
TROUBLESHOOTING

Problem	Possible Causes	Corrective Action
Repeated element burnout.	Overheating furnace. Control malfunction. Incorrect element. Oxidized thermocouple leading to inaccurate reading. Wired improperly.	Keep furnace under maximum temperature. Closer supervision of control setting. Replace control. Install proper element. Replace thermocouple. Check wiring diagram for correct wiring of your furnace.
Inaccurate temperature readout.	Oxidized or contaminated thermocouple. Poor thermocouple connection. Improper loading procedures. Poor ventilation of base. Thermocouple connections reversed. *Static charge on pyrometer case, breathing on cover, Control out of calibration. P.I.D. values invalid. Control malfunction.	Replace thermocouple. Tighten connections. Use proper loading procedures. Clear area around furnace base. Reconnect thermocouple correctly. Dispel static charge by treat for static charge. Contact Barnstead International Re-tune control. Verify and correct all parameter and configuration values. If "malfunction" persists, replace control.

*Applies to the manual temperature control models.

Maintenance and Servicing

Maintenance and Servicing

To Replace Vestibule End Caps

- a. Disconnect furnace from power supply.
- b. Remove the metal end cap.
- c. Remove old vestibule. Insert the new vestibule, aligning the two holes in the vestibule with the holes on the bracket.
- d. Before pushing the metal end caps back onto the chamber, insert the two screws through the holes in the metal end cap and vestibule. Then, start the two screws into the holes in the bracket two or three turns, push the metal end cap onto the chamber and finish tightening the two screws.
- e. Reconnect furnace to power supply.



Note

Perform only maintenance described in this manual. Contact an authorized dealer or our factory for parts and assistance.

To Replace Heating Element

- a. Disconnect furnace from power supply.
- b. Disconnect the cord from furnace chamber to control base. Identify the color and placement of the thermocouple extension wires and disconnect from control base.
- c. Remove furnace chamber from the bracket.
- d. Remove both end caps and vestibules of furnace chamber.
- e. Remove terminal plate with four screws to expose wiring. (Note placement and connection of thermocouple and element wires.)
- f. Remove two element lead wires from terminal block. Also, remove thermocouple by removing two screws on terminal block then pulling it straight back.
- g. Remove the four screws that secure heating element tube inside the case, then slide out the old heating element tube.
- h. Insert new heating element tube and thread each element lead wire through the brass bushings.
- i. Secure heating element tube to case.
- j. Reinstall thermocouple and connect thermocouple and new element lead wires to terminal block.
- k. Replace terminal plate.
- l. Insert the screw on the terminal plate through the mounting bracket and secure with knob.
- m. Replace both end caps and vestibules.
- n. Reconnect power cord from furnace chamber to control base.
- o. Reconnect thermocouple extension wires to control base

- terminal block. Looking from the rear of the furnace, reconnect the red wire to the terminal on the far right side of the block. The yellow wire connects to the terminal second from the right side of the terminal block.
- p. Reconnect furnace to power supply.
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To Replace Pyrometer (Manual Control Models)

- a. Disconnect furnace from power supply.
 - b. Remove furnace chamber from control base.
 - c. Turn control base upside down and remove bottom cover.
 - d. Remove black and red wires from terminal block on back of unit.
 - e. Remove pyrometer from dial plate of control base.
 - f. Insert new pyrometer and secure to dial plate.
 - g. Looking from the rear of the furnace, reconnect red thermocouple extension wire to the terminal on the far right side of the terminal block. Reconnect black thermocouple extension wire to the terminal second from the right side of the terminal block.
 - h. Replace bottom cover.
 - i. Turn control base upright and secure furnace chamber to it.
 - j. Reconnect furnace to power supply.
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To Replace Manual Temperature Control Switch

- a. Disconnect furnace from power supply.
- b. Remove furnace chamber from control base.
- c. Turn control base upside down and remove bottom cover.
- d. Remove control knob with two Allen set screws.
- e. Remove two screws by pulling straight out.
- f. Disconnect wires from control. Identify or mark wires disconnected from control to insure proper placement and connection when reinstalling. Remove defective control.
- g. Looking from the rear of the furnace, insert new control with the H₁ (vertical lead) and H₂ (horizontal lead) leads on top and secure to dial plate.
- h. Replace knob by sliding knob over shaft.
- i. Reconnect the wires identified or marked in Step (f) to new control.
- j. Replace bottom cover.
- k. Turn control base upright and secure furnace chamber to it.
- l. Reconnect furnace to power supply.

MAINTENANCE AND SERVICING

To Replace Furnace Chamber

- a. Disconnect furnace from power supply.
 - b. Remove black knob holding furnace chamber to bracket and remove furnace chamber.
 - c. Remove terminal plate on back of furnace chamber.
(Note placement and connection of wires.)
 - d. Disconnect thermocouple extension wires and power cord from terminal block.
 - e. Remove back terminal plate on new furnace chamber.
 - f. Insert power cord and thermocouple extension wires through their proper holes in the bracket on the new furnace chamber. (See Figure 2 for placement and connection of wires.)
 - g. Replace back terminal plate.
 - h. Insert screw on back terminal plate through bracket slot and secure with knob.
 - i. Reconnect furnace to power supply.
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To Replace Type K (Chromel/Alumel) Thermocouple (Manual Control Models)

- a. Disconnect furnace from power supply.
- b. Remove knob that holds furnace chamber to the bracket and remove the furnace chamber.
- c. Remove terminal plate on back of furnace chamber.
- d. Remove two screws that secure the old thermocouple and remove thermocouple by pulling straight back.
- e. Insert the new thermocouple until tip extends approximately 1/4" into the heating chamber. Connect the lead marked (+) on insulator of thermocouple to the terminal across from yellow thermocouple extension wire, and fasten the other thermocouple lead (-) to the remaining terminal. (See Figure 2.)
(A polarity test of the lead wire is easily made with the use of a magnet. On chromel/alumel thermocouples and extension wires, the non-magnetic wire is positive (+) and the magnetic wire is negative (-).)
- f. Replace terminal plate.
- g. Insert the screw on the terminal plate through the mounting bracket and secure with knob.
- h. Reconnect furnace to power supply.

To Replace Type Platinel II Thermocouple (Single Set Point Control Models)

- a. Disconnect furnace from power supply.
- b. Remove knob that holds furnace chamber to the bracket and remove the furnace chamber.
- c. Remove terminal plate on back of furnace chamber.
- d. Remove two screws that secure the old thermocouple and remove thermocouple by pulling straight back.
- e. Insert the new thermocouple until tip extends approximately 1/4" into heating chamber.
- f. Connect the blue and yellow beaded thermocouple lead to the terminal across from yellow thermocouple extension wire and the other thermocouple lead to the remaining terminal. (See figure 2)
- g. Insert the screw on the terminal plate through the mounting bracket and secure with knob.
- h. Reconnect furnace to power supply.

MAINTENANCE AND SERVICING

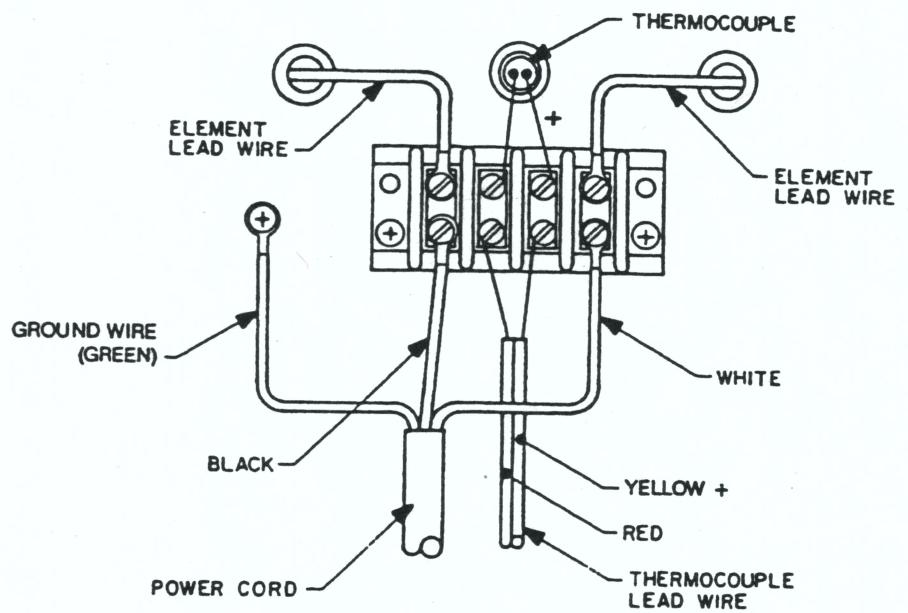


Figure 2 All Models

Replacement Parts List

Replacement Parts List Series 1259

Part Number	Description	Model Number
EL211X1B	120V Element	F21125, F21135
EL211X2B	230V Element	F21120, F21130, F21130-33, F21120-33
TC211X1A	Thermocouple, Chromel/Alumel	All Manual Control Models
TC662X1A	Thermocouple, Platinel II	All Electronic SSP Models
CN71X105	Electronic SSP Control	All Electronic SSP Models
CNX60	Manual Control	F21125
CNX61	Manual Control	F21120, F21120-33
ME1260X1	Pyrometer	F21120, F21120-33, F21125
RYX34	Solid State Relay	F21130, F21130-33, F21135
440-0020	Fuse, Type ABC, 250V, 8 Amp	F21120, F21120-33, F21130, F21130-33
2-58147 Fuse, 15 Amp	F21125, F21135	
SWX143	Main Power Switch	F21125, F21135
SWX144	Main Power Switch	F21120, F21120-33, F21130, F21130-33
CAX44	Filter, EMI	F21130-33, F21120-33
CS1260X4	Furnace Chamber Complete, 240V	F21120, F21120-33, F21130, F21130-33
CS1260X3	Furnace Chamber Complete, 120V	F21125, F21135

Ordering Procedures

Ordering Procedures

Please refer to the Specification Plate for the complete model number, serial number, and series number when requesting service, replacement parts or in any correspondence concerning this unit.

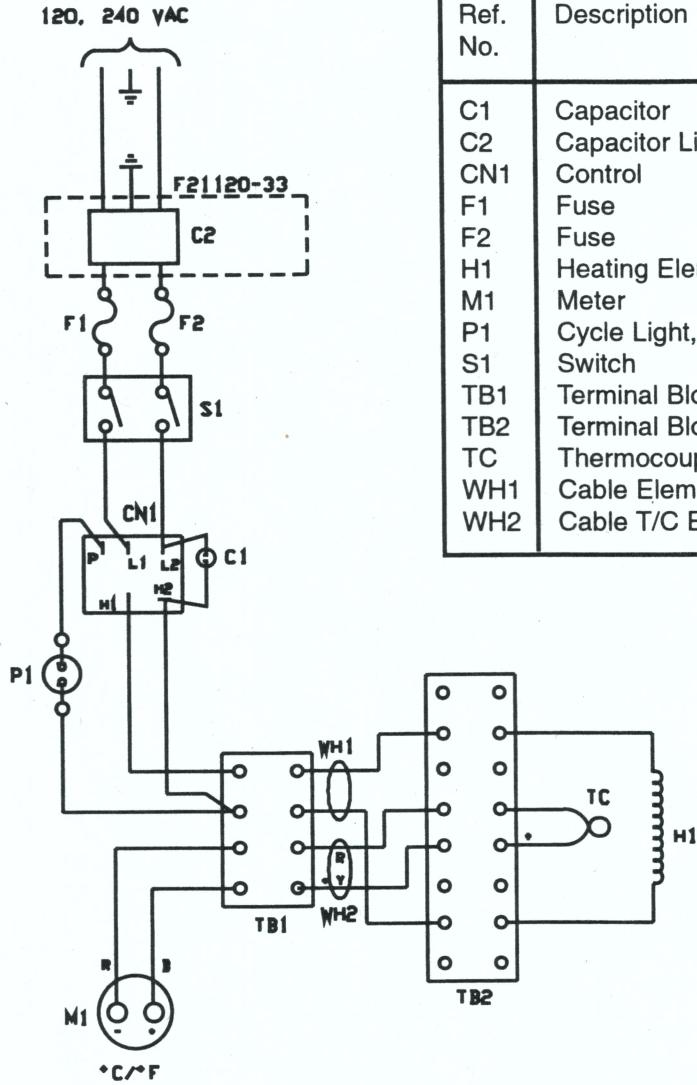
All parts listed herein may be ordered from the **Barnstead International** dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed we ask that you check first with your dealer. If the dealer cannot handle your request, then contact our Customer Service Department at 563-556-2241 or 800-553-0039.

Prior to returning any materials to **Barnstead International**, please contact our Customer Service Department for a "Return Materials Authorization" number (RMA). Material returned without a RMA number will be refused.

Wiring Diagrams

Diagram Component List

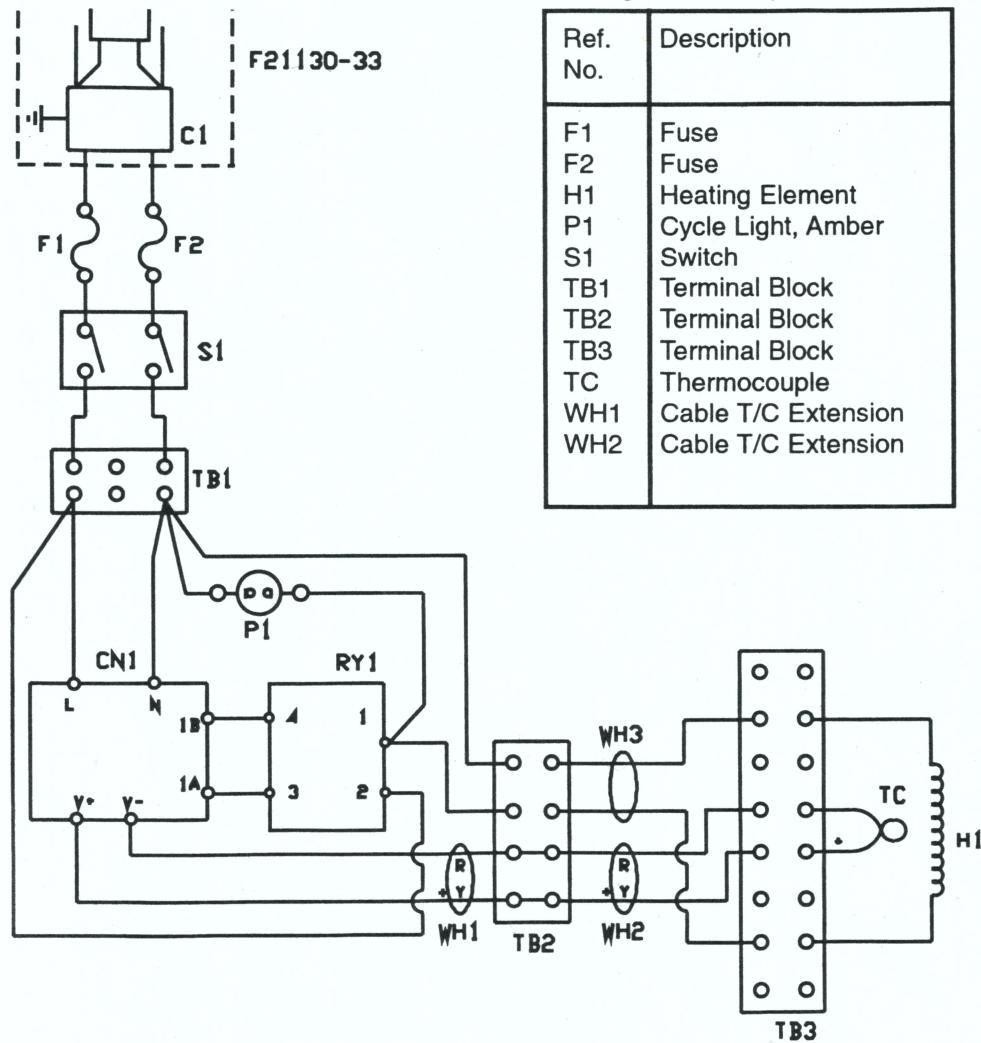
Ref. No.	Description
C1	Capacitor
C2	Capacitor Line Filter
CN1	Control
F1	Fuse
F2	Fuse
H1	Heating Element
M1	Meter
P1	Cycle Light, Amber
S1	Switch
TB1	Terminal Block
TB2	Terminal Block
TC	Thermocouple
WH1	Cable Element Power
WH2	Cable T/C Extension



Wiring Diagram for Models F21120, F21120-33, F21125

Diagram Component List

Ref. No.	Description
F1	Fuse
F2	Fuse
H1	Heating Element
P1	Cycle Light, Amber
S1	Switch
TB1	Terminal Block
TB2	Terminal Block
TB3	Terminal Block
TC	Thermocouple
WH1	Cable T/C Extension
WH2	Cable T/C Extension



Wiring Diagram for Models F21130, F21130-33, F21135