KEGGERNAUT

Two-Head Semi-Automatic Keg Washer
Opperation Manual

FOR UNITS PRE AUG 2023

CRAFTMASTER STAINLESS

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Thanks
For Hiring Me

KEGGERNAVT

Keggernaut Semi Automatic Keg Washer Welcome Guide

Before you put one of your hardest working employees to work, let's check a few things first.

The first thing you need to do is look at the user manual. It's located online and can be accessed by scanning the QR code below. We also placed a QR code sticker on the side of the Keggernuat's control panel, so the user can quickly pull up the user manual. Please take the time to read the PDF manual! Also, there is a complete "How to video series" located on our website and Youtube Channel to help set up and operate your machine correctly . Make sure you meet all the requirements and follow the set up steps outlined in the manual and Youtube videos before using your new washer.

Air and CO2 Requirements

SCAN ME

	SOURCE	CFM RATING	OUTPUT PRESSURE
Air Compressor	Min 80 Gal	14 CFM at 90 PSI	90 PSI
CO2	Bulk Tank		90 - 120 PSI

** An Air Regulator with Water Separator is required and must be installed in-line on the incomming air going to the keg washer. Water in the airline will damage your machine.

Electrical Requirements

	VOLTAGE	CURRENT	HERTZ	PLUG TYPE
Single Phase	208 - 240V	50 Amps	60 Hz	L10 - 50P
Three Phase	208 - 240V	30 Amps	60 Hz	L15 - 30

TABLE OF CONTENTS

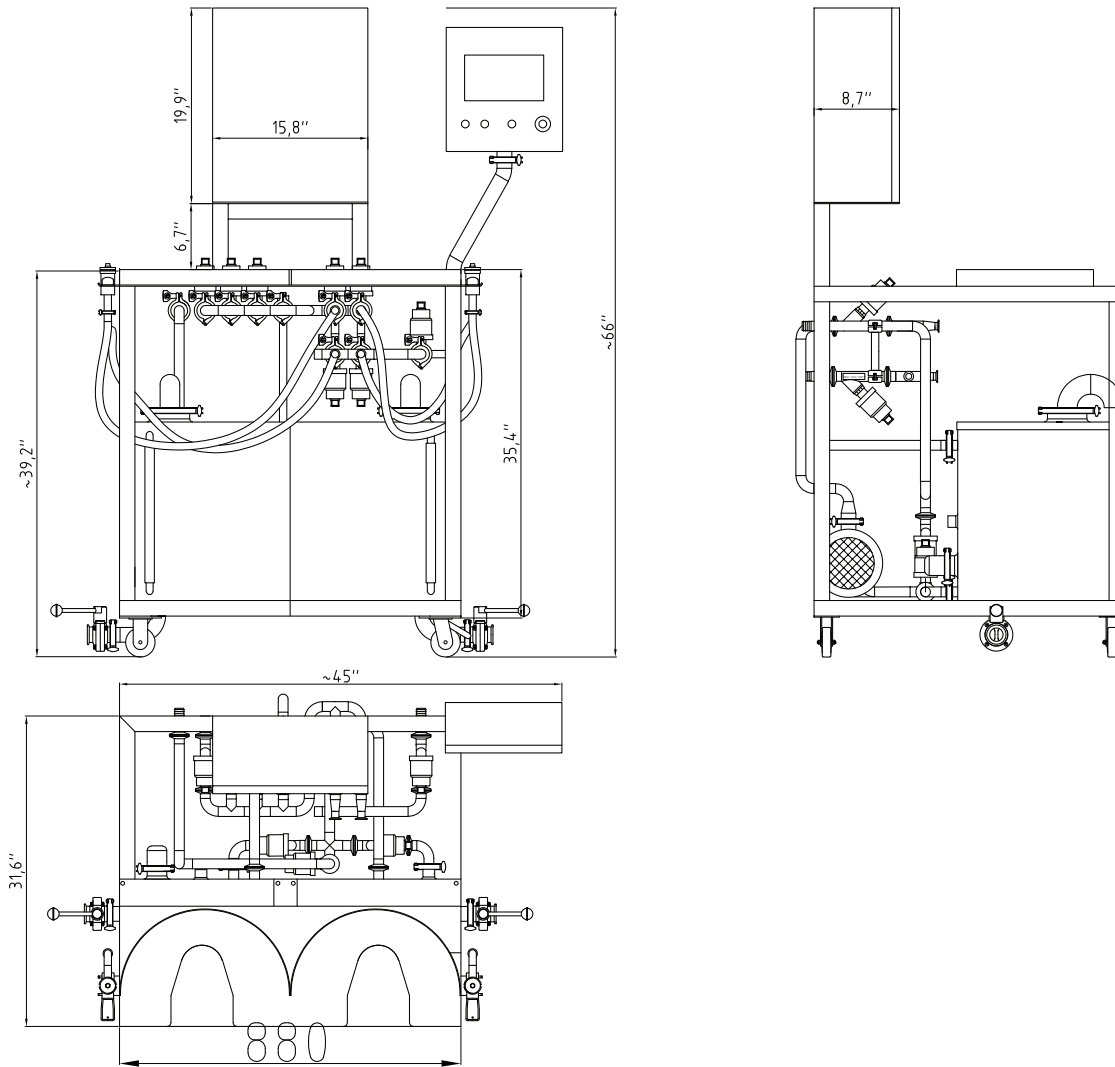## VIDEO TUTORIALS

We have a complete series of video tutorials on Youtube. Please scan the qr code or go to youtube.com/@craftmasterstainless. At bottom of each page you will find the title of the video that compliments the material in that section of the manual.

Pre 8/23

DIMENSIONS
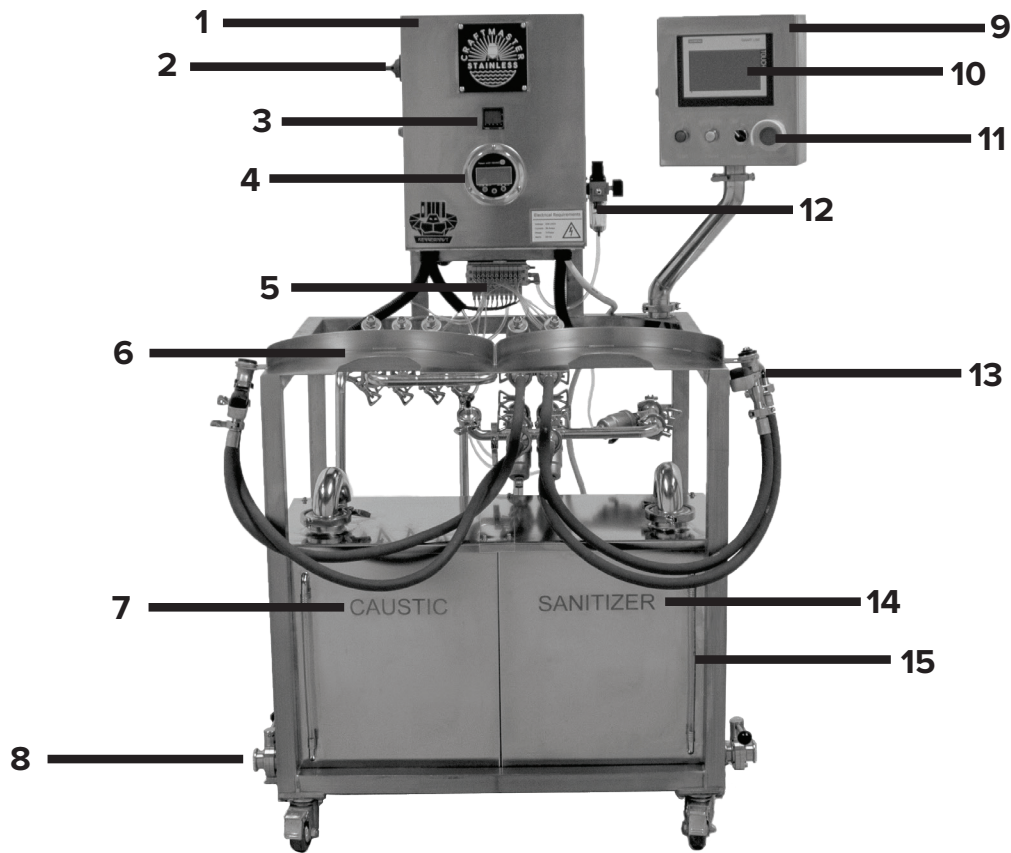
HEIGHT	66 IN
DEPTH	35 IN
WIDTH	32 IN
DRY WEIGHT	395 LB

Pre 8/23

1. Main Control Panel

2. Main Power Switch

3. Omron Temperature Controller

4. Pressure Control Instrument

5. Solenoid Control Manifold

6. Keg Loading Platform

7. Caustic Reservoir (20 gal)

8. Reservoir Drainage Valve

9. Secondary Control Panel

10. Siemens Touch Screen

11. Emergency Stop

12. Inlet Pressure Regulator

13. Micromatic Keg Coupler

14. Sanitizer Reservoir (20 gal)

15. Sight Tube

ELECTRICAL REQUIREMENTS

WARNING

⚠️ Electrical work presents significant risk to one's health and safety. All electrical work should be performed by a licensed professional.

THREE PHASE REQUIREMENTS

Voltage :   208 - 240V
Current :   30 Amps
Phase: 3 - Phase
Hertz: 60Hz
Plug Type: L15 - 30

Electrical Requirements

Voltage: 208-240V
Current: 30 Amps
Phase: 3-Phase
Hertz: 60 Hz

SINGLE PHASE REQUIREMENTS

Voltage :   208 - 240V
Current :   50 Amps
Phase: Single - Phase
Hertz: 60Hz
Plug Type: L10 - 50P

Electrical Requirements

Voltage: 208-240V
Current: 50 Amps
Phase: Single-Phase
Hertz: 60 Hz

CHECKING POLARITY

WARNING

⚠️ Due to nature of three phase electronics and differences in how outlets are wired, it is necessary to check the polarity of your keg washer before using it. Incorrect polarity causes the motor to spin in the wrong direction. Operating your keg washer with the incorrect polarity will cause damage to your washer and possible risk to ones health and safety.

STEPS
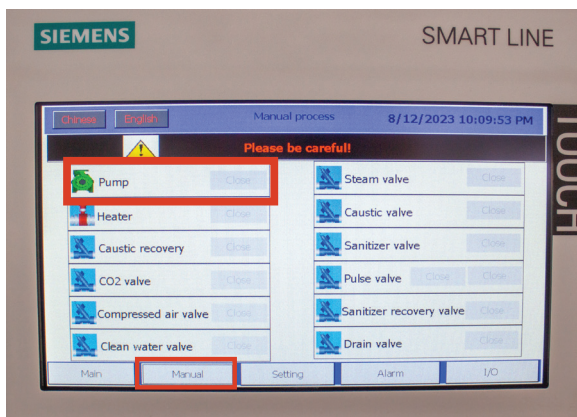
1. Turn on your unit.

2. Using the Siemens touch screen to navigate to the manual page.

3. Locate the Pump icon toward the top of the list and press the gray square next to the icon to manually turn the pump on and off.

4. Turn the pump on for a second and turn off quickly.

5. Check the spin of the blades on the pump and make sure they correspond with the direction depicted on the sticker. If the pump is not spinning the correct direction, you will have to modify the wiring sequence in the electrical plug.

STEPS FOR 3 - PHASE POWER ONLY
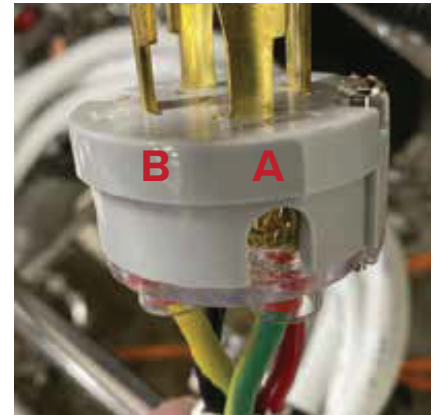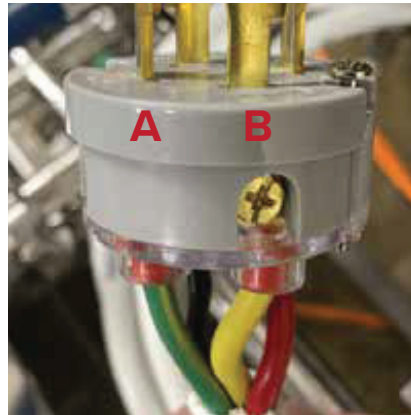
1. You will need a phillips head screwdriver to complete this task.

2. Expose the wires by opening the plug up. Unscrew the two screws on the face of the plug, as well as the two screws located on the back.

3. Slide down the plug cover and expose the wires. Next, look at the top of the plug. You will see four prongs. The L shape prong is your ground wire, it is also indicated by a green lug. Do not change this wire. The other three prongs are your live wires.

4. Change any two of those three live wires to reverse the polarity. Loosen the lugs under the two prongs you would like to change. The wires should now freely pull out. Switch the two wires and re-tighten the lugs.

5. Make sure you did not change your ground wire (L Shape Prong).

6. Slide the plug cover back up. Making sure to line up the tongue and groove on the plug and cover. Re-tighten all four screws.

7. You are now ready to plug in your Keggernaut and retest the polarity.

OPERATION GUIDE AND SAFETY

Keg washers operate with high pressure, chemicals, and hot temperatures. Always wear appropriate P.P.E. when operating. In case of error, Press Emergency Stop. Turn off unit. Disconnect the power source, air, CO2, water supply, and kegs. Depressurize the system by opening a coupler pointed down and away.

FIRST START UP OPERATION GUIDE

We recommend filling both Chemical Reservoirs with water for the first few trial runs until the operator is familiarized with the machine.

1. Make sure you have the correct electrical, air, and CO2 requirements covered in the manual.

2. Check that the heater is turned off using heater control dial on secondary control panel.

3. ***Fill Sanitizer tank with sanitizer solution.***

4. ***Fill Caustic tank with hot water and desired caustic solution.***

5. Turn on your washer. Let the software completely load.

6. ****Ensure emergency stop is disengaged by twisting red knob.****

7. Next, turn the heater on using the heater control dial on the secondary control panel. Let the caustic solution heat to desired temperature.

8. Check all air connections for secure fit and that all air regulators are set to the recommended pressures.

9. Make sure your water source and drain hose are connected securely.

10. Select your desired preset on the settings page.

11. Attach two kegs. Flip kegs on to loading platform and check that the couplers are still engaged. Press start and wash. Watch sight tubes for proper recovery.

Consult With Your Chemical Provider

AIR AND CO2 REQUIREMENETS
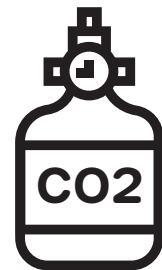
COMPRESSOR REQUIREMENTS

Capacity :	Min 80 Gal
CFM Rating :	14 CFM @ 90 PSI
Output Pressure:	90 PSI
**Air Water Separator :	Required
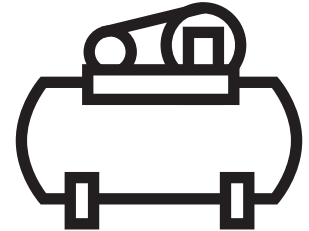
** An Air Regulator with Water Separator is required and must be installed in-line on the incoming air going to the keg washer. Water in the airline will damage your machine.

CO2 REQUIREMNTS

Capacity :	Bulk Tank Source
Output Pressure:	90 PSI

PRESSURE REGULATOR RECOMMENDATIONS

| Air Supply To The Machine	CO2 Supply To The Machine	Air Supply To The Valves
50 - 60 PSI	50 - 60 PSI	90 PSI

SOFTWARE OVERVIEW

MAIN PAGE

When you turn on your washer the Keggernaut will automatically load the software. The program will load to the main page. When the washer is running, this page will inform you on current progress through the different cleaning stages and give visual feedback on what components are currently in use.
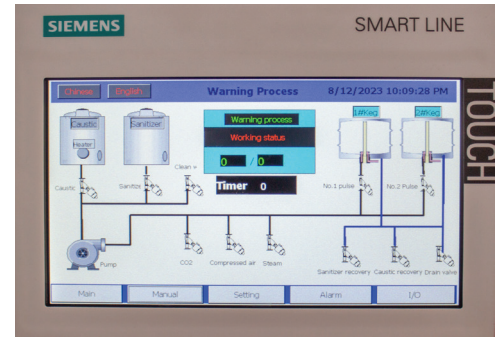
MANUAL PAGE

The manual page allows you to manually turn on and off individual components. To activate a component, Locate the component you would like to activate and press the gray button next to it. The square will turn green indicating it is active. Press again to deactivate.
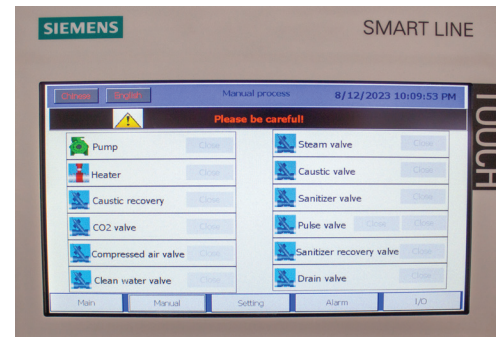

SETTINGS PAGE

The Parameter page allows you to change between one of four presets for different sized kegs. To select a preset, press the gray button under the size keg you would like to clean. The button will turn green denoting your current selection.

PARAMETERS SELECT PAGE

The parameter select page shows the settings for a given preset. The 14 cleaning stages are listed in order in which they occur. You will see the name of the stage and numerical value. The numerical value is the amount of seconds that stage will run. Any stage set to zero will be bypassed in the cycle.
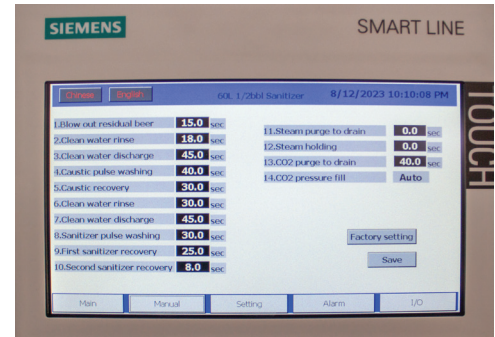
ALARM PAGE

This alarm page will display any errors or warnings that the software has detected. Check this page in case of any problems for insight on the source of any errors.
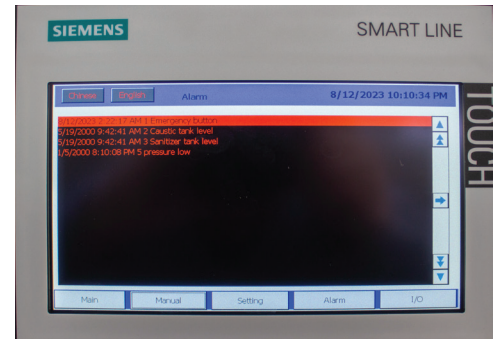
INPUTS AND OUTPUTS PAGE

The I.O or inputs and outputs page will show you what components are currently active. Green dots will appear next to the name of any components currently active.

STEPS

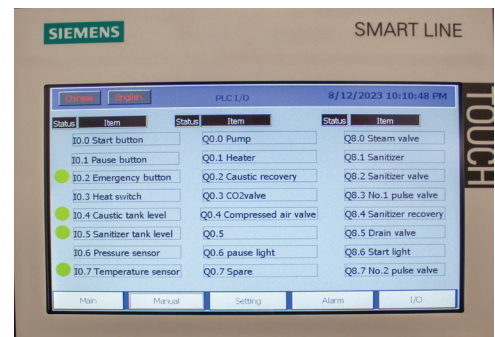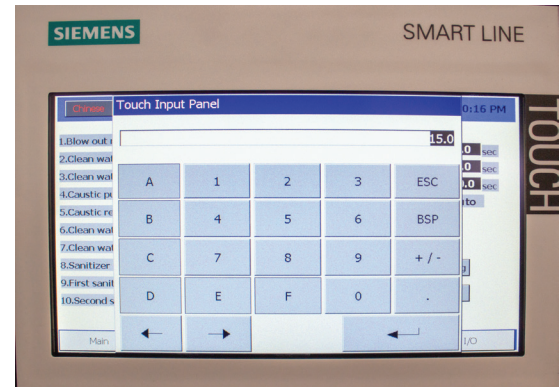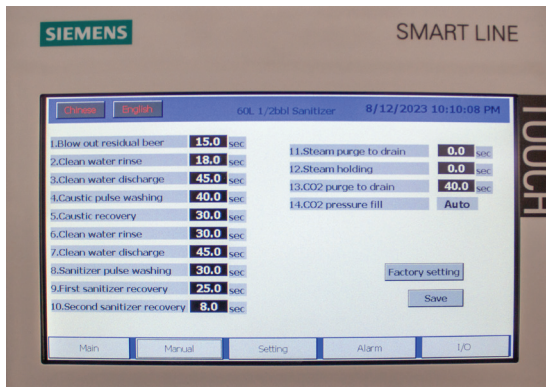1. To make a change to a preset, navigate to the settings page.

2. Locate the preset you would like to change. Press the button above the icon that depicts the name of the preset.

3. This will load the Parameter Select page for that preset. You will see the name of the cleaning stages and numerical values. The numerical value is the amount of seconds that stage will run. Any stage set to zero will be bypassed during the wash cycle. To make a change to a stage, press the numerical value of that stage.

4. A pop up will appear allowing you to input a new value. Enter the new value and press the return button to set the value.

5. You must press the save button to have your new value saved to the preset.

6. To exit press any tab along the main navigation.

CLEANING STAGES

1. BLOW OUT RESIDUAL FLUID

This stage is going to release and drain any remaining fluid or residue in your kegs.

It is recommended that you drain your kegs as much as possible before hooking them to the washer ensuring this stage can work as efficiently as possible.

If you are noticing fluid is still evacuating the kegs as this stage completes, then you are going to want to increase the duration till nothing is coming out.

2. FIRST CLEAN WATER RINSE

This clean water rinse will help remove and loosen any built up residues in the keg before deep cleaning with caustic.

Extend or shorten to your personal preference.

3. CLEAN WATER DISCHARGE

This stage removes all the water from the previous stage.

Make sure the keg is empty as possible before moving to the next stage.

Extend this time as needed.   There should be no more discharge at the end of the stage.

4. CAUSTIC PULSE WASH

This stage is going to deliver powerful pulses of hot caustic to each keg.

You should be able to feel the pulses through the top of the kegs as it alternates pulses.

Depending on how soiled your kegs are, you will need to adjust this stage to ensure thorough cleaning.

5. CAUSTIC RECOVERY

This stage will return the caustic back to the holding reservoir helping minimize waste and cost.

You want to check your recovery in the sight tube. You are looking for full recovery or a slight bit below the starting level.

Increase the time if recovery is too low.

If the recovery is too high, then you need to check the clean water discharge stage before the caustic pulse wash and ensure that all the fluid is being discharged in that stage.

6. SECOND CLEAN WATER RINSE

This stage helps remove any remaining caustic residues in the keg before moving to the sanitation stages.

Extend or shorten this stage to your personal preference.

CLEANING STAGES

7. SECOND CLEAN WATER DISCHARGE

This stage discharges the water from the water rinse. Make sure the keg is empty as possible before moving to the next stage.

Extend the time until you have no more discharge at the end of the stage.

8. SANITIZER PULSE WASH

This stage uses strong pulses of sanitizer ensuring complete coverage and sanatization within the kegs.

Extend or shorten this stage to your personal preference.

9. FIRST SANITIZER RECOVERY

This stage use CO_2 to recover the sanitizer back into the reservoir. This helps reduce waste and maintains the sterile environment in the kegs by replacing the oxygen for CO_2.

If the recovery is too high, then you need to check the second clean water discharge stage and ensure that all the water is being discharged in that stage.

10. SECONDARY SANITIZER RECOVERY

This stage to helps get any of the remaining sanitizer out of your kegs before you purge and fill your kegs with CO_2.

Check your sight tube and lengthen the duration if you still have sanitizer left in the kegs and are still below your starting level of sanitizer.

CLEANING STAGES

11. STEAM PURGE TO DRAIN

This stage is used by individuals that need to use steam rather than sanitizer in their cleaning process.

This stage is not necessary for normal use. Set this stage to zero seconds to bypass it.

12. STEAM HOLDING

Steam Holding is the second stage for those sterilizing with steam.

This stage is also not necessary for normal use. Set this stage to zero seconds to bypass it.

13. CO2 PURGE TO DRAIN

This step removes any lingering materials from the kegs and the system before pressurizing the keg with CO2.

14. CO2 PRESSURE FILL

In this stage the washer will fill your kegs with CO2 and automatically stops once it reaches the fill pressure designated on the pressure control instrument.

Filling your kegs with CO2 insures an oxygen free zone, creating a clean and sanitized environment until you are ready to fill your kegs.

RECOMMENDED DEFAULT PARAMETERS

Below are recommended default starting values for the fourteen cleaning stages. These are only recommendations. It is strongly recommended that you water test the washer and make adjustments to maximize your effciency and meet the necessary sanitation specifications you have chosen.

HALF BARREL KEGS

1. Out Residual Fluid	15	8. Sanitizer Pulse Wash	30
2. Clean Water Rinse	18	9. First Sanitizer Recovery	25
3. Clean Water Discharge	45	10. Second Sanitizer Recovery	8
4. Caustic Pulse Wash	40	11. Steam Purge To Drain	0
5. Caustic Recovery	30	12. Steam Holding	0
6. Clean Water Rinse	30	13. CO2 Purge to Drain	40
7. Clean Water Discharge	45	14. CO2 Purge to Fill	Auto

QUARTER BARREL KEGS

1. Out Residual Fluid	15	8. Sanitizer Pulse Wash	25
2. Clean Water Rinse	15	9. First Sanitizer Recovery	20
3. Clean Water Discharge	40	10. Second Sanitizer Recovery	8
4. Caustic Pulse Wash	35	11. Steam Purge To Drain	0
5. Caustic Recovery	25	12. Steam Holding	0
6. Clean Water Rinse	25	13. CO2 Purge to Drain	35
7. Clean Water Discharge	40	14. CO2 Purge to Fill	Auto

SIXTEL KEGS

1. Out Residual Fluid	12	8. Sanitizer Pulse Wash	22
2. Clean Water Rinse	12	9. First Sanitizer Recovery	20
3. Clean Water Discharge	35	10. Second Sanitizer Recovery	8
4. Caustic Pulse Wash	30	11. Steam Purge To Drain	0
5. Caustic Recovery	24	12. Steam Holding	0
6. Clean Water Rinse	22	13. CO2 Purge to Drain	30
7. Clean Water Discharge	35	14. CO2 Purge to Fill	Auto

OMRON TEMPERATURE CONTROL UNIT

OVERVIEW

PV : The present value or PV is the number on the top and is the current temperature being read by the thermo gauge located in the Caustic holding reservoir.

SV: The set value or SV is the number located below the PV. This is the set temperature for the heating element located in the same reservoir.

SETTING CAUSTIC TEMPERATURE

1. To change the Set Value, locate the up and down buttons on the bottom right of the omron unit.

2. Use those button to increase or decrease the set value. Hold the button for faster adjustments.

3. Once you select your desire temperature. Turn on the heater using the dial located on the secondary control panel. Allow your caustic to heat up before washing. The washer will automatically regulate the temperature while in use. Note that the caustic temperature will drop a few degrees during use due to heat lose in the clean cycle.

WARNING

The Omron controller has many settings and sub menus. There is no need to change any other setting but the Set Value. You are responsible for any other changes made. Please refer to the omron manual. (PAGE 19)

PRESSURE CONTROL INSTRUMENT

OVERVIEW

The Pressure Control Instrument monitors the pressure in the system and allows set the fill pressure for CO2 in your kegs. The PCI will show the current pressure by default. It also has four set pressures. The Up1 and Up2 are the CO2 fill pressures for your kegs. The Lo1 and Lo2 are the low pressures. The Washer comes with a factory fill pressure of 12 PSI.

SETTING CO2 FILL PRESSURE

1. Press the button on the left with the grid pattern. This will allow you to scroll through the four set pressures. Small triangles will appear on the screen denoting what set pressure you are currently on.

2. Once you have the set pressure you want selected, use the middle button with the up arrow to select the value place you want to adjust. The value place will blink denoting what place is currently selected.

3. Next use the right button with the down arrow to change the value.

5. To save, press the left button with the grid on it to move to the next set pressure. Ensure both Up1 and Up2 are set to the same fill pressure and both Lo1 and Lo2 are set to zero.

6. Finish by power cycling the PCI. Always run the washer with the current pressure screen selected.

●Specifications

Power supply voltage	100 to 240 VAC, 50/60 Hz or 24 VAC, 50/60 Hz / 24 VDC
Operating voltage range	85 to 110% of the rated voltage
Power consumption	Option 000: Approx. 4.1 VA (100 to 240 VAC) Approx. 3.0 VA (24 VAC)/approx. 1.7 W (24 VDC) All other specifications: Approx. 5.1 VA (100 to 240 VAC) Approx. 3.9 VA (24 VAC)/approx. 2.3 W (24 VDC)
Indication accuracy (Ambient temperature: 23°C)	Thermocouple: (±0.3 % of indication value or ±1°C, whichever is greater) ±1 digit max. Platinum resistance thermometer: (±0.2 % of indication value or ±0.8°C, whichever is greater) ±1 digit max. Analog input: ±0.2 % FS ±1 digit max.

Event input
  Contact input
  No-contact input
	Output current: approx. 7 mA per contact.
	ON:1 kΩ max., OFF: 100 kΩ min.
	ON: residual voltage 1.5 V max.,
	OFF: leakage current 0.1 mA max.

Remote SP input	4 to 20 mA DC or 0 to 20 mA DC 0 to 5 V DC or 0 to 10 V DC
Control output 1	Relay output :SPST-NO 250VAC, 3A(resistive load) Electrical life of relay: 100,000 operations Voltage output (for driving SSR): 12 VDC ±20%, 21 mA Current output: 4 to 20 mA DC, 0 to 20mA DC Load: 500 Ω max. (Long-life model: 1 million operations)
Control output 2	Voltage output (for driving SSR): 12 VDC, 21 mA
Control method	ON/OFF or 2-PID control
Auxiliary outputs	Relay outputs:SPST-NO, 250 VAC, 3 A (resistive load), Electrical life of relay: 100,000 operations
Ambient temperature	-10 to 55°C (Avoid freezing or condensation)
Ambient humidity	RH25 to 85%
Storage temperature	-25 to 65°C (Avoid freezing or condensation)
Altitude	Max. 2,000m
Recommended fuse	T2A, 250 VAC, time-lag, low-breaking capacity
Weight	Approx. 120 g (Digital Controller only)
Degree of protection	Front panel: IP66 Rear case: IP20, Terminal section: IP00
Installation environment	Installation category II, pollution degree 2 (as per IEC61010-1)
Memory protection	Non-volatile memory (Number of write operations: 1,000,000)
Transfer output	4 to 20 mA DC with load of 500 Ω max. 1 to 5 VDC with load of 1 kΩ min.

●Specifications

Power supply voltage	100 to 240 VAC, 50/60 Hz or 24 VAC, 50/60 Hz / 24 VDC
Operating voltage range	85 to 110% of the rated voltage
Power consumption	Option 000: Approx. 4.1 VA (100 to 240 VAC) Approx. 3.0 VA (24 VAC)/approx. 1.7 W (24 VDC) All other specifications: Approx. 5.1 VA (100 to 240 VAC) Approx. 3.9 VA (24 VAC)/approx. 2.3 W (24 VDC)
Indication accuracy (Ambient temperature: 23°C)	Thermocouple: (±0.3 % of indication value or ±1°C, whichever is greater) ±1 digit max. Platinum resistance thermometer: (±0.2 % of indication value or ±0.8°C, whichever is greater) ±1 digit max. Analog input: ±0.2 % FS ±1 digit max.
Event input Contact input No-contact input	Output current: approx. 7 mA per contact. ON:1 kΩ max., OFF: 100 kΩ min. ON: residual voltage 1.5 V max., OFF: leakage current 0.1 mA max.
Remote SP input	4 to 20 mA DC or 0 to 20 mA DC 0 to 5 V DC or 0 to 10 V DC
Control output 1	Relay output :SPST-NO 250VAC, 3A(resistive load) Electrical life of relay: 100,000 operations Voltage output (for driving SSR): 12 VDC ±20%, 21 mA Current output: 4 to 20 mA DC, 0 to 20mA DC Load: 500Ω max. (Long-life model: 1 million operations)
Control output 2	Voltage output (for driving SSR): 12 VDC, 21 mA
Control method	ON/OFF or 2-PID control
Auxiliary outputs	Relay outputs:SPST-NO, 250 VAC, 3 A (resistive load), Electrical life of relay: 100,000 operations
Ambient temperature	-10 to 55°C (Avoid freezing or condensation)
Ambient humidity	RH25 to 85%
Storage temperature	-25 to 65°C (Avoid freezing or condensation)
Altitude	Max. 2,000m
Recommended fuse	T2A, 250 VAC, time-lag, low-breaking capacity
Weight	Approx. 120 g (Digital Controller only)
Degree of protection	Front panel: IP66 Rear case: IP20, Terminal section: IP00
Installation environment	Installation category II, pollution degree 2 (as per IEC61010-1)
Memory protection	Non-volatile memory (Number of write operations: 1,000,000)
Transfer output	4 to 20 mA DC with load of 500 Ω max. 1 to 5 VDC with load of 1 kΩ min.

■Operation Menu

●Input Type

	Input type	Input	Setting	Setting range	
Temperature inputs	Platinum resistance thermometer	Pt100	0	-200 to 850 (°C)	/-300 to 1500 (°F)
			1	-199.9 to 500.0 (°C)	/-199.9 to 900.0 (°F)
			2	0.0 to 100.0 (°C)	/0.0 to 210.0 (°F)
		JPt100	3	-199.9 to 500.0 (°C)	/-199.9 to 900.0 (°F)
			4	0.0 to 100.0 (°C)	/0.0 to 210.0 (°F)
	Thermocouple	K	5	-200 to 1300 (°C)	/-300 to 2300 (°F)
			6	-20.0 to 500.0 (°C)	/0.0 to 900.0 (°F)
		J	7	-100 to 850 (°C)	/-100 to 1500 (°F)
			8	-20.0 to 400.0 (°C)	/0.0 to 750.0 (°F)
		T	9	-200 to 400 (°C)	/-300 to 700 (°F)
			10	-199.9 to 400.0 (°C)	/-199.9 to 700.0 (°F)
		E	11	-200 to 600 (°C)	/-300 to 1100 (°F)
		L	12	-100 to 850 (°C)	/-100 to 1500 (°F)
		U	13	-200 to 400 (°C)	/-300 to 700 (°F)
			14	-199.9 to 400.0 (°C)	/-199.9 to 700.0 (°F)
		N	15	-200 to 1300 (°C)	/-300 to 2300 (°F)
		R	16	0 to 1700 (°C)	/0 to 3000 (°F)
		S	17	0 to 1700 (°C)	/0 to 3000 (°F)
		B	18	100 to 1800 (°C)	/300 to 3200 (°F)
		W	19	0 to 2300 (°C)	/0 to 3200 (°F)
		PL II	20	0 to 1300 (°C)	/0 to 2300 (°F)
	Infrared Thermosensor ES1B	10 -70°C	21	0 to 90 (°C)	/0 to 190 (°F)
		60 -120°C	22	0 to 120 (°C)	/0 to 240 (°F)
		115 -165°C	23	0 to 165 (°C)	/0 to 320 (°F)
		140- 260°C	24	0 to 260 (°C)	/0 to 500 (°F)
Analog input type	Current input	4 to 20mA	25	Use the following ranges for scaling: -1999 to 9999, -199.9 to 999.9, -19.99 to 99.99, -1.999 to 9.999	
		0 to 20mA	26		
	Voltage input	1 to 5V	27		
		0 to 5V	28		
		0 to 10V	29		

*The default is "5".
*S.ERR will be displayed when a platinum resistance thermometer is mistakenly connected while input type is not set for it. To clear the S.ERR display, correct the wiring and cycle the power supply.

●Error Display (troubleshooting)

When an error has occurred, the No.1 display shows the error code. Take necessary measure according to the error code, referring the table below.

No.1 display	Meaning	Action	Status at error Control output	Alarm
S.ERR (S. Err)	Input error *2	Check the setting of the Input Type parameter, check the input wiring, and check for broken or shorts in the temperature sensor.	OFF	Operates as above the upper limit.
E333 (E333)	A/D converter error *2	After the correction of A/D converter error, turn the power OFF then back ON again. If the display remains the same, the controller must be repaired. If the display is restored to normal, then a probable cause can be external noise affecting the control system. Check for external noise.	OFF	OFF
E111 (E111)	Memory error	Turn the power OFF then back ON again. If the display remains the same, the controller must be repaired. If the display is restored to normal, then a probable cause can be external noise affecting the control system. Check for external noise.	OFF	OFF

If the input value exceeds the display limit (-1999 to 9999), though it is within the control range, ⌐⌐⌐⌐ will be displayed under -1999 and ⌐⌐⌐⌐ above 9999. Under these conditions, control output and alarm output will operate normally.
Refer to the E5CC/E5EC Digital Controllers User's Manual (Cat. No. H174) for the controllable ranges.
*2: Error shown only for "Process value / Set point". Not shown for other status.

●Alarms

Setting	Alarm type	Alarm output function Positive alarm value (X)	Negative alarm value (X)
0	No alarm function	Output off	
1 *1	Deviation upper/lower limit	ON/OFF	Vary with "L", "H" values
2	Deviation upper limit	ON/OFF	ON/OFF
3	Deviation lower limit	ON/OFF	ON/OFF
4 *1	Deviation upper/lower range	ON/OFF	Vary with "L", "H" values
5 *1	Deviation upper/lower limit standby sequence ON	ON/OFF	Vary with "L", "H" values
6	Deviation upper limit standby sequence ON	ON/OFF	ON/OFF
7	Deviation lower limit standby sequence ON	ON/OFF	ON/OFF
8	Absolute value upper limit	ON/OFF	ON/OFF
9	Absolute value lower limit	ON/OFF	ON/OFF
10	Absolute value upper limit standby sequence ON	ON/OFF	ON/OFF
11	Absolute value lower limit standby sequence ON	ON/OFF	ON/OFF
12	LBA (only for alarm 1)		
13	PV Change Rate Alarm		
14	SP absolute value upper limit	ON/OFF	ON/OFF
15	SP absolute value lower limit	ON/OFF	ON/OFF
16	MV absolute value upper limit	ON/OFF	ON/OFF
17	MV absolute value lower limit	ON/OFF	ON/OFF
18	RSP absolute value upper limit	ON/OFF	ON/OFF
19	RSP absolute value lower limit	ON/OFF	ON/OFF

*1: Upper and lower limits can be set for parameters 1, 4 and 5 to provide for different types of alarm. These are indicated by the letter "L" and "H".
• The default alarm type is "2"