PC200 MAX

Progressive Cavity Valve Controller Operating Manual

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OVERVIEW

Model PC200 Valve Controller

The PC200 MAX is a valve controller suitable for use with all Posipump™ PC1 and PC2 series progressive cavity valves.

The graphic user interface (GUI) provides simple touch-screen programming and operation for both one and two component dispense applications.

The 4" HMI display allows all dispense parameters to be independently programmed on one single screen.

An integral pressure regulator and digital pressure gauge ensure easy system installation.

Five Operation Modes

Continuous mode – The dispense operation is manually controlled.

Teach mode – Allows the operator to calculate the correct dispense time needed.

Timed mode – Dispenses at a pre-set time for controlled, repeatable shot sizes.

Cycle mode – Allows the operator to create a repeating cycle of dispense actuations.

Sequence mode – Allows the user to create and run a sequence of programs one after the other.

16 programmable memory slots.

Adjustable air output pressure (0-100psi) with digital timer display (0.01 – 999.9 seconds).

Suitable for dispensing both low and high viscosity fluids.

Adjustable forward and reverse speed for precise fluid flow rate control.

Controllable suck-back delay dwell time prevents fluid dripping from the dispense tip, due to any generated back pressure within the dead fluid volume area.

User friendly touch-screen interface (GUI).

Cleaning routine for valve maintenance.

Durable aluminum housing designed for industrial work environments.

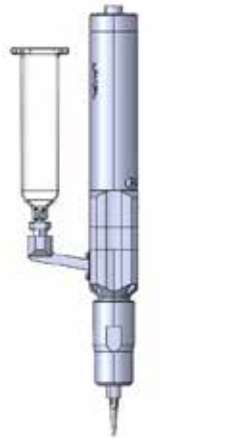
Auto-purge (anti-gel function).

Remote program select function.

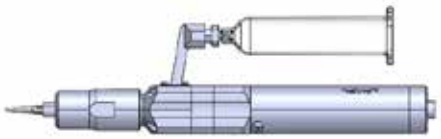
SAFETY

General Precautions

⚠	*Do not operate the machine in excess of its maximum ratings / settings.*
⚠	*Make sure that the input air supply is clean and dry. A 5 micron air filter/regulator (item number 560567) is recommended to ensure the input air supply is clean and dry.*
⚠	*The fluid being dispensed may be toxic and / or hazardous. Refer to the Material Safety Data Sheet for proper handling and safety precautions.*
⚠	*Do not smoke or use near an open flame when flammable materials are being dispensed.*
⚠	*Do not expose the machine directly to sunlight.*
⚠	*Avoid cleaning the machine with aggressive solvents – neutral detergents are preferred.*
⚠	*When using a syringe barrel or cartridge as the fluid supply device to the valve, please ensure it is positioned in an upright position. This will prevent fluids from flowing back into the machine – refer to figures A, B & C below.*



A



B

C

PC200 MAX Malfunction

⚠	*If the machine malfunctions, shut down the machine immediately. This can be done by either pushing the power switch at the back of the unit into the off position or disconnecting the power cord.*
⚠	*When possible always use a piston with the syringe barrel to prevent fluids from flowing back into the machine*

SAFETY

Inappropriate Use

If the machine is used in a way other than described in this manual, it may cause damage to self or property.

⚠	***Do not use any components with the machine other than Fluid Research authorized components.***
⚠	***Do not use incompatible materials.***
⚠	***Do not make any modifications to the machine. All repairs are to be done using Fluid Research specified spare parts.***
⚠	***Do not operate the machine in excess of its maximum ratings / settings.***

Fire Prevention

Refer to the following instructions to avoid any fire or explosion.

⚠	***Assess your surroundings and the location of the nearest fire extinguisher and Emergency Exit.***
⚠	***Do not smoke or use near an open flame when flammable materials are being dispensed.***
⚠	***Immediately disconnect power if any sparking or smoke appears.***
⚠	***Do not expose the machine directly to sunlight.***

Maintenance

The PC200 MAX is generally a maintenance free machine. However, to ensure smooth operation please follow the below instructions.

⚠	***Only use non-woven cleaners on the machine.***
⚠	***Avoid cleaning the machine with aggressive solvents – neutral detergents are preferred.***
⚠	***Ensure that compressed air supply to the machine is clean and moisture free.***
⚠	***When using a syringe barrel or cartridge as the fluid supply device to the valve, please ensure it is positioned in an upright position.***

SPECIFICATIONS

Dimensions (W x D x H):	10.79 x 6.02 x 4.17” (274 x 153 x 106 mm)
Weight:	3.35 lbs (1.52 kg)
Voltage	100 – 240 VAC, 50 / 60 Hz
I/O	11 Digital inputs, 4 Digital outputs, 2 Analog inputs (0-10V) and RS232
Cycle Rate:	Up to 600 cycles / min
Relative Humidity:	20 – 90% (No Condensation)
Operating Temperature:	50 – 104°F (10 – 40°C)
Timer:	0.01 – 500 seconds
Air Input:	100 psi (7 bar) max
Air Output:	1 – 100 psi (0.07 – 7 bar)
Standards:	CE Approved, RoHS Compliant

ACCESSORIES

Item Number	Description	Quantity
A23EMOT-EA10681V240	Power Adaptor (Input: 100–240 VAC / Output: 24 VDC)	1
5601888	Foot Pedal	1
560567	5-Micron Air Filter Regulator	1
561851	Air Inlet Hose Assembly	1
560746A	Straight 1/4" OD Push Connector x 1/4" NPT Male	2
560716	Nipple 1/4” NPT Male	1
560945	Street Tee 1/4” NPT Male x 1/4" NPT Female	1
51495K173	1/4” OD Push to Connect Air Plug	2
A10COT-D-SUB25M-25FR	25 Way D-Sub Male Connector Kit	1
A10D-TYPE9MHP2-9CASE	9 Way D-Sub Male Connector Kit	1

Note: Valve Connecting Cable (part # PC1-CABLE) for connecting Posipump PC1 and PC2 series progressive cavity vales to PC200 MAX controller is purchased separately.

EXTERNAL CONTROLS

FIG. 1: External Controls - Overview

Item	Illustration	Item	Illustration	Item	Illustration
1	Touchscreen Display	8	Low Level 1 Connector	15	I/O Connector
2	Pressure Regulator 1	9	Low Level 2 Connector	16	RS232 Connector
3	Pressure Regulator 2	10	Pump 1 Connector	17	Grounding Point
4	Shot Button	11	Pump 2 Connector	18	Air Outlet Port 1
5	Foot Switch Connector	12	Power On/Off Switch	19	Air Outlet Port 2
6	Fluid Pressure 1 Connector	13	Fuse	20	Air Inlet Port
7	Fluid Pressure 2 Connector	14	Power Input Connector		

EXTERNAL CONTROLS - FRONT

FIG. 2: External Controls – Front

1.	**Touchscreen Display**	Provides the user with a complete overview of the dispense program parameters. Is also used for selecting the dispense program number and adjusting/setting the dispense parameters of how the connected valve will operate. For further information on the user interface, please refer to Touchscreen display controls.
2.	**Pressure Regulator 1**	Adjusts the amount of pressure being supplied to the air outlet port 1. In order to reach the desired pressure, pull the knob outwards to unlock it, so it will rotate freely. (This is confirmed by an orange colored collar visible behind the knob.) Turn the knob counterclockwise to a point below the required pressure, and then turn the knob clockwise to reach the required pressure. The set pressure is displayed on the touchscreen display.
3.	**Pressure Regulator 2**	Adjusts the amount of pressure being supplied to the air outlet port 2. In order to reach the desired pressure, pull the knob outwards to unlock it, so it will rotate freely. (This is confirmed by an orange colored collar visible behind the knob.) Turn the knob counterclockwise to a point below the required pressure, and then turn the knob clockwise to reach the required pressure. The set pressure is displayed on the touchscreen display.
4.	**Shot Button**	Used to initiate a dispense cycle and dispense fluid from the connected valve(s). Note:- If two valves are connected they will be actuated at the same time.

EXTERNAL CONTROLS - BACK

FIG. 3: External Controls - Back

5.	**Foot Switch Connector**	Used for connecting to an external device (e.g. Fisnar dispense robot) that will send the dispense start signal to the machine. Note:- If two valves are connected they will be actuated at the same time.
6.	**Fluid Pressure 1 Connector**	The connecting cable (PC1-CABLE-M12-M12) of the fluid pressure monitor kit (PC1-PM-KIT) is connected here. PC1-PM-KIT (sold separately)
7.	**Fluid Pressure 2 Connector**	The connecting cable (PC1-CABLE-M12-M12) of the fluid pressure monitor kit (PC1-PM-KIT) is connected here. PC1-PM-KIT (sold separately)
8.	**Low Level 1 Connector**	The low-level sensor connecting cable is connected here. PC1-CABLE-M8-M12 or PC1-CABLE-M8-M12 (sold separately)
9.	**Low Level 2 Connector**	The low-level sensor connecting cable is connected here. PC1-CABLE-M8-M12 or PC1-CABLE-M8-M12 (sold separately)

EXTERNAL CONTROLS - BACK		
10.	**Pump 1 Connector**	The valve connecting cable (part # PC1-CABLE) is connected here. PosiPump™ PC1 series valve or PosiPump™ PC2 series valve (Resin (A) motor) is to be connected here.
11.	**Pump 2 Connector**	The valve connecting cable (part # PC1-CABLE) is connected here. PosiPump™ PC1 series valve or PosiPump™ PC2 series valve (Hardener (B) motor) is to be connected here.
12.	**On / Off Switch**	Used to switch the machine on or off.
13.	**Fuse Holder**	A 1 Amp fuse is installed to prevent external power surge damaging machine.
14.	**Power Input Connector**	The Power input cable from the external power supply is connected here.
15.	**I/O Connector**	The external machine I/O input signals and output signals are connected here.
16.	**RS232 Connector**	Used for external data communication / programming of dispense parameters.
17.	**Grounding Point**	A wire from an external earth ground source within the workplace environment can be connected here to ensure the machine is permanently and safely grounded.
18.	**Air Out Port 1**	¼" O.D. Tubing is connected here to allow the safe pressurization of the connected fluid feed system (e.g. syringe barrel, cartridge, etc.) The regulated compressed air set by pressure regulator 1 on the machine will exit from this outlet.
19.	**Air Out Port 2**	¼" O.D. Tubing is connected here to allow the safe pressurization of the connected fluid feed system (e.g. syringe barrel, cartridge, etc.) The regulated compressed air set by pressure regulator 2 on the machine will exit from this outlet.
20.	**Air Inlet Port**	External Compressed air 70-100 psi (5-7 bar) is to be connected here.

Touchscreen Display Controls – Home Screen

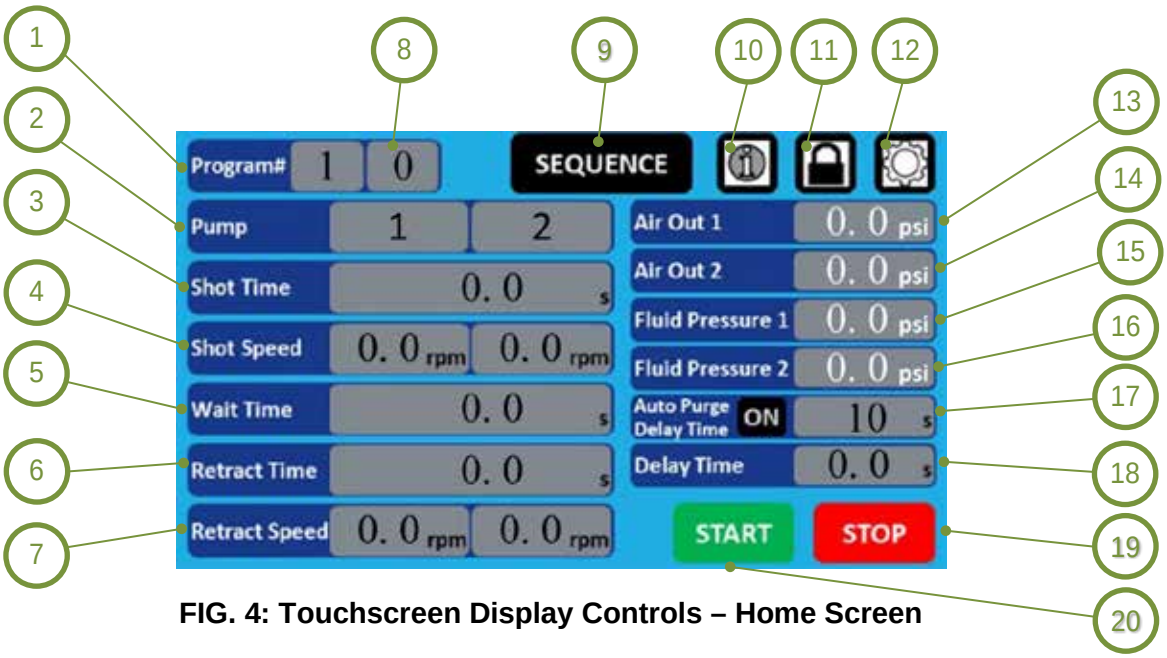


FIG. 4: Touchscreen Display Controls – Home Screen

1.	**Program No.**	Used to select and displays the selected program number and all dispense parameters saved within the program. When the machine is cycled, the connected valve will operate according to the parameters displayed within the selected program number.
2.	**Pump**	The background color confirms the status of the connected valve. Gray = Posipump™ valve is disconnected Yellow = Posipump™ valve is connected and in idle / ready condition Green = Posipump™ valve is running / dispensing fluid material Red = = Posipump™ valve has error / abnormal signal
3.	**Shot Time**	Used to set and display the time period (seconds) that the connected valve will dispense fluid for, when a dispense cycle is initiated.
4.	**Shot Speed**	Used to set and display the speed (rpm) that the connected valve will operate at, when a dispense cycle is initiated.
5.	**Wait Time**	Used to set and display the time period (seconds) that the connected valve will rest for after the completion of a dispensed shot, before it completes the retract cycle.
6.	**Retract Time**	Used to set and display the time period (seconds) that the connected valve will run in a reverse mode to retract fluid after the completion of a dispensed shot.

7.	**Retract Speed**	Used to set and display the speed (rpm) that the connected valve will operate at, when carrying out the retract cycle.
8.	**Sequence Program Number**	Only displayed when SEQUENCE mode is active. Shows the program number that is currently being executed.
9.	**Mode**	Used to select the operation mode that the machine / displayed dispense program is operating in. **Continuous mode** – The dispense operation is manually controlled. **Teach mode** – Allows the operator to calculate the correct dispense time needed. **Timed mode** – Dispenses at a pre-set time for controlled, repeatable shot sizes. **Cycle mode** – Allows the operator to create a repeating cycle of dispense actuations. **Sequence mode** – Allows the user to create and run a sequence of programs one after the other.
10.	**Information Button**	Used to access the Machine information screen
11.	**Operator Lockout**	Used to lock all dispense program parameter settings and access to the Machine setting screen. **The default password is 1111**
12.	**Settings Button**	Used to access the Machine setting screen
13.	**Air Out 1**	Displays the pressure value that has been set by “Pressure regulator 1” and is constantly exiting from “Air Out Port 1”.

14.	**Air Out 2**	Displays the pressure value that has been set by “Pressure regulator 2” and is constantly exiting from “Air Out Port 2”.
15.	**Fluid Pressure 1**	Displays the pressure value of the fluid pressure sensor connected to the “Fluid Pressure 1” connector port.
16.	**Fluid Pressure 2**	Displays the pressure value of the fluid pressure sensor connected to the “Fluid Pressure 2” connector port.
17.	**Auto Purge Delay Time**	Displays the time period (seconds) remaining, before the machine carries out the Auto-Purge dispensing cycle.
18.	**Delay Time**	When the machine is in “CYCLE” or “SEQUENCE” mode, the time period (seconds) remaining that the connected valve will rest for, before it completes the next dispense cycle automatically will be shown here.
19.	**Start Button**	Can be used to initiate a dispense cycle and dispense fluid from the connected valve(s). Note:- If two valves are connected they will be actuated at the same time.
20.	**Stop Button**	Can be used to stop a dispense cycle and dispensing of fluid from the connected valve(s). Note:- If two valves are connected they will be stopped at the same time.

NOTE:
If the background color of a displayed parameter value cell is white, it confirms that this value can be adjusted.

If the background color of a displayed parameter value cell is gray, it confirms that this value cannot be adjusted.

Touchscreen Display Controls – Machine Settings

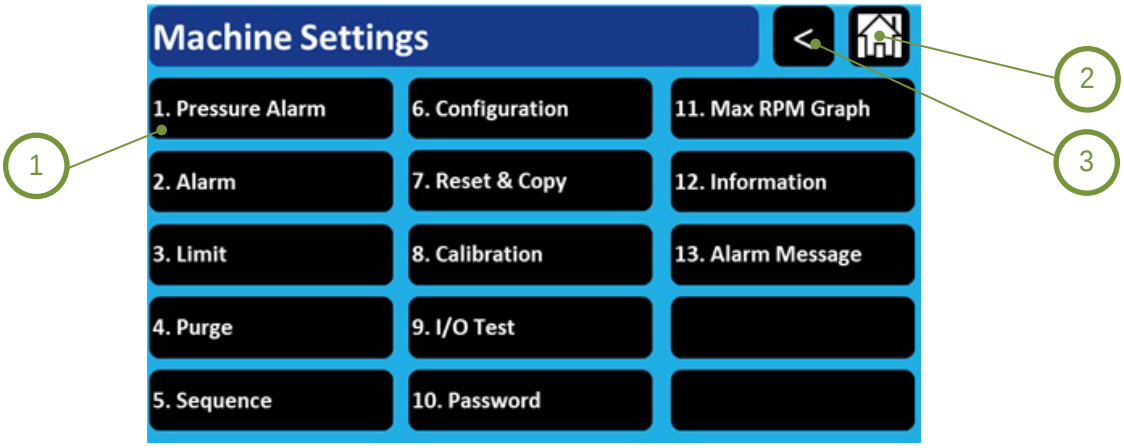


FIG. 5: Touchscreen Display Controls – Machine Settings

1.	**Machine Setting Pages**	When pushed, takes the user to the selected menu setting page
2.	**Escape**	When pushed, takes the user backwards to the previous screen
4.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 1. Pressure Alarm

FIG. 5:- Machine Settings – Pressure Alarm

1.	**ON / OFF**	Selects whether the corresponding Alarm function is switched on (enabled), or switched off (disabled).
2.	**Tolerance**	Sets the accepted tolerance as a percentage (%) value that the pressure can be allowed to deviate from the set pressure value, before the alarm signal will be activated.
3.	**Pressure**	Sets the required target / mid-point pressure value that the user wants to monitor.
4.	**Back**	When pushed, takes the user backwards to the previous screen.
5.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 2. Alarm

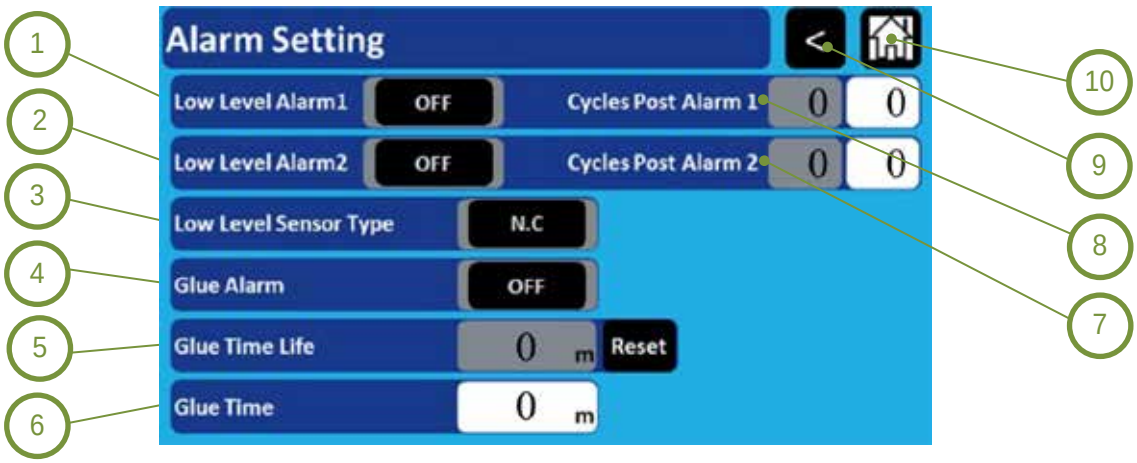


FIG. 5:- Machine Settings – Alarm

1.	**Low Level Alarm 1**	Selects whether the low level alarm being detected from the “low level connector port 1” is switched on (enabled), or switched off (disabled).
2.	**Low Level Alarm 1**	Selects whether the low level alarm being detected from the “low level connector port 2” is switched on (enabled), or switched off (disabled).
3.	**Low Level Sensor Type**	Used to set whether the low level sensor connected to the “low level connector port 1” and/or “low level connector port 2” is a N.O (normally open) or N.C (normal closed) contact.
4.	**Glue Alarm**	Selects whether the glue alarm function is switched on (enabled), or switched off (disabled). This function allows the user to set a timer that will trigger a visual and audible alarm to indicate when the fluid material is either no longer useable, or its optimal working life has been reached. This functionality is particularly useful for sensitive (moisture, temperature, light, etc.) or multi-component materials which have strict pot-life or working life dispensing requirements.

5.	**Glue Time Life**	Displays the time left before the glue alarm is activated. The glue time can be reset back to the original set value by pressing the “reset” button on the display screen..
6.	**Glue Time**	Used to set the glue time value in minutes “m”, that the machine will begin counting down from when activated. When the value reaches zero, a visual and audible alarm will be emitted and it will not be possible to actuate a dispense cycle, until the glue time has been reset.
7.	**Cycles Post Alarm 1**	Used to set the number of dispense actuations that will be allowed to occur after the “low-level alarm 1” has been activated. When the set number is reached, it will not be possible to actuate a dispense cycle, until the low-level sensor alarm has been disabled.
8.	**Cycles Post Alarm 2**	Used to set the number of dispense actuations that will be allowed to occur after the “low-level alarm 2” has been activated. When the set number is reached, it will not be possible to actuate a dispense cycle, until the low-level sensor alarm has been disabled.
9.	**Back**	When pushed, takes the user backwards to the previous screen.
10.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 3. Limit

FIG. 5:- Machine Settings – Limit

1.	**Pump 1 Run Time**	Displays the total number of minutes that the valve connected to the “Pump 1” connector port has been cycled for. The value can be rest to zero (0) by pushing the reset button adjacent to the display value cell.
2.	**MAX. Pump 1 Run Time**	Used to switch on or off and set the maximum time that the valve connected to the “Pump 1” connector port will be allowed to cycle for. When the set time is reached, a visual and audible alarm will be activated and it will not be possible to actuate a dispense cycle, until the “Pump 1 Run Time” is reset to zero (0).
3.	**Pump 2 Run Time**	Displays the total number of minutes that the valve connected to the “Pump 2” connector port has been cycled for. The value can be rest to zero (0) by pushing the reset button adjacent to the display value cell.

4.	**MAX. Pump 2 Run Time**	Used to switch on or off and set the maximum time that the valve connected to the “Pump 2” connector port will be allowed to cycle for. When the set time is reached, a visual and audible alarm will be activated and it will not be possible to actuate a dispense cycle, until the “Pump 2 Run Time” is reset to zero (0).
5.	**Dispense Count**	Displays the total number of dispense cycles that the valve(s) connected to the “Pump 1” connector port and “Pump 2” connector port have completed. The value(s) can be reset to zero (0) by pushing the reset button adjacent to the display value cell.
6.	**Dispense Count Limit**	Sets the total number of dispense cycles that the machine is able to complete. A visual and audible alarm will trigger once the Dispense Limit has been reached preventing the machine from being actuated further until the “Dispense Count” has been reset
7.	**Back**	When pushed, takes the user backwards to the previous screen.
8.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 4. Purge

FIG. 5:- Machine Settings – Purge

1.	**Purge Time**	Used to set and display the time period (seconds) that the connected valve will dispense fluid for, when the “START”, “START 1” or “START 2” button displayed on the screen is pressed and the “Mode” has been set to “Timed”.
2.	**Purge Speed**	Used to set and display the speed (rpm) that the connected valve will operate at, when the “START”, “START 1” or “START 2” button displayed on the screen is pressed. The value can be adjusted and set up to a maximum speed of 150 rpm. For optimal dispense results and to maximize valve service life it is recommended to set the speed no greater than 50% of the maximum speed.
3.	**Mode**	Sets how the machine will function when the “START”, “START 1” or “START 2” button displayed on the screen is pressed. MANUAL:- Machine will actuate and dispense fluid continuously, until the “STOP”, “STOP 1” or “STOP 2” button displayed on the screen is pressed. TIMED:- Machine will actuate and dispense fluid from the connected valve(s) according to the value set in “Purge Time”.

4	**Auto Purge**	Selects whether the auto purge function is switched on (enabled), or switched off (disabled). This function allows the user to set an automatic dispense time in pre-defined intervals when the machine is idle. This functionality is particularly useful for sensitive (moisture, temperature, light, etc.) or multi-component (2K) materials which have strict pot-life or working life dispensing requirements. This prevents premature curing of material in the mixing nozzle or dispense tip.
5.	**Start 1**	Used to actuate the valve connected to the “Pump 1” connector port and dispense fluid.
6.	**Start 2**	Used to actuate the valve connected to the “Pump 2” connector port and dispense fluid.
7.	**Start**	Used to simultaneously actuate the valve connected to the “Pump 1” and “Pump 2” connector port and dispense fluid.
8.	**Stop**	Used to simultaneously stop the valve connected to the “Pump 1” and “Pump 2” connector port and stop dispensing fluid.
9.	**Stop 2**	Used to stop the valve connected to the “Pump 2” connector port and stop dispensing fluid.
10.	**Stop 1**	Used to stop the valve connected to the “Pump 1” connector port and stop dispensing fluid.
11.	**Auto Purge Shot Time**	Used to set and display the time period (seconds) that the connected valve will dispense fluid for when the Auto-Purge function is enabled and the Auto Purge Delay Time” reaches zero (0).
12.	**Auto Purge Delay Time**	Used to set the auto purge delay time value in seconds “s”, that the machine will begin counting down from when the dispense cycle has completed. Every time a dispense actuation cycle has been initiated the auto purge delay time will reset to the set value and begin counting down, once the dispense actuation cycle has completed.
13.	**Back**	When pushed, takes the user backwards to the previous screen.
14.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 5. Sequence

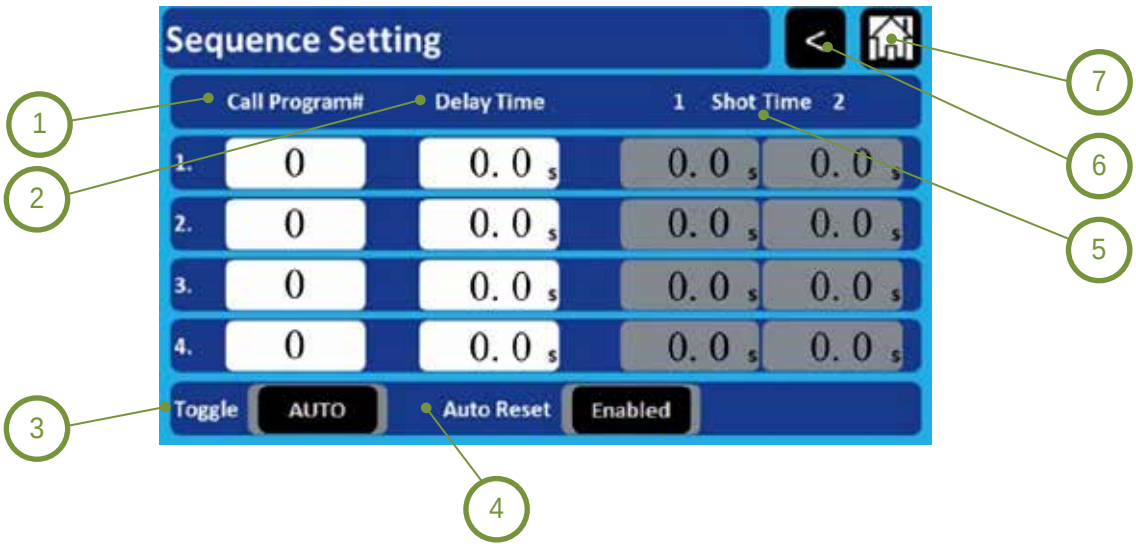


FIG. 5:- Machine Settings – Sequence

1.	**Cal Program#**	Used to select which program numbers are to be executed as part of the sequence mode. A maximum of four (4) programs can be selected.
2.	**Delay Time**	Used to set and display the time period (seconds) that the connected valve will rest for, before it progresses to the next program number and completes the next dispense cycle.
3.	**Toggle**	Sets how the machine will actuate when it progresses to the next program number. MANUAL:- The operator will need to actuate the dispense cycle. AUTO:- The machine will automatically actuate the dispense cycle.
4.	**Auto Reset**	Sets how the machine will behave once the dispense cycle in the last program has completed. Enabled:- The machine will automatically return back to the first program number in the sequence, and wait to receive dispense actuation signal to start sequence cycle. Disabled:- A visual and audible alarm will trigger preventing the machine from being actuated further until the “Sequence” has been reset by the operator. Once it has been reset the machine will return back to the first program number in the sequence.

5.	**Shot Time**	Displays the time period (seconds) from the selected program number that the connected valve will dispense fluid for, when a dispense cycle is initiated.
6.	**Back**	When pushed, takes the user backwards to the previous screen.
7.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 6. Configuration

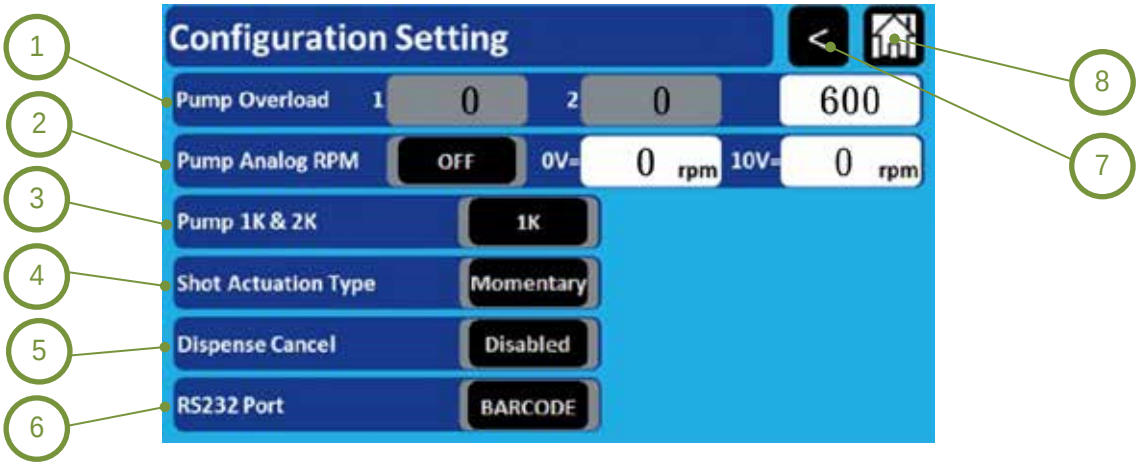


FIG. 5:- Machine Settings – Configuration

1.	**Pump Overload**	Sets a current overload value, which if exceeded during the dispense cycle, the connected valve will stop operating and an audible and visual alarm signal will be emitted. **WE RECOMMEND THE VALUE IS NOT SET ABOVE 600.** The overload value is typically exceeded if the rotor assembly requires excessive torque or is unable to rotate within the stator assembly of the connected valve. This is likely to be caused by a material blockage or curing of the material inside the valve or mixing nozzle.
2.	**Pump Analog RPM**	Selects whether the "Shot Speed" is controlled externally via an analog signal (ON) or internally according to parameter value set on the machine (OFF) When switched "ON" set a speed (rpm) value when a 0V signal is received and a speed (rpm) value when a 10V signal is received. The machine will then automatically create a linear scale (voltage (V) vs speed (rpm) based on the signal voltage that is received at any given time. Note:- It will not be possible to set the Shot Speed value on the machine when this function is switched "ON".

3.	**Pump 1K & 2K**	Sets the configuration of Pump 1 and Pump 2 dispense parameters based on the type of valve that has been connected to it. 1K:- To be used when one (1) or two (2) Posipump™ PC1 series valve(s) are connected to the “Pump 1” and/or “Pump 2” connector. 2K:- To be used when one (1) Posipump™ PC2 series valve is connected to the “Pump 1” and “Pump 2” connector
4.	**Shot Actuation Type**	Select if the dispense actuation signal will work as a momentary or latching type when the machine is set to CONTINUOUS mode. Momentary (Default):- The machine will actuate for as long as the dispense actuation signal is received. When the dispense actuation signal is not received the machine will stop actuating. Latching:- The machine will actuate for as long as the dispense actuation signal is received. When the dispense actuation signal is not received the machine will continue to actuate. When the next dispense actuation signal is received the machine will stop actuating.
5.	**Dispense Cancel**	Select if the dispense cycle can be cancelled before the end of the dispense cycle is reached or not. Enabled = The dispense cycle can be cancelled by sending another dispense actuation signal before the end of the dispense cycle is reached. Disabled = The dispense cycle cannot be cancelled.
6.	**RS232 Port**	Sets the configuration of the RS232 Port on the back of the machine is to be setup to allow a barcode scanner to be connected to the machine or to allow the machine to be programmed and controlled remotely using MODBUS communication protocol.
7.	**Back**	When pushed, takes the user backwards to the previous screen.
8.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 7. Reset & Copy

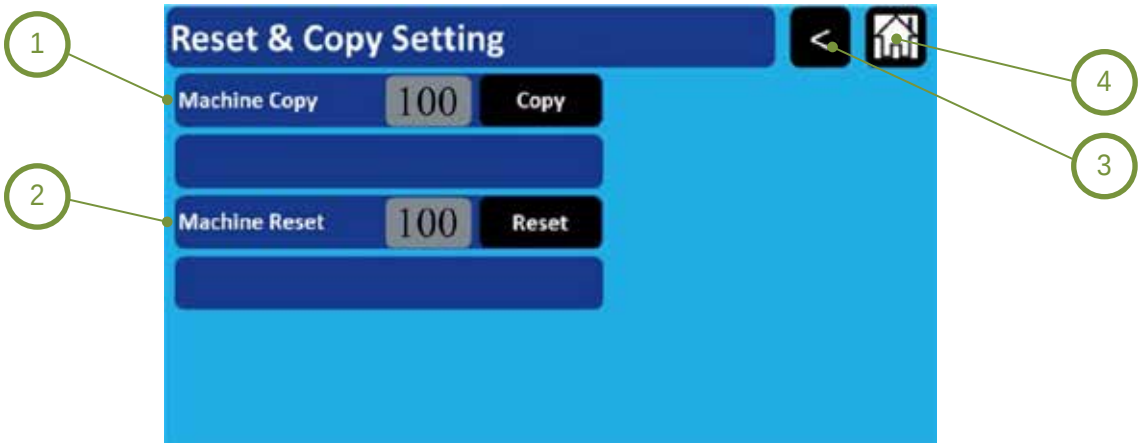


FIG. 5:- Machine Settings – Reset & Copy

1.	**Machine Copy**	Allows the user to copy all stored programs, settings, and parameters from one PC200 MAX controller to another. (Note:- The receiving machines programs, settings, and parameters will be overwritten) The function can only be used by the machine containing the stored programs, settings, and parameters that you want to transfer onto another machine. To execute the function, 1.) Install a straight parallel RS232 communication cable between the RS232 port on the back of the two machines. 2.) Ensure that the machine that the settings and parameters are to be copied onto is powered on and displaying the home screen. 3.) Press the “Copy” key on the display screen for 100 seconds.
2.	**Machine Reset**	Allows the user to reset the machine back to its factory default settings. Press the “Reset” key on the display screen for 100 seconds to execute the machine reset function.
3.	**Back**	When pushed, takes the user backwards to the previous screen.
4.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 8. Calibration

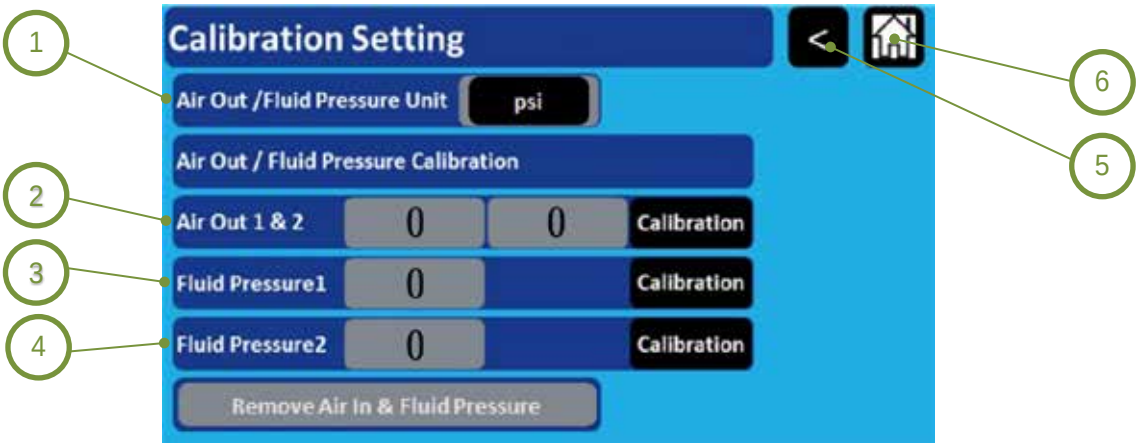


FIG. 5:- Machine Settings – Calibration

1.	**Air Out / Fluid Pressure Unit**	Sets the air out pressure and fluid pressure unit displayed on the machine. Select between psi, bar and kPa.
2.	**Air Out 1 & 2 Calibration**	Allows the user to calibrate the digital pressure gauge “Air Out 1” and “Air Out 2” displayed on the home screen to the atmospheric and environmental conditions where the machine is being used. Before executing the function ensure that the Main Air In hose has been removed from the back of the machine, To execute the function press the adjacent “Calibration” key on the display screen.
3.	**Fluid Pressure 1 Calibration**	Allows the user to calibrate the fluid pressure gauge “Fluid Pressure 1” displayed on the home screen to the atmospheric and environmental conditions where the machine is being used. Before executing the function ensure that the fluid material hose that the “fluid pressure sensor 1” is connected to has no residual pressure within it. To execute the function press the adjacent “Calibration” key on the display screen.

4.	**Fluid Pressure 2 Calibration**	Allows the user to calibrate the fluid pressure gauge “Fluid Pressure 2” displayed on the home screen to the atmospheric and environmental conditions where the machine is being used. Before executing the function ensure that the fluid material hose that the “fluid pressure sensor 2” is connected to has no residual pressure within it. To execute the function press the adjacent “Calibration” key on the display screen.
5.	**Back**	When pushed, takes the user backwards to the previous screen.
6.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 9. I/O Test

FIG. 5:- Machine Settings – I/O Test

Allows the user to test the input and output signals of the I/O connector, foot switch connector, shot low level connector, and shot button on the front panel of the machine.

I/O Connector digital input, Low Level Connector:- Is verified by the correlating key changing background color. (Gray = Signal not received / Inactive. Red = Signal received / Active)

I/O Connector analog input:- Is verified by the incoming voltage value being displayed in the correlating Analog display value cell.

I/O Connector digital output:- Is tested by pressing the correlating key. The background color will change based on its status. (Gray = Signal disabled (off). Red = Signal activated (on))

Shot Button:- Is tested by pressing the shot button on the front panel of the machine. The background color of the correlating key “Shot IN” on the screen will change color to red.

Foot Switch:- Is tested by pressing the foot switch or if it has been connected to a Fisnar robot by pushing the purge button on the robot. The background color of the correlating key “Foot IN” on the screen will change color to red.

1.	**Back**	When pushed, takes the user backwards to the previous screen.
2.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 10. Password

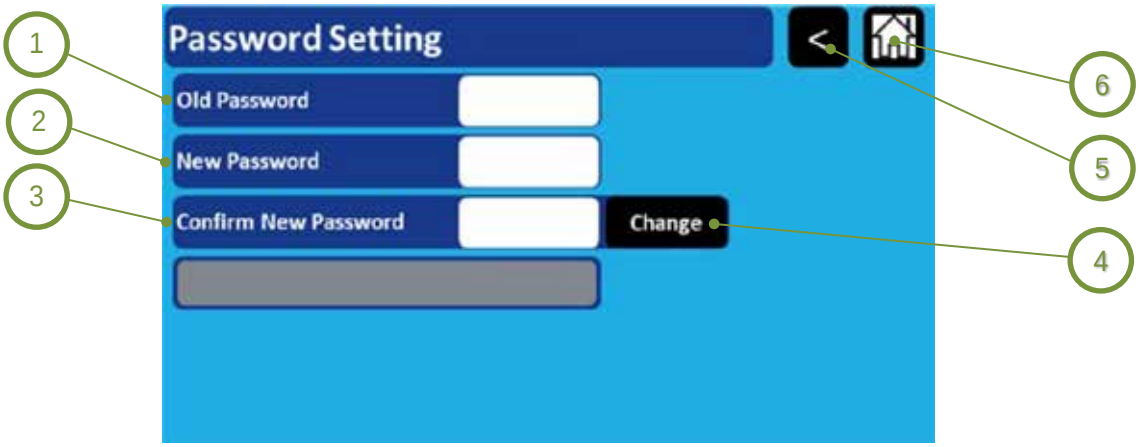


FIG. 5:- Machine Settings – Password

Allows the user to change the password that is used to enter into the machine setting menu or adjust dispense parameters on the home screen when the operator lockout function is activated.

To successfully change the password please follow the below procedure.

1.) Enter the current password being used in the value cell of “Old Password” (1)

2.) Enter the new password to be used in the value cell of “New Password” (2)

3.) Enter the new password to be used in the value cell of “Confirm New Password” (3)

4.) Press the “Change” key (4) on the display screen

5.	**Back**	When pushed, takes the user backwards to the previous screen.
6.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 11. Max RPM Graph

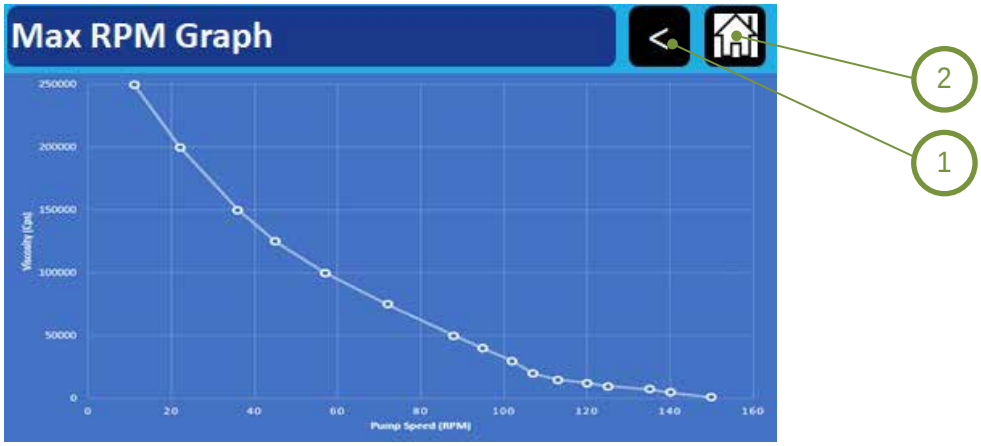


FIG. 5:- Machine Settings – Max RPM graph

To achieve the most repeatable dispense volume and to maximise the life of the stator assembly fitted in the connected Posipump™ PC1 or PC2 series progressive cavity valve, it is important that the motor speed (rpm) is not exceeded based on the viscosity of the fluid material being dispensed.

Please use the graph and table below as a reference for the maximum reccomended motor speed.

Viscosity	Max. Shot Speed
1 – 1,000 cP	150 rpm
1,000 – 10,000 cP	130 rpm
10,000 – 25,000 cP	100 rpm
25,000 – 50,000 cP	70 rpm
50,00 – 200,000 cP	40 rpm

4.	**Back**	When pushed, takes the user backwards to the previous screen.
5.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 12. Information

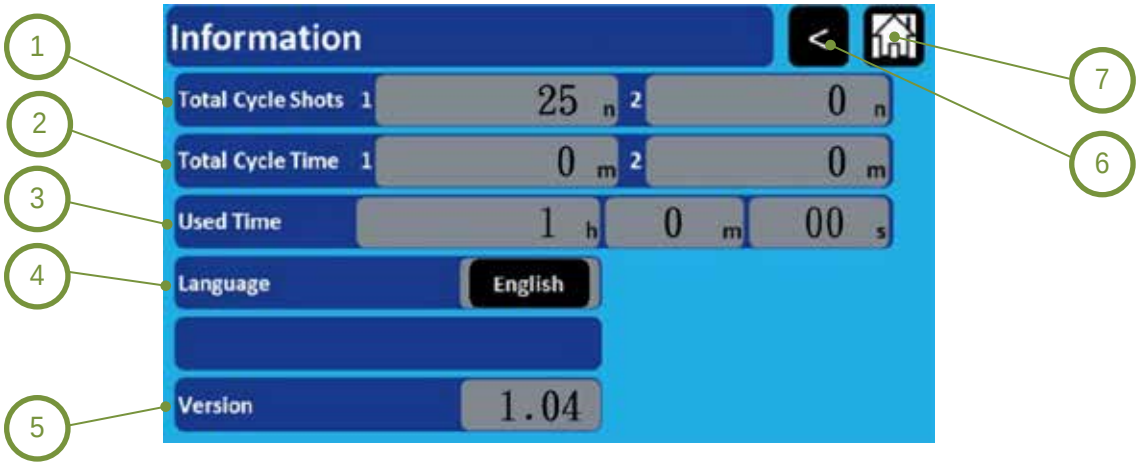


FIG. 5:- Machine Settings – Information

1.	**Total Cycle Shots**	Displays the total number of completed dispense cycles (n) made by connected valve. (The counter is not resettable.)
2.	**Total Cycle Time**	Displays the total cumulative time that the connected valve has been carrying out dispense cycles (n) for. (The timer is not resettable.)
3.	**Used Time**	Displays the cumulative lifetime hours that the machine has been powered on for. The timer starts counting as soon as the machine is turned ON. (The timer is not resettable.)
4.	**Language**	Set the language that will be displayed on the screen. The user can select between English and Mandarin Chinese.
5.	**Version**	Displays the software version installed on the machine
6.	**Back**	When pushed, takes the user backwards to the previous screen.
5.	**Home**	When pushed, goes back to Home Screen.

Machine Settings – 13. Alarm Message

FIG. 5:- Machine Settings – Alarm Message

1.	**Alarm Status**	The alarm status of each function is verified by the correlating key changing background color. (Gray = Alarm inactive (Off). Red = Alarm Active (on)) If any Alarm is active (on) it will not be possible to actuate a dispense cycle.
2.	**Clear / Reset**	Press the “Clear / Reset” key to reset all active alarms. Only when all alarms are inactive (off) will it be possible to actuate a dispense cycle. Note:- If an alarm signal is removed (e.g. low level alarm) it will still be necessary to press the “Clear / Reset” key to reset the alarm.
3.	**Back**	When pushed, takes the user backwards to the previous screen.
4.	**Home**	When pushed, goes back to Home Screen.

Note:- When an Alarm is activated while the user is on the home screen, The information symbol key will be replaced by an alarm signal key. If the alarm signal key is pressed it will take the user directly to the alarm message screen, where the alarm(s) can be reset.

Machine Settings – 14. Program Name

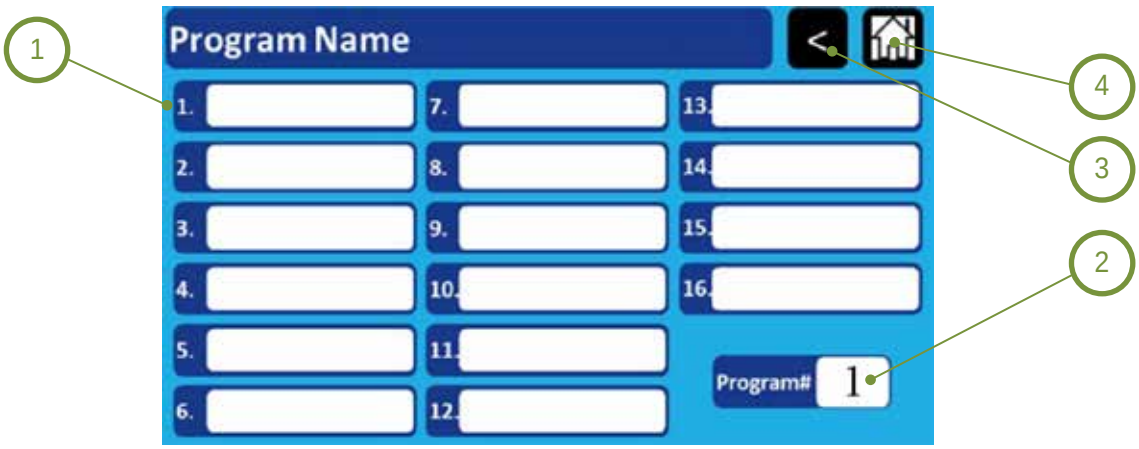


FIG. 5:- Machine Settings – Program Name

1.	**Program Name**	Allows the user to assign a specific name against each created program number.
2.	**Program Number**	Sets the program number dispense parameters that will be displayed on the home screen when the user navigates back to the home screen.
3.	**Back**	When pushed, takes the user backwards to the previous screen.
4.	**Home**	When pushed, goes back to Home Screen.

Touchscreen Display Controls – Keypad

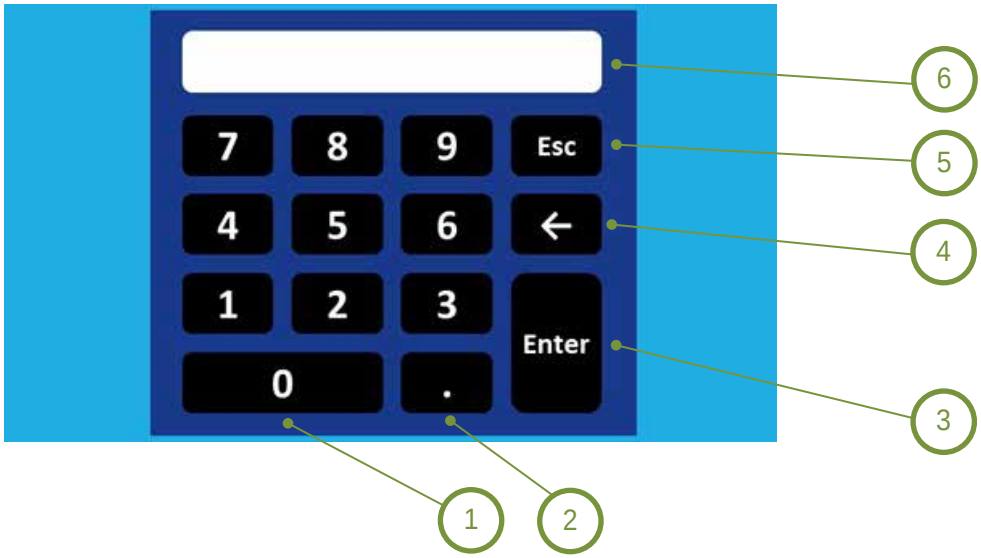


FIG. 5:- Touchscreen Display Controls - Keypad

1.	**Numerical Value Keys**	Numerical value input keys 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9.
2.	**.**	Decimal point input key
3.	**Enter**	Saves the value in the display screen and exits the keypad display screen.
4.	**Backspace**	Deletes the last entered numerical value in the display screen
5.	**Escape**	Exits the keypad display screen without saving.
6.	**Display**	Displays the set value.

Touchscreen Display Controls – Keyboard

FIG. 5:- Touchscreen Display Controls - Keyboard

1.	**Escape**	Exits the keypad display screen without saving.
2.	**Numerical Value Keys**	Numerical value and special character input keys.
3.	**Text Keys**	Lower- and upper-case text input keys.
4.	**Caps Lock**	Changes between lower- and upper-case text, and numerical values and special characters.
5.	**Enter**	Saves the value in the display screen and exits the keypad display screen.
6.	**Display**	Displays the set name.
7.	**Backspace**	Deletes the last entered numerical value in the display screen

MACHINE SET UP

FIG. 9: Machine Setup

1.	Attach the fluid feed system to the Posipump™ PC1 or PC2 series progressive cavity valve that is to be connected to the machine
2.	Connect air input hose from compressed air 70-100 psi (5-7 bar) to the air inlet port on the back of the machine. **DO NOT INITIATE COMPRESSED AIR SUPPLY INTO MACHINE** This step can be skipped if the pressure regulator / air output connector on the machine is NOT being used to pressurize the fluid material being supplied to the connected valve.
3.	Connect air output hose to device (e.g. syringe barrel adapter, cartridge retainer, etc.) being used to pressurize the fluid material. This step can be skipped if the pressure regulator / air output connector on the machine is NOT being used to pressurize the fluid material being supplied to the connected valve.

MACHINE SET UP	
4.	Connect one end of valve connecting cable(s) (part # PC1-CABLE) into the pump 1 / pump 2 connector on the back of the machine. When connecting the Posipump™ PC1 series progressive cavity valve to the machine it is recommended to connect valve connecting cable into pump 1 connector.
5.	Connect opposite end of valve connecting cable(s) (part # PC1-CABLE) into the connector port(s) on the top of the Posipump™ PC1 or PC2 series progressive cavity valve. When connecting the Posipump™ PC2 Series progressive cavity valve to the machine the following connection must be made, pump 1 connector = Resin (A) motor pump 2 connector = Hardener (B) motor
6.	Connect appropriate country type electrical power cord into the power input connector on the back of the machine.
7.	Use power on/off switch, to switch on machine
8.	Initiate compressed air supply being supplied to pressurize the fluid feed system. Follow one of the below steps depending on fluid feed system configuration used. A.) Adjust the fluid pressure accordingly using the pressure regulator on the machine. B.) Adjust the fluid pressure accordingly using the external pressure regulator that is controlling the fluid feed pressure to the connected valve. MAX PRESSURE = 100psi (6.9 Bar) The pressure should be set at the point where there is enough pressure to feed the fluid material into the fluid inlet port of the connected valve and to keep up with the set shot speed parameter that has been programmed into the machine.
9.	Use the shot button on the machine to purge the fluid material through the connected valve until there is a continuous steady material flow exiting from the dispense tip or mixing nozzle. The below dispense parameters can be set initially on the machine to assist in an efficient and quick purging process. Dispense Mode = CONTINUOUS Shot Time = 0.00 seconds Shot Speed = 30-60rpm
10.	Set the dispense parameters and dispense mode on the machine, of how the connected valve should operate for the required application process.
11.	The machine is now ready for production use.

DISPENSE MODES

1K Screen Layout – Posipump™ PC1 Series **2KScreen Layout – Posipump™ PC2 Series**

FIG. 10: Dispense Modes - Continuous

CONTINUOUS MODE

CONTINUOUS (manual) mode allows the dispense operation to be manually controlled.

A dispense signal is received to start dispensing. The subsequent dispense signal received, stops the dispensing.

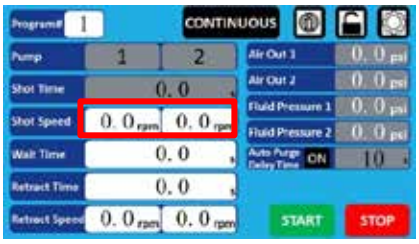
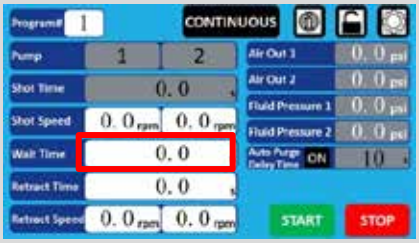
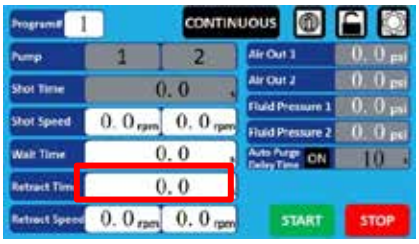
1.

Check that the “Operator Lockout” icon is in the unlocked condition.

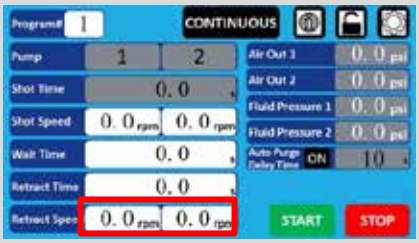
2.

Select the “Program Number” that you want to set and save the dispense parameter against.

DISPENSE MODES

3.	Press the SHOT SPEED value cell(s).   Use the buttons on the pop-up keypad display to enter the speed (rpm) that the pump motor(s) on the connected valve(s) will run at when dispensing.
4.	Press the WAIT TIME value cell(s).   Use the buttons on the pop-up keypad display to enter the wait time (seconds) that the pump motor(s) on the connected valve(s) will pause for before retracting. This step can be skipped if suck-back is not required for the purpose of the dispense application.
5.	Press the RETRACT TIME value cell(s).   Use the buttons on the pop-up keypad display to enter the time (seconds) that the pump motor(s) on the connected valve(s) will retract for to assist in preventing fluid from drooling from the dispense tip or mixing nozzle. Then press the “Enter” button on the keypad display to save the value and exit. This step can be skipped if suck-back is not required for the purpose of the dispense application.

DISPENSE MODES

6.	Press the RETRACT SPEED value cell(s).   Use the buttons on the pop-up keypad display to enter the speed (rpm) that the pump motor(s) on the connected valve(s) will run at when retracting. This step can be skipped if suck-back is not required for the purpose of the dispense application.
7.	If required press the “Operator Lockout” to put the machine in a locked condition.  
8.	If the shot actuation type has been set to “Momentary”, Press and hold the “SHOT” button to initiate a dispense cycle. If the shot actuation type has been set to “Latching”, press and release the “SHOT” button to initiate a dispense cycle.
9.	If the shot actuation type has been set to “Momentary”, release the “SHOT” button to stop the dispense cycle. If the shot actuation type has been set to “Latching”, press and release the “SHOT” button again to stop the dispense cycle.

DISPENSE MODES

1K Screen Layout – Posipump™ PC1 Series **2KScreen Layout – Posipump™ PC2 Series**

FIG. 10: Dispense Modes - Timed

TIMED MODE

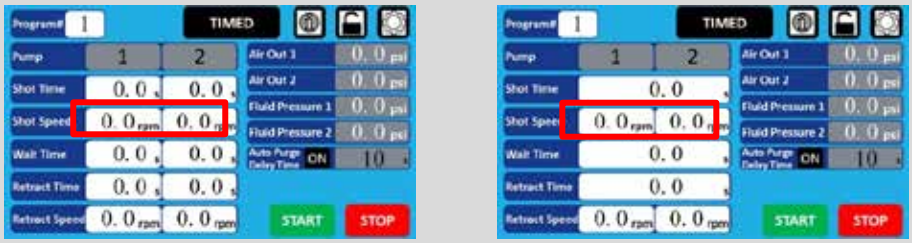
TIMED mode allows the dispense operation to dispense at a pre-set time for controlled, repeatable shot sizes

A dispense signal is received to start dispensing. Once the machine has completed the set shot time period, dispensing will automatically stop.

1. Check that the “Operator Lockout” icon is in the unlocked condition.

2. Select the “Program Number” that you want to set and save the dispense parameter against.

DISPENSE MODES

3.	Press the SHOT TIME value cell(s).  Use the buttons on the pop-up keypad display to enter the time (seconds) that the pump motor(s) on the connected valve(s) will dispense fluid material for.
4.	Press the SHOT SPEED value cell(s).  Use the buttons on the pop-up keypad display to enter the speed (rpm) that the pump motor(s) on the connected valve(s) will run at when dispensing.
5.	Press the WAIT TIME value cell(s).  Use the buttons on the pop-up keypad display to enter the wait time (seconds) that the pump motor(s) on the connected valve(s) will pause for before retracting. This step can be skipped if suck-back is not required for the purpose of the dispense application.

DISPENSE MODES

6.	Press the RETRACT TIME value cell(s).  Use the buttons on the pop-up keypad display to enter the time (seconds) that the pump motor(s) on the connected valve(s) will retract for to assist in preventing fluid from drooling from the dispense tip or mixing nozzle. Then press the “Enter” button on the keypad display to save the value and exit. This step can be skipped if suck-back is not required for the purpose of the dispense application.
7.	Press the RETRACT SPEED value cell(s).  Use the buttons on the pop-up keypad display to enter the speed (rpm) that the pump motor(s) on the connected valve(s) will run at when retracting. This step can be skipped if suck-back is not required for the purpose of the dispense application.
8.	If required press the “Operator Lockout” to put the machine in a locked condition. 
9.	Press and release the “SHOT” button to initiate the dispense cycle. Once the pre-set shot time value has been reached the dispense cycle will automatically stop.

DISPENSE MODES

1K Screen Layout – Posipump™ PC1 Series

2KScreen Layout – Posipump™ PC2 Series

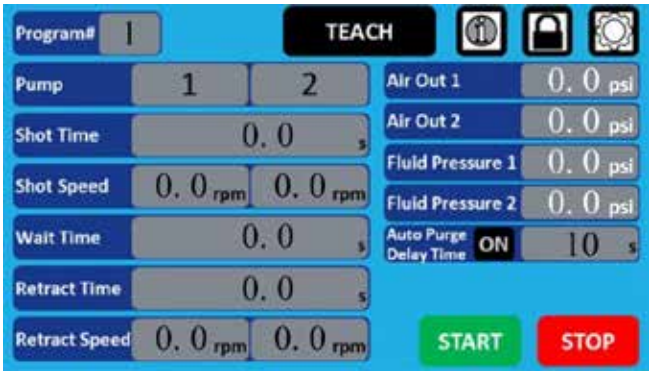


FIG. 10: Dispense Modes - Teach

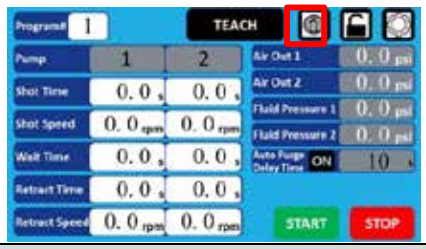
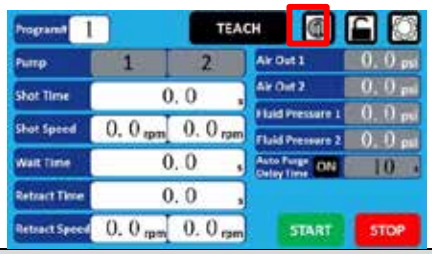
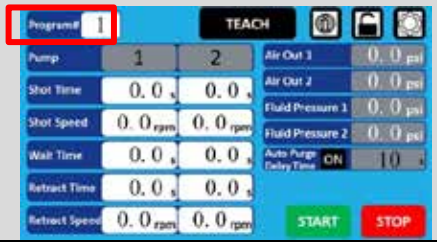
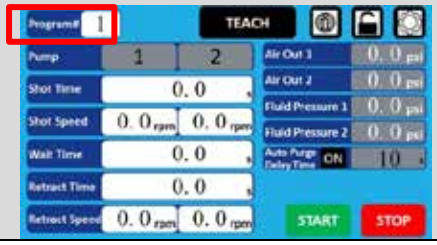
TEACH MODE

TEACH mode allows the operator to calculate the correct dispense time needed for the application process. This is useful when carrying out a potting process.

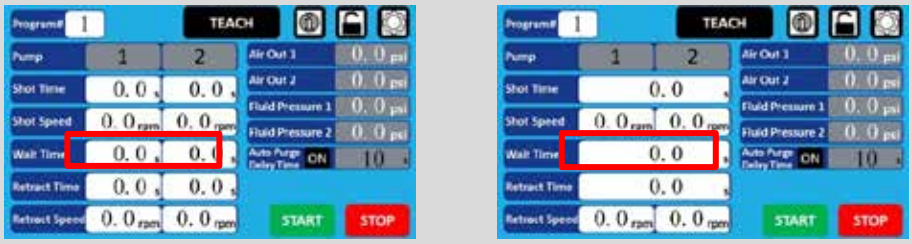
A dispense signal is received to start dispensing. The displayed SHOT TIME will increase cumulatively every time the machine is actuated.

The time shown on the screen will be the total cumulative time the machine has been actuated for.

Once the correct dispense time is obtained, press the mode button to change into TIMED or CYCLE mode in order to save the value.

1.	Check that the “Operator Lockout” icon is in the unlocked condition.  
2.	Select the “Program Number” that you want to set and save the dispense parameter against.  

DISPENSE MODES

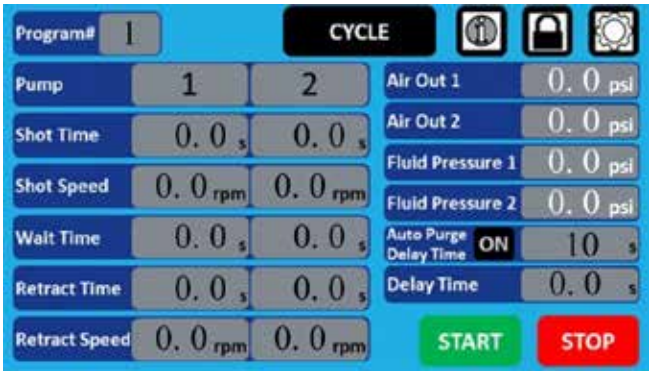
3.	Press the SHOT SPEED value cell(s).  Use the buttons on the pop-up keypad display to enter the speed (rpm) that the pump motor(s) on the connected valve(s) will run at when dispensing.
4.	Press the WAIT TIME value cell(s).  Use the buttons on the pop-up keypad display to enter the wait time (seconds) that the pump motor(s) on the connected valve(s) will pause for before retracting. This step can be skipped if suck-back is not required for the purpose of the dispense application.
5.	Press the RETRACT TIME value cell(s).  Use the buttons on the pop-up keypad display to enter the time (seconds) that the pump motor(s) on the connected valve(s) will retract for to assist in preventing fluid from drooling from the dispense tip or mixing nozzle. Then press the “Enter” button on the keypad display to save the value and exit. This step can be skipped if suck-back is not required for the purpose of the dispense application.

DISPENSE MODES

6.	Press the RETRACT SPEED value cell(s).  Use the buttons on the pop-up keypad display to enter the speed (rpm) that the pump motor(s) on the connected valve(s) will run at when retracting. This step can be skipped if suck-back is not required for the purpose of the dispense application.
7.	If required press the “Operator Lockout” to put the machine in a locked condition. 
8.	If the shot actuation type has been set to “Momentary”, Press and hold the “SHOT” button to initiate a dispense cycle. Then release the “SHOT” button to stop the dispense cycle. If the shot actuation type has been set to “Latching”, press and release the “SHOT” button to initiate a dispense cycle. Then press and release the “SHOT” button again to stop the dispense cycle. The TIME shown will increase cumulatively every time the machine is actuated. Continue to actuate the machine until the desired dispense time / fluid volume or weight has been reached. Change the machine operation mode to TIMED to save the Shot Time parameter setting value.

DISPENSE MODES

1K Screen Layout – Posipump™ PC1 Series



2KScreen Layout – Posipump™ PC2 Series

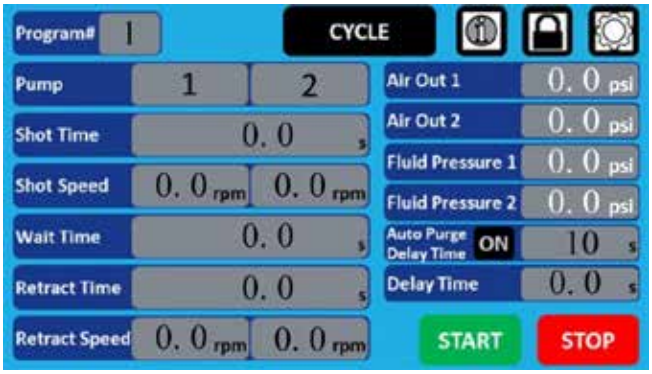
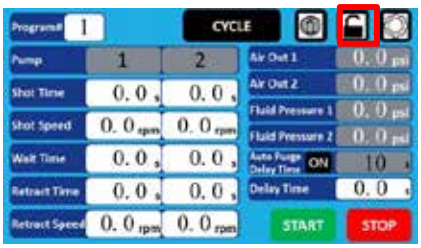


FIG. 10: Dispense Modes - Cycle

CYCLE MODE

CYCLE mode allows the operator to create a repeating cycle of dispense actuations. For example, dispense for 1 second and then wait for 3 seconds, and cycle these times over and over again.

A dispense signal is received to start dispensing. Once the machine has completed the set shot time period, dispensing will automatically stop. The machine will then wait according to the set delay time, before automatically repeating the dispense cycle.

1.	Check that the “Operator Lockout” icon is in the unlocked condition.  
2.	Select the “Program Number” that you want to set and save the dispense parameter against.  

DISPENSE MODES

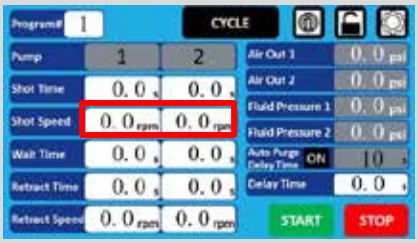
3.

Press the SHOT TIME value cell(s).

Use the buttons on the pop-up keypad display to enter the time (seconds) that the pump motor(s) on the connected valve(s) will dispense fluid material for.

4.

Press the SHOT SPEED value cell(s).



Use the buttons on the pop-up keypad display to enter the speed (rpm) that the pump motor(s) on the connected valve(s) will run at when dispensing.

5.

Press the WAIT TIME value cell(s).

Use the buttons on the pop-up keypad display to enter the wait time (seconds) that the pump motor(s) on the connected valve(s) will pause for before retracting.

This step can be skipped if suck-back is not required for the purpose of the dispense application.

DISPENSE MODES

6.

Press the RETRACT TIME value cell(s).

Use the buttons on the pop-up keypad display to enter the time (seconds) that the pump motor(s) on the connected valve(s) will retract for to assist in preventing fluid from drooling from the dispense tip or mixing nozzle.

Then press the “Enter” button on the keypad display to save the value and exit.

This step can be skipped if suck-back is not required for the purpose of the dispense application.

7.

Press the RETRACT SPEED value cell(s).

Use the buttons on the pop-up keypad display to enter the speed (rpm) that the pump motor(s) on the connected valve(s) will run at when retracting.

This step can be skipped if suck-back is not required for the purpose of the dispense application.

8.

Press the DELAY TIME value cell(s).

Use the buttons on the pop-up keypad display to enter the time (seconds) that the machine will remain idle for after executing a dispense cycle, before automatically actuating the next dispense cycle.

DISPENSE MODES

9.	If required press the “Operator Lockout” to put the machine in a locked condition.  
10.	Press and release the “SHOT” button to initiate the first dispense cycle. Once the pre-set shot time value has been reached the dispense cycle will automatically stop and the “SHOT TIME” will reset back to the set “SHOT TIME”. The machine will then automatically start counting down from the time set in the “DELAY TIME” until it reaches zero (0) seconds. Once the machine has counted down to zero (0) seconds, it will automatically begin dispensing fluid again according to the set “SHOT TIME” until it reaches zero (0) seconds. This looping cycle will continue to be repeated until the “SHOT” button is pressed again.

DISPENSE MODES

1K Screen Layout – Posipump™ PC1 Series **2KScreen Layout – Posipump™ PC2 Series**

FIG. 10: Dispense Modes - Sequence

SEQUENCE MODE

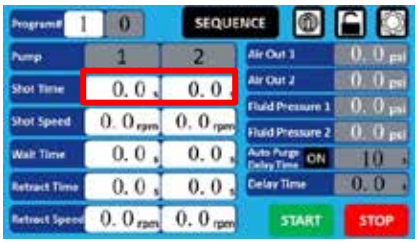
SEQUENCE mode allows the user to create and run a sequence of up to four (4) timed programs one after the other. The user is able to select if the machine has to be actuated by the operator every time it changes from one program to another. Or if it automatically actuates all programs according to the delay time set in the sequence function menu.

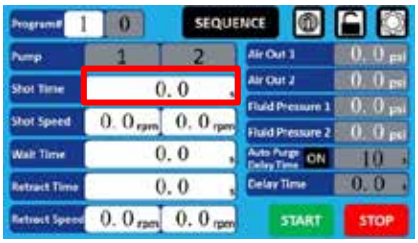
1.	Check that the “Operator Lockout” icon is in the unlocked condition. 
2.	Select the “Program Number” that you want to set and save the dispense parameter against. 

DISPENSE MODES

3.

Press the SHOT TIME value cell(s).

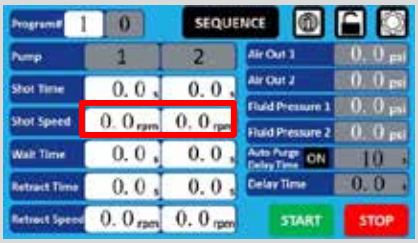


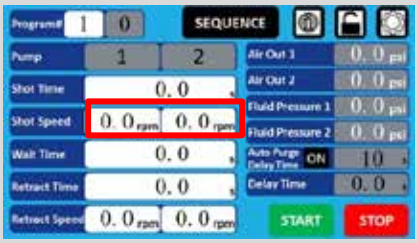


Use the buttons on the pop-up keypad display to enter the time (seconds) that the pump motor(s) on the connected valve(s) will dispense fluid material for.

4.

Press the SHOT SPEED value cell(s).

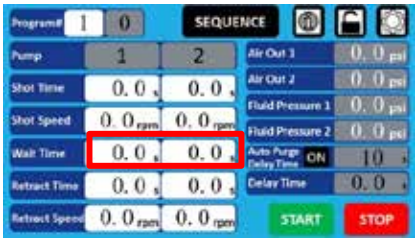


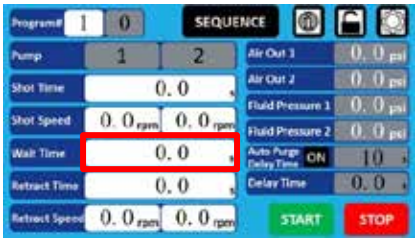


Use the buttons on the pop-up keypad display to enter the speed (rpm) that the pump motor(s) on the connected valve(s) will run at when dispensing.

5.

Press the WAIT TIME value cell(s).





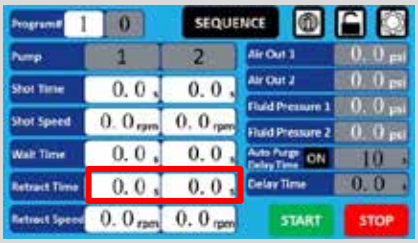
Use the buttons on the pop-up keypad display to enter the wait time (seconds) that the pump motor(s) on the connected valve(s) will pause for before retracting.

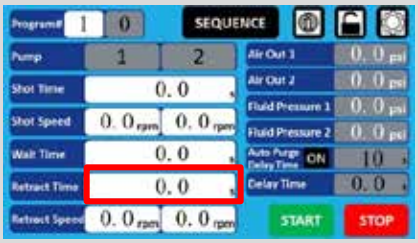
This step can be skipped if suck-back is not required for the purpose of the dispense application.

DISPENSE MODES

6.

Press the RETRACT TIME value cell(s).





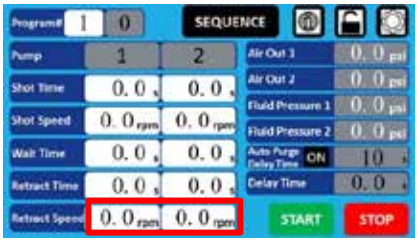
Use the buttons on the pop-up keypad display to enter the time (seconds) that the pump motor(s) on the connected valve(s) will retract for to assist in preventing fluid from drooling from the dispense tip or mixing nozzle.

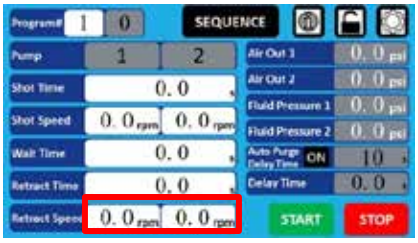
Then press the “Enter” button on the keypad display to save the value and exit.

This step can be skipped if suck-back is not required for the purpose of the dispense application.

7.

Press the RETRACT SPEED value cell(s).





Use the buttons on the pop-up keypad display to enter the speed (rpm) that the pump motor(s) on the connected valve(s) will run at when retracting.

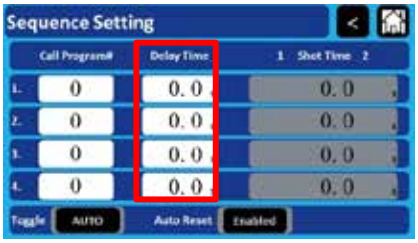
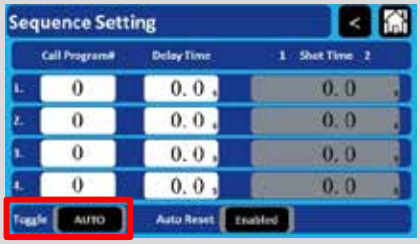
This step can be skipped if suck-back is not required for the purpose of the dispense application.

8.

Repeat steps two (2) to seven (7) until the required number of dispense program memories have been created.

Note:- A total number of four (4) dispense program memories can be created connected together in SEQUENCE mode.

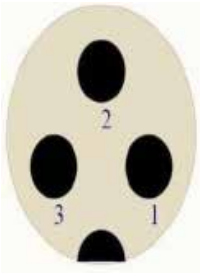
DISPENSE MODES

9.	Acces the Sequence setting menu from within the Machine Settings. 
10.	Press the CALL PROGRAM # value cell(s).  Use the buttons on the pop-up keypad display to set the program numbers in order that you wish to execute in SEQUENCE mode.
11.	Press the DELAY TIME value cell(s).  Use the buttons on the pop-up keypad display to enter the time (seconds) that the machine will remain idle for after executing a dispense cycle, before progressing on to the next program number memory.
12.	Press the Toggle value cell to set how the machine will actuate when it progresses to the next program number.  MANUAL:- The operator will need to actuate the dispense cycle. AUTO:- The machine will automatically actuate the dispense cycle.

DISPENSE MODES

13.	Press the AUTO RESET cell to set how the machine will behave once the dispense cycle in the last program has completed.  Enabled:- The machine will automatically return back to the first program number in the sequence, and wait to receive dispense actuation signal to start sequence cycle. Disabled:- A visual and audible alarm will trigger preventing the machine from being actuated further until the “Sequence” has been reset by the operator. Once it has been reset the machine will return back to the first program number in the sequence.
14.	Press the HOME SCREEN icon to return back to the home screen.  Note:- When returning back to the home screen, the machine will automatically display the first selected program memory according to the Sequence setting.
15.	If required press the “Operator Lockout” to put the machine in a locked condition.  
16.	Press and release the “SHOT” button to initiate the first dispense cycle of the first program memory.

FOOT SWITCH CONNECTOR



Pin #	Description
1	NO (Normally Open)
2	Com (Common)
3	Not Used

FIG. 9: External Machine Actuation

Input	A dry contact closure (0 Volt) between the Input (Pin #1) and Common (Pin #2) pins will trigger a dispense signal.
	PLEASE READ: **Do not apply a voltage between the input pin (1) and the common pin (2). Doing so will damage the control board and void all warranty conditions.**

I/O CONNECTOR

Pin #	Function	Pin #	Function
1	24V+ Internal Power OUT	14	Machine Ready OUT
2	Internal Ground (GND)	15	Internal Ground (GND)
3	Contact Closure Initialize IN	16	Clear/Reset IN
4	Alarm IN	17	Pump 1 Activate
5	Internal Ground (GND)	18	Pump 2 Activate
6	Alarm OUT	19	Analog Input Pump 1 Speed (0-10V)
7	Internal Ground (GND)	20	Analog Input Pump 2 Speed (0-10V)
8	Start Signal IN 24V+	21	Bit 0 IN
9	Start IN GND (0V)	22	Bit 1 IN
10	Machine Busy OUT	23	Bit 2 IN
11	Internal Ground (GND)	24	Bit 3 IN
12	End of Cycle OUT	25	Program Select IN
13	Internal Ground (GND)		

FIG. 10: Input / Output Schematic

OUTPUT SIGNALS

Output Type: Open Collector Photocoupler (NPN)

Output Power: Output signals are able to sink a maximum of 200 milliamps per pin.

Output Function: When the output signal is activated, the circuit between the output pin (pin #6, 10, 12 & 14) and the GND (pin #2, 5, 7, 11, 13 & 15) is completed.

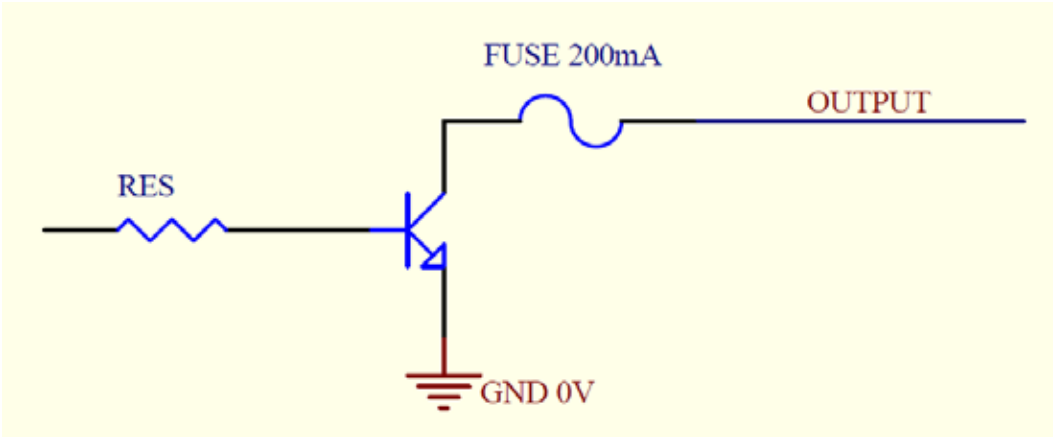
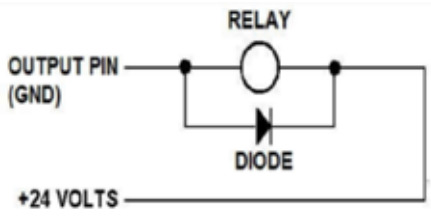


FIG. 11: Example of I/O output port driving

PLEASE READ: If an inductive load (such as a relay) is connected to an output signal, be sure to install a diode as shown to prevent damage to the output photocoupler.



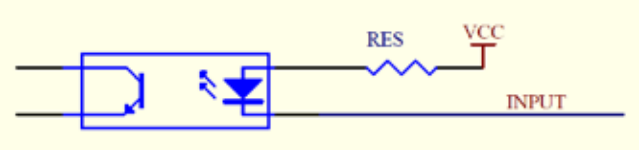
Installation of Diode

INPUT SIGNALS

Input Type: Photocoupler

Input Power: Pin #3, 4, 16, 17, 18, 21, 22, 23, 24, and #25 are an externally driven dry-contact voltage free contact closure circuit (I.E. Switch or Relay).

Input Function (pin #3, 4, 16, 17, 18, 21, 22, 23, 24 and #25):
To activate an input signal, pull the input pin (pin #3, 4, 16, 17, 18, 21, 22, 23, 24 or #25) down to a GND pin (pin #2, 5, 7, 11, 13, or 15). Input signals utilize the machine internal power supply.



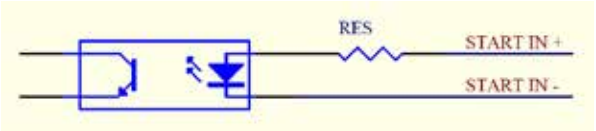
Example of I/O input port driving

PLEASE READ:

A dry contact closure between inputs (pin #3 or pin #4) and any ground will trigger an input signal. DO NOT apply a voltage to input pin #3 or pin #4 and ground. Doing so will damage the internal control board and void all warranty conditions.

Input Function (pin #8):
To actuate the machine from an external device using a voltage signal (24V+),

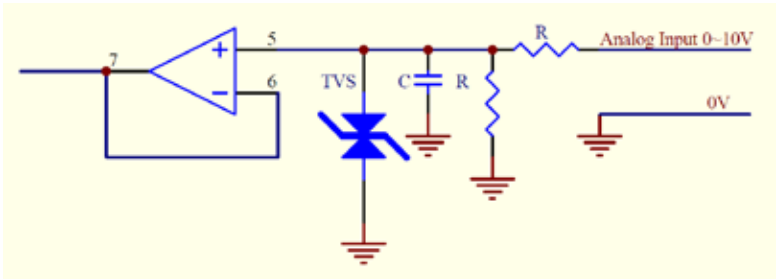
- connect input pin “Start Signal IN 24V+” (pin #8) to an external power supply (24V+)
- connect input pin “Start IN GND (0V)” (pin #9) to an external ground (0V)



Example of I/O input port driving (pin #8)

Input Function (pin #19 and #20):
To adjust the shot speed (rpm) from an external device using a voltage signal (0-10V DC)

- connect input pin “Pump 1 Speed” (pin #19) and/or “Pump 2 Speed” (pin #20) to an adjustable external power source (0-10V+)
- connect input pin “Start IN GND (0V)” (pin #9) to an external ground (0V)



Example of I/O input port driving (pin #19 and #20)

OUTPUT SIGNAL DEFINITION

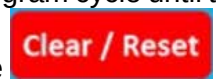
Pin #6 Alarm Out (Output):

- The signal will be activated if any one of the below conditions occur.
  - o If the external “Alarm In” input circuit has been activated.
  - o If the “Glue Alarm” has been activated by reaching zero (0).
  - o If the “Air Out Pressure Alarm” has been activated due to the pressure being outside of the set tolerance.
  - o If the “Fluid Pressure Alarm” has been activated due to the fluid pressure being outside of the set tolerance.
  - o If the “Dispense Count Limit” has reached the set limit value.
  - o If the “Pump Run Time” has reached the set limit value.
  - o If the machine has lost signal with the connected valve.
  - o If the “Pump Overload Alarm” has been activated due to reaching its set limit value.
  - o If the signal on the “Low Level Connector” has been received.
  - o If the machine has executed the dispense cycle on the last program memory in Sequence mode and the “Auto-Reset” function is disabled.

- When an Alarm is activated, the information  symbol key on the home screen will be replaced by an alarm  signal key.

- Press the alarm signal key to access the alarm message screen and identify why the “Alarm Out” signal has been activated.

- If the alarm signal key is pressed it will take the user directly to the alarm message screen, where the alarm(s) can be reset.

- It will not be possible to actuate a new program cycle until the “Alarm Out” signal has been switched off and the machine reset by pressing the 

button or momentarily (two (2) seconds) activating pin #16 of the I/O input circuit.

Pin #10 Machine Busy (Output):

- When the machine is actuating a program cycle the signal will be activated.

- When the machine is in the machine settings menu the signal will be activated.

Pin #12 End of Cycle (Output):

- When the machine has completed a program cycle the signal will be momentarily activated for a period of approximately 10ms.

Pin #14 Machine Ready (Output):

- After machine power on, the signal will be activated.

- The signal will automatically switch off if any of the below conditions occur.
  - o "Machine Busy" Output signal activated.
  - o "End of Cycle" Output signal activated.
  - o "Alarm Out" Output signal activated.

- The signal will be re-activated automatically when all of the above conditions do not occur.

INPUT SIGNAL DEFINITION

Pin #3 CC Initialize (Input):

- When connected to a GND pin the "CC Initialize" signal will be activated, resulting in the machine dispense cycle being actuated.
  - o When in "CONTINUOUS" or "TEACH" mode, the machine will continue to be actuated (i.e. Dispensing fluid) until the "CC Initialize" signal is removed from the GND pin.
  - o When in "TIMED" or "SEQUENCE" mode, the machine will continue to be actuated (i.e. Dispensing fluid) until the set dispense time on the machine has been reached.
  - o When in "CYCLE" mode, the machine will continue to be actuated (i.e. Dispensing fluid) in a looping cycle until "CC Initialize" signal is removed from the GND pin and then re-applied.

- The background color of the "Pump 1" and /or "Pump 2" icon on the home screen will change to green, to identify the machine is actuating a dispense cycle (i.e. Dispensing fluid).

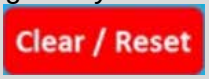
Pin #4 Alarm In (Input):

- When connected to a GND pin the "Alarm In" signal will be activated, resulting in the "Alarm Out" signal (Pin #6) being activated automatically.

- When an Alarm is activated, the information  symbol key on the home screen will be replaced by an alarm  signal key.

- Press the alarm signal key to access the alarm message screen and identify why the "Alarm Out" signal has been activated.

- If the alarm signal key is pressed it will take the user directly to the alarm message screen, where the alarm(s) can be reset.

- It will not be possible to actuate a new program cycle until the "Alarm In" signal has been switched off and the machine reset by pressing the 

button or momentarily (two (2) seconds) activating pin #16 of the I/O input circuit.

Pin #8 Start Signal IN 24V+ (Input):

- When connected to an external 24V+ power supply, the “Start Signal IN 24V+” signal will be activated, resulting in the machine dispense cycle being actuated.
    - When in “CONTINUOUS” or “TEACH” mode, the machine will continue to be actuated (i.e. Dispensing fluid) until the signal is removed from the “Start Signal IN 24V+”.
    - When in “TIMED” or “SEQUENCE mode, the machine will continue to be actuated (i.e. Dispensing fluid) until the set dispense time on the machine has been reached.
    - When in “CYCLE” mode, the machine will continue to be actuated (i.e. Dispensing fluid) in a looping cycle until the signal is removed from the “Start Signal IN 24V+” and then re-applied.

- The background color of the “Pump 1” and /or “Pump 2” icon on the home screen will change to green, to identify the machine is actuating a dispense cycle (i.e. Dispensing fluid).

PLEASE READ: For the “Start Signal IN 24V+” signal to work correctly, “Start IN GND (0V)” (pin #9) must be connected to an external GND (0V)

Pin #16 Clear/Reset In (Input):

- When momentarily (two (2) seconds) connected to a GND pin the “Clear/Reset In” signal will be activated, resulting in the machine being reset and/or error message being cleared.

- The machine will need to be reset after one or more of the following conditions have occurred.
    - Glue Alarm function activated
    - Air Out Pressure Alarm function activated
    - Fluid Pressure Alarm function activated
    - Signal on Low Level Connector has been received
    - Vacuum Alarm function activated
    - Dispense Count Limit function activated
    - Pump Run Time function activated
    - Alarm IN signal activated
    - End of Sequence completed if the “Auto-Reset” function is disabled.
    - If the machine has lost signal with the connected valve.
    - If the “Pump Overload Alarm” has been activated due to reaching its set limit value.

Pin #17 Pump 1 Activate (Input):

- When connected to a GND pin the “Pump 1 Activate” signal will be activated, resulting in the valve connected to the “Pump 1” connector being actuated according to the “Pump 1” dispense parameter values displayed on the home screen.

Pin #18 Pump 2 Activate (Input):

- When connected to a GND pin the “Pump 2 Activate” signal will be activated, resulting in the valve connected to the “Pump 2” connector being actuated according to the “Pump 2” dispense parameter values displayed on the home screen.

Pin #19 Analog Input Pump 1 Speed (0-10V)

- **When connected to an adjustable external power source and supplied with a voltage signal between 0-10V DC, the shot speed (rpm) of the valve connected into the "Pump 1" connector will change.**
- **The shot speed (rpm) it changes to will be based on the linear scale created from the 0V and 10V rpm values set in the configuration page of the Machine settings.**

PLEASE READ: For the "Analog Input Pump 1 Speed (0-10V)" signal to work correctly, "Start IN GND (0V)" (pin #9) must be connected to an external GND (0V)

Pin #20 Analog Input Pump 1 Speed (0-10V)

- **When connected to an adjustable external power source and supplied with a voltage signal between 0-10V DC, the shot speed (rpm) of the valve connected into the "Pump 2" connector will change.**
- **The shot speed (rpm) it changes to will be based on the linear scale created from the 0V and 10V rpm values set in the configuration page of the Machine settings.**

PLEASE READ: For the "Analog Input Pump 2 Speed (0-10V)" signal to work correctly, "Start IN GND (0V)" (pin #9) must be connected to an external GND (0V)

Pin #21, 22, 23 and 24 Bit Status In (Input):

- The status setting of pin #18 - #21 are used to create a binary value to set the program number that the machine will automatically change to when the “Program Select” pin #25 signal is activated.

- When connected to a GND pin the “Bit Status” signal will be activated, resulting in its status changing.

  - Activated = Bit Status High (1)
  - Not Activated = Bit Status Low (0)

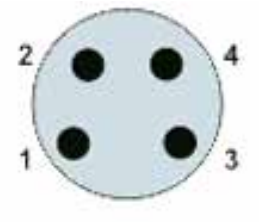
- The below table can be referenced, to set the correct program number according to the Bit Status.

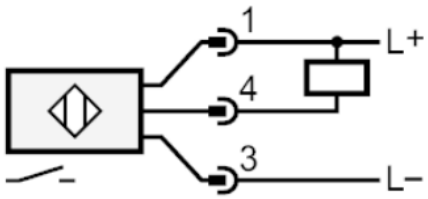
Program Number	Pin #21 Bit Status 0	Pin #22 Bit Status 1	Pin #23 Bit Status 2	Pin #24 Bit Status 3
1	0	0	0	0
2	1	0	0	0
3	0	1	0	0
4	1	1	0	0
5	0	0	1	0
6	1	0	0	1
7	0	1	1	0
8	1	1	1	0
9	0	0	0	1
10	1	0	0	1
11	0	1	0	1
12	1	1	0	1
13	0	0	1	1
14	1	0	1	1
15	0	1	1	1
16	1	1	1	1

Pin #25 Program Select In (Input):

- When momentarily connected to a GND pin, the “Program Select IN” signal will be activated, causing the machine program number being changed according to the Bit Status of pin #21-24.

LOW LEVEL CONNECTOR



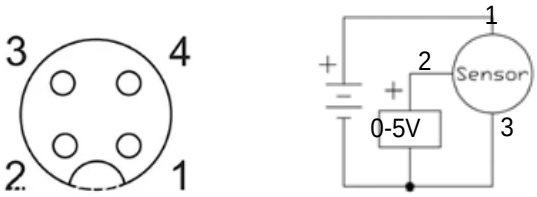


Pin #	Description
1	Supply (V+) 24V DC
2	Not Used
3	Com (Common) 0V DC
4	Signal

FIG. 9: Low Level Sensor Alarm Signal Driving

Input	When a signal is emitted on the “Signal” (Pin #4) it will trigger the low-level alarm signal on the machine
	PLEASE READ: **The “Low Level” connector is designed to only work with sensors using NPN signal logic .**

FLUID PRESSURE CONNECTOR



Pin #	Description
1	Supply (V+) 24V DC
2	Signal 0-5V DC
3	Com (Common) 0V DC
4	Not Used

FIG. 9: Fluid Pressure Sensor Signal Driving

Input	When a 0-5V DC signal is emitted on the “Signal” (Pin #2) it will display the fluid pressure value on the home screen.
	PLEASE READ: **The “Fluid Pressure” connector is designed to only work with sensors using a 0-5V DC signal output with a pressure range of 0-500 psi.** **(See Appendix 3 for further details on compatible Fluid Pressure Monitor Kit (sold separately)**

RS232 CONNECTOR

Barcode Scanner

A barcode scanner can be attached to the machine, allowing the user to change the program number on the machine and actuate a dispense cycle.

Keyence barcode scanner (HR-100) plus communication cable (HR-1C3RC) and a null modem adapter have been successfully tested with the machine.

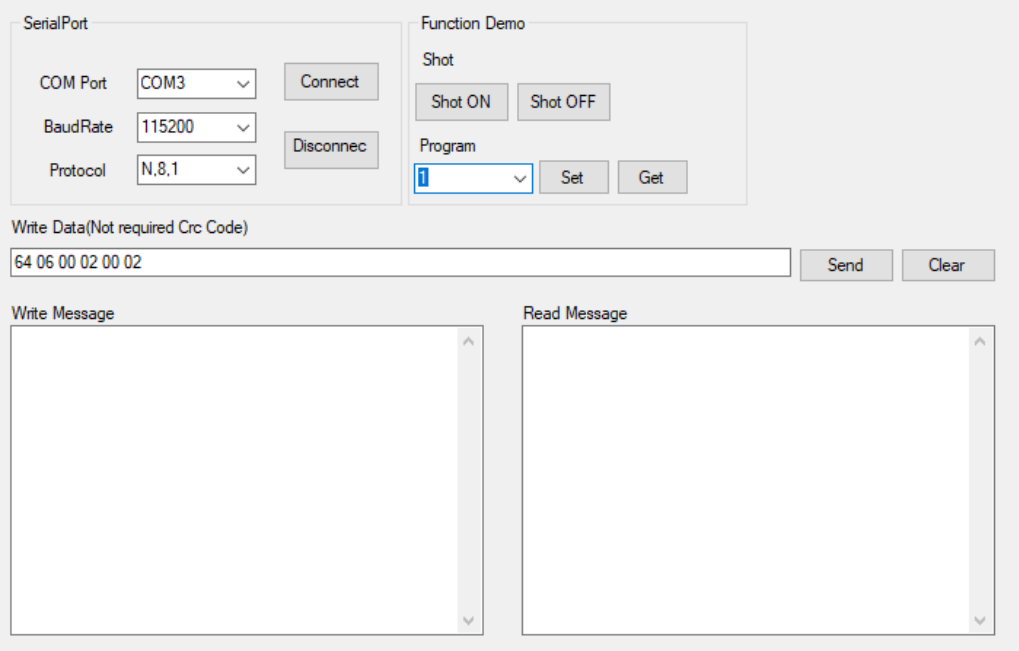
Keyence HR-100

1.	Check the RS232 Port Function Setting in the Configuration page of the Machine Settings menu, to make sure that “BARCODE” has been selected.
2.	Plug the Barcode Scanner into the RS232 port on the back of the machine, ensuring that a null modem adapter is fitted between the communication cable and RS232 connector port.
3.	Scan the appropriate barcode label (appendix 1) to change the program number on the machine and/or actuate a dispense cycle.

RS232 External Control

An external connection can made with the RS232 connector on the back of the machine, allowing the user to remotely program, adjust, monitor and operate the machine using RS232 MODBUS communication protocol.

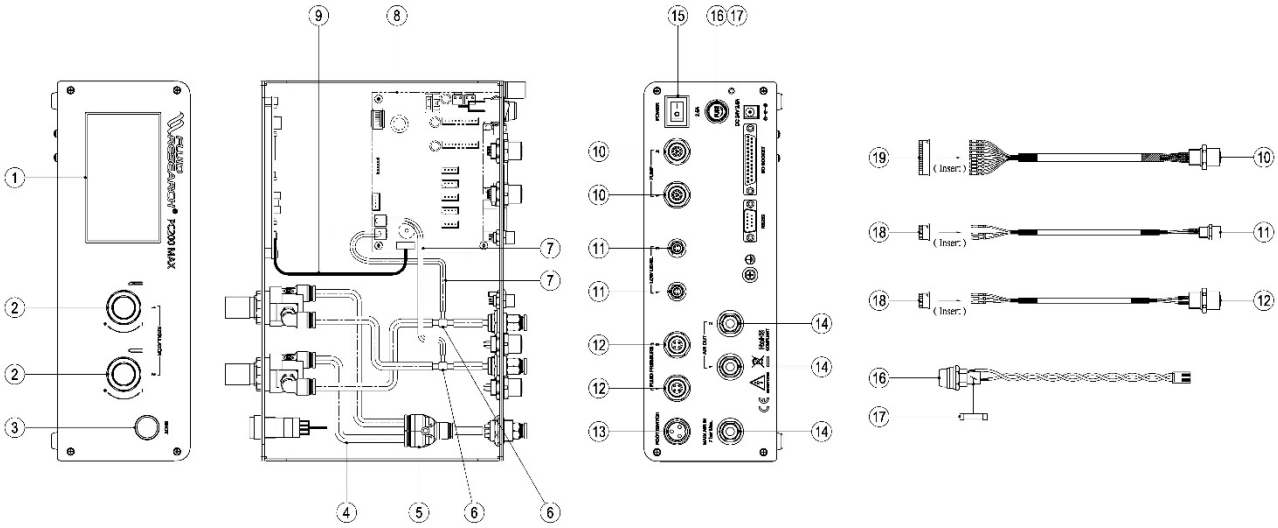
A standard straight parallel RS232 communication cable is needed to create a successful connection.



RS232 MODBUS communication

1.	Check the RS232 Port Function Setting in the Configuration page of the Machine Settings menu, to make sure that “MODBUS” has been selected.
2.	Establish a connection between the external device and RS232 port on the back of the machine, ensuring that a straight parallel RS232 communication cable has been used.
3.	Refer to the programming table (appendix 2) for a list of commands that can be sent to the machine as a hexadecimal value.

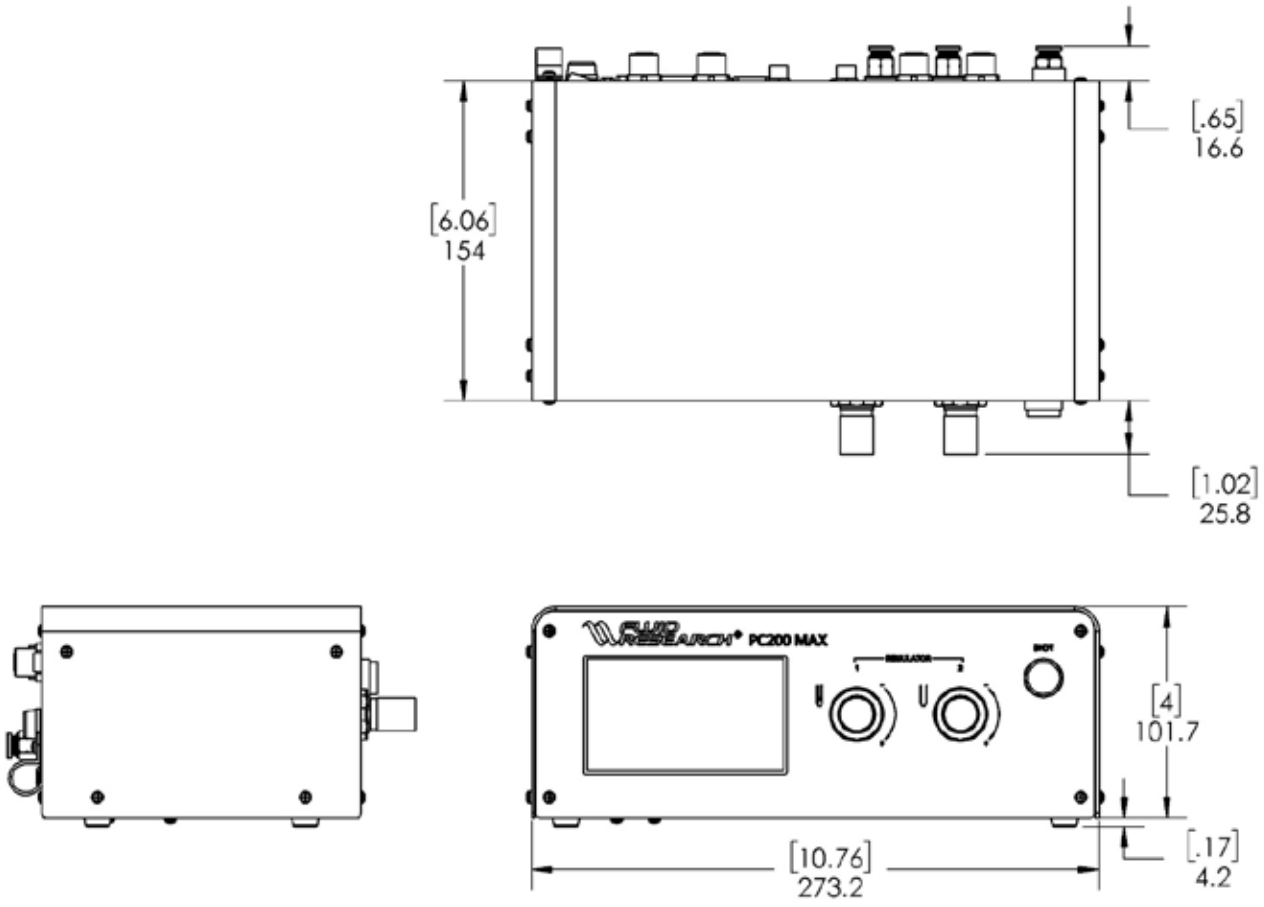
SPARE PARTS



Item	Part Number	Description
1	A23DIS-DMG48270C043	LCD Display
2	2301-25700002	Pressure Regulator
3	2301-25700003	Shot Button
4	5601887	Ø6mm OD Clear PU Tubing
5	W124000035	Ø6mm Y-Coupler - Push-in
6	5601878	T-Style Barb Joint
7	5601886	Ø4mm OD Black PU Tubing
8	A13AC-PC200MAX-1CTA	Control Board
9	A09WOT-FCC1015	LCD Display Connecting Cable
10	A09WP-2301-2-W01	Pump Wire Assembly
11	A09WP-2301-2-W02	Low Level Wire Assembly
12	A09WP-2301-2-W03	Fluid Pressure Wire Assembly
13	A09WP-2301-2-W04	Foot Switch Wire Assembly
14	5601885	Air In / Out Module
15	A08RSW-SW5009BAR	Power Switch
16	A09WP-1402-1-W04	Fuse Wire Assembly
17	A22FUSE-2.5-250R	Fuse 2.5 Amp
18	A10JST-4FHDCR	4-Pin Female PCB Connector
19	A10JST-10FHDCR	10-Pin Female PCB Connector
20*	5601888	Foot Pedal
21*	A23EMOT-EA10681V240	Power Adapter (Input 100-240 VAC / Output 24VDC)
22*	561851	Air Inlet Hose Assembly

* Item Not Shown

TECHNICAL DRAWING



APPENDIX 1


P16


P15


P14


P13


P12


P11


P10


P09


P08


P07


P06


P05


P04


P03


P02


P01


SHOT

APPENDIX 2

MODBUS RTU

Transmitting speed rate settings:- 115200, n, 8, 1

Command Code (03H) Read Multiple Records/Parameters of Controller (1~100)

Write In	0	1	2	3	4	5	6	7					
	Machine #	Command Code	Data Address		Data Record Quantity		CRC-16 Checking Code						
	C8 H	03 H	00 H	01 H	00 H	01 H	CRC	CRC					
Feedback	1	2	3	4	5	6	7						
	Machine #	Command Code	Data Record Qty	Data Information		CRC-16 Checking Code							
	C8 H	03 H	02 H	00 H	00 H	CRC	CRC						

Command Code (06H) Write In Single Records/Parameters of Controller

Write In	0	1	2	3	4	5	6	7					
	Machine #	Command Code	Data Address		Data Information		CRC-16 Checking Code						
	C8 H	06 H	00 H	01 H	00 H	64 H	CRC	CRC					
Feedback	0	1	2	3	4	5	6	7					
	Machine #	Command Code	Data Address		Data Information		CRC-16 Checking Code						
	C8 H	06 H	00 H	01 H	00 H	64 H	CRC	CRC					

Command Code (10H) Write In Multiple Records/Parameters of Controller

Write In	0	1	2	3	4	5	6	7	8	9	10	11	12
	Machine #	Command Code	Data Address		Data Record Quantity		Data Bit Count	Data 1 Information		Data 2 Information		CRC-16 Check Code	
	C8 H	10 H	00 H	01 H	00 H	02 H	04 H	00 H	01 H	00 H	01 H	CRC	CRC
Feedback	0	1	2	3	4	5	6	7					
	Machine #	Command Code	Data Address		Data Information		CRC-16 Checking Code						
	C8 H	10 H	00 H	01 H	00 H	02 H	CRC	CRC					

Command Read (R) / Write (W)	Parameter	Address Value	Data Value
R / W	Shot 1 & 2	0x0001	0 – 1 (Hex)
R / W	Shot 1	0x0002	0 – 1 (Hex)
R / W	Shot 2	0x0003	0 – 1 (Hex)
R / W	Mode	0x0004	1 – 5 (Hex)
R / W	Program Number	0x0005	1 – 16 (Hex)
R / W	Shot Time 1	0x0100 … 0x010F:	0 – 9999 (Hex)
R / W	Shot Speed 1	0x0110 … 0x011F:	0 – 1500 (Hex)
R / W	Wait Time 1	0x0120 … 0x012F:	0 – 9999 (Hex)
R / W	Retract Time 1	0x0130 … 0x013F:	0 – 9999 (Hex)
R / W	Retract Speed 1	0x0140 … 0x014F:	0 – 1500 (Hex)
R / W	Shot Time 2	0x0150 … 0x015F:	0 – 9999 (Hex)
R / W	Shot Speed 2	0x0160 … 0x016F:	0 – 1500 (Hex)
R / W	Wait Time 2	0x0170 … 0x017F:	0 – 9999 (Hex)
R / W	Retract Time 2	0x0180 … 0x018F:	0 – 9999 (Hex)
R / W	Retract Speed 2	0x0190 … 0x019F:	0 – 1500 (Hex)
R / W	Delay Time 1 & 2	0x01A0 … 0x01AF:	0000 – 9999 (Hex)
R	Air Out Pressure 1 psi	0x8001	1 Decimal Place
R	Aire Out Pressure 1 kPa	0x8002	Integer Number
R	Air Out Pressure 1 bar	0x8003	2 Decimal Place
R	Air Out Pressure 2 psi	0x8004	1 Decimal Place
R	Aire Out Pressure 2 kPa	0x8005	Integer Number
R	Air Out Pressure 2 bar	0x8006	2 Decimal Place
R	Fluid Pressure 1 psi	0x8007	1 Decimal Place
R	Fluid Pressure 1 kPa	0x8008	Integer Number
R	Fluid Pressure 1 bar	0x8009	2 Decimal Place
R	Fluid Pressure 2 psi	0x800A	1 Decimal Place
R	Fluid Pressure 2 kPa	0x800B	Integer Number
R	Fluid Pressure 2 bar	0x800C	2 Decimal Place

Command Read (R) / Write (W)	Parameter	Address Value	Data Value
Alarm Output Status 0x800D (convert returned Hex value to Binary Value)			
R	Air Out 1 Alarm		Bit 0
R	Air Out 1 Alarm		Bit 1
R	Fluid Pressure 1 Alarm		Bit 2
R	Fluid Pressure 2 Alarm		Bit 3
R	Low Level 1 Alarm		Bit 4
R	Low Level 2 Alarm		Bit 5
R	Pump 1 Alarm		Bit 6
R	Pump 2 Alarm		Bit 7
R	Glue Alarm		Bit 8
R	Input Alarm		Bit 9
R	Time Limit Alarm		Bit 10
R	Count Limit Alarm		Bit 11
R	Sequence End		Bit 12
Machine Input Status 0x800E (convert returned Hex value to Binary Value)			
R	CC Start Initialise 1&2		Bit 0
R	Input Alarm		Bit 1
R	24V Start Initialise 1&2		Bit 2
R	Clear / Reset		Bit 3
R	Pump 1 Initialise		Bit 4
R	Pump 1 Initialise		Bit 5
R	Bit 0 Signal		Bit 6
R	Bit 1 Signal		Bit 7
R	Bit 2 Signal		Bit 8
R	Bit 3 Signal		Bit 9
R	Program Select		Bit 10
R	Low Level 1 Alarm		Bit 11
R	Low Level 2 Alarm		Bit 12
R	Foot Switch		Bit 13

Command Read (R) / Write (W)	Parameter	Hex Value	Input Value (x)
Machine Output Status 0x800F (convert returned Hex value to Binary Value)			
R	Alarm		Bit 0
R	Busy		Bit 1
R	End of Cycle		Bit 2
R	Ready		Bit 3
R	Total Cycle Shots 1	0x8020 … 0x8021	0 – 2147483647
R	Total Cycle Shots 2	0x8022 … 0x8023	0 – 2147483647
R	Total Cycle Time 1	0x8024 … 0x8025:	0 – 2147483647
R	Total Cycle Time 2	0x8026 … 0x8029:	0 – 2147483647
R	Used Time (hours)	0x802A	0 – 999999999
R	Used Time (minutes)	0x802B	0 – 59
R	Used Time (seconds)	0x802C	0 – 59
R / W	Clear	0xAAAA	0
R / W	Save	0xABCD	0 – 1
Command Code Error + 0x80			
Error	Command Code Incorrect	0x01	
Error	Data Address Incorrect	0x02	
Error	Data Incorrect or Value out of range	0x03	

APPENDIX 3

Fluid Pressure Monitor Kit - PC1-PM-KIT

Item Number	Description	Quantity
211-2334	Adapter 1/4" NPT Male x 9/16-18 Female - SS	1
851-0443	Street T 1/4” NPT Male x 1/4” NPT Female	1
572-5027	Pressure Transducer 9/16-18 – 500psi	1
232-2906	O-Ring - AFLAS	1
PC1-CABLE-M12-M12	M12 Connecting Cable – 5m	2

NOTES

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LIMITED WARRANTY

Manufacturer warrants this product to the original purchaser for a period of one (1) year from the date of purchase to be free from defects in material and workmanship, but not against damages caused by misuse, negligence, accident, faulty installation, abrasion, corrosion or by not operating in accordance with factory recommendations and instructions. Manufacturer will repair or replace (at factory's option), free of charge, any component of the equipment thus found to be defective, upon prepaid return of the equipment to the factory during the warranty period of the equipment. In no event shall any liability or obligation of Manufacturer arising from this warranty exceed the purchase price of the equipment. **This warranty is valid only when 5 micron filtered air is used.** The manufacturer's written liability, as stated herein, cannot be altered or enlarged except by a written statement signed by an officer of the company. In no event shall manufacturer be liable for consequential or incidental damages. A return authorization is required prior to shipping a defective machine to the factory.

Manufacturer reserves the right to make engineering or product modifications without notice.

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