

# Weller® Tech Sheet

## MP Series

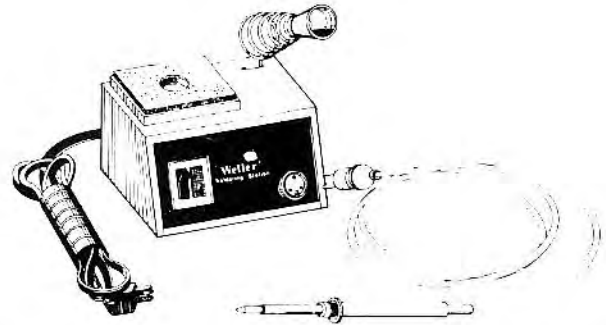
### PRODUCT DESCRIPTION

A transformer powered low voltage soldering station, complete with choice of a 650°F or 750°F controlled temperature soldering pencil, designed for soldering small and/or heat, voltage and current sensitive components.

The soldering station features a safe, low voltage power supply for the soldering pencils, a quick connect/disconnect receptacle for attaching the soldering pencils, an on/off switch with neon indicator light for safety and economy, a sponge receptacle, extra large improved wiping sponge, a non-heat sinking pencil holder, a 3 wire power cord, and a soldering pencil which features new non-seizing tip construction, quick connect/disconnect plug, non-burning silicone cord, clear temperature designation, and interchangeable tips (1/64" conical tip No. MP131 is provided).

The solid state "closed loop" control circuit automatically controls the maximum tip temperature thereby protecting temperature sensitive components while the grounded tip protects current and voltage sensitive components.

The soldering station is U. L. listed or C.S.A. certified.

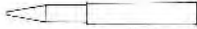
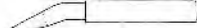








**CAUTION: TIP IS GROUNDED. DO NOT SOLDER IN AN ENERGIZED CIRCUIT.**

### MODELS AVAILABLE

Model No.	Description
MP 156	Soldering Station, complete with 650°F Soldering Pencil, MP 131 tip, sponge, pencil holder
MP 157	Soldering Station, complete with 750°F Soldering Pencil, MP 131 tip, sponge, pencil holder
MP 126	Soldering Pencil Only, 650°F with MP 131 tip
MP 127	Soldering Pencil Only, 750°F with MP 131 tip

### TIP SIZES AVAILABLE

	Part No.	Description
	MP 131	Tip, 1/64" conical
	MP 132	Tip, 2/64" conical, bent
	MP 133	Tip, 2/64" spade, 45°
	MP 134	Tip, 3/64" conical, bent
	MP 135	Tip, 3/64" spade, 45°
	MP 136	Tip, 1/16" narrow screwdriver
	MP 137	Tip, 5/64" screwdriver
	MP 138	Tip, 8/64" chisel

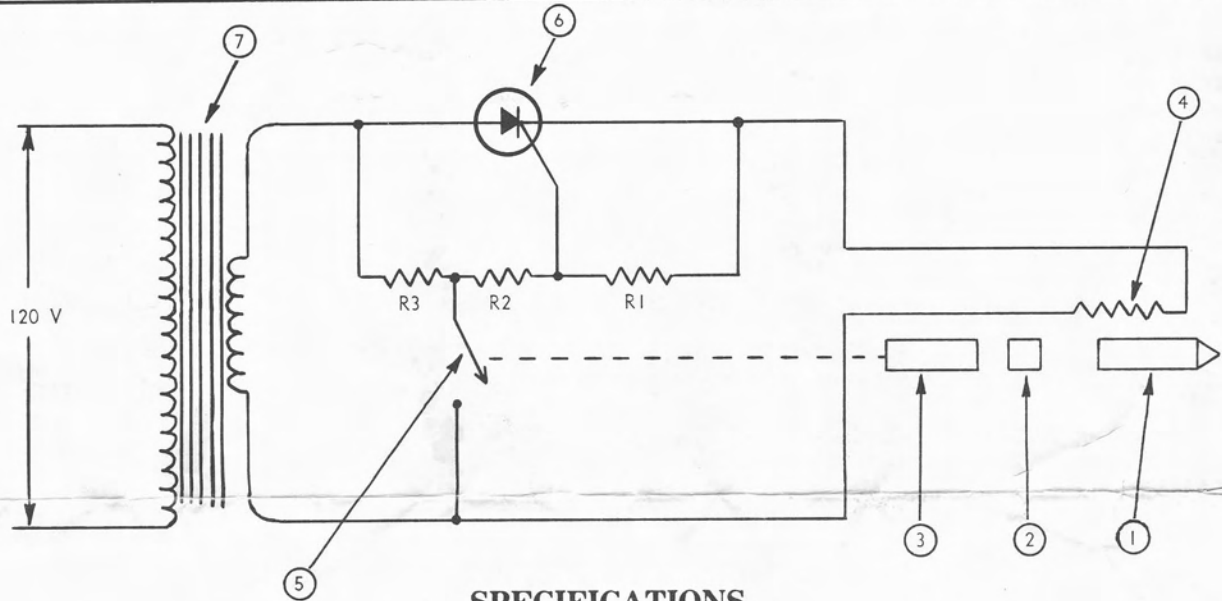
## PRINCIPLE OF OPERATION

The tip (1) screws into a ferromagnetic temperature sensor (2) within the pencil. When the tip and sensor are cold, the sensor attracts a permanent magnet (3), which in turn opens the control switch (5). When 120 V. 60 hz power is applied to the transformer (7) a 24 V., 60 hz potential is applied across the SCR (6) and the SCR gate triggering voltage resistors  $R_1$ ,  $R_2$  and  $R_3$ . This causes the SCR to conduct current through the heater element (4).

The heater element is in close proximity to the tip and causes it to heat rapidly. Heat is transferred from tip to the temperature sensor and at the operating temperature selected, the sensor loses its ferromagnetic property and no longer attracts the magnet. A spring (not illustrated) closes the control switch which, in turn, alters the gate voltage and prevents the SCR from conducting current through the heater element. The tip and sensor cool.

At a temperature slightly below the selected tip temperature, the sensor recovers its ferromagnetic property and attracts the magnet starting the cycle over again. In this manner, the selected tip temperature can be maintained automatically.

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## SPECIFICATIONS

### POWER UNIT:

#### ELECTRICAL:

1. Power Input - 120 volts, 60/400 Hz, 22 watts
2. Transformer Output Voltage - 26 volts (no load)
3. U. L. Listed or C.S.A. Certified

#### PHYSICAL:

1. Size - 5" wide x 4" deep x 2½" high
2. Weight - 2 Lbs.
3. Power Cord - 3 wire/6 feet long

#### FEATURES:

1. Improved switch w/long life neon indicator lamp
2. Quick connect/disconnect soldering pencil receptacle
3. Built in sponge receptacle
4. Impact resistant polycarbonate case
5. Improved transformer design
6. Reliable solid state control circuit
7. Large wiping sponge

### SOLDERING PENCIL:

#### ELECTRICAL:

1. Heater element resistance - 15.0 Ohms
2. When connected to MP-101 Power Unit:
  - a. Heater current - .62 amps, r.m.s.\*
  - b. Wattage - 13 watts\*
  - c. Tip voltage to ground - .3 volts p-p\*
  - d. Leakage current to ground - .07 milli-amps\*

#### PHYSICAL:

1. Size - 6" long x 13/32" (.406) dia with 2½" tip reach
2. Weight (w/o cord) - 3/5 ounce
3. Cord length - 4 feet
4. Recovery rate - 13 seconds from 100°F drop

#### FEATURES:

1. Two tip temperatures available - 650°F and 750°F
2. Quick connect/disconnect pencil plug
3. Tip temperature clearly marked on handle
4. Non-burning silicone rubber cord.

\* Amperage measured w/Model #433 A.C. Ammeter, Weston Instrument Company  
 Wattage measured w/Model #432 A.C. Wattmeter, Weston Instrument Company (10,000 ohm input resistance)  
 Voltage measured w/Type 504 Oscilloscope Tektronic (1 meg. 47 pf input)  
 Leakage current measured w/Model #229 Simpson

## MAINTENANCE

### SOLDERING PENCIL AND TIPS:

1. Keep tinned: wipe only before using
2. Use rosin or activated rosin fluxes
3. Remove and clean tips with a suitable rosin cleaner, at least once a week when used in continuous production
4. Use isopropyl alcohol to clean handle
5. Do not file or clean tip with abrasive materials

### POWER UNIT:

1. Clean power unit case with isopropyl alcohol — avoid using chlorinated hydrocarbons
2. Do not touch hot iron to case
3. Avoid dripping solder onto iron receptacle

### REPAIR NOTES:

Caution: Disconnect power supply before attempting any repair.

### SOLDERING PENCIL:

1. Check for proper resistance between plug pins #1 and #3\*. Do not use any pencil with incorrect resistance values.
2. Pencil must be returned to factory or authorized service center for repair.

### POWER UNIT:

1. Disconnect power cord before attempting any repair.
2. A zero ohm resistance between pin #1 and #3\*\* indicates a shorted SCR.
3. Be sure to maintain ground circuit to pin #1; if not grounded, voltage/current sensitive components may be damaged during soldering operation.
4. Check power cord strain relief, keep screws tight.
5. Avoid pinching leads when reassembling case.

### TROUBLE SHOOTING GUIDE:

Symptom	Possible Cause
Indicator light out and pencil hot	1. Lamp burnt out
Indicator light out and pencil cold	1. No 120V. supply input 2. Primary circuit open 3. Power plug disconnected 4. Switch in off position
Indicator light on and pencil cold	1. Open in transformer primary 2. Open in power unit output circuit 3. Solder shorting plug and/or receptacle pins 4. Short between green and black (or white) leads in pencil 5. Switch in pencil not opening 6. Pencil heater element burnt out
Handle overheats	1. Partial short in heater element
Tip overheats	1. SCR shorted on printed circuit board 2. Switch in pencil not closing 3. Open in control lead (green wire)

### Typical Voltage Measurements of Power Unit Output w/Primary @ 120V., 60Hz.

Voltage measurements taken with Triplet Model #630-NS VOM(10,000 ohms/volt)

Between transformer secondary leads	26.0 volts
Between Pin #1 and Pin #3	25.3 volts
Pin #1 and Pin #2	0.0 volts
Pin #2 and Pin #3	25.8 volts

### Typical Resistance Measurements of Pencil Heater Element (Cold)

Between Pin #1 (Black) and Pin #3 (White)	15.0 ohms
Between Pin #1 (Black) and Pin #2 (Green)	∞ ohms
Between Pin #2 (Green) and Pin #3 (White)	∞ ohms

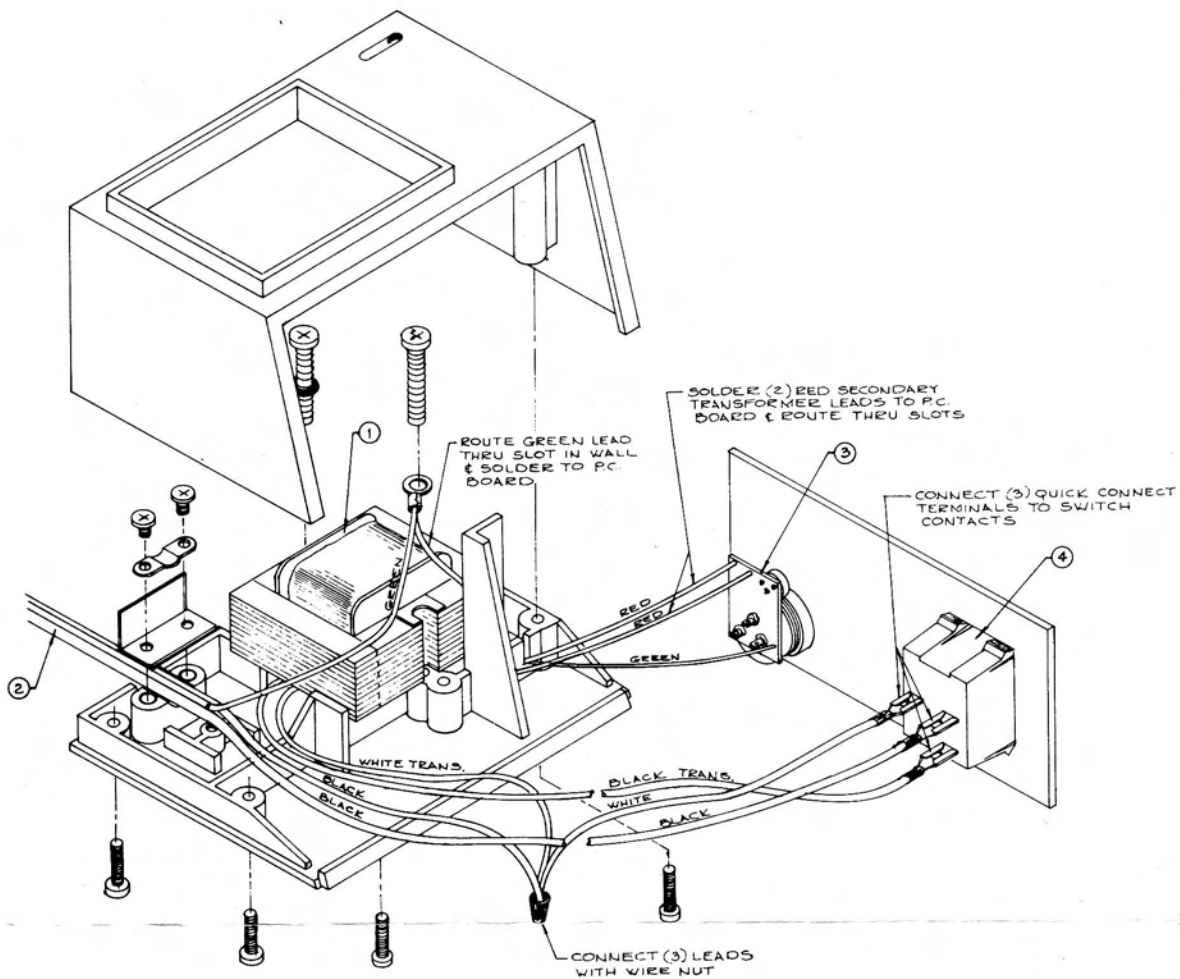
### Typical Resistance Measurements of Power Unit Output Circuit

(Caution: Disconnect power supply before measuring)

Between Pin #1 and Pin #3	17,000 ohms
Between Pin #1 and Pin #2	11,500 ohms
Between Pin #2 and Pin #3	5,500 ohms

\*1Pins are numbered **counterclockwise** #1, 2, & 3

\*2Pins are numbered **clockwise** #1, 2, & 3



### REPAIR PARTS LIST

Key	Part No.	Description
1	MP 201	Transformer
2	MP 302	Power cord w/ ground terminal and jumper
3	MP 303	Iron receptacle w/ control circuit
4	MP 304	Switch w/ light

### REPLACEMENT PARTS LIST

Part No.	Description
MP 101	Power unit w/ 3 wire power cord, 120 V., 60 Hz, 22 W.
MP 126	Soldering Pencil 650°F. w/ silicone cord & 3 pin plug
MP 127	Soldering Pencil 750°F. w/ silicone cord & 3 pin plug
MP 131	Tip, 1/64" conical
MP 132	Tip, 2/64" conical, bent
MP 133	Tip, 2/64" spade, 45°
MP 134	Tip, 3/64" conical, bent
MP 135	Tip, 3/64" spade, 45°
MP 136	Tip, 1/16" narrow screwdriver
MP 137	Tip, 5/64" screwdriver
MP 138	Tip, 8/64" chisel
MP 202	Sponge
MP 210	Barrel Nut Assembly
MP 213	Funnel, Only
MP 214	Pencil Holder Spring & Funnel