

BUNN®

Technical Training

AXIOM®

RFID Technology



BUNN



AXIOM[®] with RFID Technology

Objectives

Given a realistic scenario in which the learner has access to the machine's internal components, the learner will understand the composition and functions of the RFID system within an AXIOM brewer.

The learner will be able to discuss the similarities and differences between a standard AXIOM and an AXIOM equipped with RFID.

The learner will be able to identify the components and functions of the RFID system.

Given an operating machine the learner will be able to give a general explanation of how the unit operates.

The learner will be able to recognize and explain the purpose of the freshness default time.

The learner will be able to access and explain the RFID service program menus.

The learner will be able to identify the LED color sequence.

Axiom with RFID

The Axiom brewer with RFID will automatically scan and monitor the glass carafe or thermal carafe on all of the warming elements for fresh coffee. The corresponding freshness time message will display with the use of RFID (radio frequency identification). In addition to the visual freshness message on the display, the warmer LED will correspond by changing color and sounding an alarm to inform the operator that the coffee is either fresh or expired. The warmer element will turn on and off automatically by reading the assigned date and time that is recorded at time of brew to a glass carafe. The brewer will detect when a RFID Thermal Fresh carafe is being used and will keep the corresponding warmer plate in the off position.



AXIOM with RFID Differences

Software

- Additional Adjustment and Optional Service Program Menus (Left Hidden Switch)
- Programming Access Switch (Right Hidden Switch)
- Additional Digital 3 Click Brew Volume Setup
- Additional LED Color Change for Freshness Indicator
- Warning Alert Message and Warmer Shut-off

Mechanical

- Additional RFID Board and TIC Clock
- Additional Beeper
- Additional RFID Coil
- Revised Faucet Components
- Additional RFID Collar and Strap to the Glass Carafe
- Additional RFID Housing to the Thermal Carafe
- Additional 3 Wire plus Ground 12 Gauge Power Cord with L14-20 with L14-20 Plug

Software

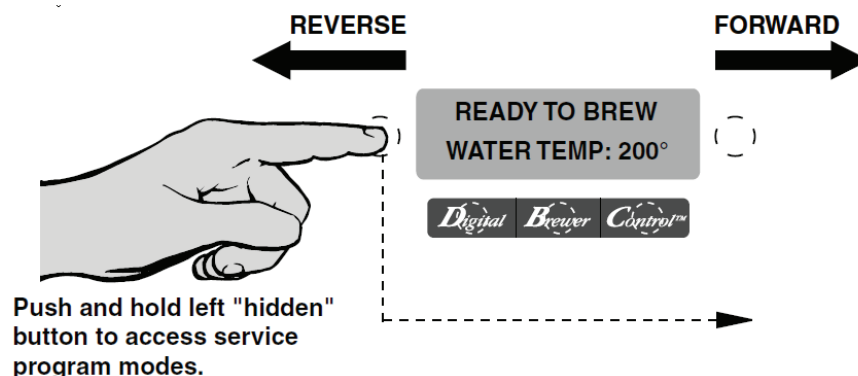
The brewer automatically distinguishes what type of carafe is being used for the allotted freshness time-remaining message.

- Glass Carafe Fresh Hours - 0.5 (30 minutes)
- Thermal Carafe Fresh Hours - 2.0 (2 hours)

The Axiom RFID software will include an entire set of adjustment and service menus that are logically located separate from the BUNN standard programming menus.

Left Access Programming

The service and adjustment menus are located by depressing the left hidden button. The right hidden button is used to scroll through the twelve menus.



To access to the standard Axiom programming menus, depress the right hidden button in the same manner as the original Axiom brewer. Although the menu screens are the same, they are arranged in a different order than the original Axiom brewer.

The program time-out feature remains the same for the right hidden button, but does not time-out within two minutes for the left hidden button. You will need to manually exit the left side of programming.

Miscellaneous Operation

The warmer plate can be turned on manually as long as the RFID board does not see a RFID glass carafe. If the RFID coil/sensor detects the RFID glass carafe, then the warmer will automatically turn on or off, depending on the date and time that is assigned to the RFID carafe. The date and time is assigned to the RFID carafe when it is placed on the main warmer and the brew switch has been depressed. An asterisk will appear in the upper-right corner when the date and time has successfully been assigned to the RFID carafe.

Note: If two or more pieces of the same equipment are going to be installed in the same location, it's very important to make sure that all the date and time settings are set identical throughout the equipment for the "glass freshness time remaining" message.

Additional Adjustment and Optional Service Program Menus

These are the programming menus that are accessed by pressing the left hidden button.

Freq&AdjustCaps?
NO YES

This screen allows the user to monitor the frequency of the RFID coils. It can also be used to monitor the adjustment capacitors, which are used to keep the coil frequency at it's nominal value (125.0 khz).

Digital Brewer Control™

125.0 0000 *TOP F
125.0 0000 *TOP R

This menu can be used as a tool to troubleshoot the RFID board and circuit. The asterisk will display when a carafe is placed on a warmer and will not display when a carafe is taken off or not detected.

Digital Brewer Control™

125.0 0000 * MAIN

Digital Brewer Control™

DISPLAY BREW TIMES
NO YES

This allows you to read the "age" of any brewed batch in a particular carafe, as long as it's equipped with an RFID chip. The sensor coil will read the chip and the brewer will display the time of day it was brewed.

Digital Brewer Control™

MAY 10 2010
MAIN 10:00:00 AM

This screen will automatically scan through all RFID coil/sensors and display the recorded brew date and time from the RFID carafe. If no RFID carafe is present on the warmer plate, the date and time will be shown as a blank value.

Digital Brewer Control™

TEST RFID BOARD
NO YES

This allows you to monitor the individual coil/sensors and RFID board.

Digital Brewer Control™



RFID CIRCUIT BOARD
VERSION # xx.xx

Digital Brewer Control™

PRESS ANY SWITCH
TO EXIT

Digital Brewer Control™

10:00:00 AM
M TF ☐ TR

If a carafe is placed on a particular warmer, a solid box will appear next to the warmer's abbreviation. The box indicates that the RFID carafe is present. RFID Thermal carafe is identified by a hollow box.

Digital Brewer Control™

GLASS FRESH HRS
(-) .5 (+)

Fresh hours sets the "x:xx Glass Remaining" message and expiration time for freshness. The expiration time is the amount of time the product is allowed before the "Glass Expired" message is displayed. Default: .5, Range: 0.5 to 4.0 Hrs. If the range adjustment is set to off, the setting will automatically revert to 0.5 after exiting the programming menus.

Digital Brewer Control™

ThermalFresh HRS
(-) 2.0 (+)

Thermal Fresh Hours is the same definition as the Glass Fresh Hours.
Note: Brewer senses a Thermal carafe on any warmer plate, warmer plates will not operate.

Digital Brewer Control™



WARMER MINs PAST
FRESHNESS: 5

Sets the amount of time that the warmers will turn off after an alert message is displayed. Default: 5, Range: Off/ 1 -30 min

Digital Brewer Control™

FRESHNESS SCAN
NO DONE YES

This screen allows the brewer to continually scan the RFID coil/sensors and display freshness time remaining message. If "No" is selected, the brew will not continually scan sensors for the "freshness time remaining" message assigned to the RFID carafes. The machine will display the regular home screen "Date and Time" and scroll to "Ready to Brew", "Water Temp 200°" screen.

Note: You do have the capability to view the freshness time remaining message or expired message when you depress and hold the warmer on/off button on warmers except for the main warmer.

Digital Brewer Control™

EXPIRATION ALARM
DISABLE ENABLE

This menu allows the user to enable or disable the beeper alarm.
Enabled: See the “Expiration Seconds” menu.
Disabled: The disabled setting will also include the pre-expire alarm.

Digital Brewer Control™

EXPIRATION SECS

Sets the amount of delay between the expired alarm beeps.
Default: 10, Range: 5-300 sec.

(-) 10 (+)

Digital Brewer Control™

ADJUST ALARM
NO VOLUME ? YES

Select “Yes” to adjust the beeper volume.

Digital Brewer Control™

ADJUST ALARM 5

Sets the volume of the beeper for expiration and pre-expire alarm.
Default: 14, Range: Off/ 1-14
Off: another option for disabling the beeper.

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Digital Brewer Control™

SET DATE/TIME ?
NO YES

Select “Yes” to set the date and time.

Digital Brewer Control™

YEAR 2010

Press “+” or “-” to adjust the year.

(-) DONE (+)

Digital Brewer Control™

MONTH MAY

Press “+” or “-” to adjust the month.

(-) DONE (+)

Digital Brewer Control™

DAY 10

Press “+” or “-” to adjust the day

(-) DONE (+)

Digital Brewer Control™

HOUR 10 AM
(-) DONE (+)

Press "+" or "-" to adjust the hour.

Digital *Brewer* *Control™*

MINUTE 00
(-) DONE (+)

Press "+" or "-" to adjust the minutes.

Digital *Brewer* *Control™*

SECOND 00
(-) DONE (+)

Press "+" or "-" to adjust the seconds.

Digital *Brewer* *Control™*

PRE-EXPIRE ALARM
DISABLE ENABLE

Enable/disable the 5 minute warning beep sequence for a carafe that's about to expire. Sequence: The last 5 minutes of the freshness time remaining message or the corresponding warmer flashing yellow LED; the pre-expire alarm will beep once a minute with a total of 5 beeps before the every 10 second expiration alarm takes over.

Digital 3-Click Brew Volume Setup

The digital 3-click volume setup is added for the convenience of setting pot levels. The segment of adding or subtracting an ounce of water during setup is not possible. This method of calibrating pot levels is more user friendly to the operator than entering the programming menus using the right hidden switch and then making the volume adjustment.

BREW OZ: 60.0
(-) DONE (+)

Note: The brew oz. volume will automatically change on this screen when you perform the optional 3-click brew volume setup. If the program lockout switch is in the lock position on the control board, while performing the 3-click volume setup procedure, the new calibration time or volume will not hold and will go back to the original setting. You have the perception of calibrating a new volume without any warning of the lockout switch being locked.

Freshness Indicator LED Color Sequence

The freshness time remaining message will operate in conjunction with the warmer element LED color sequence.

Green LED

The green color means you are within the freshness time limit (0.5 hrs/glass).

Flashing Yellow LED

The yellow color is a warning indicator, which tells the operator that the glass freshness time is about to expire. The LED will change from green to yellow when the freshness time reaches the last five minutes of the freshness time limit (0.5 hrs/glass).

Flashing Red LED

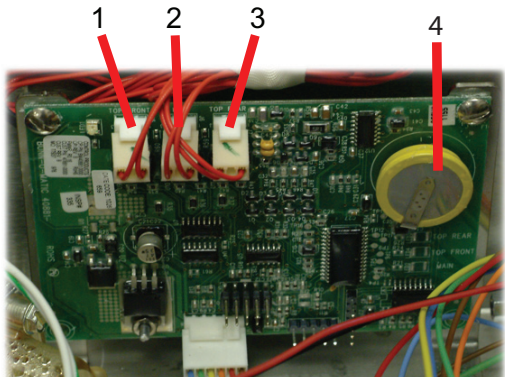
The red color means that the freshness time has expired and the warmer element is about to turn off automatically.

Note: When the "Freshness Expired" message or the flashing red LED appears, the warmer will turn off automatically after five minutes.

Mechanical

RFID Board

The board is located in the hood assembly on the right-hand side. The board contains the TIC clock. Three connectors are represented at the top of the RFID board, where the RFID coil/sensors are connected. The three connectors are labeled and identified above the connector.



Warmer Sensor

1. Top Front (J7-1)
2. Main (J6-1)
3. Top Rear (J5-1)
4. TIC Clock

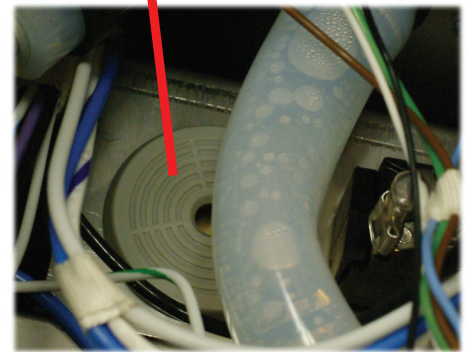
The RFID board operates in a range between 124.0 and 127.0 khz while writing and reading the date/time to the RFID carafes through the use of the RFID coil/sensor. The RFID board can be monitored for frequency and tested by a test menu in programming using the left hidden button. The menu option is "Freq&AdjustCaps".

Beeper

The Axiom brewer with RFID utilizes a beeper along with the freshness indicator LED sequence. Two beeper alarms are represented within the operation of the unit with the capability of adjusting the volume and activation of the audible alarms.

- The expiration alarm will sound an audible beep when the coffee freshness time has expired or when the flashing red LED is visible. The alarm will beep once every ten seconds.
- The pre-expiration alarm will sound an audible beep when the coffee freshness time had reached the remaining five minutes or when the flashing yellow LED is visible. The pre-expire alarm will beep once a minute before the expiration alarm.

Beeper

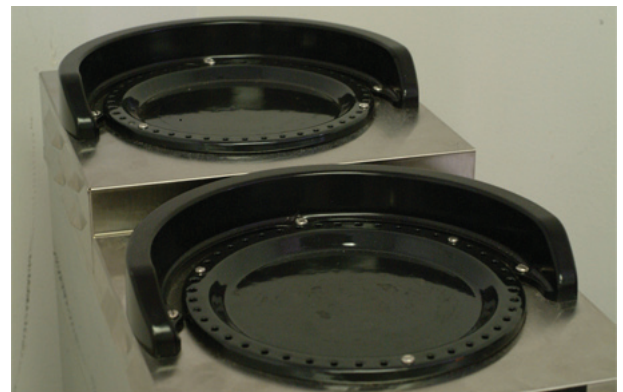


The beeper harness and lock nut can be accessed through the front panel and the beeper is removed from the top or hood assembly.

RFID Coil/Sensor

A RFID sensor is represented by each warmer plate. The sensor picks up the recorded brew date/time from the RFID carafe and will show it on the display. All of the sensors can be checked for operation by utilizing the test menus that are accessed by using the left hidden button. The menus are abbreviated on the display.

- M = Main
- TF = Top Front
- TR = Top Rear



10:00:00 AM

M TF ■ TR

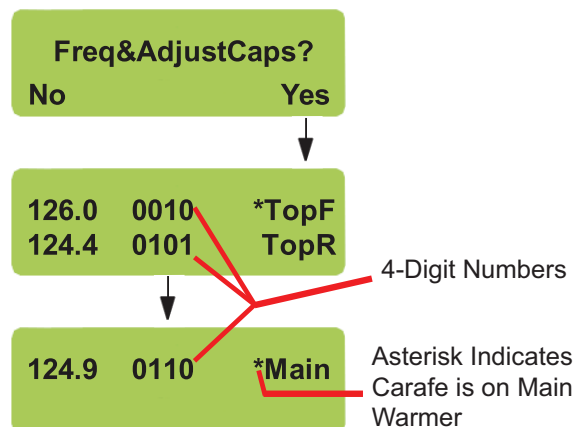
If a box appears to the right of the abbreviation while a RFID carafe is on the corresponding warmer plate, this indicates that the sensor or circuit is operating. The block will disappear when the RFID carafe is removed from the warmer plate.

Freq&AdjustCaps Menu

* An asterisk will appear if a RFID carafe is placed on a warmer element.

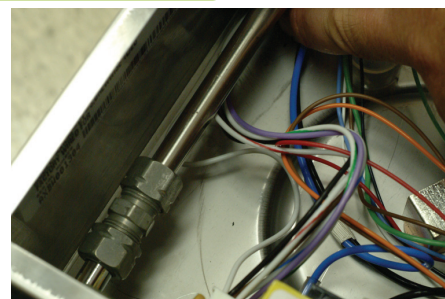
The 4-digit number located in the middle of the main, top front and top rear warmers can be used as a reference during troubleshooting.

- 4-digit number steady: Means the coil frequency is staying tuned to the nominal value of 125.0 khz.
- 4-digit number flashing: Means the coil frequency is at the low end of tuning, which will result in intermittent or failure of writing and reading of the RFID carafes.



Faucet Assembly

The tube that's connected from the tank to the faucet is now stainless with an insulation wrap around it to help insulate the tube from temperature loss. The requirement for the oatmeal mixing is 185°F water and a flow dispense of 5 ounces within 15 seconds.



RFID Glass Carafe

The glass carafe has an attached collar and strap that contains the RFID transponder. The transponder is located within the strap holder, which contains the assigned date and time recorded from the initial start of a brew cycle. The operational range for reading and writing from the RFID sensor is approximately .3/4 inches.

The collar and strap with transponder can be replaced as a complete kit (Bunn PN: 42930.1000) on the glass carafe. See instruction sheet 43520.0000.



RFID Thermal Carafe

The thermal carafe has an attached RFID transponder holder adhered to the side wall of the stainless housing. The brewer RFID board automatically can sense when a thermal carafe is set on the warmer and will use the "Thermal Fresh Hours" menu which is set at a 2 hours. The display will read "Ready To Brew Thermal Carafe". Anytime a thermal carafe is sensed, the corresponding warmer will not activate or turn on. The operation range is the same distance as the glass carafe but the transponder is not replaceable on the thermal carafe. A new carafe will need to be ordered if the transponder fails or housing releases from the stainless carafe housing.

