

20:1 Brewer Operation and Service Manual



| Model | Height | Width | Depth | US 120 V | Canada 120 V | 240 V |
|-------|---------|-------|--------|----------|--------------|-------|
| NB-LD | 17-7/8 | 8-1/2 | 19-1/4 | 14.6A | 11.7A | 14.6A |
| NB-TD | 24-3/16 | 8-1/2 | 19-1/4 | 14.6A | 11.7A | 14.6A |

20:1 INSTALLATION / SETUP INSTRUCTIONS

WARNING: - Read and follow installation / setup instructions before plugging or wiring in machine to electrical circuit. Warranty will be void if machine is connected to any voltage other than that specified on the name plate.

Plumber's Installation Instructions

- 1) Plumb brewer in to water supply using 1/4 inch copper tubing. Flush water line before installing brewer to remove sediment. Brewer should be connected to COLD WATER LINE for best operation.
- 2) Water pressure should be at least 20 lbs. For less than a 25 ft run, use 1/4" tubing and connect to 1/2" or larger water line. The inlet water fitting on the back of the brewer is a 1/4" flare fitting.
- 3) If installed with saddle valve, the valve should have a minimum of 1/8" port hole for up to 25 ft run, and 5/16" port hole for over 25 ft runs.
- 4) Check for leaks.

Initial Setup Instructions

Ensure power switch on right rear of unit is in the off position. Plug or wire brewer to the appropriate voltage circuit as indicated on the serial tag. Turn power switch to the on position. Brewer tank will begin to fill. Once the tank is full the brewer will begin to heat. Ready light will come on to indicate tank has finished heating.

CAUTION: The water faucet will dispense hot water anytime the handle is pulled.

Programming

The brewer has two program modes, service mode and user mode. The service mode is used to establish basic operating parameters of the unit while the user mode allows the three buttons to be programmed for brewing into various containers or for varying beverage volumes. Programming mode is initiated as outlined below. The following will outline the various steps as displayed by the programming "screens". The screens will loop continuously until exiting the mode.

Service Mode is entered by holding any two of the buttons on the face of the machine while powering up the brewer. The brewer firmware revision number is displayed for a couple of seconds when entering this mode. The table below list the items that may be programmed along with available values or settings. Use the center brew button to advance through the items and the left and right button to decrement or increment the values/selection respectively. These items are programmed at the factory and will typically not need adjustment.

| Item Selected | Screen Example | Values Available | Comment |
|------------------------------------------|----------------|------------------|-------------------------------------------------------------------------------------------------------|
| Water Temperature | 200 | 170-205 | Degrees F |
| End of Cycle Beeper | On | On, OFF | Used to audibly indicate brew cycle has completed with a series of beeps. |
| Brew Pump Speed | b:05 | 1-10 | Pump speed used for brewing |
| Not Used | F:05 | 1-10 | No effect. Unused feature. |
| Pump Calibration | CAL | N/A | See instructions below. Must be done if pump speed modified. |
| Volume Delivered During Calibration Step | 39.0 | 16.0-99.9 | Ounces. Only displays if calibration cycle was run. |
| Water Fill Flow Rate | 0.30 | Off, 0.20-1.40 | Adjustable in increments of .05 GPM. Should match flow rate through valve. |
| Water Filter Capacity | 100 | Off, 500-2000 | In tens of gallons. 50=500 gallons. Increments are 500 gallons. |
| Power Mode | nor | nor, SAV, dn | Normal, Power Down, or Power Save. |
| Power Down/Save Time | 4:00 | 0:30-4:00 | Hours:Minutes from last brew until brewer enters the selected power mode. No effect if mode is "Off". |
| Brew Counter | 0-999 | N/A | Shows number of brew cycles since last reset (up to 999). |
| Service Data | Srv | N/A | Used to view temperature & probe data. See Service Data below. |
| Exit | End | N/A | Use left or right button when displayed to exit this mode. |

Pump calibration is necessary when the pump speed is changed or if the brewer is delivering substantially more or less beverage than what it has been programmed for in the user mode. Pump speed may be adjusted up or down if required to deliver water at a faster or slower rate to meet a specific beverage taste profile. Calibration tells the brewer control how much hot water is delivered within a specific time frame so it can adjust the time required to run to deliver the desired brew volumes.

Ensure the brew basket is in place. Place a suitably graduated container in place below the brew basket to capture and measure the water delivered. To calibrate, enter the service mode as noted above and advance to the “CAL” screen. Press either the left or right brew button and water delivery will begin. If the brewer has not reached operating temperature, it will finish heating before automatically starting. The pump will cycle on and off for approximately 2 minutes at which time the currently programmed volume is displayed. Use the left and right button to decrement or increment the value to the measured value. For better accuracy, you may want to measure a couple of cycles and average the measured values. Note that user mode will be entered automatically when exiting the service mode if calibration values have been changed.

Service Data consist of the tank temperature as measured at two points in the tank and an indication as to which probe(s) are making contact with the water. To view data, enter the service mode as noted above and advance to the “Srv” screen. Use the left or right button to enter service data mode. Use the center button to advance through the data. The table below list the data that is displayed.

| Data displayed | Screen Example | Values Available | Comment |
|-------------------|----------------|------------------|------------------------------------------------------------------|
| Lower Temperature | 198 | N/A | Degrees F |
| Upper Temperature | 20`0 | N/A | Degrees F |
| Probes | 1:UL | U,L,UL | Displays probes in contact with the water; Upper, Lower or Both. |
| Exit | End | N/A | Use left or right button when displayed to exit this mode. |

User Mode is entered by holding any of the buttons on the face of the machine while powering up the brewer. Note that the user mode is also automatically entered whenever the calibration volume setting is changed. The beverage volume, brew time, and visa-brew time can be programmed for each of the three buttons on the face of the brewer. The brewer will determine the minimum brew time possible based on pump speed and calibration values as outlined previously. This time is set as the default whenever calibration values are changed. The brew time can be extended to lengthen the water delivery time to meet a specific beverage taste profile. The table below list the data displayed and values available.

| Data displayed | Screen Example | Values Available | Comment |
|------------------|----------------|------------------|--------------------------------------------------------------------------------------------------------|
| Brew 1 Settings | b1 | N/A | Displays briefly to indicate that the parameters are for brew button 1 (left) |
| Brew 1 Volume | 64 | Off, 30-128 | Ounces. Button can be turned off and will serve as cancel only. |
| Brew 1 Time | 3:30 | Min-9:59 | Calculated minimum to 9 minutes and 59 seconds. |
| Visa-brew 1 Time | 0:30 | 0:00-4:00 | Set to allow for beverage to finish dripping from basket after water delivery time has been completed. |
| Brew 2 Settings | b2 | N/A | Displays briefly to indicate that the parameters are for brew button 2 (center) |
| Brew 2 Volume | 64 | Off, 30-128 | Ounces. Button can be turned off and will serve as cancel only. |
| Brew 2 Time | 3:30 | Min-9:59 | Calculated minimum to 9 minutes and 59 seconds. |
| Visa-brew 2 Time | 0:30 | 0:00-4:00 | Set to allow for beverage to finish dripping from basket after water delivery time has been completed. |
| Brew 3 Settings | b1 | N/A | Displays briefly to indicate that the parameters are for brew button 3 (right) |
| Brew 3 Volume | 64 | Off, 30-128 | Ounces. Button can be turned off and will serve as cancel only. |
| Brew 3 Time | 3:30 | Min-9:59 | Calculated minimum to 9 minutes and 59 seconds. |
| Visa-brew 3 Time | 0:30 | 0:00-4:00 | Set to allow for beverage to finish dripping from basket after water delivery time has been completed. |
| Exit | End | N/A | Use left or right button when displayed to exit this mode. |

OPERATION INSTRUCTIONS

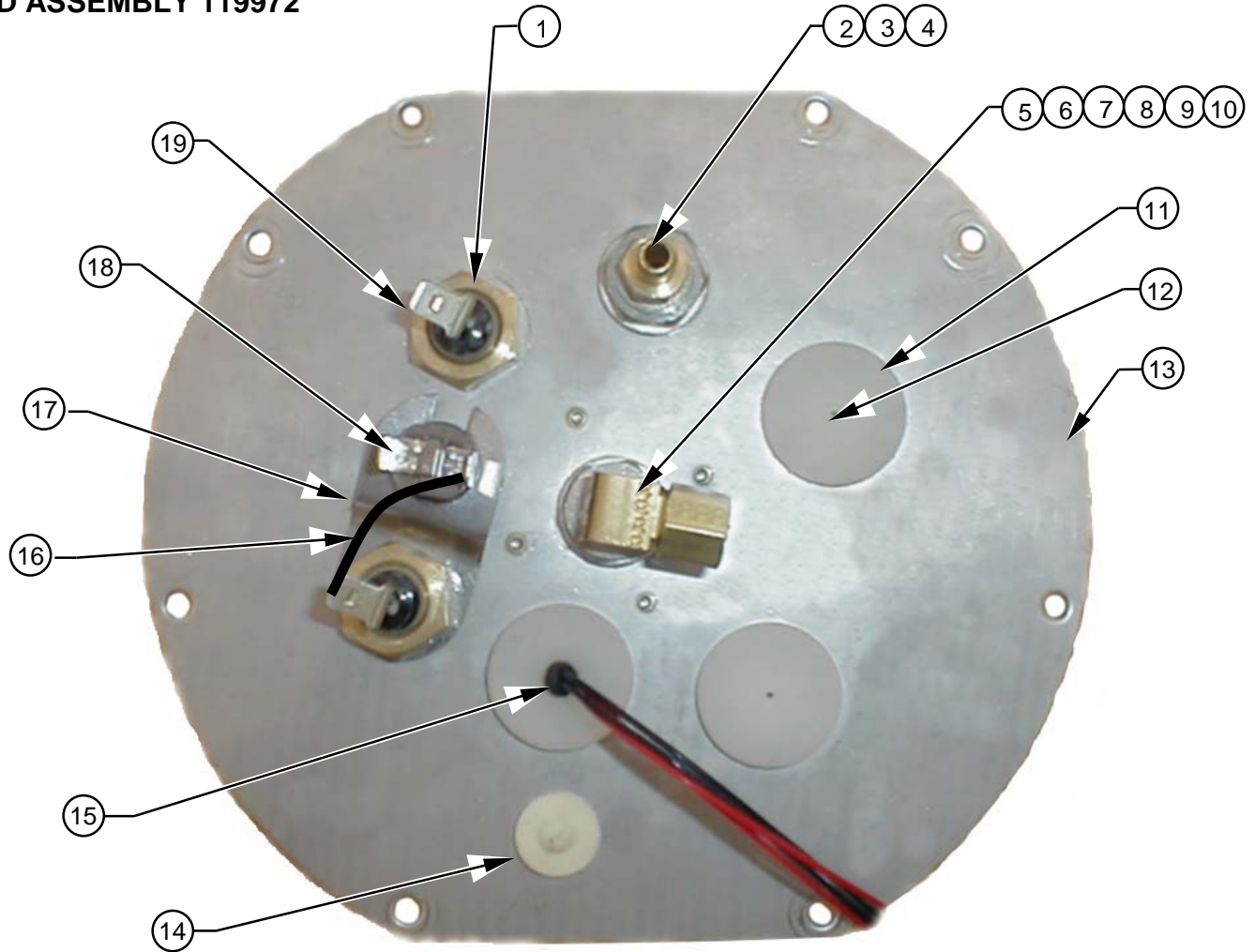
Coffee Preparation Procedures

- 1) Place filter into brew basket.
- 2) Put the proper amount of coffee into the filter.
- 3) Slide the brew basket into holder.
- 4) Place the appropriate empty decanter into position below the brew basket. For airpots first open lid and remove pump stem unless of a brew through design. For other dispensers remove the lid unless it is a brew through design.
- 5) Press the appropriate brew start switch. Note: a brew cycle may be initiated even if the heating light is on. The brewer features an autoarm circuit which will flash the heating light indicating that the brewer is heating and will begin to brew immediately after the heating cycle is complete. To over ride autoarm, hold in brew button until cycle starts (5 seconds).
- 6) Do not remove decanter. Brew cycle may be canceled by depressing any brew button or the cancel switch on the front control panel.
- 7) Hot water will be delivered through the sprayhead. This distributes the hot water evenly over the coffee bed within the brew basket. The coffee brew will drain from the brew basket into the decanter below.
- 8) The Brewing light should continue to flash until all the liquid has finished flowing from the brew basket. Do not remove decanter until the brewing process has stopped and all liquid has stopped flowing from the brewbasket.
- 9) The resultant coffee brew should be crystal clear and have the desired properties attainable through excellent extraction.
- 10) To clean brew basket simply remove from brew rails and dump filter into waste basket. The brewing process, as described above, can now be started again.

Error Messages

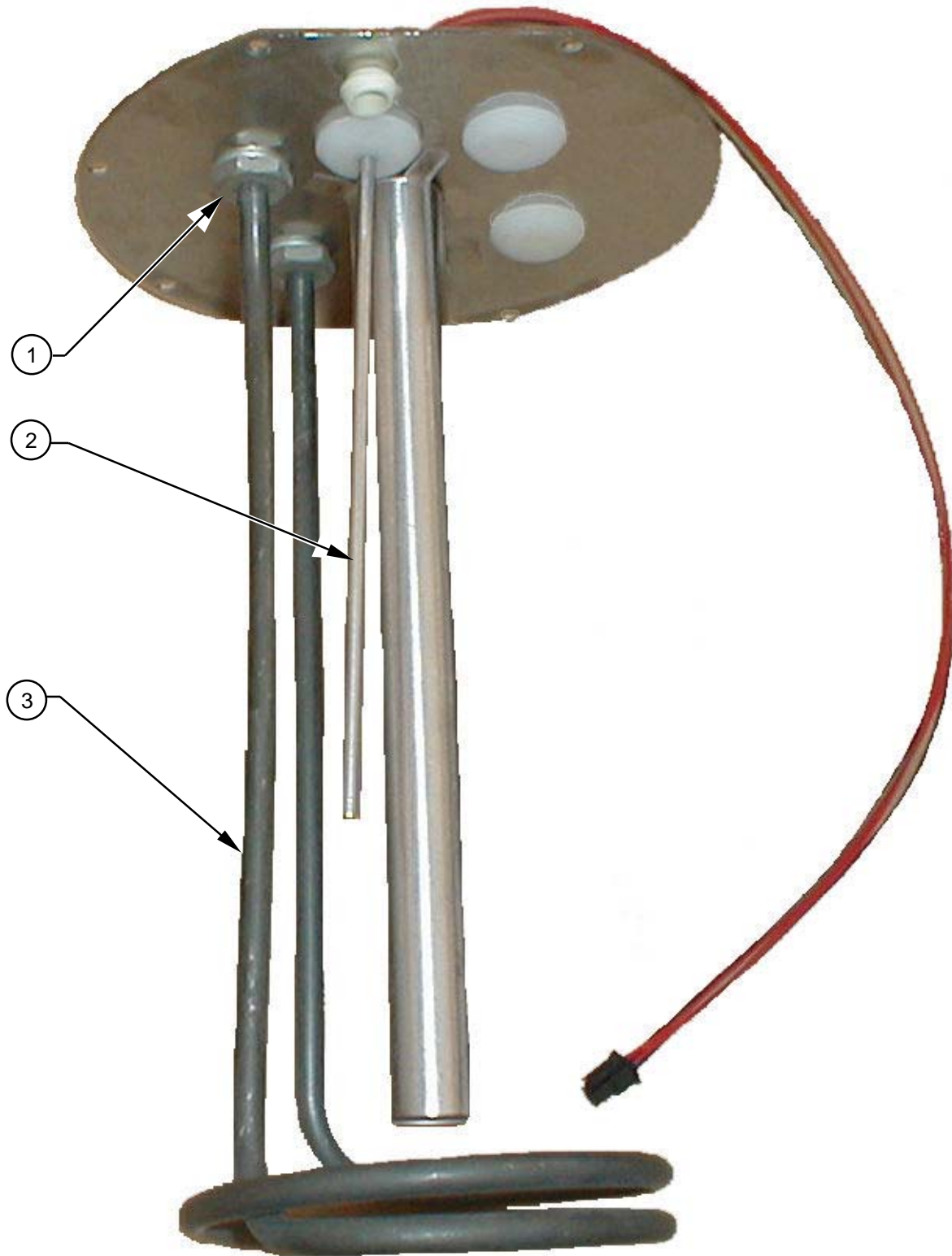
This brewer incorporates a number of self diagnostic test that are routinely run. If a fault condition should occur the unit will display an error number as outlined below. All errors may be reset by powering unit off and then back on. Errors E1 and E2 are auto-resttable and will clear themselves if the condition that caused them goes away. You may still brew, but call for service. E3 will disable heater but will allow brewing to take place. E4 and E-A must have power to unit cycled to clear them. E5 will force brewer to use its default settings for brewing. E7 and E8 will clear when a brew cycle is started. E9 will disable input from dsplay board. If error repeats, correct the cause of the error.

| Error Number | Description | Cause | What to Check |
|--------------|-------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| E1 | Open Thermistor | Resistance extremely high from upper or lower thermistor | Check/replace thermistor. |
| E2 | Shorted Thermistor | Resistance extremely low from upper or lower thermistor | Check/replace thermistor. |
| E3 | Heater Run Error | Water did not heat within timeout period | Check element for short and proper resistance. Replace if bad. |
| E4 | Tank Fill Error | Water did not reach probe in timeout period | Check valve function and flow rate. Replace valve or increase flow rate. Check probes for excess scale. |
| E5 | Comm Error | Serial communication error to/from non-volatile memory (EEPROM). | Replace main board. |
| E7 | Open Motor Circuit | Open motor circuit. Pump 0 or pump 1. | Check harness/motor continuity. Replace if defective. |
| E8 | Bad (Open) Motor Driver | Bad/open motor driver. Pump 0 or pump 1. | Replace main board. |
| E9 | SPI Comm Error | Serial communication error to/from display board. | Verify good connection in proper port. Try new display board. Try new main board. |
| E-A | Possible Leak Detected | Water system may have a leak. | Check all plumbing system components for possible leak. Look for water on counter. |
| Full | Filter Full | Water filter has reached capacity. | Replace filter. |

LID ASSEMBLY 119972

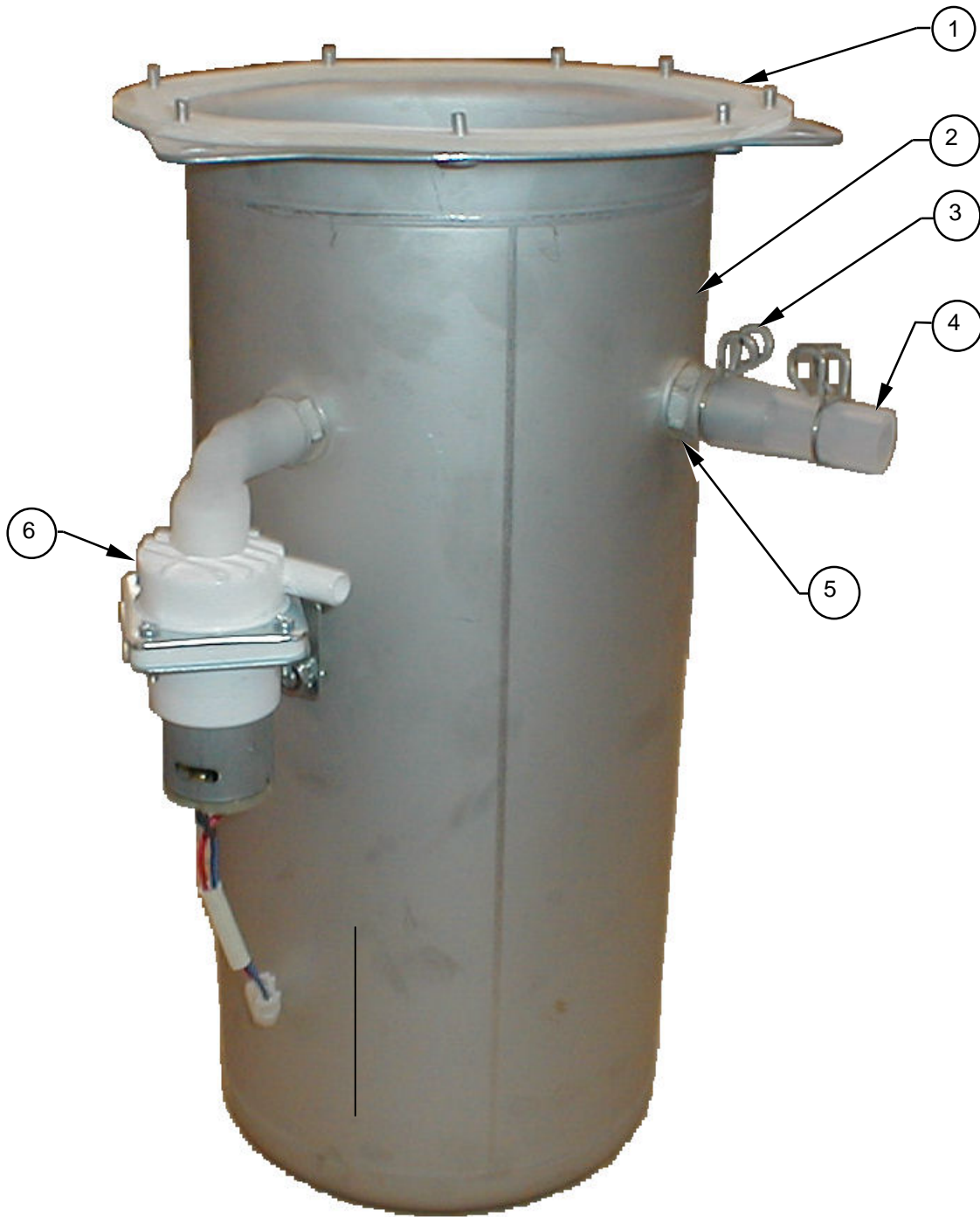
| Item # | Part # | Description | Qty |
|-------------|------------------------|----------------------------------|-----|
| 1 | 100190 | NUT, 1/2 -20 JAM, BRASS | 2 |
| 2 | 119997 | CONNECT, FM 3/8C x 1/8P, MOD | 1 |
| 3 | 119991 | FITTING, 1/8 PIPE x 1/4 BARB | 1 |
| 4 | 100030 | GASKET, BRS, .566 ID, TIN/PLTD | 2 |
| 5 | 100149 | ELBOW, MALE, 1/4 COMP x 1/8 | 1 |
| 5 Alternate | 100177 | ELBOW, MALE, 1/4 FLARE X 1/8 NPT | 1 |
| 6 | 100445 | TUBING, TEFLON, 3/16 ID | |
| 6 Alternate | 119836 | COPPER TUBE ASSEMBLY | 1 |
| 7 | 202044 | INSERT TUBING, 3/16 | 1 |
| 8 | 110946 | NUT, 1/4 SELF ALIGN | 1 |
| 9 | 110944 | SLEEVE, 1/4 SELF ALIGN | 1 |
| 10 | 101720 | CONNECT, FM 3/8C x 1/8P, TNPL | 1 |
| 11 | 102836 | GROMMET, SIL, NO SLIT | 3 |
| 12 | 119891 | PROBE SPTWLD | 2 |
| 13 | 119973 | LID, TANK, PUNCHED, NB | 1 |
| 14 | 152207 | PLUG, TANK CVR NATURAL SIL | 1 |
| 15 | 151677 | PROBE, TEMP, DUAL, 7.312, THERM | 1 |
| 16 | 152198 | 14GA, VIO/BLK, 4 TEF, 1S-1S | 1 |
| 17 | 100269 | BRACKET, HIGH LIMIT THERMO | 1 |
| 18 | 111593 | THERMO, MAN/RESET | 1 |
| 19 | 202025 | ELEMENT, TANK, 1750W, 120V | 1 |

LID ASSEMBLY 119972, CONTINUED



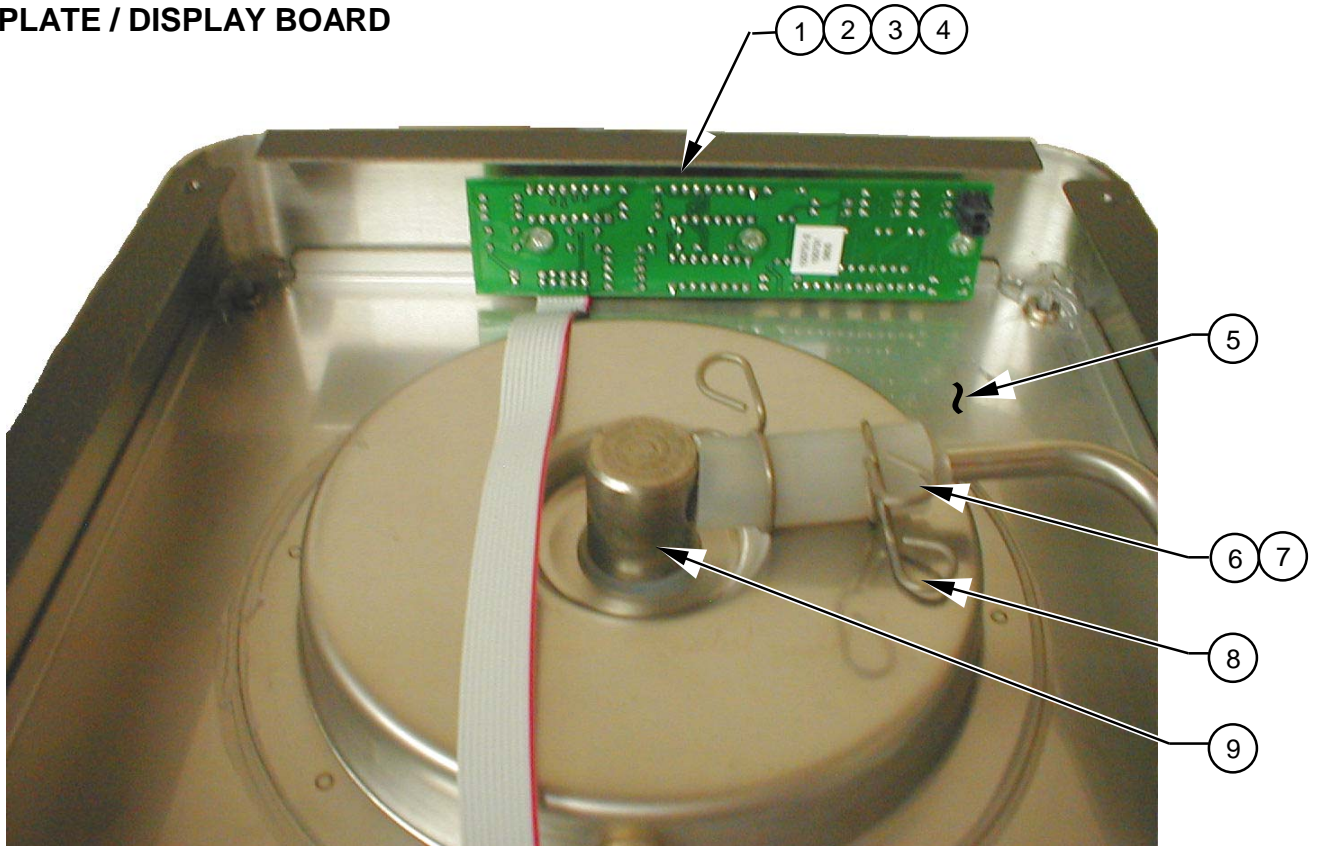
| Item # | Part # | Description | Qty |
|--------|------------------------|--------------------------------|-----|
| 1 | 100409 | GASKET, BRASS, .520ID, TN/PLT | 2 |
| 2 | 151677 | PROBE, TEMP, DUAL, 7,312 THERM | 1 |
| 3 | 202025 | ELEMENT, TANK, 1750W, 120V | 1 |

TANK



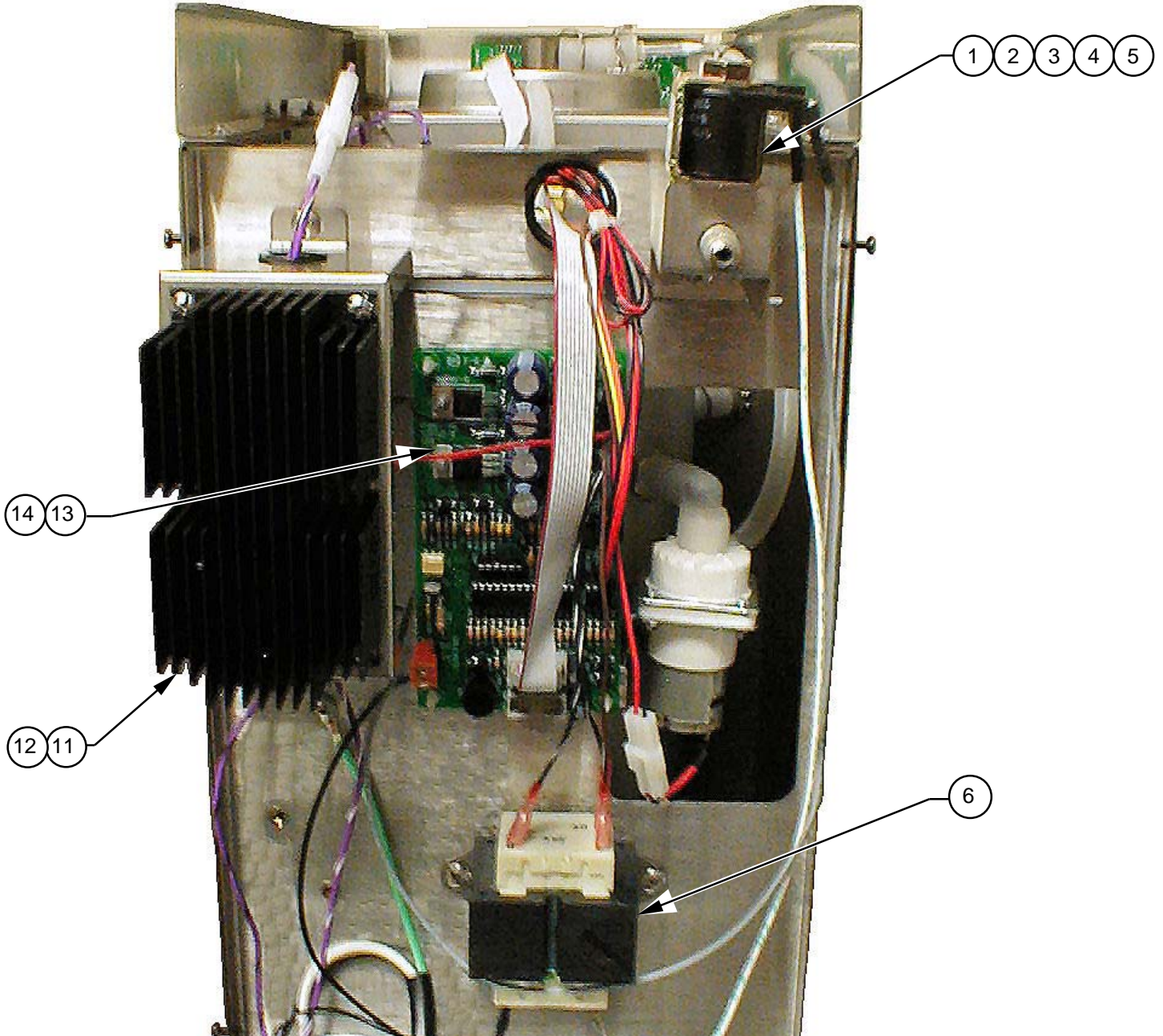
| Item # | Part # | Description | Qty |
|--------|------------------------|------------------------------|-----|
| 1 | 704221 | GASKET | 1 |
| 2 | 119971 | TANK, PUNCHED | 1 |
| 3 | 111635 | CLAMP, HOSE .574 ID | 2 |
| 4 | 152213 | TUBING, SIL, 3/8 ID x 5/8 OD | |
| 5 | 102835 | BULKHEAD, FAUCET | 2 |
| 6 | 781772 | PUMP, ASSY, WATER | 1 |

BREW PLATE / DISPLAY BOARD



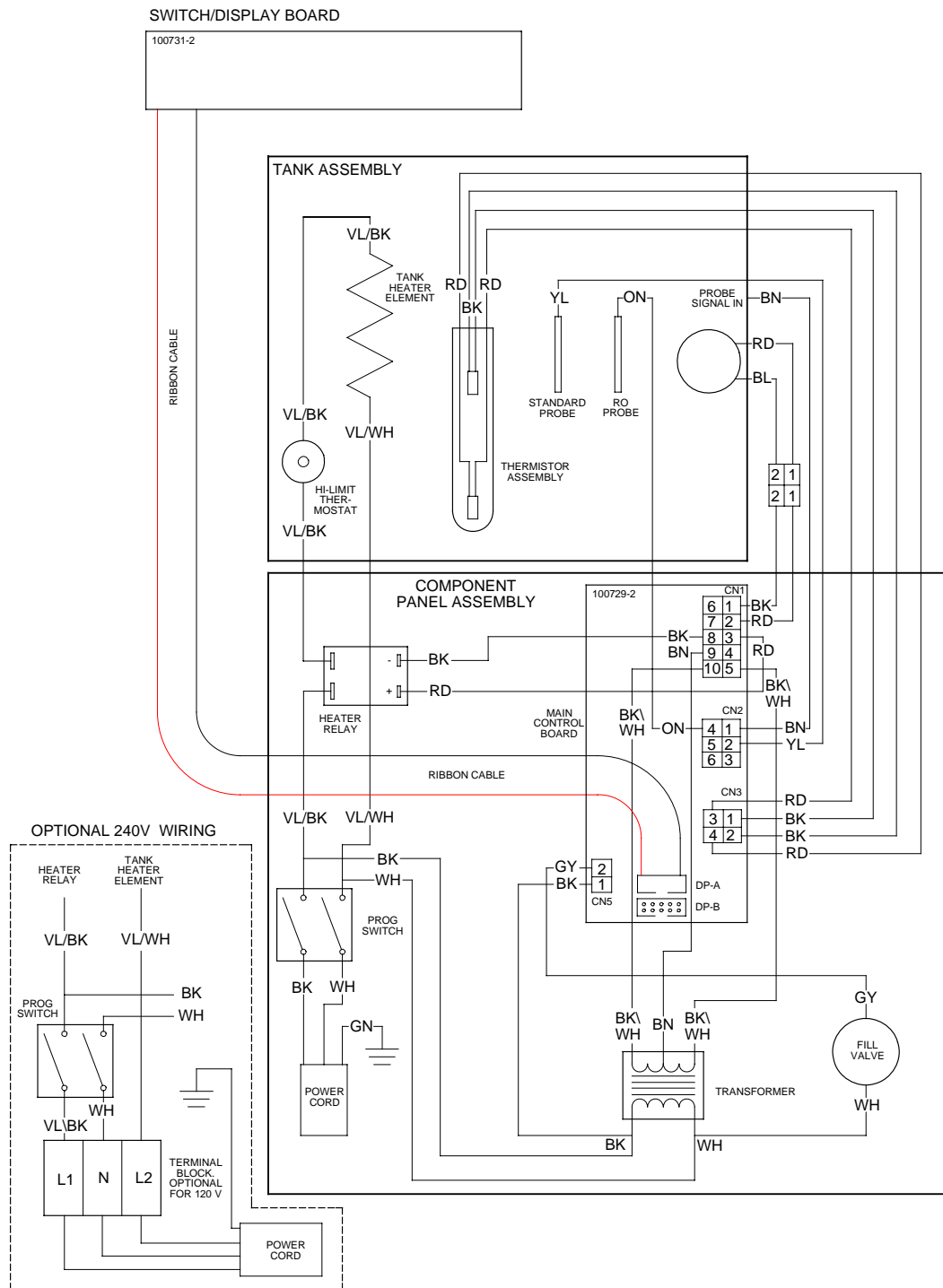
| Item # | Part # | Description | Qty |
|--------|--------|---------------------------------|-----|
| 1 | 100731 | DISPLAY BOARD & HARNESS | 1 |
| 2 | 120025 | SPACER, 6-32, 3/8 HEX x 7/16L | 3 |
| 3 | 120046 | SCREW, 6-32 x 1/4, PPHMS, POLY | 3 |
| 4 | 110941 | WASHER, NYL, .151 x .345 x .031 | 3 |
| 5 | 119970 | BREW PLATE SPTWLD | 1 |
| 6 | 152218 | TUBING, SIL, 1/4 ID x 3/8 OD | |
| 7 | 152213 | TUBING, SIL, 3/8 ID x 5/8 OD | |
| 8 | 111635 | CLAMP, HOSE, .574 ID | 2 |
| 9 | 111597 | TUBE, SPRAYHEAD | 1 |

COMPONENT, PANEL ASSY - 119994



| Item # | Part # | Description | Qty |
|--------|------------------------|-----------------------------|-----|
| 1 | 100255 | KIP VALVE, SOLENOID | 1 |
| 2 | 110944 | SLEEVE, 1/4 SELF ALIGN | 1 |
| 3 | 110946 | NUT 1/4 SELF ALIGN | 1 |
| 4 | 202044 | INSERT TUBING, 3/16 | 1 |
| 5 | 101527 | REPLACEMENT KIT, KIP VALVE | 1 |
| 6 | 105115 | TRANSFORMER | 1 |
| 7 | 100022 | CORD, POWER | 1 |
| 8 | 101035 | GROMMET, STRN RELIEF | 1 |
| 9 | 101898 | CORD PLATE | 1 |
| 10 | 110626 | SWITCH, DP/ST, RECT, ROCKER | 1 |
| 11 | 121659 | HEATSINK | 1 |
| 12 | 110367-10 | RELAY, 50 AMP, SOLID STATE | 1 |
| 13 | 100729 | MAIN BOARD | 1 |
| 14 | 102844 | SUPPORT, CIRCUIT BOARD 3/8 | 4 |

20:1 Wiring Diagram



WARRANTY

Newco coffee brewers are warranted against defects in workmanship or materials, under normal use, for 90 days from the date of purchase. Brewer parts are warranted against defect for 12 months from date of purchase.

Liability in all events is limited to the purchase price paid and liability under the aforesaid warranty is limited to replacing or repairing any part or parts which are defective in material or workmanship, and returned to our factory, shipping cost prepaid. No warranty expressed or implied, other than the aforesaid is made or authorized by Newco Enterprises, Inc.

Prompt disposition will be made if item proves to be defective, within warranty. Before returning any item, write or call Newco, or the dealer from whom the product was purchased, giving model number, serial number, and date of purchase, and describe nature of the defect. If damage was incurred during transit to you, file claim with the carrier.