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# VIPER FROZEN MULTI FLAVOUR VALVE

## INSTALLATION AND OPERATION MANUAL



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The products, technical information, and instructions contained in this manual are subject to change without notice. These instructions are not intended to cover all details or variations of the equipment, nor to provide for every possible contingency in the installation, operation or maintenance of this equipment. This manual assumes that the person(s) working on the equipment have been trained and are skilled in working with electrical, plumbing, pneumatic, and mechanical equipment. It is assumed that appropriate safety precautions are taken and that all local safety and construction requirements are being met, in addition to the information contained in this manual.

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**RECYCLE**

This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

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# SAFETY INSTRUCTIONS

## SAFETY OVERVIEW

- Read and follow **ALL SAFETY INSTRUCTIONS** in this manual and any warning/caution labels on the unit (decals, labels or laminated cards).
- Read and understand **ALL** applicable **OSHA** (Occupational Safety and Health Administration) safety regulations and/or national and local codes before operating this unit.

## SAFETY ALERT SYMBOL RECOGNITION



*This is the safety alert symbol. When you see this in the manual or on the unit, be alert to the potential of personal injury or damage to the unit.*

## Types of Alerts

 <b>DANGER</b>	Indicates an immediate hazardous situation which if not avoided <b>WILL</b> result in serious injury, death or equipment damage.
 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, <b>COULD</b> result in serious injury, death, or equipment damage.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, <b>MAY</b> result in minor or moderate injury or equipment damage.

## SAFETY TIPS

- Carefully read and follow all safety messages in this manual and safety signs on the unit.
- Keep safety signs in good condition and replace missing or damaged items.
- Learn how to operate the unit and how to use the controls.
- **Do not** let anyone operate the unit without proper training. This appliance is **not** intended for use by very young children or infirm persons without supervision. Young children should be supervised to ensure that they do not play with the appliance.
- Keep your unit in proper working condition and do not allow unauthorized modifications to the unit.

**NOTE: The dispenser is not designed for a wash-down environment and MUST NOT be placed in an area where a water jet could be used.**

## QUALIFIED SERVICE PERSONNEL

 <b>WARNING</b>	<p>Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. All wiring and plumbing must conform to National and Local Codes. <b>Failure to comply could result in serious injury, death or equipment damage.</b></p> <p><b>If the power cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.</b></p>
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## SAFETY PRECAUTIONS

This unit has been specifically designed to provide protection against personal injury. To ensure continued protection observe the following:

 <b>WARNING</b>	<p>Disconnect power cord to the unit before servicing, following all lock out/tag out procedures established by the user. Verify all the power is off to the unit before any work is performed. <b>Failure to disconnect the power could result in serious injury, death or equipment damage.</b></p>
 <b>CAUTION</b>	<p>Always be sure to keep area around the unit clean and free of clutter. <b>Failure to keep this area clean may result in injury or equipment damage.</b></p>

## Shipping And Storage

 <b>CAUTION</b>	<p>Before shipping, storing, or relocating the unit, the unit must be sanitized and all sanitizing solution must be drained from the system. A freezing ambient environment will cause residual sanitizing solution or water remaining inside the unit to freeze resulting in damage to internal components.</p>
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## CO<sub>2</sub> (Carbon Dioxide) Warning

 <b>DANGER</b>	<p>CO<sub>2</sub> displaces oxygen. Strict attention <b>MUST</b> be observed in the prevention of CO<sub>2</sub> gas leaks in the entire CO<sub>2</sub> and soft drink system. If a CO<sub>2</sub> gas leak is suspected, particularly in a small area, <b>IMMEDIATELY</b> ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentrations of CO<sub>2</sub> gas experience tremors which are followed rapidly by loss of consciousness and <b>DEATH</b>.</p>
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## Unit Location

 <b>CAUTION</b>	<ul style="list-style-type: none"> <li>• This unit is not designed for use in outdoor locations.</li> <li>• The appliance must be placed in a horizontal position.</li> <li>• The appliance is not suitable for installation in an area where a water jet would be used.</li> </ul>
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## Machine Usage

 <b>CAUTION</b>	<ul style="list-style-type: none"> <li>• This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.</li> <li>• Children should be supervised to ensure that they do not play with the appliance.</li> </ul>
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# INSTALLATION

## DELIVERY, INSPECTION & UNPACKING

**NOTE: Cornelius is not responsible for damaged freight. If damage is found, you must save all packaging material and contact the freight carrier. Failure to contact the carrier within 48 hours of receipt may void your claim.**

1. Inspect the carton and note any damage, regardless if it appears minor. If the carton is damaged, note on the consignee copy of the freight invoice “exterior carton damage – concealed damage possible” and contact the freight company immediately.
2. Remove the exterior carton sleeve, internal fillers and plastic bag around the unit. Carefully inspect the unit for damage.
3. Open the packages of loose parts and inspect all of the parts for damage or missing parts. Check the parts received against the packing list to ensure receipt of all parts.

## COUNTER LOCATION

Select a location in a well ventilated area, close to a grounded electrical outlet and back room connections. Do not place unit close to hot and /or steaming machines.

The Minimum clearance is 76.2 mm (3 in.) on side after placing the kit on the viper, Refer below image.

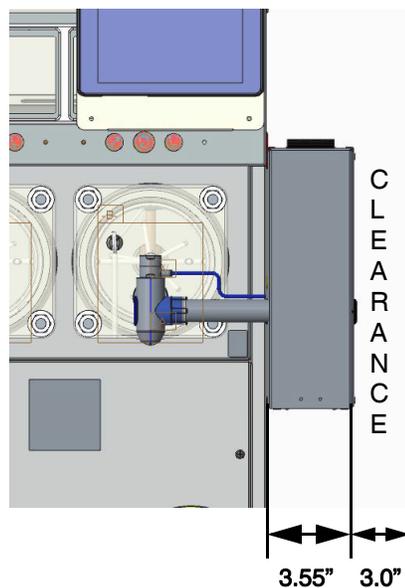


Figure 1.

## COMPRESSED AIR REQUIREMENTS

**NOTE: Primary compressed air source of 50-80 psig is required.**

**NOTE: Compressed air connections require 1/4" I.D. tubing. All hoses must reach the back of the unit plus an adequate amount of extra tubing to allow the unit to be pulled out for servicing.**

**NOTE: Use a dedicated secondary pressure regulator adjusted to 45 ±5 psig to supply the unit.**

**NOTE: Air should be dry, filtered and free from oils and particulates.**

## COMPRESSED AIR CONNECTION

Use a source-dedicated secondary pressure regulator, fittings and clamps to connect the Compressed air line to the Kit. Set the regulator for  $45 \pm 5$  psig at the Kit. Run the tubing for the compressed air from the secondary regulator to the Kit and make all appropriate connections. Ideally, locate the regulator within 3 ft. of the unit. It is to be set to 45 psig, not lower.

## SYRUP REQUIREMENTS

### Syrup Connections

Use the appropriate fittings and clamps to connect the syrup lines to the unit. Run the tubing for the syrup from the back room to the unit and make all appropriate connections.

**NOTE: Syrup connections require 1/4" I.D. tubing. All hoses must reach the back of the unit plus an adequate amount of extra tubing to allow the unit to be pulled out for servicing.**

## ELECTRICAL REQUIREMENTS

Refer to the nameplate to determine the power requirements before connecting electrical power to the unit. All of the power cords shall comply with safety requirements outlined in the EC Standards (EN60335-1 1 Clause 24.1) in countries where CE compliance is required. All cords must be HD 21 or HD 22.

### Line Voltage

The recommended line voltage for FMFV kit is 230VAC 50/60. Measure the voltage at the wall outlet to verify proper wiring of the outlet before plugging the FMFV kit.

### Power

The power circuit must have 1 amp overload protection, such as a circuit breaker or fuse that meets local and national electrical codes.

**NOTE: Viper & FMFV kit uses different power wall outlets.**

# FMFV- SYSTEM OVERVIEW

## FMFV: Description

The Frozen Multi flavour Valve (FMFV) is a pneumatically actuated valve that has the capability to dispense single or dual-flavoured frozen drinks. The valve’s operation is achieved by using compressed air at a pressure of 45 psig. The FMFV kit comes with 3 sub systems:

- 1.C-Box
- 2.Valve assembly
- 3.UI Display

## FMFV: Features

The FMFV Kit provides the following features:

- Digital Interface: User-Friendly touch screen control
- Variety: 8 flavours on each barrel deliver up to 36 different flavour combination from one barrel
- Technology: Electro-pneumatic dispense valves removes the need to touch the valve
- Pulsed dispensing: Electronically controlled flavour valve actuation to maintain ratio during dual flavour dispensing
- Mixology: Ability to combine and personalize flavour

## FMFV: Specifications

Table 1

Model	Specifications
Flavour Ratio	30:1
Flavour flow rate	6ml/sec (0.203 oz/Sec)
Drink Flow rate	200 - 250 ml/sec (6.76 - 8.45 oz/Sec)
Operational Relative Humidity range	30-80% RH
Operational Temperature Range	23.8°-40.5°C (75°F-105°F)
Electrical Requirements	230V 50/60 Hz
User Interface (Touch Screen)	122.4 X 91.44 mm (7 in.)
Shipping Weight	12.27 Kg (27 lb)
Operating Pressure	276-310 k Pa (40-50 psig)
Agency Listing	NSF, CE
IP Rating	IP CLASS 20

## PHYSICAL DIMENSIONS

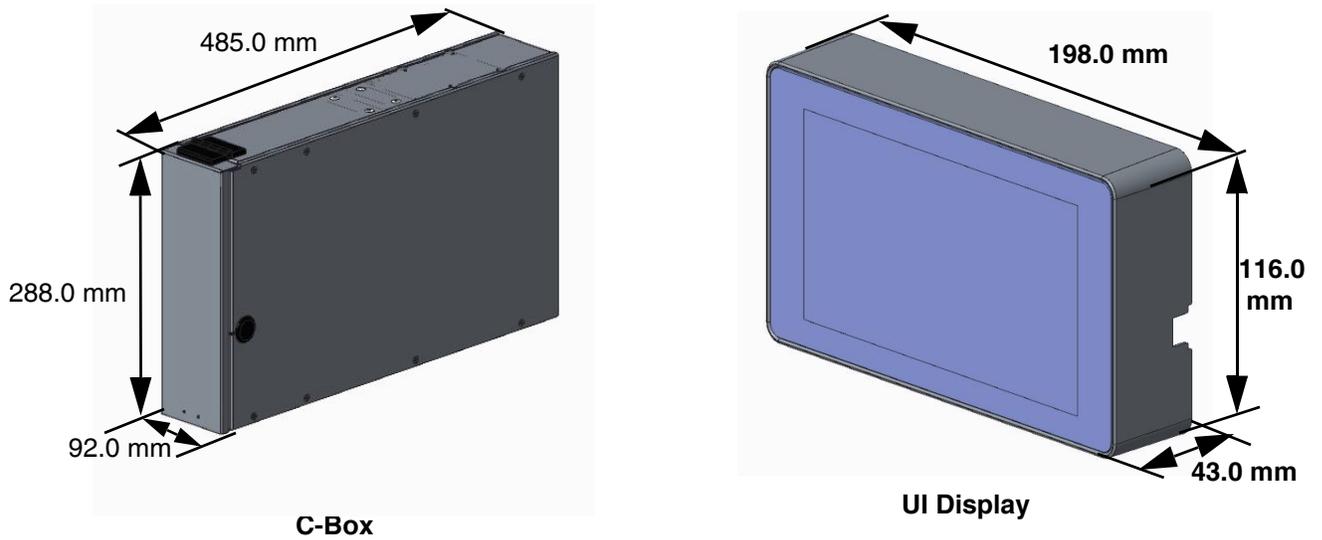


Figure 2. Physical Dimensions

## TOOLS REQUIRED

Table 2

 <p>Screw driver, phillips #2 &amp; #1</p>	 <p>Oetiker crimping tool</p>	 <p>Tube cutter</p>
 <p>Needle nose plier 8"/200 mm</p>	 <p>Snap ring plier 8"/200 mm</p>	 <p>3/32" Allen key</p>
 <p>Adjustable Wrench 30 mm</p>	 <p>Safety Gloves</p>	 <p>Safety Goggles &amp; Shoes</p>

## FMFV KIT INCLUDES FOLLOWING KEY COMPONENTS

Table 3

SI. No.	Part Number	Description	QTY
1.	910002034	C-Box	1
2.	620070052	UI Display Module	1
3.	910002035	FMFV Valve Assembly	1
4.	910001938	C-Box Mounting Bracket	1
5.	910001939	C-Box Bottom Bracket	1
6.	910002047	Pump Mounting bracket	1
7.	910002209	1/4" Hose flavour pump to C-box	8
8.	910002210	1/4" Hose Y connector assembly	1
9.	910002018	Pump bracket holding	2
10.	910002017	Pump Bracket Holding bottom	2
11.	910002208	3/8" Hose with BIB connector	8
12.	910000452	Oeiteker 13.3	16
13.	910001703	Harness routing Magnet	5
14.	28301211	Inlet air Regulator	1
15.	910002060	Power Cord	1
16.	910000659	M4 X 15 Pan head screw	1
17.	910001959	Injector cap	1
18.	910001801	Display bracket	1
19.	910002053	Self tapping screw for Display	8
20.	910002080	Display bracket Magnet	1
21.	620068141	Screw 4-40 X.188"	2
22.	910001942	Cable FMFV touch Display	1
23.	910000560	Cable tie, 4 In	1
24.	910002239	Grommet Harness	1

## INSTRUCTIONS FOR INSTALLING FMFV KIT

**NOTE:** Only one kit can be installed on the left side of the unit as a default position. But it can be installed, either left or right side of the unit. One trained technician required to install FMFV Kit.

- C-Box
- UI Display
- Pump Assembly
- Valve Assembly

## Installation of C-Box

Table 4: Installation of C-Box

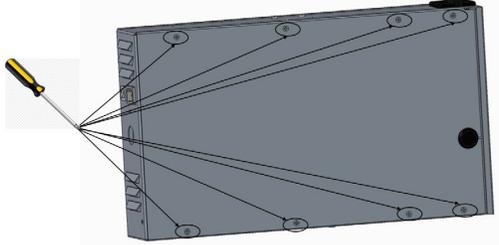
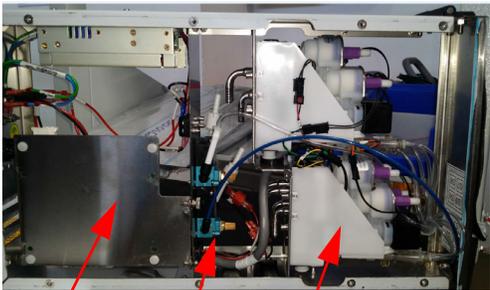
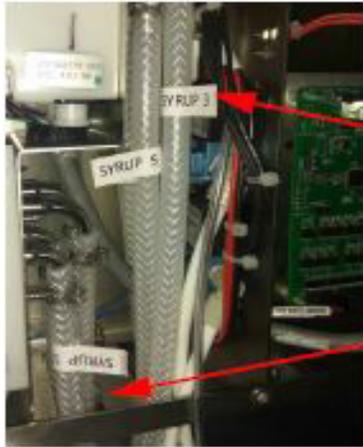
Sl. No.	Description	Figure
1.	<p>Remove the C-box side panel (left/right) by unfastening 8 mounting screws by using screw driver, phillips #2.</p> <p>Open front door to access the MFV valves, Solenoid valves and PCB brackets.</p>	 <p><b>Figure 3.</b></p>  <p><b>Figure 4.</b></p>

Table 4: Installation of C-Box

<p>2.</p>	<p>Route the tube through bottom cut out of C-Box</p> <p>Connect all 8 “Hose flavor pump” (910002209) end to the dole fittings of MFV and clamp all the hoses with oetiker clamps</p> <p><b>NOTE: Flavour lines must be connected in series as per the label on MFV.</b></p>	 <p><b>Figure 5.</b></p>  <p><b>Figure 6.</b></p>
<p>3.</p>	<p>Connect “1/4 inch Hose Y connector assembly (910002210)” to two solenoid valve by 1/4” braided hose</p> <p>Connect the other end of the braided hose to push connector.</p> <p><b>NOTE: Clamp compressed air tubes by oetiker.</b></p>	 <p><b>Figure 7.</b></p>

**Table 4: Installation of C-Box**

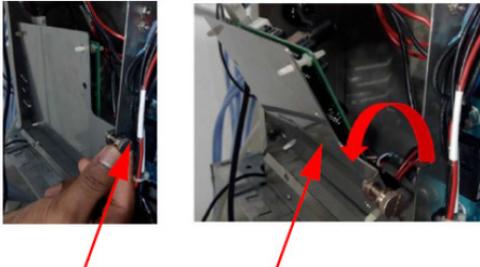
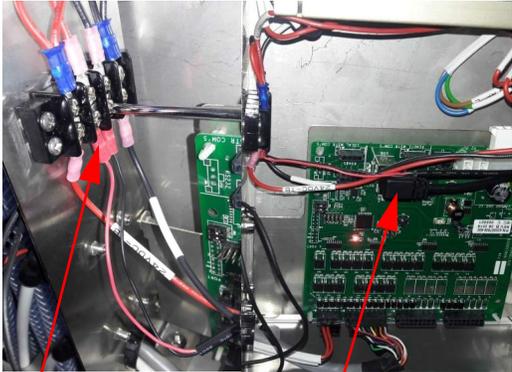
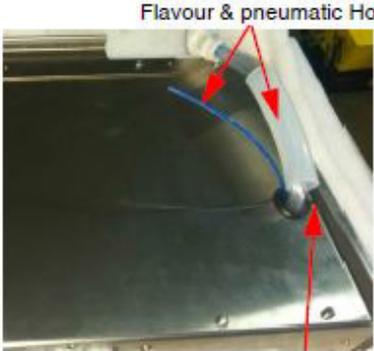
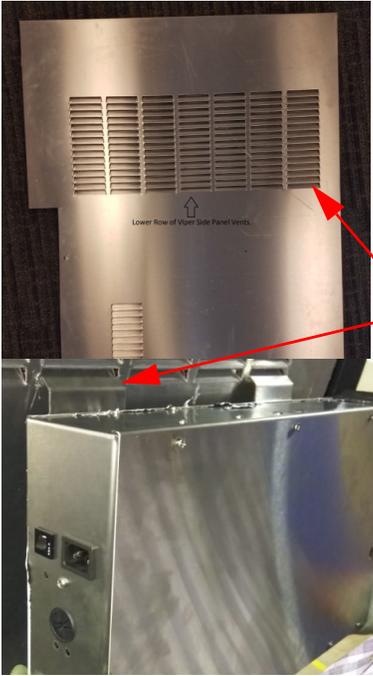
<p>4.</p>	<p>Pass Display cable through grommet in C-Box</p>	 <p><b>Figure 8.</b></p>
<p>5.</p>	<p>Rotate (unscrew) thumb screw to access the PCB board by rotating down</p>	 <p><b>Figure 9.</b></p>
<p>6.</p>	<p>Connect Display cable terminals  a. USB terminal to PCB board  b. Fork terminals: Connect the fork terminal to the shown location in terminal block by unscrewing the screws of terminal block</p>	 <p><b>Figure 10.</b></p>

Table 4: Installation of C-Box

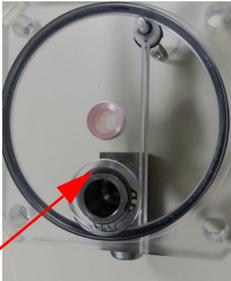
<p>7.</p>	<p>Tie “Cable FMFV touch display(910001942)” using cable tie to C-Box</p>	 <p style="text-align: right;">Cable Tie</p> <p style="text-align: center;">Figure 11.</p>
<p>8.</p>	<p>Assemble the side panel to C-Box with screws. <b>IMPORTANT: DO NOT EXCEED 3 IN-LB of torque</b></p>	
<p>9.</p>	<p>Assemble “C-box mounting bracket” (910001938) to the C- box right or left as per the requirement of hanging on the Viper unit.</p> <p>Use the existing screw on C-Box</p> <p><b>CAUTION</b> Make sure the fingers should not come in between C-box and Viper unit while placing the C-box after hooking on the unit.</p>	<p>Hooking Bracket</p>  <p style="text-align: center;">Pinching area</p> <p style="text-align: center;">Figure 12.</p>
<p>10.</p>	<p>Replace the bottom screw as per the mounting requirement left or right and cover the dummy hole by screw.</p>	<p>Dummy threaded Hole      Close with screw</p>  <p style="text-align: center;">Figure 13.</p>

Table 4: Installation of C-Box

<p>11.</p>	<p>Ensure the flavour and air tubes are taken out from side panel, according to the side of mounting. The Flavor &amp; pneumatic hoses can be taken out using the slot on side panel.</p>	 <p>Flavour &amp; pneumatic Hose</p> <p>Slot on side panel</p> <p>Figure 14.</p>
<p>12.</p>	<p>Hook the C-box to bottom most row of louver (air vent) of the side panel of the unit.</p>	 <p>Lower Row of Viper Side Panel Vents</p> <p>Bottom row louver</p> <p>Figure 15.</p>
<p>13.</p>	<p>After placing the C-box on the unit assemble C-box Bottom (910001939) to the bottom louver on the viper and fasten to C-box using screw M4 X 10</p>	 <p>Lower Row of Viper Side Panel Vents</p> <p>Bottom louver</p> <p>Holding bracket</p> <p>Figure 16.</p>

## Installation of Valve

**Table 5: Installation of Valve**

1.	Defrost cylinders by referring the Viper unit manual.	
2.	When the barrel is defrosted, go to the Maintenance menu. If the security feature is active, access the Maintenance menu by pressing and holding the far left and right buttons simultaneously for approximately five seconds.	
3.	Remove the splash panel. See “BRIX Setup Menu	
4.	Turn the Product/BRIX valve off to shutoff product to the barrel.	
5.	Place a large waste container under the dispense valve.	
6.	Barrel Maintenance menu, press the PURGE button to re-pressurize the barrel with CO <sub>2</sub> . As product level lowers in the barrel, partially close the valve to avoid spurting. Em[ty product from the barrel.	
7.	Disconnect the BIB from the unit, shut unit down, disconnect electrical power from Unit.	
8.	Remove the hex nuts and flat washers securely, then remove the faceplate from the barrel.	 <p style="text-align: center;"><b>Figure 17.</b></p>
9.	Carefully remove the existing Valve from the faceplate. Refer the procedure mentioned in viper service manual for removing Motorman and SPH/Delta valves.	
10.	<p>Assemble the Valve (910002035) to face plate using retainer ring provided with valve assembly</p> <p><b>NOTE: Use snap ring plier to remove retainer ring.</b></p>	 <p>Retaining ring</p> <p style="text-align: center;"><b>Figure 18.</b></p>

**Table 5: Installation of Valve**

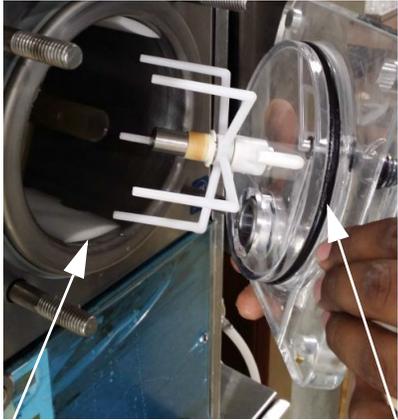
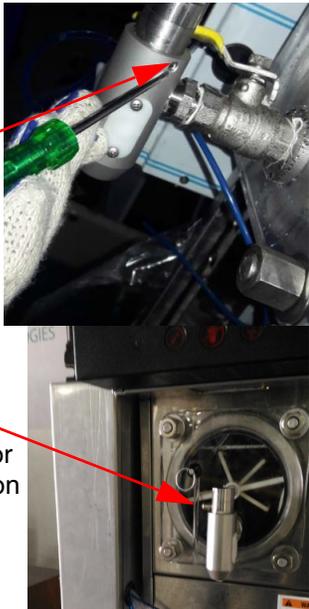
<p>11.</p>	<p>Put back the face plate ensure the O-ring and seal are properly assembled and not damaged</p>	 <p>Gasket</p> <p>O-ring</p> <p><b>Figure 19.</b></p>
<p>12.</p>	<p>Assemble Hex Nut using adjustable wrench.</p>	 <p>FMFV Valve</p> <p><b>Figure 20.</b></p>
<p>13.</p>	<p>Loosen the grub screws of the valve assembly using 3/32" Allen key and reorient the air valve assembly such a way that, the quick connector should face towards C-box mounted on viper. Tighten the grub screw to secure the position of air valve assembly.</p>	 <p>Grub screw</p> <p>Quick connector orientation</p> <p><b>Figure 21.</b></p>

Table 5: Installation of Valve

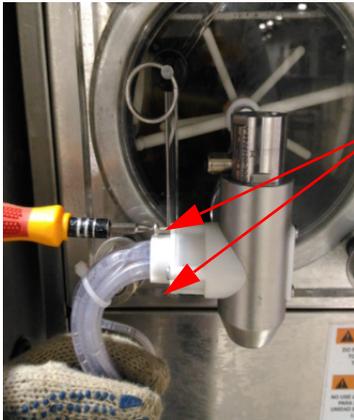
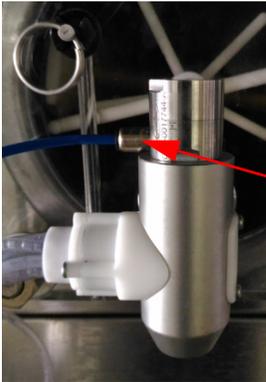
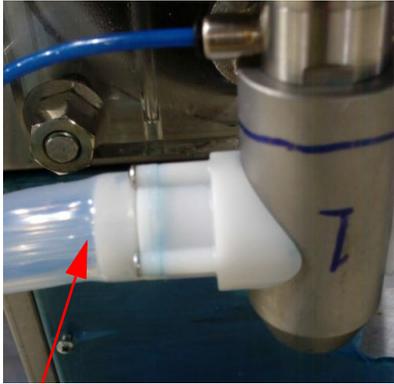
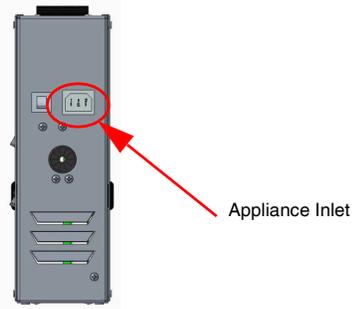
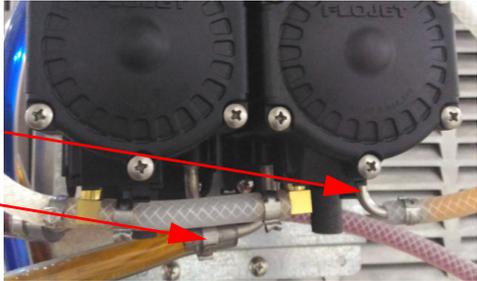
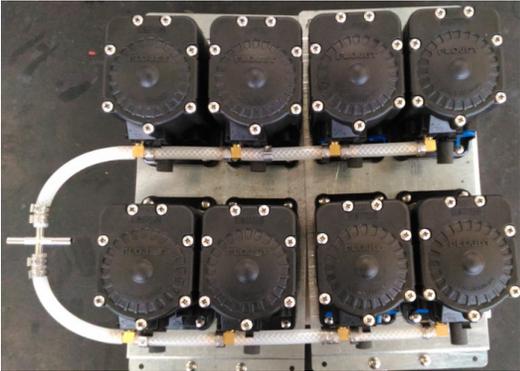
<p>14.</p>	<p>Assemble Injector cap with injector module. Insert the Injector module along with injector cap in to the Valve body.</p>	 <p>Figure 22.</p>
<p>15.</p>	<p>Fasten the injector module to valve body by screw Use #1 Phillips screw driver <b>NOTE: To change valve to right side of the unit, need to interchange dummy cap and injector module accordingly.</b></p>	 <p>Screws</p> <p>Figure 23.</p>
<p>16.</p>	<p>Air inlet hose (blue colour hose) goes into the Quick connector in the pneumatic valve and ensure the hose fixed properly.</p>	 <p>Quick Connector</p> <p>Figure 24.</p>

Table 5: Installation of Valve

17.	Slide the flavour hose sheathing on injector module.	 <p style="text-align: center;">Sheathing Hose</p> <p style="text-align: center;"><b>Figure 25.</b></p>
18.	Connect the power cord to the appliance inlet.	 <p style="text-align: center;"><b>Figure 26.</b></p>
19.	Connect the power cord of the viper.	
20.	<b>For Brix Setting and Brix adjustment refer Viper manual.</b>	

## Installation of Syrup Pump Assembly

Table 6: Installation of Syrup Pump assembly.

<p>1.</p>	<p>Mount the top bracket to flavour pump panel assembly by using 4 qty M5 X 10.0 screws.</p>	 <p>Figure 27.</p>
<p>2.</p>	<p>The clamps of the mounting bracket need to be inserted to 21st louver from top of viper unit and fix the bottom bracket by using 4 qty M5 x 10.0 screws</p>	 <p>Figure 28.</p>
<p>3.</p>	<p>Connect the pumps with syrup inlet hose and outlet of pumps should be connected to flavour solenoids hoses (solenoids are inside the C-box).</p>	 <p>Figure 29.</p>
<p>4.</p>	<p>Connect the air pressure regulator outlet to one end of the "Four way connector".</p>	 <p>Figure 30.</p>
<p>5.</p>	<p>The other end of the "Four way connector", supply the air to purge and hammering solenoids</p>	

**Table 6: Installation of Syrup Pump assembly.**

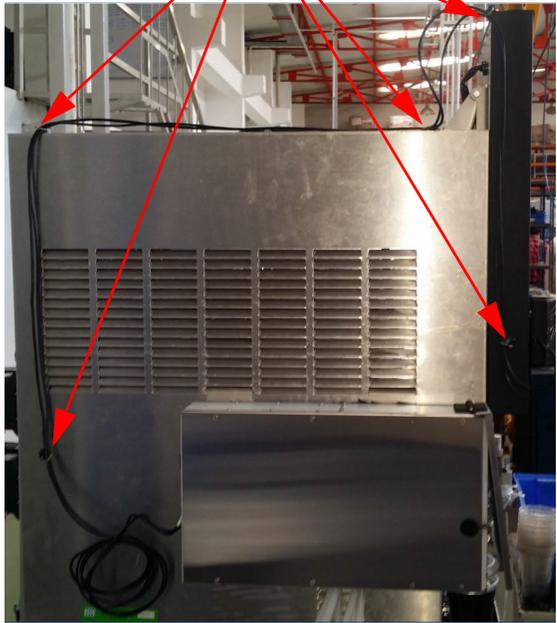
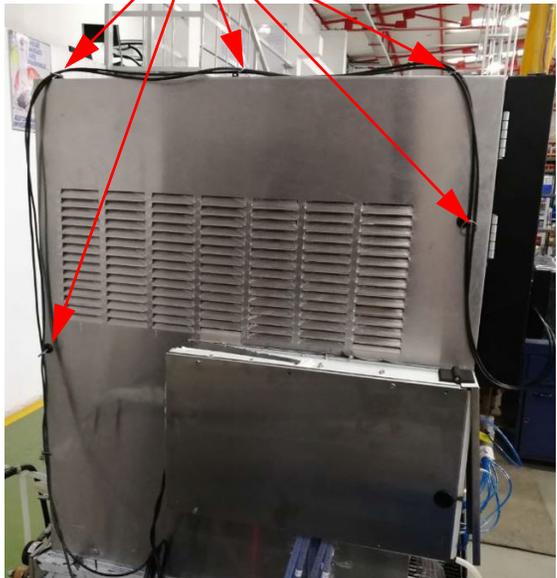
<p>6.</p>	<p>The air regulator should be set to 45psig</p> <p>The inlet of air regulator must be connected to air supply only.</p> <p>The outlet of air regulator will be going to the airline "Four way connector" provided on the syrup pump assembly.</p>	 <p><b>Figure 31.</b></p>
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## Installation of UI display

Table 7: UI display

<p>1.</p>	<p>Connect the Display cable connections from C-box to display module at the shown location.</p>	 <p>Data Cable                      Power input</p> <p><b>Figure 32.</b></p>
<p>2.</p>	<p>Assemble “Grommet Harness (910002239)” on display. Assemble the Display mounting bracket to Display module using “self tapping screws “(910002053) at 8 places. <b>NOTE: Use screw driver, Phillips head #1</b></p>	 <p><b>Figure 33.</b></p>
<p>3.</p>	<p>Assemble the “Display mounting Magnet” by Phillips screw depending on the side of display mounting</p>	
<p>4.</p>	<p>Hook the assembled Display bracket on the Viper merchandiser.</p>	 <p><b>Figure 34.</b></p>

Table 7: UI display

<p>5.</p>	<p>Tie the Magnet to the wire through cable tie and route it on the Viper.</p>	<p style="text-align: center;">Magnets</p>  <p style="text-align: center;">Magnet</p>  <p style="text-align: center;"><b>Figure 35.</b></p>
<p>6.</p>	<p>Connect the Power cord to the main power Supply and switch ON the FMFV Kit and viper</p>	

# OPERATION

## INSTRUCTION

Switch ON the power supply to Power On the Kit.

The machine operation shall be done only by operator.

Update the software and firmware (Refer Software and Firmware update section in page no. 24).

## DISPENSING PRODUCT

### Display

- This unit has 8 different flavours whose icons are shown in the display that help in dispensing the assorted drink
- The Pneumatic dispensing valve get actuated by the compressed air.
- The display has two USB ports which will help the service provider to install the software.

### Dispense Screen

The Dispense Screen has the following options

- Menu
- Hold
- Clear
- Ice Hammer
- Flavour Icons.

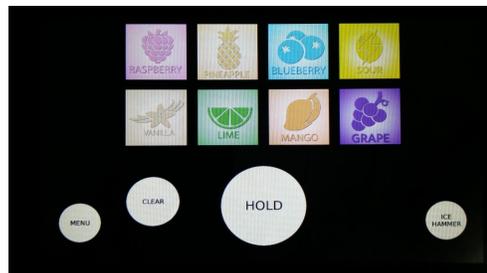


Figure 36.

### Menu

The Menu icon help to go back to the lock screen.

### Hold

To dispense the drink Operator must touch the “HOLD” icon continuously till the cup get filled and the valve stop operating when “HOLD” icon is released.

### Clear

If the operator wants to change the flavour. The operator can touch the “CLEAR” icon which enables to reselect the flavour as needed.

### Ice Hammer

If the Valve has restricted flow use, “ICE HAMMER” to activate the valve via compressed air and clears the way to dispense.

### Flavour Icons

The Unit has flexibility to dispense

- Base drink from barrel
- Base drink with One flavour
- Base drink with Two flavour

### Base Drink

- To get the base drink just touch the “HOLD” icon. Once “HOLD” is released the purge cycle automate starts.

### Base Drink with one flavour

- To get One shot with the Base drink select the One flavour you need, flavour selected will be encircled
- Touch “HOLD” Icon, Base drink with One flavour will dispense. Once “HOLD” is released the purge cycle automate starts.

### Base Drink with Two Flavours

- To dispense the Basic drink with Two flavours, select two flavour's and press the “HOLD” icon. Once “HOLD” is released the purge cycle automate starts
- The dimmed flavour icon indicates the unavailability to dispense the drink with that flavour.

## ADJUSTMENTS

The ratio Adjustment Should only be done by a Qualified Service person by opening the C-Box Door.

### FMFV Brixing

Initiate the test after the Viper unit has stabilized & within five minutes of the compressor cycle - off.

Before start wait for 2 compressor idle cycles to complete. Set the base drink expansion at 80% to 120% as per Viper set up.

1. Set the Base Drink dispense time for 2 second in FMFV Display.
2. Dispense a Base frozen product sample into a Base measuring jar (Capacity 1000 ml.)
3. Dispense at a rate of one sample per minute, repeat the above steps until the expansion volume of five consecutive Base frozen product samples from barrel is stabilized within  $\pm 50$  ml of volume change and temperature between 24-28F.

**NOTE: During measurement slightly shake the base measuring jar to get equal expansion distribution.**

4. Calculate the average of five stabilized base samples volume.
5. Use target Ratio Calculation/Formula to get target flavour volume for ratio 30:1  
$$\text{Target flavour volume (ml)} = \text{Avg base expansion volume (ml)}/30$$
6. Set the flavours solenoids to above target flavour volume (ml) with 2 sec dispense time
7. Dispense flavours at a rate of one sample per minute, repeat the above steps until volume of five consecutive flavours is stabilized within  $\pm 1$ ml of volume change to target and temperature within  $\pm 1^\circ\text{F}$ .

**NOTE: Use flavour measuring jar (capacity 50ml)**

8. After above steps, take five flavours volume samples at one drink per minute for evaluation

**Specification: Flavour volume limit is target flavour volume  $\pm 2$ ml for 3 seconds**

**NOTE: Flavour solenoid range is 0-9 ml/sec.**

## Flavour Syrup Line Cleaning & Sanitizing

 <b>CAUTION</b>	Only trained and qualified persons should perform these cleaning and sanitizing procedures. To sanitize the tubing and BIB connectors, perform the procedure as per Table 8
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### Sanitizing Flavour System

The Flavour system should be sanitized at least every 120-days. Prepare the sanitizer and detergent solutions as per the instructions below.

**Sanitizing solution:** Portable water approximately 12 liters (3.1 gallon) of 20°C - 38°C (70°F-100°F) add 39.0 g (1.3 Oz) of household bleach.

**Detergent solution:** Portable water approximately 12 liters (3.1 gallon) of 20°C - 38°C (70°F-100°F) add 39.0 g (1.3 Oz) of liquid dish washing detergent.

### Sanitizing Flavour System.

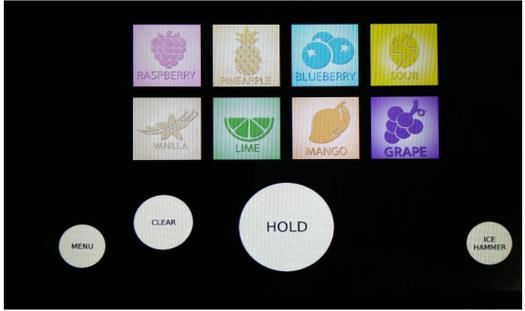
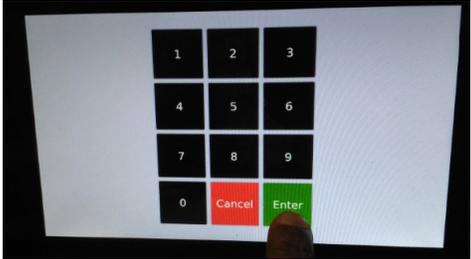
**CAUTION**

To avoid possible personal injury or property damage, DO NOT remove the Flavour line until compressed air pressure has been turned OFF in the regulator.

**Table 8**

Steps	Action	Figure
1	Remove all flavour BIB connectors from BIB containers.	 <b>Figure 37.</b>
2	Take 20 liters (5.28 gallon) bucket and fill warm water Approximately 12 Liter (3.1 gallon).	
3	Immerse all BIB Connectors in warm water in the bucket. Clean BIB connectors using a nylon bristle brush. <b>(Do not use a wire brush.)</b> Rinse all BIB connectors in clean potable water thoroughly.	 <b>Figure 38.</b>
4	Take 20 liters (5.28 gallon) bucket and fill Portable water approximately 12 liters (3.1 gallon) of 20°C - 38°C (70°F - 100°F) add 39 g (1.3 Oz) of liquid dish washing detergent. Mix well to create detergent solution.	

Table 8

<p>5</p>	<p>Connect a sanitizing fitting (P/N 28688) to the flavours BIB connectors. Immerse all BIB connectors connected with sanitizing fitting (P/N 28688) in Detergent Solution in the bucket.</p> <p><b>NOTE: P/N 28688 is available in viper unit accessories.</b></p>	 <p>Figure 40.</p>
<p>6</p>	<p>Press "MENU" Icon on the Display module.</p>	 <p>Figure 41.</p>
<p>7</p>	<p>Input the password by Number tab and press "ENTER".</p>	 <p>Figure 42.</p>
<p>8</p>	<p>Menu setting window will open. Press "BRIX/SANITIZATION" tab.</p>	 <p>Figure 43.</p>

**Table 8**

<p>9</p>	<p>Brix window will open. Select any one flavour. Set Pour Timeout as 10 press "Pour" tab</p>	 <p style="text-align: center;"><b>Figure 44.</b></p>
<p>10</p>	<p>Liquid starts to dispense through Valve, press the "Pour" tab until residue of liquid comes out from the valve.</p>	
<p>11</p>	<p>Repeat the "Pour" cycle for all the liquid lines sequentially by repeating the steps #9 and #10.</p>	
<p>12</p>	<p>Ensure all the flavour lines should hold detergent solution for minimum of 10 minutes, but no more than 15 minutes.</p>	
<p>13</p>	<p>Take 20 liters (5.28 gallon) bucket and fill water Approximately 12 Liter (3 gallon).</p>	
<p>14</p>	<p>Immerse all BIB connectors connected with sanitizing fitting (P/N 28688) in the bucket having rinse water.</p>	 <p style="text-align: center;"><b>Figure 45.</b></p>
<p>15</p>	<p>Repeat the steps From #6 to #11</p>	
<p>16</p>	<p>Take 20 liters (5.28 gallon) bucket and fill Portable water approximately 12 liters (3.1 gallon) of 20°c - 38°C (70°F - 100°F) add 39 g (1.3 Oz) of household bleach to create sanitizing solution. <b>IMPORTANT: The sanitizing solution must not exceed 200 PPM chlorine.</b></p>	
<p>17</p>	<p>Immerse all BIB connectors connected with sanitizing fitting (P/N 28688) in the bucket having sanitizing solution.</p>	 <p style="text-align: center;"><b>Figure 46.</b></p>

**Table 8**

18	Repeat the steps From #6 to #11	
19	Ensure all the flavour lines should hold sanitizing solution for minimum of 10 minutes, but no more than 15 minutes.	
20	Take 20 liters (5.28 gallon) bucket and fill water Approximately 12 Liter (3 gallon).	
21	Immerse all BIB connectors connected with sanitizing fitting (P/N 28688) in the bucket having rinse water.	 <p data-bbox="1062 787 1175 814"><b>Figure 47.</b></p>
22	Repeat the steps From #6 to #11	

## Software and firmware update

Table 9

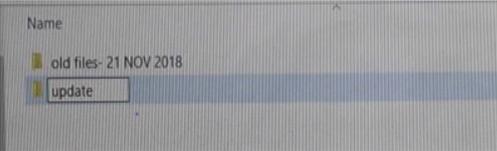
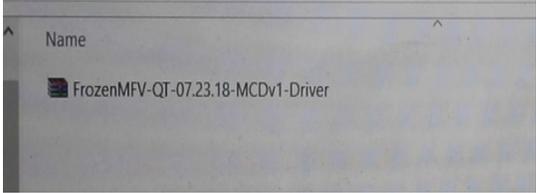
<p>1.</p>	<p>Software shall be updated by a trained technician</p> <p>Connect USB storage drive to your computer.</p>	
<p>2.</p>	<p>Create folder named “update” in the USB storage drive.</p>	 <p><b>Figure 48.</b></p>
<p>3.</p>	<p>Download and save the software update zip folder</p> <p>Example: (FrozenMFV-QT-07.23.18-MCDv1-Driver) inside “update” folder.</p>	 <p><b>Figure 49.</b></p>
<p>4.</p>	<p>Safely remove the USB drive from your computer.</p>	
<p>5.</p>	<p>Plug the storage media in to USB port Located under the left side of display (connect to any one port)</p>	 <p><b>Figure 50.</b></p>

Table 9

<p>6.</p>	<p>Press menu icon on FMFV Display-Operator Screen; enter the Pass code 13795 to get access to technician menu.</p>	 <p><b>Operators Screen</b> Figure 51.</p>  <p><b>Pass Code Screen</b> Figure 52.</p>
<p>7.</p>	<p>Press Upgrade Software Icon on the screen.</p>	 <p><b>Figure 53.</b></p>
<p>8.</p>	<p>Select the right upgrade file; Example: FrozenMFV-QT-07.23.18-MCDv1-Driver.Zip</p>	 <p><b>Figure 54.</b></p>

Table 9

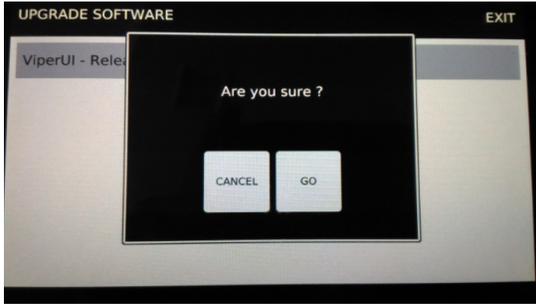
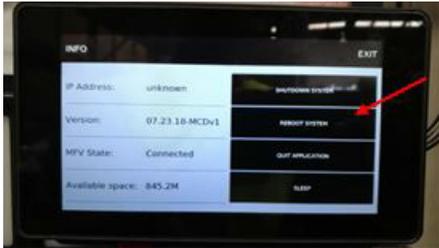
<p>9.</p>	<p>“Are you sure?” screen will pop up, Press “Go” to continue.</p>	 <p style="text-align: center;"><b>Figure 55.</b></p>
<p>10.</p>	<p>A new window will pop up showing “update completed “. Press Reboot icon.</p>	 <p style="text-align: center;"><b>Figure 56.</b></p>
<p>11.</p>	<p>Wait till display reboots.</p>	
<p>12.</p>	<p>Repeat the step #6 to #11, Upgrade software one more time.</p>	
<p>13.</p>	<p>Press menu and enter the technician password code 13795.</p>	 <p style="text-align: center;"><b>Figure 57.</b></p>  <p style="text-align: center;"><b>Figure 58.</b></p>

Table 9

<p>14.</p>	<p>Press the INFO menu button and check if a new the version:  Example: MFV-QT-07.23.18-MCDv1 appears and Available space should be more than 800MB</p>	 <p><b>Figure 59.</b></p>  <p><b>Figure 60.</b></p>
<p>15.</p>	<p>In "INFO" screen press reboot system.</p>	
<p>16.</p>	<p>Display will reboot with new upgrade software and is ready to use.</p>	 <p><b>Figure 61.</b></p>  <p><b>Figure 62.</b></p>

## COMPONENT SERVICE

The following are procedure for replacing the major components of the Kit.

### DIFFUSER REPLACEMENT

1. Defrost the System (Ref Viper product manual)
2. Dispense all the Base Syrup in the Respective Viper barrel
3. Remove front panel turn OFF 3 way valve
4. Disconnect power to the Unit.
5. Loosen the grub screw and remove the pneumatic Cylinder
6. Remove the Diffuser fin from bottom of diffuser body by unscrewing
7. Replace the Diffuser body

### SIDE SEAL

1. Turn barrel "OFF" from menu
2. Remove the Side cap and Injector Module
3. Remove existing seals and assemble new seals

### CYLINDER SPRINGS

1. Defrost the System (Ref Viper product manual)
2. Dispense all the base Syrup in the respective viper barrel
3. Loosen the grub screw and remove the Pneumatic Cylinder
4. Open the Pneumatic cylinder by Removing the Top Cover
5. Remove existing lengthier spring and Insert New springs

### PISTON O-RING

1. Defrost the System (Ref Viper product manual)
2. Dispense all the base Syrup in the respective viper barrel
3. Loosen the grub screw and remove the Pneumatic Cylinder
4. Remove existing seal and assemble new seal

### MAC VALVE

1. Disconnect power to the Unit.
2. Shut off the compressed air/Co2 at source
3. Remove the pneumatic Hose and Injector module out of the Valve
4. Take out the C-Box and place it on flat surface
5. Remove the side panel, Disconnect the inlet and out let pneumatic connections of the mac valve
6. Disconnect the electrical harness
7. Remove existing Mac Valve and assemble new mac valve

# TROUBLE SHOOTING

 <b>WARNING</b>	Only an authorized service person should service internal components or electrical components.
	To avoid personal injury disconnect electrical power to the unit before attempting any electrical repairs or working on the internal parts of the unit.
	If repairs will be made to the compressed air or water systems, shut off compressed air and water supplies, then bleed systems before proceeding.
 <b>CAUTION</b>	If repairs are to be made to one of the syrup circuits, disconnect applicable syrup tank and bleed pressure from the system before proceeding.

**Table 10: Troubleshooting**

Trouble	Probable Cause	Remedy
Valve not Dispensing the Drink	<ol style="list-style-type: none"> <li>1. Compressed air supply not available/less pressure.</li> <li>2. Mac valve malfunctioning.</li> <li>3. Display HOLD button not operating.</li> <li>4. Ice Bridging or Ice ball formation</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for compressed air pressure in regulator set to 45±5.</li> <li>2. Check electrical connection to MAC valve/Replace the Defective MAC valve.</li> <li>3. Check for the display cable connection.</li> <li>4. Start hammering (Ref Operation section) or Defrost (Ref Viper Product Manual)</li> </ol>
Continuous valve leakage	<ol style="list-style-type: none"> <li>1. BIMBA not closing or partially closing.</li> <li>2. Failure of Diffuser assembly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the BIMBA cylinder.</li> <li>2. Need to change the Diffuser (Service call) or Need to replace O-ring (Service Call)</li> </ol>
Carry Over of flavour	<ol style="list-style-type: none"> <li>1. Failure of side seal</li> <li>2. Check valve in the injector failed</li> <li>3. Purge solenoid leakage or failure</li> <li>4. Injector failure or Duck bill failure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Need to replace with new Side Seal (Service call)</li> <li>2. Need to replace injector module (service Call)</li> <li>3. Check for Solenoid Leakage if no leakage need to replace the purge solenoid (Service call)</li> <li>4. Replace the injector module assembly.</li> </ol>
Leakage from Side	<ol style="list-style-type: none"> <li>1. Failure of side seal</li> <li>2. Failure of injector cover</li> </ol>	<ol style="list-style-type: none"> <li>1. Need to replace with new Side Seal (Service call)</li> <li>2. Need to replace Injector seal</li> </ol>

<p>Valve not dispensing flavour or less flow flavour</p>	<ol style="list-style-type: none"> <li>1. No power supply to MFV solenoid valve.</li> <li>2. MFV solenoid knob opened fully.</li> <li>3. MFV solenoid plumbing pinch/leakage</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for electrical connection.</li> <li>2. Adjust Brix</li> <li>3. Check the plumbing connection for no pinch or leakage.</li> </ol>
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## Plumbing Diagram

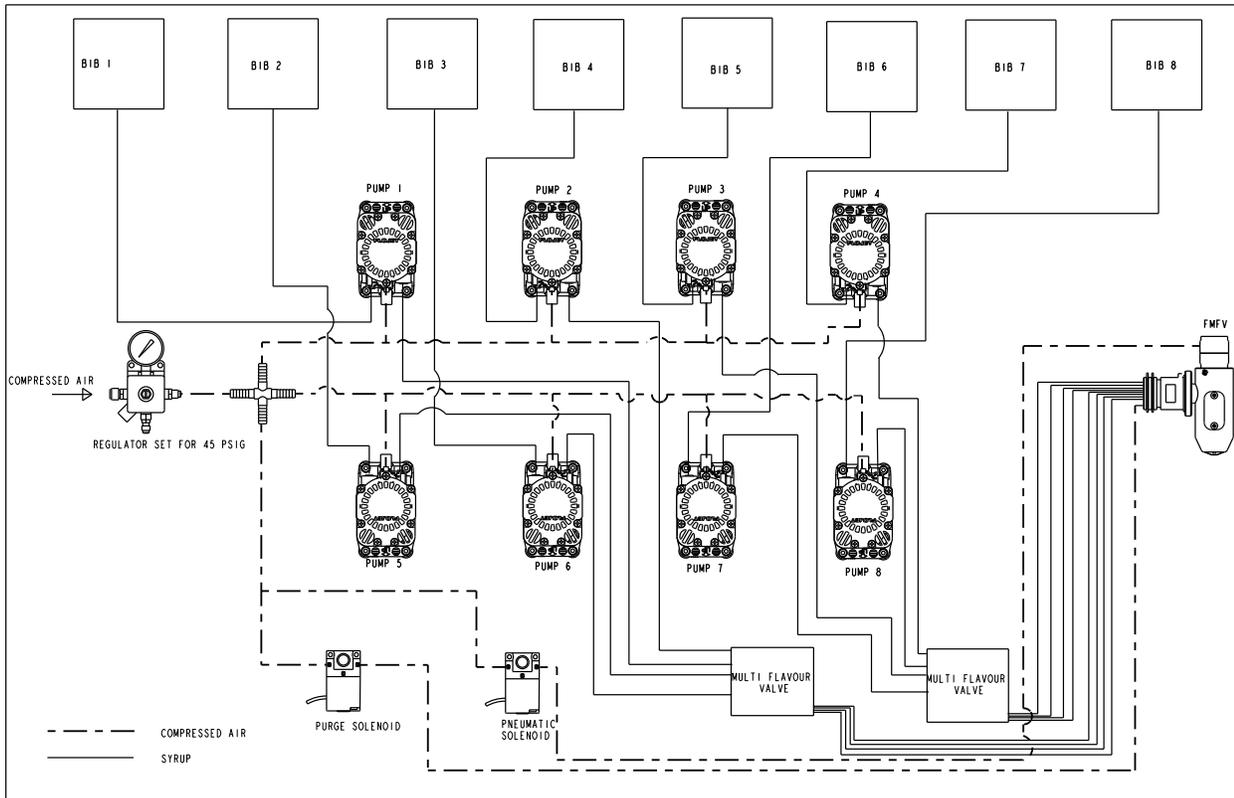


Figure 63.





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