



An ISO 9001 Certified Company

replacement parts industries, inc.

USAGE INSTRUCTION BOOKLET
DIAGNOSTIC SMART KIT®

RPI Part #TUK108

*FOR SERVICING TUTTNAUER® AUTOMATIC AUTOCLAVES
MODELS EZ9, EZ10, EZ10k, 1730E/EK, 2340E/EA/EK/EKA, 2540E/EA/EHS/EK/EKA & 3870EHS*

CALL (800) 221-9723 or (818) 882-8611 • FAX (818) 882-7028 • E-MAIL order@rpiparts.com • WEBSITE www.rpiparts.com



*Please see the RPI website, www.rpiparts.com,
for a complete listing of all RPI parts that fit*

**Tuttnauer® automatic autoclaves
Models EZ9, EZ10, EZ10k, 1730E/EK, 2340E/EA/EK/EKA, 2540E/EA/EHS/EK/EKA & 3870EHS**

DIAGNOSTIC SMART KIT® (RPI PART #TUK108) USAGE INSTRUCTIONS BOOKLET

TABLE OF CONTENTS

1.0 - INTRODUCTION TO THE DIAGNOSTIC SMART KIT® (RPI PART #TUK108) Page 1-2

- 1.1 - Explanation of the Kit
- 1.2 - Listing of Tools in the Kit

2.0 - TEST POINT BOARD 3

- 2.1 - General Usage Information
- 2.2 - How to Determine the Software Version/Date Code for the Micro-processor

3.0 - PRESSURE TRANSDUCER 4-10

- 3.1 - Units with AJUNC 3 Board: Installation, Calibration and Troubleshooting for the Pressure Transducer that is used with an AJUNC 3 Board and does not have an in-line PCB assembly.

Following is a list of parts and tools necessary to service the Pressure Transducer:

- Pressure Transducer (RPI Part #TUT092)
- Test Point Board (RPI Part #TUB109)
- Ribbon Cable (RPI Part #TUC117)
- Trim Pot Adjustment Tool (RPI Part #RPT460)
- Test Pressure Gauge (RPI Part #TUG110)

- 3.2 - Units with AJUNC 2 Board: Installation, Calibration and Troubleshooting for Pressure Transducer that is used with an AJUNC 2 Board and has an in-line circuit PCB assembly.

Following is a list of parts and tools necessary to service the Pressure Transducer:

- Pressure Transducer (RPI Part #TUT092)
- Terminal Crimp Tool (RPI Part #RPT482)
- Test Point Board (RPI Part #TUB109)
- Ribbon Cable (RPI Part #TUC117)
- Test Pressure Gauge (RPI Part #TUG110)
- Trim Pot Adjustment Tool (RPI Part #RPT460)

4.0 - TEMPERATURE SENSOR 11-14

- 4.1 - Installation and Calibration Instructions for the PT100 Temperature Sensor in units with an AJUNC 3 Board.

Following is a list of parts and tools necessary to service the PT100 Temperature Sensor:

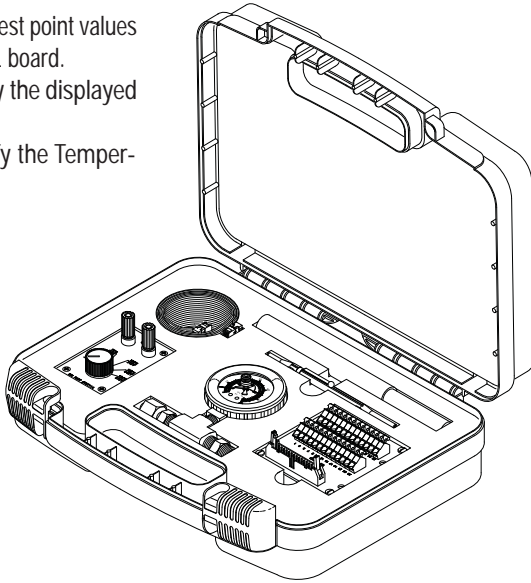
- Temperature Sensor (RPI Part #TUS093)
- Test Point Board (RPI Part #TUB109)
- Ribbon Cable (RPI Part #TUC117)
- Simulator (PT100) (RPI Part #TUT114)
- Harness No. 1 (RPI Part #TUH111)
- Harness No. 2 (RPI Part #TUH112)
- Harness No. 3 (RPI Part #TUH113)
- Trim Pot Adjustment Tool (RPI Part #RPT460)
- Max Register Thermometer (RPI Part #RPT113) – see page 11

1.0 - INTRODUCTION TO THE DIAGNOSTIC SMART KIT® (RPI PART #TUK108)

1.1 - Explanation of the Kit

The Diagnostic Smart Kit® (RPI Part #TUK108) is designed to assist you with the following service tasks:

- Check and monitor all test point values from the AJUNC or ANL board.
- Calibrate and/or verify the displayed pressure values.
- Calibrate and/or verify the Temperature Sensor values.

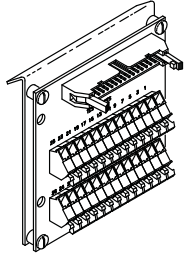


1.2 - Listing of Tools in the Kit

The tools included in the Diagnostic Smart Kit® are as follows:

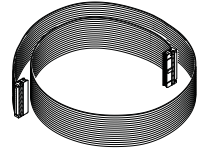
Test Point Board (RPI Part #TUB109)

The Test Point Board enables you to check and monitor all of the test points on the AJUNC or ANL-T2 Board without having to locate resistor or chip legs. The RPI Test Board (RPI Part #TUB109) is used with the Ribbon Cable (RPI Part #TUC117) and has all necessary test points clearly marked for easy and convenient access.



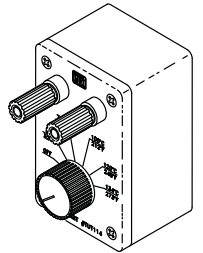
Ribbon Cable (RPI Part #TUC117)

The Ribbon Cable (RPI Part #TUC117) connects the PCB to the Test Point Board (RPI Part #TUB109).



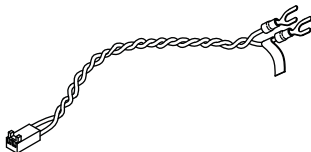
Simulator (PT100) (RPI Part #TUT114)

A test box used to simulate the PT100 Temperature Sensor. The capability of simulating high and low temperatures makes this a valuable tool for calibrating temperature. The Simulator uses a harness assembly to connect to the AJUNC or ANL-T2 Board - see next page for harness needed for the various sterilizer models.



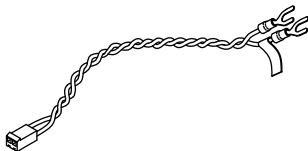
Harness No.1 (RPI Part #TUH111)

Fits models 1730E/EK, 2340E/EA/EK/EKA, 2540E/EA/EHS/EK/EKA, 3870EHS, and EZ9/10/10k manufactured with AJUNC 3 Boards.



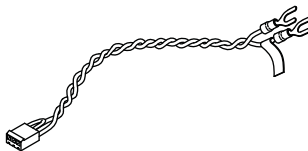
Harness No.2 (RPI Part #TUH112)

Fits other various Tuttnauer models.



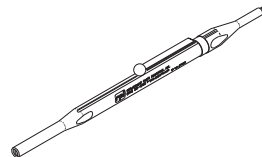
Harness No. 3 (RPI Part #TUH113)

Fits 2540EHS and 3870EHS manufactured with ANL-T2 Boards.



Trim Pot Adjustment Tool (RPI Part #RPT460)

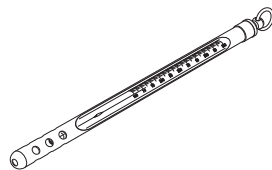
The RPI Trim Pot Adjustment Tool (RPI Part #RPT460) is used to easily, accurately and safely adjust all types of variable resistors.



Max Register Thermometer (RPI Part #RPT113)

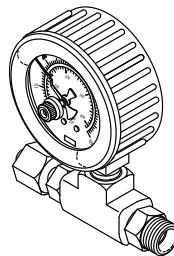
The Max Register Thermometer (RPI Part #RPT113) is used inside the chamber to measure the internal temperature of the chamber. The thermometer is accurate to +/-1 division (or +/-2°F).

Note: See page 11 for Usage Instructions.



Test Pressure Gauge (RPI Part #TUG110)

The Test Pressure Gauge (RPI Part #TUG110) is used to verify that the digital display matches the mechanical gauge. The gauge has a maximum indicator pointer.



Carrying Case

The items included in the Kit are encased in a sturdy, lockable hard plastic case with custom foam that form-fits to each of the tools and parts. See illustration of the Kit on page 1.

Note: The Carrying Case is also available with a blank case label and "pick-n-pluck" foam inserts that can be arranged to create custom storage configurations. See illustration to the right for Carrying Case (RPI Part #RPC476).



RPC476

2.0 - TEST POINT BOARD (RPI PART #TUB109)

2.1 - General Usage Information

The Test Point Board (RPI Part #TUB109) fits automatic versions of models: 1730, 2340, 2540 & 3870 series that were manufactured with AJUNC 2, AJUNC 3, and ANL-T2 Boards with the following suffixes:

E	= Electronic
EA & EZ	= Electronic with Air Assisted Drying
EK	= Electronic Kwiklave
EKA & EZ10k	= Electronic Kwiklave with Air Assisted Drying
EHS	= Electronic Pre and Post Vacuum Autoclave

The Test Point Board enables you to check and monitor all the test point voltages from the AJUNC or ANL boards. The Test Point Board has all necessary test points clearly marked for easy and convenient access and utilizes a Ribbon Cable (RPI Part #TUC117) which is included in this Kit.

Depending on the type of board installed in the unit and the software version/date code of the microprocessor, the Test Points, Functions and DC Voltage Range will vary. To determine the Software Version/Date Code for the microprocessor being serviced, please see **2.2 - How to Determine the Software Version/Date Code**, then refer to **Exhibit A-D, pages 15-16**, for the Test Points, Functions and DC Voltage for the board.

2.2 - How to Determine the Software Version/Date Code for the Microprocessor

To determine the Software Version/Date Code for the microprocessor, proceed with one of the following two methods:

Method #1 to Determine Software Version/Date Code for the Microprocessor

- 1) Using the Power switch, turn the power off.
- 2) Using the Power switch, turn the power on. Look at the display screen. The first information displayed on the screen will be the version number.

Method #2 to Determine Software Version/Date Code for the Microprocessor

- 1) Look at the printer tape. The first printed information that appears before each cycle is the version number.

3.0 - PRESSURE TRANSDUCER

IMPORTANT NOTE

Before beginning the installation of the new Pressure Transducer, determine which AJUNC Board is installed in the autoclave.

The Tuttnauer automatic autoclaves have a Pressure Transducer using either an AJUNC 3 Board or an AJUNC 2 Board. Once determined, follow the steps below that correspond to the type of AJUNC Board installed in the autoclave.

3.1 - Units with AJUNC 3 Board: Installation, Calibration and Troubleshooting for the Pressure Transducer that is used with an AJUNC 3 Board and does not have an in-line PCB assembly

Installation Instructions

- 1) Turn the sterilizer power off and unplug the unit from the electrical source.
- 2) Remove the cover and put aside any hardware for use later in these instructions.
- 3) On the back of the AJUNC 3 Board, locate a 4-pin connector labeled JP6 and unplug the Pressure Transducer connector. See **Figure 1 - Close up of board (page 5)**.
- 4) Remove the cable ties holding the silicone tube to the Pressure Transducer and the brass tubing.
- 5) Remove the Pressure Transducer and the tubing. Discard both parts.

- 6) Install and securely mount the new Pressure Transducer (RPI Part #TUT092) and the new silicone tube included in the package (RPI Part #RPK282). Be sure to secure tubing at both ends with the enclosed new cable ties.
- 7) Plug the JP6 connector back into the AJUNC 3 Board.
- 8) Continue to the Calibration Instructions below. Note: The calibration procedure must be done following the replacement of either the Pressure Transducer or the AJUNC 3 Board.

Calibration Instructions

This procedure needs to be done anytime the Pressure Transducer or AJUNC 3 Board is replaced.

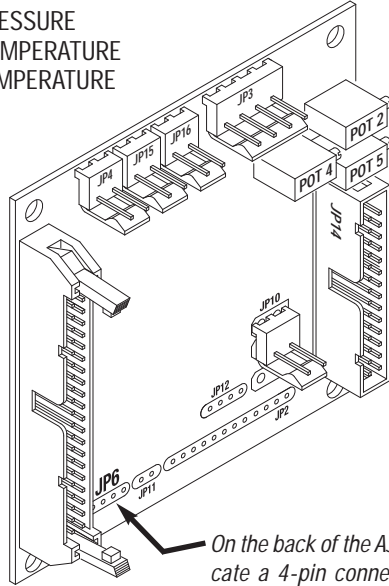
• Zero Adjustment Procedure

- 1) Plug the unit into the electrical source and make sure the unit is in the off position.
- 2) Press and hold in the Door Switch. Turn the power on and hold the Door Switch for approximately 5 seconds.
- 3) The unit automatically sets the display to zero. Any display other than 0.0 is not acceptable and indicates a bad AJUNC 3 board.

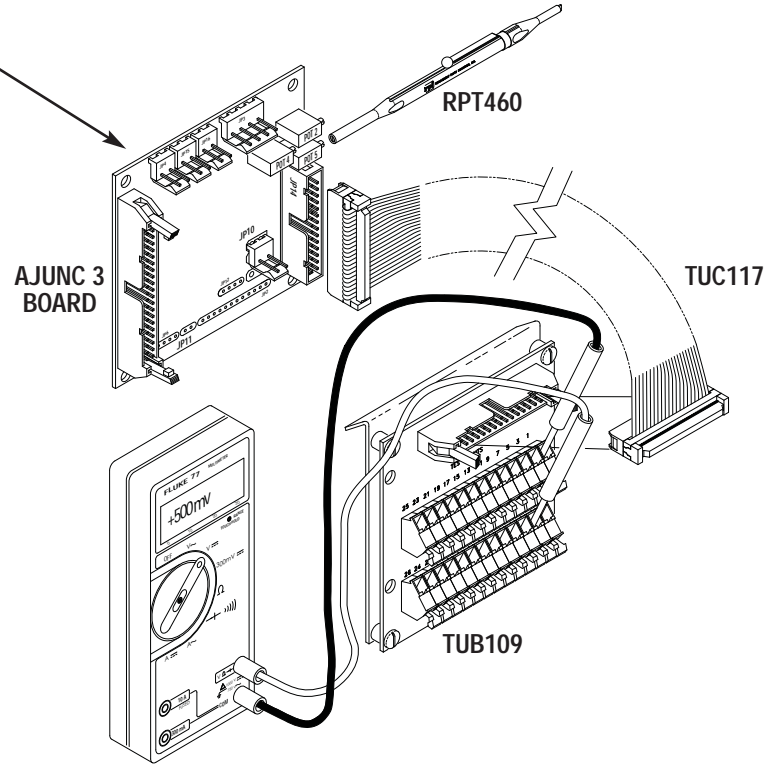
FIGURE 1 - Initial Setup

Close up view of AJUNC 3 board

POT 2: GAIN PRESSURE
POT 4: ZERO TEMPERATURE
POT 5: GAIN TEMPERATURE



On the back of the AJUNC 3 Board, locate a 4-pin connector labeled JP6 and unplug the Pressure Transducer connector.



- **Gain Adjustment Procedure for units with an AJUNC 3 Board:**
(See Figure 1, page 5 for initial setup)

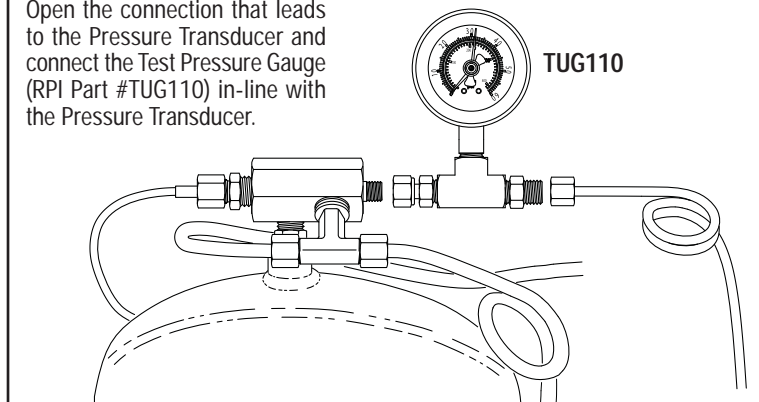
- 1) Connect the Test Point Board (RPI Part #TUB109) using the Ribbon Cable (RPI Part #TUC117) to the JP14 connector on front of the AJUNC 3 Board.
 - 2) Connect a voltmeter to test points TP4 and TP1 on the Test Point Board.
 - 3) Adjust Pot 2 on the AJUNC 3 Board until the voltmeter reads 500mv DC (+/-5mv). Use the Trim Pot Adjustment Tool (RPI Part #RPT460) for this adjustment.
 - 4) If the front panel display changed from zero (set during the zero adjustment procedure above) to any other value, close the sterilizer door and start an unwrapped cycle. As the pressure rises within the chamber from room pressure to 30 PSI, the voltage reading should rise from 500 mv (set in Step #3 above) to 1.5 volts. While the cycle is running, it should be noted that each one-pound change in pressure should be approximately equal to 0.033 mv.
- If the readings obtained are not correct then the AJUNC 3 Board may need to be replaced.
 - If the readings on the voltmeter are correct but the display is inaccurate then the Digital Predg Board may need to be replaced.

Final Check

- 1) Turn off Power Switch and remove the Test Point Board and Ribbon Cable.
- 2) Open the connection that leads to the Pressure Transducer and connect the Test Pressure Gauge (RPI Part #TUG110) in-line with the Pressure Transducer. See **Figure 2**.

FIGURE 2 - Test Pressure Gauge (RPI Part #TUG110)

Open the connection that leads to the Pressure Transducer and connect the Test Pressure Gauge (RPI Part #TUG110) in-line with the Pressure Transducer.



- 3) Run an empty sterilization cycle and after checking for leaks at the Test Pressure Gauge connections, verify that the digital display matches the mechanical gauge.
- 4) Disconnect the Test Pressure Gauge and reconnect the tubing.
- 5) Run an unwrapped cycle to check for leaks at the Pressure Transducer connections.
- 6) Turn the sterilizer power off and unplug the unit from the electrical source.
- 7) Replace the top cover and removed hardware.
- 8) Retest the final assembly repair by running an additional cycle before returning the sterilizer to service.

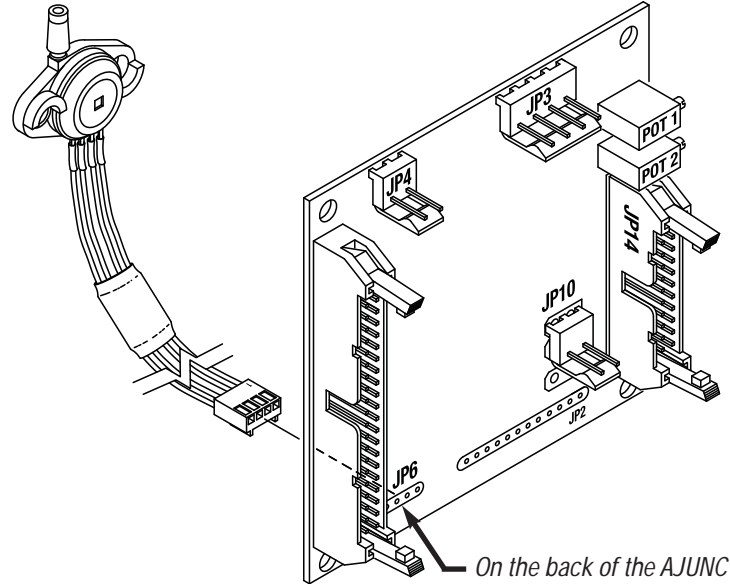
3.2 - Units with AJUNC 2 Boards: Installation, Calibration and Troubleshooting for Pressure Transducer that is used with an AJUNC 2 Board and has an in-line circuit PCB assembly

Before installing the new Pressure Transducer into a unit using an AJUNC 2 Board, simple modifications must be made to the cable assembly wires.

Remove Existing Pressure Transducer

- 1) Turn the sterilizer power off and unplug the unit from the electrical source.
- 2) Remove the cover and put aside any hardware for use later in these instructions.
- 3) On the back of the AJUNC 2 Board, locate a 4-pin connector labeled JP6 and unplug the Pressure Transducer connector. See **Figure 3**.
- 4) Remove the cable ties holding the silicone tube to the Pressure Transducer and the brass tubing.
- 5) Remove the Pressure Transducer and the silicone tubing. Discard the tubing. Keep the Pressure Transducer for modification on next page.

FIGURE 3 - *Close up view of AJUNC 2 board*



POT 1: ZERO TEMPERATURE
POT 2: GAIN TEMPERATURE

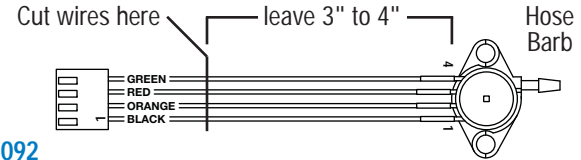
On the back of the AJUNC 2 Board, locate a 4-pin connector labeled JP6 and unplug the connector.

Modification Instructions (See Figures 4a, page 8 & 4b, page 9)

Note: Tools needed – Soldering iron, solder, and Terminal Crimp Tool (RPI Part #RPT482).

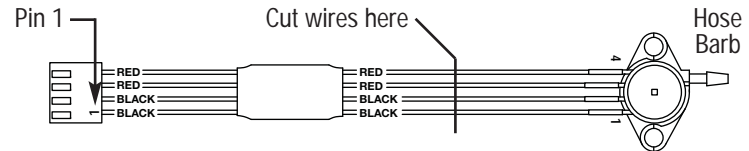
- 1) Using the Terminal Crimp Tool, section the heat shrink tubing that is enclosed in this Kit into 4 equal lengths of approximately 1 inch each.
- 2) Using the Terminal Crimp Tool, clip the installed connector off of the new Pressure Transducer (RPI Part #TUT092) but be sure to leave at least 3 to 4 inches of wire attached to the Transducer. Discard connector. See **Figure 4a**.
- 3) Slide one of the pieces of heat shrink tubing prepared in Step #1 onto each of the four individual wires attached to the new transducer.
- 4) Using the Terminal Crimp Tool, carefully remove approximately 1/2 inch of the insulation on each of the 4 wires attached to the new transducer.
- 5) Lay the original Pressure transducer (that was removed previously) on a flat surface with both the hose barb and the Red wire pair on the left side of the part. Then using a Terminal Crimp Tool, clip the Black wire attached to Pin 1 and remove approximately 1/2 inch of the insulation from the Black wire connected to the existing cable assembly. See **Figure 4a**.
- 6) Lengthwise, twist together the Black wire from the existing assembly to the new Pressure Transducer (RPI Part #TUT092). Solder the two twisted Black wires together and install the heat shrink tubing over the connection.
- 7) Repeat the procedure above, attaching the corresponding wires connected to Pins 2, 3, and 4 of the new transducer to the wires originally attached to the old cable assembly ensuring that each connection is soldered properly and covered with heat shrink tubing. **Caution: Ensure wires of new transducer are spliced to the proper corresponding wires of original cable assembly.** Now the modified Pressure Transducer is ready for installation. See **Figure 4b, page 9**.

FIGURE 4a - Modifying the Pressure Transducer (RPI Part #TUT092)



RPI PART #TUT092

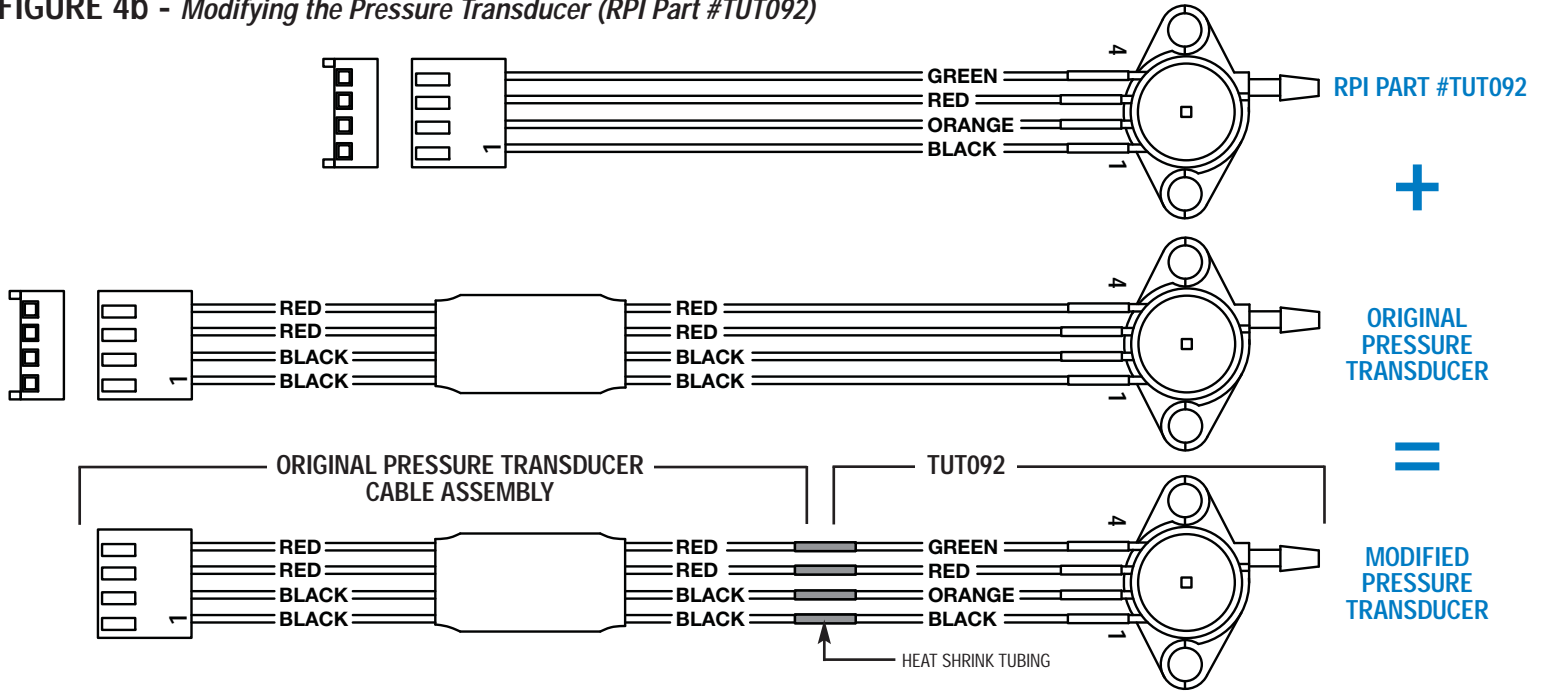
Using the Terminal Crimp Tool, clip the installed connector off of the new Pressure Transducer (RPI Part #TUT092) but be sure to leave at least 3" to 4" of wire attached to the Transducer. Discard connector. Split the heat shrink tubing enclosed with the Pressure Transducer (RPI Part #TUT092) into 4 equal lengths of ≈ 1 ". Slide one piece of tubing onto each of the 4 wires attached to the new transducer. Remove $\approx 1/2$ " of the insulation on each of the 4 wires attached to the new transducer.



ORIGINAL PRESSURE TRANSDUCER

Clip the wires attached to Pins 1 thru 4 and using the Terminal Crimp Tool, remove $\approx 1/2$ " of the insulation from the wires connected to the existing cable assembly. Attach the corresponding wires connected to Pins 1 thru 4 of the new transducer to the wires originally attached to the original cable assembly ensuring that each connection is soldered properly and covered with heat shrink tubing. **Caution: Ensure wires of new transducer are spliced to the proper corresponding wires of original cable assembly.** See **Figure 4b, page 9**.

FIGURE 4b - Modifying the Pressure Transducer (RPI Part #TUT092)



Caution: Ensure wires of new transducer are spliced to the proper corresponding wires of original cable assembly. Note the wire colors above.

Installation of Modified Pressure Transducer Instructions

- 1) Install and securely mount the modified Pressure Transducer (RPI Part #TUT092) and the new silicone tube included in the package (RPI Part #RPK282). Be sure to secure the tubing at both ends with the enclosed new cable ties.
- 2) Plug the modified Pressure Transducer onto the JP6 connector on the AJUNC 2 Board.
- 3) Continue to the Calibration Instructions below. Note: The calibration procedure must be done following the replacement of either the Pressure Transducer or the AJUNC 2 Board.

Calibration Instructions

This procedure must be done following the replacement of either the Pressure Transducer or the AJUNC 2 Board.

• Zero Adjustment Procedure (See Figure 3, page 7)

- 1) Turn off power. Connect the Test Point Board (RPI Part #TUB109) using the Ribbon Cable (RPI Part #TUC117) to the AJUNC 2 board.
- 2) Connect a voltmeter to test points TP2 and TP3 on the Test Point Board.
- 3) Turn on power. Use the Trim Pot Adjustment Tool (RPI Part #RPT460) to make adjustments to Pot 1 on the AJUNC 2 Board for 0.0 volts on voltmeter.

• Gain Adjustment Procedure for units with an AJUNC 2 board:

- 1) Open the connection that leads to the Pressure Transducer and con-

nect the Test Pressure Gauge (RPI Part #TUG110) in-line with the Pressure Transducer. See **Figure 2, page 6**.

- 2) Run an empty sterilization cycle and adjust Pot 2 so the digital display matches the mechanical gauge. Be sure to wait until the reading on the Test Pressure Gauge has passed 25 psi to make the final adjustment.
- 3) If the display is incorrect or inconsistent, connect a voltmeter to test points TP4 and TP1 on the Test Point Board (RPI Part #TUB109).
- 4) Run an empty sterilization cycle. The voltage reading should rise from 0 volts to 1.923 volts DC. This voltage reading corresponds to a pressure reading of between 0 psi and 30 psi. While the cycle is running, it can be noted that each one-pound change in pressure is approximately equal to 0.0641 mv.
 - If the readings obtained are not correct then the AJUNC 2 Board may need to be replaced.
 - If the readings are correct but the display is inaccurate then the Digital Predg Board may need to be replaced.

Final Check

- 1) Turn off power switch and disconnect sterilizer from AC source.
- 2) Disconnect the Test Point Board and Ribbon Cable. Remove the Test Pressure Gauge and reconnect the original tubing.
- 3) Run an unwrapped cycle to check for leaks at the Pressure Transducer connections.
- 4) Turn the sterilizer power off and unplug the unit from the electrical source.
- 5) Replace the top cover and any removed hardware.
- 6) Retest the final assembly repair by running an additional cycle before returning the sterilizer to service.

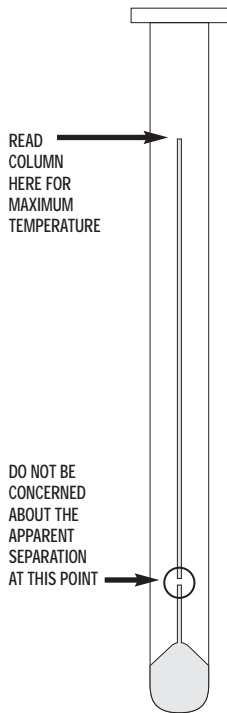
MAX REGISTER THERMOMETER (RPI PART #RPT113) USAGE INSTRUCTIONS

IMPORTANT – An o-ring was placed at the bottom of the thermometer to help prevent damage to the glass during shipping. Please remove the o-ring before using thermometer.

This thermometer registers the highest temperature it has been exposed to and holds that temperature indication until reset. This feature works on the principle of a constricted capillary; on heating, the expansion of the mercury within the bulb forces the mercury column through the constriction. The constriction prevents the mercury column from retreating under the influence of gravity or mild vibration. Retraction of the column is accomplished by "shaking" the thermometer, much like one would a fever thermometer, thus generating centrifugal force and forcing the mercury column back through the constriction.

Do not be concerned about the apparent separation of the mercury column below the constriction. This is a normal condition while the indication is above ambient temperature, and will not affect the accuracy of the indication. The mercury will rejoin after shaking down to ambient temperature.

IMPORTANT: The thermometer should be reset prior to each use as described above. Be sure to continue shaking until the column registers approximately ambient room temperature. Place the thermometer into the environment you wish to measure. The thermometer should be allowed to remain exposed to the temperature you wish to measure for at least five minutes, and ALLOWED TO COOL TO AMBIENT TEMPERATURE BEFORE IT IS READ. READ IN AN UPRIGHT POSITION AND ONLY AFTER IT HAS COOLED TO AMBIENT TEMPERATURE OR YOU WILL OBTAIN A FALSELY HIGH READING



4.0 - TEMPERATURE SENSOR

IMPORTANT NOTE

The PT100 Temperature Sensor (RPI Part #TUS093) fits Tuttnauer automatic autoclaves using an AJUNC 3 Board.

4.1 - Installation and Calibration Instructions for the Temperature Sensor in units with an AJUNC 3 Board

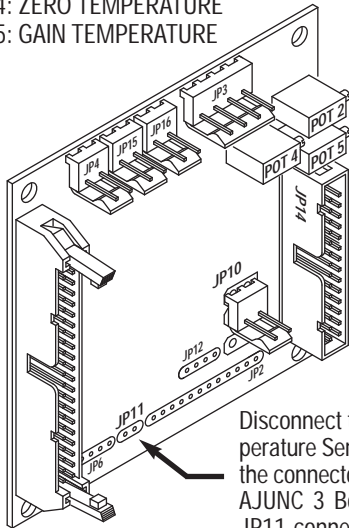
Installation Instructions

- 1) Turn the sterilizer power off and unplug the unit from the electrical source.
- 2) Remove the cover and put aside any hardware for use later in these instructions.
- 3) Disconnect the original Temperature Sensor by removing the connector at JP11 on the AJUNC 3 Board. See **Figure 5, page 12**. (Note: The JP11 connector is the 2-pin connector that plugs into the back of the AJUNC 3 Board.)
- 4) Remove the original Temperature Sensor from the manifold located on the back of the chamber and discard.

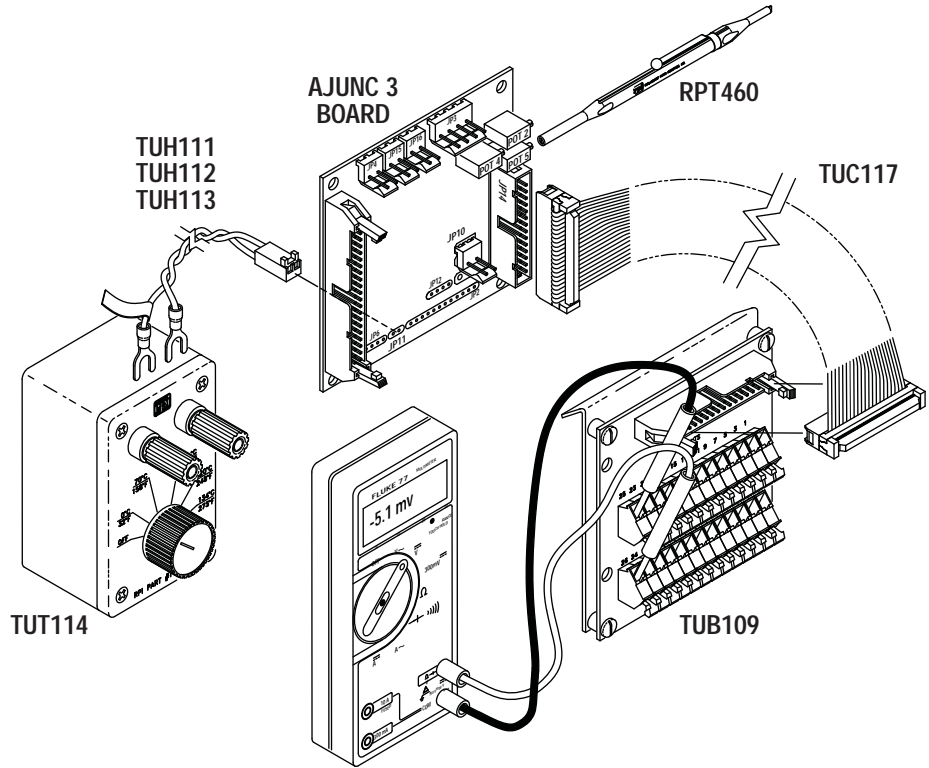
FIGURE 5 - Initial Setup

Close up view of AJUNC 3 board

POT 2: GAIN PRESSURE
POT 4: ZERO TEMPERATURE
POT 5: GAIN TEMPERATURE

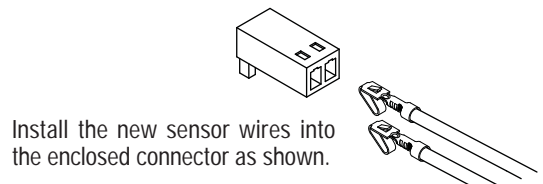


Disconnect the original Temperature Sensor by removing the connector at JP11 on the AJUNC 3 Board. (Note: The JP11 connector is the 2-pin connector on the back of the AJUNC 3 Board.)



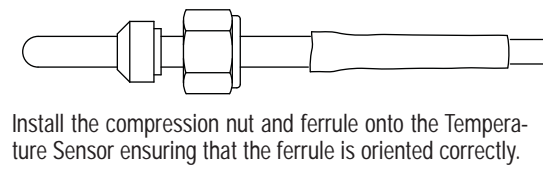
- 5) Locate the connector enclosed with the new Temperature Sensor (RPI Part #TUS093), and install the sensor wires into the connector. (Note: For this device, either wire can go into either position on the connector.) Locate the catch on the contact; it should be in the up position when inserted into the connector. The window in the connector should also be in the up position to receive the catch. Push the contact in until a click is heard. The contact should now be locked in position. See **Figure 6**.

FIGURE 6 - Sensor Wire Installation



- 6) Install the enclosed compression nut and ferrule onto the new Temperature Sensor ensuring that the ferrule is oriented correctly. See **Figure 7**.

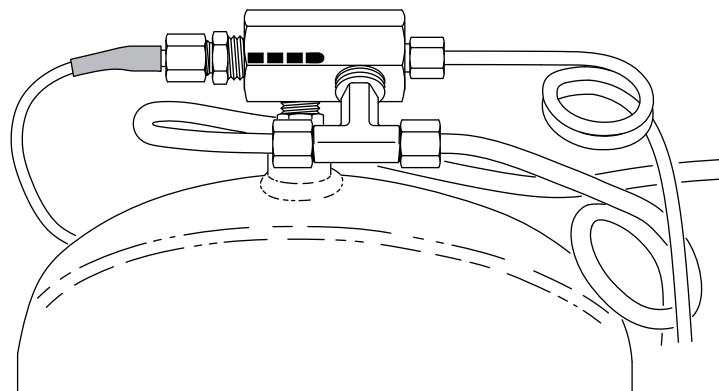
FIGURE 7 - Compression Nut and Ferrule



- 7) Insert the new Temperature Sensor assembly into the manifold located in the back of the chamber. When positioning the Temperature Sensor in the manifold, ensure that the tip of the sensor is directed up to but not past the center of the manifold. See **Figure 8**. Secure the Temperature Sensor in place by tightening the compression fitting.

FIGURE 8 - Temperature Sensor Placement

Insert the new Temperature Sensor assembly into the manifold. Ensure that the tip of the sensor is directed up to but not past the center of the manifold.



Calibration Instructions (See Figure 5, page 12 for initial setup)

This procedure needs to be done anytime the PT100 Temperature Sensor is replaced.

- 1) Connect the Test Point Board (RPI Part #TUB109) using the Ribbon Cable (RPI Part #TUC117) to the JP14 connector located on the front of the AJUNC 3 Board.
- 2) Connect the Simulator (PT100) (RPI Part #TUT114) to the JP11 connector using either Harness No. 1 (RPI Part #TUH111), No. 2 (RPI Part #TUH112), or No. 3 (RPI Part #TUH113) depending on the sterilizer model number.
- 3) On the simulator, select 32°F (0°C).
- 4) Connect the negative probe of a voltmeter to TP25 and the positive probe to TP26 on the Test Point Board.
- 5) Plug the sterilizer into the electrical source and turn the sterilizer power on.
- 6) Using the Trim Pot Adjustment Tool (RPI Part #RPT460), adjust Pot 4 on the AJUNC 3 Board so the voltmeter reads -5.1 mv DC (negative 5.1 mv DC). (Note: If Pot 4 cannot be adjusted to -5.1 mv then replace the AJUNC 3 Board.)
- 7) On the Simulator, select 273°F (134°C).
- 8) Connect the negative probe of the voltmeter to TP1 and the positive probe to TP7 on the Test Point Board.
- 9) Using the Trim Pot Adjustment Tool, adjust Pot 5 on the AJUNC 3 Board so the voltmeter reads +2.385 volts DC. (Note: If Pot 5 cannot be adjusted to 2.385 volts DC then replace the AJUNC 3 Board.)

Final Check

- 1) Turn the sterilizer power off and unplug the unit from the electrical source.
- 2) Disconnect the Ribbon Cable and the Test Point Board from the AJUNC 3 Board.
- 3) Route the new Temperature Sensor cable to the back of the AJUNC 3 Board making sure to keep it well away from the chamber. Plug the Temperature Sensor connector onto the JP11 located on the back of the AJUNC 3 Board.
- 4) Place a shaken-down Max Register Thermometer (RPI Part #RPT113) into the tray inside the sterilizer. **Note:** See page 11 for Max Register Thermometer (RPI Part #RPT113) Usage Instructions.
- 5) Close the sterilizer door and start an unwrapped cycle.
- 6) Check the fittings at the manifold mounted on the back of the chamber for steam leaks. Tighten the fittings if necessary.
- 7) Note the maximum temperature that is displayed on the sterilizer's front display panel during the run.
- 8) Verify that the maximum temperature displayed is equal to the maximum temperature registered on the thermometer.
- 9) Turn the sterilizer power off and unplug the unit from the electrical source.
- 10) Replace the top cover and install any removed hardware.
- 11) Retest the final assembly repair by running an additional cycle before returning the sterilizer to service.

EXHIBIT A
AJUNC 2 BOARD (SOFTWARE VERSION UP TO T96DNI)

TEST POINT	FUNCTION/PART	VALUE
TP1	GROUND	
TP2	ZERO PRESSURE REFERENCE	
TP3	ZERO PRESSURE ADJ	0.0 VOLTS
TP4	ANALOG PRESSURE ADJ	0 TO 2.5 V = 0 TO 2.7 BAR
TP5	ANALOG TEMPERATURE	
TP6	WATER FILL ELECTRODE	0 TO 1V = NO WATER 3.5 TO 5 V = WATER IN CHAMBER
TP7	-----	-----
TP8	FLOAT SWITCH	3.5 TO 5 V = NO WATER 0 TO 1 V = WATER IN RESERVOIR
TP9	DOOR SWITCH	3.5 TO 5 V = DOOR OPEN 0 TO 1 V = DOOR CLOSED
TP10	WATER FILL VALVE	10.5 TO 12 V = CLOSED 0 TO 1 V = OPEN
TP 11	EXHAUST VALVE	10.5 TO 12 V = CLOSED 0 TO 1 V = OPEN
TP12	HEATER CONTROL	3.5 TO 5 V = NO HEAT 0 TO 1 V = HEAT
TP13	FAN CONTROL	0 TO 1 V = ON 10.5 TO 12 V = OFF
TP14	AIR OUTLET VALVE	0 TO 1 V = ON 3.5 TO 5 V = OFF
TP15	VEE	+12 V
TP16	-----	-----
TP17	VCC	+5 V
TP18	DRY VALVE AND DRY PUMP	0 TO 1 V = ON 3.5 TO 5 V = OFF
TP19 - TP23	-----	-----

EXHIBIT B
ANL-T2 BOARD

TEST POINT	FUNCTION/PART	VALUE	
TP1	GND		
TP2	+5 V DC		
TP3	+12 V DC		
TP4	OUTPUT	HEATERS	0 V = OFF; 5 V = ON
TP5	OUTPUT	VACUUM PUMP	0 V = OFF; 5 V = ON
TP6		-----	-----
TP7	OUTPUT	AIR INLET VALVE (43)	0 V = CLOSE; 5 V = OPEN
TP8	OUTPUT	VACUUM VALVE (52)	0 V = CLOSE; 5 V = OPEN
TP9	OUTPUT	MINERAL FREE WATER TO RESERVOIR (21)	0 V = OFF; 5 V = ON
TP10	OUTPUT	WATER TO VAC PUMP (15)	0 V = OFF; 5 V = ON
TP11		-----	-----
TP12	OUTPUT	STEAM TO CHAMBER (93)	0 V = CLOSE; 5 V = OPEN
TP13	OUTPUT	SLOW EXHAUST (74)	0 V = CLOSE; 5 V = OPEN
TP14	OUTPUT	DRAIN COOLING WATER (13)	0 V = OFF; 5 V = ON
TP15	OUTPUT	WATER TO VAC PUMP RES. (14)	0 V = OFF; 5 V = ON
TP16	OUTPUT	FAST EXHAUST (73)	0 V = CLOSE; 5 V = OPEN
TP17	OUTPUT	WATER PUMP	0 V = OFF; 5 V = ON
TP18 - 20		-----	-----
TP21	INPUT	TEMPERATURE-1 (PT100)	273 F = 1.97 V
TP22	INPUT	JACKET PRESSURE	29.4 PSI = 2.031 V
TP23		-----	-----
TP24	INPUT	CHAMBER PRESSURE	29.4 PSI = 2.031 V
TP25	INPUT	LOW WATER ELECTRODE	0 V = SATISFIED 2.5 V = NOT SATISFIED
TP256	INPUT	HIGH WATER ELECTRODE	0 V = SATISFIED 2.5 V = NOT SATISFIED

EXHIBIT C**AJUNC 3 BOARD (SOFTWARE VERSION UP TO T97DN6)**

TEST POINT	FUNCTION/PART	VALUE
TP1	GROUND	
TP2 & TP3	-----	-----
TP4	ANALOG PRESSURE ADJ	500 MV
TP5	-----	-----
TP6	WATER FILL ELECTRODE	0 TO 1 V = NO WATER 3.5 TO 5 V = WATER IN CHAMBER
TP7	PT100 OUTPUT	151.4 Ω = 2.385 V
TP8	FLOAT SWITCH	3.5 TO 5 V = NO WATER 0 TO 1 V = WATER IN RESERVOIR
TP9	DOOR SWITCH	3.5 TO 5 V = DOOR OPEN 0 TO 1 V = DOOR CLOSED
TP10	WATER FILL VALVE	10.5 TO 12 V = CLOSED 0 TO 1V = OPEN
TP 11	EXHAUST VALVE	10.5 TO 12 V = CLOSED 0 TO 1 V = OPEN
TP12	HEATER CONTROL	3.5 TO 5 V = NO HEAT 0 TO 1 V = HEAT
TP13	FAN CONTROL	0 TO 1 V = ON 10.5 TO 12 V = OFF
TP14	AIR OUTLET VALVE	0 TO 1 V = ON 3.5 TO 5 V = OFF
TP15	VEE	+12 V
TP16	-----	-----
TP17	VCC	+5 V
TP18 & TP19	-----	-----
TP20	DRY VALVE & DRY PUMP	0 TO 1 V = ON 3.5 TO 5 V = OFF
TP21	-----	-----
TP22	SAFETY THERMOSTAT	0 TO 1 V = CLOSED CIRCUIT 3.5 TO 5 V = OPEN CIRCUIT
TP23 & TP24	-----	-----
TP25	PT100 ZERO TEMP ADJ	100 Ω = -5.1 MV
TP 26	PT100 ZERO TEMP ADJ	100 Ω = -5.1 MV

EXHIBIT D**AJUNC 3 BOARD (SOFTWARE VERSION T97DN7WP AND BEYOND)**

TEST POINT	FUNCTION/PART	VALUE
TP1	GROUND	
TP2 & TP3	-----	-----
TP4	ANALOG PRESSURE ADJ	500 MV
TP5	-----	-----
TP6	WATER FILL ELECTRODE	0 TO 1 V = NO WATER 3.5 TO 5 V = WATER IN CHAMBER
TP7	PT100 OUTPUT	151.4 Ω = 2.385 V
TP8	FLOAT SWITCH	3.5 TO 5 V = NO WATER 0 TO 1 V = WATER IN RESERVOIR
TP9	DOOR SWITCH	3.5 TO 5 V = DOOR OPEN 0 TO 1 V = DOOR CLOSED
TP10	WATER FILL VALVE	10.5 TO 12 V = CLOSED 0 TO 1 V = OPEN
TP 11	EXHAUST VALVE	10.5 TO 12 V = CLOSED 0 TO 1 V = OPEN
TP12	HEATER CONTROL	3.5 TO 5 V = NO HEAT 0 TO 1 V = HEAT
TP13	WATER PUMP CONTROL	0 TO 1 V = ON 10.5 TO 12 V = OFF
TP14	AIR OUTLET VALVE	0 TO 1 V = ON 3.5 TO 5 V = OFF
TP15	VEE	+12 V
TP16	-----	-----
TP17	VCC	+5 V
TP18 & TP19	-----	-----
TP20	DRY VALVE & DRY PUMP	0 TO 1 V = ON 3.5 TO 5 V = OFF
TP21	-----	-----
TP22	SAFETY THERMOSTAT	0 TO 1 V = CLOSED CIRCUIT 3.5 TO 5 V = OPEN CIRCUIT
TP23 & TP24	-----	-----
TP25	PT100 ZERO TEMP ADJ	100 Ω = -5.1 MV
TP 26	PT100 ZERO TEMP ADJ	100 Ω = -5.1 MV



*Parts mentioned in this booklet and on the case label are manufactured by Replacement Parts Industries, Inc. to fit Tuttnauer® equipment.
All product names used in this document and on the case label are trademarks or registered trademarks of their respective holders. All rights reserved © RPI 2010.*