

JKM-WM30^{Plus}

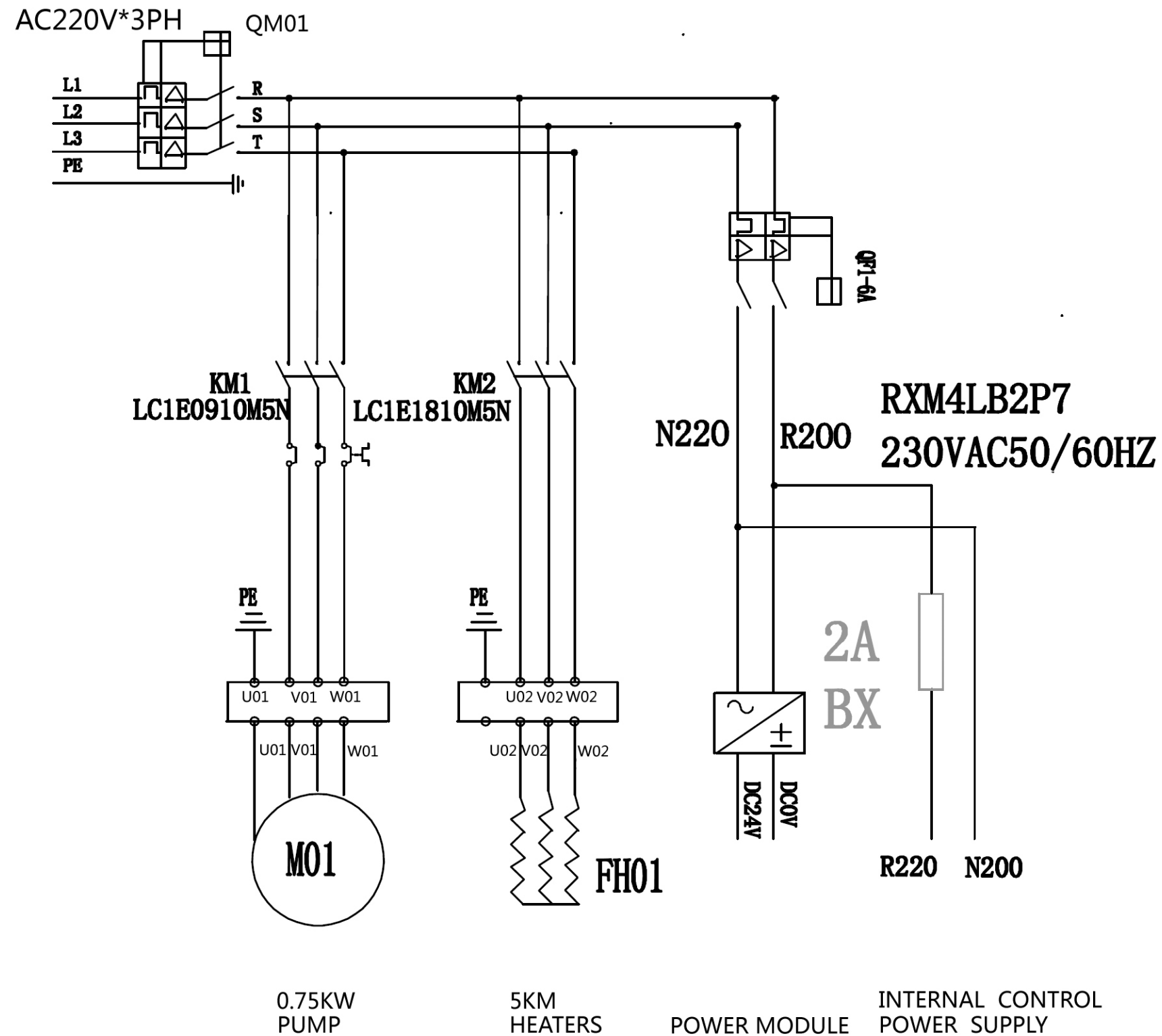
Double station semi-automatic cleaning machine

Operation instructions

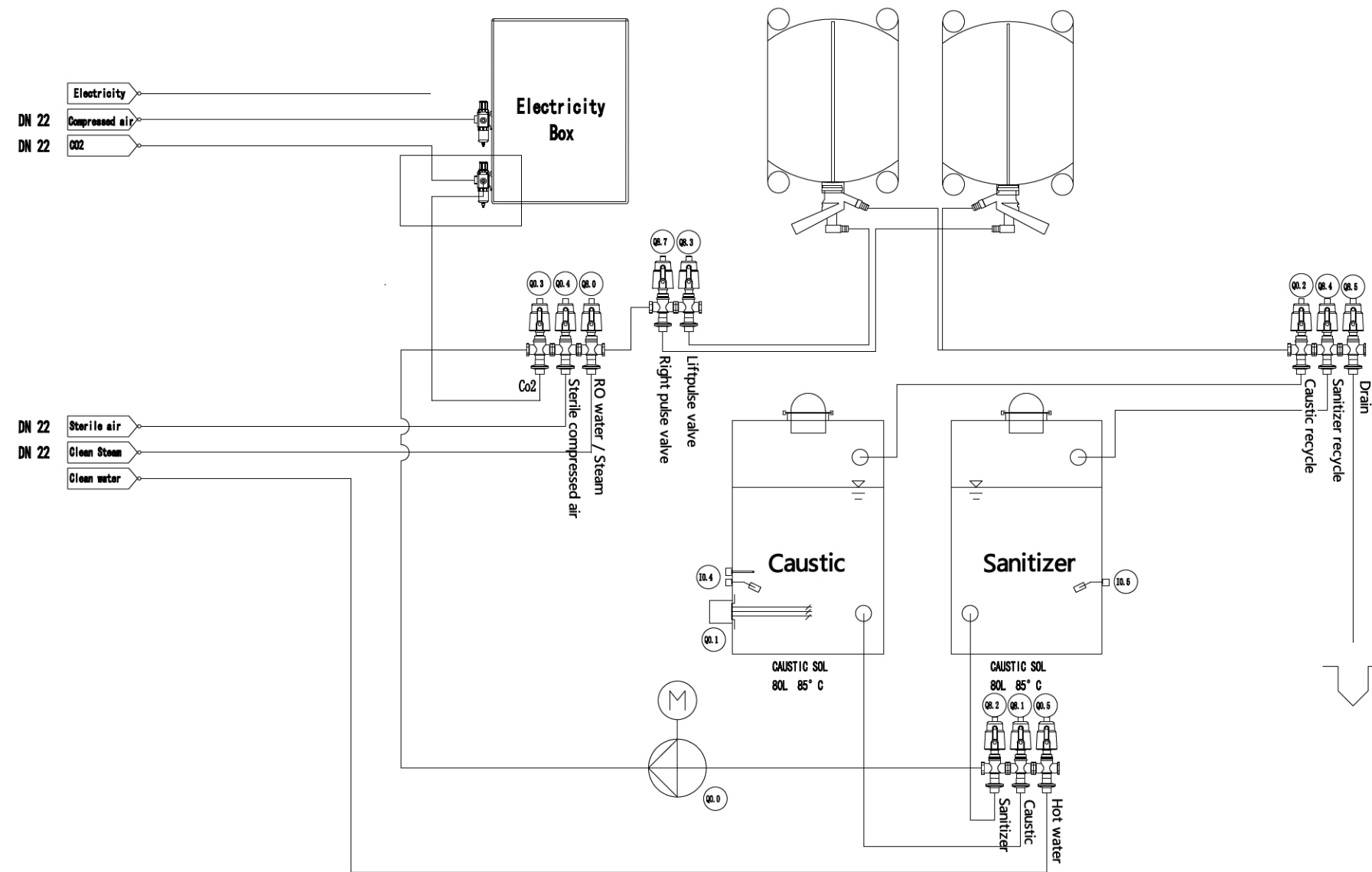
JKM-WM30^{Plus}

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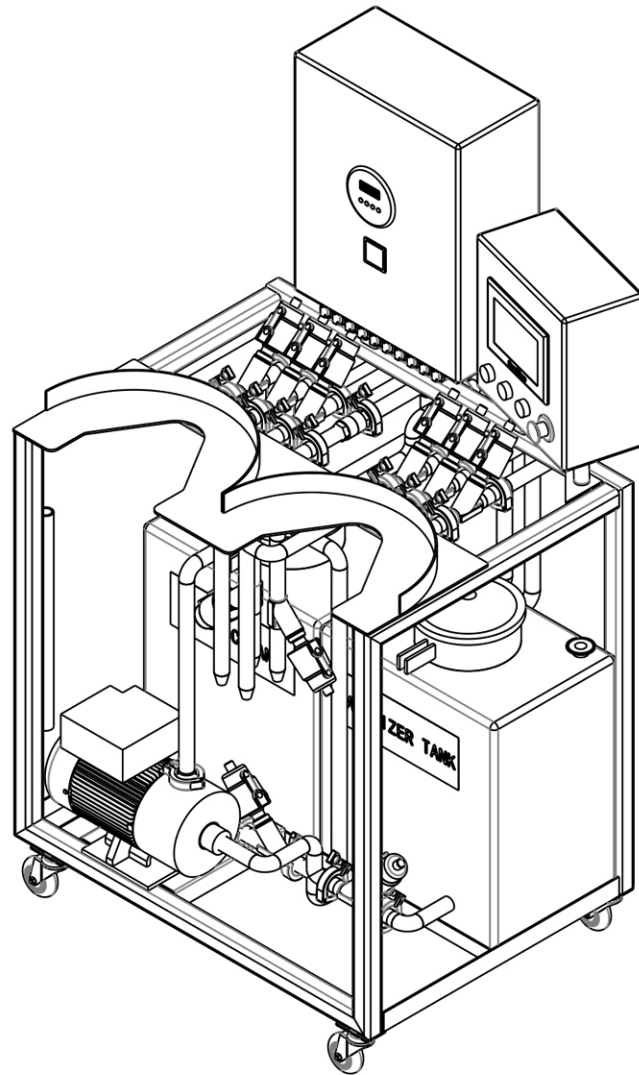
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Circuit diagram

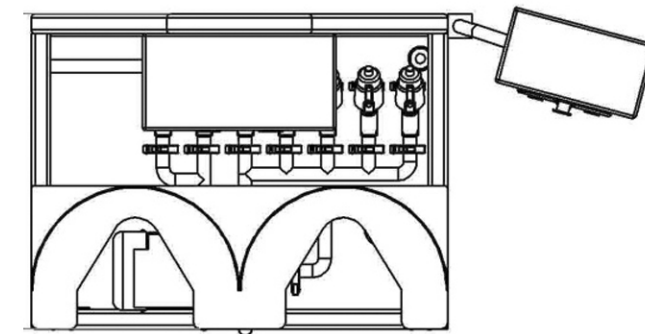


Flow chart



3D Graph

A



Side view

B

Structure

General information

The WM30-PLUS is an efficient, easy to use, versatile keg washer for small to medium microbreweries. Up to two straight-sided Sankey fitting kegs of any size can be rinsed, washed and sanitized. Cleaning can be done with cold detergent or hot detergent, as well as sanitizing with an appropriate non-rinse sanitizer. The pulse valve also allows for an efficient way to thoroughly clean the keg stem.

JKM-WM30 Plus Two-Head & Semi-auto Keg Washer

Size	W2.6xL2.8xH5.4(Ft)	Weight	286.6(lb)
Speed	About 30-40kegs/h	Total power	7kw
Tank	2 tanks/31.7(gal)	Heater	Electric Heater/6kw
Pump	SUS304 Pump/1.1kw X 1	Valve	Automatic Valves
Keg Type	10-60L Euro/USA Standard	Spear	Sankey "D" Type
PLC	SIEMENS S7-S200smart	Touch screen	WEINVIEW

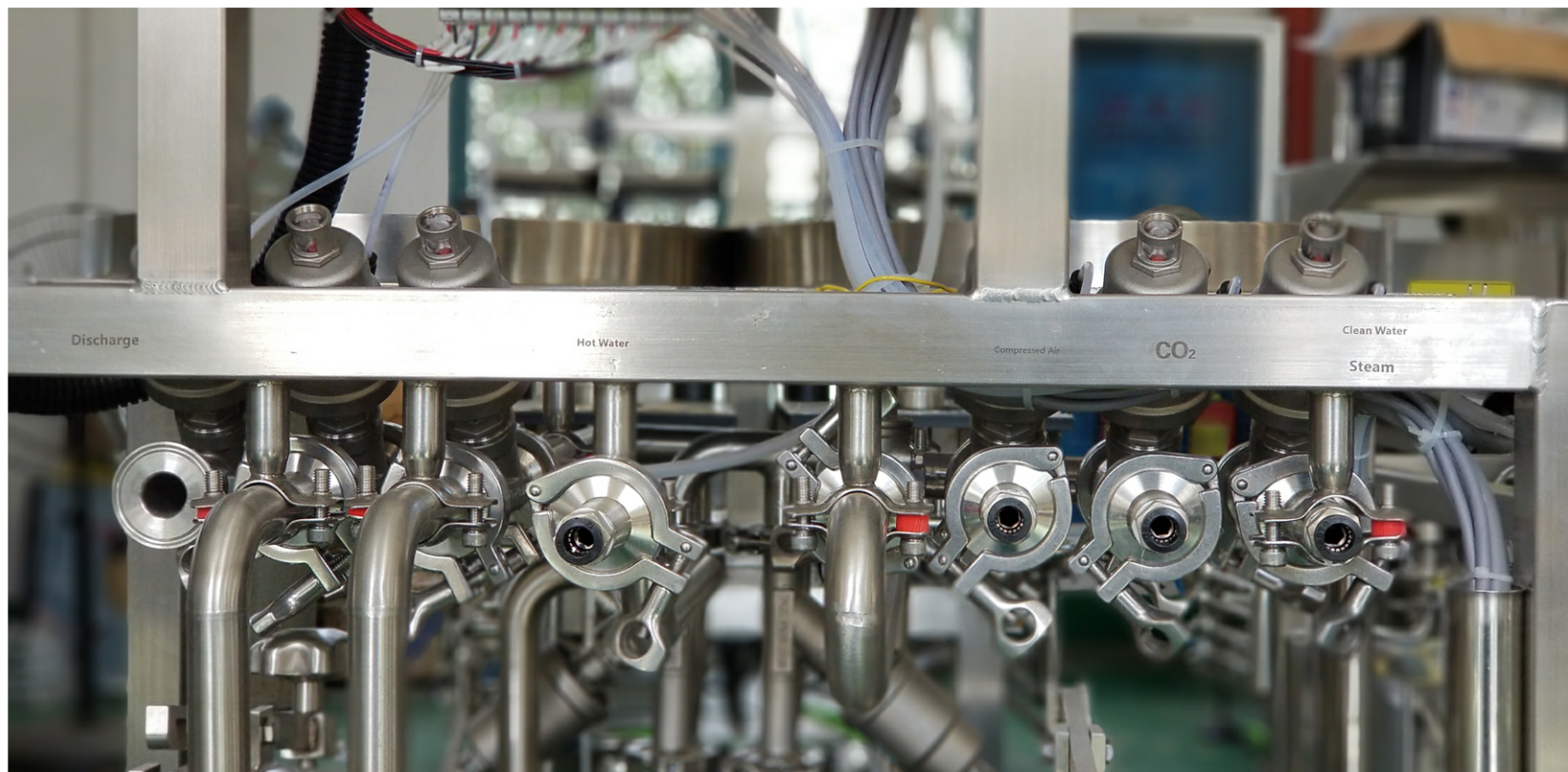
Note; Above data is only for reference and can be customized if necessary.



Install

The requirement for installation place: There must be electricity source, water source, air source, steam source, CO2 and nice drain condition.

Set the machine on the working place; adjust footing screw to make it balanced.



The connector from left to right is Discharge, Hot water, CO2, Compressed air, Sterile steam/ Clean water(RO water)

Install



- Hot water inlet : connect with \varnothing 25 nozzle and \varnothing 38 stainless steel Tri clamp
- Alkaline water tank watering inlet : connect with \varnothing 25 nozzle and \varnothing 38 stainless steel Tri clamp
- CO2 inlet: connect \varnothing 12 high pressure PU windpipe with quick-acting coupling. The length of the windpipe dues to the air source situation of the client.
- Compressed air inlet: connect \varnothing 12 high pressure PU windpipe with quick-acting coupling. The length of the windpipe dues to the air source situation of the client .
- Drain: connect \varnothing 25 ID rubber hose coupling with elbow , at the same time connect DN \varnothing 25 hose with rubber hose coupling . Then lock with \varnothing 19- \varnothing 29 hoop, effluent sewerage. The length of the hose dues to the situation of the client.
- Electricity source: connect the power wire to the electricity source of AC220V 3-Phase. According to the client' s electrical safety code to connect ground or neutral protection.

Pressure

Pressure regulation method and notice item for pressure regulation valve

Medium	Temperature (℃)	Temperature (℉)	Pressure (Bar)	Pressure (Mpa)	Pressure (Psi)	Medium Concentration (%)	Connector
Caustic	60-75	140-167	2.0-3.0	0.2-0.3	29-43.5	1.5-2.0% Caustic	φ 25 pipe with φ 38 Tri-clamp
Sterile compressed air	-	-	2.0-3.0	0.2-0.3	29-43.5	-	φ 38 Tri-clamp with φ 10 Air pipe
Clean water	70-85	158-185	2.0-3.0	0.2-0.3	29-43.5	-	φ 38 Tri-clamp with φ 25.4 Pagoda type
CO2	-	-	2.0-3.0 cleaning	0.2-0.3 cleaning	29-43.5 cleaning		φ 38 Tri-clamp with φ 10 Air pipe
			1.5-2.0 Pre-pressure	0.15-0.2 Pre-pressure	21.75-29 Pre-pressure		
Sterile steam	95-110	203-230	1.5-2.0	0.15-0.2	21.75-29	-	φ 38 Tri-clamp with G 1/2 Female thread

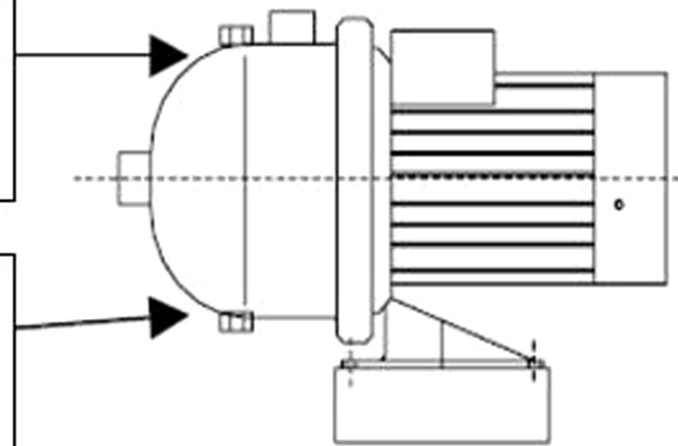
1Bar = 0.1MPa = 14.503Psi

- Cylinder pressure (compressed air regulator for valve) : adjust gauge of compressed air for valve to 0.4-0.6Mpa .
- Sterile compressed air : adjust Sterile compressed air gauge to 0.2Mpa-0.3Mpa .
- CO2 pre-pressure : adjust pressure controller' value to 0.15-0.2Mpa on the cabinet.
- Routine observation whether the filter has the water or not (if the climate is moist, the water should be often discharged)
- Please draw back the knob first before rolling; force down the knob is fixing position.
- Turn knob right is increasing outlet pressure; turn knob left is decreasing outlet pressure.
- When regulate the pressure, which should be transferred equally to the needed pressure step by step.
- Compressed air for valve (air source pressure) does not exceed 0.8MPa.
- When the outlet airflow reduces obviously, the filter element should be replaced in time.

Pump

Unscrew the screw,
discharge the air inside the pump,
then the pump can work normally.

When it not use and under a low temperature,
need to open here will be water emissions,
protect the pump from frostbite.



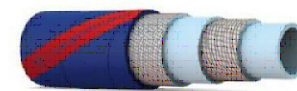
Air and CO2 inlet: connect $\phi 12$ high pressure PU windpipe with quick-acting.



RO water connect DN $\phi 25$ hose with rubber hose coupling .
The length of the hose dues to the situation of the client.

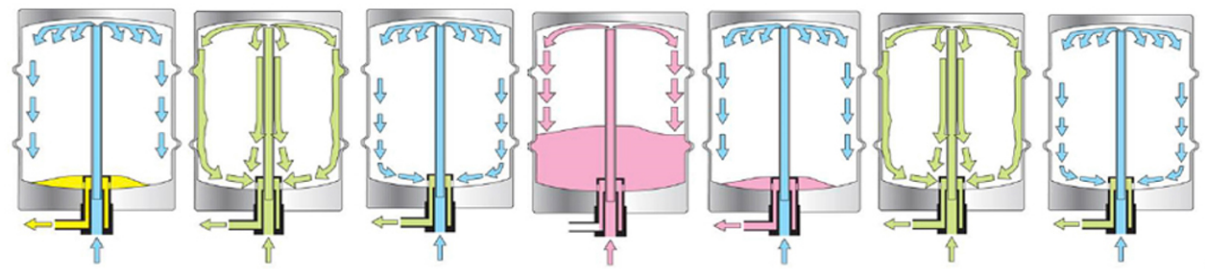


If you use steam to connect, suggest you
use this kind of high pressure and Temp. FDA hose.

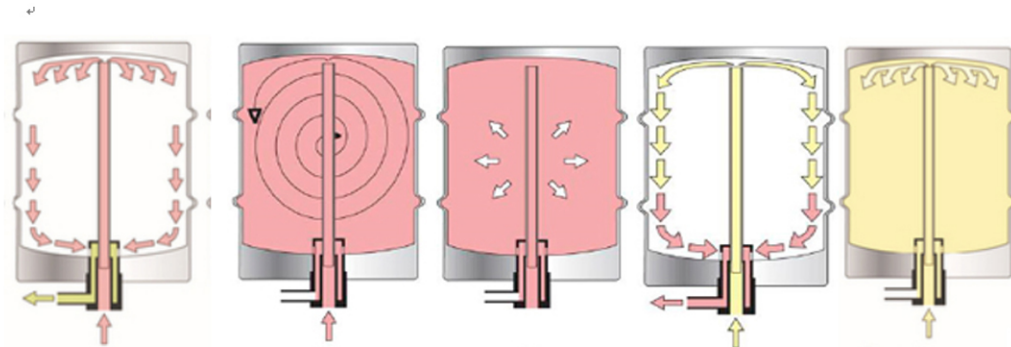


Operation

Plan A Cleaning process with steam



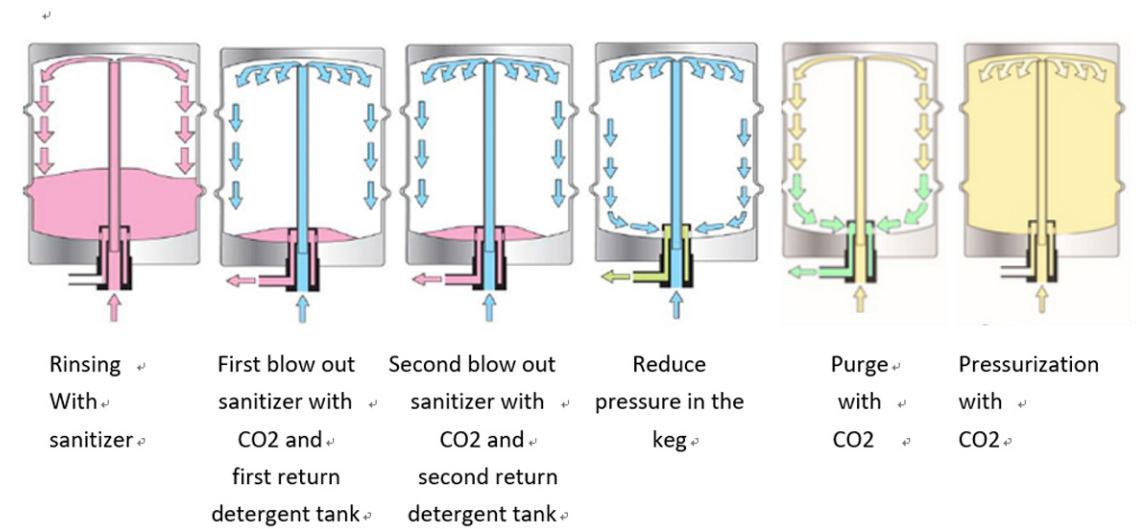
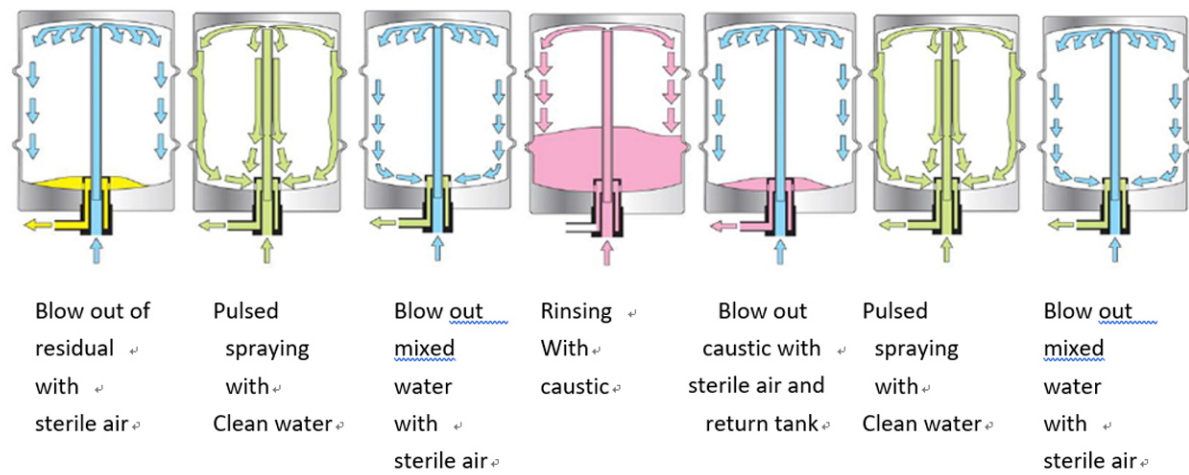
Blow out of residual with sterile air
Pulsed spraying with Clean water
Blow out mixed water with sterile air
Rinsing With caustic
Blow out caustic with sterile air and return tank
Pulsed spraying with Clean water
Blow out mixed water with sterile air



Blow out water With steam
Pressurization with steam and holding
Steam holding
Blow out steam and purge With CO2
Pressurization with CO2

Operation

Plan B Cleaning process with sanitizer



Process step

Process step	Description
Centering	■The operating personnel connect the Keg to the coupler, then put onto the keg table and centers it.
Leak test	■Leak test to check that the keg is properly seated with keg coupler.
Coupler	■If the leak test was successful, the piston lifts and opens the fitting.
Residual pressure check	■The machine checks the keg for the residual pressure required. ■The residual pressure check only takes place once the corresponding operating mode has been selected on the operator terminal.
Blowing out of product residue	■When the residual pressure is correct, The machine blows any remaining product residue out of the keg.
Rinse	■The keg is pre-cleaned with cold water.
Blowing out with sterile (compressed) air	■The cold water is blown out of the keg using sterile air.
Pulsed caustic spraying	■Pulsed spraying with caustic that alternately flows over the keg spear and the inside walls of the keg.
Blowing out with sterile air	■The caustic is blown out of the keg using sterile air.
Pulsed spraying with hot water	■Pulsed spraying with hot water that flows alternately over the keg spear and the inner walls of the keg.
Blowing out with sterile steam / clean water(Ro water)	■The hot water is blown out of the keg using sterile steam/clean water(Ro water).. No depressurization takes place.
Building up of steam pressure	■Sterile steam is applied to the keg.
Blowing out of condensation	■The condensation is blown out of the keg using sterile steam.
Pressurizing	■Pressurize with CO2
Seal test	■Test whether the inner keg pressure is decrease.

Maintenance

- Please check the keg spear is suited for the keg coupler.

(Notice: if using steam must connect the steam pipe well before turn on the power switch in order to avoid water flow out from the steam heating valve.)

- Check the last time before testing, notice: does each technical parameter fit for the regulation or not.
- Clean work platform; turn off power switch, air source and water source after complete work every day.
- After running a period of time, check the water road have the leak or not.

Monitoring

Monitoring production

Personnel: ■ Operating personnel

Monitor the media values to ensure they are adhered to.

Personnel: ■ Operating personnel

If an internal disinfectant tank is fitted:

Monitor the operation of the disinfectant pump to ensure it is working correctly.

Personnel: ■ Operating personnel

Check the machine for leaks at the machine pipelines.

Responding to machine faults



DANGER!

Restarting after a machine malfunction.
Restarting the machine without performing the relevant checks still poses a risk.
This could result in death or serious injury.
– Before restarting, ensure that no one is in the vicinity of the machine.

Stopping

- Stopping production is useful if production is to be continued after a short amount of time.
- Stopping production does not prepare the machine for maintenance activities.

Stopping production briefly

Personnel: ■ Operating personnel

Prerequisite: ■ Production is to be interrupted for a short time.

1. End the cleaning process.

2. Press the [Machine OFF] button.

Production stops.

Continuing production after a brief interruption

Personnel: ■ Operating personnel

Prerequisites: ■ Production is to continue after a brief interruption.

1. Press the [Machine ON] button.

The machine can clean the next keg.

2. Start the cleaning process for the next keg.

Ending operation

Personnel: ■ Operating personnel

Prerequisites: ■ There are no more kegs on the cleaning station. The cleaning processes are complete.

- The wash stations are empty.

1. Press the [Machine OFF] button.

2. Clean the internal and external disinfectant tanks at the end of each shift.

Clean the inner and outside keg coupler with clean water keep the gaskets clean so that those can be used for a long time

3. Perform CIP cleaning at regular intervals.

- Low temperature or long time outage

■ When the equipment does not use for a long time or the temperature is lower than 0 °C, should pour out the water from water pump and pipes in time in order to avoid frost cleft water pump head, valves and pipes.

■ Long time outage and then start-up it again, the water pump maybe could not be turned. The reason is that part of the water pump's gasket has too big resistance not the equipment breakdown; the solution method is using a small screwdriver to stir one time of water pump fan.

■ Air relief method: there is an air relief screw at the top of the water pump, turn on the screw until the water comes out, then screw down it.

■ Drop water method: put a drop water screw at the bottom of the pump head, open the screw and make the water out, then screw up.

Safety information

This chapter details the prerequisites and measures for safe operation.

Protective equipment

Persons remaining or working in the vicinity of hazardous and operating areas are required to wear general or special personal protective equipment.



WARNING!

If personal protective equipment is not available or not worn, unprotected body parts may be injured.

General personal protective equipment includes:

Work clothes

Steel toe-cap safety shoes with non-slip soles

Hearing protection suitable for the noise level.



Face shield

Protects the face from flying objects and liquid splashes.



Temperature, acid and caustic-resistant safety gloves

Protect the hands against acid and caustic, abrasion, scrapes, puncture wounds or deeper wounds, against contact with hot surfaces and against scalding from steam, vapor or hot water.



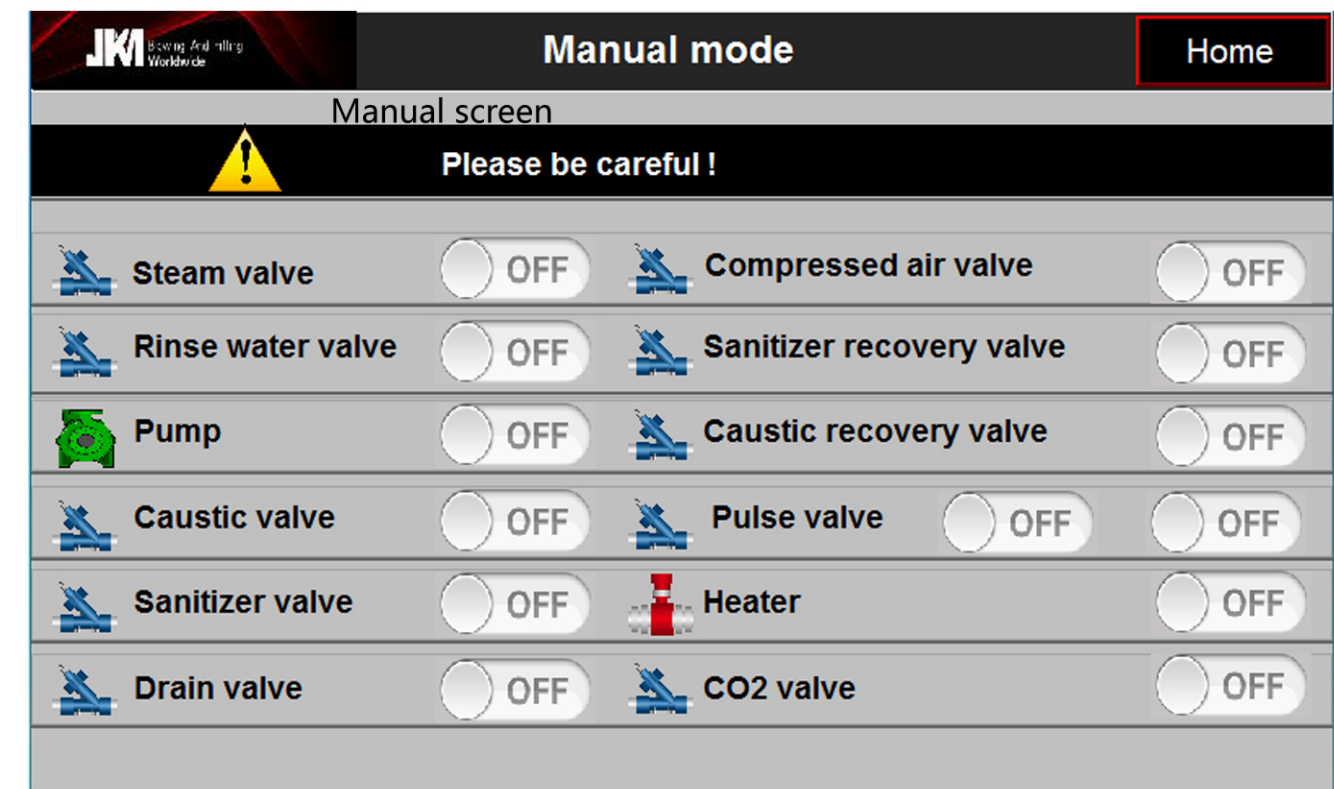
WARNING!

disinfectant tank.

The disinfectant tanks contain hot fluids with a temperature of up to 85°C. When the lid is open, disinfectant can spray out. Scalding and chemical burns can occur on contact with the disinfectant tank or the disinfectant.

Interface

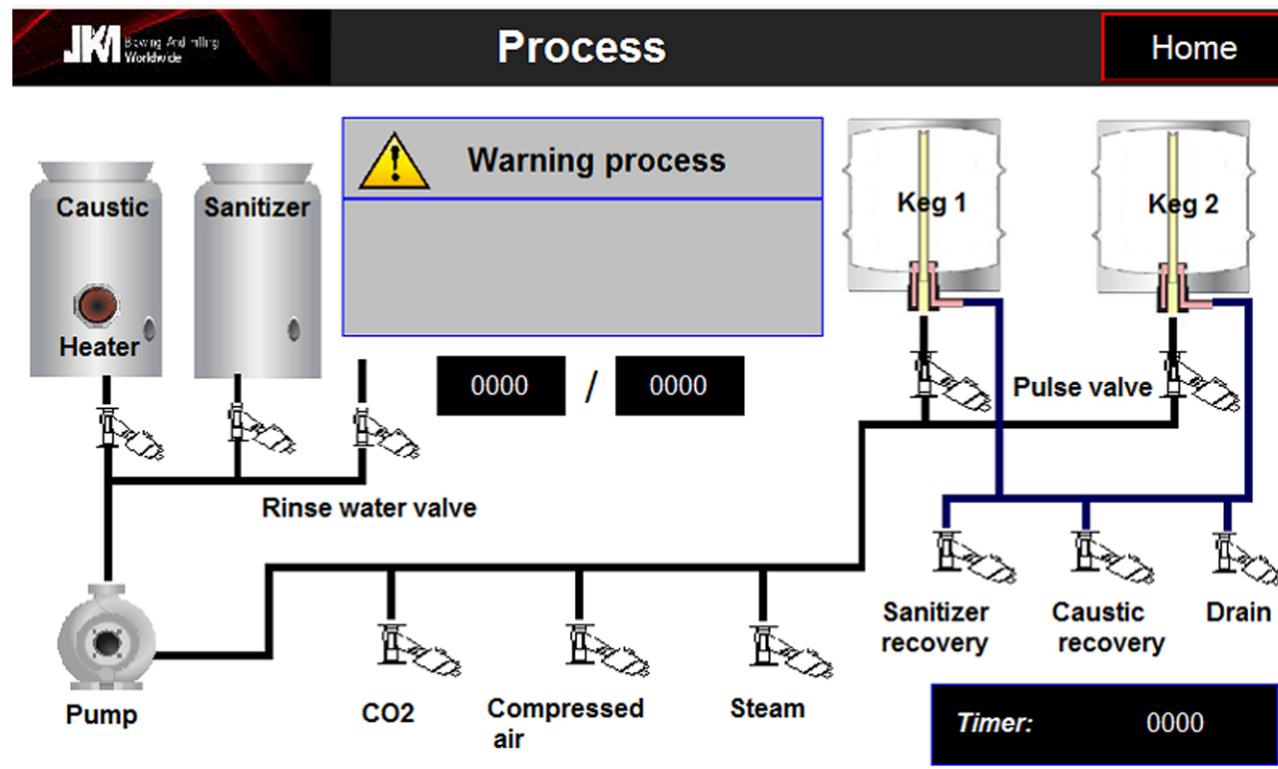
The keg washer will display the welcome screen after pressing two button at the same time.
Touch screen is used to monitor equipment operation state and set the parameters.



Manual screen

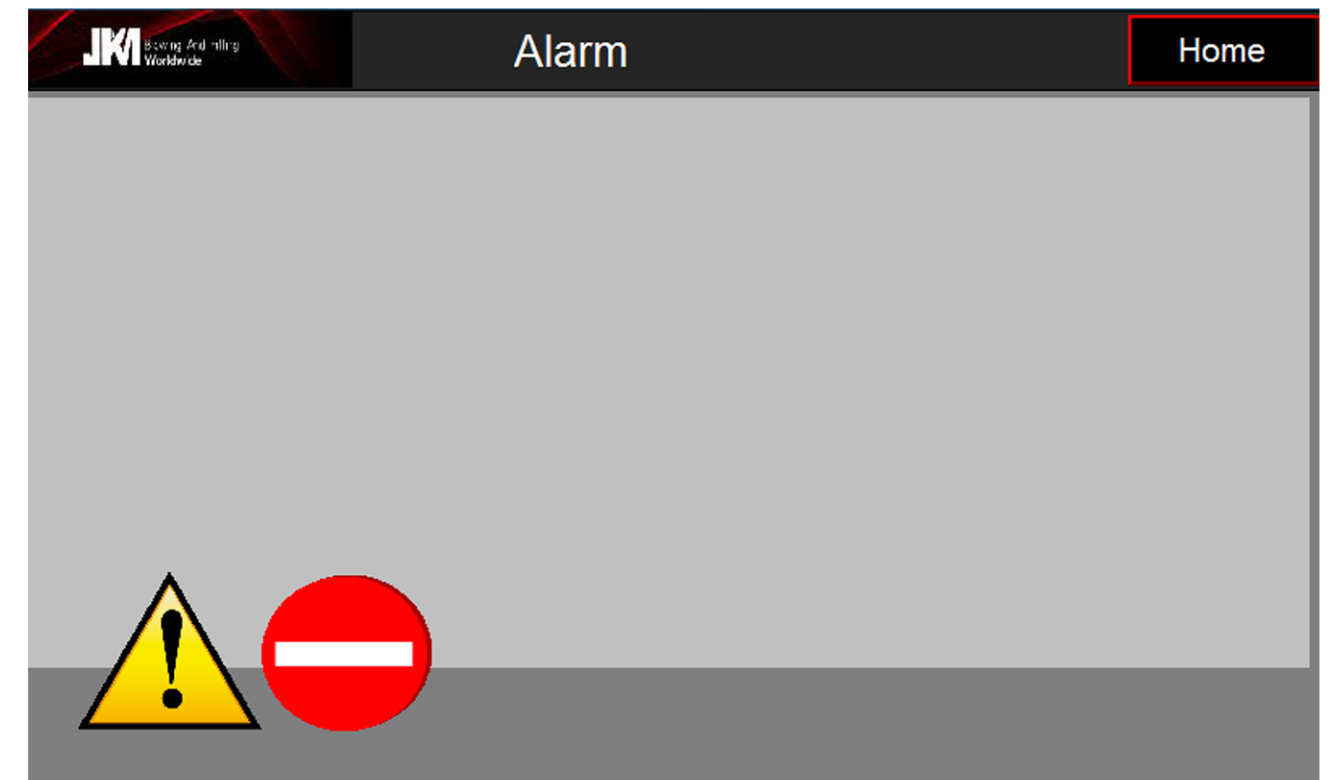
The operator can test pump or valve or cylinder in this screen by touch the RUN button

Process screen



The operator can see all parts of the machine in this screen, when you touch the start button on the stainless surface, The program begin to run, you can see the lights of the parts will turn on. It' s means this parts is working.

Alarm screen



The operator can see the alarm information in this screen when the machine running

The I/O monitor screen

Inputs/Outputs							Home
No.	Item	State No.	Item	State No.	Item	State	
I0.0	Start button	<input type="checkbox"/>	Q0.0 Pump	<input type="checkbox"/>	Q8.0 Steam valve	<input type="checkbox"/>	
I0.1	Pause button	<input type="checkbox"/>	Q0.1 Heater	<input type="checkbox"/>	Q8.1 Caustic valve	<input type="checkbox"/>	
I0.2	Emergency stop button	<input type="checkbox"/>	Q0.2 Caustic recovery valve	<input type="checkbox"/>	Q8.2 Sanitizer valve	<input type="checkbox"/>	
I0.3	Heating switch	<input type="checkbox"/>	Q0.3 CO2 valve	<input type="checkbox"/>	Q8.3 Pulse valve	<input type="checkbox"/>	
I0.4	Caustic tank level	<input type="checkbox"/>	Q0.4 Compressed air valve	<input type="checkbox"/>	Q8.4 Sanitizer recovery valve	<input type="checkbox"/>	
I0.5	Sanitizer tank level	<input type="checkbox"/>	Q0.5 Rinse water valve	<input type="checkbox"/>	Q8.5 Drain valve	<input type="checkbox"/>	
I0.6	Pressure sensor	<input type="checkbox"/>	Q0.6 SP	<input type="checkbox"/>	Q8.6 Start button light	<input type="checkbox"/>	
I0.7	Temperature sensor	<input type="checkbox"/>	Q0.7 SP	<input type="checkbox"/>	Q8.7 NO.2 pulse valve	<input type="checkbox"/>	

This picture is used to monitor the various components or instrument at present state of the signal
Such as machine external components damaged, can be checked by the interface.

Setting screen

Setting 50L					Keg size	Home
No.	Washing Station Time Setting	Time	Unit			
1	Blow out residual beer	000.0	sec	Factory setting		
2	Clean water rinse	000.0	sec			
3	Clean water discharge	000.0	sec	Save		
4	Caustic pulse washing	000.0	sec			
5	Caustic recovery	000.0	sec			
6	Clean water rinse	000.0	sec			
7	Clean water discharge	000.0	sec			
8	Sanitizer pulse washing	000.0	sec			
9	First sanitizer recovery	000.0	sec			
10	Second sanitizer recovery	000.0	sec			
11	Steam purge to drain	000.0	sec			
12	Steam holding	000.0	sec			
13	CO2 purge to drain	000.0	sec			
14	CO2 pressure fill	Auto	sec			

In this picture, the customer types according to their own keg, choosing the appropriate cleaning program, press the corresponding button, You choose the bucket will be off. Click the time setting, can be revised based on the default time, we provide open parameter setting function, convenient to customers according to their own actual situation to adjust.

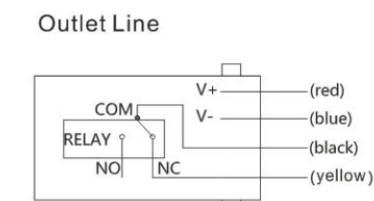
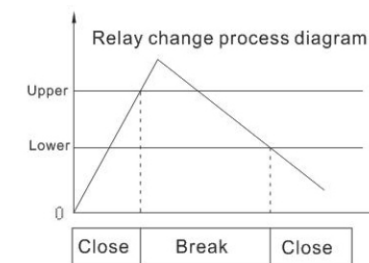
Faults

Fault description	Cause	Solution
No water supply from Water Pump	■The water pump's gasket does not well.	■The gasket is of wearing parts, replace it in time.
	■The water pump long time doesn't use.	■First clean the pump with water, then pour out the water from water pump and pipes in time in order to avoid frost cleft water pump head, valves and pipes.
Compressed air	■No compressed air, the pulse valves do not open.	■Check that air pressure is at 0.4-0.6 Mpa.
Water leakage out from distributor during working.	■Location at the wrong position.	■Rotate keg and put the keg right position.
	■Seal ring damage.	■Put the seal ring on rabbet again, or replace it with new one.
The PLC power broken while running.	■PLC voltage over the scope of work.	■Check the power.
	■Short circuit.	■Check the wire lines.
Light bar does not light.	■The light may be burned.	■Replace new one.
Leaving residue in the keg after cleaning.	■Discharge time is too short.	■Check the sterile compressed air to 0.2-0.3 Mpa.
	■Spear damage.	■Replace the new one.
The water in each tank reduce or overflow.	■The washing time is not right.	■Factory reset.
The hose shaking.	■A type spear sometimes often happen this situation rather other spear.	■Reset the sterile compressed air pressure at 0.15-0.2 Mpa.
Using time of caustic and sanitizer.	■1.5-2% caustic. ■FDA sanitizer.	■Suggest every day change twice.

Pressure controller



2.CONNECTION METHOD



Working Method: When the pressure increases to the set upper limit of pressure, the black and white lines are disconnected; when the pressure decreases to the lower limit pressure, the black and white lines are connected.

Reverse control function(t000) can be opened in system function to achieve: high pressure to start, low pressure to stop.

1.SPECIFICATION

Pressure Range	0~0.6...1...1.6...2.5...4...6...10...16...25...40...60Mpa
Overload Pressure	150%
Acc.	0.5%FS
Supply	24VDC, 220VAC, 380VAC (Selectable)
Alarm Point Set	Any point can be set within the range.
Output Signal	Relay signal
Load Capacity	380V 3A 220V 5A 24V 5A
Sampling Frequency	5 Times/sec
Operation Temperature	-20℃~80℃
Measurement Medium	Liquid, gas compatible with 316L stainless steel.
Connection Protection	Reverse protection, short-circuit protection
Connector	M20*1.5, G1/2, G1/4 (selectable)
Outlet Line	Power: red blue Output: black yellow

3.PRODUCT INSTALLATION AND SET

Installation	Use wrench to install.(Do not twist housing to install.)	
Connecting	Please follow the above wiring method to correct the wiring. please check the connection before the power.	
Set	Zero Clearing	After power, without pressure, close the 'run' key, long press '▼' key for 5 seconds to zero clearing.
	Units Change	Close 'run' key, short press '▲' key to change pressure unit circularly.
	Upper and lower limit setting	Close 'run' key, short press 'set' key, it shows lower limit pressure and the low pressure warning light comes on; press '▲' '▼' to change the figure(long press, the figure changes quickly), after setting, short press 'set' key to save setting. Then it shows upper limit and high pressure warning light comes on, press '▲' '▼' to change the figure(long press, the figure changes quickly), after setting, short press 'set' key to save setting and quit automatically. (if the lower limit can not reach to the figure you want, you can set upper limit firstly.)
	Run	After setting, short press 'run' key to open. (The 'run' key must be closed before setting)

Pressure controller

4.SYETEM FUNCTION

Close 'run' key, long press 'set' key for 3 seconds to enter to system set, then short press 'set' key, it will show the following functions modes. After setting the function, press 'run' key and it will save the setting automatically.

Notice: It means the function closed when it shows "001"; it means the function open when it shows "000". Factory default is all functions off.

Function Modes	Function Description	Purpose	Setting Method
H001/H000 Delay Control	H001:When pressure reach to action point, the controller will delayed act, not immediately. The delay time can be set.	Delay control will prevent the motor starting frequently because instability pressure of tube.	Press '▼' key to change 'H001' to 'H000', then the screen shows '0010' and it means the delay time is 10 seconds. Press '▲' '▼' to change the figure(the unit is second), then press 'set' key to save the setting and quit.
P001/P000 Parameter Protection	Function open: Press any key expect the 'run' key, the screen will shows '----'. At this time, it needs to input passwords to set upper and lower limit value.	It protect the upper and lower limit value from being revised arbitrarily.	When it shows '----', press '▲' key to input passwords, and press 'set' key to shift. Short press 'set' key after input '1111', the parameter can be set.
T001/T000 Reverse Control	Function open: it will be NO when the pressure low than lower limit; it will be NC when the pressure high than upper limit.	It will achieve the reverse control.	Press '▲' '▼' to open or close the function.
S001/S000 Pressure Detection Automatically	Function open: After relay NC, the controller will disconnect the relay automatically when there is no pressure for 3 minutes. The screen will show 'E--1'	It prevents the water pump idling because the pressure will not reach to the upper limit due to water shortage, pipe leakage.	When is shows 'E--1', pressure '▲' '▼' to open or close the function.
F001/F000 Water Shortage Protection	When the water pressure low than the set water shortage protection value, it will close the motor and shows 'E--F'	It prevents the water pump idling because the pressure will not reach to the upper limit due to water shortage, pipe leakage.	Change F001 to F000, Screen flicker and show the water shortage protection value, press '▲' '▼' to change the value.
L001/L000 Detection Time	In case of water shortage protection function, the water pressure does not reach to the water shortage protection value in the setting of the detection time, the relay will disconnect and show 'E--F'.	It prevents the water pump idling because the pressure will not reach to the upper limit due to water shortage, pipe leakage.	Default time is 20 seconds, then it enter to parameter. Press '▲' '▼' to change the parameter. When the water shortage protection closed, this function will close automatically.

*It must be careful for system setting, Wrong setting leads the product to abnormal operation and even destroy the product.

5.COMMON PROBLEM AND SOLUTION METHODS

NO.	Description	Cause	Solution
1	Reaching to set pressure, the motor does not work.	The wiring Error or the contactor damage	1.Check the wiring 2.Check AC contactor
2	Motor start frequently	numerical space of Upper and lower limit is too small	1.Change the upper and lower limit value 2.Open delay control function 3.Increasing pressure tank, buffer pressure
3	Showing '----'	Passwords protection function is opened.	Input '1111', then change the parameter.
4	Showing 'E--F'	Water shortage protection function is opened.	Press 'run' key to restore. Or change the water shortage protection value.
5	Showing 'E--E'	The circuit of sensor or controller is damage.	Product scrap or factory repair.
6	Showing 'E--1'	Pressure detection Automatically is opened.	Pressure any key to back to operation.
7	Showing 'E--H'	The pressure is higher than the range, sensor destroyed.	Reduce the pressure or chose a more lager range controller.