FETCO®
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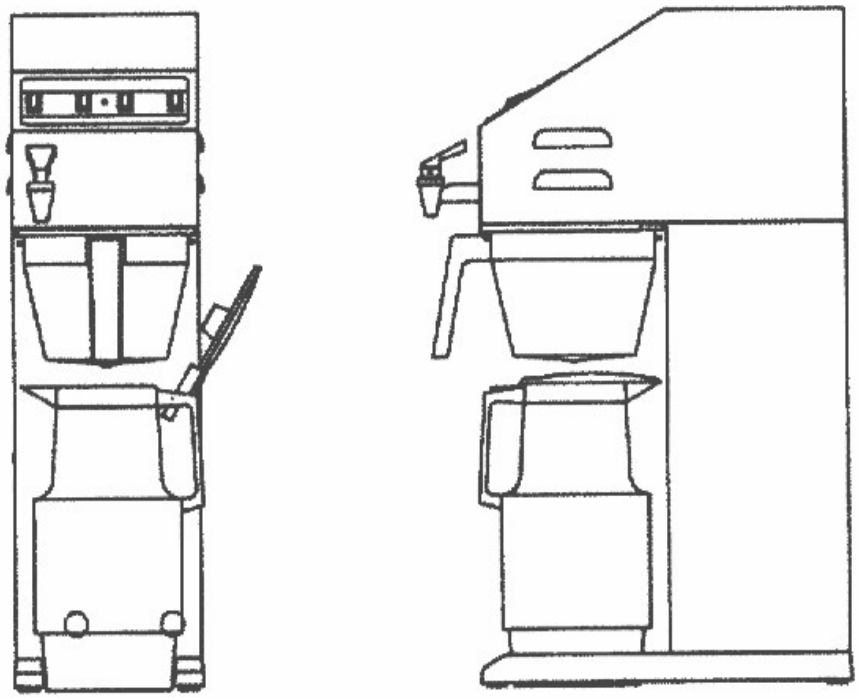
User's Guide

Installation - Operation - Service

Coffee Brewing Systems

Model: CBS-18



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Part # P007 Revised February 27, 2004

Product Description/Features

- **Fully Automatic, With Pulsebrew, Pre-Wetting, and Dripping Indicator**
- **Stainless Steel, Gourmet Size Brew Basket**
- **1.5 or 1.8 Liter, Glass Lined Thermal Server With Brew Thru Feature**
- **Hot Water Service**
- **All Stainless Steel Body Construction**

Technical Data

Brewing Specifications

Brew Volume: 1.5 or 1.8 liters (0.4 or 0.5 gallon)

Coffee Filter Size: 11 ¼ X 3 ¾" Product # F007

Water Requirements: 20-75 psig

Factory Settings

Water Temperature: 205°F in tank

Brew Temperature Protection: Disabled

Brew time: 3 minutes

Pulse: 20 seconds on, 10 seconds off

Pre-wetting: Disabled

Weights and Capacities

Brewer Weight (empty)	Water Tank Capacity	Brewer Weight (filled)	Server Weight (empty)	Server Capacity	Server Weight (filled)	Total Weight Brewer & Server Filled
21 lbs.	2.0 gal.	38 lbs.	2.0 lbs.	0.4 / 0.5 gal.	5.9 lbs.	43.9 lbs.
9.5 kg	7.5 liters	17.3 kg	0.9 kg.	1.5 / 1.8 ltr.	2.7 kg.	20.0 kg.

Electrical Configurations & Brewing Capacities

Domestic Model	Heater Configuration	Voltage	Phase	Wires	KW	Maximum Amp draw	Batches per Hour*	
							1.5L Batch	1.8L Batch
CBS-18 (-1)	1 X 1500 watt	120	1 ph.	2 + ground	1.6	13.0	6.3	5.4
CBS-18 (-2)	1 X 2100 watt	120	1 ph.	2 + ground	2.2	18.0	7.9	6.8
CBS-18 (-3)	1 X 2700 watt	120/208	1 ph.	3 + ground	2.1	10.2	7.7	6.7
		120/220	1 ph.	3 + ground	2.4	11.2	8.4	7.4
		120/240	1 ph.	3 + ground	2.8	11.8	9.1	8.0
CBS-18 (-5)	1 X 3700 watt	120/208	1 ph.	3 + ground	2.9	13.8	9.2	8.2
		120/220	1 ph.	3 + ground	3.3	15.1	10.0	8.9
		120/240	1 ph.	3 + ground	3.8	15.9	10.7	9.6
Export Model								
CBS-18 (-4)	1 X 2700 watt	220	1 ph.	2 + ground	2.4	11.2	8.4	7.4
CBS-18 (-6)	1 X 3700 watt	220	1 ph	2 + ground	3.3	15.1	10.0	8.9

*Batches per hour are based on standard factory settings: No pre-wetting / 3 minute spray over / Pulse - 20 sec.
With pre-wetting feature enabled, subtract ¼ batch per hour.
With no pulse (continuous spray over), add 1 - 1 ½ batches per hour for 120 volt units and 2 - 3 batches per hour for 208-240 volt units.

Installation

(For Qualified Service Technicians Only)

Keys To A Successful Installation

FETCO brewers are rugged and reliable machines that will provide many years of service. However, if not installed correctly by qualified personnel, the brewer will not operate properly and damage to the brewer may result. Damages resulting from improper installation are not covered by the warranty.

Here are the key points to consider before installation:

General: Utilize a qualified beverage equipment service technician for installation.

Place the brewer on a level surface.

Do not adjust the thermostat setting unless absolutely necessary. It is set at the factory for optimum performance- 205°F. It should only be lowered at high altitude installations.

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.

A taste and odor filter is highly recommended for this and all beverage equipment

Verify that the water line will provide at least 2 gallons per minute before connecting it to the brewer.

Electrical: 120 volt units are supplied with appropriate cords and plugs for 15 amp or 20 amp service.

Dual voltage units (120/208-240VAC) are not supplied with a cord or plug. The terminals must be wired as follows:

L-1: 120 VAC	Located on the	L-3: 120 VAC	Located next to
L-2: neutral (white)	control board	ground (green)	the control board.

Both neutral (white) and ground (green) must be provided.

The electrical drawing for is located at the back of this manual and inside the rear cover of the brewer.

Installation Check List

The installation must comply with applicable federal, state, and local codes having jurisdiction at your location. Check with your local inspectors to determine what codes will apply to the installation and operation of FETCO products.

1. Review the Dimensional Drawings and the Operating Procedures for the unit you are installing. Verify the brewer will fit in the space intended for it. Verify that the counter or table will support the weight of the brewer and servers when filled and that the surface is level.

2. Verify that the actual voltage at the electrical service connection is compatible with the specifications on the brewer's serial number plate. Make sure the electrical service includes **neutral**. Ensure at this time that the circuit breaker to the brewer and the power switch on the brewer are in the off position.

3. Remove the white plastic protective coating from the brewer body.

4. The thermostat, timer, and the 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 liquid level control board circuits on the main board until water is sensed. The heating process will start automatically when the tank has filled with water.

5. Remove the top and rear panel to inspect for leaks, loose wires, etc., and for adjustments.

6. Water connection:
   - Water inlet is a 1/4 inch male flare fitting
   - 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. Hot water should not exceed 160°F.
   - We discourage the use of softened water. Softened water will give poor brew performance in any drip coffee system using a paper filter.
   - 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.
   - Flush the water supply line and filter **before** connecting it to the brewer.
   - Verify that the water line will provide at least 3/4 gallons per minute, and that the water pressure is between 20 and 75 psig.
   - 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.

7. Power connection:
   - 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.
   - All brewers require **neutral**. Damage to the brewer may result if neutral is not present.
   - The body of the brewer must be grounded to a suitable building ground. A ground lug is provided in the brewer on the floor of the chassis. Use suitable gauge copper wire for grounding.
   - Electrical connections must be secured in-place within the unit to meet national and local standards.

8. Turn on the incoming water supply line and inspect both inside and outside of the brewer for leaks in all fittings and tubes.

9. Plug in brewer and turn on the incoming power

10. Turn on the brewer with the power switch.
    - Within 6 seconds, the internal tanks will begin filling until the water is sensed by the water level probe.
    - The heaters will be disabled by the L.L.C. circuits on the main board until water is sensed by the water probe at the top of the tank.

On initial startup, from dry tank conditions, the green "READY" will flash 45 seconds after turning unit on, indicating a fault (low water level). Turn the power switch off and back on to reset this. Repeat one additional time if necessary

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.

Depending on the cost of electricity in your area, very little savings may be had by turning the brewer off between shifts. The water tank is well insulated and may actually use less electricity to keep the tank hot, than re-heating the tank from a cold condition. Leaving the brewer in the on position will also avoid delays at the beginning of shifts for the brewer to reach operating temperature.

11. Brew one server (water only) to confirm proper fill levels.
    - The brewer is factory set to deliver 1.9 liters to the serving dispenser.
    - Each ounce of coffee retains up to two ounces of water, therefore your brew level will be reduced proportionally to the amount of coffee used.

12. Review the entire operating procedures with whoever will be using the brewer. Pay particular attention to the following areas.
    - Don't remove the brew basket until it has stopped dripping.
    - Don't remove the spray plate until it has cooled from the brewing operation. It may still be hot, and hot brew water may be retained behind it.
    - Make sure the server is empty before brewing into it.
    - Show the location and operation of the water shut off valve as well as the circuit breaker for the brewer.
    - Never unplug the coffee brewer (or any high wattage equipment) while it is operating. Push the power switch to the off position first. The resulting electrical pulse may cause a burn or shock hazard, or damage the computer operating circuits on the control board.
    - Steam from the tank will form condensation in the vent tube. This condensation will drip into and then out of the brew basket. Up to 1/4 cup discharging overnight is possible. Place an appropriate container under the brew basket when not in use.

Warning: Avoid sudden changes in temperature in the server, which may cause the glass liner to shatter. Do not rinse a warm server in cold water. Use only warm or hot water.

Operating Procedures

1. **Turn brewer on/off switch to the on position**
   - The power switch will illuminate to indicate that the brewer has power and is operating.
   - When the **ready light** 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. **Prepare the brew basket.**
   - Place a paper filter in the brew basket. Pour the appropriate amount of pre-measured, ground coffee into the paper filter, and distribute it evenly. The amount of coffee used will depend on your personal tastes and the recommendation of your roaster.
   - Slide the brew basket into place.

3. **Place the server in position under the brew basket.**
   - Make sure the server is empty. Overflowing may result if it is not completely empty when the brew cycle begins.
   - Ensure that the brew-though cover is in place and the lever is in the open position.

4. **Start the brew cycle.**
   - When the ready light illuminates, start a brew cycle by pressing the start switch.
   - The brew light will illuminate during the brew cycle. At the end of the brew cycle, the brew light will flash for 90 seconds, indicating that coffee is still dripping from the brew basket.
   - CAUTION! Do not remove the brew basket until the brew light stops flashing and 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.
   - To interrupt the brew cycle at any time, press the stop switch. This will reset all functions.

Optional Setting: Brew Temperature Protection

The CBS-18 may be set so that it cannot brew unless the water is at the proper temperature. If a brew cycle is started without the ready light on, no water will be dispensed and the brew light will begin flashing. Once the water heats to the proper temperature, the brew cycle will begin normally. See the Settings & Adjustments section for instructions on setting this feature.

Optional Setting: Pre-wetting

The CBS-18 has an optional pre-wetting feature. When the brew cycle is started, water will be sprayed over the coffee grounds for 5 seconds, followed by a 30 second delay before the regular brew cycle begins. See the Settings & Adjustments section for instructions on setting this feature.

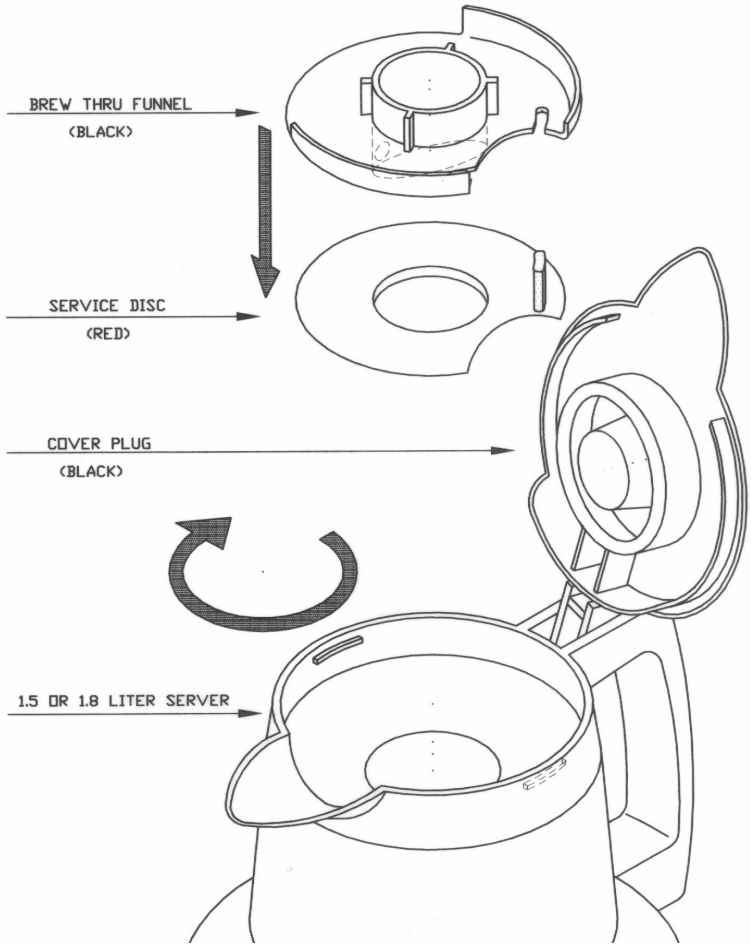
Cleaning

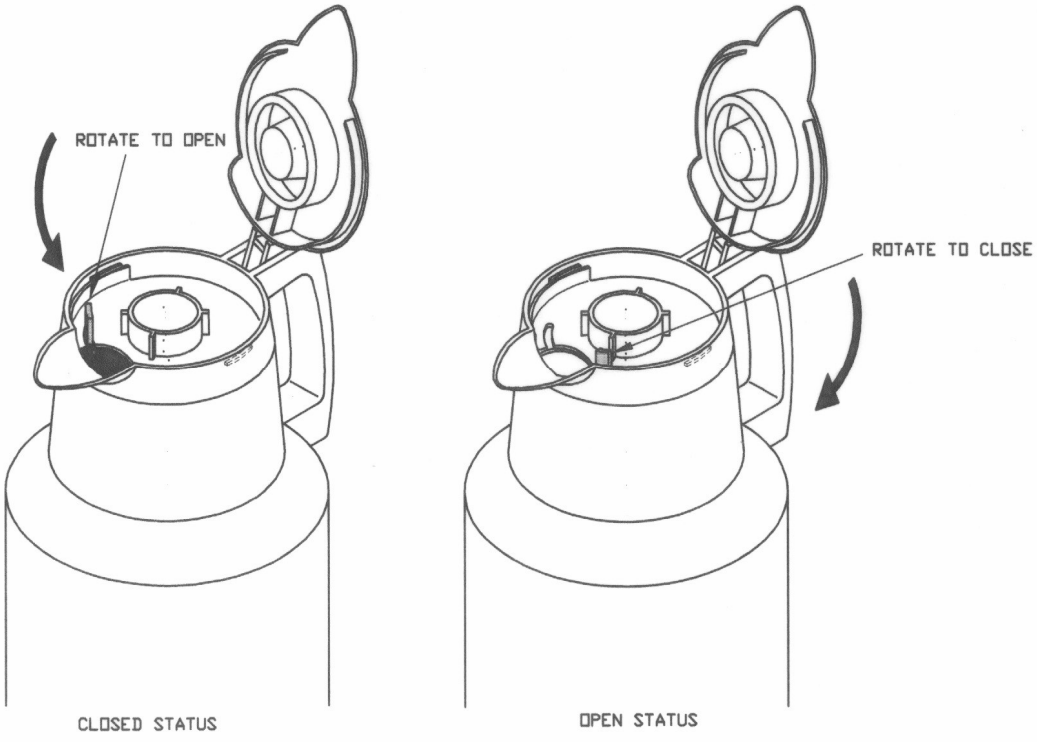
Brewer: The spray pan should be removed and cleaned periodically to remove hard water deposits. In areas with extremely hard water, it may be necessary to do this weekly. Monthly cleaning may be sufficient in areas with average water conditions.

Servers: The servers should be cleaned daily with mild detergent and a soft brush or sponge. Never allow coffee to sit inside the server overnight to prevent deposits from forming. Do not use wire brushes.

Do not place the servers in a dishwasher

Warning: Avoid sudden changes in temperature in the server, which may cause the glass liner to shatter. Do not rinse a warm server in cold water. Use only warm or hot water.


BREW THRU FUNNEL
(BLACK)
SERVICE DISC
(RED)
COVER PLUG
(BLACK)
1.5 OR 1.8 LITER SERVER


ROTATE TO OPEN
ROTATE TO CLOSE
CLOSED STATUS
OPEN STATUS

Settings and Adjustments

Caution! Always unplug or disconnect power to the brewer before changing any settings or adjustments.

All settings and adjustments are made on the control board, which is accessible from the back of the unit. (See the control board diagram.) To remove the cover, remove 6 screws from the back and 2 screws from the top.

Dispense System

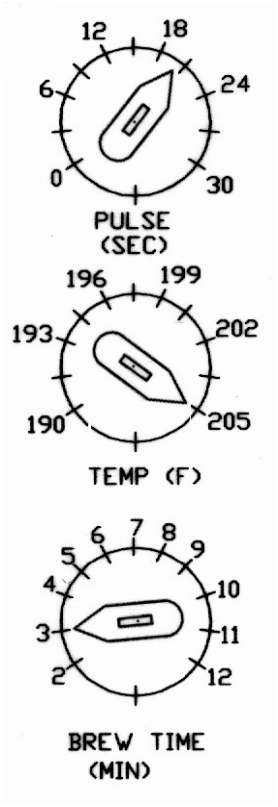
The CBS-18 features a system which dispenses a factory calibrated amount of water completely before refilling the tank. This amount of water (1.8 or 1.5 liters) is determined by the distance between the water level probe and the dispense tube. The water tank will not refill until the brew cycle is finished and the dispense valve has closed.

The volume of water dispensed is not adjustable.

Brew Time (bottom dial)

The brew time is adjustable from 2 to 12 minutes and is factory set at 3 minutes. The brew time always defaults to the nearest full minute on the dial.

The brew time must be set long enough to dispense the full volume of water, however, a setting that is longer than necessary will delay the next brew cycle. See the next section, Pulse Feature, for a full explanation.



Pulse Feature (top dial)

The optional pulse feature allows the spray of water over the coffee bed to cycle on and off throughout the brew cycle. The setting is made on the top dial on the control board, labeled “ON TIME”. The total pulse cycle is 30 seconds in length.

Examples:

1.) The factory setting, 20 seconds, will give 20 seconds of spray over followed by a 10 second pause.
2.) A setting of 15 seconds will give 15 seconds of spray over followed by a 15 second pause.
3.) A pulse setting of 30, the maximum, will give a constant spray of water throughout the brew cycle. In other words, no pulse at all.

The Pulse and Brew settings must be synchronized so that the dispense valve is open long enough to dispense all of the brew water, without being open longer than is necessary. The brew setting is on the bottom dial of the control board.

Use the following chart to determine the proper settings.

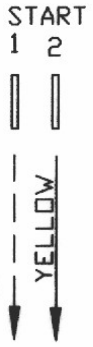
				Factory Settings		
On Time Setting (Pulse)	5 sec.	10 sec.	15 sec.	**20 sec.**	25 sec.	30 sec*.
Brew Time Setting (minimum)	12 min.	6 min.	4 min.	**3 min.**	3 min.	2 min.

* No pulse

Temperature

The brew water temperature is adjustable from 190°F to 205°F and is factory set at 205°F. The adjustment is made on the center dial of the control board. Adjustment should only be necessary at high altitudes to prevent boiling.

Brew Temperature Protection



When this feature is enabled, a brew cycle cannot begin unless the water is at the proper temperature. If a brew cycle is started without the ready light on, no water will be dispensed and the brew light will begin flashing. Once the water heats to the proper temperature, the brew cycle will begin normally.

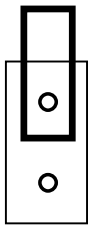
The brewer is factory set with this feature disabled. To enable it, locate the yellow wire near the lower right side of the control board. Move the wire from the terminal labeled START 2 to the terminal labeled START 1.

Pre-wetting Feature

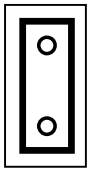
When this feature is enabled, water will spray over the coffee bed for 5 seconds at the beginning of the brew cycle to pre-wet the grounds. After a 30 second delay, the normal brew cycle will begin.

The brewer is factory set with this feature disabled.

Pre-wetting is controlled by Jumper #2, near the bottom of the control board. To enable pre-wetting, remove the jumper connector and place it on both of the pins. This closes the circuit, allowing pre-wetting to occur.



Jumper 2 in open position. Pre-wetting disabled. (Factory setting)



Jumper 2 in closed position. Pre-wetting enabled.

Do not change Jumper #1. This jumper must always be in the open position for the CBS-18.

Replacement Parts

CBS-18 Brewer Parts

Part Number	Description	
23073	plastic stand, CBS-18	
51018	control board, pulse brew, 120VAC	
107013	heater element, 1.5KW, 120VAC, bottom mount	
107014	heater element, 2.1KW, 120VAC, bottom mount	
107015	heater element, 2.7KW, 240VAC, bottom mount	
107016	heater element, 3.7KW, 240VAC, bottom mount	
54020	temperature probe, 8"	
53061	thermostat, temperature limit, 230°F	
57058	fill valve, S-53, 0.75 GPM, 120VAC	
58017	lamp, "brew" 120VAC	
58019	lamp, "ready", 220VAC	
58061	switch, brew 240VAC	
58062	switch, stop 240VAC	
58063	switch, power, 240VAC	
71044	faucet, hot water	
71003	faucet seat cup, hot water	
71039	faucet upper assy., hot water	
101151	brew basket assy., CBS-18	With wire insert
101152	brew cone assy., CBS-18	Without wire insert
9018	brew basket wire insert, CBS-18,11 1/4" X 3 3/4"	
23074	brew basket handle, CBS-18	
102013	tank cover assy.	
24002	tank cover gasket	
102080	spray housing assy, 120VAC, CBS-18, TBS-21H	Includes coil, o-ring, and spray plate assy.
102081	spray plate assy.	
57047	spray housing coil service kit, DSV-11, 120 VAC	
24054	o-ring, 4.237" I.D., #156	
K027	water level probe assy., 1.8 L	
K026	water level probe assy., 1.5 L	

Server Parts

Part Number	Description	
99005	glass liner, 1.8 liter server	
99006	glass liner, 1.5 liter server	
99007	rubber sealing ring, CBS-18 server	
99008	chrome jacket, 1.8 liter server	
99015	black lid, CBS-18 server	
99011	orange lid, CBS-18 server	
23077	brew through funnel, CBS-18 server	
23078	service disc, CBS-18 server	
23079	cover plug, CBS-18 server	

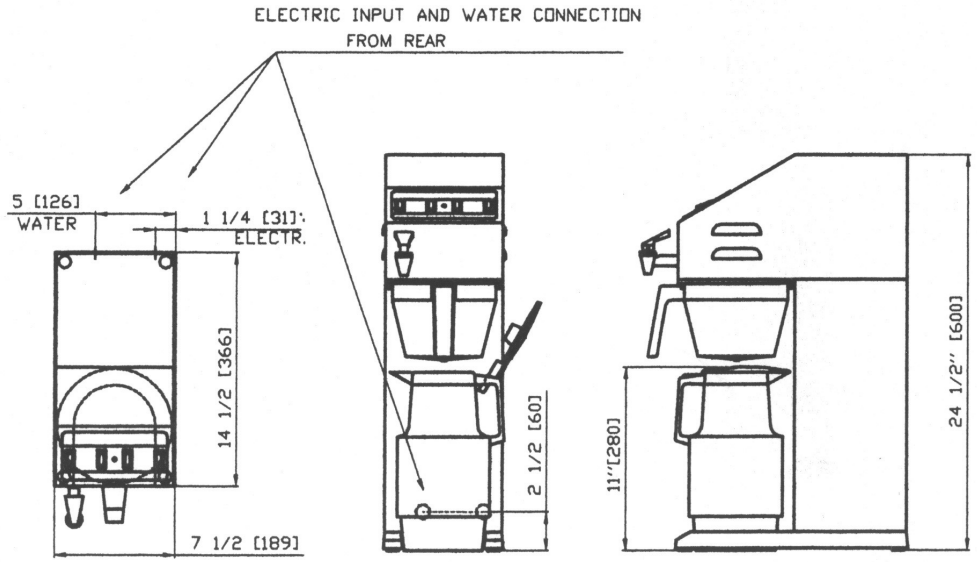
ELECTRICAL INPUT (ONE OF THE FOLLOWING) :

CBS-18(-1) 120 VAC 1PH 2WIRE+GRD 1.6 KW 13.0 AMPS (1.5 KW HEATER)
CBS-18(-2) 120 VAC 1PH 2WIRES+GRD 2.2 KW 18.0 AMPS (2.1 KW HEATER)
CBS-18(-3) 120/208-240 VAC 1PH 3WIRE+GRD 2.0-2.8KW 10.2-11.8AMPS (2.7 KW HEATER)
CBS-18(-4) 220 VAC 1PH 2 WIRES+GRD 2.4KW 11.2 AMPS (2.7 KW HEATER)

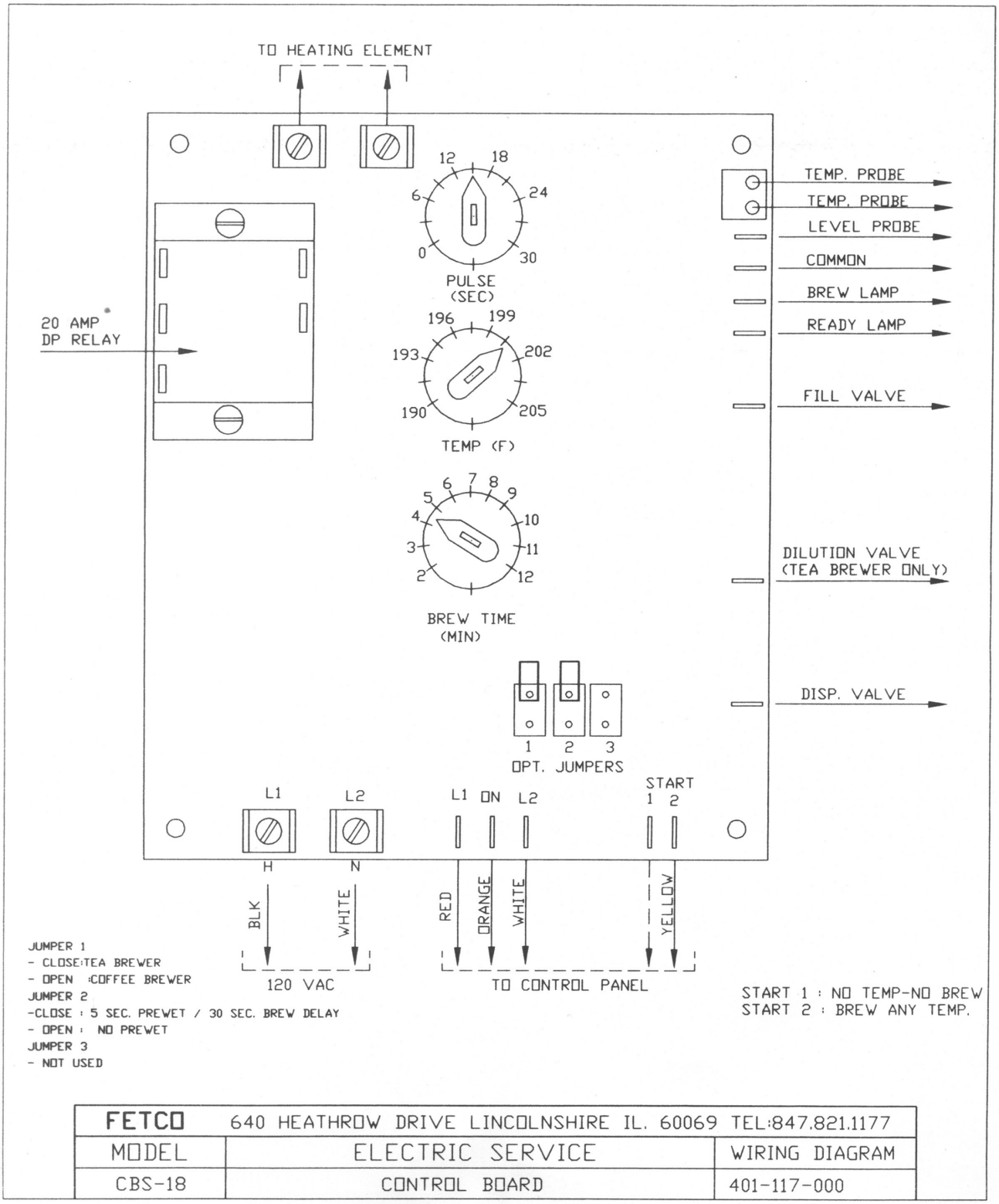
CHECK ELECTRICAL SPECIFICATION LABEL FOR SPECIFIC SERVICE REQUIRED.
UTILITIES CONNECTIONS THROUGH BOTTOM AND/OR BACK WALL OF UNIT.

WATER INLET CONNECTION:
1/4 FLARE

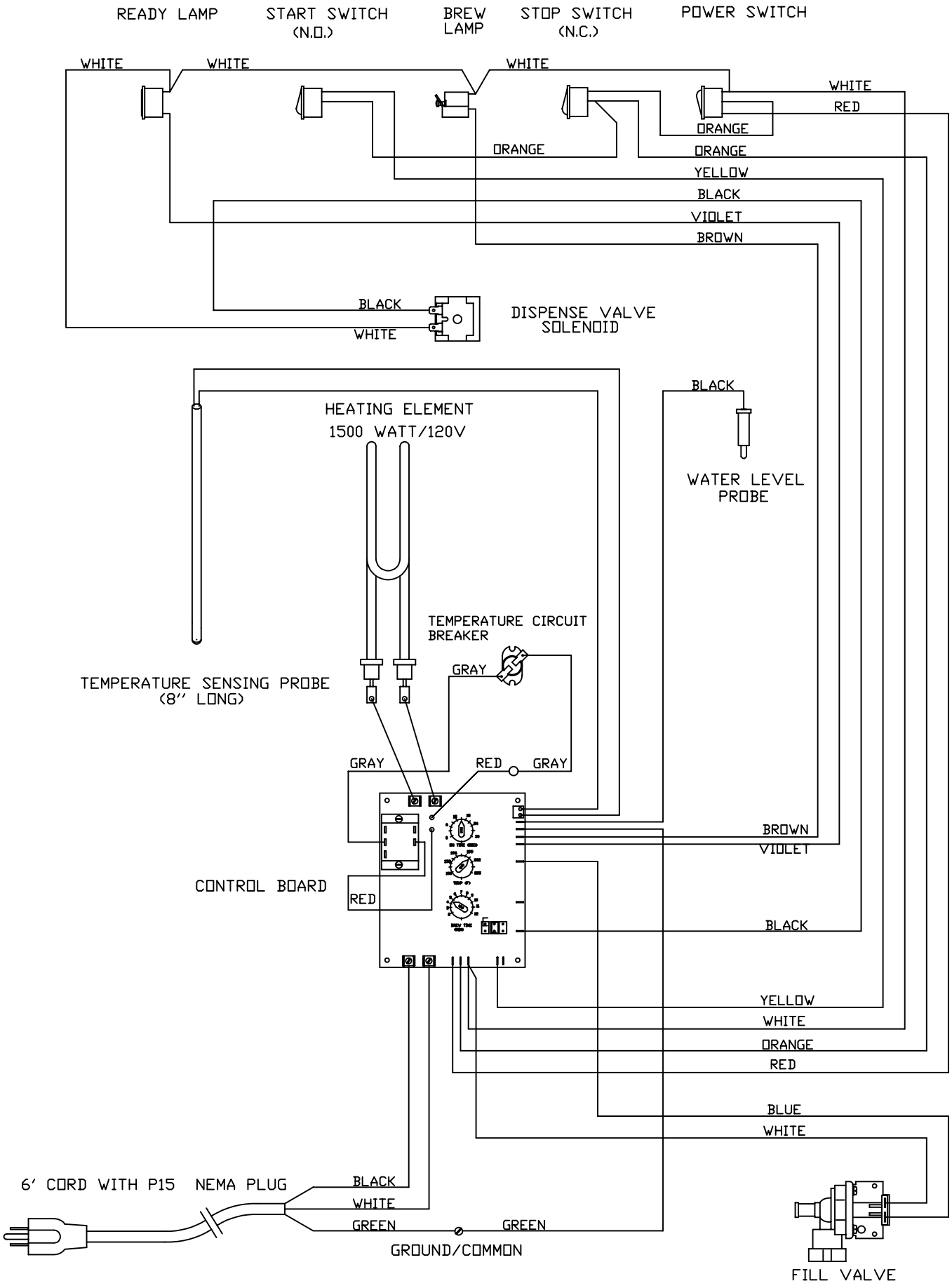
TOTAL WEIGHT IN USE:
X



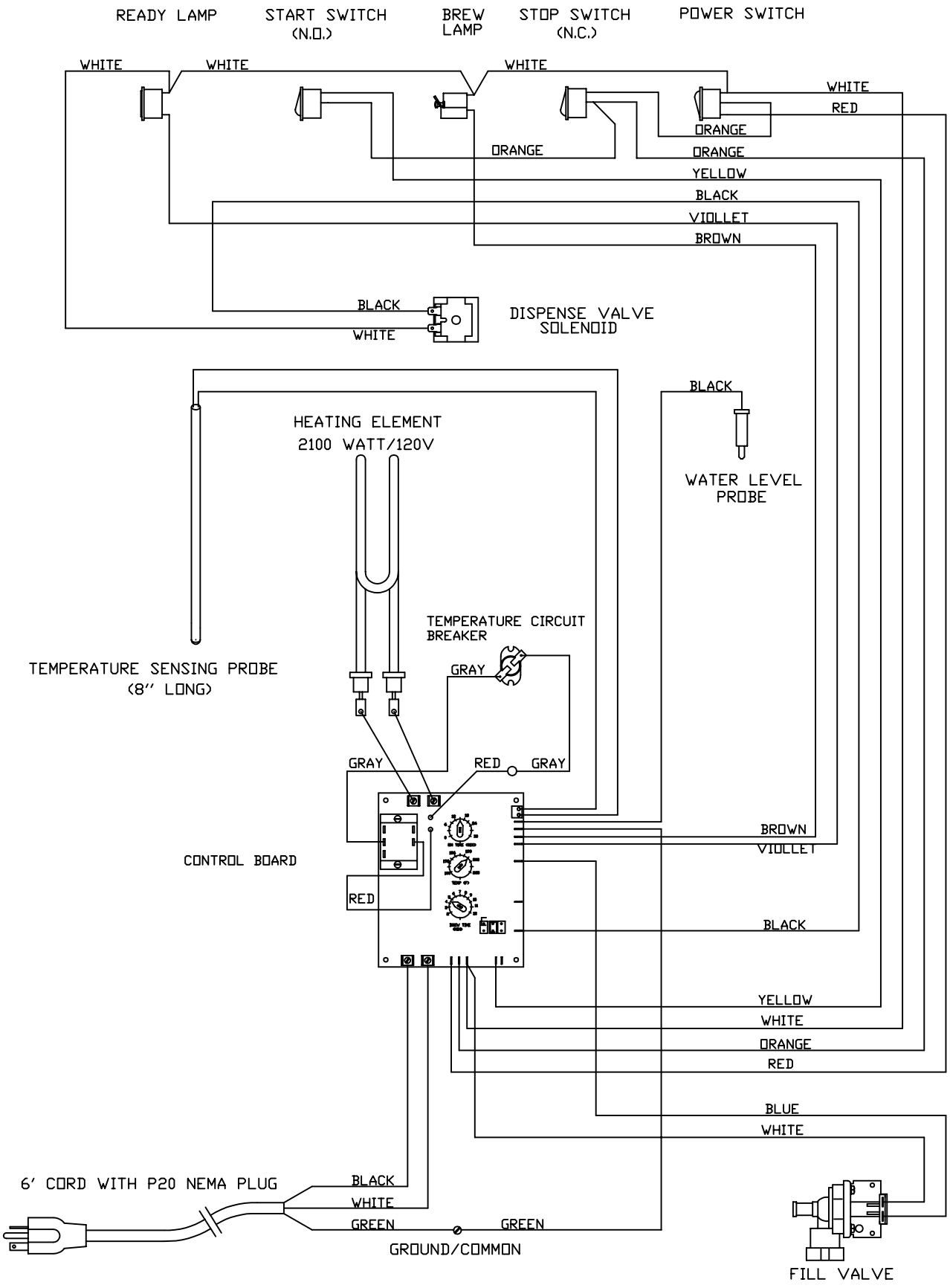
FETCO	640 HEATHROW DRIVE, LINCOLNSHIRE, IL. 60069, TEL: (800) FETCO-99		
MODEL: CBS-18	ROUGHING-IN SPECIFICATION	DRW. NO. 201-058	SCALE: 1:10



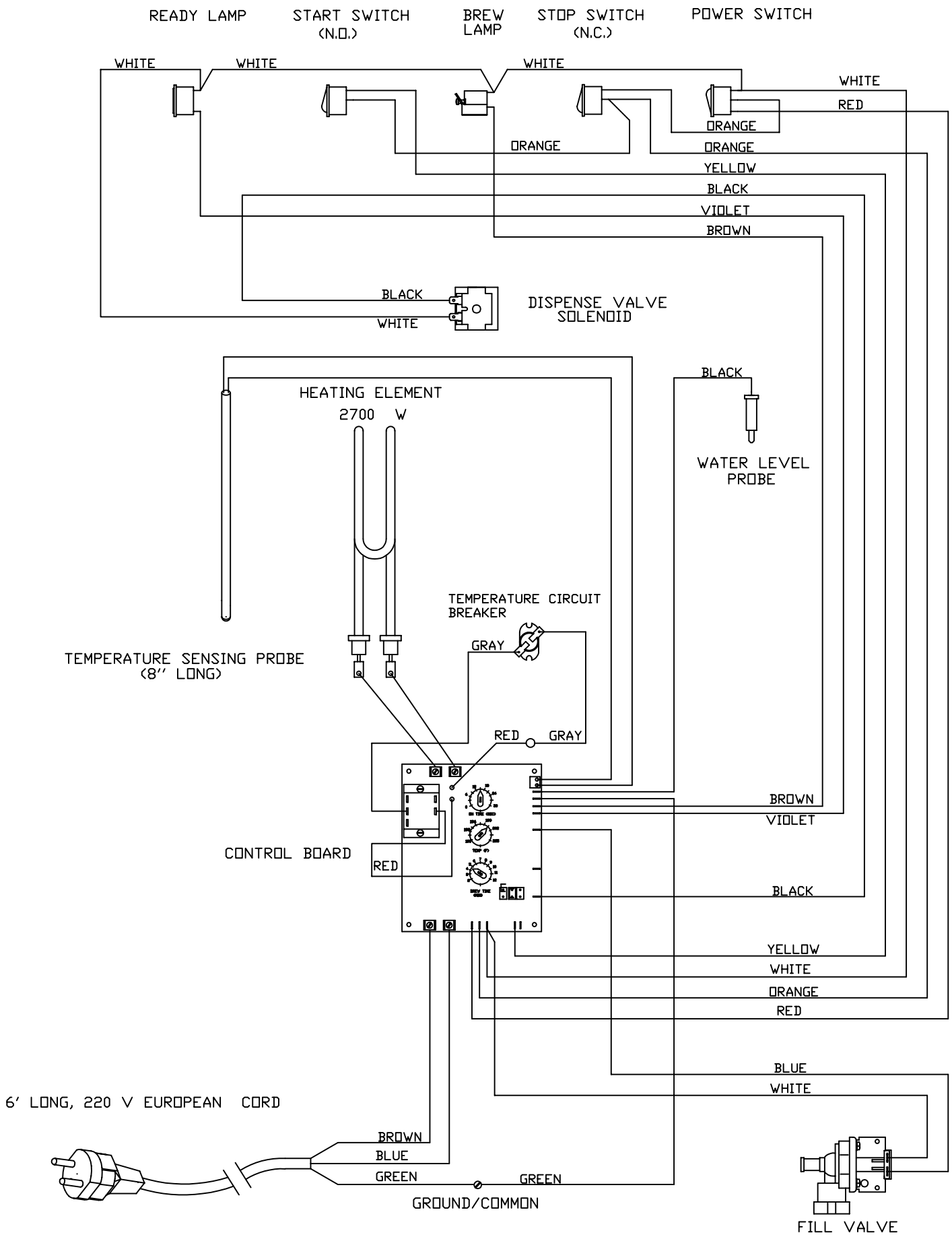
FETCO	640 HEATHROW DRIVE LINCOLNSHIRE IL. 60069 TEL:847.821.1177	
MODEL	ELECTRIC SERVICE	WIRING DIAGRAM
CBS-18	CONTROL BOARD	401-117-000



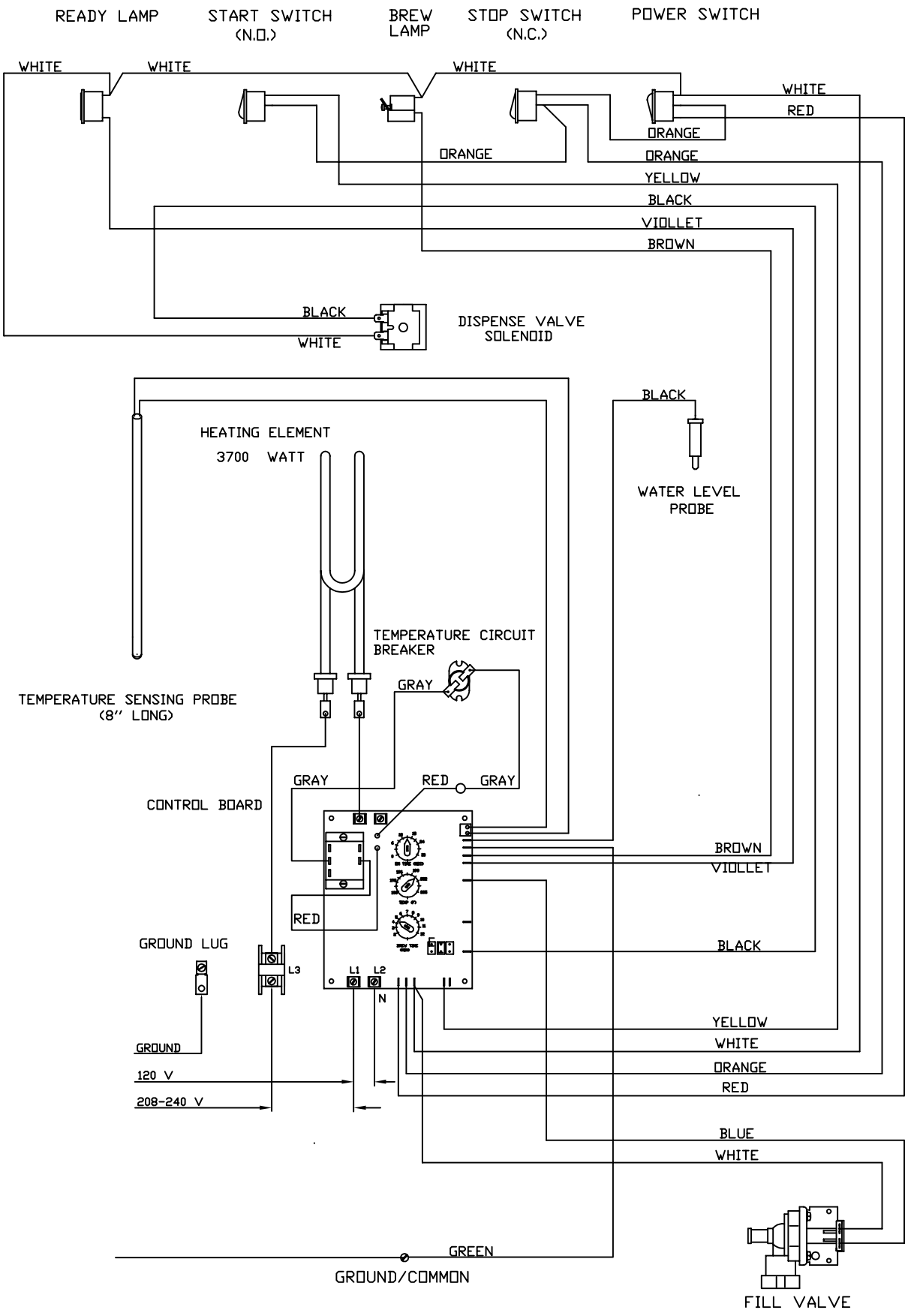
FETCO 640 HEATHROW DRIVE, LINCOLNSHIRE, IL. 60069, TEL: (800) FETCO-99		
MODEL	ELECTRIC SERVICE	WIRING DIAGRAM
CBS-18-01	120VAC 1PH 2 WIRE + GRD 13 AMP 1.6KW	401-113-001



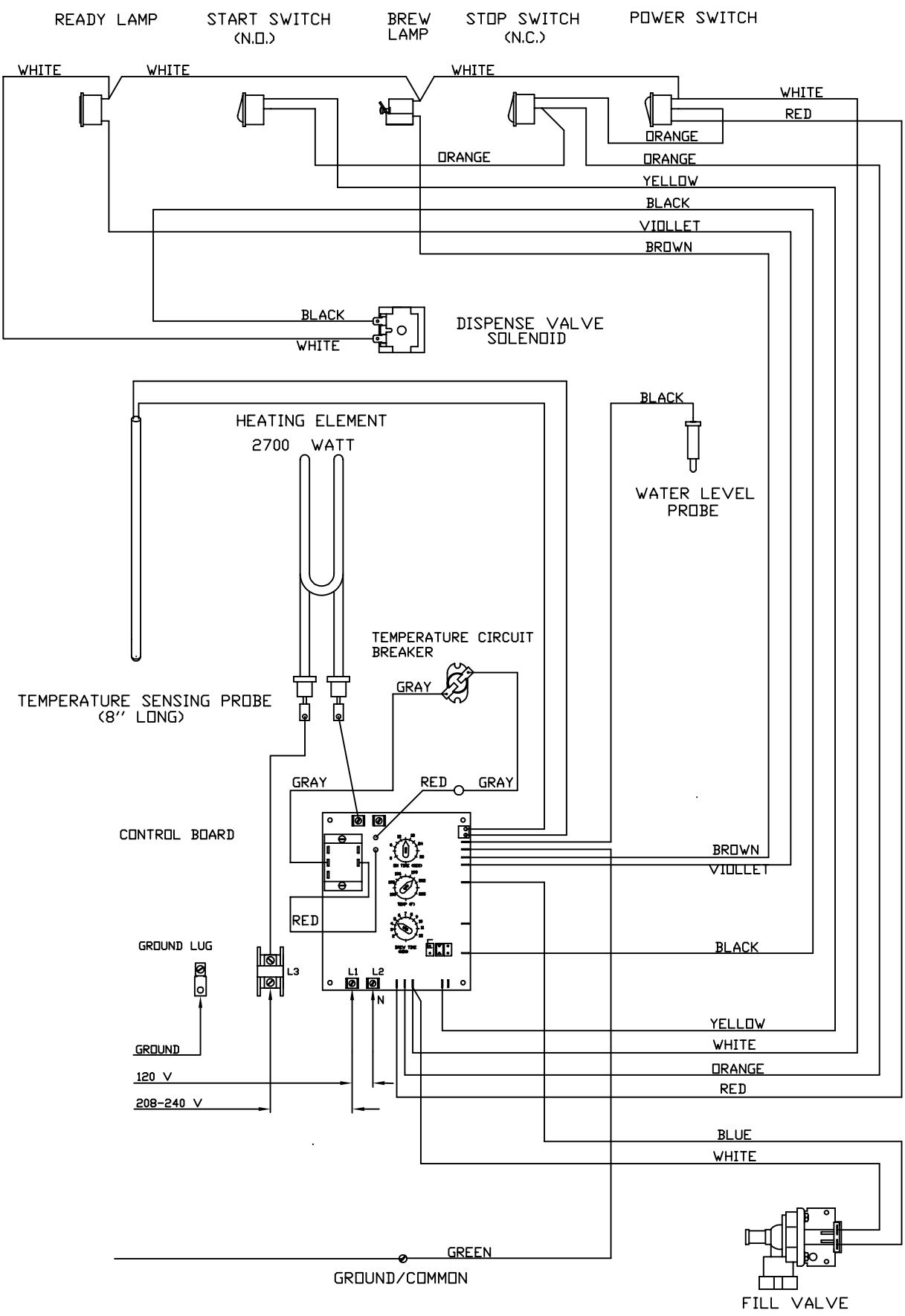
FETCO 640 HEATHROW DRIVE, LINCOLNSHIRE, IL. 60069, TEL: (800) FETCO-99		
MODEL	ELECTRIC SERVICE	WIRING DIAGRAM
CBS-18-02	120VAC 1PH 2 WIRE + GRD 18 AMP 2.2KW	401-114-001



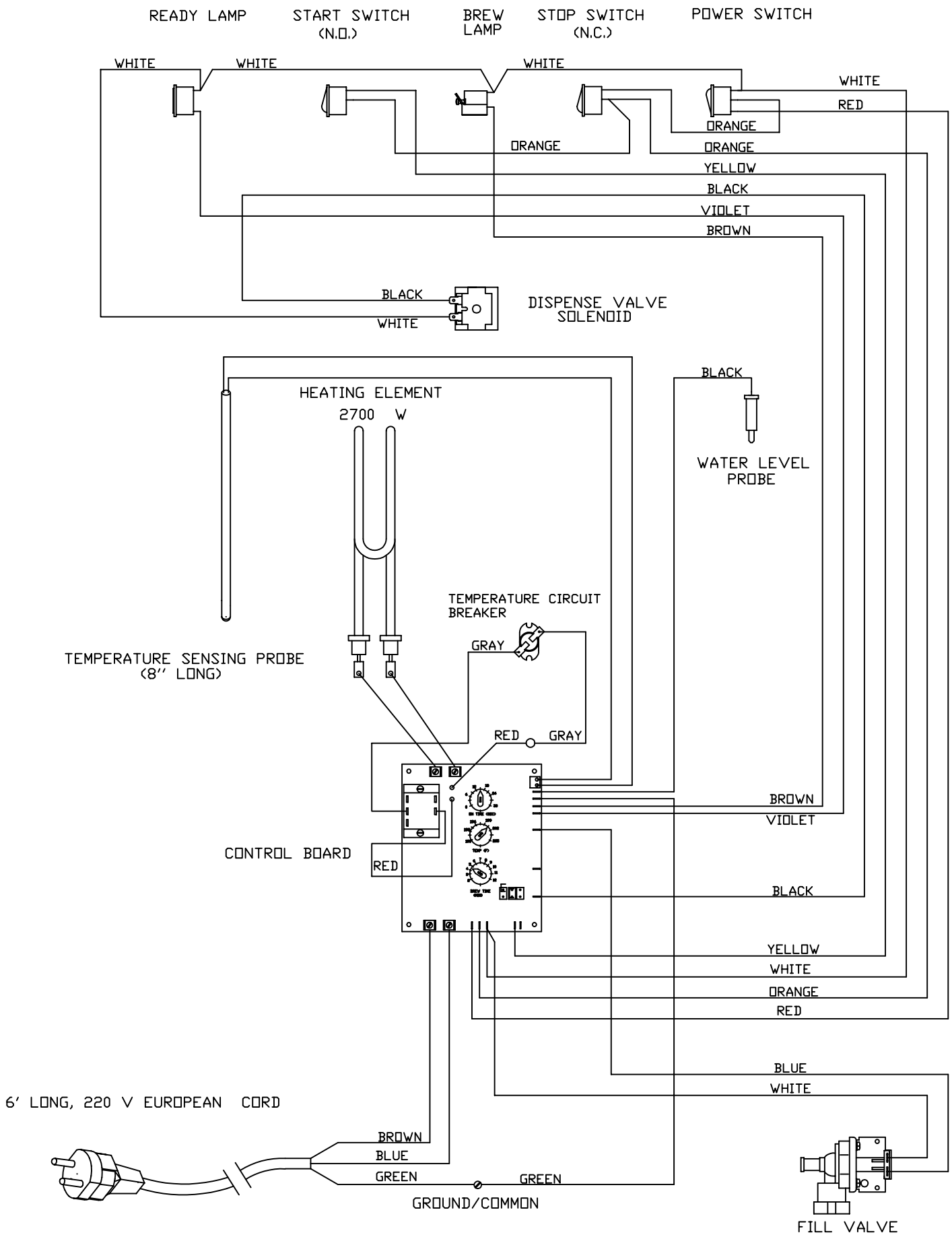
FETCO 640 HEATHROW DRIVE, LINCOLNSHIRE, IL. 60069, TEL: (800) FETCO-99		
MODEL	ELECTRIC SERVICE	WIRING DIAGRAM
CBS-18-04	220 VAC 1PH 2 WIRE + GRD 2.4KW 11.2 AMP	401-116-001



FETCO 640 HEATHROW DRIVE, LINCOLNSHIRE, IL. 60069, TEL: (800) FETCO-99		
MODEL	ELECTRIC SERVICE	WIRING DIAGRAM
CBS-18-05	120/208-240 VAC 1PH 3WIRE + GRD 2.9-3.8 KW 13.8-15.9 AMP	401123-001



FETCO 640 HEATHROW DRIVE, LINCOLNSHIRE, IL. 60069, TEL: (800) FETCO-99		
MODEL	ELECTRIC SERVICE	WIRING DIAGRAM
CBS-18-03	120/208-240 VAC 1PH 3WIRE + GRD 2.0-2.8 KW 10.2-11.8 AMP	401-115-001



FETCO 640 HEATHROW DRIVE, LINCOLNSHIRE, IL. 60069, TEL: (800) FETCO-99		
MODEL	ELECTRIC SERVICE	WIRING DIAGRAM
CBS-18-04	220 VAC 1PH 2 WIRE + GRD 2.4KW 11.2 AMP	401-116-001