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SAVAGE BROS. CO.

FireMixer-14
Table-Top Cooker
Models # 2440 & # 2441

Installation, Operation, Maintenance and Parts Manual

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PURPOSE OF THE OPERATING INSTRUCTIONS

	Before you operate the machine for the first time or if you are commissioned with any other work on the machine, you must read the operating instructions.

Before you operate the machine for the first time or if you are commissioned with any other work on the machine, you must read the operating instructions.
The use and handling of the machine described in the following as well as its operation are not self-evident and are explained in detail by the accompanying technical documentation.
Particularly observe chapter "1 Basic safety information".
The operating instructions help you to use the machine as intended, in a proper, effective and safe way. Therefore, read the following chapters thoroughly and carefully. If necessary, refer to the issues crucial to you time and again.
The operating instructions inform and warn you of any residual risks against which a risk reduction by constructive and protective measures is not or not fully effective.

ORIENTATION IN THE OPERATING INSTRUCTIONS

These operating instructions contain the following general information symbols which guide you, the reader, through the operating instructions and provide you with important information.

Representation of general information symbols

Pictogram	Meaning
	Caution, possible material damage This pictogram indicates that an action could result in material damage to the machine if the instructions are not correctly complied with and implemented.
	Important information This pictogram indicates an important additional information which contains a warning against a hazard.
	Staff qualification This pictogram indicates which staff (target group) is admitted for the actions in the respective chapter.
➢	**Interim result** This symbol indicates interim results and important information in the instructions.

Table 1: General pictograms and their meaning

When operating a machine, it is always necessary to perform actions during which hazards may arise. These hazardous actions are preceded by warnings which must stringently be observed.

Representation of warnings

Important information on the warnings in the operating instructions

Observe all the warnings on the machine and in the documentation and proceed with utmost care in these cases. Additionally pass on any warnings to other users, too.

Warnings (as well as mandatory actions and prohibitions) ensure your personal safety!

DESIGN OF WARNINGS IN THE OPERATING INSTRUCTIONS

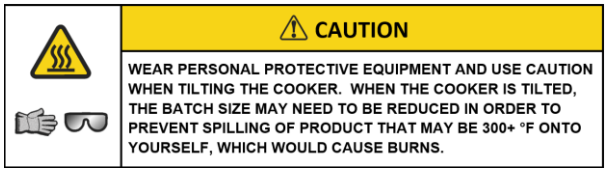
Step	Information	Content	Example
1	Risk level	Severity and classification of the hazard by a signal word and a pictogram	
2	Type and source of hazard	Which type of hazard is there and where does it originate from?	Risk of burns due to contact with spilled product
3	Possible consequences of the hazard	What will or can happen if the warning is not observed?	The product may heat to approximately 300+°F. Contact may cause burns of the skin.
4	Action to prevent or avoid the hazard	What has to be done? What has to be avoided? Which protective measures have to be adopted?	Never touch the heated product with bare hands. Clean and maintain FM-14 tank only if the machine is switched off and it has cooled down.

Table 2: Structure of warnings

CLASSIFICATION OF THE RISK LEVEL (SIGNAL WORDS) OF WARNINGS

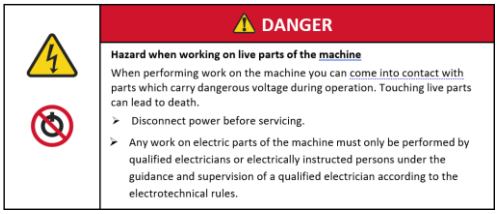
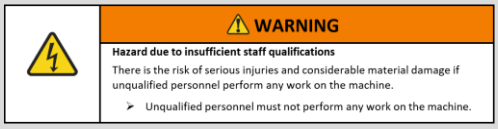
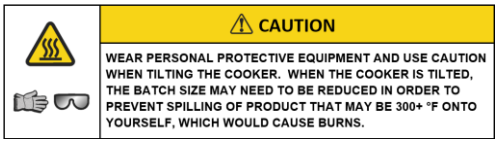
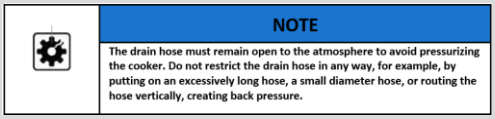
Risk level (signal word)	Meaning and consequences of non- observance	Warning
DANGER	**Imminent** danger resulting in **serious injuries or death**.	 ⚠ DANGER **Hazard when working on live parts of the machine** When performing work on the machine you can come into contact with parts which carry dangerous voltage during operation. Touching live parts can lead to death. ➢ Disconnect power before servicing. ➢ Any work on electric parts of the machine must only be performed by qualified electricians or electrically instructed persons under the guidance and supervision of a qualified electrician according to the electrotechnical rules.
WARNING	**Possibly** dangerous situation which could result in **serious injuries or death**.	 ⚠ WARNING **Hazard due to insufficient staff qualifications** There is the risk of serious injuries and considerable material damage if unqualified personnel perform any work on the machine. ➢ Unqualified personnel must not perform any work on the machine.
CAUTION	**Possibly** dangerous situation which could result in **minor injuries**.	 ⚠ CAUTION **WEAR PERSONAL PROTECTIVE EQUIPMENT AND USE CAUTION WHEN TILTING THE COOKER. WHEN THE COOKER IS TILTED, THE BATCH SIZE MAY NEED TO BE REDUCED IN ORDER TO PREVENT SPILLING OF PRODUCT THAT MAY BE 300+ °F ONTO YOURSELF, WHICH WOULD CAUSE BURNS.**
NOTICE	Situation which can result in possible **material damage to the machine.**	 **NOTE** **The drain hose must remain open to the atmosphere to avoid pressurizing the cooker. Do not restrict the drain hose in any way, for example, by putting on an excessively long hose, a small diameter hose, or routing the hose vertically, creating back pressure.**

Table 3: Design of warnings

WARNING SYMBOLS WARN AGAINST DANGER ZONES, RISKS AND OBSTACLES

Generic warning	Warning against dangerous electric voltage	Warning against hot surfaces

Warning against cuts

MANDATORY ACTION SIGNS SERVE TO PREVENT ACCIDENTS

General mandatory action sign	Wear protective equipment	Read the operating instructions

IMPORTANT SAFETY MEASURES

General

Moving any type of machinery presents a risk of injury. This cooker weighs approximately 150 lbs. (68 kg).

The FM-14 tilts and agitates, which means the operator(s) must be alert at all times. Anyone who will operate the FM-14 must have training in its function and care.

1. It is strongly recommended that a qualified electrician perform all electrical work.

2. The machine requires a 208/240 volt, 50/60 Hz, 1 phase power source and a 20 amp fuse or circuit breaker protecting the circuit.

3. Before working on the machine — installation and maintenance — ensure the machine is properly locked out-tagged out.

Safety Rules

- Do not operate the FM-14 or other machinery if you:
  - Are tired; or
  - Have been drinking alcohol; or
  - Are taking any medication that makes you drowsy or sleepy.

- When operating, inspecting or maintaining the FM-14, always follow all workshop rules, safety regulations and precautions.

- Always pay attention to what you are doing and to other people in the area and surrounding conditions.

- Do not use the FM-14 for anything other than its intended purpose.

- Do not use broken tools or tools designed for another purpose for inspection or maintenance.

- SAFETY IS UP TO YOU.

Unauthorized Modification

- Modifications of any type to the FM-14 without specific written authorization from Savage Bros. Co. can create unknown hazards and voids the warranty.

- Before making any modification, consult the manufacturer. Savage Bros. Co. will not be responsible for any injury or damage caused by any unauthorized modification.

- Obstruction or limitation of movement and/or operator view can result if unauthorized equipment or parts are added to the FM-14.

1. BASIC SAFETY INFORMATION

1.1 Operator's duty of care

Important information

The machine has been planned, designed and built in due consideration of laws, directives and standards, a risk assessment and further technical specifications. It therefore corresponds to the state of the art and guarantees the maximum degree of safety.

In practical application, however, safety can only be achieved if all the required measures are adopted. It is subject to the operator's duty of care to plan these measures and to monitor their implementation.

Important information

The operator of the machine shall take care that the operating instructions are read and understood by the users.

Particularly the safety information and the information on maintenance and servicing must be observed.

The following requirements for the technical condition of the machine are imposed and must be ensured by the operator:

- The machine must only be used as intended.
- As a matter of principle, the machine must be checked for its perfect technical condition before switching it on.
- The correct functioning of the safety devices must be checked at regular intervals.
- The safety and warning information attached to the machine must not be removed and must regularly be checked for legibility and replaced, if necessary.
- No alterations, manipulations and changes to the machine must be made without authorization.
- The operating instructions must always be freely available at the place of operation in legible and complete state.

1.2 General Work Safety

1.2.1 Staff qualification

Important information on the staff qualification

Any work on the machine must only be performed by persons who have read and understood these instructions. Special installation and maintenance work must only be performed by qualified personnel.

WARNING

Hazard due to insufficient staff qualifications

There is the risk of serious injuries and considerable material damage if unqualified personnel perform any work on the machine.

- Unqualified personnel must not perform any work on the machine.

Machine operators / operating staff

Chocolatier or professions similar/related to confectioners. The person has completed vocational training and has experience in the handling of confectionery masses. Can create recipes for confectionery masses and also recognize problems with the recipe during processing. Furthermore, the person has knowledge of and advanced training in food hygiene.

Carrier

Transports the machine to the customer or to the installation site. Has experience in the handling of lift trucks, the correct handling of loads and securing of loads. Has a valid driving license for the lift trucks used (if required).

1.2.2 Authorized staff

Phase / chapter	Staff qualification
Transport, installation and storage	Carrier, machine operators / operating staff
Initial commissioning	Machine operators / operating staff
Preparing for operation	Machine operators / operating staff
Operation	Machine operators / operating staff
Maintenance and servicing	Machine operators / operating staff

Table 4: Authorized staff

Carrier

The staff working on the machine must regularly be trained and instructed on the machine by the operator.

1.2.3 Personal protective equipment

In compliance with applicable directives and regulations, the staff is obliged to wear the respective personal protective equipment (PPE). The required PPE must be provided by the operator. Proper use by the staff must be ensured by the operator.

Personal protective equipment (PPE)

The degree of protective equipment must be assessed and determined for each individual case.

Important information on the personal protective equipment

When performing any work on the machine, the staff must wear the respective PPE.

Observe the following list and the chapter-related list as well as the notes on personal protective equipment attached in the work area.

The following is a list of the recommended PPE:

	Wear protective gloves Protective gloves serve to protect the hands against abrasion, graze, puncture or deeper injuries as well as against contact with hot surfaces. Safety Goggles are designed to protect eyes from various hazards, such as chemical splashes, pollutants in laboratories, clean rooms, and heavy industrial environments, and are designed for direct or indirect ventilation. Only use the approved protective gloves and safety goggles provided to the operator of the machine.

1.3 Basic information

Read all the safety information and instructions. Failure to comply with the safety information and instructions can cause serious injuries. Keep any safety information and instructions for future reference.

- Children and adolescents must not operate this machine.
- Do not use this machine if you are tired, under the influence of drugs, alcohol or medicines.
- Avoid sharp kinks of the cable. Particularly during transport and storage of the machine do not wind the cable around the machine.
- Damaged cables or plugs must immediately be replaced.
- Do not dispose of the machine in the household waste.
- All parts of the machine coming into contact with foodstuffs must be cleaned before use.
-

1.4 Machine-specific hazards

1.4.1 Hazards due to electrical energy

 	DANGER **Hazard when working on live parts of the machine** When performing work on the machine you can come into contact with parts which carry dangerous voltage during operation. Touching live parts can lead to death. ➢ Disconnect power before servicing. ➢ Any work on electric parts of the machine must only be performed by qualified electricians or electrically instructed persons under the guidance and supervision of a qualified electrician according to the electrotechnical rules.

1.4.2 Thermal hazards

	⚠ CAUTION **WEAR PERSONAL PROTECTIVE EQUIPMENT AND USE CAUTION WHEN TILTING THE COOKER. WHEN THE COOKER IS TILTED, THE BATCH SIZE MAY NEED TO BE REDUCED IN ORDER TO PREVENT SPILLING OF PRODUCT THAT MAY BE 300+ °F ONTO YOURSELF, WHICH WOULD CAUSE BURNS.**

1.5 Safety and monitoring devices

1.5.1 General information

The safety devices of the machine serve to protect the staff against hazards produced by the machine which has been built according to applicable statutory provisions and which is safe to operate. Any danger zones which cannot be excluded by constructive measures are equipped with safety devices and, if necessary, are marked with warning signs on the machine and information on work safety in the operating instructions.

The machine must only be operated if all safety devices and safety-related devices are present and functional.

	⚠ DANGER **Hazard due to removal of or tampering with safety devices** Removal of or tampering with safety devices can lead to serious, irreversible or even critical injuries resulting in death, to severe damage to health or significant material damage. ➢ Do not remove any safety devices. ➢ Do not tamper with any safety devices. ➢ Check all existing safety devices at regular intervals.

	⚠ WARNING **Risk of accidents due to missing or defective safety devices** Any unauthorized modifications of the safety devices can lead to personal injury. ➢ Check the safety devices for perfect function prior to operation and replace any defective safety devices. ➢ Do not modify any safety devices.

GENERAL CONCEPT OF OPERATION

1. The Savage Bros. Co. Table-Top Cooker is an electric cooker/mixer. ***Safe operation of the equipment is very important.*** Personnel that will work in the area of the machine must become familiar with the potential hazards.

2. The PLC (Programmable Logic Controller) is used by the machine for accurate cooking control. With a single point of operation, both product and cooker temperatures can be monitored and controlled more accurately.

3. The optional "Data Logging" feature records a variety of essential data during the cook process including time, temperature, setpoint and batch count.

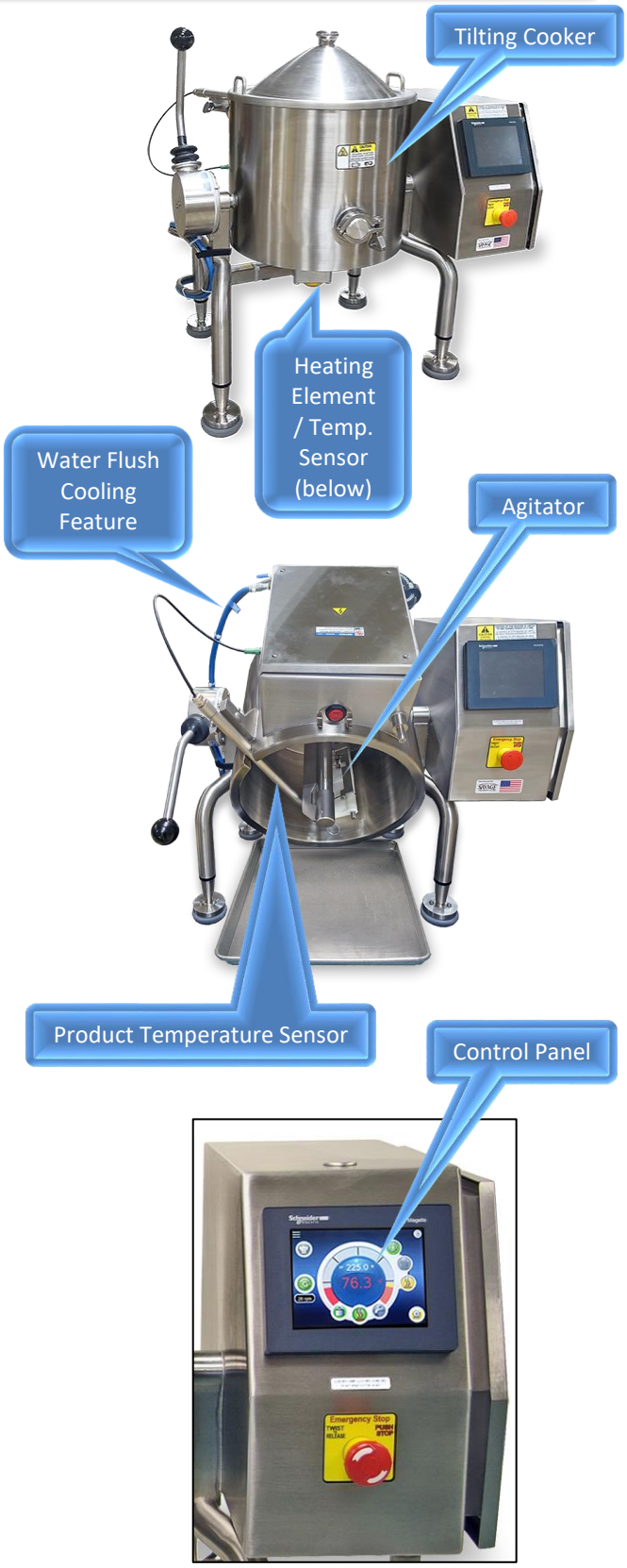
4. An electric scraper agitator stirs the product. The agitator is a rotating mechanical device. ***The agitator will not automatically stop*** if a body part, clothing, or a rigid item gets caught in it. Keep hands and body clear of the rotating agitator.

5. The standard 208-240VAC 50/60Hz unit has a 3,000 watt electric heating element and a 1/8HP agitator motor with a gearbox designed for 150 inch-pounds of torque at 28 RPM.

6. The cooker is a tilting cooker, encased in a stainless steel cylinder. Within the cylinder is the electric heating element formed to fit the cooker bottom. A temperature sensor monitors the cooker skin temperature.

7. The cooker and the product being cooked may become very hot during operation. Although the cooker surface is insulated, take precaution not to allow bare skin to contact the cooker cylinder surface. The FM-14 has a water-flush cooling feature to control the cooking and speed up the cooling process.

8. A second temperature sensor is mounted along the agitator shaft and monitors the product temperature while the product is cooking.



INITIAL INSTALLATION

1. The cooker weighs approximately 172 lbs. (78 kg). Therefore, when removing the cooker from the shipping crate, lift up on the base or from below the cooker. Two or more people are required to lift the cooker.

2. Place the machine on a solid, level surface. To ensure the cooker is level, place a level atop the cooker. If the cooker is not level, the machine's four feet (arrows) are individually adjustable and are used to level the machine, Fig. 1.

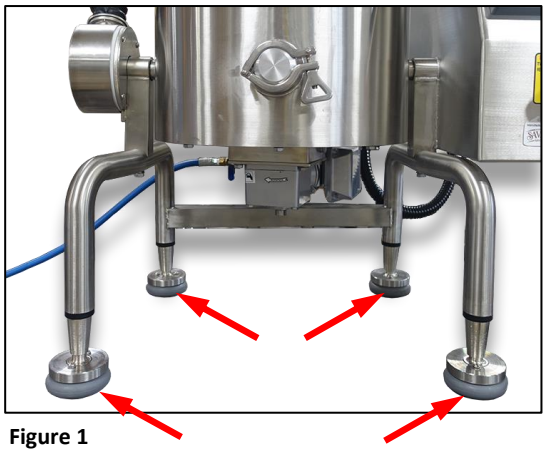


Figure 1

3. To adjust the height of an individual leg, Fig. 2:

   a. Place a bubble level atop the cooker.

   b. Turn the Bumper to increase or decrease the height of the individual leg while observing the level.

   c. Once the machine is level, remove the bubble level.

   d. It may be necessary to adjust two or more legs for the machine to be perfectly level. Repeat steps (a) through (c) for other legs as needed.

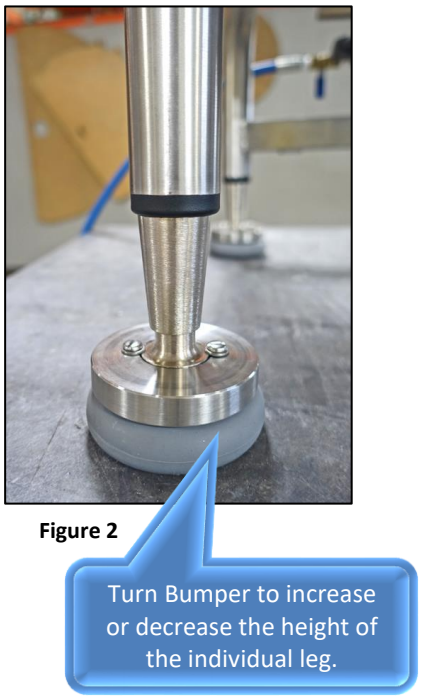


Figure 2

4. Ensure the red Emergency Stop (E-Stop), (arrow), Fig. 3, located on the front of the machine, is pushed into the STOP position.

5. The FM-14 has a water-flush cooling feature. Connect the blue hose, which has a standard hose fitting on the open end, to a cold-water source (Fig. 3.1) — a sink faucet is commonly used. Having water flow through the system removes heat from the cooker bottom, slowing the cooking process near the end of the batch.

6. The metal braided hose, which has a standard hose fitting on the open end, allows the water to drain from the machine. Connect another hose to the metal braided output hose, then route the hose assembly to a drain.

Figure 3

	NOTE
	The drain hose must remain open to the atmosphere to avoid pressurizing the cooker. Do not restrict the drain hose in any way, for example, by putting on an excessively long hose, a small diameter hose, or routing the hose vertically, creating back pressure.

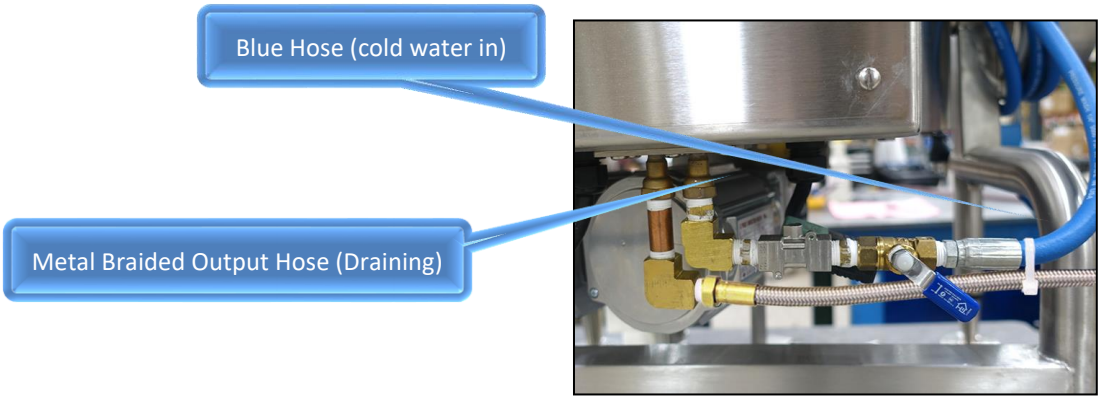


Figure 3.1

7. Connect the FM-14 to power. The following chart shows the electrical requirements for the machine. For installation outside North America, appropriate voltage and 50Hz components will be installed. A 20A hard-wired installation is standard, with 6-20R receptacle. It is recommended that a dedicated fuse or circuit breaker circuit be used.

VOLT	PH	RATED AMPS	CYCLES	RATED HEATER WATTAGE	MOTOR
208-240	1	16-14	50-60	3000	1/8 HP, 100W

TURNING ON THE MACHINE

1. Insert the machine's electrical plug into a Nema 6-20r electrical outlet.

2. The **E-Stop Reset** screen appears, Fig. 4, if the **E-Stop** button is depressed, Fig. 5. To advance to the next screen, wait for ten seconds, which gives time for the VFD (Variable Frequency Drive) to discharge, then pull out the **E-Stop** button (arrow), Fig. 5.

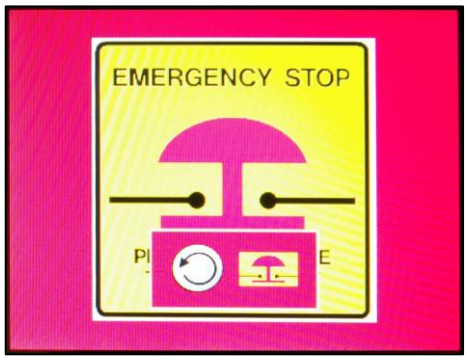


Figure 4

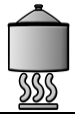
Figure 5

3. If this screen appears, after reading the WARNING, press the **Verify and Continue** button, Fig. 6.

Figure 6

COOKING CONTROL SCREEN

The following icons may be used on the FM-14 HMI screens:

	Agitator
	Chef Mode
	Flush
	Chef Mode
	Cook Temperature
	Settings
	Advanced Settings
	Cook Cycle ON
	Cook Cycle OFF
	Cooker Tilted
	Lid Switch
	Alarm
	Cooker

	Maximum Cook Power
	Low Cook
	High Cook
	Auto Shutdown
	Locked
	Unlocked
	Exit
	Accept
	Product Temperature Attained
	Help
	Information
	Maintenance
	Silence Alarm

	Jog
	Run
	Speed
	Minimum
	Medium
	Maximum
	VFD Speed HSP in HZ
	Command
	Minimum Temperature
	Maximum Temperature
	Factory Settings
	Reset
	HMI Brightness

Cooking Control Screen

The **Cooking Control** screen, Fig. 7, is used as the starting point. From this screen you can select the Main Popup Menu from which you can open the Maintenance screen and the Advanced Settings screen and the Help/Information Screen. You can also select the Chef Mode On/Off screen. You can also select High Cook or Low Cook, start and Stop the Cook Cycle, turn the Agitator On and Off, select Agitator speed, open, and close the Flush and turn the Cook Audible On/Off. Familiarize yourself with all of the screens, controls, settings, and indicators, prior to making a batch. Operate the cooker from the Cooking Control Screen, Fig. 7.

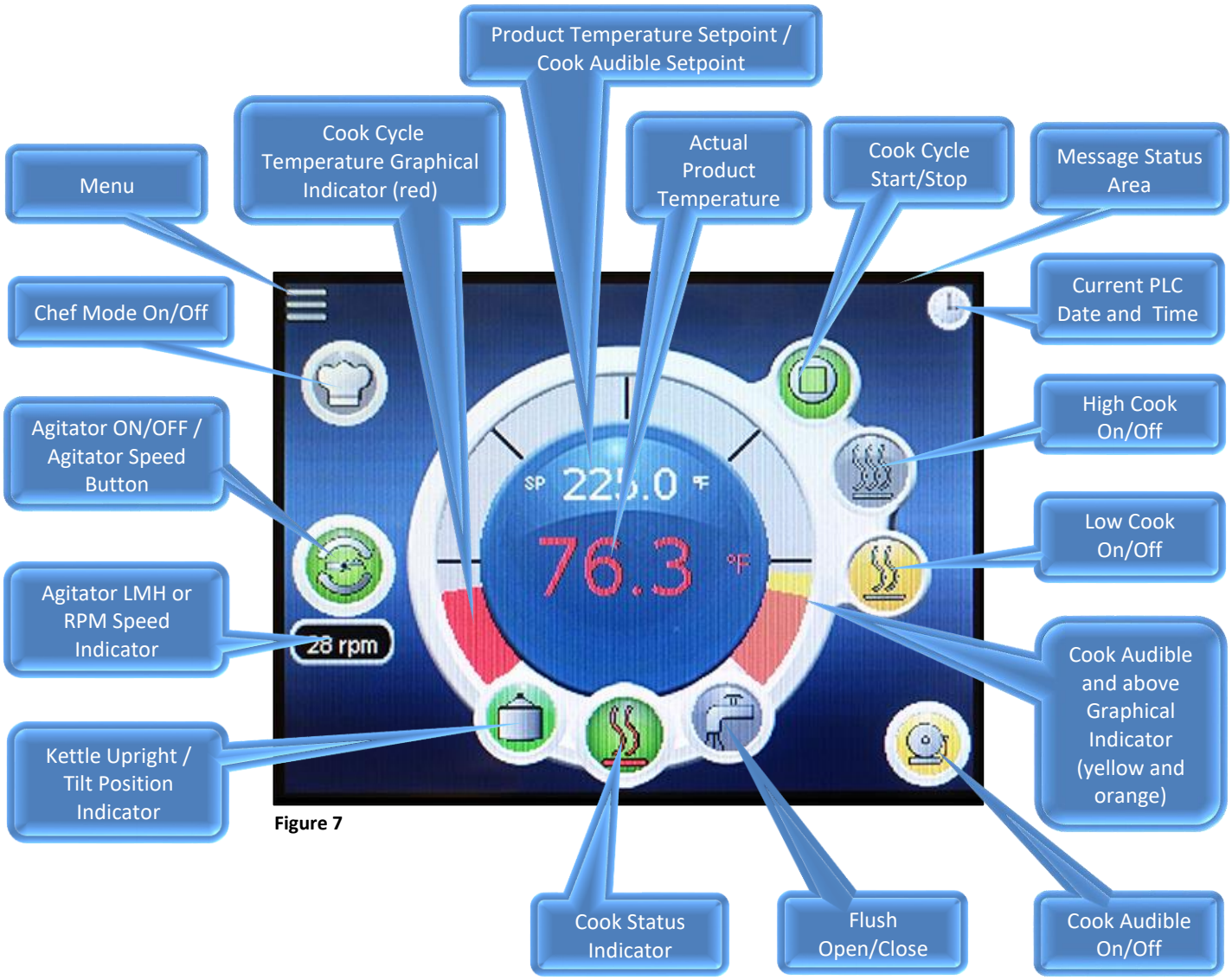


Figure 7

COOK CONTROL SCREEN FUNCTIONS AND MAIN POPUP MENU FUNCTIONS

The following are explanations of the Cook Control Screen functions (refer to Fig.7):

- **Menu** — Pressing the Menu icon brings up the Menu Popup Window
- **Actual Product Temperature** — Displays the Actual Product Temperature.
- **Message Status Area** — Messages are displayed at the top portion of the Cook Control Screen.
- **Product Temperature Setpoint / Cook Audible Setpoint** — Pressing the icon brings up the Popup Window where the setpoint of the product temperature and the setpoint of the Cook Audible can be entered.
- **Cook Audible** — Pressing the icon will Enable / Disable the Cook Audile mode.
  The "Cook Audible" is an option that can be used to notify the operator by visual and audible means, when a preset temperature, selected anywhere along the cooking process is reached, for example to indicate when to add an ingredient.
- **Flush Open /Closed Indicator** — Indicates Flush Open / Flush Closed status.
- **Cook Status Indicator** — Indicates, Ignite, Low Heat, and High Heat statuses of the burner.
- **Kettle Upright Position / Kettle Tilt Position Indicator** — Indicates Kettle in Upright Position or Kettle in Tilt Position.
- **Cook Cycle Graphical Indicator** — Graphically Indicates the temperature of the cook cycle.
- **Agitator Speed Indicator** — Indicates the preset speed of the Agitator LMH (LOW, MEDIUM, HIGH) or RPM Speed (option selected in Advanced Settings, refer to Pg. 39).
- **Agitator ON/OFF / Agitator Speed Button**— Turns Agitator ON/OFF as well as Agitator LMH (LOW, MEDIUM, or HIGH or RPM Speed Popup Window (after pressing and holding).
- **Chef Mode On/Off** — in Chef Mode, the operator can view and adjust the setpoint for the Kettle Temperature.
- **High Cook** — In High Cook mode, the product cooks at a higher rate.
- **Low Cook** — In Low Cook mode, the product cooks at a lower rate.

The following are explanations of the Main Popup Menu functions (refer to Fig. 8):

- **Current PLC Date and Time** — Pressing the icon will display the **Current PLC Date and Time**.
- **Maintenance**— Pressing the icon will bring up the **Maintenance** screen.
- **Advanced Settings** — Pressing the icon will bring up the **Advanced Settings** screen**.**
- **Help / Information** — Pressing the icon will bring up the **Help / Information** screen, refer to Pg. 53.
- **Exit** — Pressing the icon will exit without changes.

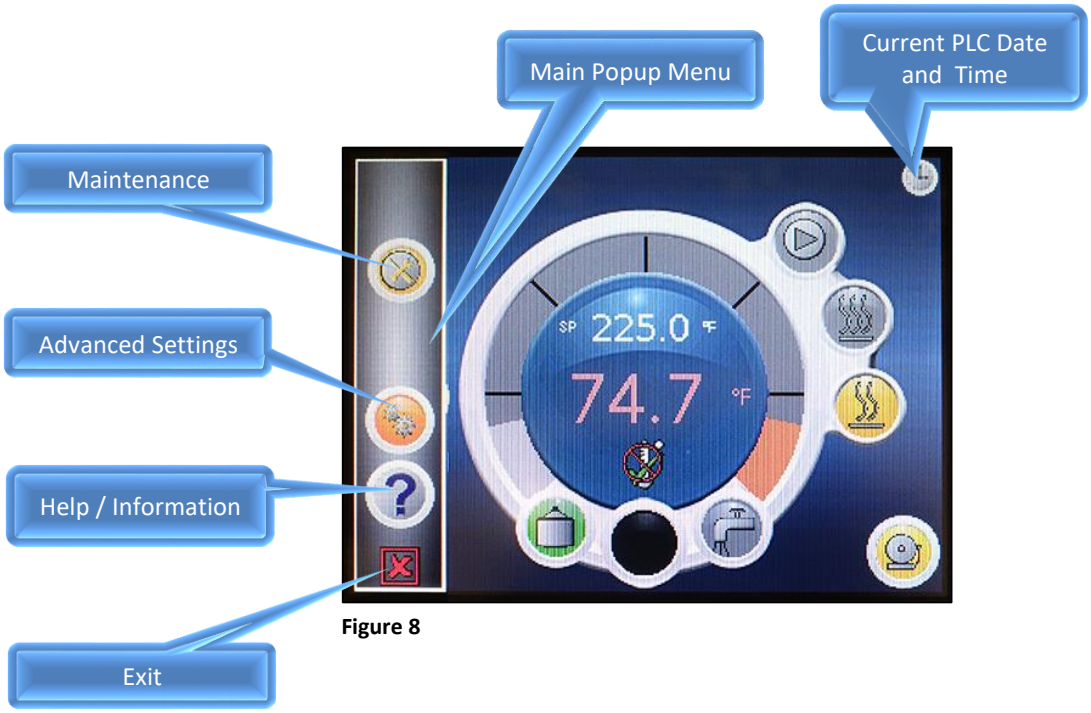


Figure 8

CURRENT PLC DATE AND TIME

To display “Current PLC Date and Time” press the “Current PLC Date and Time” button on the top right, on the Cooking Control screen, (Fig.9), which will bring up the “Current PLC Date and Time” popup window, (Fig 10). The “Current PLC Date and Time” can be changed (refer to “Advanced Settings Screen”. Press the “Exit” button to exit without changes.

Figure 9

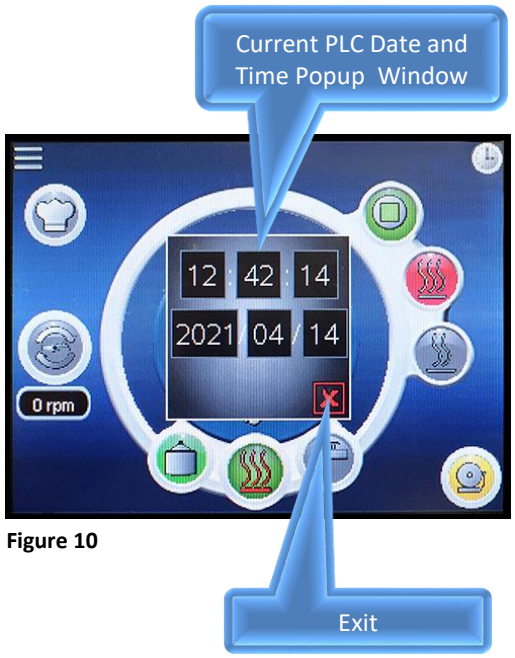


Figure 10

Product Temperature Setpoint

By touching the **Temperatures Setpoint** (white numbers), (Fig. 11), a popup window will appear, Fig. 12. Touch the **Product Temperature Setpoint** (top, black numbers, white background) in the popup window and a numeric keypad will appear, Fig. 13. Type in the desired temperature. The desired temperature can be changed before, after and during the cook cycle.

The maximum product temperature is 350 °F (177 °C). Press the **Exit** button to exit without changes.

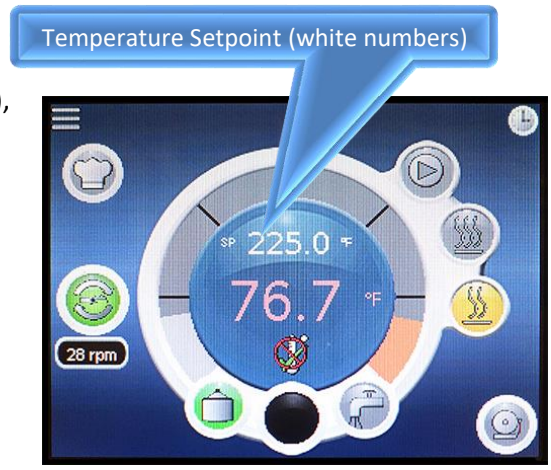


Figure 11

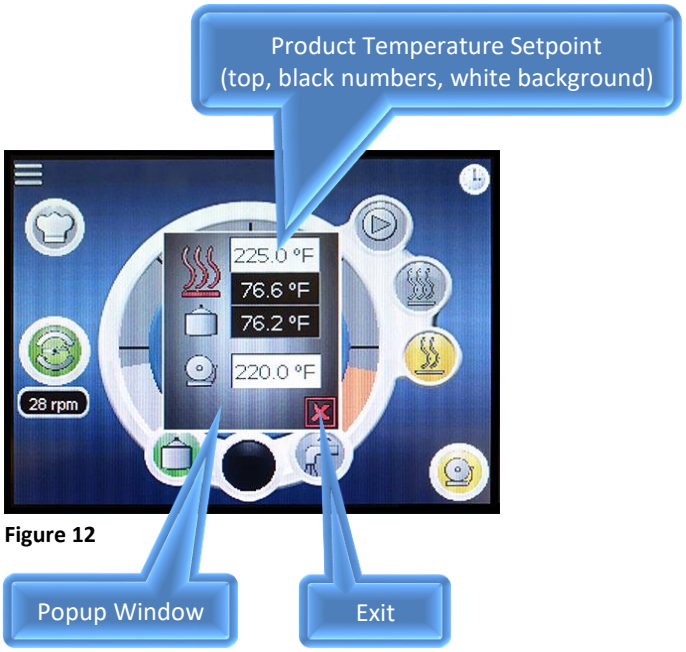


Figure 12

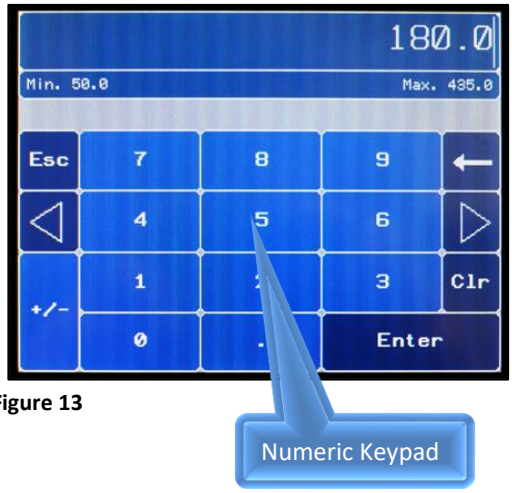


Figure 13

When the **Product Temperature Setpoint** is attained, the product Actual Product Temperature flashes green, an audible alarm turns on and **Product Temperature Attained** (with Accept symbol) is displayed in the Cook Status Indicator Area, Fig. 14. When this message appears, the user has one of three options:

- Press the **Cook Cycle Stop** button, which turns the heater off; or
- Increase the temperature setpoint and the unit resumes cooking until the new temperature setpoint is reached; or
- Do nothing, and the unit cycles the heater on and off to maintain the setpoint, unless the Auto Shutdown is turned on. In the case that the Auto Shutdown is turned on, (see Pg. 26 for info on Auto Shutdown) the cooking process will turn off after two hours from the point of pressing the **Cook Start,** as long as the maximum heat power is greater than 30 %.

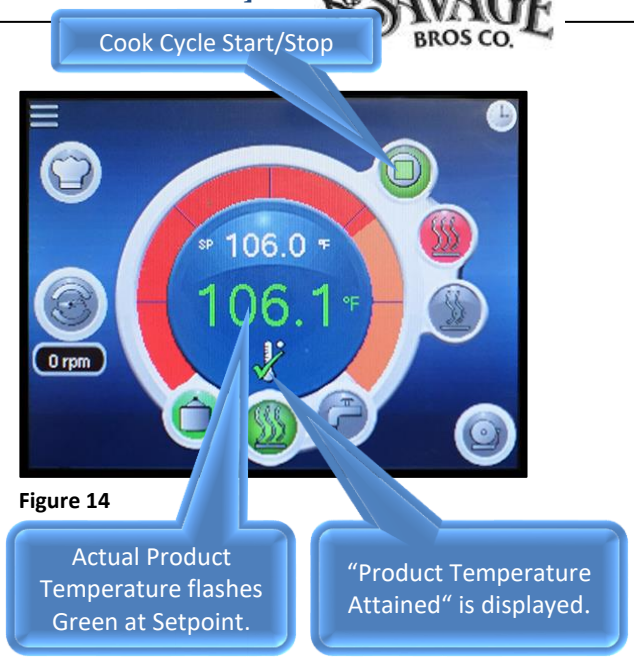


Figure 14

Cook Audible Setpoint

The "Cook Audible" is an option that can be used to notify the operator by visual and audible means that the preset temperature, has been reached, for example to indicate when to add an ingredient.

The **Cook Audible Setpoint** can be set by touching the Temperatures Setpoint, Fig. 15 after which a Popup Window will be displayed, Fig. 16.

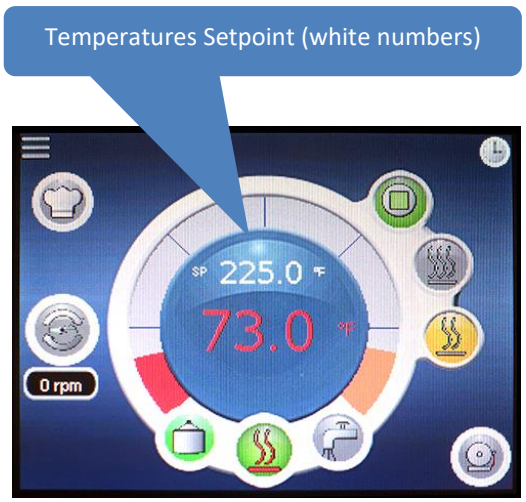


Figure 15

On the Popup Window, press on the **Cook Audible Temperature Setpoint** (bottom, black numbers with white background), after which a numeric keypad will be displayed. On the numeric keypad enter the desired setpoints. Press the Exit button to exit without changes.

The **Cook Audible** can be turned On/Off by pressing the **Cook Audible** button. When turned on, the **Cook Audible On/Off** icon background turns yellow, Fig. 16.

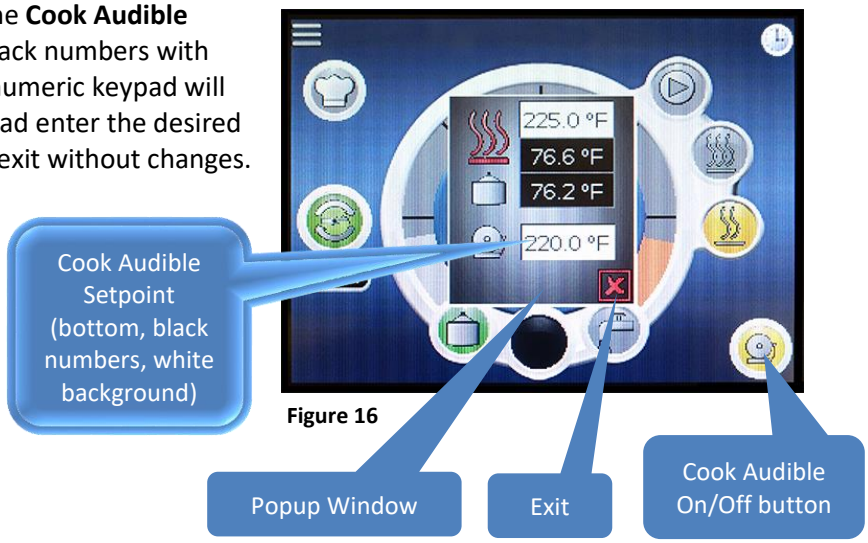


Figure 16

When the **Cook Audible Setpoint** is attained, an audible alarm turns on, until the alarm is acknowledged, the **Actual Product Temperature** (numeric value) flashes yellow and red, Fig. 17, alerting the operator the product temperature has reached the **Cook Audible Setpoint**. The alarm can be acknowledged by once more pressing the **Cook Audible On/Off** button.

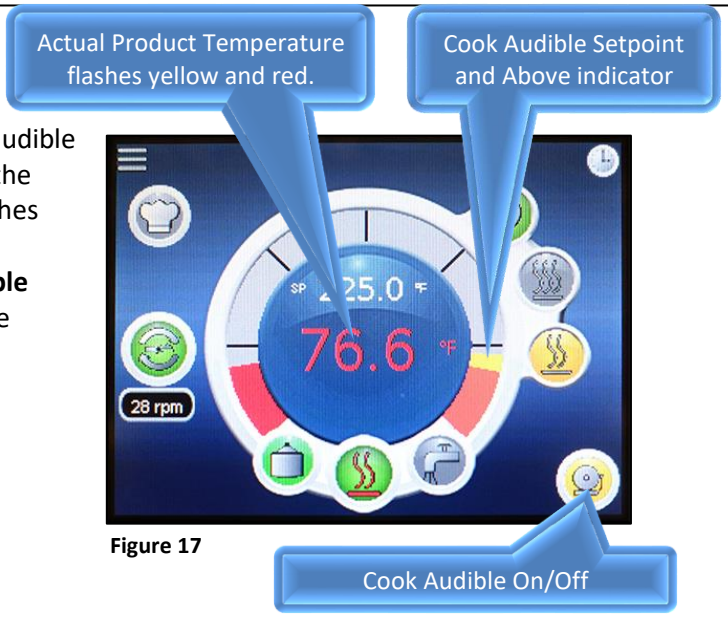


Figure 17

Cook Cycle Start/Stop Button

Pressing the **Cook Cycle Start/Stop** button starts the cooking process, Fig. 18. When **Cook** is in the **Stop** position, the background on the **Cook Cycle Start/Stop** button is grey. To turn the heater on, press the **Cook Cycle Start/Stop** button to **Start,** at which point, its background turns green. At this point a red, flashing **Heater Image** appears, in the **Cook Status Indicator**, and the **Cook Cycle Temperature Graphical Indicator** turns red**,** Fig. 19.

During the Cook Cycle, pressing the **Cook Cycle Start/Stop** button to **Off** will turn the heater off again, which causes its background color to revert to grey, also the red flashing **Heater Image** and the **Cook Cycle Temperature Graphical Indicator** to turn off, Fig 19.

Figure 18

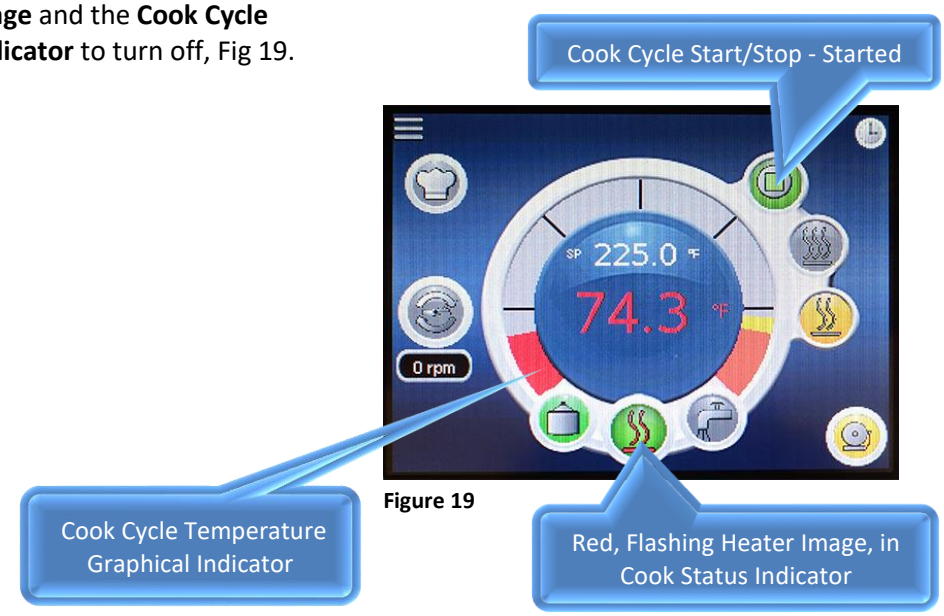


Figure 19

Auto Shutdown

Two hours after pressing the **Cook Start,** and if the maximum heat power is greater than 30 % and the Auto Shutdown is turned On (on the Advanced Settings screen, Pg. 39), the cooking process will be shut down. A countdown screen will be displayed 10 minutes prior to **Auto Shutdown**, Fig. 20. If the countdown screen is exited, it will reappear at 5, 2, and 1 minute prior to Auto Shutdown. The **Auto Shutdown Timer** can be reset by pressing the Reset Button. Press "Exit" to exit without changes.

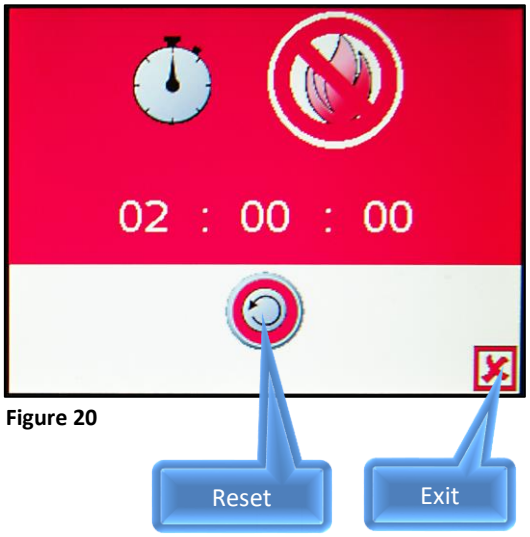


Figure 20

Flush Open/Closed Button

The flush valve can be opened/or closed by selecting the **Flush Open/Closed** button, on the bottom right of the screen Fig. 21. When it is open, the **Cook Cycle Temperature Button background** turns blue.
Opening the flush removes the heat from the cooker to stop or slow the cooking process.

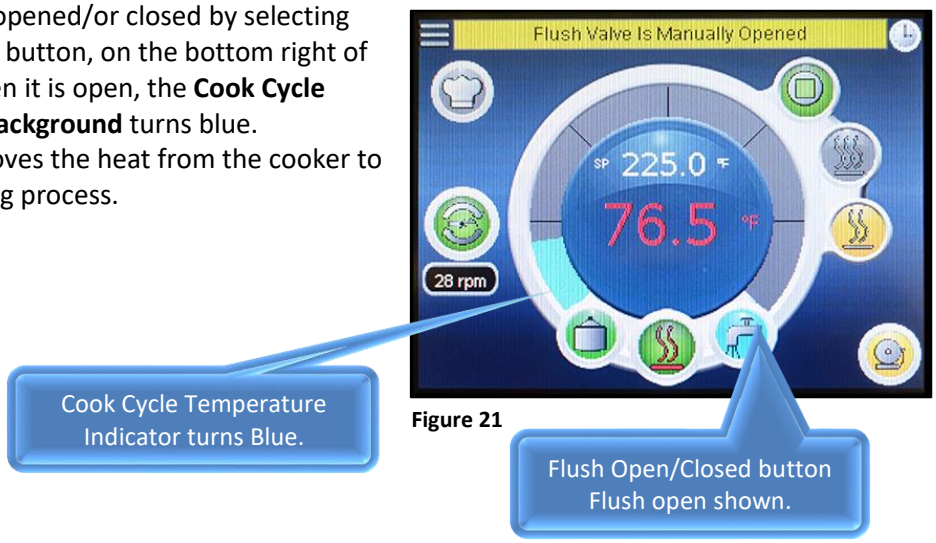


Figure 21

Agitator Start/Stop Button

Pressing the "Agitator Start /Stop button momentarily either starts or stops the agitator, Fig. 22. The agitator automatically stops if the cooker tilts past a certain point. The agitator cannot start turning again until the cooker is upright.

Figure 22

Agitator Speed

The Agitator runs on two different speed modes. To change Agitator speed mode, first open the Advanced Settings screen, Fig. 23, refer to Pg. 39 and follow it to the Advanced Settings screen, Pg. 41. On the Advanced Settings screen select between Agitator LMH (Low, Medium, High) or RPM speed mode. Once the desired Agitator speed mode is selected, exit the Cook Control screen.

On the Cook Control screen, press and hold the Agitator ON/OFF / Agitator Speed button, Fig. 24, which will bring up an Agitator popup window, depending on the speed mode. When in LMH mode, on the popup window, select LMH (Low, Medium High), Fig. 25. Press "Exit" to exit without changes.

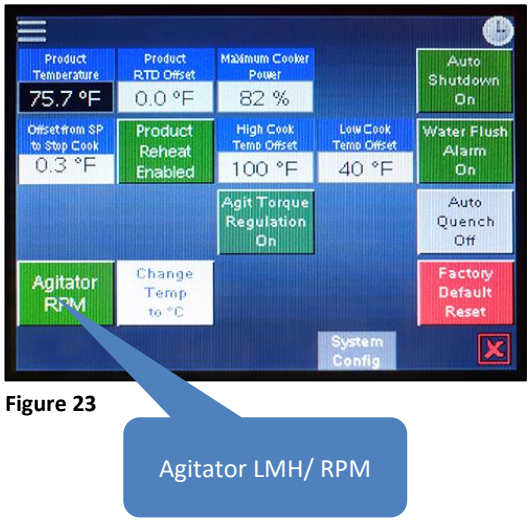


Figure 23

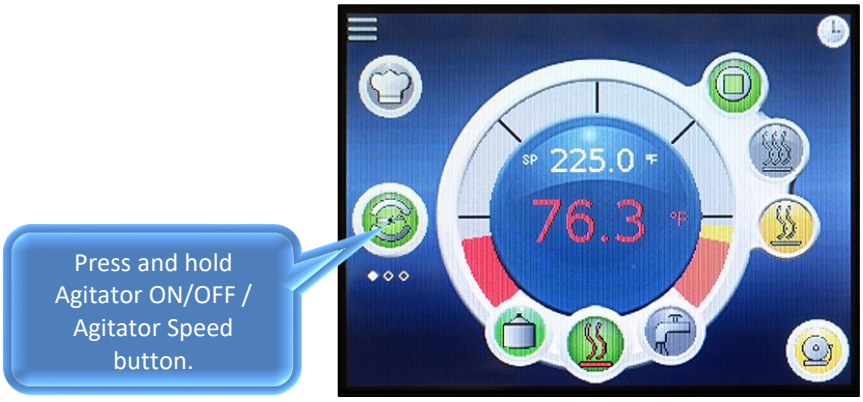


Figure 24

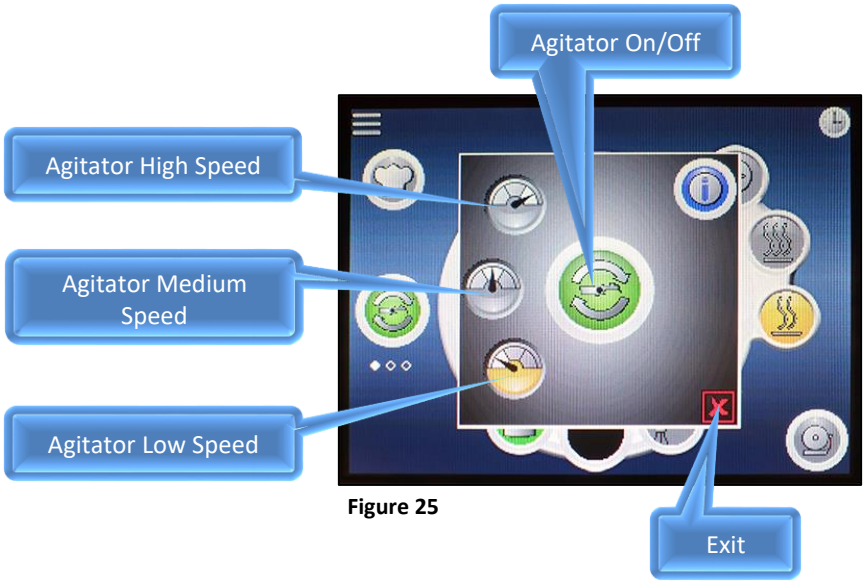


Figure 25

When in RPM mode, on the popup window, press on the Agitator RPM Setpoint button, Fig. 26, which will bring up a numeric keypad. On the keypad, type in the desired Agitator RPM speed, then press Enter. Press "Exit" to exit without changes.

Pressing the "Agitator Information" button, Fig. 26 will bring up the "Agitator Information" Popup window" which will display Agitator Information, Fig. 27. Press "Exit" to exit without changes.

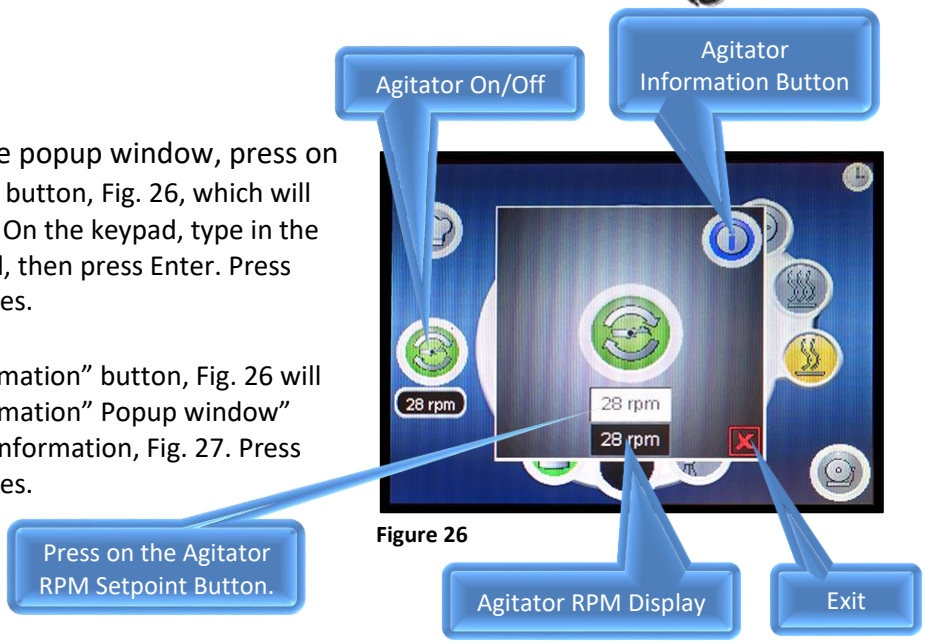


Figure 26

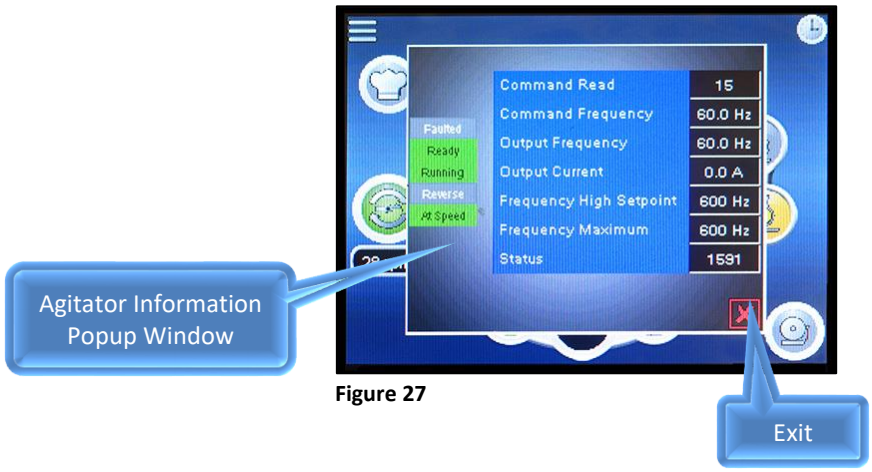


Figure 27

Agitator Speed Control – Torque Limiting

The agitator will automatically respond to load conditions and will decrease or increase agitator speed, depending on the agitator load (current on the Agitator Drive).
Agitator speed control, if enabled, will automatically slow the speed of the agitator when the agitator motor is experiencing high current. This is done to keep the agitator running and to prevent damage to the agitator.

How it works

The motor current (LCR) and the rated motor current (NCR) are read from the VFD. When the agitator is running, these values are compared.
If the motor current is at or above 100% of the rated current, the speed is dropped by 1 RPM every 8 seconds activating the speed reduction.
If the motor current is at or above 110% of the rated current, the speed is immediately reduced to 6 RPM also activating the speed reduction.
While in speed reduction, a message is displayed on the Message/Alarm banner is displayed on the HMI. The agitator icon will flash orange and green.

If the speed is already at the minimum allowable speed (6 RPM), the agitator is shut down and an alarm sounded.
While in speed reduction, If the motor current drops below 98% of the rated current, the speed is increased by 1 RPM every 8 seconds until reaching the original setpoint. This deactivates speed reduction.
If the agitator is turned off while in speed reduction for any reason, the speed reduction is deactivated and all setpoints returned to their initial values.
All the agitator VFD's internal faults will still be monitored. A VFD fault will be displayed on the HMI. Speed reduction is not active in maintenance mode.

3-Speed Agitators

If in speed reduction, the user can still toggle between Low (L), Medium (M), and High (H) but with the following caveat, the new speed setpoint will be the lesser of the of the current speed or the Low Speed Setpoint (LSP) if selecting L or will be the lesser of the of the current speed or the Medium Speed Setpoint (MSP) if selecting M. If selecting H, the speed will remain at the current speed.
If the agitator load condition increases, the agitator speed will be automatically reduced to try to prevent a "torque limit" (Overload) condition. When the agitator speed is reduced, the Agitator On/Off / Set Speed button background will flash orange and white and the warning "Agitator Torque Reduction Active" will be displayed at the top of the HMI screen, see Fig. 28.

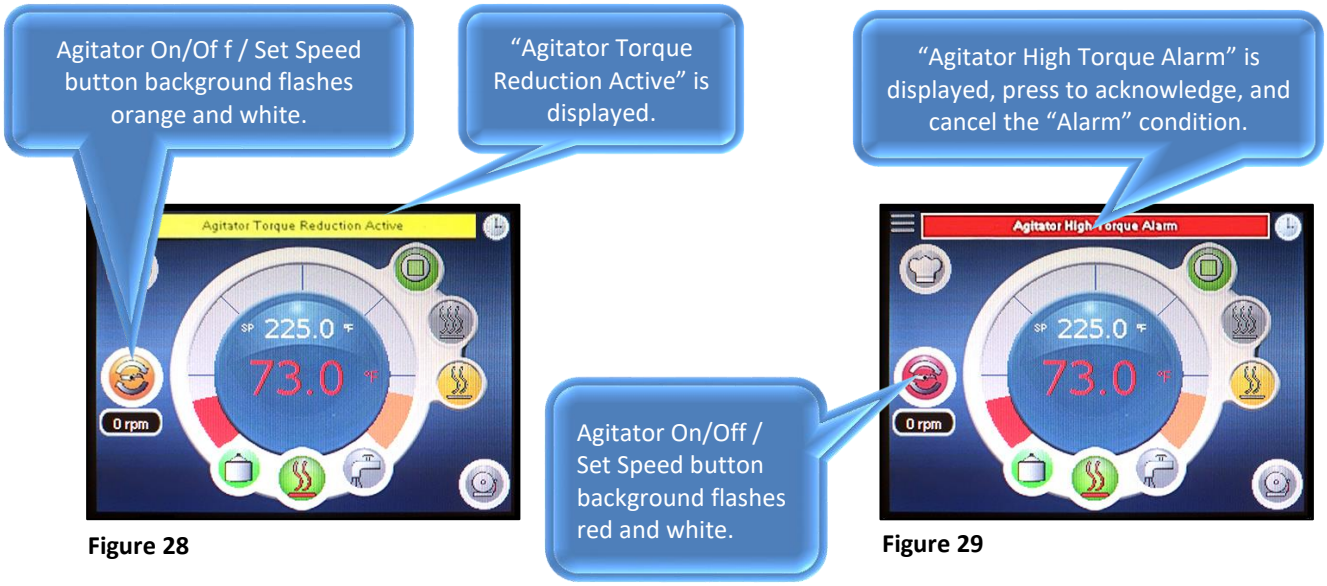


Figure 28 **Figure 29**

If the load condition continues and the Agitator speed continuously decreases for a longer duration, it may reach a point of "torque limit" (overload) condition. At that point, the Agitator On/Off / Set Speed button background will flash red, display "Alarm" symbol and "Agitator High Torque Alarm" will flash at the top of the HMI screen at which point the Agitator will stop, see Fig. 29.
Press on the "Agitator High Torque Alarm" display at the top of the HMI screen to acknowledge it and cancel the "Alarm" condition, otherwise it will time out and will no longer be displayed. The Once the alarm at the top of the HMI screen is no longer displayed, the Agitator can be restarted.

Product Reheat and Auto Quench

The “Product Reheat” can be “Enabled” or “Disabled” (refer to Advanced Settings Screen” section, Pg. 39. When “Enabled”, after the product setpoint temperature is reached, it reheats automatically to maintain product setpoint temperature.

The “Auto Quench” can also be turned On or “Off”, as stated in the “Advanced Settings Screen” section, Pg. 39. When “Auto Quench” is “On”, it will automatically cool the kettle temperature to slightly below product temperature setpoint once product has reached setpoint for the first time. This will slow/stop the cooking process.

If the “Cook” process is interrupted, the cook and auto quench processes will be stopped.

Low (Slow) Cook/High (Fast) Cook

Select the **Low (Slow) Cook or the High (Fast) Cook** button to switch between modes, Fig. 30, and Fig 31. In **High (Fast) Cook** mode, the product cooks at a higher rate and in **Low (Slow) Cook** mode the product cooks at a lower rate.

When using **Low (Slow) Cook** during cooking, the cooker temperature setpoint is calculated by taking the product temperature and adding in the "Low (Slow) Cook Temperature Offset" (set on the Advanced Settings Screen), for details see Pg. 39. The default "Low (Slow) Cook Temperature Offset" is 40°F (22°C).

Figure 30

To change the **Low (Slow) Cook** setpoint, press on the **Low (Slow) Cook** button, Fig. 30, which will bring up a popup window, Fig 32. On the popup window, press on the button, with black writing and white background, which will bring up a numeric keypad. Type in the desired **Low (Slow) Cook** temperature, then press "Enter". Press on the "Exit" button to exit without changes.

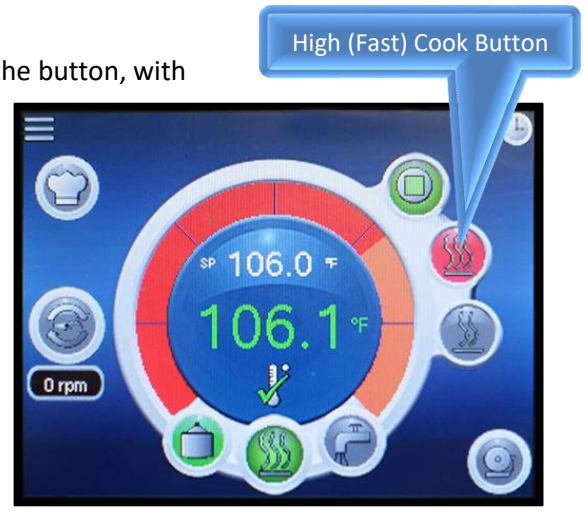


Figure 31

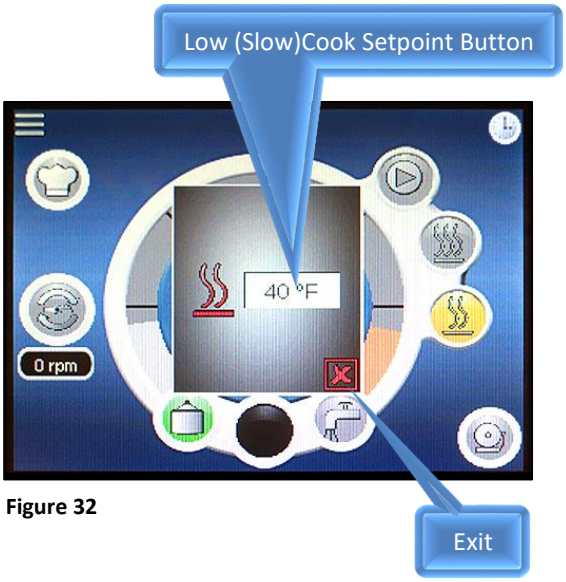


Figure 32

When using **High (Fast) Cook** during cooking, the cooking temperature setpoint is calculated by taking the product temperature and adding in the "High (Fast) Cook Temperature Offset" (set on the Advanced Settings Screen), for details see Pg. 39. The default "High (Fast) Cook Temperature Offset" is 100°F (55°C).

Figure 33

To change the **High (Fast) Cook** setpoint, press on the **High Cook** button, Fig. 3, which will bring up a popup window, Fig. 33. On the popup window, press on the High 9Fast) Cook Setpoint button, with black writing and white background, which will bring up a numeric keypad. Type in the desired **High (Fast) Cook** temperature, then press "Enter". Press on the "Exit" button to exit without changes.

Refer to Fig. 35 and Fig. 36 for Low (Slow) Cook / High (Fast) Cook explanations and examples.

Figure 34

Low Cook Confections:		
Low Cook Explanation	**Products**	**Examples**
Any candy that cooks less than 250°F (121°C) degrees, or a cook that needs to be gentle.	caramels, fudges, ganache, gummies, jellies	For caramel and fudge, higher cooking time is required, therefore, set the Cook Temperature 40°F (4.44°C) hotter than the Product Temperature Setpoint. For example, if the "Low Cook" is set to 240°F (116°C) the cooker maximum heater temperature will be 280°F (138°C).

High Cook Confections:		
High Cook Explaination	**Products**	**Examples**
Any candy that cooks 250°F (121°C) degrees and higher.	peanut brittles, toffee, hard candy	For toffee and brittle, shorter cooking time is required, therefore set the Cook Temperature 100°F (38°C) hotter than the Product Temperature Setpoint. For example, if the "High Cook" is set to 300°F (149°C) the cooker maximum heater temperature will be 400°F (204°C).

Figure 35

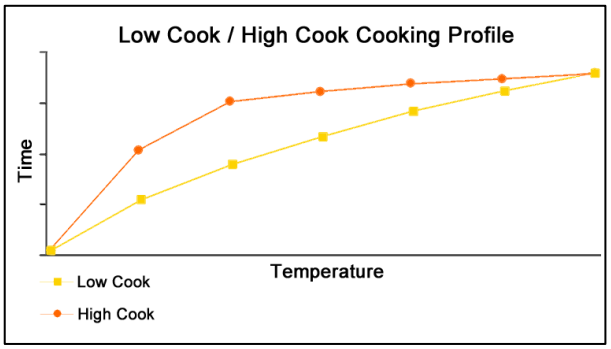


Figure 36

Product Temperature and Chef Mode/Kettle Temperature

The Product Temperature sensor monitors the changing temperature of the product while it cooks. The **Chef Mode- Kettle Temperature** determines how fast the product will cook.

In order to view and/or change the **Chef-Mode/Kettle Temperature**, press the **Chef Mode/Kettle Temperature** On/Off button, Fig. 37, at which point the button's background will turn green, indicating it is **On**. Also at that point, it will change the **Main Screen,** displaying the **Kettle Temperature Button**, Fig 38.

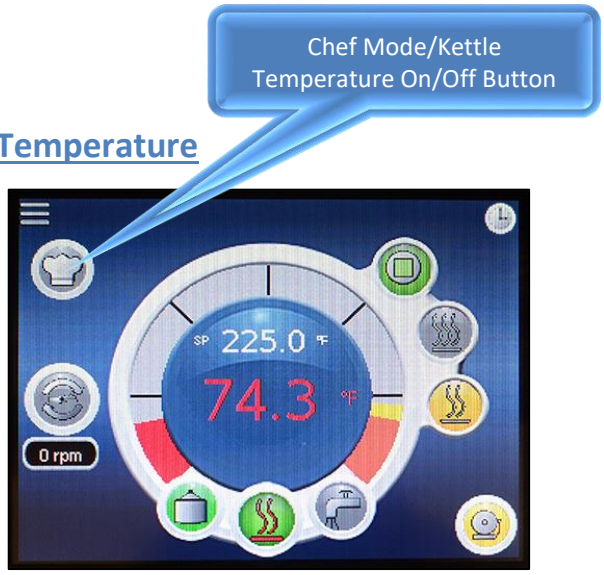


Figure 37

The **Chef Mode-Kettle Temperature SP** (setpoint) allows the operator to have control over the Kettle Temperature, Fig. 38.

Figure 38

Chef Mode - Kettle Temperature Setpoint

Pressing the **Kettle Temperature** button**,** Fig. 39, will bring up a Popup Window, Fig. 40, on which the operator can view and adjust the setpoint for the **Kettle Temperature**, the maximum temperature the Cooker is allowed to reach. Press the **Kettle Temperature Setpoint Button** (black numbers, white background). A numeric keypad screen now appears. On the keypad, type in the desired Maximum Kettle Temperature, and then press the **Enter** button. The maximum Kettle Temperature is 435 °F (224 °C).

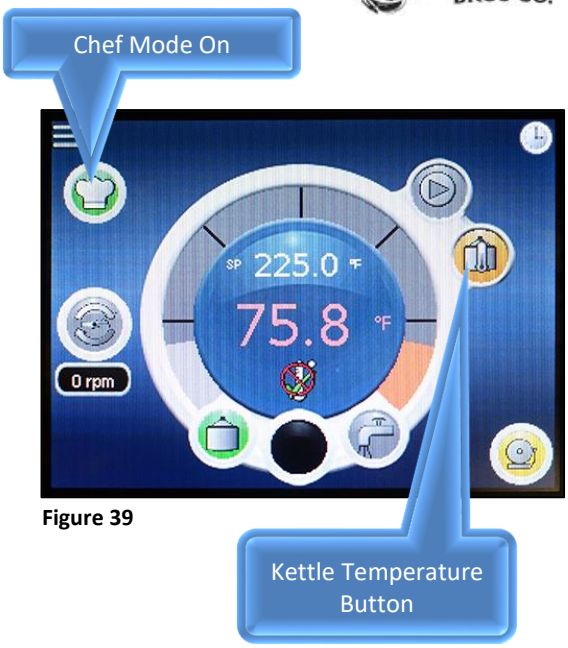


Figure 39

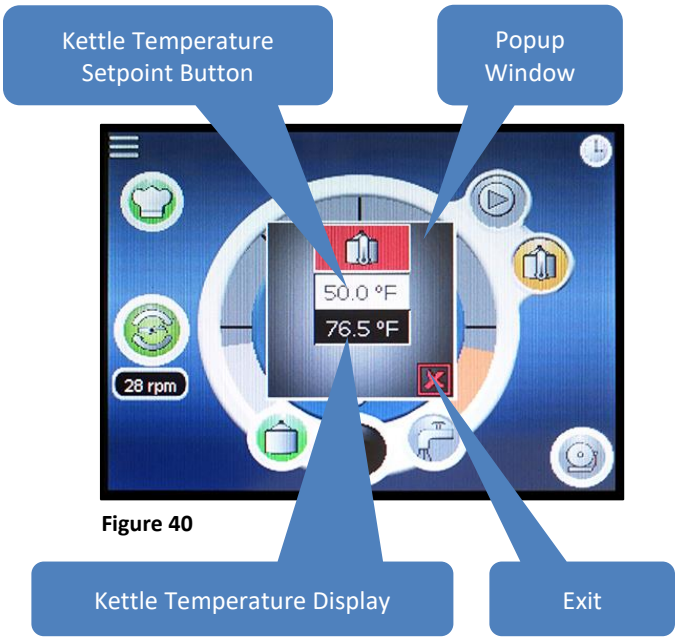


Figure 40

MAINTENANCE SCREEN

At the **Cook Control** screen, press the **Menu** button, Fig. 41, after which a **Popup Menu** appears, on the left side, Fig. 42.

On the **Popup Menu** press on the **Maintenance** button, after which the **Maintenance** screen appears, Fig. 42.

Figure 41

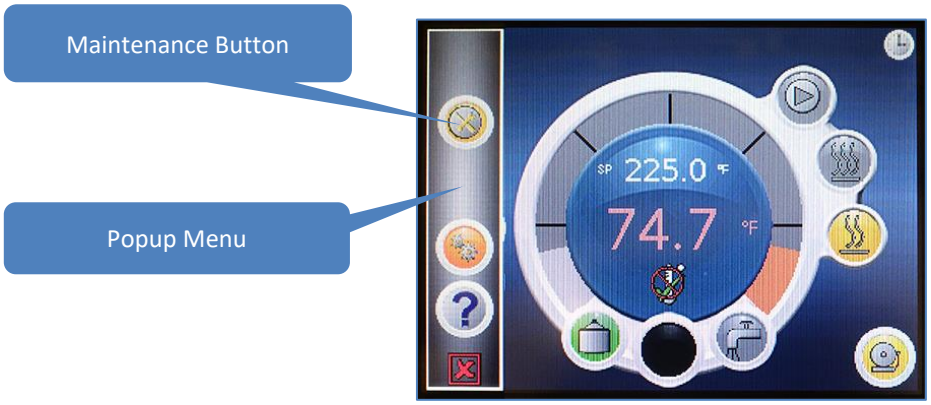


Figure 42

At the **Maintenance Screen**, Fig. 43, the operator can test that the **Tilt Switch** status (engages and disengages), the **Tank Water** flushes, the **Audible Alarm** sounds, the **Agitator** rotates, and the **Heater** works. The **Audible Alarm Test, Agitator Jog**, and **Heater Jog** buttons are momentary switches, meaning that as long as the user presses the button, the electrical circuit remains active, and the device operates. Its background turns to green when the device operates. Once the user removes pressure from the switch, the electrical circuit de-activates and the device being tested will stop operating.

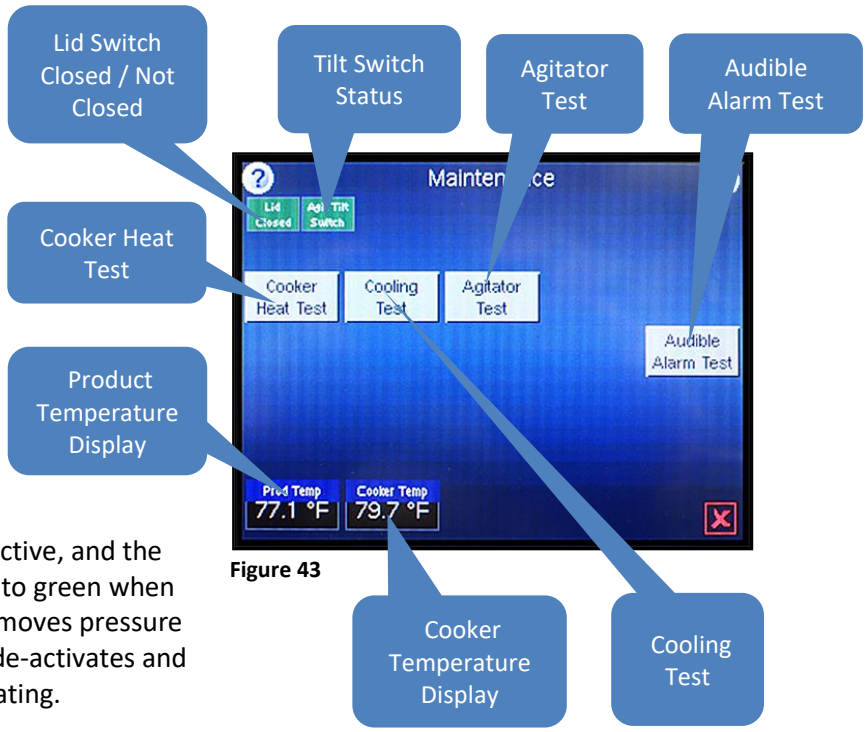


Figure 43

Tilt Switch

When the **Tilt Switch Engaged** is on, Fig. 44, the cooker is upright, which allows the agitator to rotate, if the operator chooses. To test that the tilt switch is functioning properly, ensure that the cooker is empty, after which tilt the cooker 90 degrees forward. The tilt switch display background should now turn gray, indicating the **Tilt Switch Open**. Returning the cooker to the upright position reverts the background to green background. If the tilt switch is not working properly, see the **Troubleshooting** section of this manual.

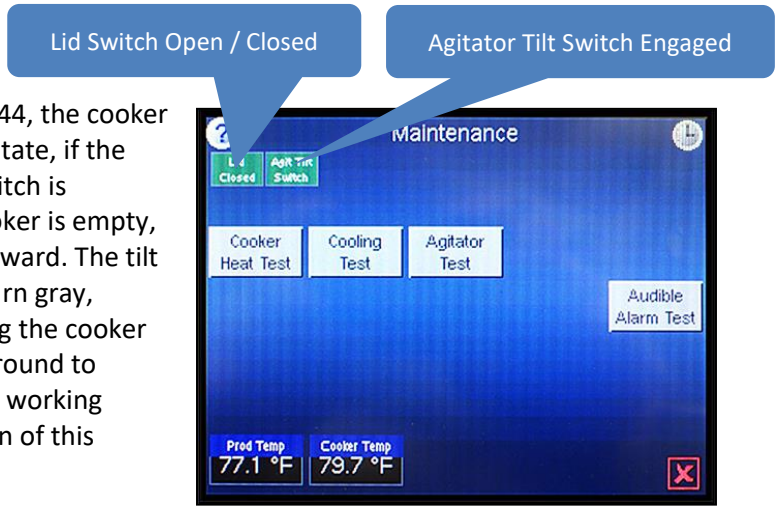


Figure 44

Lid Switch

If the cooker is equipped with the optional Lid-Off Agitator Stop interlock switch, when the lid is removed from the kettle, the agitator will stop. To test that the lift switch is functioning properly, lift the lid. The Lid Switch Display background should now turn gray, indicating **Lid Switch Open**, Fig. 44.

Cooling Test

Pressing this button changes its background to green indicating the **Flush Valve Open,** Fig. 45. If you cannot hear water running after pressing this button, see the **Troubleshooting** section of this manual. Once you are done testing the flush, press this button again to turn it off.

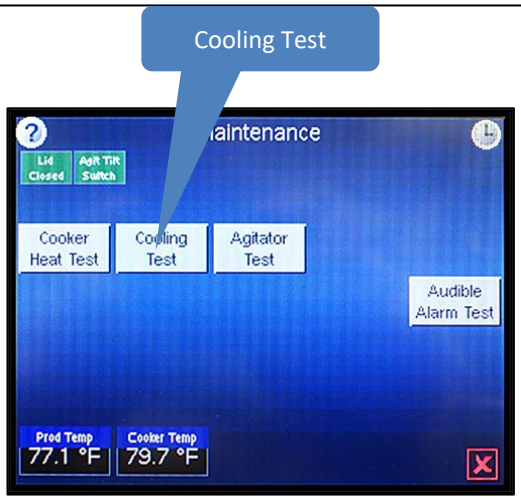


Figure 45

Audible Alarm Test

Pressing this button changes its background to green, Fig. 46, and you should hear an alarm. If the audible alarm cannot be heard during this test, see the **Troubleshooting** section of this manual. Removing pressure from this button causes it to revert to its original color and silences the alarm.

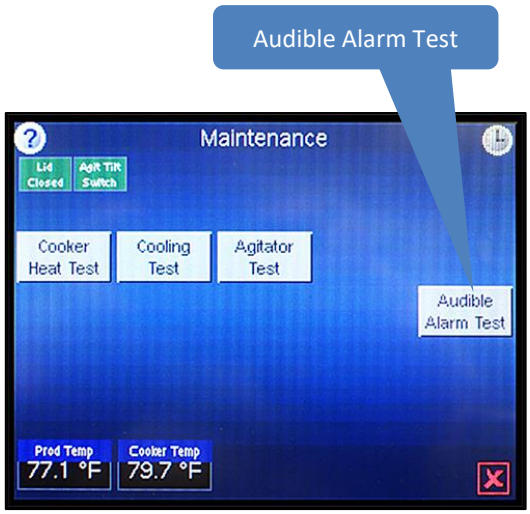


Figure 46

Cooker Heat Test

Pressing this button changes its background to green, Fig. 47, the heater turns on. You should notice the Cook Temperature increases before the Product Temperature increases. If the temperature does not increase while pressing this button, see the **Troubleshooting** section of this manual. Removing pressure from this button causes it to revert to its original color, the temperature display disappears, and the heater and status indicator turn off.

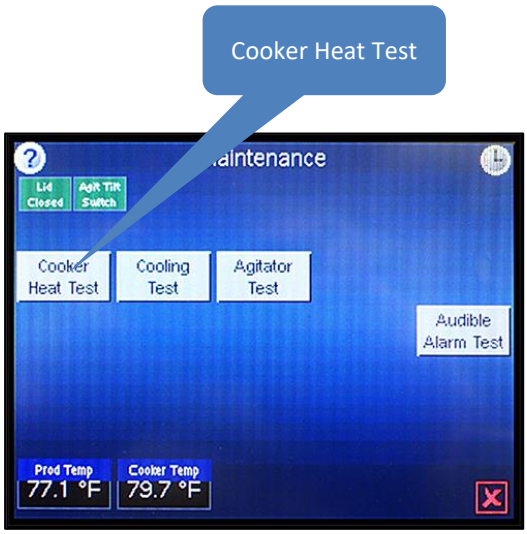


Figure 47

Agitator Test

Pressing this button changes its background to green, Fig. 48, the agitator should rotate. If the agitator fails to rotate while holding this button down, see the **Troubleshooting** section of this manual. Removing pressure from this button causes it to revert to its original color, and the agitator to turn off.

Press the **Exit** button, Fig. 48, to return to the **Cooking Control** screen.

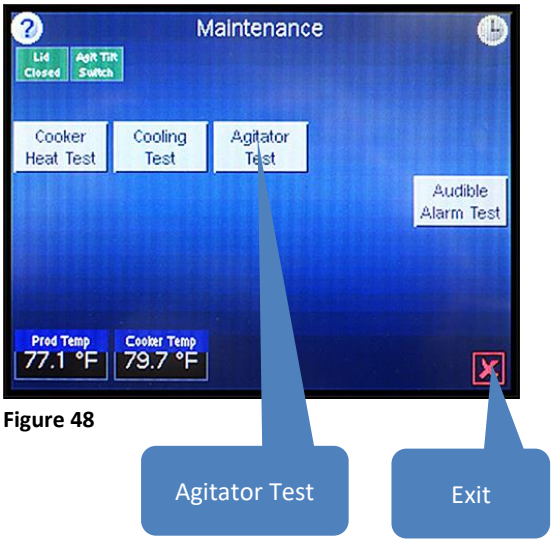


Figure 48

ADVANCED SETTINGS SCREEN

To access the **Advanced Settings** screen, press the **Menu** button on the **Cook Control** screen, Fig. 49, after which a **Popup Menu** appears.
On the **Popup Menu** press **Advanced Settings** button, on the **Popup Menu**, Fig. 50, after which a **Password Popup Window** appears, Fig. 50.

Figure 49

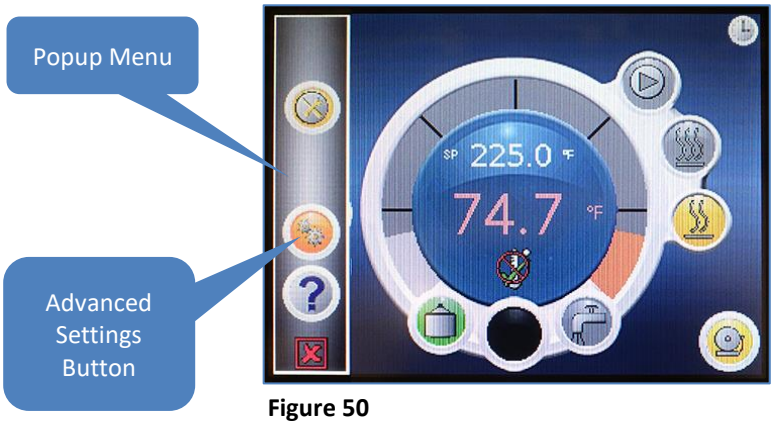


Figure 50

Press on the button with white number and gray background, inside the **Password Popup Window**, Fig. 51.

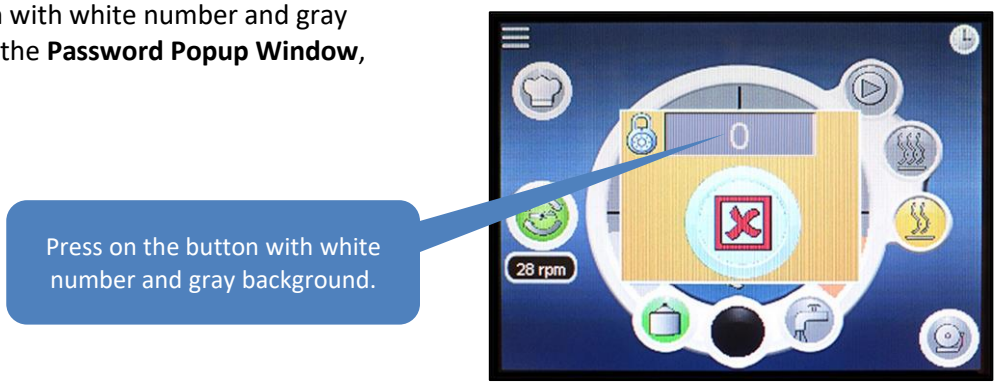


Figure 51

A numeric keypad screen now pops up. Using the on-screen keypad, Fig. 52, type in the password **(refer to the Password Addendum document)**, then press the **Enter** button, after which an unlock button appears, then press on the **Unlock button**, Fig. 53.

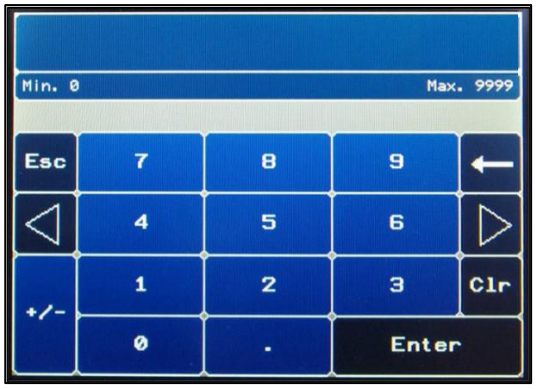


Figure 52

Figure 53

At the **Advanced Settings** screen, Fig. 54, the operator can navigate to or change the:

- Product Temperature RTD Offset (also view Product Temperature Display)
- Change Temp to °C /Change Temp to °F - display temperatures in degrees Celsius (°C) or back to Fahrenheit (°F).
- Prod (High Cook and Low Cook) Temp RTD Offset – used for offsetting the High Cook temperature for faster cooking speed or the Low Cook temperature for slower cooking speed (depending on product cooking speed requirements).
- Auto Shutdown On/Off.
- Water Flush Alarm On/Off.
- Factory Default Reset.
- Agitator Speed LMH (Low, Medium High) or RPM –toggle between LMH (Low, Medium, High) or RPM Speeds.
- Product Reheat Enabled/Disabled- when "On", after Product Setpoint temperature is reached, it reheats automatically to maintain Product Setpoint temperature.
- Auto Quench On/Off – when "On", it will automatically cool kettle, when product has reached setpoint to stop/slow cooking process.
- Agitator Torque Regulation On/Off - the agitator will automatically respond to load conditions and will decrease or increase agitator speed, depending on the agitator load (current on the Agitator Drive).
- Low Cook Temperature Offset – (when not in Chef mode)
- High Cook Temperature Offset – (when not in Chef mode)
- Agitator Torque Regulation On/Off
- Maximum Cooker Power

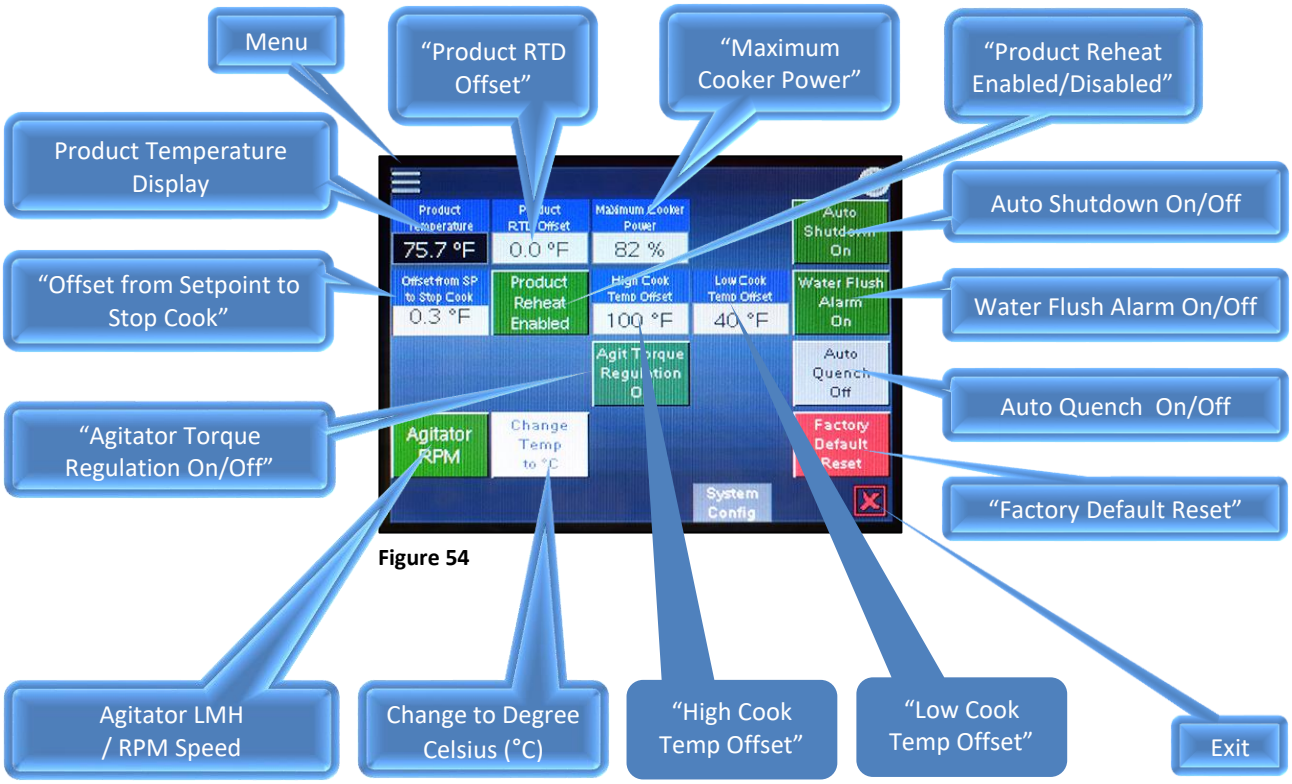


Figure 54

Factory Default Reset

Pressing the **Factory Default Reset** button, Fig. 54, will reset the FM-14 program back to the factory settings. Keep in mind that all **personal settings will be erased** after it is pressed.

Maximum Cooker Power Button/Display

Because line voltage going into a building can vary from location to location, adjust the heater power to compensate. Press the **Maximum Cooker Power** button, where the percentage is displayed, Fig. 54. A numeric keypad screen now pops up. Use the below guideline as to what percent to enter at the numeric keypad screen, and then press the **Enter** button.

208V = 100 percent
220V = 94 percent
230V = 87 percent
240V = 82 percent

Change Temperature to Degree °C Button

The default temperature displays in **Degrees Fahrenheit**. To change all of the displays to read in **Celsius**, simply press this button, Fig. 55. The button will now read **Change Temp to °F**, Fig. 56. To change back to display temperatures in **Fahrenheit**, simply press this button again, Fig. 56.

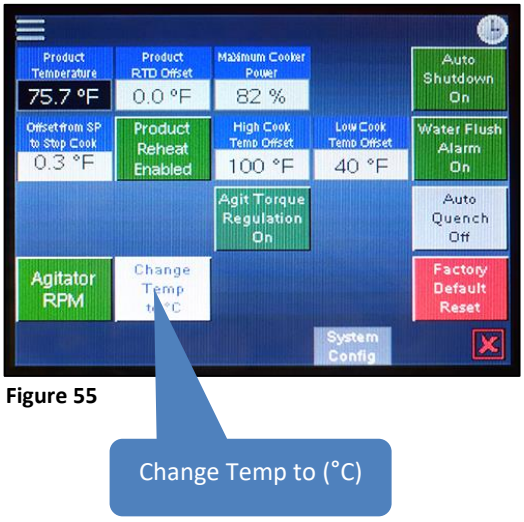


Figure 55

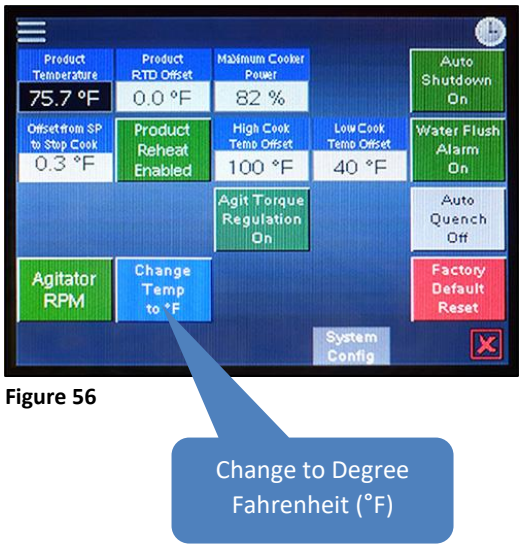


Figure 56

Advanced Settings Popup Menu

To Navigate to the **Popup Menu** on the **Advanced Settings** screen, press on the **Menu** button, Fig. 54.

At the **Popup Menu** on the **Advanced Settings** screen, Fig. 56, the operator can navigate to or change the:

- VFD Setup screen
- HMI Brightness screen.
- Set Date and Time screen
- System Error Log screen
- Help/Information

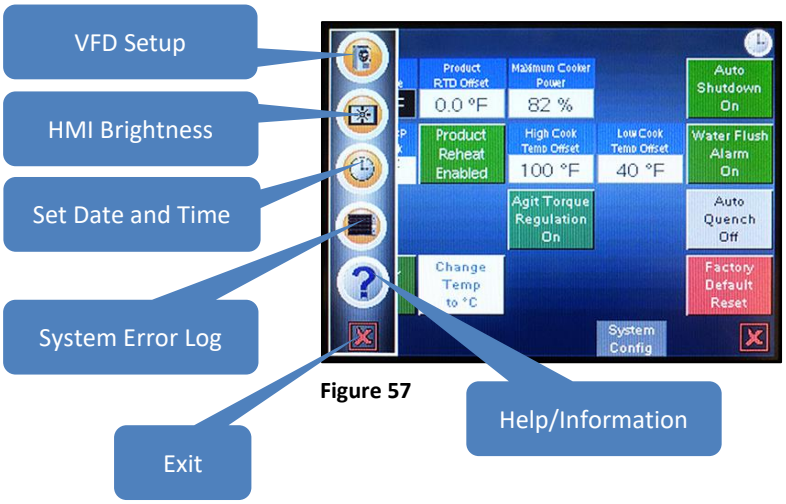


Figure 57

VFD Setup – Advanced Settings

On the **Popup Menu,** on the **Advanced Settings** screen, pressing the VFD Setup button, (Fig. 58) will take you to the **VFD Setup** screen. On the **VFD Setup** screen, (Fig. 59 or Fig. 60), depending on whether Agitator Single Speed or Agitator Low, Medium, or High preset speed is selected, the VFD parameters can be changed, and the agitator can be tested.

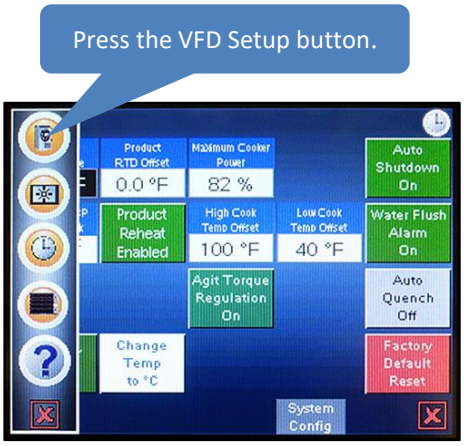


Figure 58

- **Max User Speed** — Maximum working screen (setpoint) agitator speed
- **Min User Speed** — Minimum working screen (setpoint) agitator speed
- **Jog Speed** — Maintenance test speed
- **VFD Speed HSP in Hz and Max in Hz** — Maximum frequency allowed for this motor.
- **Enter Maximum Measured Speed in RPM** — Rpm's that will be used when the motor is operated at maximum frequency.
- **UP/DOWN** speed adjust — Adjust the agitator testing speed.
- **Agitator Test RUN** — Press **RUN** to test the agitator.
- **Agitator Test STOP** — Press **STOP** to end the agitator test.
- **VFD Command** — Value read from the drive.
- **Command Speed in HZ** — The command speed is the actual value (in Hz) that the drive was commanded to run.
- **Forward / Reverse** — The Agitator can run in Forward or Reverse.
- **Calibration** — The Agitator can be calibrated, if required.

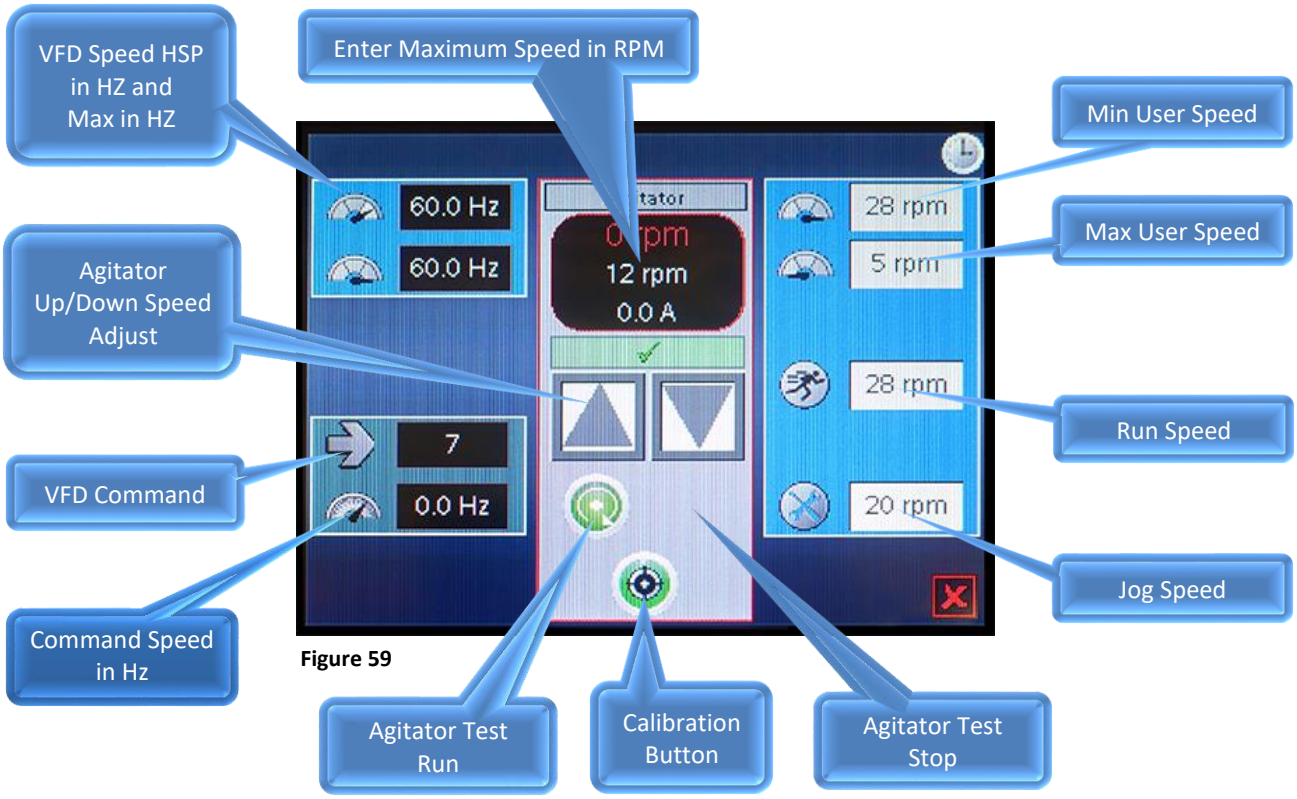


Figure 59

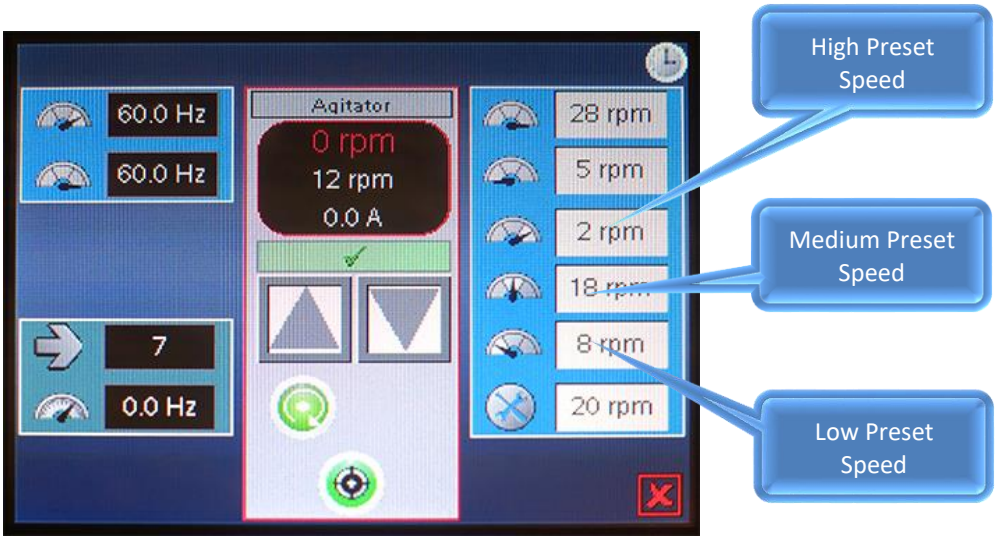


Figure 60

Agitator Calibration

The Agitator has been calibrated in the factory. If calibration is required, press the **Calibration** button, Fig. 61. As soon as you press the **Calibration** button, measure the actual maximum user units of the Agitator, then press on the **Agitator Test Stop** button, (Fig. 62), after which a popup window will appear, Fig. 63. Press on the **Measured Maximum User Units** (black numbers, white background) inside the popup window, after which a keyboard will appear Fig. 64. Enter the **Measured Maximum User Units** and press **Enter** on the keyboard. Press the **Exit** button on the popup window to exit without changes.

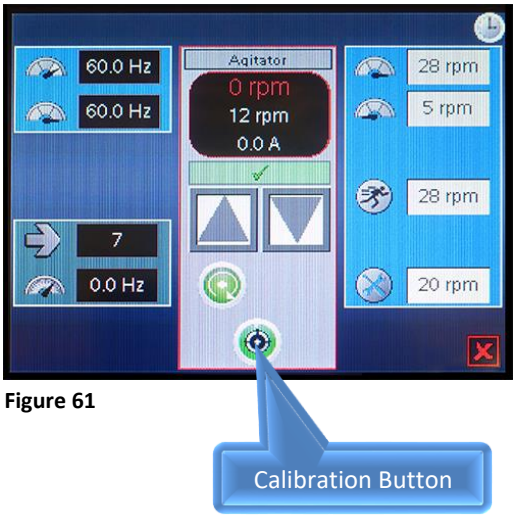


Figure 61

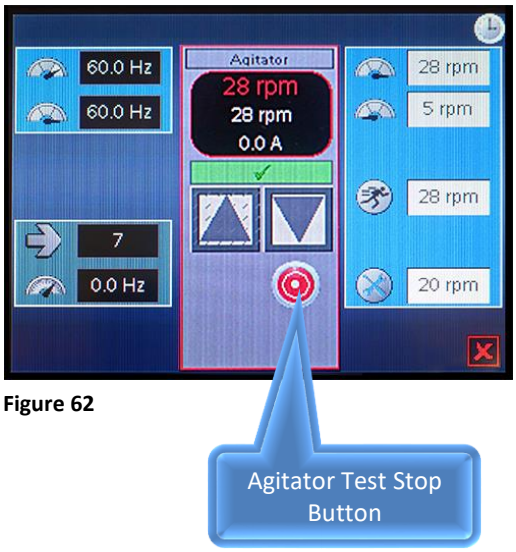


Figure 62

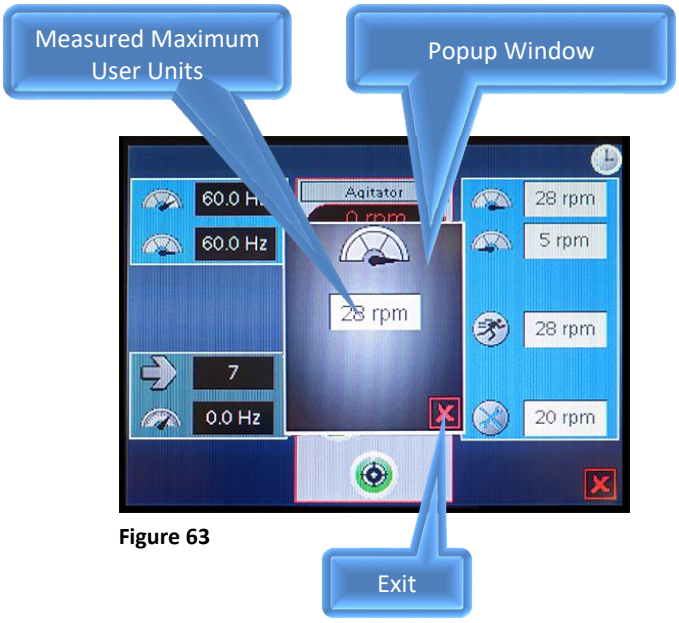


Figure 63

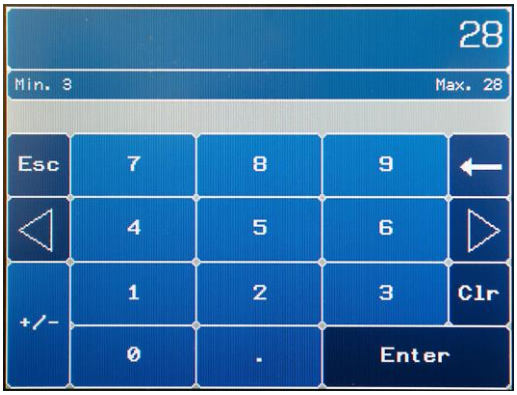


Figure 64

HMI Brightness Button

To adjust the brightness of the display, press the **HMI Brightness** button, Fig. 65, on the **Popup Menu,** on the **Advanced Settings** screen, which will bring up the **HMI Brightness** Popup Window, Fig. 66. Press on the left arrow to lower the brightness or press on the right arrow to increase the brightness, Fig. 66. The maximum level of brightness is 15. After entering the desired level of brightness, press the **Exit** button.

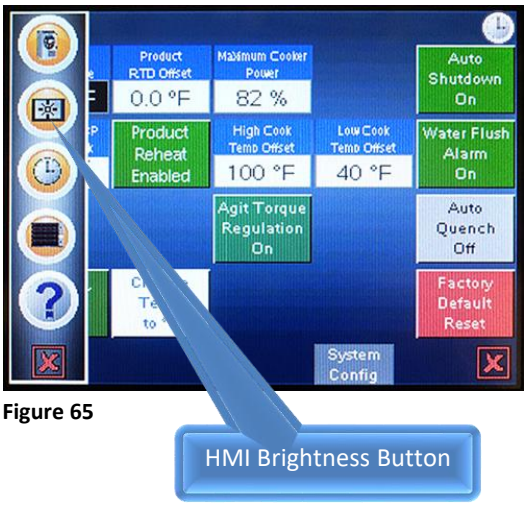


Figure 65

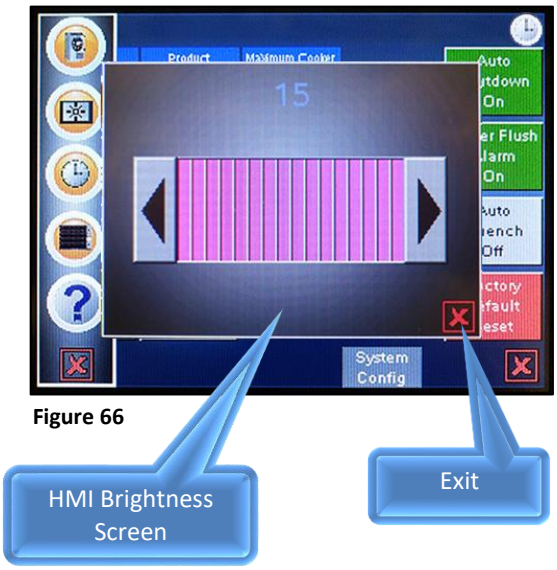


Figure 66

Set Date and Time Button

At the **Popup Menu** on the **Advanced Settings** screen, press on the "Set Date & Time" button, Fig. 67, which will bring up the "Set Date & Time" window, Fig. 68.

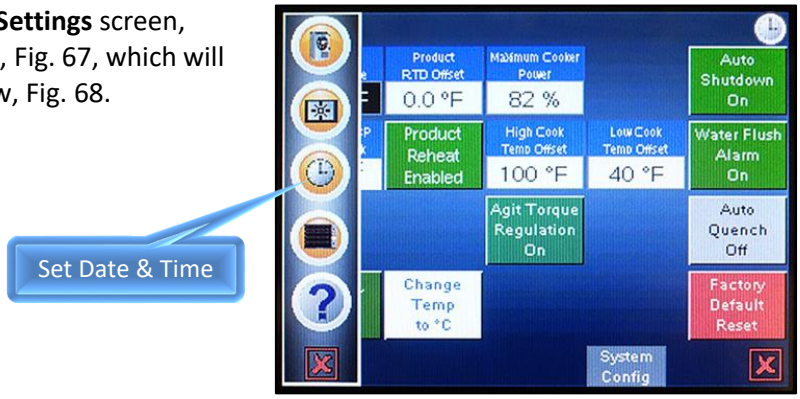


Figure 67

1. To adjust the **Day**, press inside the box (arrow) marked day, Fig. 68.

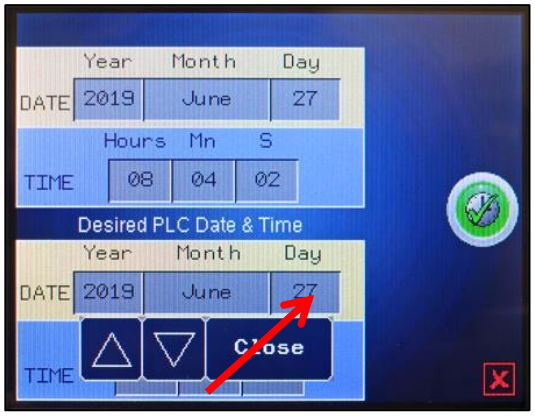


Figure 68

2. A numeric keypad screen now opens, Fig. 69. Type in the day and then press the **Enter** button.

Figure 69

3. To change the month, press inside the **Month** box (arrow), Fig. 70.

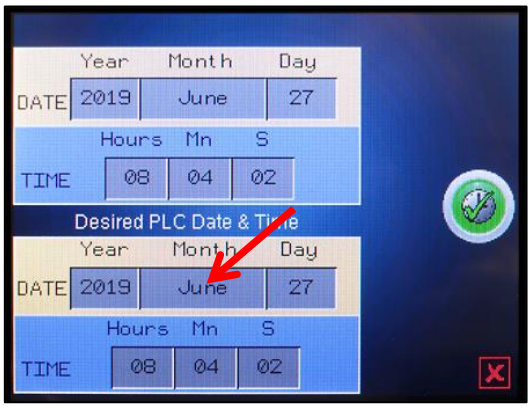


Figure 70

4. A drop-down menu now appears with up and down arrows, Fig. 71. Press either of the arrows until the desired month appears then press the **Close** button. Press the **Accept** button to accept the time change.

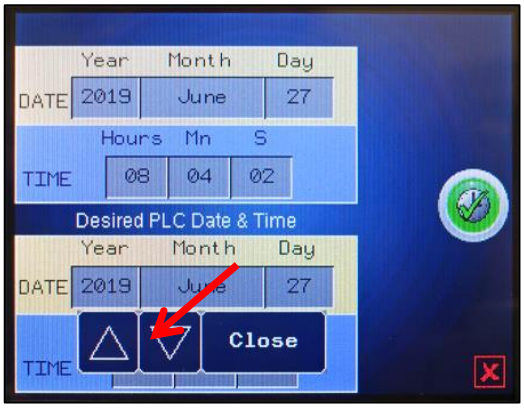


Figure 71

5. To adjust the year, press inside the **Year** box (arrow), Fig. 72.

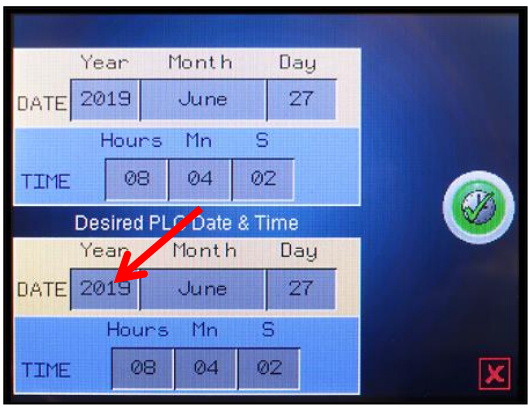


Figure 72

6. A numeric keypad opens, Fig. 73. Type in the desired year, and then press the **Enter** button. Press **Esc.** To exit the screen.

Figure 73

7. Press inside the **Hours box**, Fig. 74 to adjust the hour, and a numeric keypad opens Fig. 75. Type in the desired hours — using military time — and then press the **Enter** button**.**
8. Adjust the minutes and seconds the same way as changing the hours. Press the **Accept** button to accept the date and time changes. Press the **Exit** button to exit without changes.

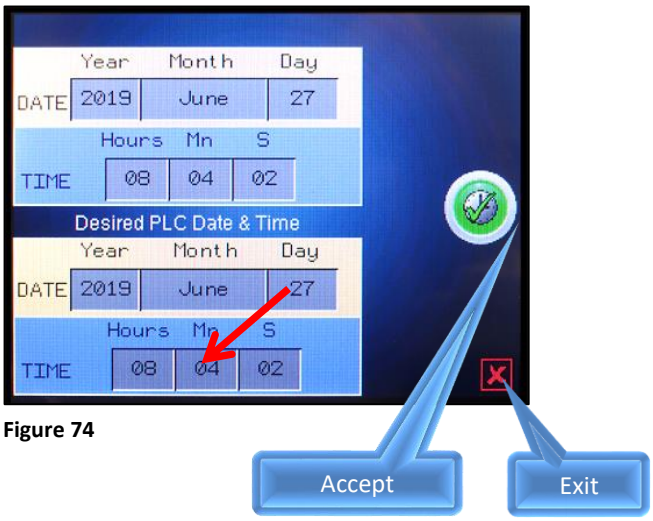


Figure 74

Figure 75

NOTE: When setting the time, this machine uses a 24-hour clock (also known as military time). That means from 1 a.m. to 12 noon, the time entered is just as the time appears on a clock. However, from 1 p.m. to midnight, add 12 to whatever the clock shows. For example: 1 p.m. now becomes 13; 5 p.m. now becomes 17; 9 p.m. now becomes 21 and midnight now becomes 24. After midnight, a new cycle begins and starts at 00. Thus, one minute after midnight now becomes 00 in the **Hours** box and 01 in the **Mn** box.

Product Temperature RTD Offset - Calibrating the Machine

The machine has been calibrated at the factory. The only time you will need to this button, Fig. 52, is to recalibrate your machine because the **Actual Product Temperature** displayed is not accurate or the temperature sensor needs replacement. The occasional need to recalibrate the machine is considered normal. However, if the machine needs *frequent* recalibration, the temperature sensor may be defective. If the temperature sensor is deemed defective or physically damaged and needs replacement, the machine will need recalibration after replacing the temperature sensor.

1. To start the procedure, boil water in the cooker. Because water boils at different temperatures at different elevations — (212°F (100 °C) at sea level and 202 °F (94.4 °C) in Denver, Colorado) — in order to determine the proper boiling point, first find out the elevation of your location. You may search online for the elevation by typing your zip code and the word “elevation”. Once you find the elevation, search online to find out what temperature water boils at your elevation. For example, Chicago has an elevation of 660 feet and the boiling temperature is 210.9 °F (99.39 °C).

2. Touch the **Actual Product Temperature** on the **Cooking Control** screen, after which a popup window will be displayed. In the popup window, touch the **Temperature** D**isplay** (white numbers) to display the on-screen numeric keypad. Using the keypad, Fig. 76, type in a temperature much higher than the boiling point for your elevation (for example, 220 °F or 104.4 °C), then press the **Enter** button which closes the window and then press the **Accept** button on the popup window. Press the **Exit** button to exit without changes.

3. Pour clean tap water into the cooker.

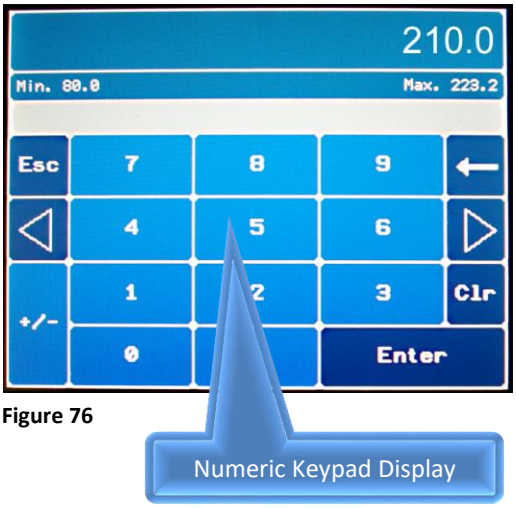


Figure 76

4. Press the **Cook Cycle Start** button, which turns the heating element on, Fig. 77. When **Coo**k is in the **On** position, the background on the Cook Cycle On/Off button is red.

5. Wait for the water to boil, and then write down the temperature at which the water starts to boil.

6. When the water boils, press the **Cook Cycle Stop** button) (Square), Fig. 77, and it will revert to **Stop** with green background.

7. At the **Cooking Control** screen, press the **Menu** button, and then follow the password prompts to open the **Advanced Settings** screen, refer to pages 39 through 41.

8. You will need to do some basic math to determine the **Product Temp RTD Offset** number to enter:

   - **If using the Fahrenheit scale:** (examples)
     If the water boiled at 210 °F, subtract 210 from 212 and the offset is -2. If the water boiled at 202 °F, subtract 202 from 212 and the offset number is -10. However, if the water boiled at 214 °F, subtract 212 from 214 and the offset would be +2… and so on.

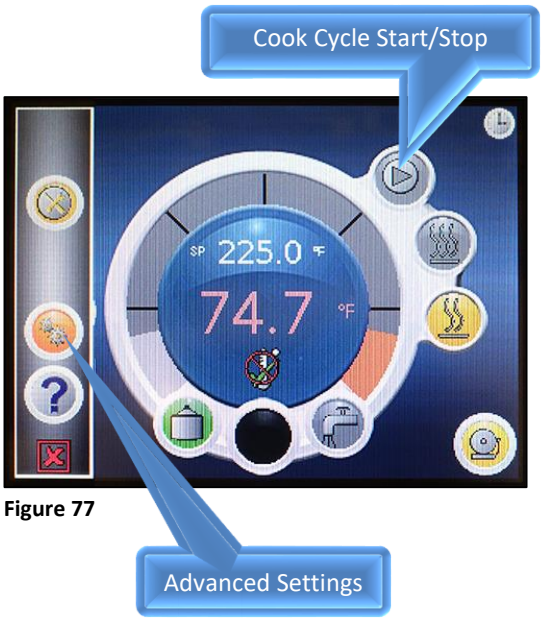


Figure 77

9. Press the **Product Temp / RTD Offset** button, Fig. 78, to open the numeric keypad.

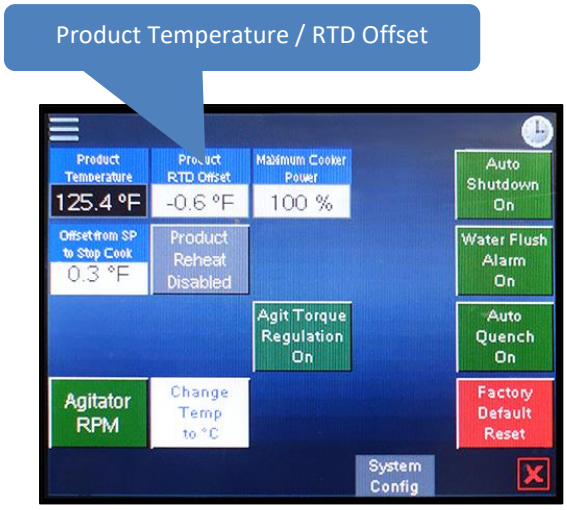


Figure 78

10. Using the on-screen numeric keypad, Fig. 79, type in the offset number. If the offset is a minus (-) number, press the **+/-** button so that the (-) sign appears on the display. However, if the offset is a positive number, no symbol will appear before the offset number. Press the **Enter** button.

11. The machine is now calibrated.

Figure 79

+/- Button

High (Fast) Cook Temperature Offset and Low (Slow) Cook Temperature Offset

"High Cook (Fast Cook) Temperature Offset"

The **High (Fast) Cooking Temperature Offset** is used to set the **cooker heater/cooking setpoint** (<= 435 °F (224 °C). For example, if the product setpoint is set for 225 °F (107 °C) and High (Fast) Cook Temperature Offset is set for 150 °F (83 °C), the cooker temperature setpoint will be 375 °F (191 °C).
To adjust, press the **High (Fast) Cook Temperature Offset button,** on the Advanced Settings Screen, Fig. 79.

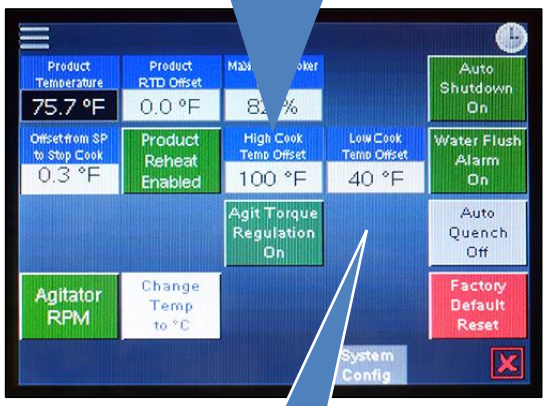


Figure 80

The **Low (Slow) Cook Temperature Offset** is used to set the **cooker heater/cooking setpoint**. For example, if the product setpoint is set for 1[illegible] °F (107 °C) and Low (Slow) Cook Temperature Offset is set for 50 °F (28°C), the cooker temperature setpoint will be 275 °F (135 °C).

To adjust, press the **Low (Slow) Cook Temperature Offset** button, on the Advanced Settings Screen, Fig. 80.

"Low/Slow Cook Temperature Offset"

System Error Log Screen

At the **System Error Log** screen, Fig. 81, the Error Log can be viewed. Pressing **Exit** will take you back to the **Advanced Settings** screen**.**

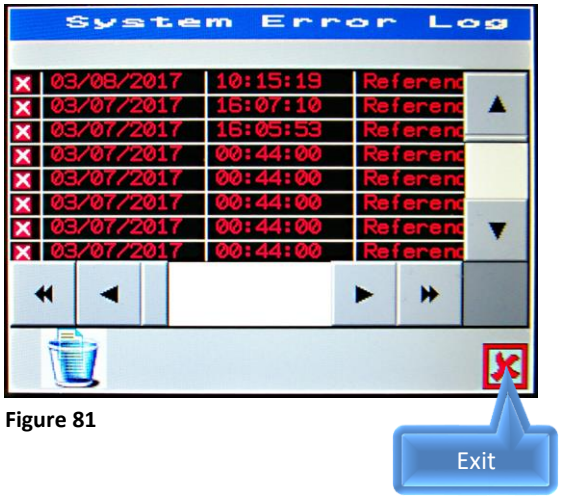


Figure 81

Auto Shutdown

The **Auto Shutdown** function can be turned On or Off by pressing the **Auto Shutdown On/Off** button, Fig. 82, for more details, refer to “AUTO SHUTDOWN”, Pg. 26.

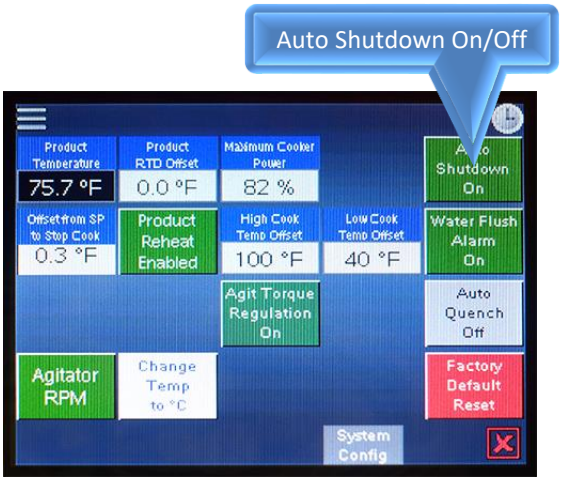


Figure 82

Help / Information Screen

At the **Cooking Control** screen, , press the **Help/Information** button, Fig. 83 to bring up the screen. At this screen press the **Information Button**, Fig. 84. The **Information** screen now appears, Fig. 85. If you call in for service, you will need to know the machine name, program name and password. You may also need to know the options code when you call in.

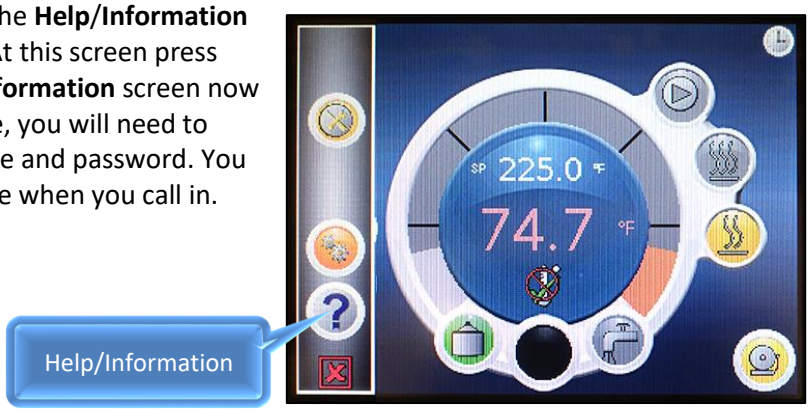


Figure 83

Figure 84

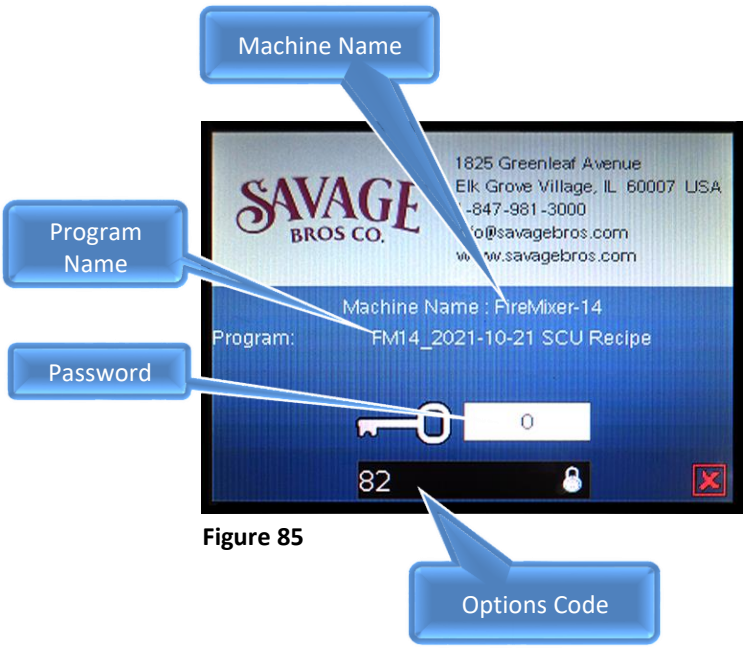


Figure 85

On the **Help/Information** screen, Fig. 83, press any of the **Help** screens to obtain help on a particular subject and a help screen will appear, Fig. 86.

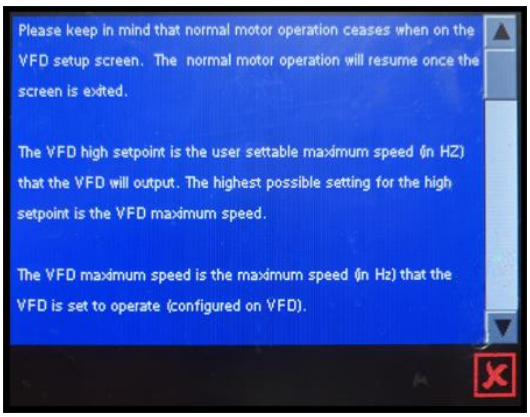


Figure 86

COOKING A BATCH

COOKER BASICS

- Before loading the cooker with ingredients, the cooker must be locked in the "0 (zero)", fully level (non-tilted) position, Fig. 87.
- Depending on the recipe, heat and agitation may or may not be required. Heat and agitation are independent of each other, offering the operator total flexibility in cooking.

Figure 87

SETTING THE COOK TEMPERATURE

- Establish both the product temperature setpoint and the cooker max temperature.
- **The cooker temperature (setpoint) MUST be set higher than the product setpoint in order to cook.**
- The temperature differential from cooker maximum temperature and product setpoint will depend on the product being cooked. There are two preset cooking offset temperatures, which are **Low Cook and High Cook.** They are adjustable on the Advanced Settings screen (refer to pages 39 through 41 for instructions on how to access).
- Select **Low Cook** or **High Cook** on the Cooking Control screen, depending on product.
- Refer to Figure 88 below for **Low Cook / High Cook** explanation and examples.

Low Cook Confections:		
Low Cook Explanation	**Products**	**Examples**
Any candy that cooks less than 250°F (121°C) degrees, or a cook that needs to be gentle.	caramels, fudges, ganache, gummies, jellies	For caramel and fudge, higher cooking time is required, therefore, set the Cook Temperature 40°F (4.44°C) hotter than the Product Temperature Setpoint. For example, if the "Low Cook" is set to 240°F (116°C) the cooker maximum heater temperature will be 280°F (138°C).

High Cook Confections:		
High Cook Explaination	**Products**	**Examples**
Any candy that cooks 250°F (121°C) degrees and higher.	peanut brittles, toffee, hard candy	For toffee and brittle, shorter cooking time is required, therefore set the Cook Temperature 100°F (38°C) hotter than the Product Temperature Setpoint. For example, if the "High Cook" is set to 300°F (149°C) the cooker maximum heater temperature will be 400°F (204°C).

Figure 88

HEAT AND AGITATE

- If you turn off the heat and then turn the heat on again, the heater will resume heating the product until the **Product Temp** setpoint is attained.
- For a more thorough "mix and fold" action, operate the cooker in a partially tilted position. Tilt the cooker and lock it into position "1" or position "2". You may need to reduce the batch size to prevent spillage while cooking. Note that tilting the cooker past the "2" (second) locking indent, automatically turns OFF the agitator and heat as a safety precaution.

	⚠ CAUTION
	WEAR PERSONAL PROTECTIVE EQUIPMENT AND USE CAUTION WHEN TILTING THE COOKER. WHEN THE COOKER IS TILTED, THE BATCH SIZE MAY NEED TO BE REDUCED IN ORDER TO PREVENT SPILLING OF PRODUCT THAT MAY BE 300+ °F ONTO YOURSELF, WHICH WOULD CAUSE BURNS.

WATER-FLUSH AT COOKING CYCLE END

- The cooker retains heat after turning off the heater, causing the batch to continue to cook beyond what is desired. You have two ways to counter this effect:
  - **Anticipate** the temperature rise and program a temperature setpoint below the final temperature required.
  - Use the **Flush Open** button on the **Cooking Control HMI** screen to **Water Flush** the heating element. Additionally, adjust the water flow by opening the water valve (blue handle), Fig. 89. As cold-water flows into the cooker, the water absorbs the heat and carries it away. Adjust the water valve for incoming water pressure. If water pressure is low, open the valve more. Experience will teach at what point in time and at what flow rate will achieve the desired effect. When the valve handle is in line with hose, water is fully on. Figure 89 shows the water partially turned off. You can regulate the water flow rate by partially opening or closing the valve.

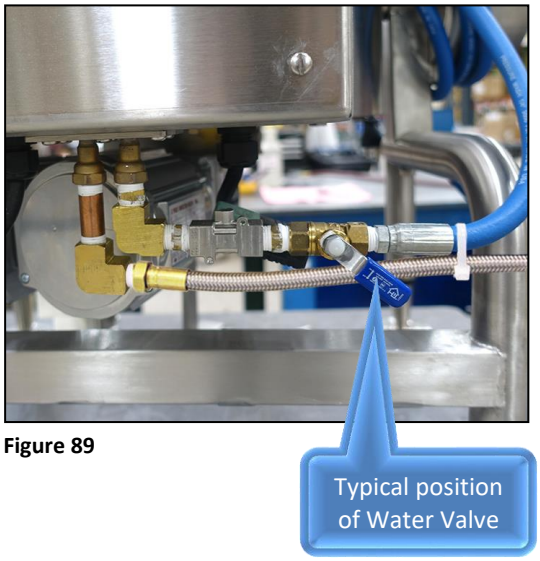


Figure 89

If you prefer the water flush method, attach a hose from an external cold-water source — i.e., a sink faucet — to the machine's blue hose.

	NOTE
	NOTE: The drain hose must remain open to the atmosphere to avoid pressurizing the cooker. Position the open end of the drain hose into a sink (refer to NOTE, Page 16).

UNLOADING PRODUCT FROM THE COOKER

1. Turn the **heat and agitator OFF**.
2. Remove the lid assembly. Note that removing the lid assembly triggers the safety interlock which will automatically stop the agitator.
3. **TILT THE COOKER** to pour out or spoon out product. Pull the tilt lever on the left side of cooker downward, Fig. 90. The tilt lever has five locking positions for holding the cooker at various angles. The "0 (zero)" locking indent locks the cooker in the fully level (non-tilted) position.
4. Tilting the cooker past the "2" (second) locking indent, Fig. 90, automatically turns OFF the agitator and heat as a safety precaution.

Figure 90

	⚠ CAUTION
	WEAR PERSONAL PROTECTIVE EQUIPMENT AND USE CAUTION WHEN TILTING THE COOKER. WHEN THE COOKER IS TILTED, THE BATCH SIZE MAY NEED TO BE REDUCED IN ORDER TO PREVENT SPILLING OF PRODUCT THAT MAY BE 300+ °F ONTO YOURSELF, WHICH WOULD CAUSE BURNS.

DRAW-OFF VALVE. Instead of tilting the cooker to pour out the product, an ***optional*** Sanitary Valve P/N: 0900-01-214 is available, contact the Savage Bros. Co. Parts Department, Fig. 91. This valve regulates the product flow from the cooker, without the need to tilt.

Figure 91

CLEANING AND SANITIZING THE COOKER

FM-14 Clean in Place (CIP) Instructions

Required Tools:

1. Flathead Screwdriver

2. PPE – Temperature Rated Gloves & Eyewear

3. Soap – Sanitizing Agent

3. Soft bristled brush

4. Scotch-Brite by 3M, non-abrasive scour pad

	Clean in Place	Clean in Wash Basin
FM-14 Cooker Body	✓	
FM-14 Agitator Assembly		✓
Thermometer Assembly		✓
Plug Assembly		✓
Sanitary Valve Assembly		✓
Refer to Fig. 1 for photos of above listed Assemblies		

Cleaning Chart

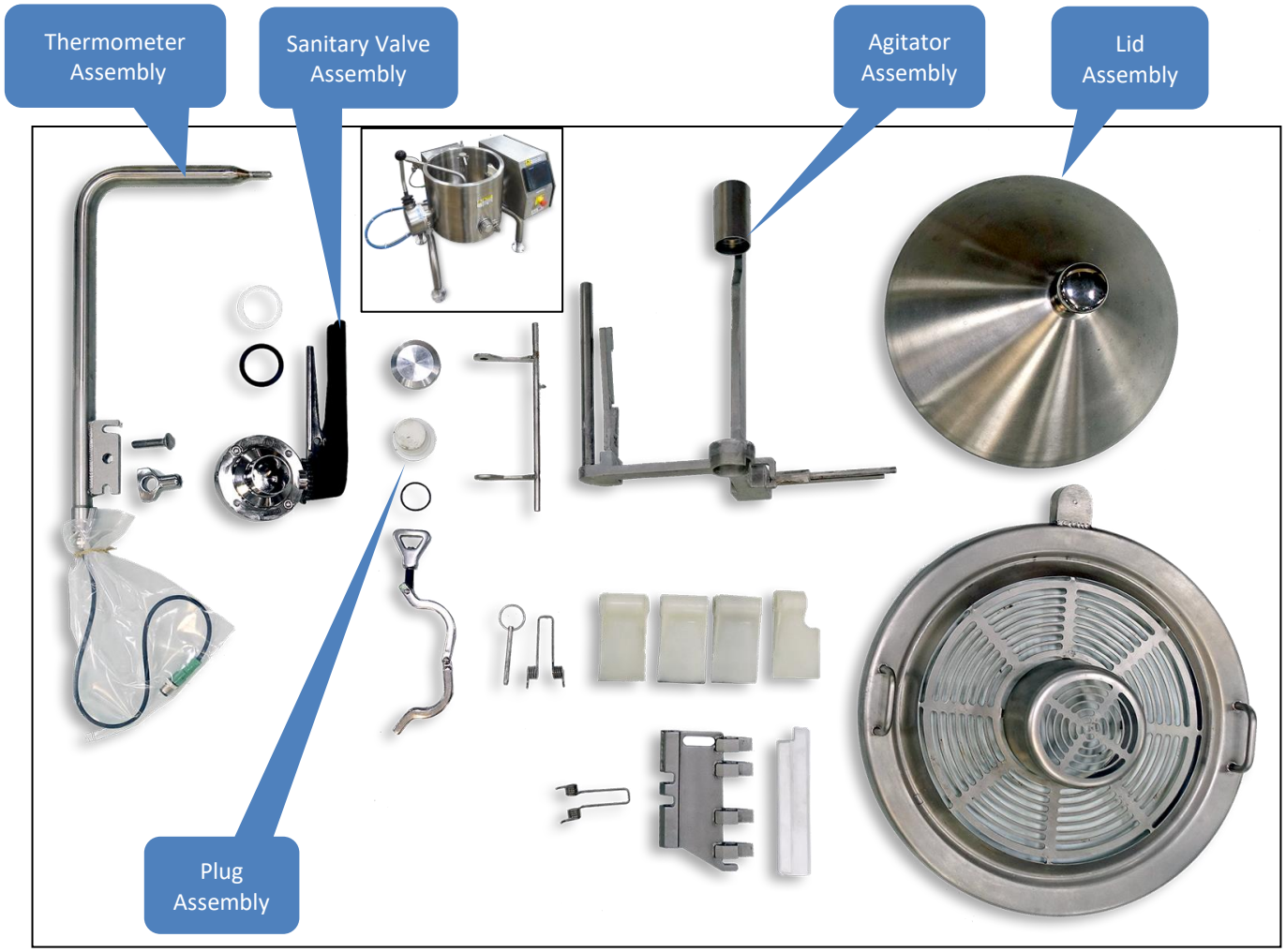


Figure 1

Cooker Body Cleaning

The recommended method to clean the cooker is to “cook” it clean with boiling water. To “cook” it clean with boiling water follow the steps below:

1. Level the cooker.
2. Be sure to close the Sanitary Valve (if equipped).
3. Fill cooker with five inches of water.
4. **BOIL water in the cooker (with the lid on).** It is not recommended to run the Agitator with water only during the cleaning process.
5. If necessary, clean the inside of the cooker with mild dish soap or sanitizing agent appropriate for 304 stainless steel.
6. While wearing PPE – (Temperature Rated Gloves, Eyewear etc.), pour out the contents of the cooker, being cautious because the water may be at boiling temperature.
7. Rinse leftover residue with water then remove excess water.
8. Using a clean rag, wipe off excess oily residue from inside of cooker.

	CAUTION
	IF THE UNIT IS TILTED WITHOUT THE QUICK RELEASE PIN IN PLACE THE AGITATOR CAN FALL OUT, REFER TO FIG. 1 & FIG. 2.

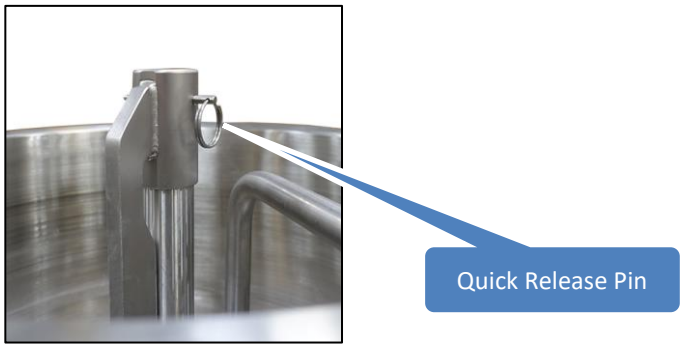


Figure 2

9. Use only a damp cloth to clean the cooker exterior. The cooker is not watertight so should **not** be “washed down” with a pressurized hose. Be particularly cautious of the touchscreen, electrical enclosures and connections when cleaning the cooker.

Assemblies that are Cleaned and Sanitized in a Three-Compartment Wash Basin

1. Place all the components of the removable assemblies, which are the Agitator Assembly, Lid Assembly, Thermometer Assembly, Plug Assembly and when equipped, Sanitary Valve Assembly in a three-compartment wash basin, Fig. 1 & Fig. 3. They will all need to be cleaned, rinsed and sanitized per NSF Guidelines and applicable local codes.

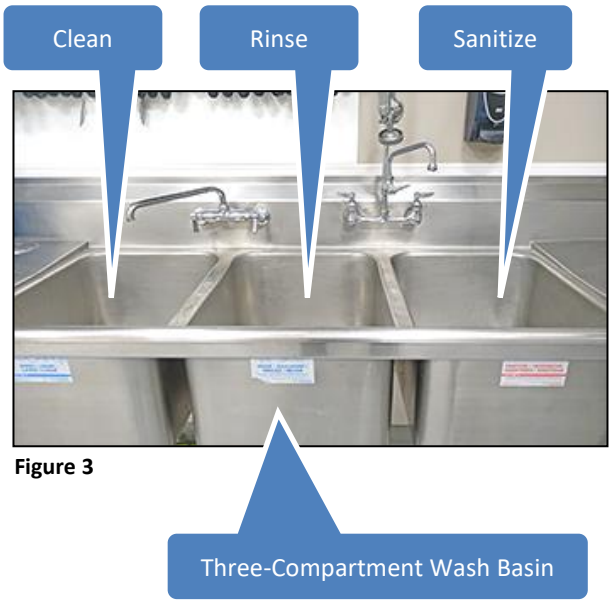


Figure 3

In order to clean, rinse, sanitize and dry the Lid Assembly, Thermometer Assembly, Agitator Assembly, Plug Assembly and when equipped Sanitary Valve Assembly, follow the steps below:

Lid Assembly

1. Lift up on the handles of the of the Lid, being careful not to drop the Recessed Lid Cover on top of it, Fig. 1 & Fig. 4.

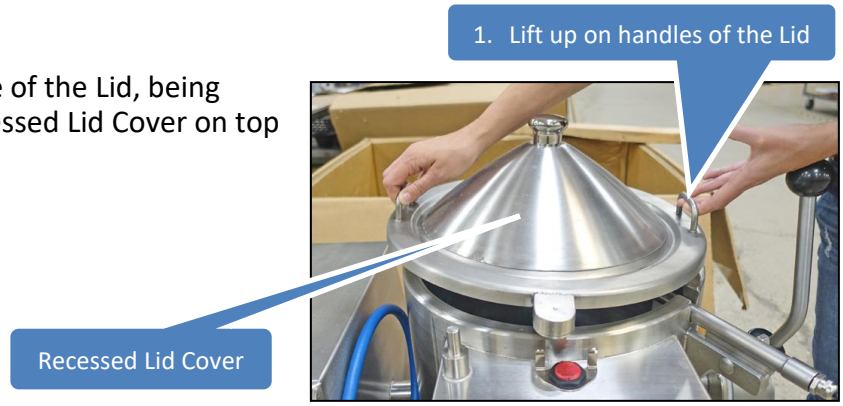


Figure 4

Thermometer Assembly

1. Unscrew the clamp nut then remove the screw, Fig. 1 & Fig. 5.
2. Tilt the Thermometer from the back then lift it up and out of housing, Fig. 1 & Fig. 6.
3. Remove the Thermometer Assembly by pulling it out of housing. Place a bag over the wire and connector part of the Thermometer Assembly then secure it with a rubber band.

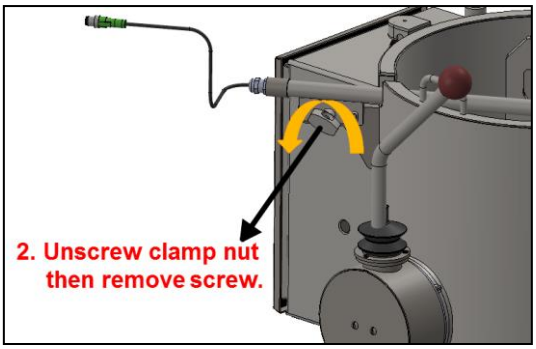


Figure 5

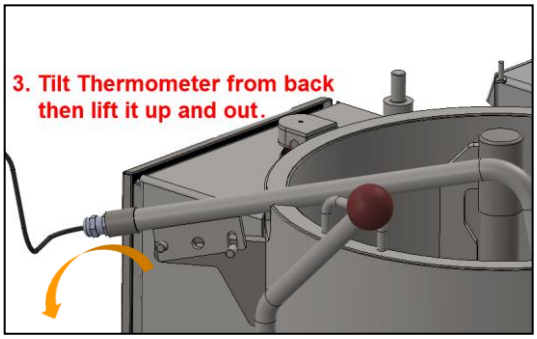


Figure 6

Agitator Assembly

How to remove Agitator Assembly

1. Pull the Quick Release Pin out (Fig. 1 & Fig. 7) and then lift up the agitator using insulating gloves as the Agitator may be hot.

	NOTICE
	During later reassembly, the Agitator Assembly may need to be rotated so that the Quick Release Pin is aligned with the opening in the Agitator Shaft.

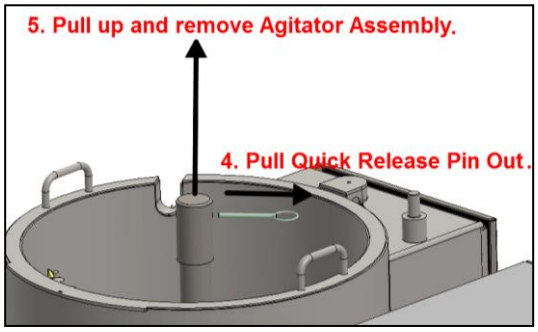


Figure 7

How to disassemble the Agitator Assembly

1. After removing the agitator, place it on a flat surface, with the front part of the bottom Teflon scraper facing you, Fig. 1 & Fig. 8.

2. Remove the scrapers of the agitator so that they may be more thoroughly cleaned.

3. To remove the scrapers, turn them to the point where their notches clear the pin on top of their shaft, make note of their position and lift them out.

4. Remove the bottom scraper by pulling it out, noting its configuration for later reassembly.

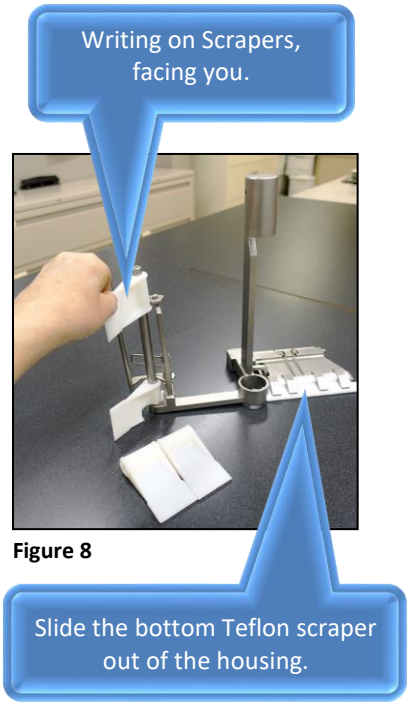


Figure 8

5. Also remove the bottom Teflon scraper by sliding it out of the metal portion.

Plug Assembly

1. Remove the Z Clamp then end cap, from the Plug Assembly.
2. Push out the Plug Assembly from the inside of the FM-14, Fig. 1 & Fig. 9.
3. Remove the O ring from the Plug Assembly.

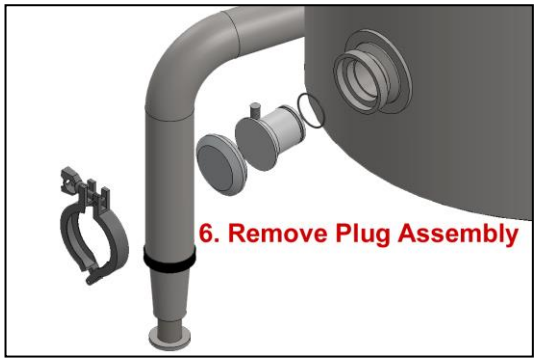


Figure 9

Sanitary Valve Assembly

1. If the FM-14 is equipped with a Sanitary Valve, first remove the Z Clamp, then remove the Sanitary Valve Assembly, and gasket, Fig. 1 & Fig. 10.

Figure 10

Clean, Rinse, Sanitize and Dry All Assemblies Procedure

Clean, rinse and sanitize all assemblies as necessary following NSF guidelines and applicable local codes.

Clean all Assemblies Procedure

1. Place all assemblies in the “Clean” compartment of the three-compartment wash basin (refer to Fig. 1 & Fig. 3).

2. Inside the “Clean” compartment, use warm (less than 120° F/48.9° C) potable water and mild dish soap and remove all debris, applying good scrubbing with scrub soft bristled brush till clean. Clean and rinse the metal portion of the Agitator with Scotch-Brite by 3M, non-abrasive scrubber. Clean the scrapers and if equipped with a bottom Teflon scraper, use a soft bristled brush to clean it.

3. To avoid recontamination issues, using high-pressure hoses is discouraged since a high-pressure rinse could aerosolize soils and chemicals onto areas and equipment that have already been cleaned and sanitized.

Rinse all Assemblies Procedure

1. When cleaning is completed, place all components in the “Rinse” compartment, Fig. 1 & Fig. 3.

2. Do a final rinse with potable water to completely remove the detergent and any residue.

3. Inspect all components thoroughly and, if necessary, spot clean any areas where there are still visible signs of residue or detergent.

Sanitize all Assemblies Procedure

1. When rinsing is completed, place all components in the “Sanitize” compartment, Fig. 1 & Fig. 3.

2. To help safely reduce bacterial load, apply an effective sanitizing chemical verified as suitable to use for food and beverage processing or handling environments.

3. When using a rinse-off sanitizer or disinfectant, the product needs to be completely removed with a potable water rinse.

Dry all Assemblies Procedure

1. When sanitizing is completed, place all components in a clean, dry area, Fig. 1.

2. Dry all components thoroughly. Air drying is the ideal way to dry surfaces because a wipe-down could lead to re-contamination.

Reinstall all Assemblies Procedure

1. When completed, reinstall all assemblies, reversing order of their removal.

MAINTENANCE

Lubrication		
Item	**Service Action**	**Frequency**
AGITATOR GEARMOTOR	The agitator motor and gearbox on this unit is a sealed unit and has been pre-lubricated. There is no further lubrication required.	N/A
Inspection		
Item	**Service Action**	**Frequency**
AGITATOR	Inspect the scrapers for chips or cracks and excessive discoloration. Inspect the springs. Replace as required.	Weekly
COOKER	Inspect all moving and wearable parts of the FM-14 Cooker.	Biweekly

Main Control Box

DANGER

IN ORDER TO PERFORM SERVICE AND MAINTENANCE, ONLY CERTIFIED ELECTRICAL TECHNICIANS SHOULD OPEN THE MAIN CONTROL BOX.

In the event that service such as resetting circuit breakers is required inside the main control box, Fig. 94, first disconnect the machine's electrical power cord from the electrical outlet. Loosen the two cam latches with a flat head screwdriver and open it. Do not touch any electrical wires inside the main control box. If needed, refer to the Electrical Schematics section.

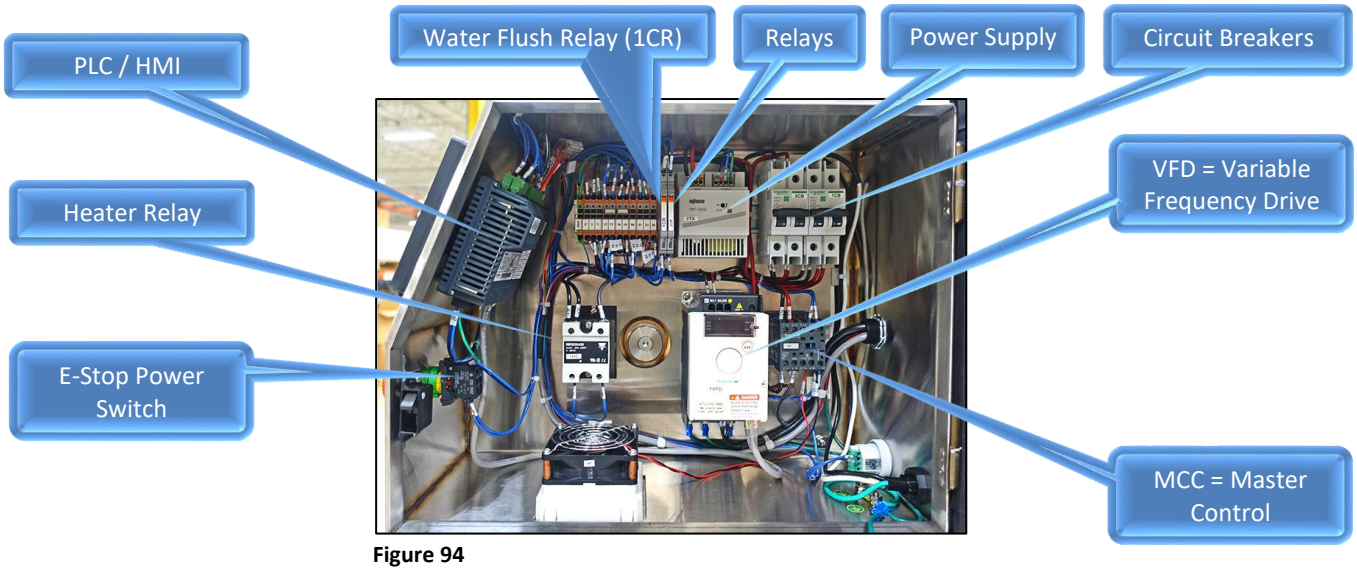


Figure 94

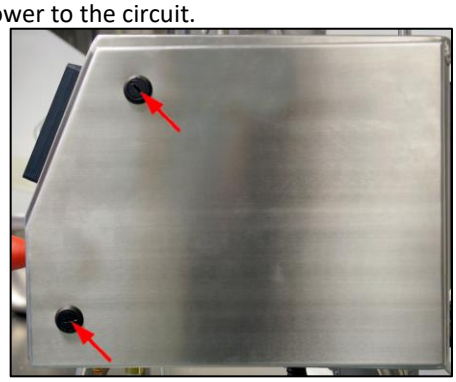
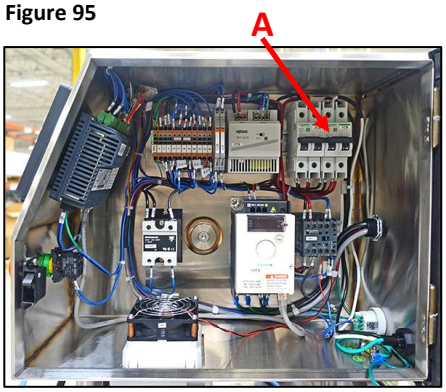
TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
PRODUCT TEMPERATURE DISPLAY INACCURATE	Temperature sensor is not inserted sufficiently into the product.	1. Make sure the tip of the temperature sensor is at least 1 in. into the product. If the sensor tip is not at least 1 in. into the product, increase the batch size.
		2. Verify that the product temperature on the control panel display is inaccurate. Insert an external thermometer into the product and compare the reading to the product temperature display on the control panel. *Ensure that the external thermometer used to check the product temperature is accurate.* If the temperature on the external thermometer differs from the control panel display, recalibrate the machine. See pages 49 through 51 to calibrate the machine.
	Temperature sensor is not calibrated properly.	3. Boil water in the cooker. While observing the control panel display, see if the water boils at the same temperature as it has in the past. If the water does not boil at the same temperature, recalibrate the machine. See pages 49 through 51 to calibrate the machine. If the problem continually persists, call Savage Bros.
OVERCOOKING / PRODUCT SCORCHING	Cooker maximum temperature is set too high.	1. Check the cooker maximum temperature. If set too high, the bottom skin of the cooker may become too hot too fast. The correct settings can be determined by trial and error, as they will vary with confection recipes.
	Product is building up on the temperature sensor.	2. STOP the agitator and use a spatula to remove product from the sensor tip. *Be careful not to damage the sensor tip, which is glass encapsulated and is sensitive*.
	Agitator may not be operating properly or scrapers out of adjustment.	3. Be certain the agitator is operating, and the scrapers are just touching the bottom and walls of the cooker. If the bottom, bronze scraper needs adjustment (high spot), remove the agitator from the motor shaft. Place the scraper on a piece of wood for support and tap the scraper with a hammer.

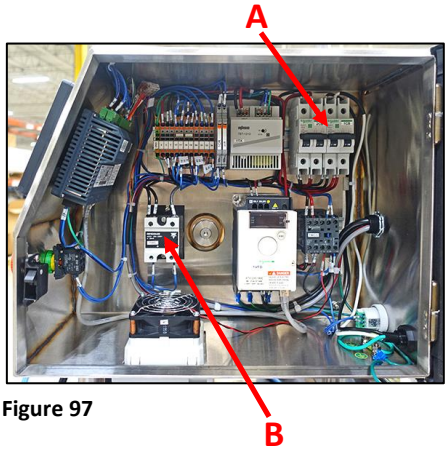
TROUBLESHOOTING (CONTINUED)

PROBLEM	CAUSE	SOLUTION
OVER COOKING / TEMPERATURE CONTINUES TO RISE AFTER SHUTOFF	A certain amount of heat is retained within the heating space below the cooker.	The cooker is a highly efficient appliance. It is possible that even after the heat has been turned off and water flushed, the amount of heat that is retained within the heating space below the cooker is sufficient to cause product to continue to cook. 1. Set the program to Program a lower product temperature setpoint and/or cooker setpoint to turn off the heater sooner. 2. Turn the water of the Water-Flush feature on sooner in the cooking process.
TILT SWITCH INOPERATIVE At the **MAINTENANCE SCREEN**: the tilt switch failed to engage and disengage during the test.	Possible causes: 1. Misadjusted switch. 2. Magnet misaligned. 3. Magnet missing. 4. Defective switch.	Readjust and realign the switch and magnet. Call Savage Bros. to assist with the diagnosis. Align the magnet. Install the magnet. Replace the defective switch. Call Savage Bros.to assist with diagnosis.
TANK WATER FLUSH INOPERATIVE At the **MAINTENANCE SCREEN**: Water not heard running after pressing the **TANK WATER FLUSH** button. A distinct click not heard when pressing the **TANK WATER FLUSH** button.	The manual water valve has not been opened.	Open the manual water valve.
	The solenoid regulating the water may be defective.	The solenoid regulating the water may need to be replaced. Call Savage Bros. to assist with further diagnosis.
	The water flush relay may be defective.	The water flush relay inside the main control box may need to be replaced (refer to “COOLING TEST”, Pg. 37 for testing the flush). Refer to Fig. 73 for location of the water flush relay (1CR). Normally, the LED on the water flush relay turns bright when the “COOLING TEST” is on. Call Savage Bros. to assist with further diagnosis.

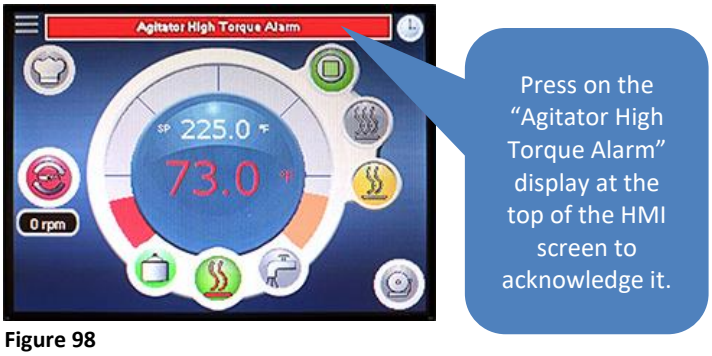
TROUBLESHOOTING (CONTINUED)

PROBLEM	CAUSE	SOLUTION
AUDIBLE ALARM NOT HEARD At the **MAINTENANCE SCREEN:** An audible alarm cannot be heard after pressing the **AUDIBLE ALARM TEST** button.	The alarm/speaker may be defective.	The alarm/speaker, located at the lower rear of the control box, may need to be replaced. Call Savage Bros. to assist with the diagnosis.
HEATER INOPERATIVE At the **MAINTENANCE SCREEN**: While testing that the heater works, by pressing the **HEATER JOG** button, the temperature does not display an increase. **NOTICE** **the HEATER JOG** button is a momentary switch, meaning that as long as the user presses the button, the electrical circuit remains active and the device operates. Once the user removes pressure from the switch, the electrical circuit de-activates and the device being tested will stop operating.	The heater is not in the heating cycle.	To determine that the heater works, make sure heater is in heating cycle.
	The circuit breakers (inside the main control box) may be tripped.	Disconnect the machine's electrical power cord from the electrical outlet. Loosen the two cam latches on the face of the control box (arrows) with a flat head screwdriver, Fig. 95, and open it. Be careful not to touch any electrical wires inside the main control box. Visually inspect if all circuit breaker levers are pointed up (arrow), Fig. 96-A, indicating the circuit is on. However, if the circuit breaker levers are pointed down, flip them up to reconnect power to the circuit.  **Figure 95**  **Figure 96**

TROUBLESHOOTING (CONTINUED)

PROBLEM	CAUSE	SOLUTION
HEATER INOPERATIVE (continued)	The heater relay may be defective.	Visually inspect if all circuit breaker levers are pointed up (arrows), Fig. 97-A, indicating the circuit is on. If the circuit breaker levers are pointing up, and the heater is inoperative, the heater relay, (arrow) Fig. 97-B may be defective. Normally, the LED on the relay for the heater turns bright when the heater is on. Call Savage Bros. to assist with further diagnosis.  **Figure 97**
	The heater coil may be defective.	The heater coil may need to be replaced. Call Savage Bros. to assist with the diagnosis.
	The E-Stop Power Switch may be defective.	Replace the E-Stop Power Switch, if it is determined to be defective. Call Savage Bros. to assist with the diagnosis.
	The **TANK WATER FLUSH** is on.	To properly determine if the heater is working or not, make sure that the **TANK WATER FLUSH** is not on.

TROUBLESHOOTING (CONTINUED)

PROBLEM	CAUSE	SOLUTION
AGITATOR DOES NOT ROTATE	1. The agitator control circuit breaker is tripped. **MODBUS COM ERROR** is displayed on the screen.	Disconnect the machine's electrical power cord from the electrical outlet. Loosen the two cam latches on the face of control box (arrows) with a flat head screwdriver, Fig. 95, and open it. Be careful not to touch any electrical wires inside the main control box. Visually inspect if all circuit breaker levers are pointed up (arrows), Fig. 97-A, indicating the circuit is on. However, if the circuit breaker levers are pointed down, flip them up to reconnect the circuit. When the unit is on and a VFD fault occurs, on the Cooking Control screen, press on the "Agitator High Torque Alarm" display at the top of the HMI screen to acknowledge it, reset the agitator VFD and cancel the "Alarm" condition, otherwise it will time out and will no longer be displayed, Fig. 98.
	2. The communication cable to the VFD is not fully connected.	Fully connect the communication cable to the VFD.  **Figure 98**
	Too much product or product is too thick (not melted) sufficiently, resulting in a "torque limit" (Overload) condition which will cause the VFD to drop out. The following are two overload conditions: 1. Time over current 2. Instantaneous current limit	1. Do not overload unit with product. 2. Melt product sufficiently before turning on the agitator. 3. Reset the VFD, following on screen commands.

TROUBLESHOOTING (CONTINUED)

PROBLEM	CAUSE	SOLUTION
AGITATOR DOES NOT ROTATE (continued)	The VFD needs to be reset.	1. Reset drive by unplugging the machine and plugging it back in after ten seconds. 2. Press on the E-Stop button to reset the VFD. To advance to the next screen, wait for ten seconds then pull out the **E-Stop** button (refer to Pg. 17).

WARRANTY POLICY

Savage Bros. Co. machinery includes a warranty for a one-year period from delivery of equipment for all parts and for all labor performed in our shop. Exceptions to this policy are:

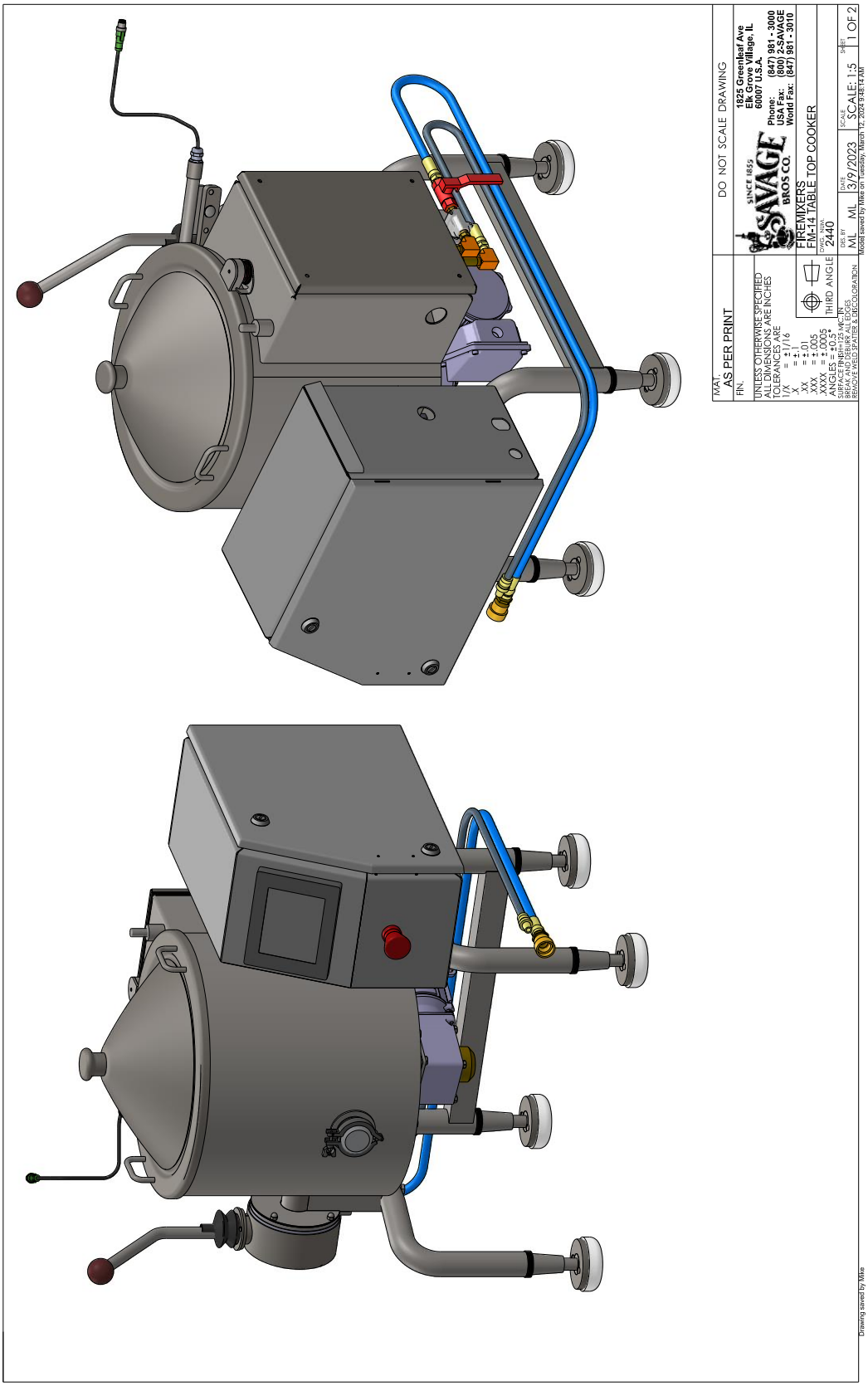
- Damage to equipment from improper usage. Improper usage includes tank damage due to water pressurization.
- Damage to equipment due to improper handling by the freight carrier.
- Local acquisition of parts or labor. However, this situation may be allowed under terms of the warranty but must be approved in writing by Savage Bros. Co. before acquisition of parts or labor.

Obtaining Replacement Parts During the Warranty

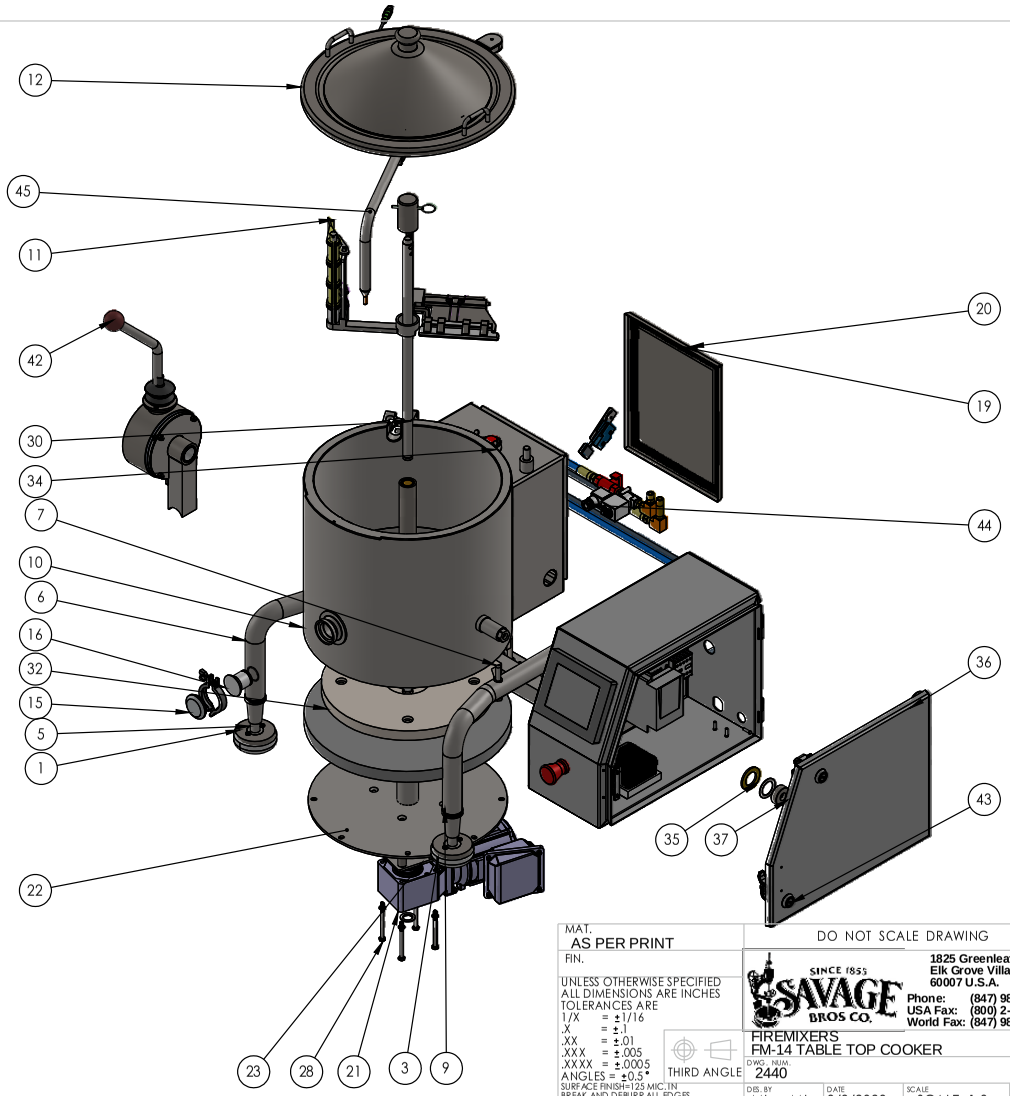
1. Notify Savage Bros. Co. of the defective part needing replacement.
2. Savage Bros. Co. will invoice and ship the part to the customer based on the customer's established credit terms with us (i.e. net 30). Savage Bros. will absorb the cost of ***standard transportation***. If priority transportation is requested, the customer shall be responsible for the cost in full.
3. If Savage Bros. Co. requires the defective part to be returned for warranty examination, Savage Bros. will notify the customer. Upon receipt and inspection of the defective part, either a full credit for the invoiced replacement part and shipping will be issued under the terms of the warranty, or the customer will be advised as to the reason the warranty cannot be honored.
4. If the defective part does not need to be returned, the invoice for the replacement part will include the full credit.
5. In most instances, parts are designed to be installed by the user. At the option of Savage Bros. Co., it may authorize the customer to obtain local installation service assistance. If necessary, labor for part installation is determined to be warranty, Savage Bros. Co. will reimburse the customer for fair and reasonable charges.
6. Any acquisition of parts or labor directly by the customer will not be honored under the terms of this warranty unless approved in advance by Savage Bros. Co.

It is the goal of Savage Bros. Co. to manufacture quality, reliable machinery. Should a part failure occur, we pledge to expedite a solution as quickly as possible to minimize any inconvenience to the customer.

MECHANICAL DRAWINGS, PARTS LISTS & ETC.



ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	9200-00-725	BUMPER - 3-1/4"OD, SBR
2	8	9200-10-321	PAN HEAD - 10-32 X 0.250"LG, SS, SLOTTED
3	4	2420-01-004	PAD ADAPTER
4	4	9200-10-428	FHCS - 5/16-18 X 0.750"LG, SS
5	4	9200-00-717	LEG - 3/8-16 X 3" W/PAD, NSF
6	1	2440-01-202	BASE WELDMENT
7	2	9200-10-424	HHCS - 3/8-16 X 2.750"LG, SS
8	2	9200-20-308	WASHER, SPLIT - 3/8", SS
9	4	9200-00-720	SLEEVE FOOT 3/8-16
10	1	2440-05	OUTER SHELL WELDMENT
11	1	2420-10-000	AGITATOR ASSY - FM-14
12	1	2440-01-100	LID ASSY
13	1	2440-07-014	FM-14 INSULATION
14	1	2400-07-022	FM-14 1" FIBERGLASS INSULATION MAT
15	1	9300-81-026	1.5" I-LINE END CAP, MALE, AL
16	1	9300-80-024	SENSOR INERT - BLANK
17	1	9700-60-929	O RING AS568A-023 VITON
18	1	9300-83-002	Z CLAMP 1-1/2
19	1	2440-11-023	REAR CONTROL ENCL COVER WELDEMNT
20	1	9300-90-017	GASKET' UL STYLE 157, EPDM, 1/4"THK X 3/4"WD
21	1	9400-00-272	SUMITOMO GEARMOTOR, 1/8HP, 50:1 RATIO, 50 LB HYPONIC RIGHT ANGLE
22	1	2440-07-300	MOTOR MOUNT PLATE WELDMENT
23	1	2440-07-303	MOTOR MOUNT WELDMENT
24	4	2440-07-026	MOTOR STANDOFF
25	2	2440-07-027	MOTOR SHAFT COVER
26	2	0937-30-116	MOTOR WASHER
27	2	9700-60-227	EXTERNAL SNAP RING 3/4"
28	4	9200-10-259	HHCS - 1/4-20 X 3.250"LG, SS
29	4	9200-20-302+	1/4-20 SPLIT LOCK WASHER, SS
30	1	2400-07-011	AGITATOR DRIVE SHAFT
31	6	9400-60-197	Screw-In Mount Cable Holders 3/8"
32	1	2440-21-102	HEATING ELEMENT 3000W - 208VAC WATER FLUSH
33	1	9200-60-117	3/16" x 2" QUICK RELEASE PIN
34	1	0900-11-109	LID SWITCH MOUSTACHE
35	1	9700-10-199	Bronze Bearing 1.125ID X .125THK
36	2	2440-07-123	SHIM WASHER
37	1	0937-50-001	TRUNNION CAP
38	1	2440-05-023	WATER TUBE PLATE
39	2	9300-90-016	GROMMET - 3/8"ID, 5/8"HOLE, 1/8"THK, BUNA-N
40	2	2440-05-024	WATER TUBE COVER
41	14	9200-10-486	HHCS - 5/16-18 X 0.62"LG, SS
42	1	2440-30-001	TILT MECHANISM
43	1	2440-01-051	CONTROL BOX ASSEMBLY
44	1	2440-19	HOSE ASSY
45	1	2440-14-203	SENSOR PROBE ASSEMBLY
46	1	9200-10-718	CARRIAGE SCREW, 5/16-18 X 1.5" LG SS18-8
47	1	9300-83-009	CLAMP NUT - WING
48	1	2420-11-122	FM-14 SUBPANEL



MAT. AS PER PRINT
FIN.
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE INCHES
TOLERANCES ARE
1/X = ±1/16
.X = ±.1
.XX = ±.01
.XXX = ±.005
.XXXX = ±.0005
ANGLES = ±0.5°
SURFACE FINISH=125 MIC. IN
BREAK AND DEBURR ALL EDGES
REMOVE WELD SPATTER & DISCOLORATION

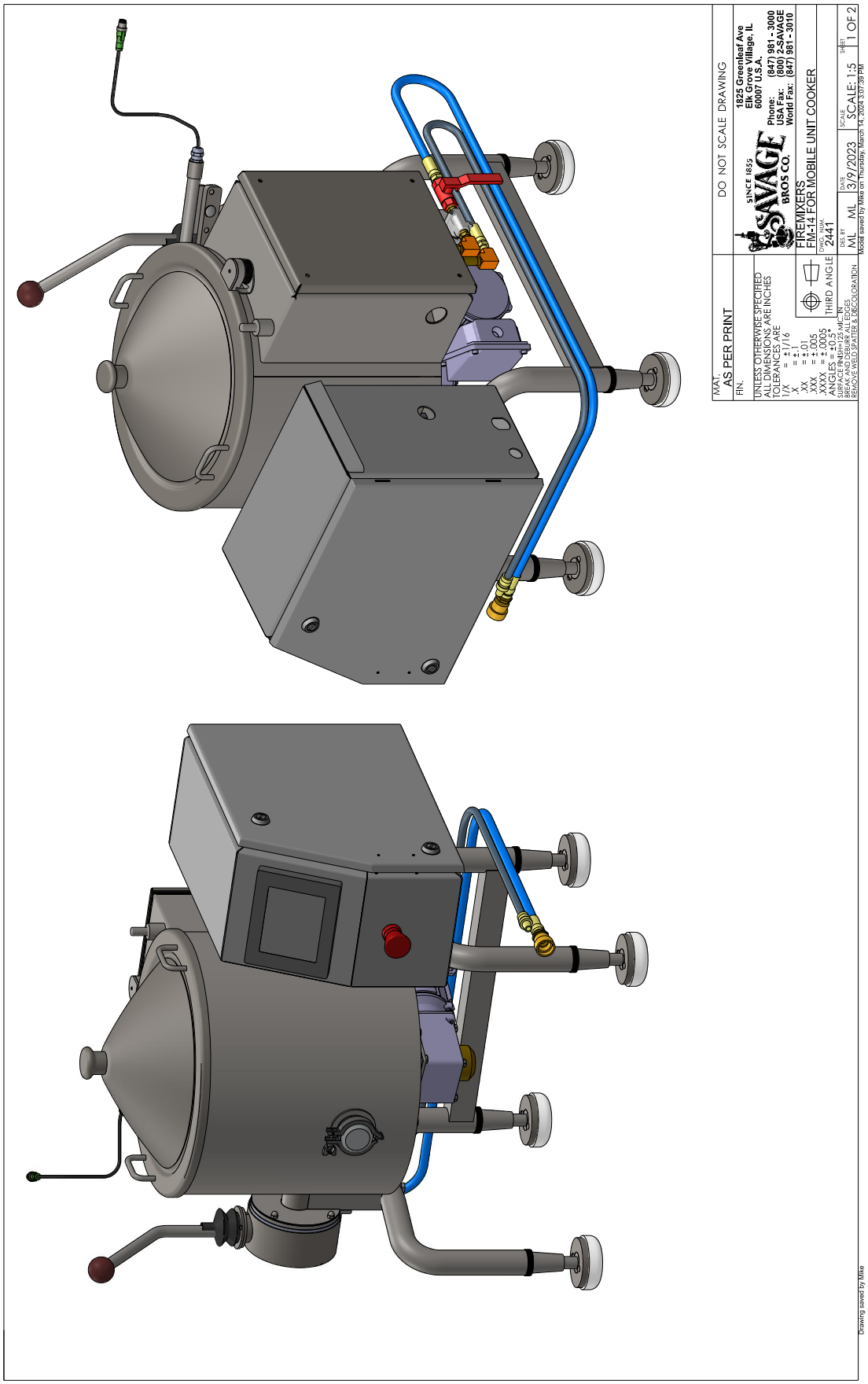
DO NOT SCALE DRAWING

SINCE 1855 SAVAGE BROS CO.
1825 Greenleaf Ave
Elk Grove Village, IL
60007 U.S.A.
Phone: (847) 981 - 3000
USA Fax: (800) 2-SAVAGE
World Fax: (847) 981 - 3010

FIREMIXERS
FM-14 TABLE TOP COOKER

THIRD ANGLE
DWG. NUM. 2440
DIS. BY ML ML
DATE 3/9/2023
SCALE SCALE: 1:8
SHEET 2 OF 2

Drawing saved by william
Model saved by Mike on Tuesday, March 12, 2024 9:48:14 AM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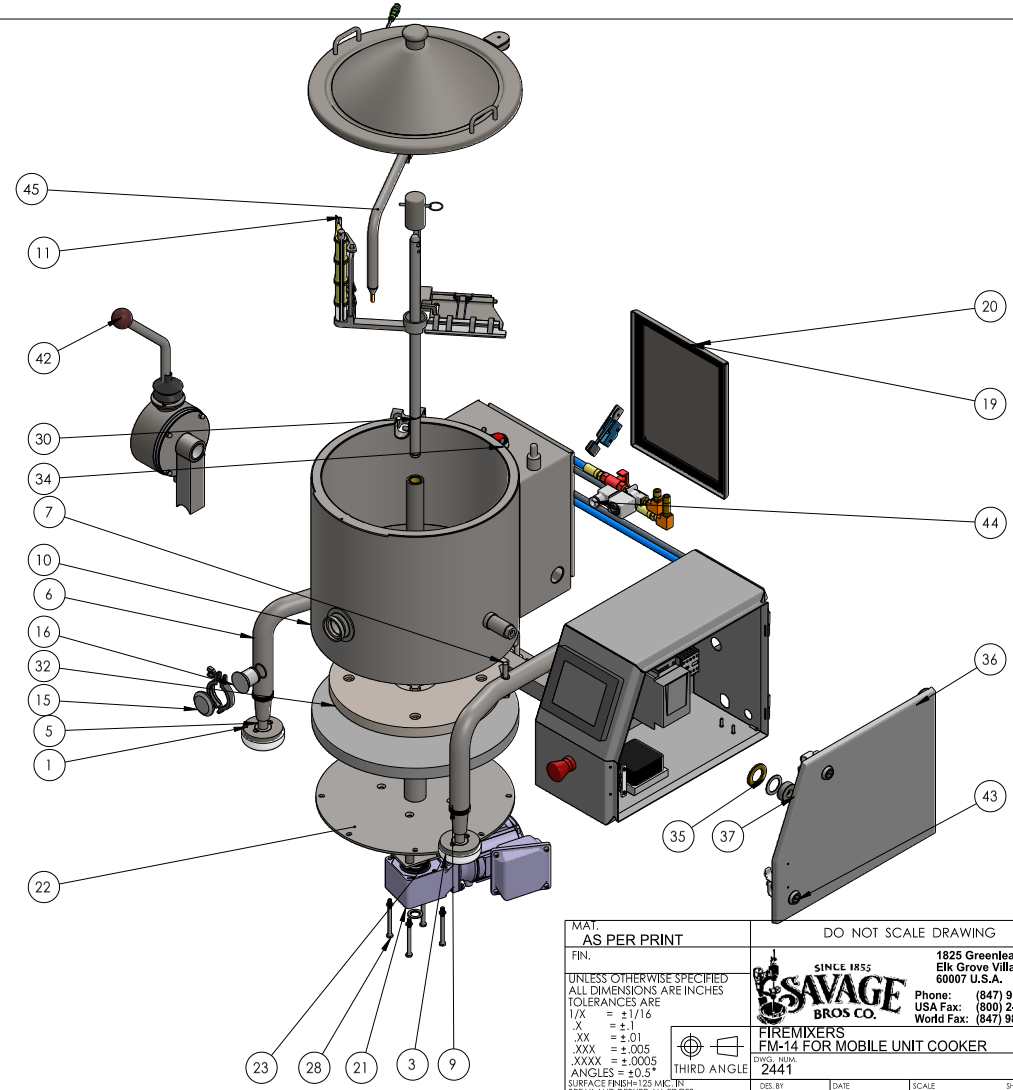
ANGLES = ±0.5°
SURFACE FINISH=125 MICIN
BREAK ALL EDGES
REMOVE ALL BURRS AND EDGES
BEADS AND SPATTER & DISCOLORATION
THIRD ANGLE
DWG. NUM.
2441
DO NOT SCALE DRAWING
SINCE 1855
SAVAGE
BROS CO.
1825 Greenleaf Ave
Elk Grove Village, IL
60007 U.S.A.
Phone: (847) 981 - 3000
USA Fax: (800) 243-4105
World Fax: (847) 981 - 3010
FIREMIXERS
FM-14 FOR MOBILE UNIT COOKER
DES. BY
ML
DRN. BY
ML
DATE
3/9/2023
SCALE
SCALE: 1:5
SHEET
1 OF 2
Model saved by Mike on Thursday, March 14, 2024 3:07:39 PM
Drawing saved by Mike

ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	9200-00-725	BUMPER - 3-1/4"OD, SBR
2	8	9200-10-321	PAN HEAD - 10-32 X 0.250"LG, SS, SLOTTED
3	4	2420-01-004	PAD ADAPTER
4	4	9200-10-428	FHCS - 5/16-18 X 0.750"LG, SS
5	4	9200-00-717	LEG - 3/8-16 X 3" W/PAD, NSF
6	1	2440-01-202	BASE WELDMENT
7	2	9200-10-424	HHCS - 3/8-16 X 2.750"LG, SS
8	2	9200-20-308	WASHER, SPLIT - 3/8", SS
9	4	9200-00-720	SLEEVE FOOT 3/8-16
10	1	2440-05	OUTER SHELL WELDMENT
11	1	2420-10-000	AGITATOR ASSY - FM-14
12	1	2440-01-100	LID ASSY
13	1	2440-07-014	FM-14 INSULATION
14	1	2400-07-022	FM-14 1" FIBERGLASS INSULATION MAT
15	1	9300-81-026	1.5" I-LINE END CAP, MALE, AL
16	1	9300-80-024	SENSOR INERT - BLANK
17	1	9700-60-929	O RING AS568A-023 VITON
18	1	9300-83-002	Z CLAMP 1-1/2
19	1	2440-11-023	REAR CONTROL ENCL COVER WELDEMNT
20	1	9300-90-017	GASKET' UL STYLE 157, EPDM, 1/4"THK X 3/4"WD
21	1	9400-00-272	SUMITOMO GEARMOTOR, 1/8HP, 50:1 RATIO, 50 LB HYPONIC RIGHT ANGLE
22	1	2440-07-300	MOTOR MOUNT PLATE WELDMENT
23	1	2440-07-303	MOTOR MOUNT WELDMENT
24	4	2440-07-026	MOTOR STANDOFF
25	2	2440-07-027	MOTOR SHAFT COVER
26	2	0937-30-116	MOTOR WASHER
27	2	9700-60-227	EXTERNAL SNAP RING 3/4"
28	4	9200-10-259	HHCS - 1/4-20 X 3.250"LG, SS
29	4	9200-20-302+	1/4-20 SPLIT LOCK WASHER, SS
30	1	2400-07-011	AGITATOR DRIVE SHAFT
31	6	9400-60-197	Screw-In Mount Cable Holders 3/8"
32	1	2440-21-102	HEATING ELEMENT 3000W - 208VAC WATER FLUSH
33	1	9200-60-117	3/16" x 2" QUICK RELEASE PIN
34	1	0900-11-109	LID SWITCH MOUSTACHE
35	1	9700-10-199	Bronze Bearing 1.125ID X .125THK
36	2	2440-07-123	SHIM WASHER
37	1	0937-50-001	TRUNNION CAP
38	1	2440-05-023	WATER TUBE PLATE
39	2	9300-90-016	GROMMET - 3/8"ID, 5/8"HOLE, 1/8"THK, BUNA-N
40	2	2440-05-024	WATER TUBE COVER
41	14	9200-10-486	HHCS - 5/16-18 X 0.62"LG, SS
42	1	2440-30-001	TILT MECHANISM
43	1	2440-01-051	CONTROL BOX ASSEMBLY
44	1	2440-19	HOSE ASSY
45	1	2440-14-203	SENSOR PROBE ASSEMBLY
46	1	9200-10-718	CARRIAGE SCREW, 5/16-18 X 1.5" LG SS18-8
47	1	9300-83-009	CLAMP NUT - WING
48	1	2420-11-122	FM-14 SUBPANEL



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REMOVE WELD SPATTER & DISCOLORATION

DO NOT SCALE DRAWING

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Elk Grove Village, IL
60007 U.S.A.
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World Fax: (847) 981 - 3010

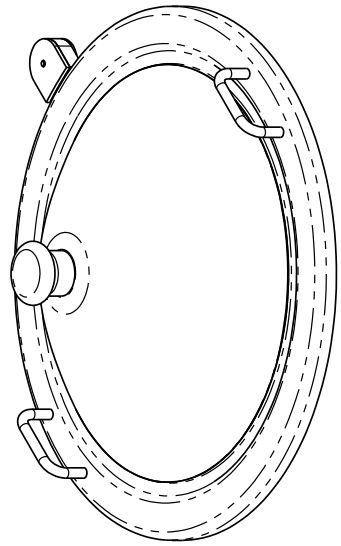
THIRD ANGLE

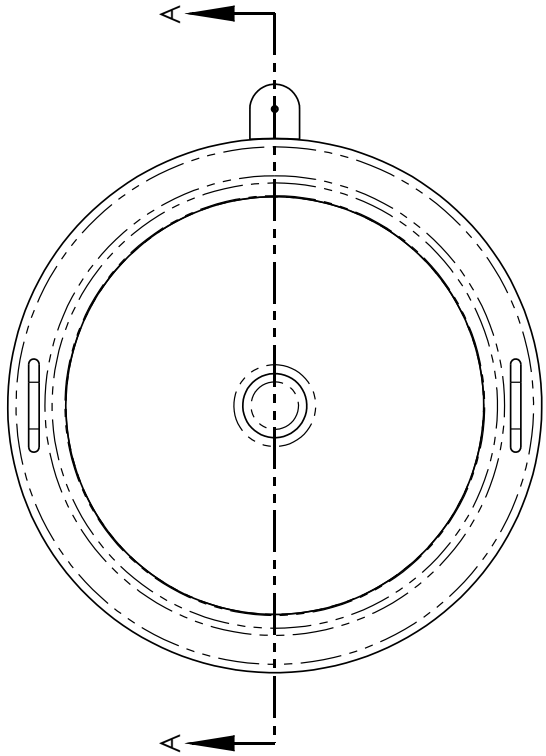
FIREMIXERS
FM-14 FOR MOBILE UNIT COOKER

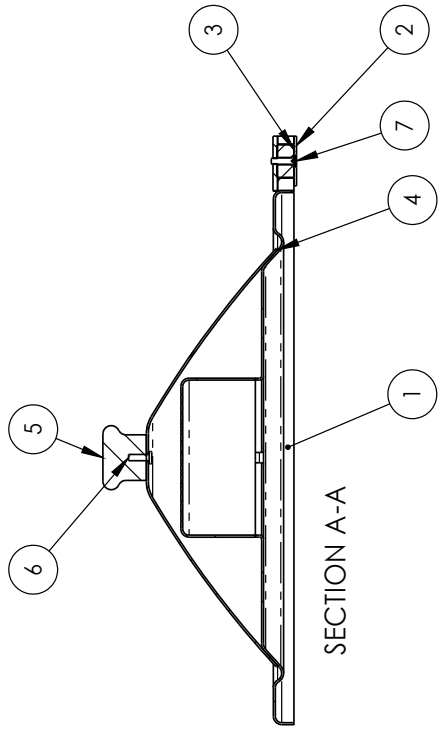
DWG. NUM. 2441
DES. BY ML ML | DATE 3/9/2023 | SCALE SCALE: 1:8 | SHEET 2 OF 2

Drawing saved by Mike
Model saved by Mike on Thursday, March 14, 2024 3:07:39 PM

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	2440-01-101	STEAM VENT LID - SENSOR WELD
2	1	0974-05-209	SENSOR COVER
3	1	9400-30-227	RND CODED MAG. SWITCH, 24V
4	1	2440-01-127	RECESSED LID COVER
5	1	9200-80-002	KNOB 50# LID
6	1	9200-10-318	PAN HEAD - 10-32 X 0.625"LG, SS, SLOTTED
7	1	9200-10-717	FHMS 10-32 X .75LG, SS18-8, PHILPS HEAD







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THIRD ANGLE

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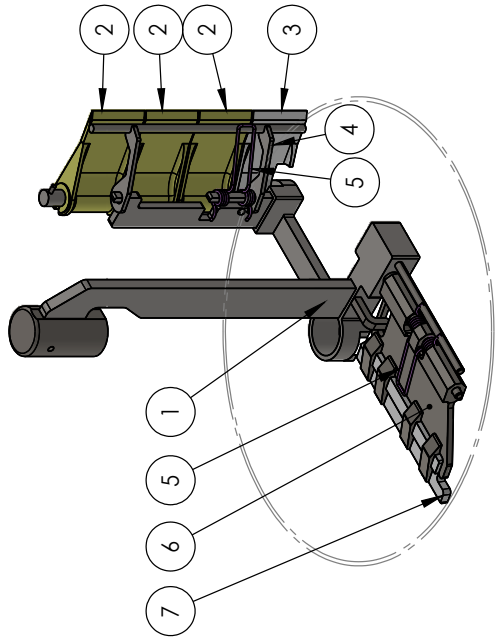
FM14
LID ASSY

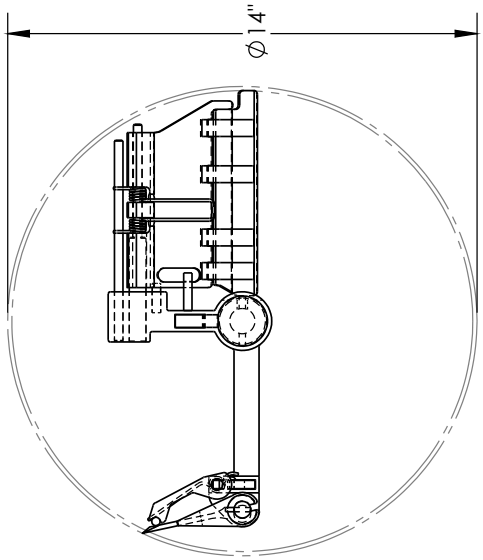
DWG. NUM. 2440-01-100
DES. BY ML
DRAWN BY ML
DATE 03/09/2023
SCALE SCALE: 1:5
SHEET 1 OF 1

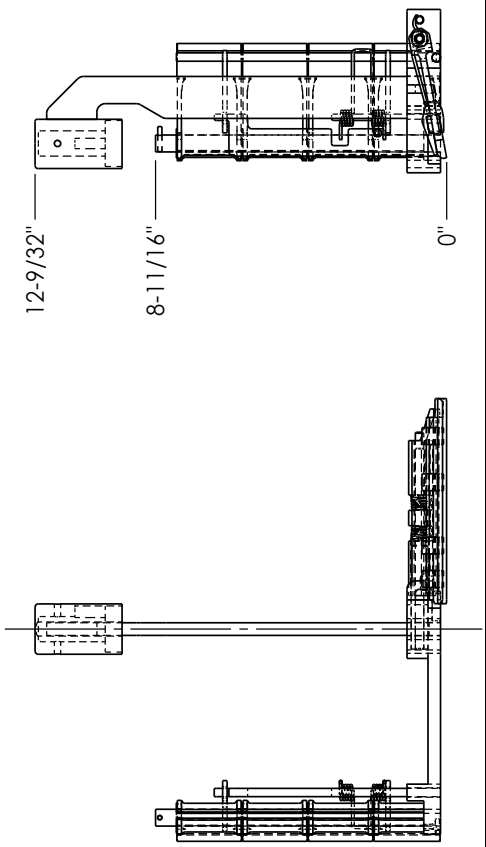
Model saved by Mike on Tuesday, October 10, 2023 2:02:50 PM

Drawing saved by Mike

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	2400-02-110	AGITATOR WELDMENT
2	3	0904	NYLON SCRAPER
3	1	0904-01-003	CUT SCRAPER 300#-2000# LOW/BOT IN
4	1	0912-02-050	SPRING RETAINER WELDMENT (50#)
5	2	9200-70-001	SPRING COIL
6	1	2420-10-027	SCRAPER WELDMENT
7	1	2420-10-026	BOTTOM SCRAPER - TEFLON







DO NOT SCALE DRAWING

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THIRD ANGLE

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ELECTROSTOVES
AGITATOR ASSY - FM-14

DWG. NUM. 2420-10-000

DES. BY GL | DATE ML 9/21/2015 | SCALE SCALE: 1:5 | SHEET 1 OF 1

Model saved by Mike on Wednesday, March 13, 2024 2:16:12 PM

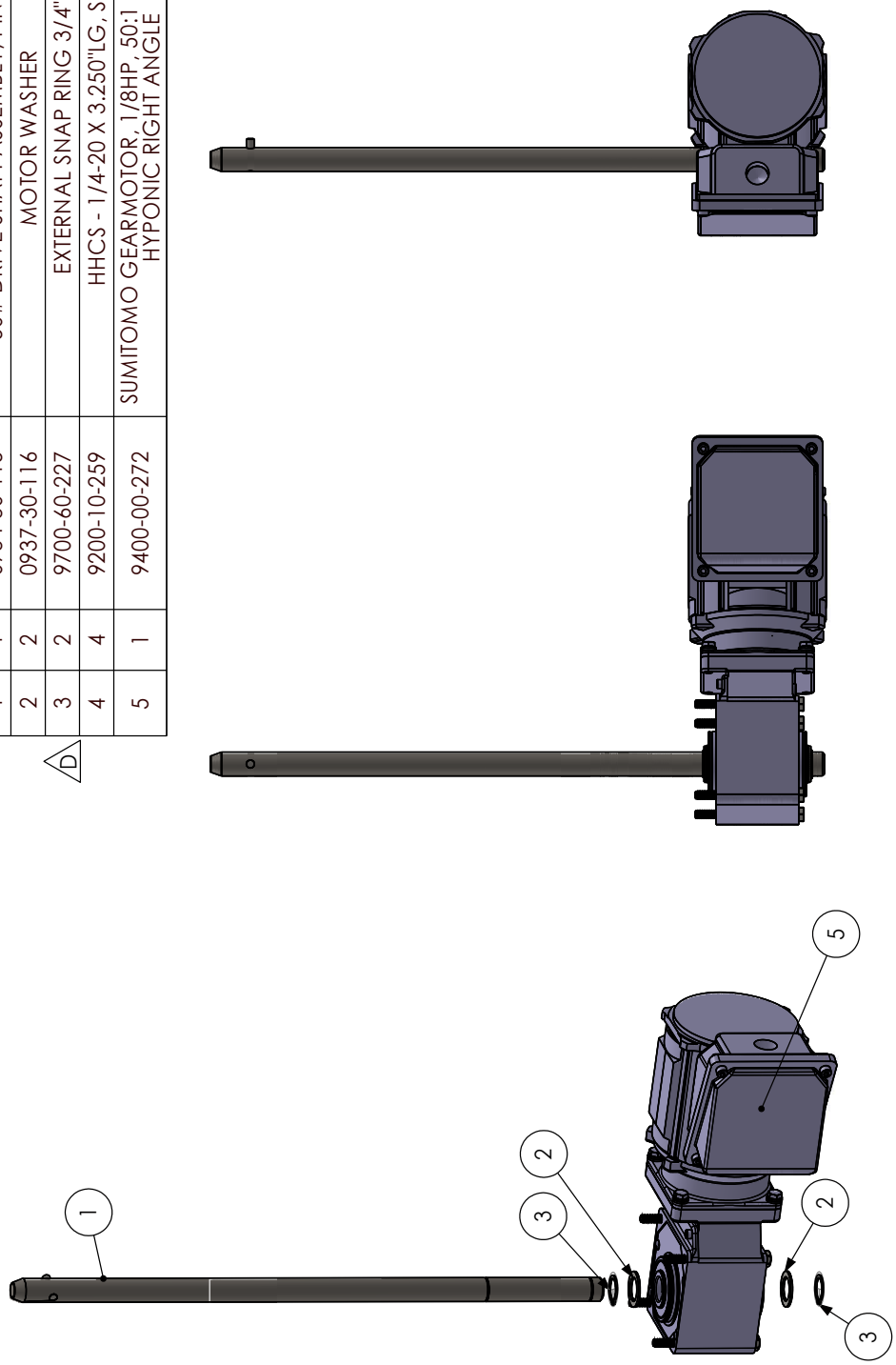
REV.	DATE	DESCRIPTION	BY
B	3/13/2024	NOW 2400-10-026 &027 - WAS 2400-10-021 & 022	ML
A	8/30/2023	REVISED SCRAPER TIP PART# NOW 2400-10-023 WAS 0000-27-001	ML

REVISIONS

Drawing saved by Mike

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	0934-30-115	50# DRIVE SHAFT ASSEMBLY, PIN DRIVE
2	2	0937-30-116	MOTOR WASHER
3	2	9700-60-227	EXTERNAL SNAP RING 3/4"
4	4	9200-10-259	HHCS - 1/4-20 X 3.250"LG, SS
5	1	9400-00-272	SUMITOMO GEARMOTOR, 1/8HP, 50:1 RATIO, 50 LB HYPONIC RIGHT ANGLE

D



DO NOT SCALE DRAWING

SAVAGE BROS. CO.
1825 Greenleaf Ave
Elk Grove Village, IL 60007 U.S.A.
Phone: (847) 981 - 3000
USA Fax: (800) 2 - SAVAGE
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MAT. AS PER PART
FIN. -

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THIRD ANGLE

CHOCOLATE MELTERS
50# MOTOR AND DRIVE SHAFT ASM

DWG. NUM. 0934-07-002

DES. BY	DRN. BY	DATE	SCALE	SHEET
ML	ML	7/15/2011	SCALE: 1:5	1 OF 1

Model saved by William on Wednesday, April 27, 2022 11:22:17 AM

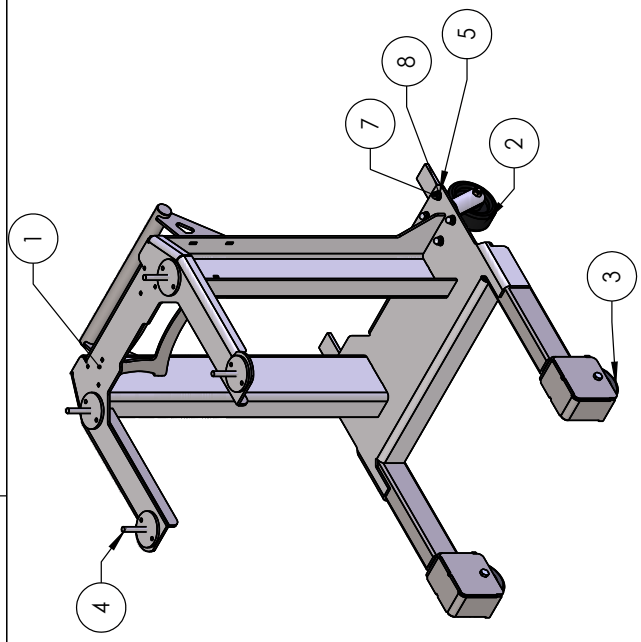
REV.	DATE	DESCRIPTION	BY
D	4/27/2022	NOW 9400-00-272. WAS 9400-00-144	WM
C	5/6/2021	UPDATED TO PIN DRIVE	WM
B	4/20/2016	0934-30-115 was 0937-30-115	GL

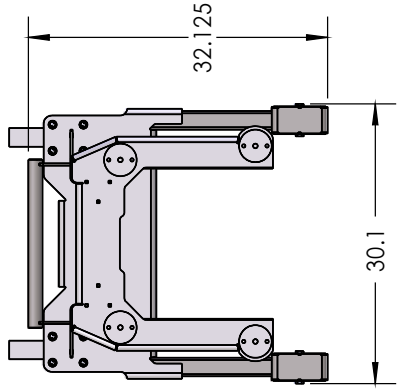
REVISIONS

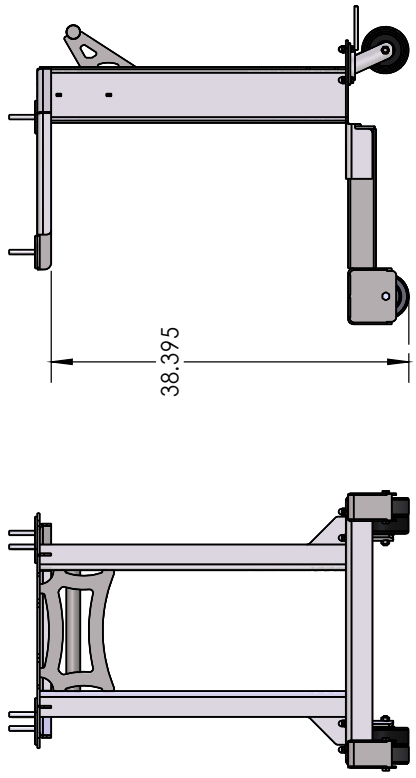
Drawing saved by William

BOM Table

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	2440-01-410	NSF CART, 36"H, WELDMENT
2	2	9700-90-054	CASTER, 5X2 NSF REAR SWIVEL
3	2	9700-90-055	CASTER, 5 X 2 NSF FRONT
4	4	2400-01-204	FOOT PAD WELDMENT
5	8	9200-20-334	FLAT WASHER - 3/8" 18-8 SS, GEN.-PURPOSE
6	8	9200-10-802	3/8-16X1 HEX HEAD W/ FLANGE
7	8	9200-00-711	3/8-16 ACORN NUT (SS)
8	8	9200-20-308	WASHER, SPLIT - 3/8", SS







DO NOT SCALE DRAWING

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AS PER PART

FIN.
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THIRD ANGLE

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FM-14 MOBILE BASE
FM-14 MOBILE CARTASSY

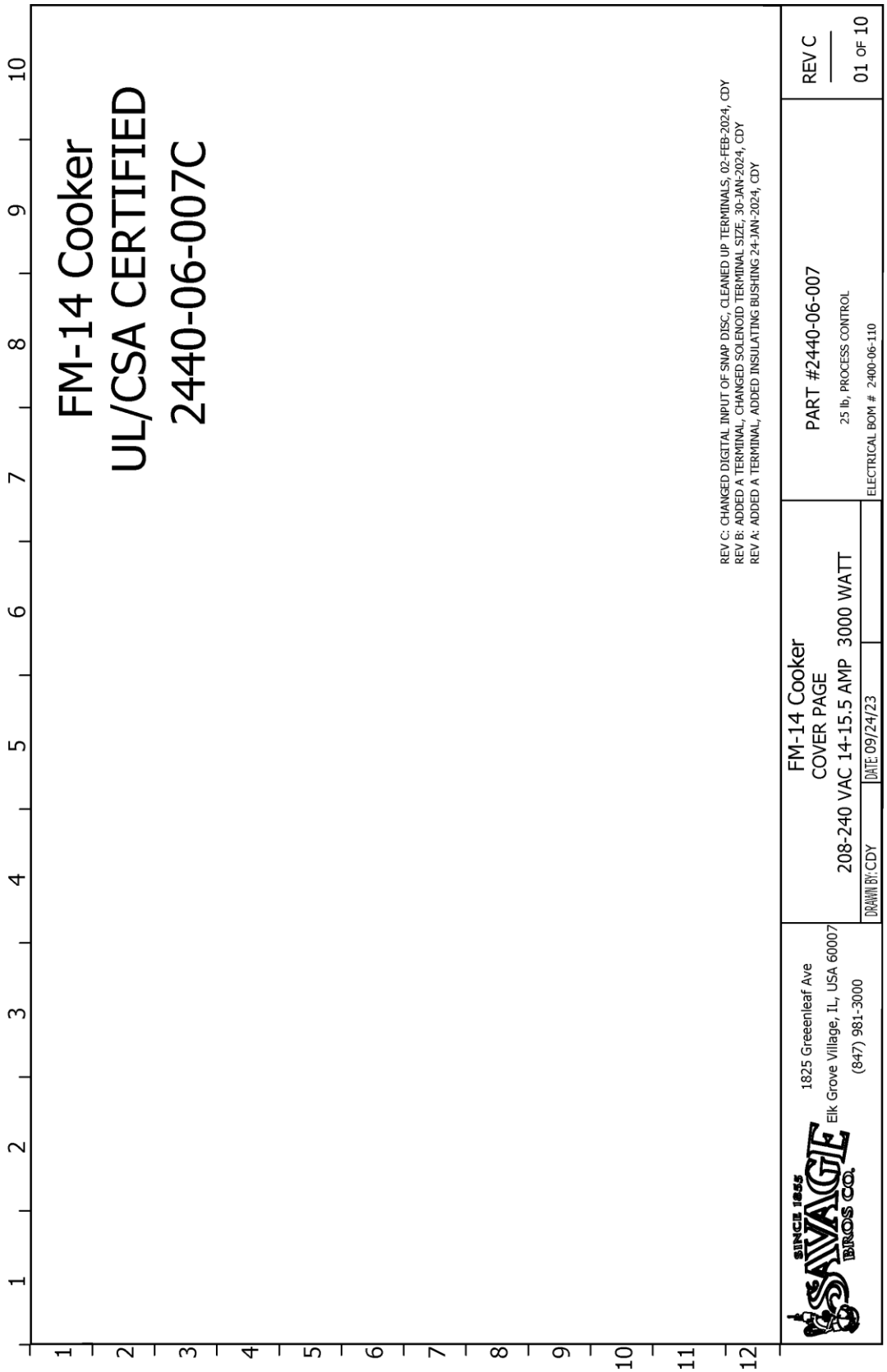
DWG. NUM.
2440-01-200

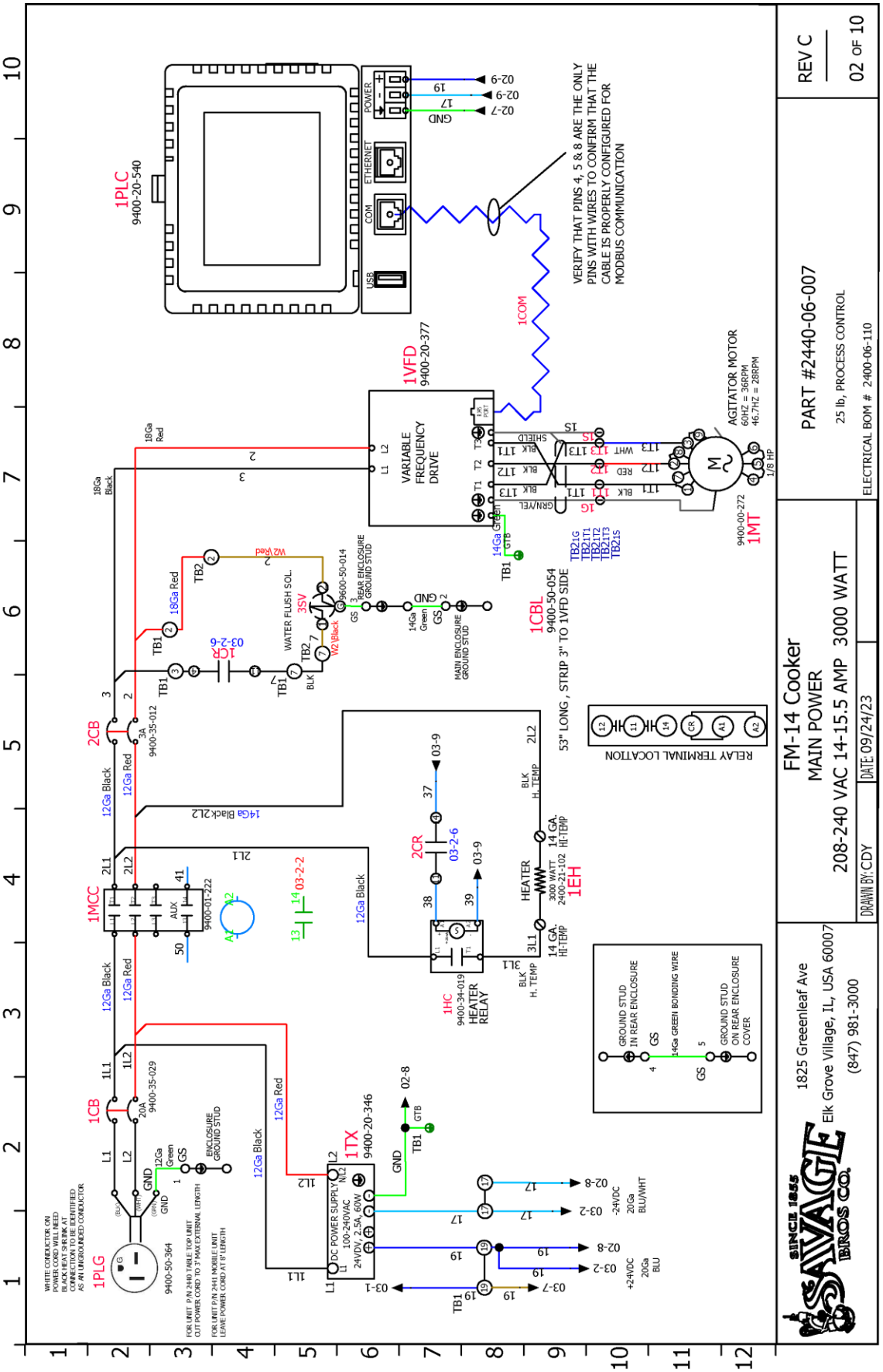
DES. BY ML
DATE 2/2/2023
SCALE SCALE: 1:18
SHEET 1 OF 1

Model saved by Mike on Monday, November 6, 2023 2:28:56 PM

Drawing saved by Mike

ELECTRICAL SCHEMATICS & ELECTRICAL PARTS LIST




1PLC
9400-20-540
1VFD
9400-20-377
VARIABLE FREQUENCY DRIVE
1COM
VERIFY THAT PINS 4, 5 & 8 ARE THE ONLY PINS WITH WIRES TO CONFIRM THAT THE CABLE IS PROPERLY CONFIGURED FOR MODBUS COMMUNICATION
AGITATOR MOTOR
60HZ = 36RPM
46.7HZ = 28RPM
1/8 HP
9400-00-272
1MT
1CBL
9400-50-054
53" LONG , STRIP 3" TO 1VFD SIDE
RELAY TERMINAL LOCATION
1CB
9400-35-029
20A
1PLG
9400-50-364
1MCC
9400-01-222
2CB
9400-35-012
3A
1CR
03-2-6
WATER FLUSH SOL.
3SV
9600-50-014
REAR ENCLOSURE GROUND STUD
MAIN ENCLOSURE GROUND STUD
2CR
1HC
9400-34-019
HEATER RELAY
HEATER
3000 WATT
2400-21-102
1EH
14 GA. HI-TEMP
1TX
9400-20-346
DC POWER SUPPLY
100-240VAC
24VDV 2.5A 60W
GROUND STUD IN REAR ENCLOSURE
14Ga GREEN BONDING WIRE
GROUND STUD ON REAR ENCLOSURE COVER
ENCLOSURE GROUND STUD
WHITE CONDUCTOR ON POWER CORD WILL NEED BE CUT AT PORTABLE CONNECTION TO BE IDENTIFIED AS AN UNGROUNDED CONDUCTOR
FOR UNIT P/N 2440 TABLE TOP UNIT CUT POWER CORD TO 3' MAX EXTERNAL LENGTH
FOR UNIT P/N 2441 MOBILE UNIT LEAVE POWER CORD AT 8' LENGTH
REV C
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PART #2440-06-007
25 lb, PROCESS CONTROL
ELECTRICAL BOM # 2400-06-110
FM-14 Cooker
MAIN POWER
208-240 VAC 14-15.5 AMP 3000 WATT
DRAWN BY: CDY
DATE: 09/24/23
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Elk Grove Village, IL, USA 60007
(847) 981-3000
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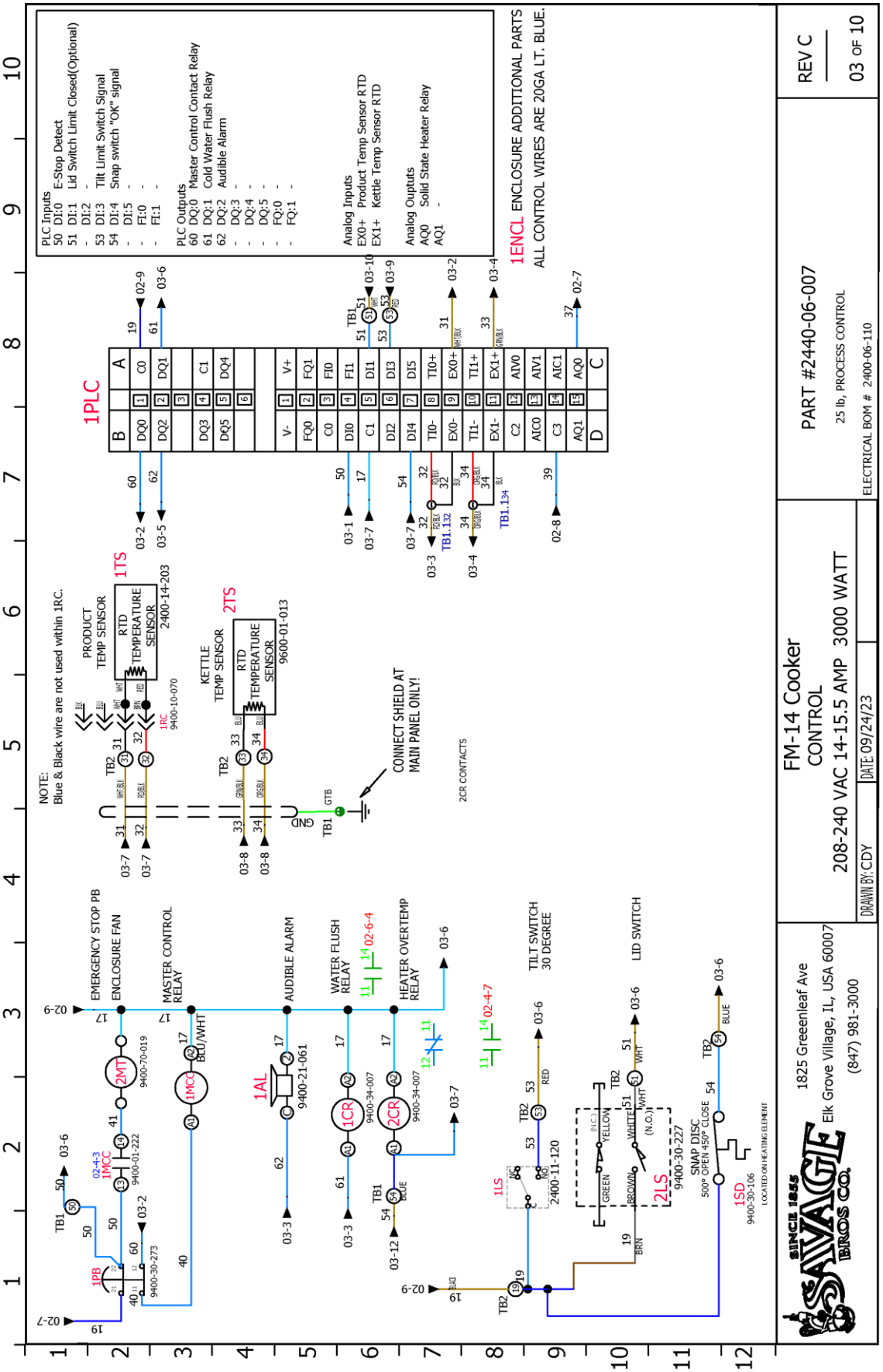
PLC Inputs
50 DI:0 E-Stop Detect
51 DI:1 Lid Switch Limit Closed(Optional)
- DI:2 -
53 DI:3 Tilt Limit Switch Signal
54 DI:4 Snap switch "OK" signal
- DI:5 -
- FI:0 -
- FI:1 -
PLC Outputs
60 DQ:0 Master Control Contact Relay
61 DQ:1 Cold Water Flush Relay
62 DQ:2 Audible Alarm
- DQ:3 -
- DQ:4 -
- DQ:5 -
- FQ:0 -
- FQ:1 -
Analog Inputs
EX0+ Product Temp Sensor RTD
EX1+ Kettle Temp Sensor RTD
Analog Ouputs
AQ0 Solid State Heater Relay
AQ1 -
1ENCL ENCLOSURE ADDITIONAL PARTS
ALL CONTROL WIRES ARE 20GA LT. BLUE.
1PLC
NOTE:
Blue & Black wire are not used within 1RC.
PRODUCT TEMP SENSOR
RTD TEMPERATURE SENSOR
2400-14-203
1TS
1RC
9400-10-070
KETTLE TEMP SENSOR
RTD TEMPERATURE SENSOR
9600-01-013
2TS
CONNECT SHIELD AT MAIN PANEL ONLY!
2CR CONTACTS
EMERGENCY STOP PB
ENCLOSURE FAN
MASTER CONTROL RELAY
AUDIBLE ALARM
WATER FLUSH RELAY
HEATER OVERTEMP RELAY
TILT SWITCH 30 DEGREE
LID SWITCH
SNAP DISC
500° OPEN 450° CLOSE
LOCATED ON HEATING ELEMENT
1PB
9400-30-273
1MCC
9400-01-222
2MT
9400-70-019
1MCC
BLU/WHT
1AL
9400-21-061
1CR
9400-34-007
2CR
9400-34-007
1LS
2400-11-120
2LS
9400-30-227
1SD
9400-30-106
FM-14 Cooker
CONTROL
208-240 VAC 14-15.5 AMP 3000 WATT
DRAWN BY: CDY
DATE: 09/24/23
PART #2440-06-007
25 lb, PROCESS CONTROL
ELECTRICAL BOM # 2400-06-110
REV C
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1825 Greenleaf Ave
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W1- CABLE BETWEEN MAIN AND REAR CABINET W1
W2- CABLE BETWEEN REAR CABINET AND WATER FLUSH SOLENOID W2

Cable	Core	Wire number	Origin	Destination
W1	Black	19	FM14 Main Panel TB1 19	FM14 Rear Panel TB2 19
W1	White	51	FM14 Rear Panel TB2 51	FM14 Main Panel TB1 51
W1	Red	53	FM14 Main Panel TB1 53	FM14 Rear Panel TB2 53.1
W1	Green			
W1	Orange			
W1	Blue	54	FM14 Main Panel TB1 54	FM14 Rear Panel TB2 54
W1	White/Black	31	FM14 Main Panel 1PLC	FM14 Rear Panel TB2 31.1
W1	Red/Black	32	FM14 Main Panel TB1.1 32	FM14 Rear Panel TB2 32.1
W1	Green/Black	33	FM14 Main Panel 1PLC	FM14 Rear Panel TB2 33.1
W1	Orange/Black	34	FM14 Main Panel TB1.1 34	FM14 Rear Panel TB2 34.1
W1	Shield			
W2	Green			
W2	Black	7	FM14 Rear Panel 3SV	FM14 Rear Panel TB2 7
W2	Red	2	FM14 Rear Panel 3SV	FM14 Rear Panel TB2 2.1
W2	White			

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FM-14 Cooker
List of cable cores
208-240 VAC 14-15.5 AMP 3000 WATT

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PART # 2440-06-007
25 lb, PROCESS CONTROL
ELE BOM: 2400-06-110

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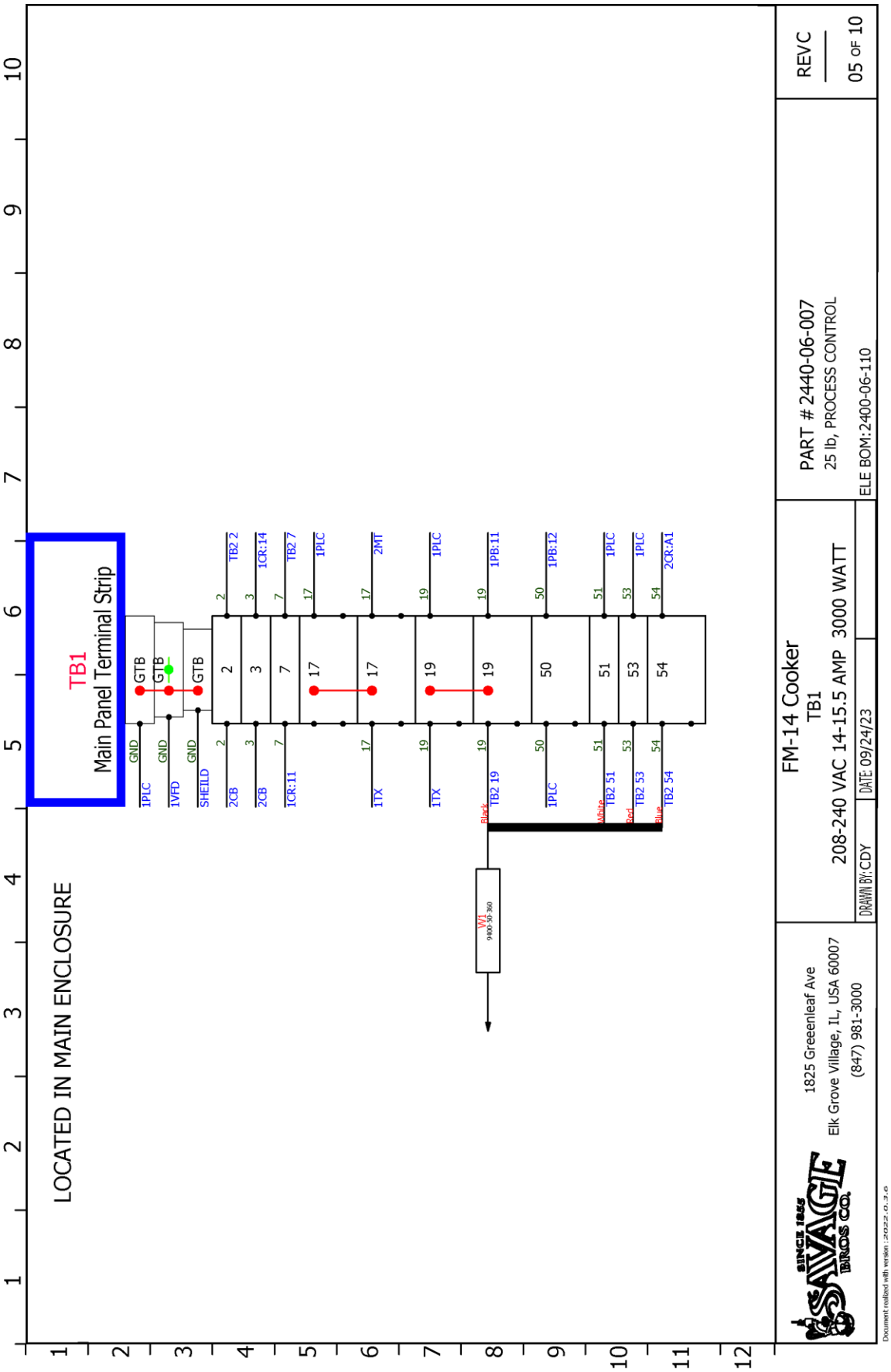
LOCATED IN MAIN ENCLOSURE
TB1
Main Panel Terminal Strip
GTB
GND
1PLC
1VFD
SHEILD
2CB
1CR:11
1TX
TB2 19
TB2 51
TB2 53
TB2 54
TB2 2
1CR:14
TB2 7
2MT
1PB:11
1PB:12
2CR:A1
Black
White
Red
Blue
V1
9400-SF-360
FM-14 Cooker
TB1
208-240 VAC 14-15.5 AMP 3000 WATT
DRAWN BY: CDY
DATE: 09/24/23
PART # 2440-06-007
25 lb, PROCESS CONTROL
ELE BOM:2400-06-110
REV C
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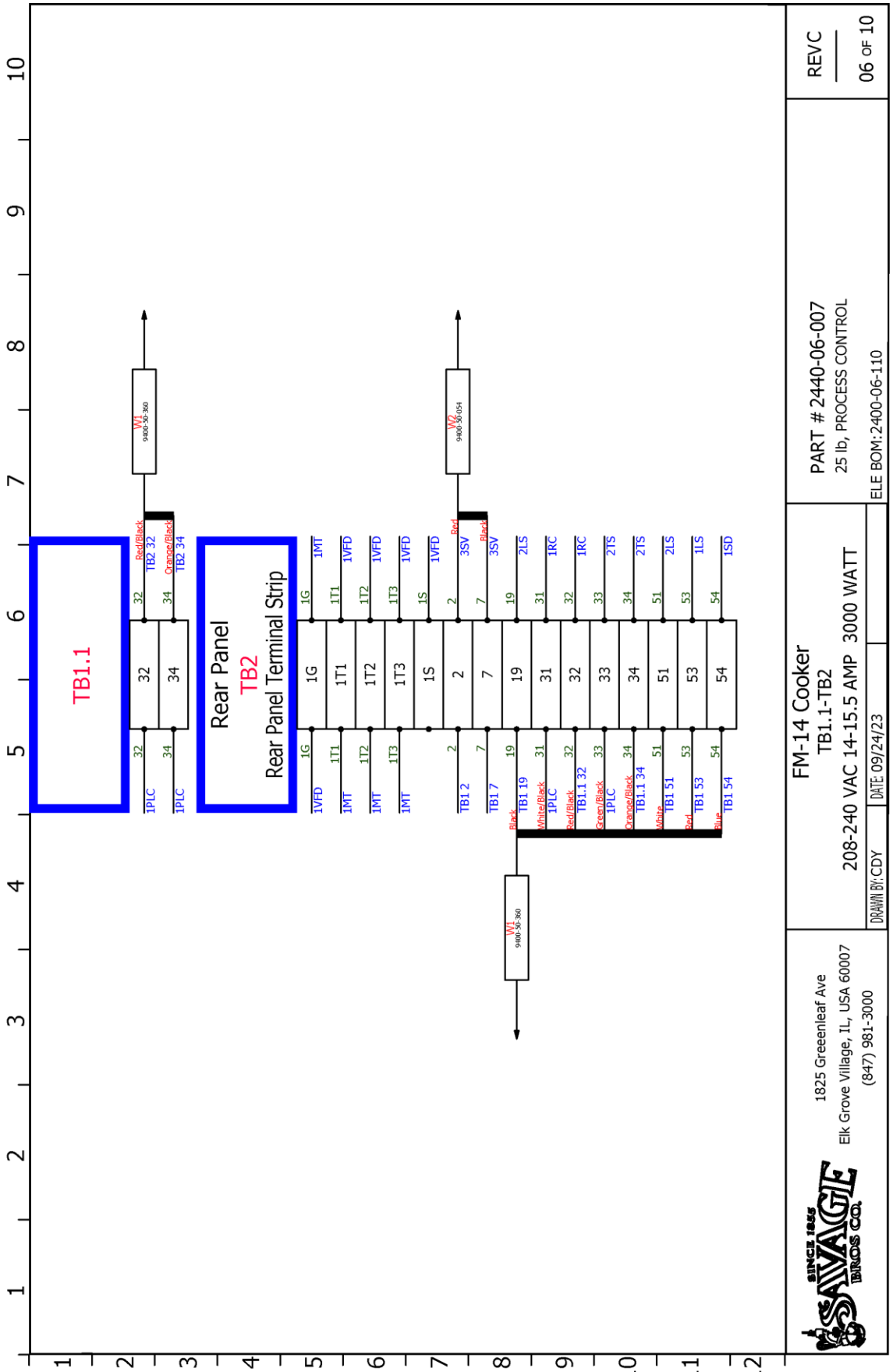
TB1.1
Rear Panel
TB2
Rear Panel Terminal Strip
W1
9400-58-360
W2
9400-58-054
Red/Black
TB2 32
Orange/Black
TB2 34
1PLC
1VFD
1MT
1T1
1T2
1T3
1S
TB1 2
TB1 7
TB1 19
TB1.1 32
TB1.1 34
TB1 51
TB1 53
TB1 54
3SV
2LS
1RC
2TS
1LS
1SD
Black
White/Black
Green/Black
Orange/Black
White
Red
Blue
FM-14 Cooker
TB1.1-TB2
208-240 VAC 14-15.5 AMP 3000 WATT
DRAWN BY: CDY
DATE: 09/24/23
PART # 2440-06-007
25 lb, PROCESS CONTROL
ELE BOM:2400-06-110
REVC
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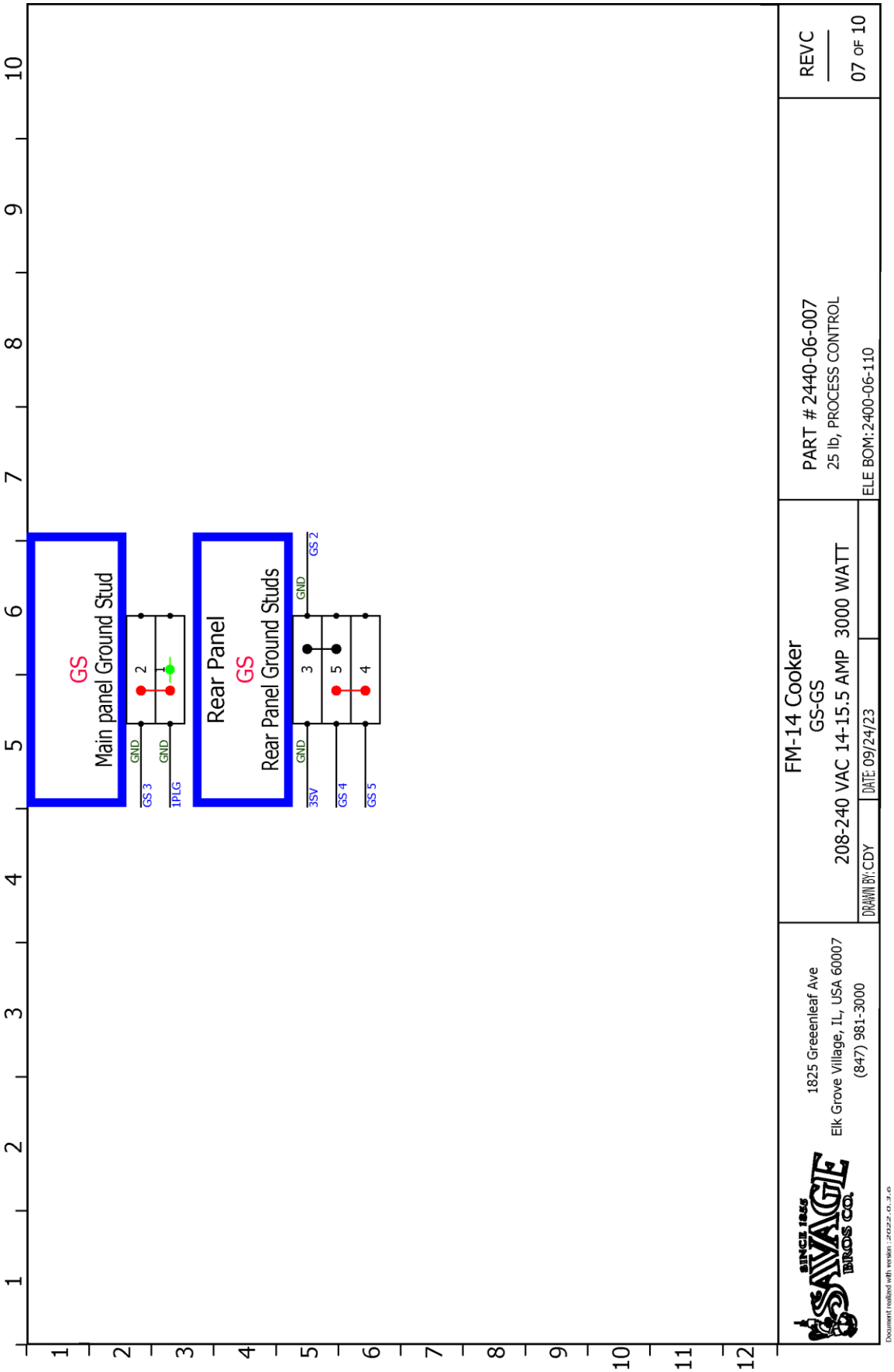
SAVAGE
BROS CO.


GS
Main panel Ground Stud
GND
GS 3
GND
1PLG
2
1
Rear Panel
GS
Rear Panel Ground Studs
GND
3SV
GND
GS 4
GND
GS 5
GS 2
3
5
4
1825 Greeenleaf Ave
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(847) 981-3000
FM-14 Cooker
GS-GS
208-240 VAC 14-15.5 AMP 3000 WATT
DRAWN BY: CDY
DATE: 09/24/23
PART # 2440-06-007
25 lb, PROCESS CONTROL
ELE BOM:2400-06-110
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EXTERNAL

Mark	Qty	Part Number	Description
1ENCL	1	2400-11-122	FM-14 SUBPANEL
1ENCL	1	2410-01-050	FM-14, CONTROL BOX, MOUNT WELDMENT
1ENCL	1	9300-50-330	1" X 3/4" REDUCING BUSHING, SS
1ENCL	1	9400-33-022	INSULATING BUSHING 1"NPT FEMALE, FOR CONDUIT CONNECTOR
1ENCL	1	9400-60-154	3/4 STRAIGHT CONNECTOR NONMETALIC CONDUIT
1ENCL	1	9400-60-155	3/4 90D CONNECTOR NONMETALIC CONDUIT
1ENCL	1	9400-60-168	28.5" LENGTH LIQUIDTITE 3/4 HIGH FLEX NON-METALIC CONDUIT HUBBELL B2075 POLYTUFF II
1ENCL	1	9400-60-173	LOCKNUT 1" CONDUIT CONNECTOR
1ENCL	1	9401-01-045	WAGO MOUNTING RAIL DIN - WIDTH=35MM, LENGTH=4.5"
1ENCL	1	9401-01-068	WAGO MOUNTING RAIL DIN - WIDTH=35MM, LENGTH=6.8"
1ENCL	1	9401-01-106	WAGO MOUNTING RAIL DIN - WIDTH=35MM, LENGTH=10.6"
1TS	1	2400-14-203	50# COOKER PROBEHOLDER ASSY
2TS	1	9600-01-013	TEMP SENSOR RTD .63"L 16"LEAD

Main Panel

Mark	Qty	Part Number	Description
1AL	1	9400-21-061	ALARM AUDIBLE 12-24VAC/DC Panel Mount
1CB	1	9400-35-029	Circuit Breaker; Therm/Mag; Hndl; Cur-Rtg 20A; DIN Rail; 2 Pole; Screw Snap; L Series; C
1CBL	1	9400-50-356	CABLE 18GA, 1000V, 4CND, SHIELDED, 90°C, 0.354"OD for Low Power VFD to MOTOR Connections
1COM	1	9400-21-123	RJ-45 CABLE MODBUS 2FT
1CR	1	9400-34-007	RELAY &SOCKET 24AC/DC 6AMP DIN MT
1EH	1	2400-21-102	PLATE HEATER 208VAC 1PH 3000 WATT
1HC	1	9100-00-403	T SINK COMPOUND-8OZ JAR #12008
1HC	1	9400-34-019	RELAY SOLID STATE 25A 240V 4-20mA Analog COIL

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FM-14 Cooker
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208-240 VAC 14-15.5 AMP 3000 WATT

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PART # 2440-06-007
25 lb, PROCESS CONTROL
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-> Main Panel

Mark	Qty	Part Number	Description
1HC	1	9400-34-020	HEAT SINK for SOLID STATE RELAY 50A HOCKEY PUCK
1MCC	1	9400-01-222	CONTACTOR MINI 3P 16A 24VDC W/1NO AUX
1MT	1	9400-00-272	SUMITOMO GEARMOTOR, 1/8HP, 50:1 RATIO, 50 LB HYPONIC RIGHT ANGLE 35 RPM, 230/460V, 0.66/0.33A, 1730RPM
1PB	1	9400-30-273	Estop 40mm trigact Turn Rel R
1PB	1	9400-40-065	MOUNTING BASE WITH CONTACT BLOCK 1NC
1PB	1	9400-40-121	CONTACT BLOCK 1NC FOR ZB5
1PLC	1	9400-20-540	PLC 5.7" COLOR HMI/PLC WITH 8 DIGITAL IN/OUT 4 ANALOG INPUTS 2 ANALOG OUTS
1PLG	1	9400-50-364	POWER CORD, 6-20P, 12/3, 8', SJT0W, 20A/250VAC
1PLG	1	9400-60-066	CORD GRIP W/FLEX CAP SEALCON .39-.55" (OR 9400-60-093)
1PLG	1	9400-60-067	CORD GRIP LOCKNUT FOR 1/2"NPT
1RC	1	9400-10-070	RECEPTACLE 4 SOC SINGLE KEYWAY FEMALE THREAD Pg9 22GA MICRO
1TX	1	9400-20-346	POWER SUPPLY 60W 24VDC 100-240VAC WIDE
1VFD	1	9400-20-377	VAR FREQ DRIVE 0.25HP 240V 1PH ATV12
TB1-2	1	9400-40-082	TERMINAL BLOCK SPRING GRAY RAIL MNT 2 TERMS 4mmSq
2CB	1	9400-35-012	CIRCUIT BREAKER 3A 2P UL489 480VAC MAX RATING
2CR	1	9400-34-007	RELAY &SOCKET 24AC/DC 6AMP DIN MT
2MT	1	9400-70-019	FAN FILTERFAN, IP54, NEMA12, 24VDC, 32 CFM, 4.88"Sq CUTOUT, 2.31" DEEP, WASHABLE FILTER, 5.5 WATT
TB1-3, TB1-7	2	9400-40-082	TERMINAL BLOCK SPRING GRAY RAIL MNT 2 TERMS 4mmSq
TB1-17, TB1-17	2	9400-40-095	TERMINAL BLOCK SPRING GRAY RAIL MNT 4 TERMS 4mmSq
TB1-19, TB1-19	2	9400-40-086	TERMINAL BLOCK SPRING GRAY RAIL MNT 3 TERMS 4mmSq
TB1.1-32, TB1.1-34	2	9400-60-176	LEVERNUT TERMINAL BLOCK 3 CONNECTION , L-TB3
TB1-50, TB1-54	2	9400-40-086	TERMINAL BLOCK SPRING GRAY RAIL MNT 3 TERMS 4mmSq
TB1-GTB	1	9400-40-093	TERMINAL BLOCK SPRING GREEN RAIL MNT 3 TERMS 4mmSq
W1	1	9400-50-360	CABLE 22GA, 300V, 10 CONDUCTOR, SHIELDED, 80C

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FM-14 Cooker
BOM
208-240 VAC 14-15.5 AMP 3000 WATT

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PART # 2440-06-007
25 lb, PROCESS CONTROL
ELE BOM: 2400-06-110

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-> Main Panel

Mark	Qty	Part Number	Description
W2	1	9400-50-054	24" LENGTH CORD 18/4 SOOW BLACK. WATER FLUSH SOLENOID

Rear Panel

Mark	Qty	Part Number	Description
TB2-1G	1	9400-40-082	TERMINAL BLOCK SPRING GRAY RAIL MNT 2 TERMS 4mmSq
1LS	1	2400-11-120	FM-14 TILT SWITCH ASM
TB2-1S	1	9400-40-082	TERMINAL BLOCK SPRING GRAY RAIL MNT 2 TERMS 4mmSq
TB2-1S	1	9400-40-084	TERMINAL BLOCK END PLATE ORANGE 2 TERMS 4mmSq
1SD	1	9400-30-106	SNAP DISC THERMAL LIMIT; OPEN 500F; CLOSE 450F; 10A MAX
TB2-1T1, TB2-1T2, TB2-1T3, TB2-2	4	9400-40-082	TERMINAL BLOCK SPRING GRAY RAIL MNT 2 TERMS 4mmSq
2LS	1	9400-30-227	RND CODED MAG. SWITCH, CMS-R-C (084575) & RND EUCHNER CODED MAGNET CMS-M-C (084577)
3SV	1	9400-60-067	CORD GRIP LOCKNUT FOR 1/2"NPT SEALCON
3SV	1	9400-60-080	CORD GRIP W/DOME CAP 1/2"
3SV	1	9600-50-014	SOLENOID VALVE 230V 50/60HZ UL/CSA
3SV	1	9800-10-113	CONNECTOR FOR 24VDC SOLENOID COIL MATES WITH 9800-10-110
TB2-7	1	9400-40-082	TERMINAL BLOCK SPRING GRAY RAIL MNT 2 TERMS 4mmSq
TB2-19	1	9400-40-095	TERMINAL BLOCK SPRING GRAY RAIL MNT 4 TERMS 4mmSq
TB2-31, TB2-32, TB2-33, TB2-34, TB2-51, TB2-53	6	9400-40-082	TERMINAL BLOCK SPRING GRAY RAIL MNT 2 TERMS 4mmSq

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FM-14 Cooker
BOM
208-240 VAC 14-15.5 AMP 3000 WATT

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PART # 2440-06-007
25 lb, PROCESS CONTROL
ELE BOM: 2400-06-110

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NOTES