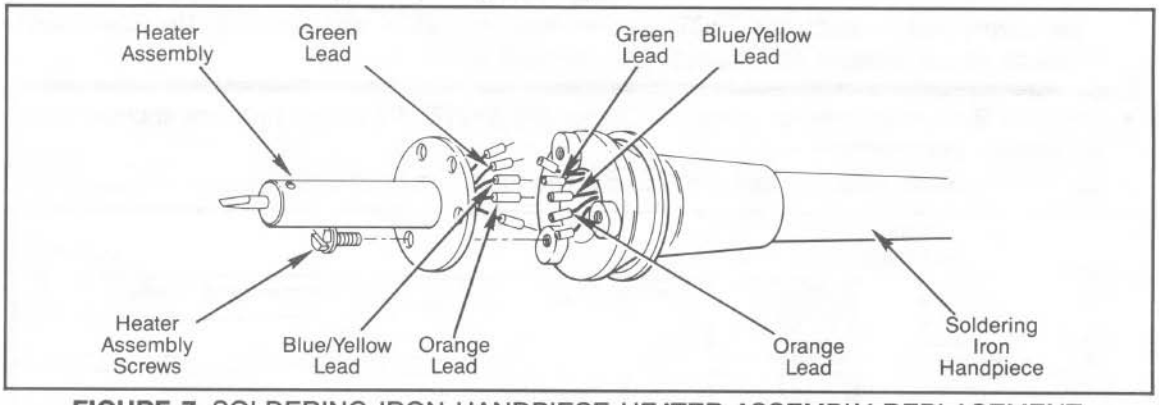


FIGURE 7. SOLDERING IRON HANDPIECE HEATER ASSEMBLY REPLACEMENT

EXTRACTOR/SOLDERING IRON TIP REPLACEMENT

When replacement of Tip becomes necessary (refer to Figure 9), proceed with the following steps:

- using Tip Tool, loosen the Heater Assembly set screw (¼ turn).
- remove and discard old Tip.
- using Tip Tool, insert new Tip into Heater Assembly. (**NOTE:** Tip should protrude approximately ⅜" beyond the Heater body).
- tighten set screw with Tip Tool. (**NOTE:** Be careful not to overtighten).

REPLACEMENT FOR JAMMED OR BROKEN EXTRACTOR TIPS

There may be an occassion when the Extractor Tip breaks off in the Heater Assembly, or due to oxide build-up, the Tip will be immovable. If this happens, perform the following steps:

- disconnect Extractor Handpiece Power Cord and Vacuum Hose from Micro Bench Top System.
- remove the End Cap Asembly and Glass Chamber (refer to Figure 5).
- using Tip Tool, loosen the Heater set screw (¼ turn). (Refer to Figure 8).

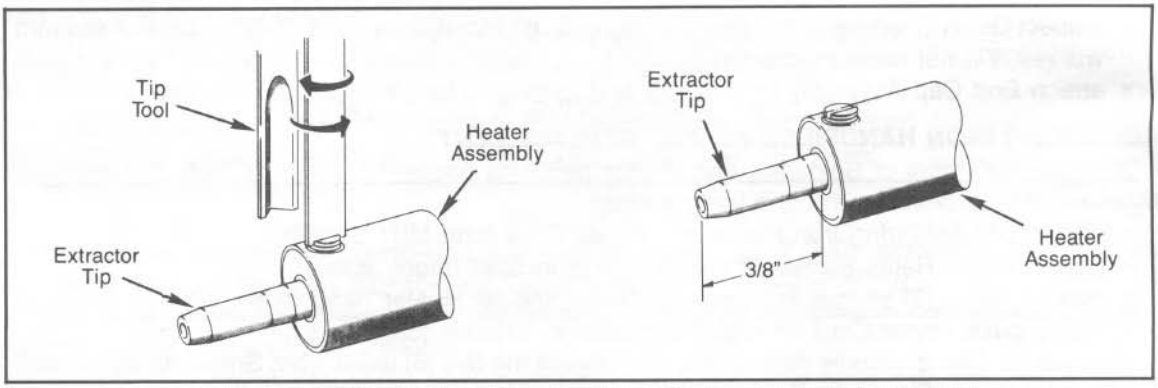


FIGURE 8. EXTRACTOR/SOLDERING IRON TIP REPLACEMENT

- while holding Extractor, insert a steel rod (slightly less than ⅛"diameter) into rear of Handpiece through the Heater Assembly to ram broken Tip from Heater Tube (refer to Figure 9). (**NOTE:** The Heater should be "HOT" for ease of removal).

CAUTION

Be careful not to touch the "HOT" Heater Assembly while removing the Tip. *Never* hold Extractor above eyelevel for inspection of clogged Tip.

- using Tip Tool, insert new Tip into Heater Assembly. (**NOTE:** Tip should protrude approximately ⅜" beyond the Heater body).
- tighten set screw with Tip Tool. (**NOTE:** Be careful not to overtighten).

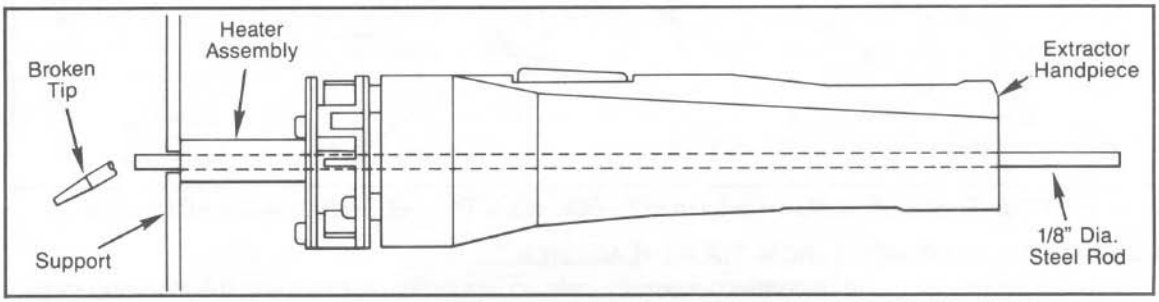


FIGURE 9. REPLACEMENT OF JAMMED OR BROKEN EXTRACTOR TIPS

FUSE REPLACEMENT—The Fuseholder is located on rear panel of the MBT System (refer to *Figure* 2). Replace Fuse in the following manner:

- unplug Power Cord from AC outlet and remove Fuseholder using a coin or screwdriver.
- remove Fuse from Fuseholder and replace with new Fuse.
- replace Fuseholder with a coin or screwdriver, plug Power Cord into AC outlet.

IMPORTANT

Make certain that Fuse replacement is of same size and rating. Improper replacement can cause damage to unit and create a safety hazard.

CORRECTIVE MAINTENANCE—When a problem in operation occurs refer to Table 3. Corrective Maintenance), select the symptom which applies and follow the steps given in the "Solution" column.

TABLE 3. CORRECTIVE MAINTENANCE

SYMPTOM	POSSIBLE CAUSE	SOLUTION
INSUFFICIENT VACUUM— The operator notices that solder joints are not being completely removed on a consistent basis. Reduction of vacuum will reduce the capability of the Extractor. It can also cause damage to the workpiece.	Restrictions or leaks	1. Check to assure that Glass Chamber is seated properly against the Front Seal. 2. Check for clogged Filter in Glass Chamber. a. Replace Filter if necessary. 3. Clean Tip Bore a. Replace Tip if necessary. 4. Clean Heater Chamber with wire brush. 5. Check "S" Baffle for correct positioning, refer to Figure 5, page 11. 6. Check for damaged or kinked Vacuum Hose. a. Replace Vacuum Hose if necessary. 7. Check for clogged or discolored VisiFilter. a. Replace VisiFilter if necessary. 8. Contact your local PACE representative.
No vacuum; heating function normal; motor operates.	Clogged Glass Chamber	Clean Glass Chamber and replace Filter.
	Clogged Tip	Replace Tip
	Broken VisiFilter	Replace VisiFilter
	Improper VisiFilter or Vacuum Hose connections	Make certain all connections are fitted properly.
	Hole or kink in Vacuum Hose	Replace or unkink Vacuum Hose.
No vacuum; heating function normal. Motor does not operate.	Handpiece Shell screws loose	Tighten screws.
	Defective Cord and Switch Assemby	Clean Switch Assembly.
		Replace Assembly.
Heater does not heat; vacuum functions normal.	Heat Control improperly adjusted	Adjust Variable Temperature Control on MBT System.
	Defective Heater	Refer to Table 4 and Figure 11, page 18.
	Defective Control Board	Contact your local PACE representative.
No vacuum or heating.	Blown Fuse	Replace Fuse.
	Improperly installed or broken Power Cord	1. Install Power Cord properly. 2. Replace Power Cord if damaged or broken.
	Defective Power Supply or Control Circuit	Contact your local PACE representative.
No heat to Soldering Iron	Heat Control improperly adjusted	Adjust Variable Temperature Control on MBT System.
	Defective Heater Assembly	Refer to Table 4 and Figure 11, page 18.
	Defective Control Board	Contact your local PACE representative.
No power to unit, blown Fuse.	Heater shorted out.	1. Unplug Extractor and Soldering Iron from receptacles. 2. If power is present, check Extractor and Soldering Iron wiring, refer to Table 4 and Figure 11, page 18.

MAINTENANCE

CLEANING AND REMOVAL/REPLACEMENT

If a problem occurs with the Extractor Handpiece, tighten the Handpiece screws. If the problem is still present, perform the following procedures for cleaning and/or removal/replacement of the Cord and Switch Assembly (refer to Figure 10).

- disconnect the Extractor Handpiece Power Cord from Power Source, refer to Figure 2,
- remove the End Cap Assembly and Glass Chamber from Extractor Handpiece, refer to Figure 5,
- remove the three (3) Heater Mounting Screws from Extractor Handpiece. (**NOTE:** *DO NOT* pull Heater Assembly from the Handpiece at this time),
- using Tip Tool or Needle Nose Pliers, disconnect the five (5) leads plugged into the PC Board of the Cord and Switch Assembly,
- remove the Heater Assembly at this time,
- remove the three (3) Heat Dissipator Mounting Screws from Handpiece,
- set Heat Dissipator and Heat Dissipator Washer aside at this time,
- remove C-Clips from rear of Handpiece,
- remove two (2) Handpiece Mounting Screws from Handpiece,
- remove Lower Handpiece Shell,
- remove the two (2) Switch Assembly Mounting Screws,
- remove the Cord and Switch Assembly from the Upper Handpiece Shell. (**NOTE:** *DO NOT* discard or lose Spacer),
- loosen Strain Relief Screw,
- remove Cord and Switch Assembly by sliding to rear of Upper Handpiece Shell, lifting gently on the Cord,
- clean switch on PC Board of Cord and Switch Assembly by brushing solvent between the contact points,
- reassemble the Handpiece in reverse order. (**NOTE:** The five (5) Heater Assembly wires are color coded to match with colored markings over Heater Wire Receptacles on PC Board of the Cord and Switch Assembly,
- plug "tan" leads into remaining receptacles of PC Board of the Cord and Switch Assembly.
- plug Extractor into Power Source and activate Switch. (**NOTE:** If Switch does not work, replace Cord and Switch Assembly).

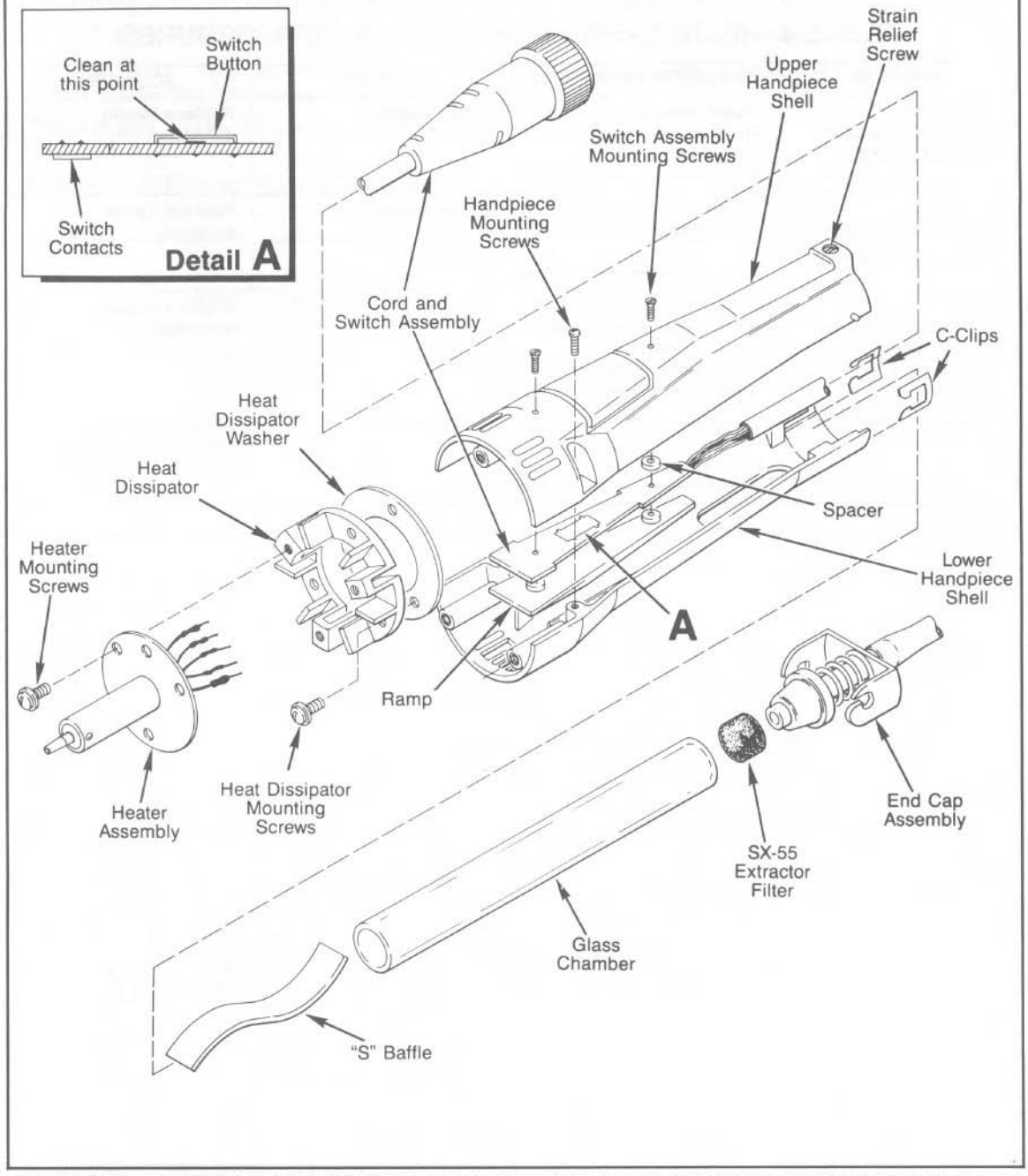


FIGURE 10. CLEANING AND REMOVAL/REPLACEMENT OF CORD AND SWITCH ASSEMBLY

MAINTENANCE

Use Table 4 and Figure 11 to determine the condition of your Extractor and/or Soldering Iron assembly. Unplug the Handpieces from the Power Source. Use a voltmeter to check resistance across the Handpiece connector plug pins as outlined in the "Checkout Procedure" column.

TABLE 4. HEATER ASSEMBLY CHECKOUT PROCEDURES

SYMPTOM	CHECKOUT PROCEDURE	CAUSE	SOLUTION
No heat or temperature, Display does not change.	Check resistance—Pin 2 to Pin 5. Resistance should be 12 ohms. If not →	Open Heater	Replace Heater assembly.
No heat or temperature, Display is blank.	Check resistance—Pin 3 to Pin 6. Resistance should be 110 ohms. If not →	Open sensor	Replace Heater assembly.
Heater full on, temperature does not work. Temperature Display does not change.	Check resistance—Pin 3 to Pin 6. Resistance should be 110 ohms at room temperature. If resistance is low →	Shorted sensor	Replace Heater assembly.
Fuse blows when unit is turned on.	Check resistance—Pin 2 to Pin 5. Resistance should be 12 ohms. If not →	Shorted Heater	Replace Heater assembly.

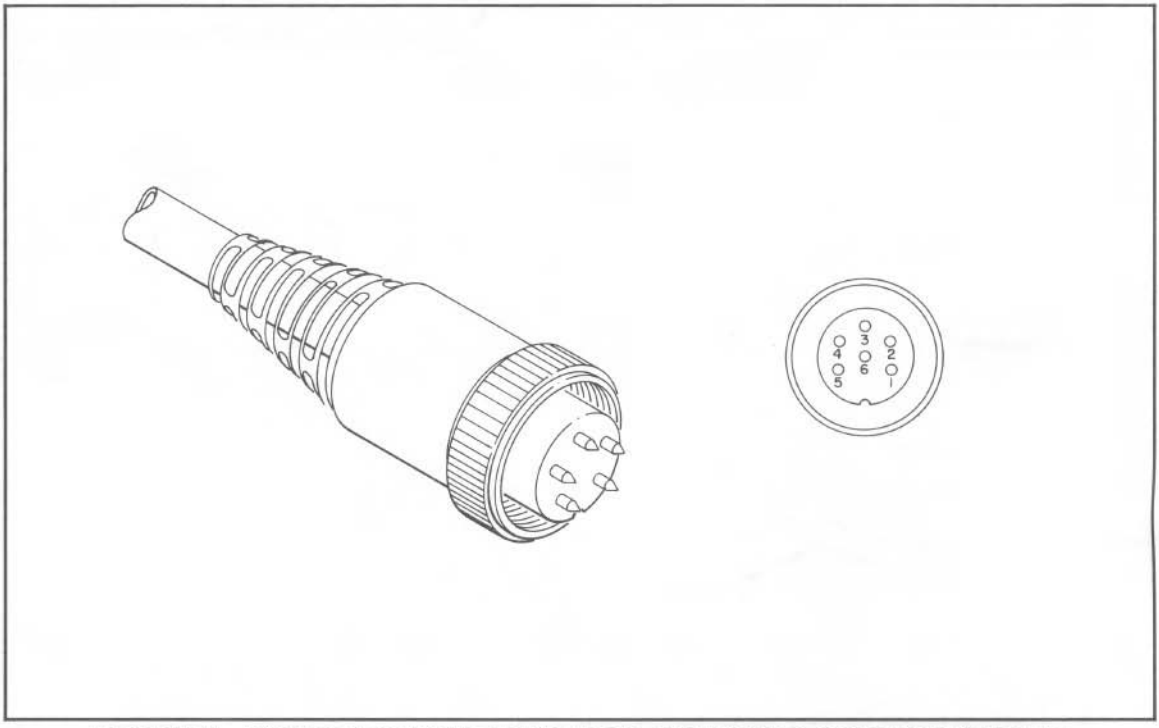


FIGURE 11. EXTRACTOR/SOLDERING IRON HANDPIECE CONNECTOR PLUG

REPLACEMENT PARTS

When ordering replacement parts for your MBT System(s), use Table 6 and Figure 13 (MBT-210/MBT-210E) for locating the required part. Locate the item number in the illustration, then refer to the corresponding Table for the item number, description and PACE part number.

Refer to Table 7 and Figure 14 (SX-65 Extractor Assembly) and/or Table 5 and Figure 12 (Soldering Iron Assembly) for replacement parts of those items.

Table 8 and Figure 15 identifies the Accessory Items.

TABLE 5. REPLACEMENT PARTS FOR IR-65 SOLDERING IRON ASSEMBLY
(Refer to Figure 12)

ITEM NO.	DESCRIPTION	PACE PART NO.
	IR-65 Soldering Iron Assembly	6025-0005
1	Soldering Iron Tip, 1/8" Chisel	1121-0130
	Soldering Iron Tip, 1/16" Chisel	1121-0131
	Needle Tip	1121-0132
2	Heater Assembly	6010-0062
3	Set Screw	1348-0287
4	Screw, #4-40x¼" (Qty. 3)	1405-0395

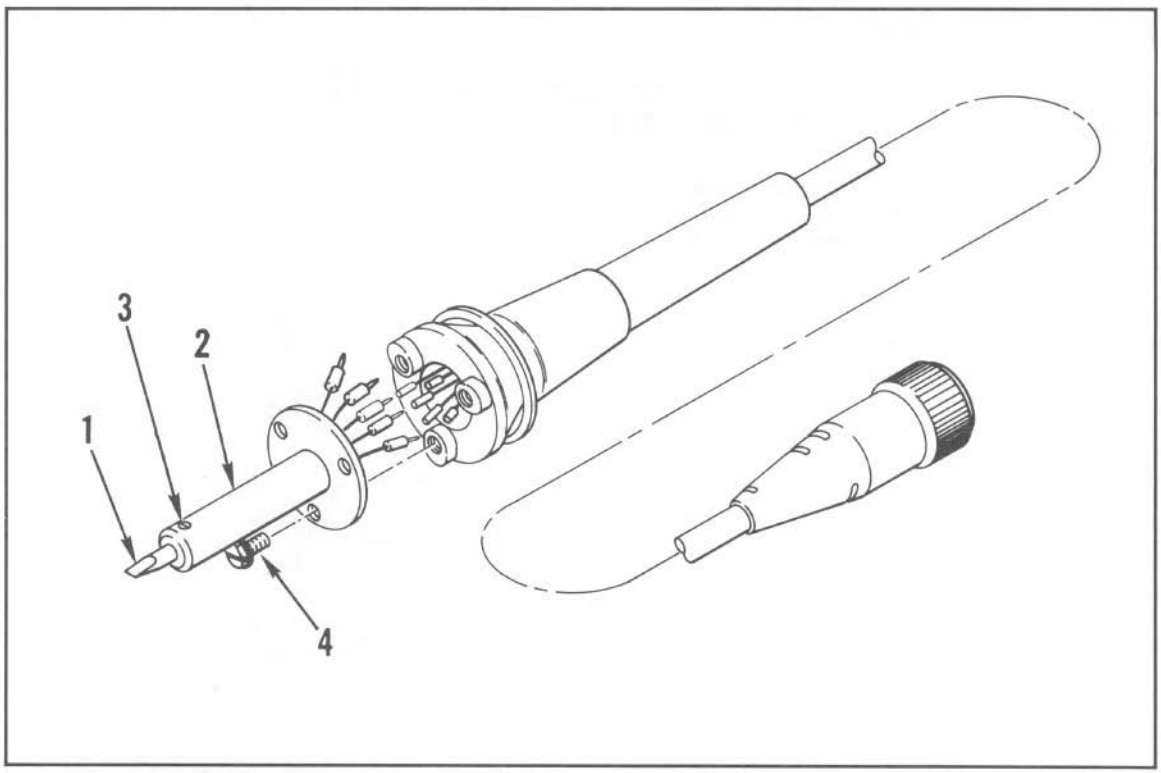


FIGURE 12. REPLACEMENT PARTS FOR IR-65 SOLDERING IRON HANDPIECE ASSEMBLY

REPLACEMENT PARTS

TABLE 6. REPLACEMENT PARTS FOR MBT-210/MBT-210E SYSTEM(S)
(Refer to Figure 13)

ITEM NO.	DESCRIPTION	PACE PART NO.	
		MBT-210	MBT-210E
	MBT System	8007-0113	8007-0114
1	Hot Cubby	6019-0021	6019-0021
2	MBT Power Source	7008-0166	7008-0168
3	VisiFilter	1309-0020	1309-0020
4	Power Cord	1332-0094	1332-0093
5	Vacuum Hose, 2'' Long	1342-0001-01	1342-0001-01
6	Vacuum Hose, 10'' Long	1342-0012-03	1342-0012-03
7	Vacuum Hose, 5'' Long (Qty. 2)	1342-0012-02	1342-0012-02
8	Main Power Switch	1157-0052	1157-0052
9	Control Knob (Qty. 2)	1222-0049	1222-0049
10	Vacuum Valve Stem	1263-0021	1263-0021
11	Pressure Control Valve Assembly	1285-0033	1285-0033
12	Fuse, 1.25A (MBT-210), .63A (MBT-210E)	1159-0217	1159-0214
13	Transformer	1192-0058	1192-0058
14	Power Entry Module	1207-0151	1207-0151
15	Motor Pump Assembly	1336-0024	1336-0024
16	Main Printed Circuit Board Assembly	6020-0051	6020-0051
17	Front Panel Assembly (Includes Display Board)	6000-0150	6000-0150
18	SX-65 Extractor Assy. (refer to Table 7, Fig. 14)	6010-0060	6010-0060
19	IR-65 Soldering Iron Assy (refer to Table 5, Fig. 12)	6025-0005	6025-0005
20	Accessory Kit (refer to Table 8, Fig. 15)	7900-0009	7900-0010
—	Operation/Maintenance Manual	5050-0207	5050-0207

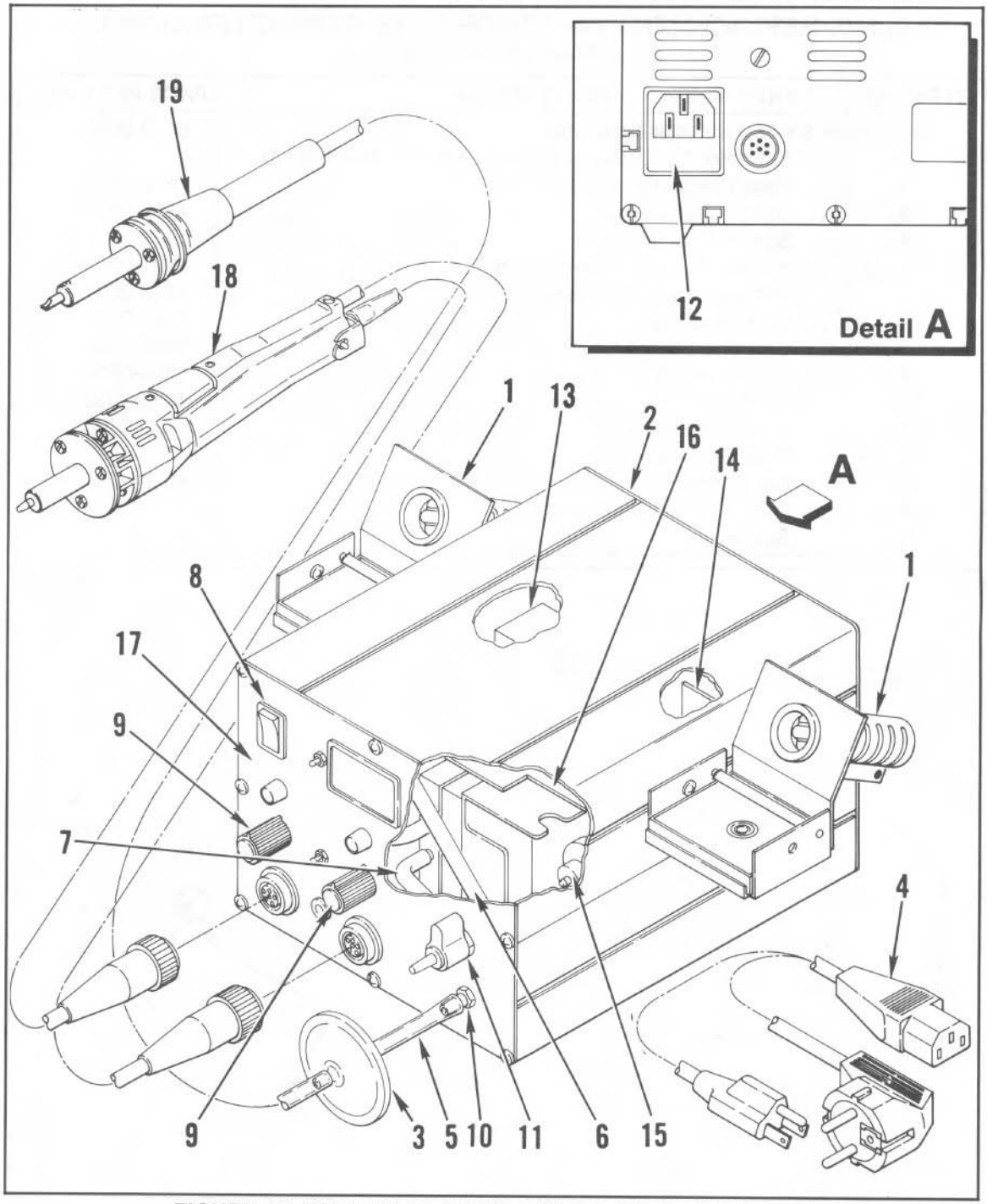


FIGURE 13. REPLACEMENT PARTS FOR MBT-210/MBT-210E

REPLACEMENT PARTS

TABLE 7. REPLACEMENT PARTS FOR SX-65 EXTRACTOR ASSEMBLY
(Refer to Figure 14)

ITEM NO.	DESCRIPTION	PACE PART NO.
	SX-65 Extractor Assembly	6010-0060
1	Extractor Tip (refer to Table 8, Fig. 15, Items 2—4)	—
2	Heat Dissipator Washer	1213-0034
3	Glass Chamber	1265-0009
4	Sodr-X-Tractor Filter	1309-0018
5	Holder, Tube to Wire (Qty. 6)	1321-0085-01
6	Vacuum Hose, 66" Length	1342-0001-14
7	Heat Dissipator	1360-0005
8	Screw, #4-40x¼" (Qty. 3)	1405-0395
9	Screw, #40-40x5/16" (Qty. 3)	1405-0534
10	"S" Baffle	4010-0033
11	Heater Assemby	6010-0061
12	Rear Seal Assembly	4010-0082
13	Set Screw	1348-0287
14	Cord and Switch Assembly	4010-0090
15	Spacer	1215-0072

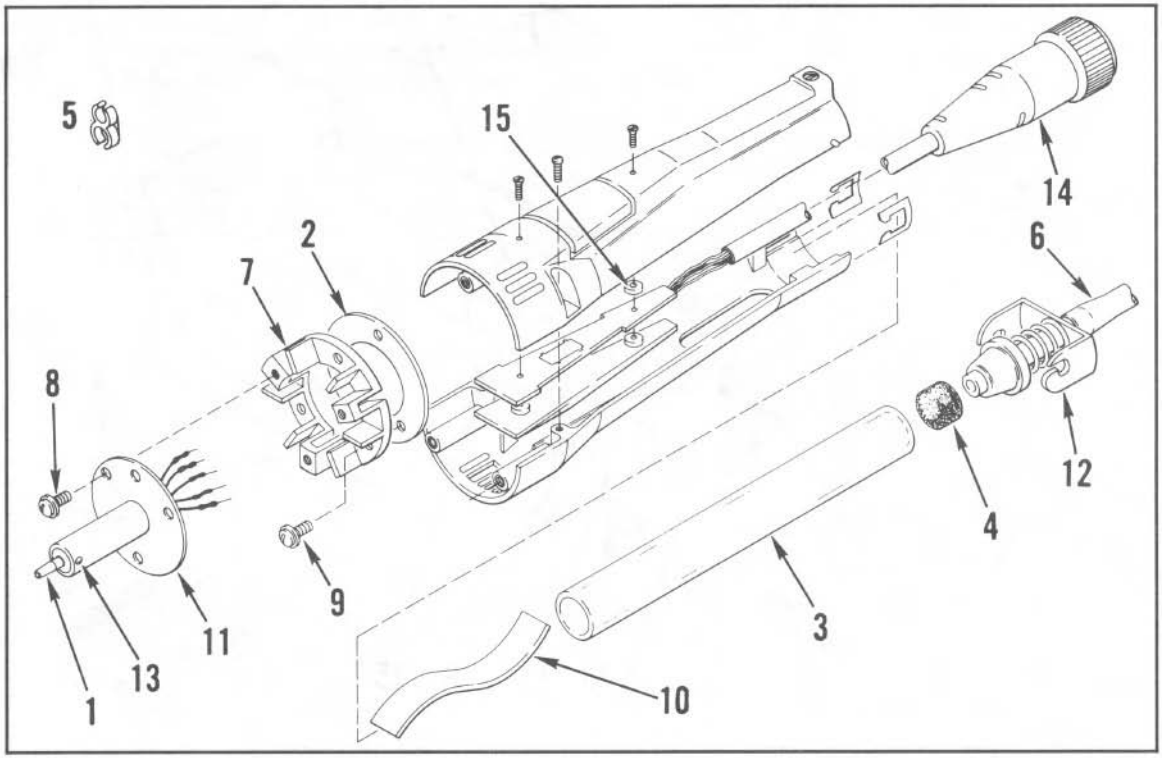


FIGURE 14. REPLACEMENT PARTS FOR SX-65 EXTRACTOR ASSEMBLY

TABLE 8. REPLACEMENT PARTS FOR ACCESSORY KIT(S)

(Refer to Figure 15)

ITEM NO.	DESCRIPTION	PACE PART NO.	
		MBT-210	MBT-210E
	Accessory Kit	7900-0009	7900-0010
1	Tip Tool	1100-0206	1100-0206
2	Micro Tip, .025 I.D.	1121-0253	1121-0253
3	Micro Tip, .036 I.D.	1121-0254	1121-0254
4	Micro Tip, .061 I.D.	1121-0255	1121-0255
5	Filter, Sodr-X-Tractor	1309-0018	1309-0018
6	Tip, 1/16″ Chisel	1121-0131	1121-0131
7	Nylon Brush	1127-0002	1127-0002
8	Wire Brush, 3½″	1127-0006-02	1127-0006-02
9	Fuse, 1.25	1159-0217	
	Fuse, .63A		1159-0214

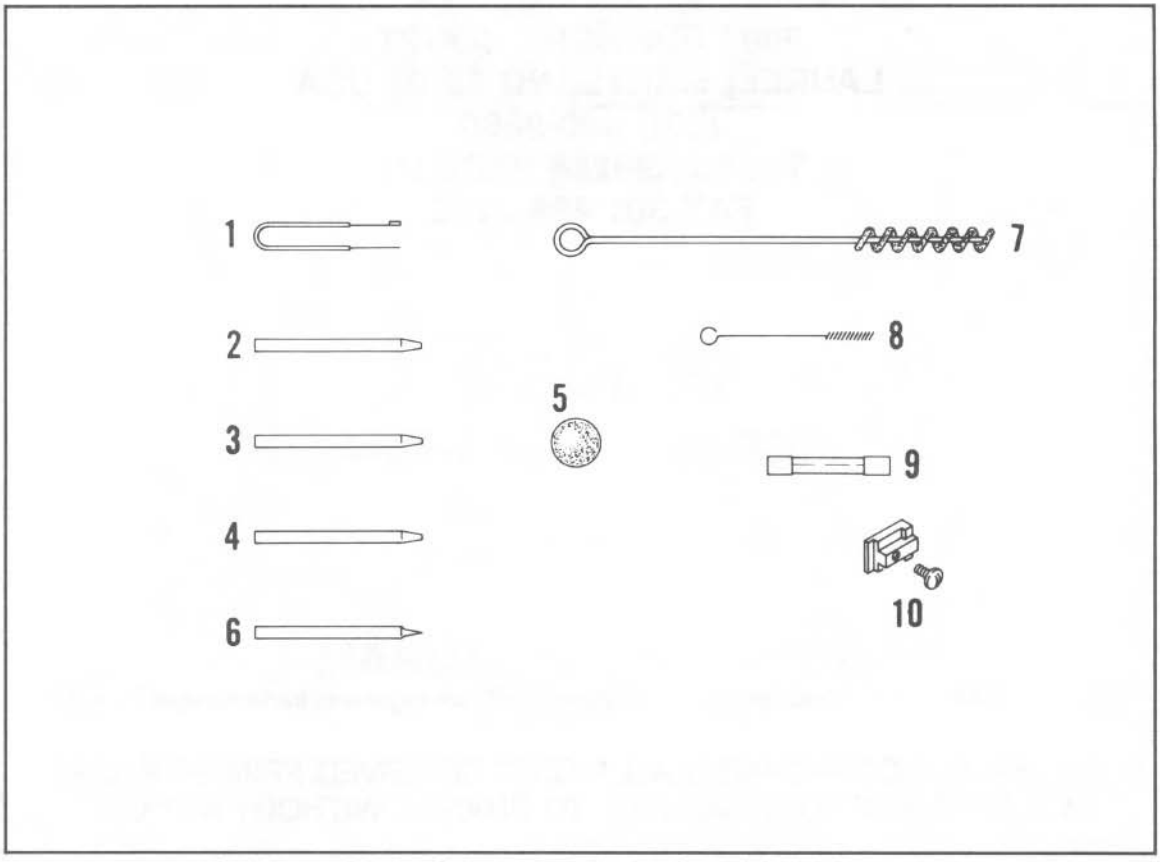


FIGURE 15. REPLACEMENT PARTS FOR ACCESSORY KIT(S)