FETCO®
www.fetco.com

User's Guide

CBS-5000 Series Coffee Brewers

Models:

- **CBS-51H10**
- **CBS-51H15**
- **CBS-52H15**
- **CBS-52H20**

Driven To Pioneer Innovation™

Table of Contents

Part # P004 January 16, 2006

Contact Information

FETCO®
Food Equipment Technologies Company
600 Rose Road
Lake Zurich • IL • 60047-0429 • USA

Internet: www.fetco.com

Phone: (800) 338-2699 (US & Canada)
(847) 719-3000
Fax: (847) 719-3001

Email: sales@fetco.com
techsupport@fetco.com

Product Description/Features

CBS-51H10 - Single 1.0 Gallon Coffee Brewer
CBS-51H15 - Single 1.5 Gallon Coffee Brewer
CBS-52H15 - Twin 1.5 Gallon Coffee Brewer
CBS-52H20 - Twin 2.0 Gallon Coffee Brewer

- **Thermal, portable, beverage dispensers**
- **Stainless steel, gourmet size brew baskets**
- **Brew basket double safety locks**
- **Open type, leak free dispense system**
- **Fully automatic, with electronic temperature control**
- **Mercury type power contactor**
- **Two level tank drain system**
- **Total serviceability from the front**

Optional Features:

- **Half batch brewing capability***
- **Iced tea brewing capability***
- **Color stainless steel finish**
- **Custom and export voltage**
- **3.0 liter airpots, with stands,**

*** Can be added at any time.**

Note: Throughout this manual, all references to CBS-51H and CBS-52H brewers apply to all models, unless otherwise indicated.

Technical Data

Brewing Specifications

Brew Volume:	**CBS-51H10**	**CBS-51H15 & 52H15**	**CBS-52H20**
Full Batch	1 gal. (3.8 lit.)	1 ½ gal. (5.7 lit.)	2 gal. (7.6 lit.)
Half Batch	½ gal. (1.9 lit.)	¾ gal. (2.8 lit.)	1 gal. (3.8 lit.)

Brew Time:	**CBS-51H10**	**CBS-51H15 & 52H15**	**CBS-52H20**
Full Batch	2 ¾ - 3 min.	4 - 4 ½ min.	5 ½ - 6 min.
Half Batch	1 ½ min.	2 - 2 ¼ min.	2 ¾ - 3 min.

(Allow an extra 2-4 minutes for coffee to finish dripping)

Coffee Filter Size:
CBS-51H10: 13" X 5"
CBS-51H15, 52H15, & 52H20: 15" X 5 ½ " – standard; 13" X 5" - optional half batch

Temperature:
205°F inside water tank (at sea level)
195°F ± 5° at sprayhead

Bypass Range: 0 to 33%
(factory set at 0% unless specified)
(Not available on CBS-51H10)

Water Requirements: 20-75 psig
½ gpm (CBS-51H)
1 ¼ gpm (CBS-52H)

Weights and Capacities

Brewer Model	Weight (empty)	Water tank Capacity & Weight.		Weight (filled)	Dispenser Weight, ea.	Dispenser Filled, ea..	Total Weight Brewer & Dispensers, Filled
CBS-51H10	42 lbs.	3.0 gal.	25 lbs.	67 lbs.	7.0 lbs.	15.4 lbs.	82.4 lbs.
CBS-51H15	55 lbs.	3.7 gal.	31 lbs.	86 lbs.	8.5 lbs.	21 lbs.	107 lbs.
CBS-52H15	82 lbs.	7.6 gal.	63 lbs.	145 lbs.	8.5 lbs.	21 lbs.	187 lbs.
CBS-52H20	87 lbs.	7.6 gal.	63 lbs.	150 lbs.	10 lbs.	26.6 lbs.	203.2 lbs.

Electrical Configuration and Brewing Efficiency

CBS-51H10 **1.0 gallon per batch**

Electrical Config. Code	Heater Configuration	Voltage Connection	Phase	Wires	KW	Maximum Amp draw	Batches per Hour (max 13) Cold Water	Hot Water
C50016	1 X 1800 watt	120	1 ph.	2 + ground	1.9	15.5	4.5	10.3
C50026	2 X 1800 watt	120/208	1 ph.	3 + ground	3.1	13.5	6.7	13.0
		120/220	1 ph.	3 + ground	3.4	14.7	7.8	13.0
		120/240	1 ph.	3 + ground	4.1	15.5	8.9	13.0

CBS-51H15 **1.5 gallons per batch**

Electrical Config. Code	Heater Configuration	Voltage Connection	Phase	Wires	KW	Maximum Amp draw	Batches per Hour (max 11)	
							Cold Water	Hot Water
C51016	1 X 1800 watt	120	1 ph.	2 + ground	1.9	15.5	3.0	6.8
C51026	1 X 3000 watt	120/208	1 ph.	3 + ground	2.3	11.3	3.7	8.6
		120/220	1 ph.	3 + ground	2.6	12.0	4.3	10.0
		120/240	1 ph.	3 + ground	3.1	13.0	5.0	11.0
C51036	1 X 4000 watt	120/208	1 ph.	3 + ground	3.1	14.9	5.0	11.0
		120/220	1 ph.	3 + ground	3.4	15.8	5.8	11.0
		120/240	1 ph.	3 + ground	4.1	17.2	6.6	11.0
C51046	2 X 3000 watt	120/208	1 ph.	3 + ground	4.6	22.1	7.4	11.0
		120/220	1 ph.	3 + ground	5.2	23.4	8.6	11.0
		120/240	1 ph.	3 + ground	6.1	25.5	9.9	11.0
C51056	2 X 4000 watt	120/208*	1 ph.	3 + ground	6.1	29.3	9.9	11.0

*(-5) version is rated for 208 volts maximum

CBS-52H15 **1.5 gallons per batch**

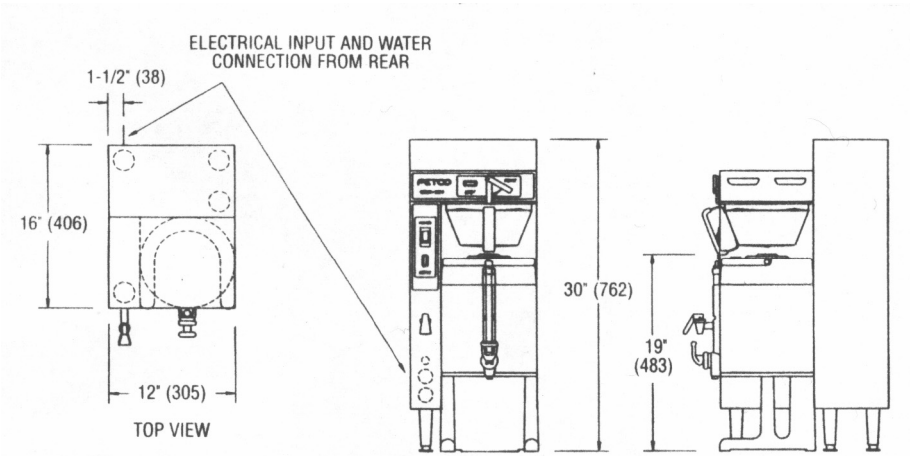
Electrical Config. Code	Heater Configuration	Voltage Connection	Phase	Wires	KW	Maximum Amp draw	Batches per Hour (max 22)	
							Cold Water	Hot Water
C52016	2 X 3000 watt	120/208	1 ph.	3 + ground	4.6	22.4	7.4	17.2
		120/220	1 ph.	3 + ground	5.2	23.7	8.6	19.9
		120/240	1 ph.	3 + ground	6.1	25.8	9.9	22.0
C52026	2 X 4000 watt	120/208	1 ph.	3 + ground	6.1	29.6	9.9	22.0
		120/220	1 ph.	3 + ground	6.8	31.3	11.5	22.0
		120/240	1 ph.	3 + ground	8.1	34.1	13.2	22.0
C52036	3 X 3000 watt	120/208	3 ph.	4 + ground	6.9	19.5	11.2	22.0
		120/220	3 ph.	4 + ground	7.7	20.6	12.9	22.0
		120/240	3 ph.	4 + ground	9.1	22.4	14.9	22.0
C52046	3 X 4000 watt	120/208	3 ph.	4 + ground	9.1	25.8	14.9	22.0
		120/220	3 ph.	4 + ground	10.3	27.3	17.3	22.0
		120/240	3 ph.	4 + ground	12.1	29.7	19.8	22.0
C52186	3 X 4000 watt	480	3 ph.	3 + ground	12.1	22.5	19.8	22.0
C52986	STEAM	120	1 ph.	2 + ground	n/a	0.8	22.0	22.0
	maximum steam demand: 40 lbs./hour steam pressure: 10 – 15 PSI							

CBS-52H20 **2.0 gallons per batch**

Electrical Config. Code	Heater Configuration	Voltage Connection	Phase	Wires	KW	Maximum Amp draw	Batches per Hour (max 18)	
							Cold Water	Hot Water
C53016	2 X 3000 watt	120/208	1 ph.	3 + ground	4.6	22.4	5.6	12.9
		120/220	1 ph.	3 + ground	5.2	23.7	6.5	14.9
		120/240	1 ph.	3 + ground	6.1	25.8	7.4	17.2
C53026	2 X 4000 watt	120/208	1 ph.	3 + ground	6.1	29.6	7.4	17.2
		120/220	1 ph.	3 + ground	6.8	31.3	8.6	18.0
		120/240	1 ph.	3 + ground	8.1	34.1	9.9	18.0
C53036	3 X 3000 watt	120/208	3 ph.	4 + ground	6.9	19.5	8.4	18.0
		120/220	3 ph.	4 + ground	7.7	20.6	9.7	18.0
		120/240	3 ph.	4 + ground	9.1	22.4	11.2	18.0
C53046	3 X 4000 watt	120/208	3 ph.	4 + ground	9.1	25.8	11.2	18.0
		120/220	3 ph.	4 + ground	10.3	27.3	12.9	18.0
		120/240	3 ph.	4 + ground	12.1	29.7	14.9	18.0
C53186	3 X 4000 watt	480	3 ph.	3 + ground	12.1	22.5	19.8	22.0
C53986	STEAM	120	1 ph.	2 + ground	n/a	0.8	22.0	22.0
	maximum steam demand: 40 lbs./hour steam pressure: 10 – 15 PSI							

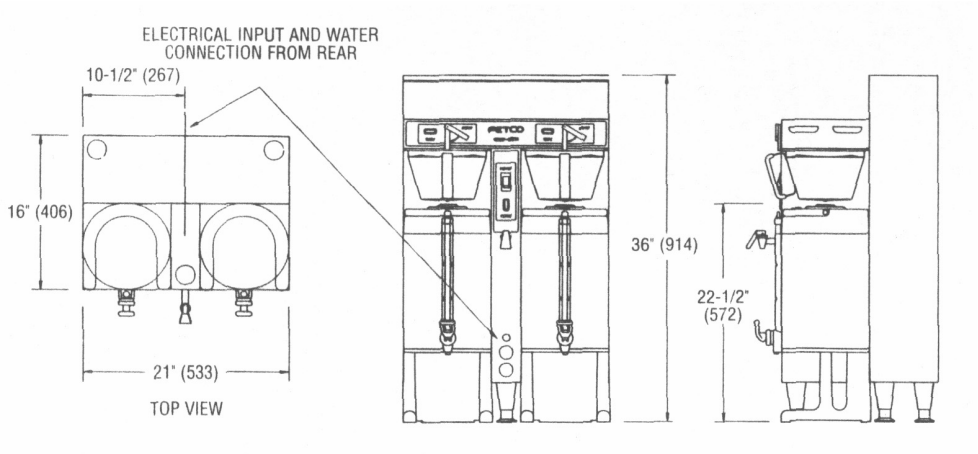
Dimensions & Utility Connections

CBS-51H10



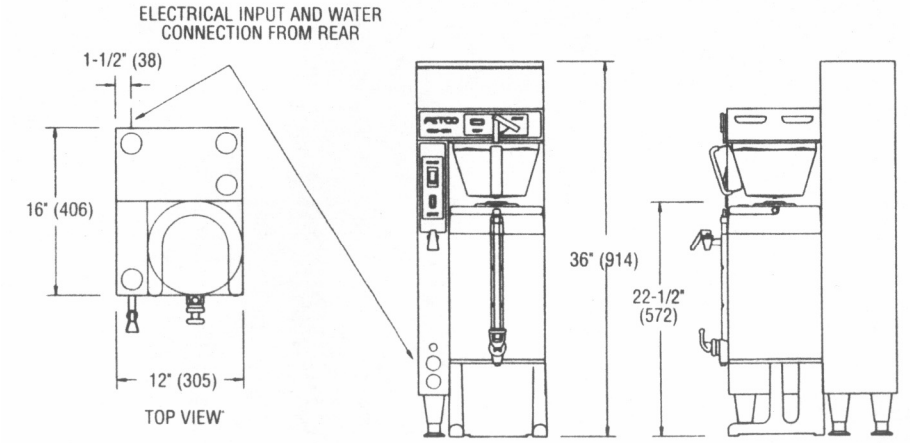
Water Requirements: 20-75 psig, 1/2 gpm flow rate. Water inlet is 3/8 Male Flare

CBS-52H15



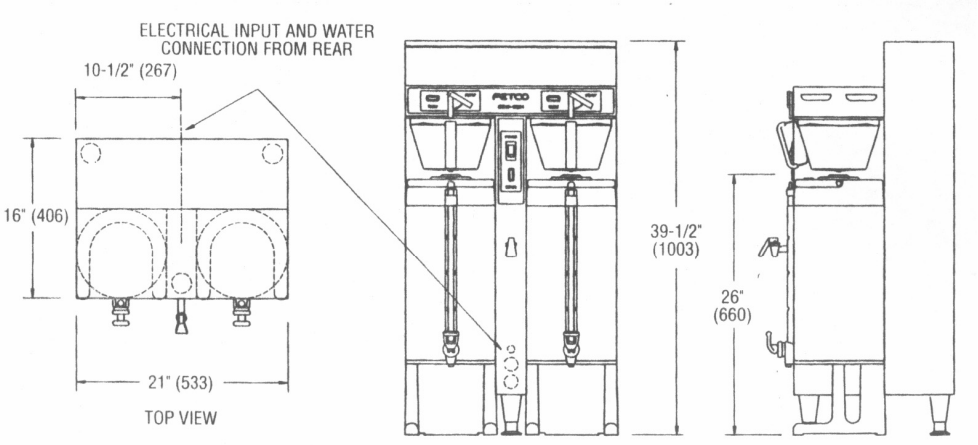
Water Requirements: 20-75 psig, 1-1/4 gpm flow rate. Water inlet is 3/8 Male Flare

CBS-51H15



Water Requirements: 20-75 psig, 1/2 gpm flow rate. Water inlet is 3/8 Male Flare

CBS-52H20



Water Requirements: 20-75 psig, 1-1/4 gpm flow rate. Water inlet is 3/8 Male Flare

Installation

(For Qualified Service Technicians Only)

Keys To A Successful Installation

If not installed correctly by qualified personnel, the brewer may not operate properly and damage may result. Damages resulting from improper installation are not covered by the warranty.
Here are the key points to consider before installation:

Electrical:

- All FETCO brewers require **NEUTRAL**. Ground is not an acceptable substitute. Installation without neutral may cause damage to the electronic components.
- The power connection to L2 on the terminal block must be at least 105 volts. Less than 105 volts will cause erratic behavior from the brewer.
- The power switch has a built-in circuit breaker. To reset it, turn to the "off" position, and then back to the "on" position.
- The electrical drawing for the brewer is located on the inside of the lower cover.

Plumbing:

- This equipment is to be installed to comply with the applicable federal, state, or local plumbing codes.
- The water line must be flushed thoroughly prior to connecting it to the brewer to prevent debris from contaminating the machine.
- Verify that the water line will provide at least ½ gallons per minute for the CBS-51H, and 1 ¼ gallons per minute for the CBS-52H before connecting it to the brewer.

General:

- Utilize only qualified beverage equipment service technicians for installation. A Service Company Directory may be found on our web site, **http://www.fetco.com**.

Installation Instructions

Brewer Setup

1. Review the Dimensions for the unit you are installing. Verify that the brewer will fit in the space intended for it, and that the counter or table will support the total weight of the brewer and dispensers when filled.
2. The brewer's legs are shipped inside the brew baskets. Remove the brew basket(s) and the coffee dispenser(s). Place the brewer on its back and screw in the legs.
3. Place the brewer on the counter or stand.
4. When the brewer is in position, level it front to back and side to side by adjusting the legs.
5. Remove the lower cover to access the water and electrical connections. Knock-outs are provided in the back and base of the brewer body for the connections.

Warning: Legs are to be adjusted for leveling the brewer only. Do not use for height adjustment or extend them higher than necessary.

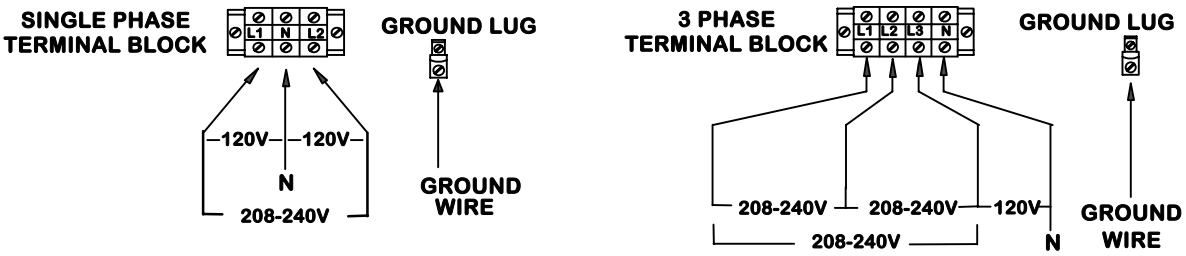
Water Connection

1. Water inlet is a 3/8 inch male flare fitting.
2. The brewer can be connected to a cold or hot water line. Cold water is preferred for best coffee flavor, but hot water will allow for faster recovery times.
3. Install a water shut off valve near the brewer to facilitate service. If an in-line water filter is used, it should be installed after the water shut off valve and in a position to facilitate filter replacement.
4. Flush the water supply line and filter **before** connecting it to the brewer.
5. Verify that the water line will provide at least ½ gallons per minute for the CBS-51H, and 1 ¼ gallons per minute for the CBS-52H, and that the water pressure is between 20 and 75 psig.
6. Use a wrench on the factory fitting when connecting the incoming water line. This will reduce stress on the internal connections and reduce the possibility of leaks developing after the install has been completed.

Electrical Connection

1. Verify that the actual voltage at the electrical service connection is compatible with the specifications on the brewer's serial number label. Make sure the electrical service includes **neutral**.
2. The temperature and water tank fill level are pre-set at the factory. There is no need to turn off the heaters during the installation process. The heaters are disabled by the control board until the tank is full of water. The heating process will start automatically when the tank has filled.
3. Only 120vac powered units are shipped from the factory with power cords and plugs attached. For other voltages, a terminal block is provided for connecting the incoming power wires. Consult local codes to determine if a cord and plug can be installed, or if the unit must be hard wired.
4. A fused disconnect switch or circuit breaker on the incoming power line must be conveniently located near the brewer, and its location and markings known to the operators.
5. The body of the brewer must be grounded to a suitable building ground. A ground lug is provided in the brewer next to the power terminal block. Use only 10 gauge copper wire for grounding.
6. Electrical connections must be secured in-place within the unit to meet national and local standards.

Warning: To prevent electrical shock, this unit must be properly grounded.



Electrical Configurations – US & Canada

7. Finally, connect the incoming power wires to the terminal block in accordance with applicable codes.

Final Setup

1. Turn on the incoming water supply line and inspect both inside and outside of the brewer for leaks in all fittings and tubes
2. Turn on the incoming power.
3. Turn on the brewer's main power switch.
4. Within 6 seconds, the hot water tank will begin filling until the water is sensed by the probe at the top of the tank.
5. The heaters will be disabled by the control board until the tank is full.
6. The brewer will be ready for operation as soon as the ready light comes on to signify that the water tank is up to temperature. The time required to reach brewing temperature will vary according to the electrical configuration ordered.
7. Review the Operating Instructions. Brew one full batch (water only) on each side to confirm proper fill levels. The brewer is factory set with water only (no coffee) to dispense the correct amount of water.
8. Re-attach the covers after one final inspection for leaks. Look closely in the top of the brewer at the dispense fittings during this inspection.

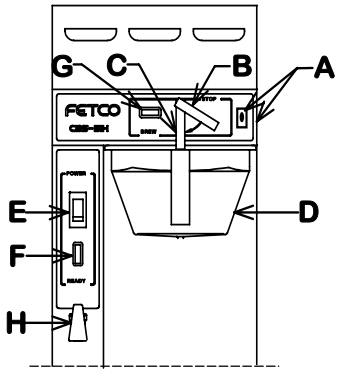
Operator Training

Review the operating procedures with whoever will be using the brewer. Pay particular attention to the following areas:

1. Always pre-heat the dispensers before the first use of each day by filling them half way with hot water, and letting them stand for at least 15 minutes.
2. Don't remove the brew basket until it has stopped dripping.
3. Make sure the dispenser is empty before brewing into it.
4. Show how to attach covers, close, and or secure the thermal dispensers for transporting.
5. Show the location and operation of the water shut off valve as well as the circuit breaker for the brewer.
6. Steam from the tank will form condensation in the vent tubes. This condensation will drip into and then out of the brew baskets. 1/4 cup discharging overnight is possible. Place an appropriate container under each brew basket when not in use.
7. We recommend leaving the power to the brewer on overnight. The water tank is well insulated and will use very little electricity to keep the tank hot. Leaving the brewer in the on position will also avoid delays at the beginning of shifts for the brewer to reach operating temperature.

Operating Procedures

1. **Turn brewer on/off switch (E) to the on position**
    - The power switch will illuminate to indicate that the brewer has power and is operating.
    - When the **ready light (F)** illuminates, the brewer is fully up to temperature. The amount of time required to gain full operating temperature will vary depending on the electrical configuration that was ordered, and the temperature of the incoming water.
2. **Pre-heat the dispensers.**
   This step is very important to the overall success of the brewing operation. FETCO avoids the damaging affects of heat on fresh brewed coffee by using highly insulated dispensers. The dispenser must be pre-heated with hot water from the brewer. This preheating process ensures that the coffee in the first brew starts out hot. Significant heat loss will occur when brewing coffee into a cold dispenser. Preheating is not required for subsequent brews unless the dispenser remains empty for an extended period of time and has cooled down.
    - Slide the empty brew basket(s) **(D)** into their rails and put the empty dispenser(s) in position under the basket for preheating. Select the half batch mode, **(A)** if you have this option.
    - When the ready light illuminates, start a brew cycle by rotating the brew lever **(B)** to the brew position. This starts clean hot water flowing into the brew basket and then into the dispenser.
    - Stop the cycle when each dispenser is approximately 1/2 full by moving the brew lever to the off position. This interrupts the brew cycle and resets the brewer .
    - Let the dispensers stand 10-15 minutes, or until use, to allow the heat from the water to be absorbed by the dispensers.



Legend:
- **A-**Full/half batch switch
- **B-**Brew lever
- **C-**Safety bar
- **D-**Brew basket
- **E-**On/off switch
- **F-**Ready light
- **G-** Brew light
- **H-** Hot water faucet

3. **Remove the brew baskets from the brewer when you are certain that the flow of hot water has stopped from the bottom of the basket.**
    - H model brewers will have a safety bar **(C)** in front of the brew basket to make removing the brew basket a 2-handed operation. This was done to help draw attention to the basket so any residual hot water or coffee will be noticed by the operator.
    - Place a paper filter in each basket to be used. Pour into the paper filter the appropriate amount of pre-measured, ground coffee. The amount of coffee used will depend on your personal tastes and the recommendation of your roaster.
    - Slide the brew basket back into the rails on the brewer. Insure the latch is outside of the basket.
4. **Carefully drain any coffee or preheating water from the dispensers through the faucets before starting a coffee brewing cycle.**
    - Overflowing of the dispensers may result if the dispensers are not completely empty when the brew cycle begins. Verify by opening the faucet over an appropriate container or drain. The last several cups cannot be seen in the sight gauge tube.
    - **CAUTION:** both the coffee or water may still be hot enough to cause burns, so be careful when draining the dispensers
5. **Place the thermal dispenser(s) in position under the brew baskets.**
    - Ensure that the brew funnel is in place, the dispenser is empty, and the faucet is closed. If you are using TPD-1.5 dispensers, also make sure the vent cap on the sight gauge is open.
    - The twist lock cover (TPD-1.5 dispensers) is for transporting the dispenser only. It must be removed before placing the dispenser under the brew basket.
6. **Start the brew cycle in the same manner used to start the water used to preheat the dispensers.**
    - It will not be necessary to interrupt the cycle while brewing coffee. The brewer will return to the stopped and ready status automatically.
    - It is normal for the ready light to go out after the start of the brew cycle. On twin brewers, there is enough hot water in the brewer to support a second brew, even if the ready light is off. After brewing on both sides, you must wait for the ready light to come back on.
    - The electrical configuration and the electrical power connected to the brewer will determine how long before the ready light comes back on for the next brew.

(Continued on next page)

CAUTION

- **Do not remove the brew basket immediately after the brew cycle has finished. Wait until dripping from the bottom of the brew basket has stopped. Carefully remove the brew basket while inspecting the inside of the basket for hot coffee that may have been trapped or has not finished draining.**

Service

Warranty

All FETCO brewers come with a limited warranty. All warranty service must be pre-authorized by calling the FETCO Service Department at (800) 338-2699.

Principles of Operation

Fill System

The fill system consists of a liquid level control board, a water level probe at the top of the tank, a fill valve, and a fill tube. As the water rises and touches the probe, continuity is established between the probe tip and the tank body, and the fill valve closes.

When water is dispensed, the water level drops below the probe. After a 5 second delay, the fill valve opens until the water touches the probe again.

The 5 second delay, and the speed that water refills the tank during brewing, results in many short bursts of water. The sound made by these repetitive bursts will let you know the fill system is functioning normally.

The fill system is designed to protect the heaters during both the installation and a loss of the water supply. During initial installation, or whenever the power switch is turned on, voltage will not be supplied to the thermostat until the tank fills and water touches the water level probe.
During operation, when water is dispensed and the water level drops below the probe, a fill signal is sent to the fill valve. If no water is sensed by the probe after 40 seconds, the voltage to the thermostat and the heaters is removed.

Water enters the tank through the fill tube. A hole is drilled in the upper portion of the fill tube to prevent water from being siphoned from the tank. The fill tube extends to the bottom area of the tank. This introduces cold incoming water directly to the heaters and away from the dispense assembly.

The water tank can be drained through a valve located inside the lower compartment of the brewer.

Temperature System:

The temperature system consists of an electronic thermostat, a temperature probe, and heating elements, and is enabled by the liquid level control board. (See the previous section - Fill Circuit.)

When the water level probe is in contact with water, power is delivered to the thermostat through the liquid level control board. If the temperature probe senses that the water is not hot enough, the thermostat energizes the heating elements through the mercury relay, the water is heated, and the ready light goes off.

Once the water temperature reaches the set point, the thermostat disengages power to the heaters and the ready light illuminates.

The thermostat is adjusted to 205° F $\pm$ 2° at the factory. (Slightly lower for high altitude installations.)

Timing System:

The timing system consist of the timer and the dispense latch assembly.

When the brew handle is rotated from the stop to the brew position, it pushes the plunger in the latch coil and closes the micro switch, and the timer starts the timed cycle. It also starts the hot water flowing.

The timer energizes the dispense latch coil, which acts as a magnet, to hold the brew handle in the brew position. It also lights the brew light. The coil remains energized throughout the brew cycle timed sequence.

When the timer finishes its cycle, it removes voltage from the latch coil. The latch coil then releases the brew handle, a spring returns it to the stop position, and the flow of water stops. This return opens the micro switch, stopping voltage from going to the timer. The brew light and the timer are disabled, and wait for the brew handle to engage the next brew cycle.

Dispense System:

The dispense system is completely mechanical. It is one of the areas that makes FETCO's brewer truly unique. (See the illustration in this section.)

When you rotate the brew lever down to brew, the end of the dispense tube is submerged in the hot water tank. It is held in the brew position by the magnetic action of the dispense latch coil.

The brew water travels down the dispense tube to the sprayhead assembly. The rate of flow over the coffee is controlled by the flow disc above the spray cutter. The standard hole in the flow disc is .240”, except for the CBS-51H10, which is .219”. Other flow discs are available for special situations like high levels of by-pass.

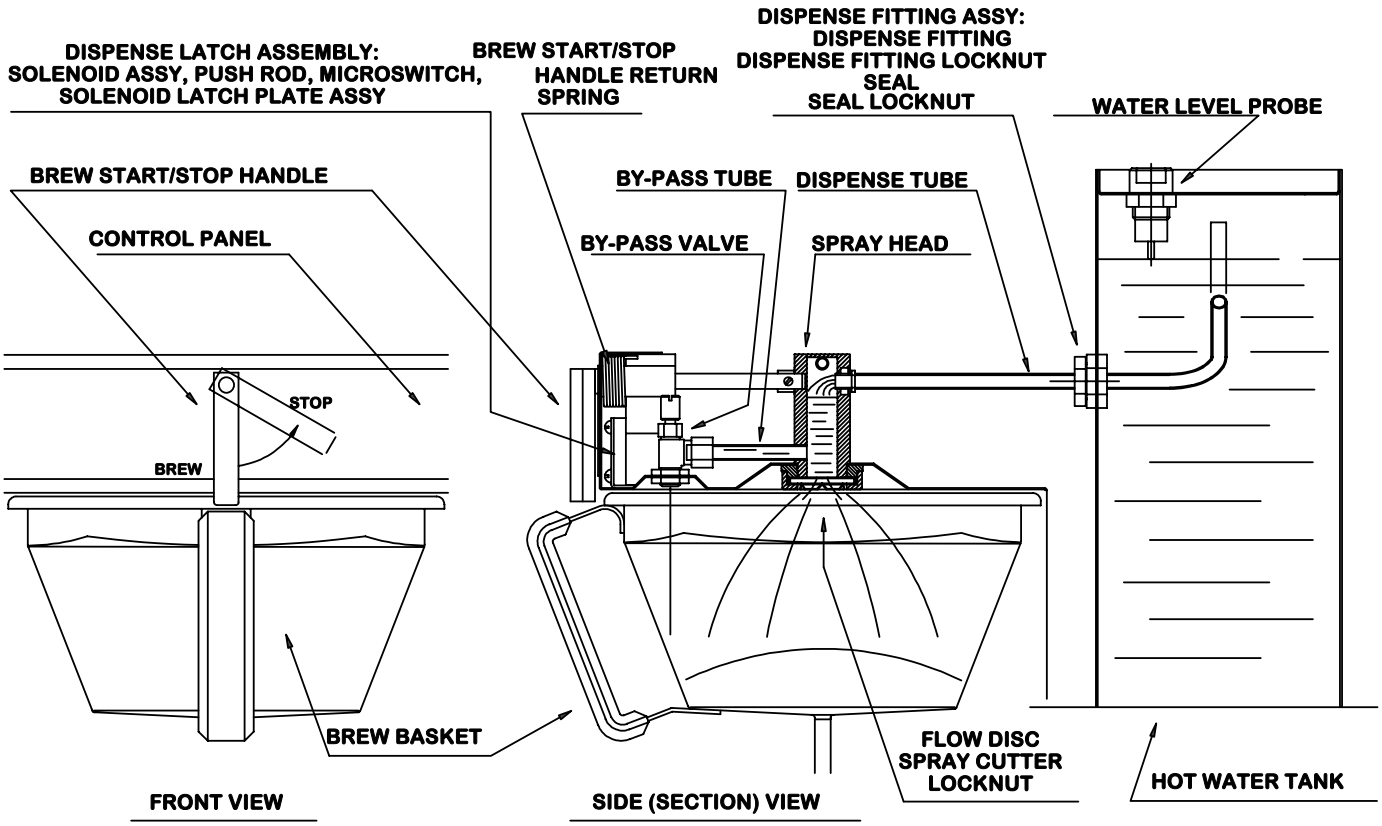
The sprayhead can be assembled incorrectly during cleaning. Refer to the cleaning label on the brewer for proper assembly. The flow disc has the flange down, flat side up. The six triangle spray cutter has the flange up. The eight hole spray cutter used in place of the triangle cutter goes bumps down.

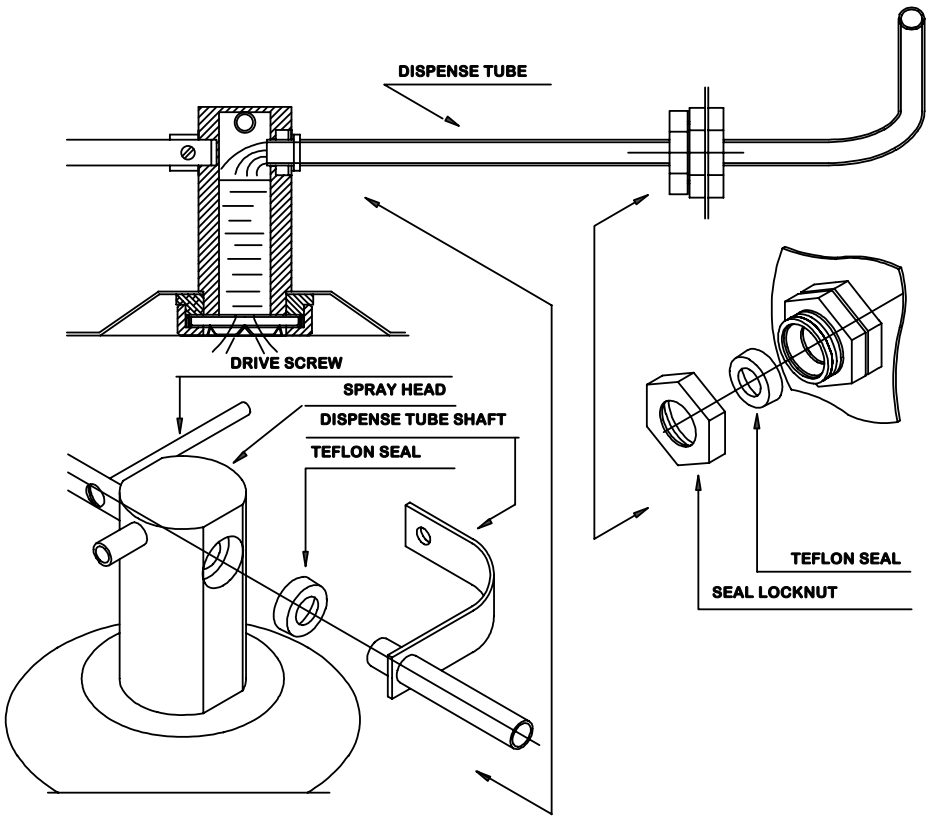
A bypass valve and tube are connected to the sprayhead. This valve directs brew water around the outside edge of the filter paper. The by-pass valve is shipped in the closed position from the factory. Each time the valve is adjusted, the brew volume is affected. Adjustment of the by-pass valve is for flavor only.
When the timer circuit releases the brew latch, the dispense tube pops back above the hot water level. The remaining brew water drains from the dispense system leaving it free of standing water. Steam escaping from the brew tank through this tube inhibits the formation of lime in the brew system.

The dispense system is clean & semi dry for all but the brief time required for the brew cycle. This eliminates any chance of lime build-up affecting the brew cycle.

It is very easy to dislodge the dispense tube seals while servicing the dispense system. If you see it leaking profusely, remove the nut and dispense tube. Reset the seal fully into the recess and carefully insert the dispense tube. Then secure the locknut before you back the tube into position. (See detailed instructions on page 10.)

Mechanical Illustration - Dispense System





To remove the dispense tube:

1. Unscrew seal locknut and release the drive screw from dispense tube shaft.

2. Turn the dispense tube slightly back and forth, while pushing the tube into the hot water tank until it is free from the sprayhead.

Pull the dispense tube out of the tank. Remember the tube is bent inside the tank. The seal will come out with the tube.

To install the dispense tube:

1. Clean any lime build up off the tube and then slide the seal off. Push the seal carefully into its chamber in the fitting.(spring towards the hot water tank.)

2. Place the seal locknut onto the tube and slide the tube into the seal. Tighten the seal locknut.

3. Work the tube back into the sprayhead seal.

4. Join the dispense tube shaft and the brew handle shaft with the drive screw.

Adjustments

Thermostat Adjustment:

For equipment manufactured before April 1, 2004

The brewer's water tank temperature is factory set at 205°F (slightly lower for high altitudes, to prevent boiling). This setting will deliver water at 195°F ± 5° to the coffee grounds.

Measure the temperature by holding a thermometer in the stream of water flowing out of the hot water faucet. The temperature should be 195°F ± 5°.

If an adjustment is necessary:

- Remove the upper cover of the unit. On CBS-51H15, also remove the lower cover.
- The thermostat is located in the upper section of the brewer. Locate the adjustment stem, which may be taped to the thermostat.
- Insert the stem into the adjustment hole. On CBS-51H15, this is done from underneath, through a hole in the brewer's frame.
- Turn the adjustment stem slightly clockwise (as viewed from the stem insertion point) to increase the temperature, and counter-clockwise to decrease the temperature.
- If you decreased the temperature setting, run 2 or 3 brew cycles to allow enough cold water into the brewer to lower the tank temperature.
- Wait for the "ready" light to come on, and measure the temperature again.
- Repeat until the desired temperature is obtained.

Effective April 1, 2004:

A new digital thermostat and temperature probe were introduced as a direct replacement for the old style thermostat and probe.

During normal operation, the digital readout displays the last two digits of the actual water temperature. When the adjustment tool is turned, the readout begins flashing to indicate the set point, not the actual temperature. After the tool is released, the readout stops flashing and displays the actual temperature again.

A red LED lights when the power to the thermostat is on. A yellow LED lights when the thermostat is calling for heat.

To adjust, turn the adjustment tool. If no adjustment tool is present, a small flat-head screwdriver may be used. The display will flash, indicating that the display is showing the set point, not the actual temperature.

The dots below the numbers indicate the temp range.

0 dots – less than 100° F
1 dot – between 100° and 200° F
2 dots – over 200° F

Examples:


= 75°F


= 187°F


= 203°F

Timer Adjustment:

For equipment manufactured before April 1, 2004

The timers control the amount of water that is used for brewing. The dual sided brewer, model # CBS-52H, has separate timers to control each side independently.

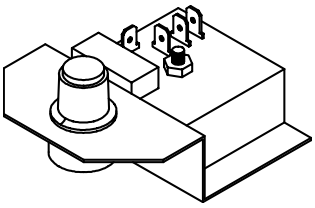
All timers are factory set to deliver the correct amount of water.
There are three possible types of timers used:

- Part # 51006 – full batch only (standard)
- Part # 51005 – full / half batch (optional) The half batch setting provides exactly half the amount of water as the full batch setting.
- Part # 51017 – dual portion (optional) The timer has 2 independent settings.

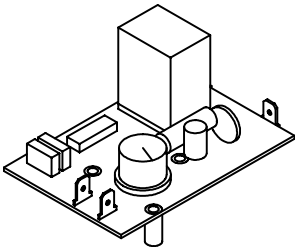
Adjustment of the factory settings may be desired to compensate for the amount of water absorbed by the coffee grounds. Approximately 2 ounces of water will be absorbed for every ounce of coffee.

To adjust the timer:

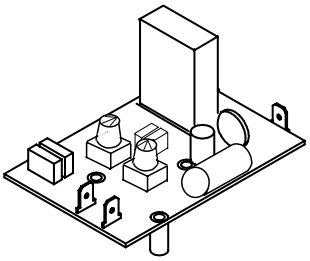
- Remove the brewer's upper cover.
- If your brewer has the half-batch or dual portion option, make sure the selector switch is in the full batch position.
- Note the current setting of the dial before making any adjustments.
- Turn the knob clockwise to increase and counter-clockwise to decrease the timer setting. On the dual portion timer. the knob labeled "T1" controls the full batch setting.
- Run a full brew cycle to check the brew level.
- If necessary, repeat the adjustment until the desired volume is obtained.
- For the dual portion timer, set the selector switch on "half" and adjust the knob labeled "T2" until the desired volume of water is obtained.
- Replace the cover.



 # 51006 timer, 120V



#51005
timer, full/half, 120V



#51017
timer, dual portion, 120V

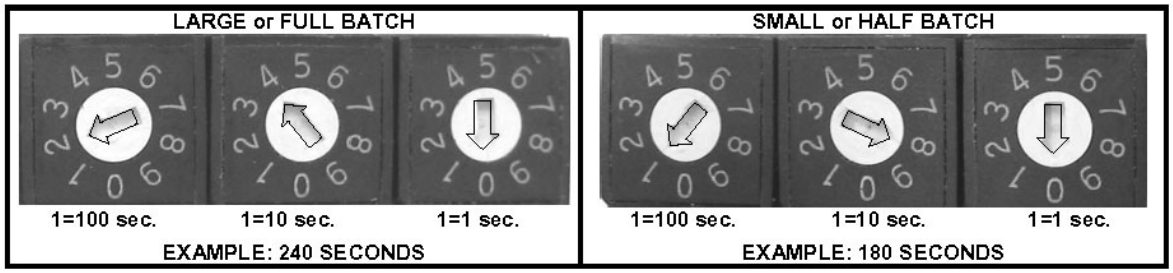
Effective April 1, 2004:

A new digital timer was introduced as a direct replacement for the three old style timers. When a batch selector switch is not connected, the timer functions as a single portion timer.

The timer has two independent settings, with three dials for each setting. The first dial in each group sets 100 second increments, the second dial sets 10 second increments, and the third dial sets 1 second increments.

A red LED lights when the power to the timer is on. A yellow LED lights when the timer is running.

A small flat head screwdriver is required to adjust the dials.



part # K034, digital timer, 100-120 VAC
part # K036, digital timer, 200-240 VAC (export versions only)

Water Level Control Board

Effective April 1, 2004:

A new digital water level control board was introduced as a direct replacement for the old style liquid level control board. The new board features a jumper to adjust its' sensitivity for reverse osmosis or other types of ultra-pure water.

The default jumper setting is LO (50K ohms) for normal water. If the brewer tank overfills because of ultra-pure water, the jumper should be set to HI (100K ohms).

A red LED lights when the power to the board is on.

A green LED lights when the water level probe detects that the tank is full.

A yellow LED lights when the FILL circuit is energized.

A second yellow LED lights when the HEAT circuit is energized.

Bypass Adjustment: (Not available on CBS-51H10)

The purpose of the bypass valve is to allow a portion of the brewing water to flow between the brew basket and the wire insert, directly into the server, without coming in contact with the coffee grounds. The bypass can be adjusted from 0% to 33% of the total brewing water. Dual brewers (CBS-52H), have separate bypass valves on each side. Unless requested at the time of order, all brewers are shipped with the bypass valves closed (0%). Adjusting the bypass always changes the total brew volume, so the timer setting must always be checked and adjusted.

To adjust the bypass:

- Remove the brewer's upper cover.
- The bypass valve is located above the brew basket, to the right and to the front, as you are facing it.
- Remove the brew basket.
- Place a container under the spray head, and a separate container under the bypass hole.
- Turn the bypass valve clockwise to decrease, and counter-clockwise to increase the bypass amount. A good starting point would be one full turn for each 5% change.
- Brew a full cycle and measure the amount of water in both containers.
- The ratio of the bypass water to the total in both containers is the bypass percentage. example: ½ gal. bypass + 1 gal. from spray head = 1 ½ gal. total. Bypass = 33.3%.
- Several adjustments may be necessary until the desired results are achieved.

Brewer Parts

CBS-51H10 Parts List

(Drawing not available at time of publication.)

Part #	Description
09001	Brew Basket Wire insert 13x5
101010	Brew basket assy. 13 x 5
002003	Brew Cone Weldment 13 x 5
85004	Brew handle Return Spring
14002	Brew handle Latch Plate
002005	Brew handle Latch Weldment
85005	Brew handle latch plate Retaining clip
31015	Spray Cutter Locknut
05001	spray cutter, 6 hole
05017	Spray cutter FLOW DISK (.219 dia. opening)
33002	Spray Head Lock Nut
31125	Spray Head (Large brass part)
24008	Dispense Tube Seal 7/16"
002049	Dispense Tube Weldment 7/16" dia.
31070	Fitting (by pass & tank drain outlet)
31006	Locknut 1/8" NPT, vent
108034	Liquid Level Control Brd. 100-120VAC, 50-100K ohm
108035	Liquid Level Control Brd. 200-240VAC, 50-100K ohm (EXPORT)
K034	Digital Timer Kit, 100-120VAC
K036	Digital Timer Kit, 200-240VAC (EXPORT)
102008	Dispense Latch, Solenoid assy. 120vac
102039	Dispense Latch, Solenoid assy. 220vac (export)
K033	Digital thermostat, 100-120VAC
K035	Digital thermostat, 200-240VAC (EXPORT)
58004	Lamp," brew" indicator, amber, 220VAC (EXPORT)
58026	Lamp, "brew"
82018	Brew handle Screw, 8-32 x 2" ss r.h.
82004	Brew handle Screw, 6-32 x 5/8" ss r.h.
13005	Brew handle Safety Handle
102010	Brew handle start/stop assy.
002036	Brew handle Weldment
86001	Brew handle Bushing
52077	Switch, power w/ circuit breaker, 120 VAC
52076	Switch, power w/circuit breaker, 220 VAC (EXPORT)
58006	Lamp, "ready" indicator, green, 220VAC, EXPORT
58027	Lamp, "ready"
71023	Faucet upper assy., HOT water faucet (Safety Handle)
71003	Faucet Seat cup, HOT water faucet
73002	Leg assy. 4", adjustable
102041	Terminal block assy. 3 pole
102040	Terminal block assy. 2 pole
52003	Ground lug terminal MEDIUM size
31028	Fitting (dispense & fill valve outlet & hot water outlet)
57017	Fill Valve assy., 220vac (S-53 export)
57006	Fill Valve assy.,120vac, (S-53)
31031	Fill Valve Fitting 3/8" MPT x 3/8" Flare elbow (inlet std.)
31055	Fill Valve Fitting 3/8" MPT x 3/8" comp. elbow (inlet opt)
52015	Relay mercury 20amp SP 120VAC
52021	Relay mercury 20amp SP (export 208-240vac coil)
52016	Relay mercury 20amp DP 120vac
52032	Relay mercury 20amp DP (export 208-240v coil)
K044	Water Level Probe Assy. (replacement for 21043 housing and 2048 probe)
31036	Thermostat Temp probe tank Fitting 1/4" MPT x 1/4" comp.
31037	Thermostat Temp probe Locknut 1/4" NSPL (temp. probe tank fitting)
53026	Thermostat Temp probe 12" (use with K033 digital thermostat or 53012 thermostat)
102213	Digital temp probe assy., 12" (use with K033 digital thermostat only)
25004	Thermostat Temp probe Lead Cover (tubing)
31081	Plug 1/4" MPT hex head
24002	Tank Cover Gasket
	Tank Cover assy.
83006	Heater Washer, 1"o.d. x 1/2" I.d.
107007	Heater element 1800w 120v bottom mount
107012	Heater element 1800w 240v bottom mount
107001	Heater element 2300w 240v bottom mount
84004	Heater Locknut, 1/2-20
83004	Heater Gasket 3/4" o.d.
82019	Heater Screw, 10-32 x 1/4" ss (heater connection)
33006	Tank Fitting (dispense tube 7/16")
33007	Tank Locknut (for tank dispense tube fitting 7/16")
31052	Dispense Tube seal LOCKNUT 7/16"
31005	Tank Fitting (tank vent)
25021	Silicone Tubing (vent) 1/4 x 3/8 x 6 1/2"
31023	Faucet Fitting 1/4" FPT x 3/8" Comp. (hot water faucet)

32043	Tube (tank to hot water faucet)
31009	Locknut 3/8" NPSL
31021	Tank drain Fitting 3/4 x 16 x 1/4" FPST HEX
33011	Tank drain Fitting Locknut 3/4 x 16
31011	Locknut 3/4 x 16 (tank drain, inlet tube)
31082	Nipple 1/4" MPT x 3/8" MPT
34004	Valve ball 3/8" x 3/8" FPT
31073	Tank Fitting 3/8" MPT x 3/8" hose barb (hot water tank out)
25002	Tank vent tube, Silicone Tubing 1/4 x 7/16 x 7 3/4"
58029	Switch, slide, full/half batch selector, w/harness (optional)

For current parts pricing, visit www.fetco.com.

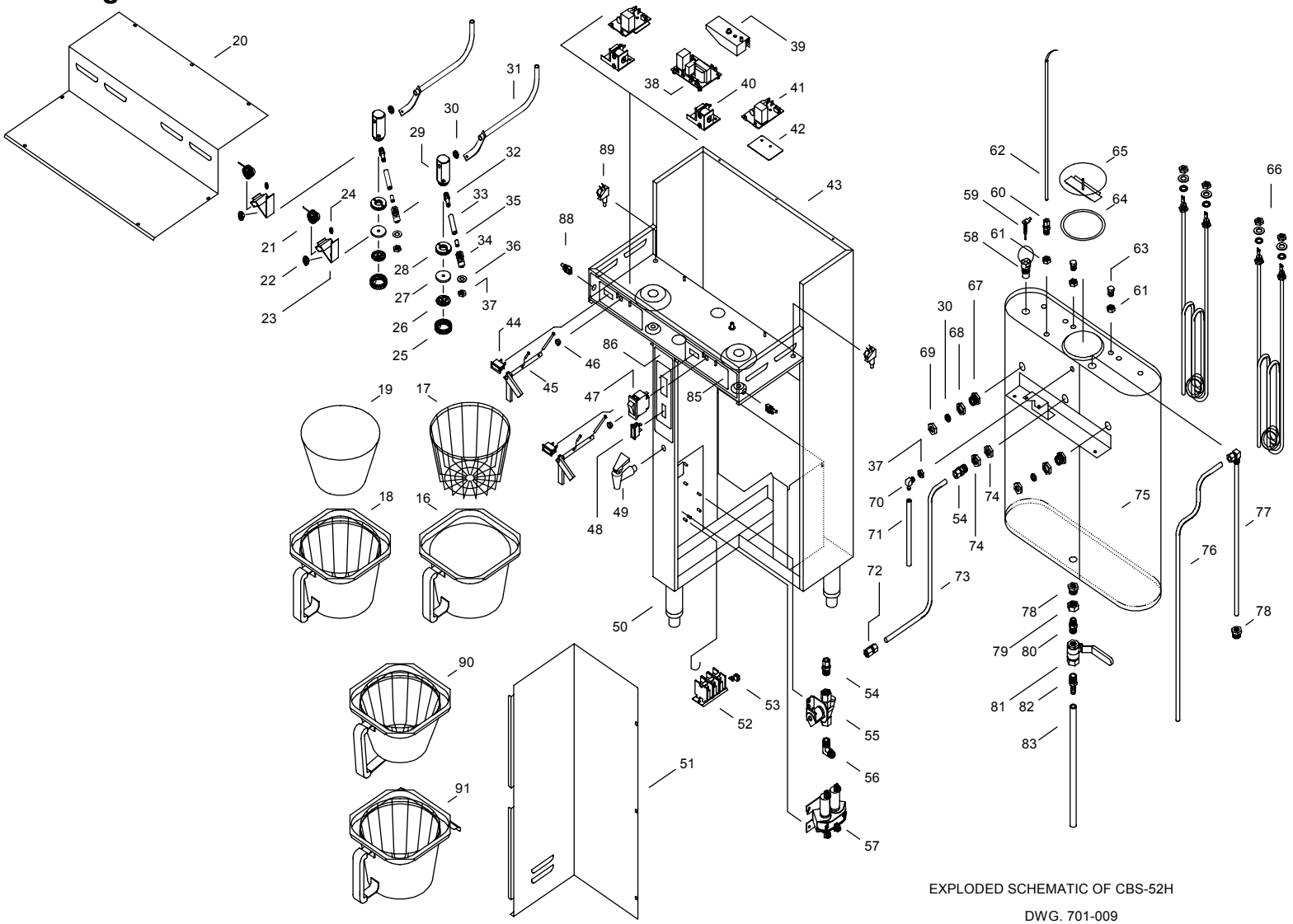
CBS-51H15, 52H15, & 52H20 Parts List

Part #	Description	Drawing Item #	used on	
002022	brew cone weldment 16x6	16	51	52
09006	brew basket wire insert 16x6	17	51	52
101165	brew basket assy. 16 x 6	18	51	52
01133	brewer upper cover	20	51	
01056	brewer upper cover	20		52
85004	brew handle return spring	21	51	52
14002	brew handle latch plate	22	51	52
002005	brew handle latch weldment	23	51	52
85005	brew handle latch plate retaining clip	24	51	52
31015	spray cutter locknut	25	51	52
05014	spray cutter (8 + 1)	26	51	52
05002	spray cutter flow disk (.240 dia. opening)	27	51	52
33002	spray head lock nut	28	51	52
31068	spray head (large brass part)	29	51	52
24008	dispense tube seal 7/16"	30	51	52
002033	dispense tube weldment 7/16" dia.	31	51	52
31070	fitting (by pass & tank drain outlet)	32	51	52
25001	by-pass silicone tubing 1/4 x 7/16 x 2 7/8"	33	51	52
102028	by-pass valve assy.	34	51	52
32023	by-pass tube (by-pass valve inlet)	35	51	52
83005	by-pass & misc. washer	36	51	52
31006	locknut 1/8" npt (1 on vent & 2 on bypass valve)	37	51	52
108034	Liquid Level Control Brd. 100-120VAC, 50-100K ohm	38	51	52
108035	Liquid Level Control Brd. 200-240VAC, 50-100K ohm (EXPORT)	38	51	52
K033	Digital thermostat, 100-120VAC	39	51	52
K035	Digital thermostat, 200-240VAC (EXPORT)	39	51	52
102008	dispense latch, solenoid assy. 120vac	40	51	52
102039	dispense latch, solenoid assy. 220vac (export)	40	51	52
K034	Digital Timer Kit, 100-120VAC	41	51	52
K036	Digital Timer Kit, 200-240VAC (EXPORT)	41	51	52
001009	brewer body weldment	43	51	
001008	brewer body weldment	43		52
58004	lamp," brew" indicator, amber (EXPORT)	44	51	52
58026	lamp, "brew"	44	51	52
82018	brew handle screw, 8-32 x 2" ss r.h.	45	51	52
82004	brew handle screw, 6-32 x 5/8" ss r.h.	45	51	52
13005	brew handle safety handle	45	51	52
102010	brew handle start/stop assy.	45	51	52
002036	brew handle weldment	45	51	52
86001	brew handle bushing	46	51	52
52077	switch, power w/ circuit breaker, 120 VAC	47	51	52
52076	switch, power w/circuit breaker, 220 VAC (EXPORT)	47	51	52
58006	lamp, "ready" indicator, green, 220VAC, EXPORT	48	51	52
58027	lamp, "ready"	48	51	52
71023	faucet upper assy., hot water faucet (safety handle)	49	51	52
71003	faucet seat cup, hot water faucet	49	51	52
73011	leg, 4" adjustable	50	51	52
002023	brewer lower cover weldment	51		52
102042	terminal block assy. 4 pole	52		52
102041	terminal block assy. 3 pole	52	51	52
102040	terminal block assy. 2 pole (export & 120v 11 & 51's)	52	51	52
52003	ground lug terminal medium size	53	51	52
31028	fitting (dispense & fill valve outlet & hot water outlet)	54	51	52
31055	fill valve fitting 3/8" mpt x 3/8" comp. elbow (inlet opt)	54	51	
57004	fill valve coil, 120vac (s-45)	55	51	52
57022	fill valve assy.,brass body, 220vac (s-45 export)	55	51	52
57001	fill valve assy.,120v, brass body w/bracket (s-45)	55	51	52
57021	fill valve coil, 230vac (s-45 export)	55	51	52
57003	fill valve, repair kit (s-45)	55	51	52
31031	fill valve fitting 3/8" mpt x 3/8" flare elbow (inlet std.)	56	51	52
31055	fill valve fitting 3/8" mpt x 3/8" comp. elbow (inlet opt)	56		52
52021	relay mercury 20amp sp (export 208-240vac coil)	57	51	
52016	relay mercury 20amp dp 120vac	57	51	
52017	relay mercury 30amp dp 120vac	57	51	
52018	relay mercury 35amp dp 120vac (208-240v 1ph brw.)	57	51	52
52015	relay mercury 20amp sp 120vac (120v brewer)	57	51	
52034	relay mercury 30amp tp (export 208-240v coil)	57	51	52
52033	relay mercury 30amp tp 120vac (208-240v 3ph brw.)	57	51	52
52032	relay mercury 20amp dp (export 208-240v coil)	57	51	
52030	relay mercury 35amp dp (export 208-240v coil)	57	51	52
52029	relay mercury 30amp dp(export 208-240v coil)	57	51	
21026	water level probe housing	58	51	52
002010	water level probe weldment	59	51	52
31036	thermostat temp probe tank fitting 1/4" mpt x 1/4" comp.	60	51	52
31037	thermostat temp probe locknut 1/4" nspl (temp. probe tank fitting)	61	51	52
53015	thermostat temp probe 14" (use with K033 digital thermostat or 53012 thermostat)	62	51	52

102198	Digital temp probe assy., 14” (use with K033 digital thermostat only)	62	51	52
25004	thermostat temp probe lead cover (tubing)	62	51	52
31081	plug 1/4" mpt hex head	63	51	52
24002	tank cover gasket	64	51	52
102013	tank cover assy.	65	51	52
83006	heater washer, 1"o.d. x 1/2" i.d.	66	51	52
107002	heater element 3000w 240v assy.	66	51	52
107003	heater element 4000w 240v	66	51	52
107005	heater element 1800w 120v assy.	66	51	
84004	heater locknut, 1/2-20	66	51	52
83004	heater gasket 3/4" o.d. (also used behind faucet on 30's)	66	51	52
82019	heater screw, 10-32 x 1/4" ss (heater connection)	66	51	52
33006	tank fitting (dispense tube 7/16")	67	51	52
33007	tank locknut (for tank dispense tube fitting 7/16")	68	51	52
31052	dispense tube seal locknut 7/16"	69	51	52
31005	tank fitting (tank vent)	70	51	52
25021	silicone tubing (vent) 1/4 x 3/8 x 6 1/2"	71	51	52
31023	faucet fitting 1/4" fpt x 3/8" comp. (hot water faucet)	72	51	52
102024	tube assy. tank outlet to hot water faucet (new)	73		52
102023	tube assy. tank outlet to hot water faucet (new)	73	51	
32032	tube (tank to hot water faucet connecting)	73	51	52
32033	tube (tank to hot water faucet connecting)	73	51	
31009	locknut 3/8" npsl	74	51	52
004004	tank weldment	75	51	
004005	tank weldment	75		52
32034	tube (fill valve to tank water inlet connecting)	76	51	
32031	tube (fill valve to tank water inlet connecting)	76	51	52
002043	tank fill tube weldment	77	51	52
31021	tank drain fitting 3/4 x 16 x 1/4" fpst hex	78	51	52
33011	tank drain fitting locknut 3/4 x 16	79	51	52
31011	locknut 3/4 x 16 (tank drain, inlet tube)	79	51	52
31082	nipple 1/4" mpt x 3/8" mpt	80	51	52
34004	valve ball 3/8" x 3/8" fpt	81	51	52
31073	tank fitting 3/8" mpt x 3/8" hose barb (hot water tank out)	82	51	52
25002	tank vent tube, silicone tubing 1/4 x 7/16 x 7 3/4"	83	51	52
45014	nameplate (-2)	85		52
45016	nameplate	85	51	
45014	label (-2) vertical panel overlay	86	51	52
58024	switch, toggle, full/half batch selector, w/harness (optional)	88	51	52
58029	switch, slide, full/half batch selector, w/harness (optional)	88	51	52
58016	switch, tea/coffee brew cycle (ice tea option)	89	51	52
09001	brew basket wire insert 13x5 (ice tea, 1/2 batch)	90	51	52
101010	brew basket assy. (13 x 5) (current 1/2 batch option)	90	51	52
002003	brew cone weldment 13 x 5 (also 1/2 batch option)	90	51	52
002024	brew cone weldment (ice tea) 13 x 5	91	51	52
002037	brew cone weldment tea	91	51	52
101081	brew basket assy. tea 16 x 6	91	51	52

For current parts pricing, visit www.fetco.com.

Parts Drawing: CBS 51H15 & 52H15



EXPLODED SCHEMATIC OF CBS-52H

DWG. 701-009

Troubleshooting

Brewing Problem	Possible Cause	Solution
Brew handle will not stay down	Power switch off.	-Turn switch on.
	No power to the brewer (Brewer lights are not illuminated)	-Make sure the brewer is plugged in. -Check the wall circuit breaker / reset -Turn the brewer power switch off then back on (it has an internal breaker)
	Bad timer or dispense latch assembly. (Brew light **does not** come on and handle won't stay down)	-Check for voltage reaching the timer from the dispense latch assembly if yes replace timer. If no, replace latch assy.
	Bad dispense latch assy. (Brew light **does** come on and handle won't stay down)	-Replace the dispense latch assembly
	Bad dispense latch assembly (brewer buzzes when in brew cycle)	-Replace the dispense latch assembly
Brew handle stays down but no water is dispensed	No water reaching the brewer	-Make sure the shut off valve is open. -Check water line for kinks; replace line if necessary -Check to see if filter is clogged by changing it.
Short brew levels EVERY BREW	Flow discs in spray heads in upside down	-Reassemble spray heads - bumps on spray cutter face ↓ with flange on flow disc facing ↓
	Water filter clogged	(See details in next section)
	Spray head clogged	-Clean and or replace the sprayhead
(**One or Both sides** are affected and levels are **consistent**)	Timer/s are set too low	-Advance timers to proper level.
	Incoming Voltage is too low for timers to function at proper time sequences	-Reset wall circuit breaker as one side may drop out & not flag the breaker. -Call an electrician to find loose connections in the building
Short brew levels SOME BREWS	Water filter clogged. (problem is worse during simultaneous brews)	-Replace water filter
	Weak dispense latch assembly (usually buzzes during cycle)	-Replace dispense latch assembly.
(**One or Both sides** are affected and levels are **erratic**)	Water pressure or flow rate is too low or fluctuates too much to support a full brew. (problem is worse in simultaneous brews)	-Make sure brewer has a dedicated water line -Ensure that the shut off valve is open all the way (Never use needle saddle valves) -Increase the diameter of the water line to the brewer and or find stable source.
Brew Time required to fill LUXUS are not the same for both sides	Brewer is not level	-With an accurate level, level the brewer front to back and left to right by adjusting the feet.
High brew levels EVERY BREW (overfills but does stop) SOME BREWS	Timer/s are set too high	-Adjust timers down to appropriate level
	Thermal server not empty	-Empty the server and try again
Brew basket or filter overflows		-Call FETCO Service Dept. to discuss. (800) 338-2699
Weak Coffee	Spray head missing	-Attach spray head assembly.
	Improper dose	-Measure and confirm correct dose
	Filter papers	-Make sure only one paper is used
	Cracked dispense tube	-See "spray head drips MAJOR", below
	Low brew temperature (Temperature inside the hot water tank is set to 205° F, the metal delivery system drops the temp.)	-Adjust thermostat so the water stream measured at the bottom of the brew basket, 1/3 of the way through the brew cycle, equals 190 degrees + or - 5 degrees
Grounds not saturated	Spray head missing	-Replace spray head
	Half batch used incorrectly	-Use smaller "half batch" brew basket -Discourage half batch use -Investigate the need for a smaller brewer
	Water Softener in use	-Move brewer water feed to a non-softened source.
	Degassing - extremely fresh coffee	-Call FETCO Service Dept. to discuss. (800) 338-2699
No bypass EVERY BREW →	Bypass valve closed	-Open bypass valve
SOME BREWS→	Flow disc wrong size or missing	-Correct or replace flow disc
Spray head / brew basket drips either side or both MINOR	Condensation around the sprayhead area	-Wipe sprayhead area after brewing; place an empty container under brew cone when not in use.
	Condensation from water tank dripping through dispense tube	-Insert an empty brew basket and server under brew heads when not in use

Brewing Problem	Possible Cause	Solution
Spray head / brew basket drips either side or both MAJOR	Cracked dispense tube/s (This problem starts out minor but gets steadily worse)	-Replace both dispense tubes even if other side is not dripping
	Fill valve not sealing (Will drip even with power off.)	-See next section - "Brewer won't stop brewing", "Bad or stuck fill valve".
Brewer won't stop brewing (**not same as high brew levels**)	Dispense tube cracked	-See "sprayhead drips MAJOR" above
	Mechanical binding (brew handle stays down / brew light turns off at normal time)	-Re-align the brew handle / brass sprayhead tower / and dispense tube into a straight line by moving brass tower
	Water pressure over 75psi	-Place a water pressure regulator on the line and reduce to 20-75 psi
	Dispense tube drive screw off. A 2.5" screw that connects the handle to the dispense tube at the brass sprayhead tower. (handle returns up and brew lamp turns off but brewing continues)	-Ensure that the drive screw is straight (can be straightened by hand while still in the brew handle) and reconnect to the dispense tube. The flange that the drive screw engages MUST be held flat against the brass sprayhead tower, without being able to back out.
	Water level probe bad or encrusted with lime. (causes brewer to continue filling hot water tank which will overflow into the brew baskets)	-Clean lime build up on the probe tip and/or tank wall. (Holding the probe wire (green) from the probe end to the body of the brewer should stop the fill if the probe is bad but the liquid level board is good)
	Bad liquid level control board	-Replace the LLC board if grounding the probe end of the (green) probe wire to the body of brewer does not remove the voltage at the fill terminal on the LLC board.
	Bad or stuck fill valve	-Rebuild or replace the fill valve if no voltage is on the coil (it is not magnetic) and it still passes water to the tank. (Disconnect the outlet side to see if it leaks water to the tank)
Coffee tastes too strong	Incorrect dosage	-Measure and confirm the correct amount of coffee required
	Short brew levels	-See "Short brew levels", above.

Temperature Problem (brewer only)	Possible Cause	Solution
See also LUXUS problems		
Brew water is cold / not hot enough, ready light is OFF. (Before proceeding, make sure water tank refills when water is dispensed. The brewer will not heat unless the tank is full.)	No power to brewer.	-Make sure power switch is on. -Reset machine circuit breaker. -Check power connection. (plug or hard wire connection). -Check building circuit breaker. (Always reset breaker by switching off, then on.)
	Defective liquid level control board. (No power to thermostat).	-With power on, and water tank full, check LLC board for 120 volts on brown wire and neutral. Replace LLC board if there is no voltage.
	Bad connections on mercury relay. (No power to heaters).	-Check relay for burned or loose connections. Replace with high temperature connectors if necessary.
	Defective mercury relay. (No power to heaters).	-Check input and output voltages on relay. 120 volts on blue wire (input) but no voltage out to heaters indicates a bad relay.
	Bad heating element/s.	-Check amperage draw on heater wires. 0 amps = bad heater.
Brew water is cold / not hot enough, ready light is ON.	Bad Thermostat (the thermostat believes that it is at set temperature)	-Replace the thermostat and or thermal probe. It's not possible to trouble shoot the probe.
	Low brew temperature setting on thermostat	-See "Low brew temperature" under "**Weak Coffee"** section.
Slow to recover temperature (Ready light takes along time to come back on after brewing.)	Brewers with more than one heater can have just one fail	-Check amperage draw on heater wires. 0 amps = bad heater.
	Hot water tank limed up	-Remove access cover to the hot water tank and inspect for lime. Remove the brewer for shop de-liming if build up is thick.
Boiling	Thermostat set too high for altitude (Denver etc.)	-Reduce temperature setting to 3 degrees below boiling at your altitude
	Defective thermostat	-Replace the thermostat and or thermal probe. It's not possible to trouble shoot the probe.

LUXUS Server Problem	Possible Cause	Solution
LUXUS leaking from the base	Overflow of coffee, or water from cleaning running down the side and collecting in the black plastic base (1.5 gallon LUXUS only)	-Remove the plastic base (it slips on and off) wipe the interior and plastic base dry and reassemble. Monitor brew practices & do not clean containers in sinks or dishwashers
	Bad O-ring gasket behind faucet shank (1.5 & 3 gallon LUXUS)	-Remove the faucet, then unbolt the faucet shank from the LUXUS and replace the O-ring.
LUXUS leaking from sight gauge	Brew level set too high	-Adjust timers for proper level
	Sight gauge cap not tight	-Tighten gauge cap (show operators how this could have been loosened when the vent cap was opened)
	Lower gasket missing or bad	-Replace and or discourage casual cleaning practices
Coffee not hot enough	LUXUS not preheated before first brew of the day	-Preheat the LUXUS 1/2 full with hot water and let stand for 15 minutes
	Attempting to hold coffee too long.	-Review discard times
	Using 1/2 batch on regular basis	-Encourage full batch use except at end of day or shift. Explore the need for smaller brewers
	Judging temperature from a sample that is too small, taken from an infrequently used LUXUS	-A small amount of coffee in the faucet body will cool in about 15 minutes.
Drip from faucet	Blockage in faucet (hair from cleaning brush, coffee oils, etc.)	-Remove faucet bonnet (top part with handle attached) and clean seat cup and faucet body. Clean on regular basis
	Faucet seat cup	-Remove faucet bonnet (top part with handle attached) and replace seat cup. Stained cups are OK cracked or brittle are not.
Coffee won't dispense	Vents closed on top of gauge tube and or twist lock cover	-Open vents (vents are closed only for transporting the servers or to extend holding times prior to serving coffee)