Energize Tower

Product manual

Model number range
06 1 0033XX

Doc ref: 06 0 003901
08/10/2010 Issue: 1

Before you start

Packaging

- **Ensure there is no damage to outer packaging**
- **Ensure there is no damage to outer carcass of the Tower**
- **Record the nature of any damage found on the couriers documents**

Pre-installation

- **Record the model and serial number on the provided space below**
- **Record the installation date**
- **Record the name of the installation company**

This product manual

- **Please keep safe as the recorded information below maybe required by your supplier or manufacturer in the unlikely event of component failure**

Model number:	
Serial number:	
Installation date:	
Installation company:	

Contents

1. Introduction

The Energize Dispense Tower is a through-the-counter mounted assembly. This dispense tower incorporates a modular design approach. The tower can be supplied with Leopard or LVV valves so performance can be matched to the system, giving quality in specification drinks.

A template is supplied with each tower, this template dictates the shape and dimensions of the required cut-out in the counter top unit, to allow the tower to be installed.

Specification: For a full specification, refer to the product data sheet.
Dimensions Nozzle to cup rest: 191mm minimum

Tower	**8P Pass-thru**	**8P Front-draw**
Height	750mm	493mm
Width	700mm	590mm
Depth	450mm	330mm

Energize Towers comply with EMC Directive 89/336//EEC as amended by 92/31/EEC.
Low Voltage Directive 73/23/EEC as amended by 93/68/EEC.

CE

2. Installation & setup

2.1 General

Installation must be done only by a trained service person, and must comply with national, state or territorial, and local codes for connection to water and electrical supplies.

Unpacking and Handling
Remove the tower from its packaging and visually inspect the product for scratches and/or signs of damage.
Check that the package includes the following component parts:

- Tower
- Cup rest
- Transformer
- Fittings kit

If damage has occurred or parts are missing, make a notation on the delivery receipt and notify the shipper immediately.

General
Warning - Site the tower to avoid temperatures below 32° F (0° C). Heat exchangers located in the Tower, are in a fixed position which cannot be altered. Please ensure templates cut-outs are followed accurately.

1. Select a suitable counter position for the tower. Refer to the overall dimensions and the mounting template details (refer to the mounting template) to ensure that there is enough available room for the tower.
2. Using mounting templates (supplied with Tower), mark the counter. Cut the counter according to the markings.
3. Bolt the tower to the counter using hardware from the fitting kit.
4. Connect the product, plain water, and soda water inlet tubes to the python, and plumb in the permanent drain. (See plumbing schematic for details of arrangements)
5. Ensure all soda & still water lines are correctly insulated. **Note –** Syrup lines do not require insulation until exiting the heat exchanger as assembled.
6. Connect the tower to a suitable 24V power supply, or the included transformer. Ensure supplied transformer is connected to a suitable mains socket which conforms to local legislation.
7. Turn on power, allow 4 minutes for valves to charge.
8. Check Backroom package to ensure syrups are connected, syrup pumps are working, water supply is on & all is working to specification.
9. Purge valves until water & syrup consistently flows from valve nozzles.
10. Set the dispense valves. (For Leopard see pages detailed ‘Leopard Valve Setup using Tomcat controller)
11. Carry out a final inspection of the installation to ensure that there are no leaks. Repair if necessary.
12. On completion of installation advise store management & staff of operation & functionality.

2.1.1 Still water module connection
(Only applicable on certain models)

Model numbers with this feature include - **06 1 003317, 06 1 003316**
The above models contain a still water module PCB **(**part number 22 0108 431) which is connected to the valve(s) that utilizes mid carbonation. When operated power activates the still water boost pump. This ensures that mid carbonated drinks (depending on requirements) can be served.

Fig.1

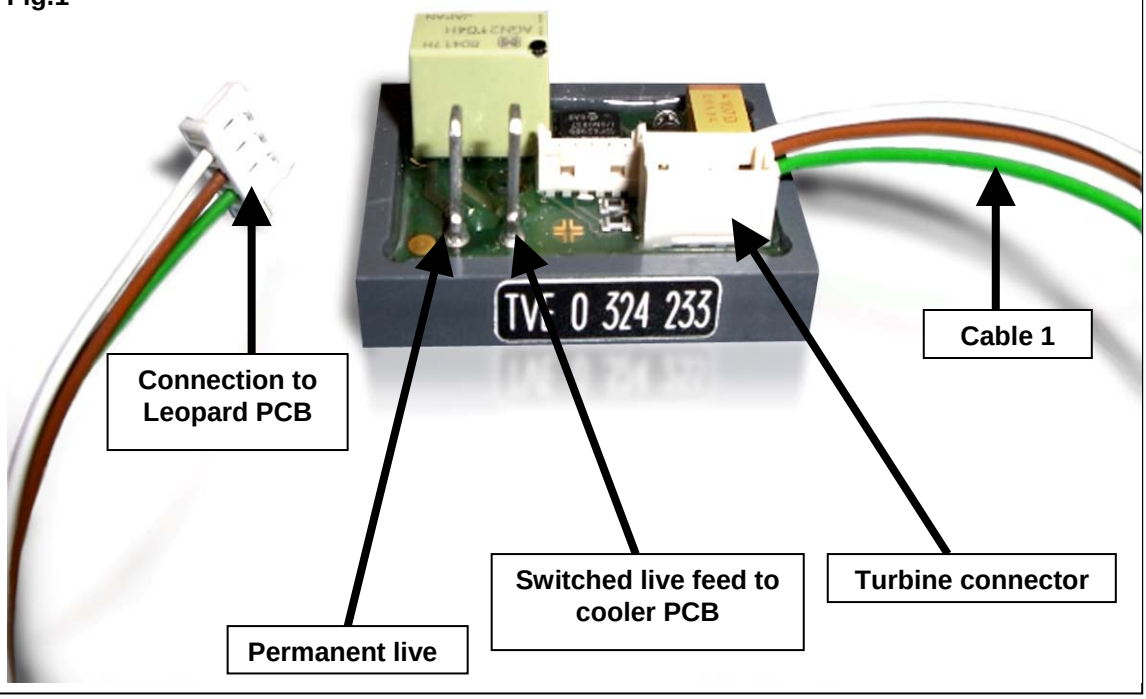


Figure 1 shows a photograph of the module and indentifies its connection

Instructions

- Remove plug from turbine and place to Still water board
- Connect cable (1) from still water board to Leopard PCB
- Connect permanent 24V supply wire to permanent live connection on water module PCB
- Run a 2 core cable from Tower to cooler
- Connect 2 core cable to main cooler board as shown in figure 2
- Connect 2 core cable to valve wiring harness on Tower see figure 3 (Refer to wiring diagram on p. 28 for confirmation)

Fig.2

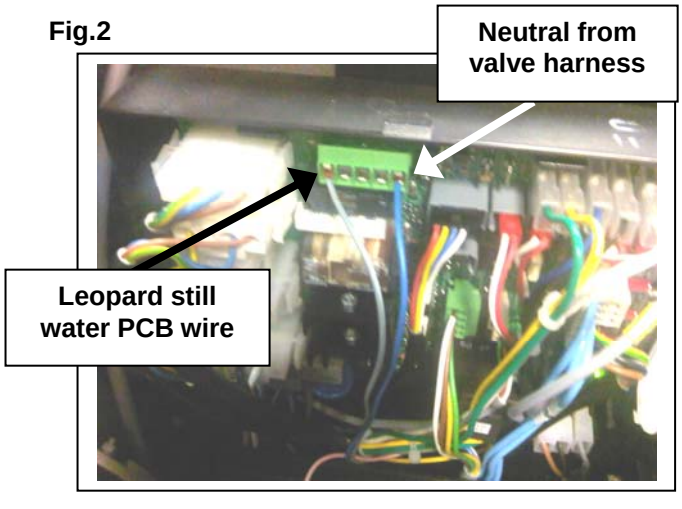
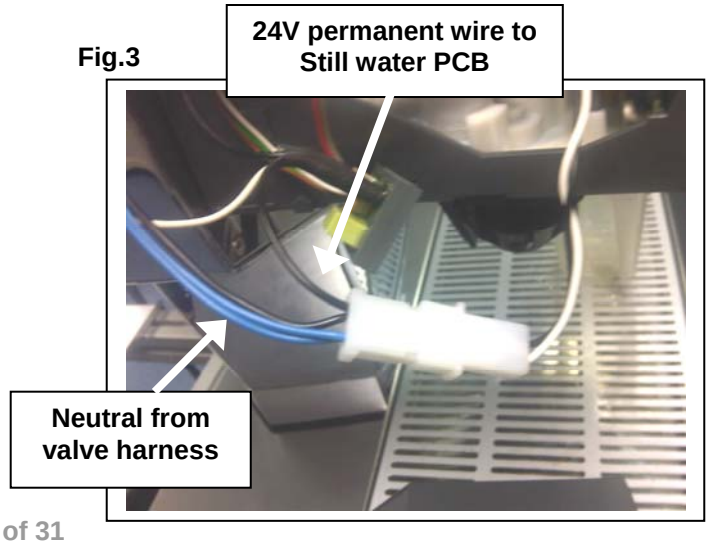
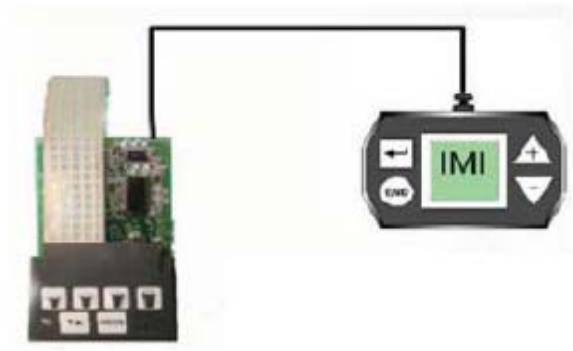


Fig.3



2.2 Leopard Valve Setup using Tomcat controller part 1 of 8

Note – Tomcat V3 instructions differ from Tomcat V4… V3 Tomcats have a yellow label on the rear casing, V4 Tomcats have orange label on the rear casing.



Leopard Valve Setup with the Tomcat

When the Leopard valve is connected to power an LED light on the PCB will begin flashing. The quick flashing indicates the valve is charging. When the flashing slows down the valve capacitor has charged and the valve is ready for operation or setup. The flashing LED on the front of the valve keypad indicates the valve is charging and when off is operational. If the keypad light is steady on, it is an indication that there is an error either on the water side or syrup side. Generally the light is indicating the valve is out of syrup.

Connecting to Valve

Remove valve cover and plug Tomcat USB connector into Leopard PCB. Top right hand side, back side of board. The Tomcat will receive its power from the Leopard valve.

TOMCAT BUTTON LAYOUT

Leopard ERV™ Tomcat Operator's Manual © 2008-2010 IMI Cornelius Inc.	Part Number: 620920851INS Revision Date: July 20, 2010 Revision: H

Leopard Valve Setup using Tomcat controller part 2 of 8

IMPORTANT NOTICE!

Before performing any Tomcat setup, the valve MUST be activated 2 or 3 times using the valve keypad or lever on the valve. A medium sized drink should be poured.

This MUST be done anytime before a Tomcat setup is performed.

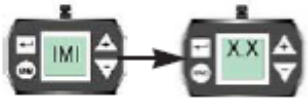
These dispenses can be done with the Tomcat plugged in or just before Tomcat is plugged in and are required to ensure that the Leopard valve sees consistent water and syrup flow.

Failure to do these dispenses could result in an improperly set valve.

If troubleshooting assistance is needed, please refer to the Leopard Service manual (620919579SER).

The following procedure describes the initial setup of the Leopard ERV valve.

Table 1. Initial Startup Procedure

Step	Action	Tomcat Display
1	When Tomcat is initializing, IMI is displayed. The second display is Tomcat's software version x.x. Screen then advances to the next function.	
2	Select OZ or ML Press + or - to toggle. (OZ is the default setting) Press ENTER to set and advance to the next function.	
3	CAP is displayed if the capacitor is being charged. Charging can take up to 5 min. depending on the amount of lost charge. Screen automatically advances to next function when charged.	
4	If the valve is new and has not been setup previously, then only SET and PUR are available menu options. Otherwise, all 5 menu options shown are available.	
Home Menu		

Error Display

ERRORS can be displayed in 2 ways. One way would be thru the Tomcat display showing an ERx and the other way would be from the LED keypad on the Leopard valve. The type of Error display is dependent on the mode of the Tomcat, but is also visibly noticed by no Water or Syrup dispensing.

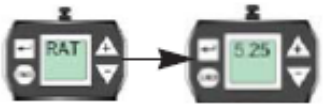
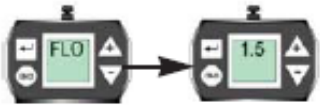
- Tomcat Displayed Errors are as follows:
  ER1 is for insufficient Water
  ER2 is for insufficient Syrup
  ER3 is for insufficient Water and Syrup
  ER4 is for improper writing to the Valve
  ER5 is for dispense time too long
- Leopard Valve Errors shows up as a "Sold-Out" light on the Valve Keypad.

For all ERRORS, fix the Water and Syrup supplies and then rerun the desired Tomcat routines.

Leopard Valve Setup using Tomcat controller part 3 of 8

SET (Valve Setup)

Table 2. Beginning Valve Setup Procedure

Step	Action	Tomcat Display
1	When SET is displayed the valve is ready to be set up. Press ENTER to begin the programming. Screen advances to the next function. **Note:** Once in the valve programming mode you cannot back out. Disconnect Tomcat to Exit.	
2	One of the following must be selected. SG/NSG/H2O. Press + or - to advance through the menu. Press Enter to select: SG - Sugar or NSG - No Sugar. Screen advances to the next function.	
	  	
3	If H2O is selected, the valve dispenses water only. Screen advances to the flow rate screen. Input flow rate as shown below and press ENTER. Screen displays OK?, then returns to SET display.	
4	RAT flashes for 2 sec. then advances to the value screen. Current value for Ratio is displayed. Press + or – to increase or decrease ratio to appropriate value in 0.05 increments. Press ENTER to set ratio. Screen advances to the next function.	
5	FLO flashes for 2 sec. and then advances to the value screen. The current value for Flow Rate is displayed. Press + or - to increase or decrease ratio in 0.1 increments. Press ENTER to set ratio. Screen advances to the next function.	
6	CUP flashes for 2 sec. and then USA or RVC is displayed. Press + or - to toggle between USA or RVC. Press ENTER to set cup style and Ratio Adjustment method. Screen advances to the next function.	

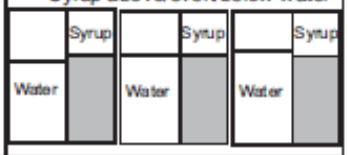
After choosing the type of ratio cup being used and performing the Pre-Pour Learning procedure in Table 3, perform the procedure in Table 4 or Table 5, to bring the valve into proper ratio. The "S" Splitter is required for both of these procedures.

Table 3. Ratio Cup Pre-Pour Learning Procedure

Step	Action	Tomcat Display
7	When SPL is displayed, insert the splitter into the valve nozzle. Press ENTER to advance.	
8	1st Pour - SPL display flashes. Water and syrup begin to flow for about 1 sec. and then shut off. 2nd Pour - SPL display is still flashing and the motors slowly open and then close again. 3rd Pour - SPL display still flashes & a 400ml drink is dispensed. The screen automatically advances to the Ratio Adjustment method determined in Table 2.	

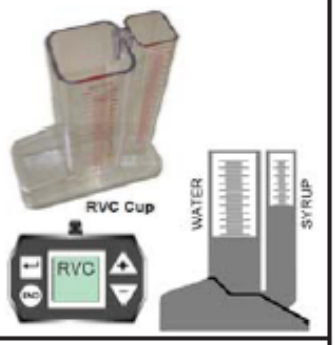
Leopard Valve Setup using Tomcat controller part 4 of 8

Table 4. USA Ratio Cup (Rectangular Ratio Cup) Procedure

Step	Action	Tomcat Display/Info
9A	When USA is displayed, place the ratio cup under the splitter and nozzle. Press ENTER to advance	
10A	Remove the Ratio Cup from under the splitter and nozzle and place it on a flat, level surface. Tap the ratio cup 3 times before reading the levels.	
11A	Observe the syrup level versus the water level in the cup. The Tomcat displays 0.0. If syrup is above the water level, press the + button. If syrup is below the water level, press the - button. Each button press is 0.5 or 1/2 of a window.	Syrup above/even/below water 
12A	Match up the Tomcat USA display to show how the ratio cup looks. If the syrup is 2 windows above the water line. Press + four times until it reads +2.0. If the syrup is 2 windows below the water line. Press - four times until a reading of -2.0.	
13A	If MAX or MIN is displayed during the adjustment, the maximum adjustment to the valve has been made. Check for improper system operation or valve operation and then rerun the test.	
14A	Once you have the desired number showing on the display, then press either ENTER or END after reading the following instructions; Press ENTER when you want to rerun the adjustment routine. The USA is displayed. Place the ratio cup under the splitter and nozzle and press ENTER, this repeats the syrup adjustment function. You can continue to rerun as many times as necessary. Press END when the proper syrup level is shown in the ratio cup and the screen reads 0.0. Press the END button. This saves all the setting information to the valve. The valve is now completely set up. The screen returns to the Home menu SET function.	
15A	After setup is complete, activate the valve to insure it is operating properly.	

Leopard Valve Setup using Tomcat controller part 5 of 8

Table 5. RVC Ratio Cup (Ratio Volume Cup) Procedure

Step	Action	Tomcat Display/Info
9B	When RVC is displayed, the unit automatically displays ML. Place the ratio cup under the splitter and nozzle. Press ENTER to dispense.	
10B	Remove the ratio volume cup from under the splitter and nozzle, place it on a flat surface and tap the cup 3 times before reading the levels.	
11B	Press + or - buttons until the value shown on the screen matches the water volume (ml.) in the ratio volume cup. Each press of the button is a 1 ml. adjustment.	
12B	Press ENTER when complete and advance to the Syrup adjustment.	
13B	Press + or - buttons until the valve showing on the screen matches the syrup volume (ml) in the Ratio Volume Cup. Each press of the button is 0.5 ml of adjustment. If **MAX** or **MIN** is displayed during the adjustment, the maximum adjustment to the valve has been made. Check for improper system operation or valve operation and then rerun the test.	
14B	Press ENTER to rerun the RVC adjustment section again. Repeat as many times as desired.	
15B	Press the END button to finish and save all setting information to the valve. The valve adjustment is now complete and the screen returns to the Home menu SET function.	
16B	After setup is complete, activate the valve to insure it is operating properly.	

PUR (Purge)

To purge the valve, refer to Table 6 for the proper selection.

Table 6. Purge Setting Display

Select • Water • Syrup • Water & Syrup 

Leopard Valve Setup using Tomcat controller part 6 of 8

NFO (Information)

To display information on the valve, select the appropriate display, as shown in Table 7.

Table 7. Information Setting Display

SG, NSG, H2O	(Valve syrup type)	
RAT	(Valve ratio)	
FLO	(Valve flow rate)	
SW	[Valve software (XXX)]	
CNT	[Valve dispensing count (XXX) (XXX) (XXX)]	
SRL	[Valve serial number (XX) (XX) (XX) (XXX)]	

MF (Maximum Flo Rate)

Use the procedure in Table 8 to measure the system and determine the valve's maximum drink flow rate, maximum water flow rate and maximum syrup flow rate.

Table 8. Maximum Flo Rate Procedure

Step	Action	Tomcat Display
1	When SET is displayed in the Home Menu, press + or - button until MF is displayed.	
2	Press ENTER again. The MF display flashes and both the Water and Syrup motors open the valves to the maximum open position while the flow rate of each is measured. The motors remain on for about 4 seconds and then automatically turn off.	
  		
3	The calculated maximum, drink flow rate is displayed on the screen in the units that have been selected earlier. The WATER and SYRUP icons also flash.	
4	Press +or - buttons to change the display and to advance to the SYRUP maximum flow rate.	
5	Press + or - buttons again to change the display and to advance to the WATER maximum flow rate.	
6	Press END when complete and to return to the Home Menu and SET.	

Leopard Valve Setup using Tomcat controller part 7 of 8

POR (Setting the Leopard Valve Portions)

In the SET mode press + or - to the display POR. Press ENTER and then press + or - to scroll through available default portions. Press ENTER to select the desired portions. The portions are fixed and cannot be changed with the Tomcat in this mode. To set portions to any other setting follow manual portion setting procedure in Table 10.

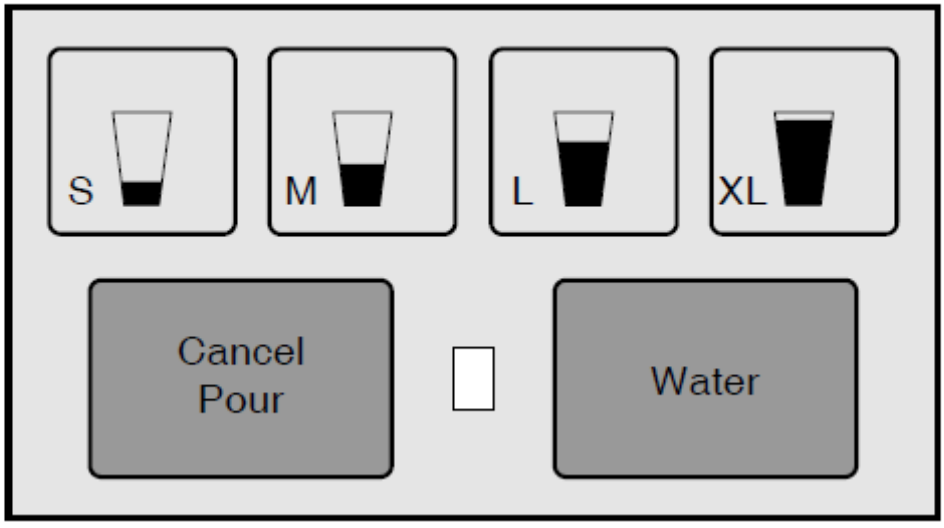
Table 9. Factory Portion Defaults

	S	M	L	XL	
Us (oz.)	8.4	11.6	16.7	24.7	
EU (ml.)	250	400	500	500	
AUC (ml.)	229	327	501	730	
AUN (ml.)	180	300	430	605	
CH (ml.)	250	400	500	500	
QK (ml.)	250	350	500	500	

Table 10. Manual Setting of Portions Procedure

Step	Action
1	Plug the Tomcat into the Leopard Valve.
2	Press S and XL to enter portion programming mode.
3	Place small cup with correct portion of ice under the nozzle.
4	Press the S button until desired level is obtained in the cup.
5	Continue to next size and repeat Step 4.
6	When all sizes are portioned press Cancel button to exit the portion programming mode.
7	Unplug the Tomcat from the valve.

BUTTON MEMBRANE PAD WITH WATER BUTTON



Leopard Valve Setup using Tomcat controller part 8 of 8

Program Modes and Abbreviations

Table 11

Modes & Abbr.	Description	Purpose of Function
AUC	Australia carbonated factory portion settings	
AUN	Australia non-carbonated factory portion settings	
USA	Rectangular Ratio Cup	USA ratio cup used to set proper ratio.
CAP	Capacitor Charging	Visual when capacitor is charging
CNT	Count	Total no. of activations of the valve.
ERx	Error Occurred	Water, syrup or connection error. Valve resets after a button press.
EU	Europe	Europe factory portion settings.
FLO	Flow Rate	Mode to set or view valve flow rate.
H2O	Water	Allows water only to be dispensed from valve.
IMI	Valve Initializing	First display to appear when Tomcat is connect to the Leopard valve.
MAX/MIN	Maximum Adjustment	Displays when the maximum or minimum adjustments have been made.
MF	Maximum Flow Rate	Displays for Maximum Flow Rate test.
mL	Milliliters	All displays in milliliters.
NFO	Information	Information mode allows displays regarding valve information.
NSG	No Sugar Based Product	Allows the selection of No Sugar Based products.
OK?	Completing Ratioing	Ones ratio is completed.
OZ	Ounces	All displays in ounces.
POR	Portions	Allows user to enter portion mode.
PUR	Purge	Allows user to purge water, syrup or both.
QK	Quick Restaurants factory portion settings.	
RAT	Ratio	Mode to set ratio or view ratio.
RVC	Ratio Volume Cup	RVC ratio cup used to set proper ratio.
SET	Main Menu and Beginning of valve setup	Mode to move through menus or to begin valve programming.
SG	Sugar based product	Allows the selection of sugar based products.
SPL	Splitter	Valve splitter to separate syrup and water.
SRL	Serial Number	Serial no. displayed in Information mode.
SW	Software for valve	Valve software version displayed in Information mode.
US	United States	United States factory portion settings.

2.3 Lancer volumetric post-mix valve (LVV)

Description
The volumetric valve dispenses post-mix beverages accurately over a broad range of pressures and syrup viscosities. Configurations, from a self-serve lever to a portion control panel interface, allow the volumetric valve to fit many different applications. It mounts to a standard LEV® back block and utilizes the same cover as the LEV®.

The condensed manual containing full specifications for the LVV valve can be downloaded by registering at: www.corneliusuk.com/Corporate/Document-Library

Specifications

Finished drink flow rates:
• 3.00 ounces per second (88.7 ml/sec) [Gray flow washer housing]
• 2.25 ounces per second (66.5 ml/sec) [White flow washer housing]
• 1.50 ounces per second (44.4 ml/sec) [Red flow washer housing]

Requirements:		
Flowing pressure (at the valve)	**Minimum**	**Maximum**
• Water	40 psig (2.8 Kg/cm2)	110 psig (7.7 Kg/cm2)
• Syrup (Sugar)	20 psig (1.4 Kg/cm2)	70 psig (4.9 Kg/cm2)
• Syrup (Diet)	10 psig (0.7 Kg/cm2)	70 psig (4.9 Kg/cm2)

Electrical Requirement:
24 VAC, 50/60 Hz

3. Still water conversion

To convert the dispense valve supply from soda to plain water:

1. Shut off the carbonated water, plain water and syrup supplies to the system. Release pressure in the lines by activating valves and lifting the carbonator relief valve. Turn electric power to the dispensing tower OFF ("0")
2. Remove the tower cap and access panels.
3. Remove the designated dispense valve to expose the valve mounting block. Remove the four shut off valve mounting block screws, and remove the valve mounting block.
4. Remove the manifold feed pipe from the soda water recirculation manifold.



5. Seal the manifold with the plug provided ensuring the red collet clip is secured into position.
6. Remove the blanking plug from the spare still water line supplied in the python.
7. Add the dispensing elbow supplied, to the spare still water line and connect to the back of the mounting block.

8. Secure the mounting block with the four screws and mount the valve.
9. Add the access panels and turn on the electrical supply, purge the system, check the brix and check for leaks.

3.1 Soda water conversion

To convert the dispense valve supply from still water to soda water:

1. Shut off the carbonated water, plain water and syrup supplies to the system.
2. Release pressure in the lines by activating the valves and lifting the carbonator relief valve.
3. Turn electric power to the dispense tower OFF ("0").
4. Remove the cup lid holder and slide the front panel section including the valve control pads out of the tower.
5. Remove the designated dispense valve to expose the valve mounting block.
6. Remove the four mounting block screws and remove the mounting block.
7. Remove the grey plug.

8. Add the dispense stem from the install kit.

9. Position the manifold feed pipe and the original syrup line in the valve mounting block.
10. Lubricate the ring seal with soda water.
11. Secure the valve mounting block with the four screws.
12. Turn the electrical power to ON ("I")
13. Restore the product supply. Purge the system, check the brix and check for leaks.
14. Verify the drink quality.

4. Service & maintenance

General
Maintain these items daily for optimum drink quality and maximum unit life.
Always switch off the mains supply & unplug the equipment if it malfunctions or suffers spillage or physical damage.

Persons performing cleaning and sanitizing operations must be fully trained in safe methods of use and application of cleaning and sanitizing agents. Wear personal protective equipment when performing cleaning and sanitizing operations. Operators must make no adjustments to the equipment.

On a daily basis:

1. Remove the cup rest from the drip tray, clean with a suitable cleaning solution and rinse with fresh water. Wipe the drip tray clean, and replace the cup rest.
2. Remove Nozzle catcher and wash under warm water to remove any syrup deposits.
3. Remove the nozzle assembly (outer nozzle and diffuser). Wash both parts in warm water only - do not use detergent as this will cause foaming and an off taste in the product. DO NOT SOAK OVERNIGHT. replace nozzle assembly.
4. Regularly remove the cup lid holder and wire lid separator. Clean them with a suitable cleaning solution and rinse with fresh water.
5. As needed, clean the metalwork of the tower with a soft cloth and non-abrasive food grade cleaning agent, as recommended by the installer.

Additionally, a trained person can clean the total system twice annually to sanitize the product coils and lines. Use a proprietary alkaline hypochlorite cleaner/sanitizer according to the manufacturer's instructions. To assist this process a Leopard Flush Device should be used which enables the valve to remain open for extended period of time to assist with flush. (Part no. 620314880)

Product coils/lines should be cleaned by flushing with water, followed by a chlorinated alkaline sanitizing agent and final potable water flush when tainting is evident or when advised by the equipment installer or beverage supplier.

Leopard valve component replacement

Note – Full illustrated Leopard valve service manual is available on request.

Syrup module replacement guide –	P/N 620049348
Water module replacement guide –	P/N 620049349
PCB module replacement guide –	P/N 620049350
Mixing body replacement guide –	P/N 620049354
Leopard valve trouble shooting guide –	P/N 620919579PM

4.1 Leopard valve component replacement

Portion control keypad replacement

1. Switch off power to valve
2. Remove portion control ribbon cable plug from PCB
    - If Pass-through, remove ribbon cable from 'Y' splitter connector
3. Remove keypad from front panel. Tip – a suitable sharp knife can be used to remove keypad, please ensure any remaining adhesive is removed from surface.
4. Thread new keypad ribbon cable through front slot
5. Remove backing sheet to expose the adhesive on the rear of the keypad
6. Carefully adhere keypad to panel taking care of the alignment
7. Reconnect ribbon plug to PCB
8. Switch on power, allow valve to charge, & test operation

Syrup module replacement	**Water module replacement**
1. Close Backblock	1. Close Backblock
2. Dispense to release pressure	2. Dispense to release pressure
3. Unplug Power Connector	3. Unplug Power Connector
4. Remove Retaining Spring	4. Remove Retaining Spring
5. Remove Valve	5. Remove Valve
6. Remove Nozzle/Diffuser	6. Remove Nozzle/Diffuser
7. Unplug Keypad and remove PCB	7. Unplug Keypad and remove PCB
8. Remove Assembly by pressing tabs	8. Remove Assembly by pressing tabs
9. Remove Syrup Module	9. Remove water module
10. Remove syrup connectors	10. Remove water connectors
11. Replace quad ring	11. Replace quad ring
12. Place new Syrup Module in body; rotate to engage	12. Place new Water Module in body; rotate to engage
13. Snap assembly back into base	13. Snap assembly back into base
14. Align PCB with slots and push down into base	14. Align PCB with slots and push down into base
15. Refit valve to backblock	15. Refit valve to backblock
16. Replace Diffuser and Nozzle	16. Replace Diffuser and Nozzle
17. Reconnect keypad connector to PCB	17. Reconnect keypad connector to PCB
18. Reconnect power connector	18. Reconnect power connector
19. Set up the valve using the Tomcat setup device (See Leopard Valve Setup using Tomcat controller)	19. Set up the valve using the Tomcat setup device (See Leopard Valve Setup using Tomcat controller)
20. *Portion Control Valves*: Check and verify that portion sizes are correct. If not, perform the manual portion procedure.	20. *Portion Control Valves*: Check and verify that portion sizes are correct. If not, perform the manual portion procedure.

Printed circuit board (PCB) replacement	Mixing body replacement
1. Remove Cover 2. Close Backblock 3. Dispense to release pressure 4. Unplug Power Connector 5. Remove Retaining Spring 6. Remove Valve 7. Remove Nozzle/Diffuser 8. Unplug Keypad and remove PCB 9. Remove small & large syrup connector 10. Remove both water connector 11. On new PCB, replace connectors in correct location (see Steps 15-16) 12. Align PCB with slots; push down into base until it snaps into location 13. Reconnect keypad connector to PCB 14. Set up the valve using the Tomcat setup device 15. Check and verify that portion sizes are correct. If not, perform the manual portion procedure.	1. Close Backblock 2. Dispense to release pressure 3. Unplug Power Connector 4. Remove Retaining Spring 5. Remove Valve 6. Remove Nozzle/Diffuser 7. Unplug Keypad and remove PCB 8. Press tabs to remove module assembly 9. Remove syrup module by rotating ¼ turn to left 10. Remove water module by rotating ¼ turn to right 11. Install new quad rings in new mixing body 12. Reinstall water module into the mixing body 13. Reinstall syrup module into the mixing body 14. Replace Diffuser and Nozzle 15. Snap mixing body into tabs to reinstall assembly in base 16. Reconnect keypad connector to PCB 17. Replace Diffuser and Nozzle 18. Replace valve on unit 19. Reconnect power connector 20. Check setup of the valve using the Tomcat setup device 21. Check and verify that portion sizes are correct. If not, perform the manual portion procedure

5. Fault Finding

Energize Tower

Fault	Possible cause	Corrective action
Water to syrup ratio too low or too high.	Insufficient CO2 gas pressure to the syrup tanks or gas pumps to push syrup out of tanks or operate the gas pumps.	Adjust syrup tank CO2 regulator.
	No syrup supply.	Replenish the syrup supply.
	Restricted syrup flow , syrup tank quick disconnect, bag-in-box connector or syrup line	Sanitize the syrup system.
	Leopard valve fault	See Leopard valve trouble shooting guide
	Carbonator CO2 regulator out of adjustment for existing water conditions or temperature.	Adjust the carbonator CO2 regulator.
Dispensed product carbonation too low.	Air in the carbonator tank.	Vent air out of the carbonator tank through the relief valve. Open the Number 1 dispensing valve to make the carbonator pump cycle.
	Water, oil or dirt in the CO2 supply.	Remove the contaminated CO2. Clean the CO2 system (lines, regulator, etc.) using a mild detergent. Install a clean CO2 supply.
	Oil film or soap scum in the cups or glasses.	Use clean cups or glasses.
Dispensed product comes out of the dispensing valve clear but foams in the cup or glass.	Ice used for the finished is sub cooled.	Do not use ice directly from the freezer. Allow ice to become “wet” before using.
	Recovery rate of the refrigeration unit exceeded, ice bank depleted.	Allow the ice bank to recover.
	Syrup possibly out of date, air in syrup lines.	Check syrup supply, trace lines & look for air pockets
	Dirty nozzle or diffuser	Clean both parts
Dispensed product produces foam as it leaves dispensing valve.	Carbonator CO2 regulator pressure too high for the existing water conditions or temperature.	Reduce the carbonator CO2 regulator pressure settings.
	Dispensing valve restricted or dirty.	Sanitize the syrup system as instructed.
	Dirty water supply.	Check the water filter. Replace the cartridge. Flush the lines and carbonator completely.
Dispenses no product.	No electrical power to the unit.	Connect the unit power cord Check for a tripped circuit breaker.
	Disconnected or broken wiring to the dispensing valve.	Connect or replace the wiring.
	Inoperative transformer	Replace the inoperative part.
	Out of syrup or no water supply.	Replenish the syrup supply as instructed, check water supply
	Inoperative valve	Trouble shoot & repair valve as per Leopard valve service manual
Dispenses only carbonated water.	Improperly adjusted syrup CO2 regulator.	Adjust the syrup CO2 regulator as instructed.
	Improperly adjusted valve	Recalibrate valve
	Closed syrup supply line shutoff valve.	Open the syrup supply line shutoff valve.
Dispenses only syrup.	Improperly adjusted carbonator CO2 regulator.	Adjust the carbonator CO2 regulator.
	Inoperative valve	Refer to Leopard valve fault finding guide
	Faulty recirculation pump	Check pump & motor then replace as necessary

5.1 Fault finding

Leopard valve – part 1 of 2

Symptom	Possible cause	Corrective action
Valve Runs Continuously	Valve locking wire installed backwards	Install so circles on clip are facing to the back
	Valve base cracked or broken	Inspect and replace as necessary
	Defective PCB	Replace PCB
Syrup Flows Continuously	Defective syrup module	Replace module
	Defective PCB	Replace PCB
Water Flows Continuously	Defective water module	Replace module
	Defective PCB	Replace PCB
Valve Stuck in Sold Out (red sold out indicator is lit and backroom has been confirmed as OK)	Water and syrup module connections are crossed	Verify proper connection using diagram
	PCB locked up	Unplug valve's 24 VAC power for 5 seconds and reconnect
	Defective transducer	Press actuation switch for 3 seconds, if valve operates, replace syrup module.
	Defective flow turbine	If sold out light doesn't reset after replacing syrup module, replace water module.
	Defective PCB	Replace PCB
Syrup NOT Dispensing	Before troubleshooting valve, verify back room is in proper working order	Replace/repair BIB, BIB pump, BIB connection and CO2 pressure to valve
	If sold out LED is lit	Verify water and syrup connections are connected properly
	Valve not setup properly	Use Tom Cat to properly setup valve
	Defective syrup module	Replace syrup module
	Defective PCB	Replace PCB
Water NOT Dispensing	Before troubleshooting valve, verify backroom is in proper working order	Repair water supply, carbonation, CO2 system as needed
	Wire mesh screen clogged	Remove valve from mounting block, look into end of water side of valve; inspect and clean screen as necessary
	Defective water module	Replace water module
	Defective PCB	Replace PCB
	If "sold out" LED lit	Verify water and syrup connections are connected properly
Nothing Dispensing	Mounting block shutoffs closed	Open shout offs
	Backroom not functioning properly	Inspect and repair BIB system and carbonation system as necessary
	Defective PCB	Replace PCB
	Failed activation switch	Inspect and replace as necessary
	Cracked or broken bases	Inspect and replace
	Cracked or broken lever	Inspect and replace
	Debris in lines has damaged modules (common in new installations)	Replace valve
LED on Valve front Cover Plate Blinking	Internal capacitor charging	Allow at least 5 minutes for the capacitor to charge
LED will not stop blinking after 5 minutes	Faulty transformer, wiring, connectors	Check transformer, wiring and connectors for intermittent connections or loss of power
	Defective PCB	Replace PCB

Fault finding

Leopard valve – part 2 of 2

Symptom	Possible cause	Corrective action
Valve Will NOT Hold Ratio	Wire mesh screen on water module restricted	Remove valve and clean screen
	Wire mesh screen on water module missing	Replace water module
	Nozzle and/or diffuser dirty	Clean or replace nozzle and/or diffuser
	PCB is remembering sold out	Unplug valve from electrical and allow 5 seconds for PCB to reset
	Valve has not been setup properly	Using TOM CAT, setup valve correctly (remember to perform pre-pour)
	Defective transducer on Syrup module	Replace syrup module
	Defective PCB	Replace PCB
	Defective water flow turbine	Replace water module
	Defective TOM CAT	Use another TOM CAT
Water Leaking	Cracked valve base	Replace valve base
	Valve locking wire installed backwards	Install wire correctly
	Cracked water module	Replace water module
	Defective water module	Replace water module
Water dripping from diffuser cavity	Diffuser missing Red o-ring	Replace Diffuser
	Diffuser HAS black o-ring installed	Remove and discard black o-ring
Syrup leaking	Cracked valve base	Replace base
	Valve locking clip installed backwards	Install locking clip correctly
	Cracked syrup module	Replace syrup module
	Cracked mixing body	Replace mixing body or o-ring between mixing body and syrup module
	Defective syrup module	Replace syrup module
Syrup dripping from diffuser cavity	Defective syrup module	Replace syrup module
Excessive Fobbing of drink	Dirty Nozzle/Diffuser	Ensure that flow rates are correctly set up for Syrup type. If using IPaq/PC these can be altered in portion setting menu instead of doing complete set up.
	Incorrect flow rate	Ensure that flow rates are correctly set up for Syrup type. If using IPaq/PC these can be altered in portion setting menu instead of doing complete set up.
	Diffuser missing red o-ring	Replace Diffuser
	Air in syrup line	Check BIB connectors are fitted correctly. Ensure that Changeover valves are operating correctly and where fitted 2 boxes are always connnected. Check for leaks around connections on suction side. Ensure BIB connector pushed down in Mega Box. May have to purge syrup by removing valve and purge from back block.

6. Product data sheet

Energize Tower

Date: 14th July 2010
Issue No: 1
Part No range: 06 1 0033XX

Dimensions	6&8P Front drawer	6&8P Pass-thru
Height:	493mm	750mm
Width:	590mm	700mm
Depth:	320mm	450mm

Finished drink flow rate	
Leopard valve:	1.5 to 4.5 oz./sec
LVV:	1.5 to 3.0 oz./sec

Finished drink ratio range
3.5:1 to 10:1

Operational temperature range
0°C (32°F) to 60°C (140°F)

Storage temperature range
-30°C (-22°F) to 70°C (158°F)

Operating humidity range
<75% RH @ 40°C (105°F)

Voltage requirements
22 to 27 VAC (50/60Hz)

Power consumption	
Leopard valve only	<50mA (in standby mode)

Water/Soda flowing
30 to 125psi

Syrup flowing
30 to 90psi

Plumbing	
Heat exchanger:	Field configurable 2 x 6p heat exchanger
Tubing connection	
Syrup:	3/8”
Still water:	3/8”
Carbonated water:	½”

Optional extra’s
Medium carbonation module

Compliance to standards and legislation
All materials coming into contact with the product are of food grade quality.
This product complies with the current requirements of the EMC directive.
Low Voltage Directive 73/23/EEC as amended by 93/68/EEC

CE

7. Parts list & exploded view (Tower)

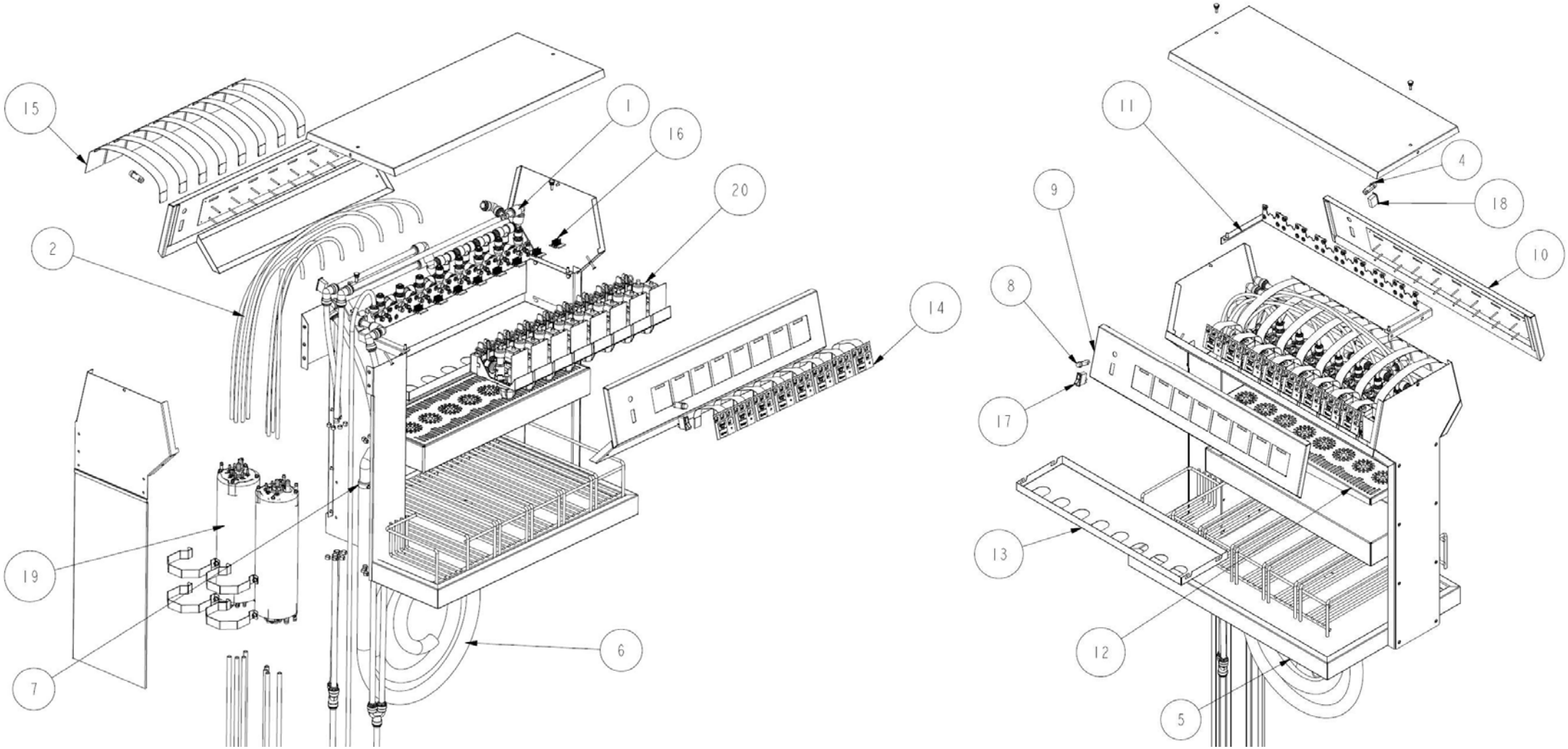
Parts list

Description: Energize Tower Pass-through

Item	Part no.	Description
1	06 0 002305	Manifold assembly – Energize PTT
2	06 0 002311	Syrup tube assembly – Energize PTT
3	06 0 002902	Installation template – Energize LH PTT **(not shown)**
3a	06 0 002903	Installation template – Energize RH PTT **(not shown)**
4	06 0 140781	Wiring loom with lamp holder
5	06 0 350102	Left hand Tower body assembly
5a	06 0 350103	Right hand Tower body assembly
6	07 0 000880	Clear tube PVC 25mmX31mm
7	07 0 000926	Jubilee clip 25mmX40mm
8	07 0 001653	CO2 out warning light link
9	07 0 002549	Membrane panel 8P LH PT
10	07 0 002550	Membrane panel 8P RH PT
11	07 0 002552	Valve mounting plate assembly
12	07 0 002643	Top drip tray grill 8P LH PT
12a	07 0 002641	Top drip tray grill 8P RH PT
13	07 0 002647	Nozzle catcher PT 8P Leopard
14	07 0 002647	10cm Membrane with water button
15	07 0 002675	35cm Membrane with water button
16	07 0 002676	Membrane ‘Y’ connector (Leopard)
17	58 0440 408	Rocker switch
18	58 0475 141	Blanking switch plate
19	22 0107 230	6P heat exchanger
20	620607718	Leopard valve (excluding back block)
20a	620609120	Leopard valve (including backblock)
Not Shown	22 0100 209	Lancopard PCB – LVV adaptor board
Not Shown	14 1647 490	Lancopard - LVV connector cable

Exploded view

Description: Energize Tower L/H Pass through



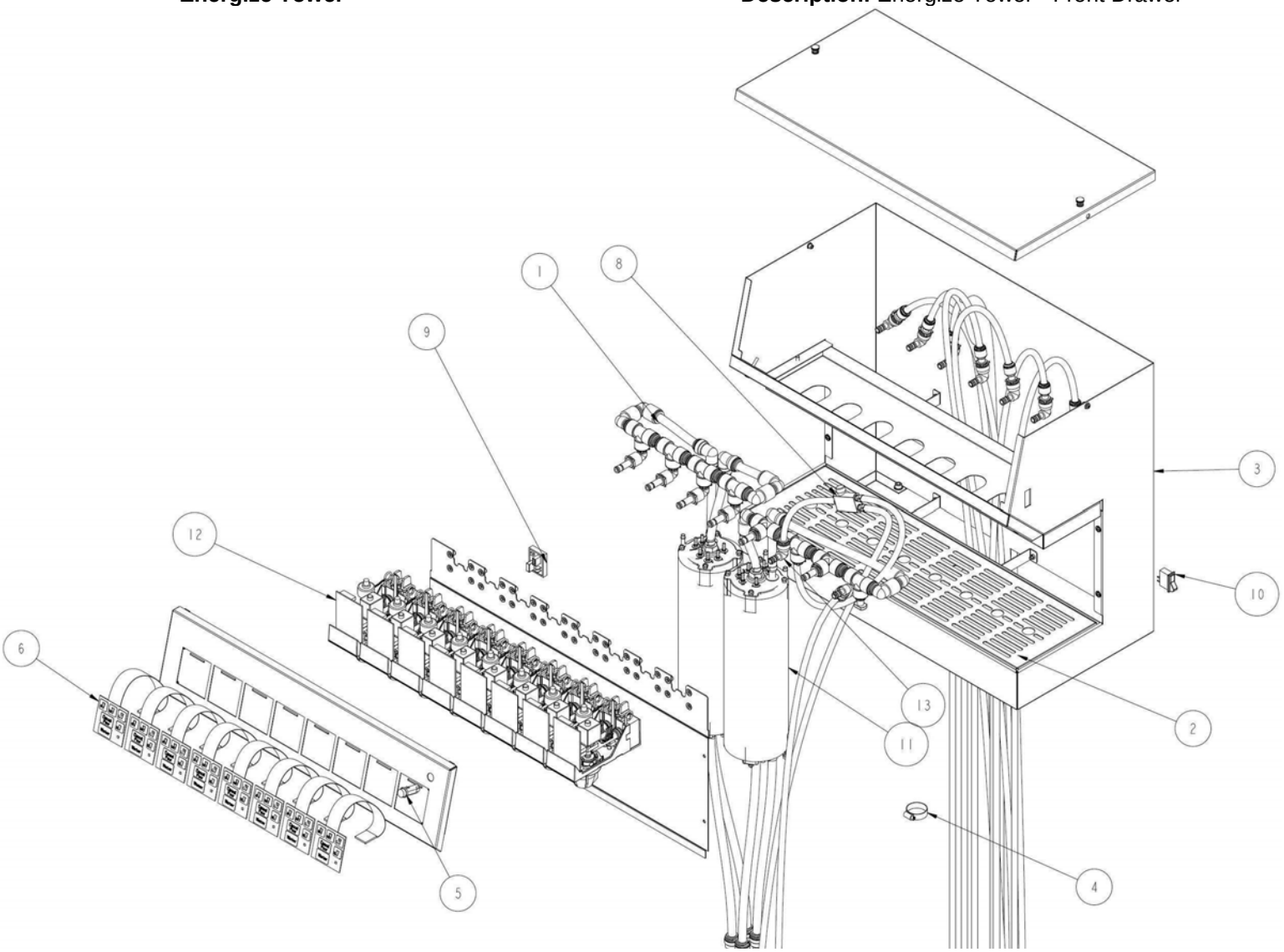
Parts list

Energize Tower **Description:** Energize Tower – Front Drawer

Item	Part no.	Description
1	06 0 002302	Manifold assembly
2	06 0 002308	Syrup tube assembly
3	06 0 003310	Sheet metal components assembly
4	07 0 000926	Jubilee clip 25mm – 40mm
5	06 0 001654	Light indicator
6	07 0 002674	10cm membrane + water button
7	13 1019 000	Tube O/D.375"*I/D.265" MDPE
8	14 1149 300	Mid carbonation valve
9	22 0108 413	Still water PCB – for use with Leopard valve
10	58 0440 408	Rocker Switch
11	22 0107 230	6P heat exchanger
12	620609120	Leopard valve (including back block)
13	NC356-02	Dispense valve elbow 3/8”
14	PIC1812R	Locking clip 3/8”
Not Shown	22 0100 209	Lancopard PCB – LVV adaptor board
Not Shown	14 1647 490	Lancopard - LVV connector cable

Exploded view

Energize Tower **Description:** Energize Tower - Front Drawer



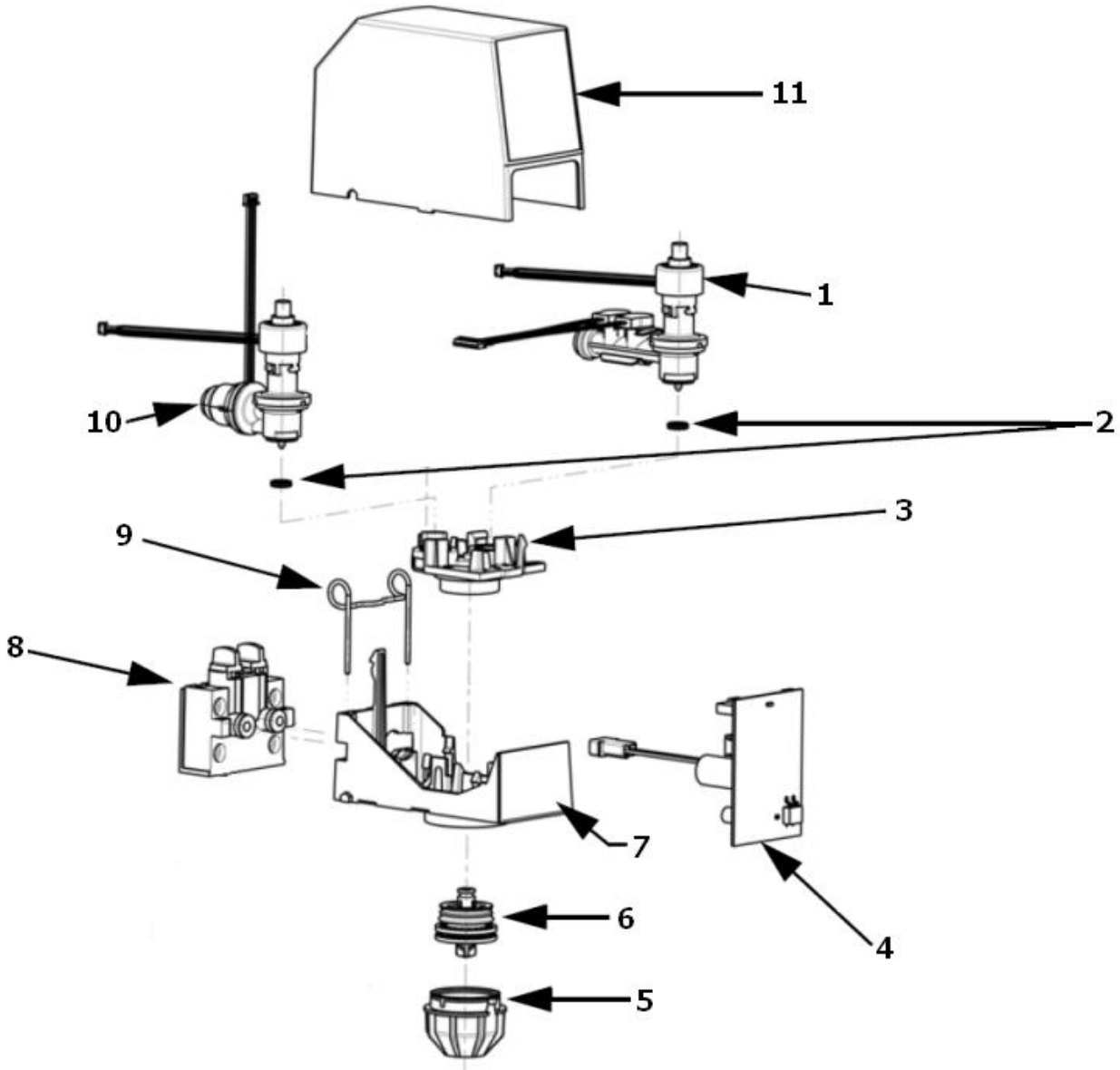
7.1 Parts list & exploded view (Leopard valve)

Description: Leopard Valve

Parts list

Item	Part no.	Description
1	629097012	Syrup module kit (includes item number 2)
3	620715714	Mixing body
4	629097014	Printed circuit board - kit
5 & 6	629087584	Nozzle & Diffuser kit
7	750500458	Base support
8	60278110	Back block
9	620716402	Back block retaining clip
10	629097014	Water module kit (includes item number 2)
11	620516639	Cover

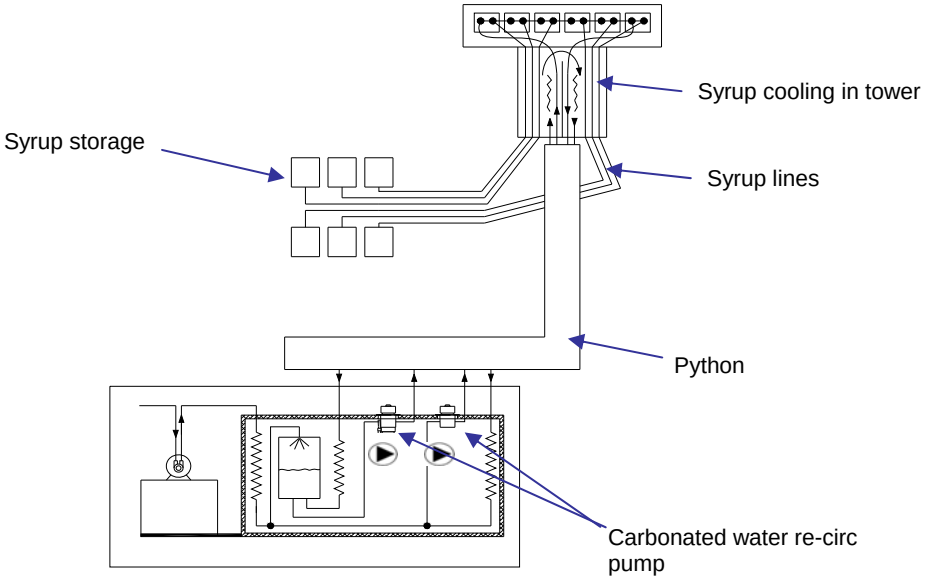
Exploded View
Leopard valve



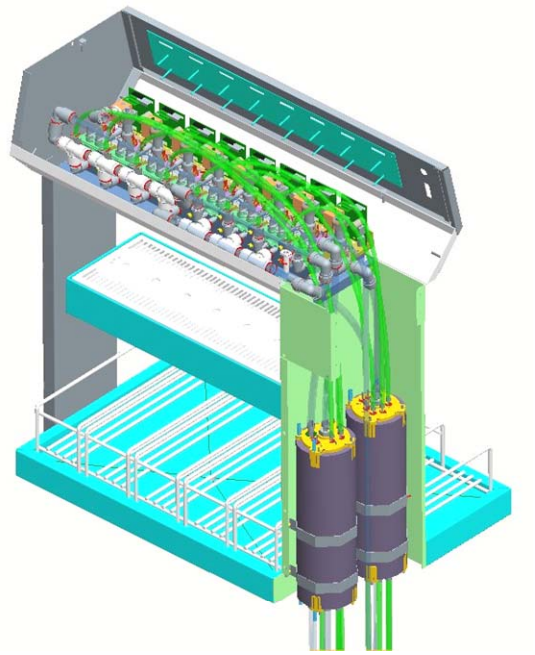
8. Plumbing schematic

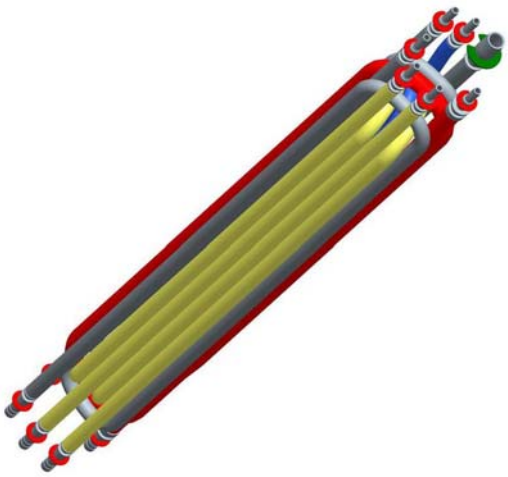
Plumbing schematics

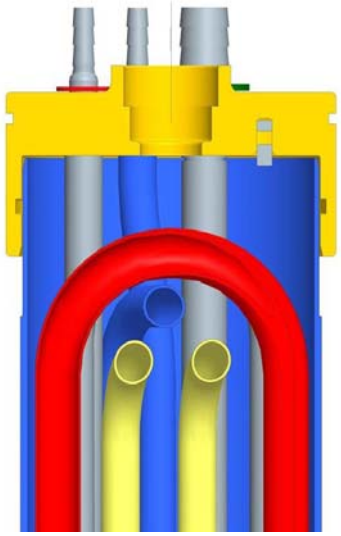
General system



Tower & heat exchanger

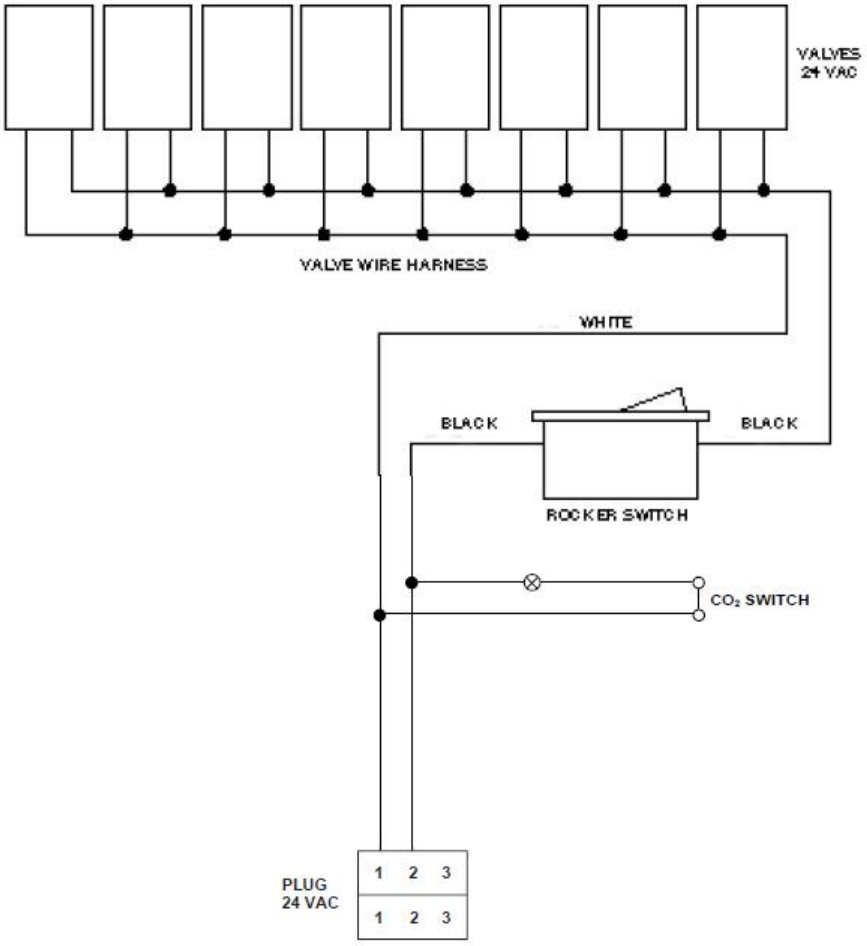




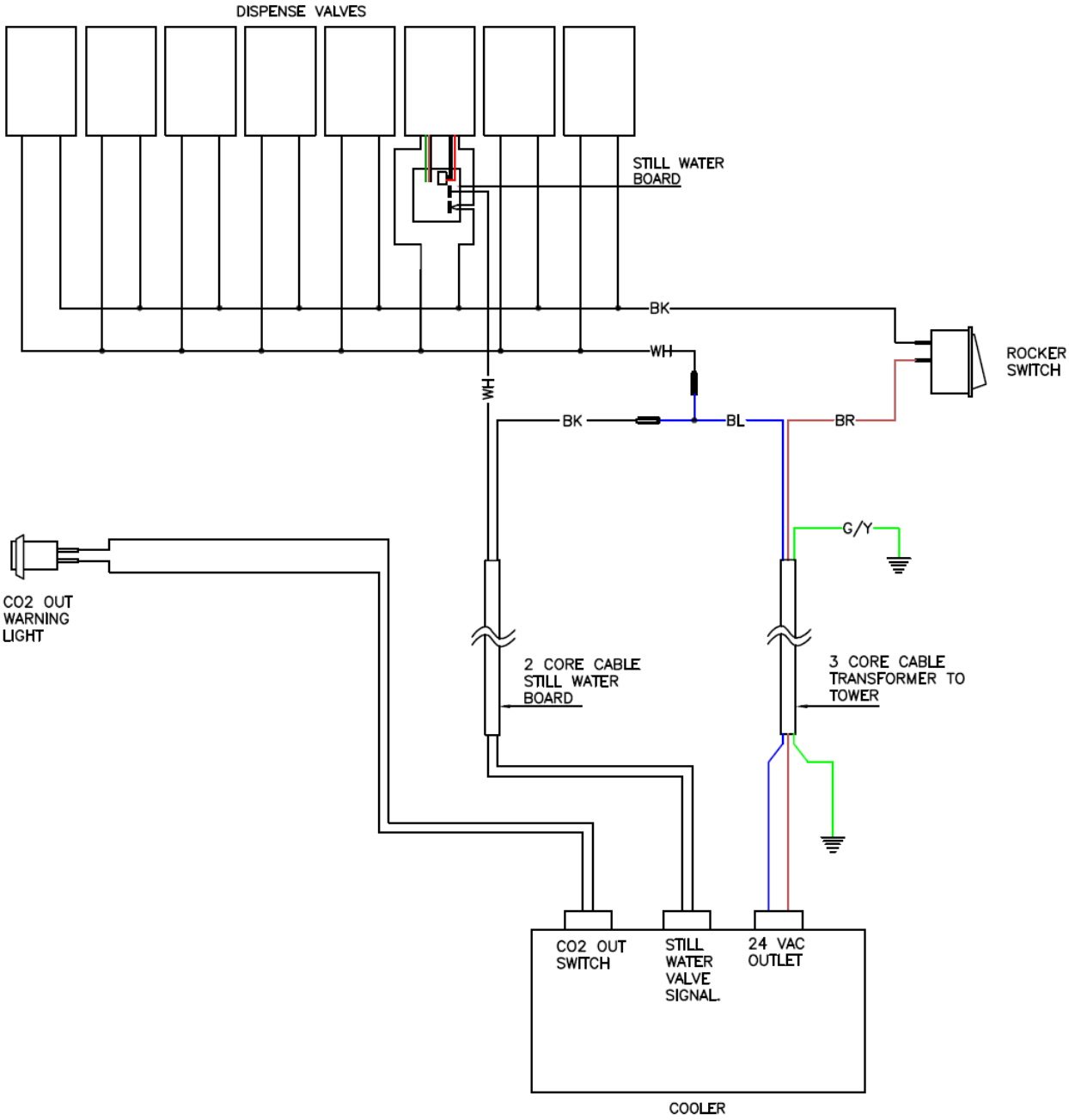


9. Wiring diagrams

Energize Tower



Energize Tower - with mid carbonation device



10. About Cornelius

As a core division of UK-based international engineering solutions group IMI plc, Cornelius is a forward thinking business backed by a global infrastructure. We are the world's leading supplier of beverage dispense and cooling equipment and, for more than seventy-five years, have formed enduring partnerships with many major brand owners and retailers.

Cornelius is uniquely positioned to drive synergies across all elements of the drinks dispense mix, controlling the total life cost whilst continuously developing innovative new solutions, based on our superior market awareness and the provision of cutting edge-technology. Within the UK, our business operates with three distinct focused Strategic Business Units:

- Cooling & Dispense
- Merchandising & Print
- Supply Chain

The Cooling & Dispense Business Unit is a world-class manufacturing facility, utilising state-of-the-art techniques within a purpose-built factory, focused on developing and producing dispense equipment and cooling platforms.

Supply Chain encompasses expertise within logistics, warehousing and refurbishment to provide a prompt, efficient service to provide our customer with the opportunity of maximising their distribution requirements.

Merchandising & Print Business Unit is dedicated to creating bespoke branding opportunities and the development of fonts and taps.

We work closely with our customers and are committed to delivering the right dispense and cooling systems to meet their individual needs. Our partnering approach encompasses all elements of beverage dispense, from system development and equipment specification to supply chain management and customer service, ensuring every customer requirement is met.

Cornelius around the world

Our global experience and infrastructure offer unprecedented levels of performance, service and support. Cornelius operates across three geographic regions; Cornelius Europe, Cornelius Asia-Pacific and Cornelius USA, where the original Cornelius business, based in Minneapolis, was founded in 1931. Today, the company manufactures products at 8 plants in the USA, Mexico, the UK, Germany, Spain, China and the Ukraine, with sales offices spanning the globe and more than 4,500 employees.

11. Technical product library

Find your parts or technical solution via our online product literature library

Cornelius UK is proud to invite you to register for access to the new online product literature library.

The library offers a range of literature including:

- Product data sheets
- Parts lists and exploded views
- Product manuals
- Product leaflets

Register today to access information whenever you need it.

www.Corneliusuk.com/Corporate/Document-Library

12. Conditions of sale

In these Conditions, “the Company” means IMI CORNELIUS (UK) LTD, “the Purchaser” and “the Customer” means the person, firm or company to whom the acknowledgement of order is issued, “the goods” means any plant, machinery or parts to be supplied by the Company. These conditions supersede any and all terms listed on any order confirmation, invoice or other written communication issued by or on behalf of the Company, except where expressly agreed by both parties in writing.

FORMATION OF CONTRACT

No binding contract shall be deemed to have been effected until confirmed in writing by the Company by an acknowledgement or order or otherwise, quotations, price lists and other publications of the Company shall not constitute offers.

APPLICATION OF CONDITIONS

Contracts are accepted only upon and subject to the following Conditions of sale. Unless expressly accepted in writing, any terms or conditions contained in any written or printed document of the Purchaser, inconsistent with or in any qualifying of these Conditions shall not apply unless expressly accepted in writing by the Company.

PRICE VARIATION

Prices and discounts contained in this contract will be subject to amendment in consequence of any increase arising after the date of quotation in the price of raw materials, labour and other costs, unless agreed otherwise by the Company in writing.

WARRANTY

The Company will assist the Purchaser in securing and expediting warranty terms from the Manufacturer of the original equipment.

SPECIFICATIONS

All descriptive specifications, literature, drawings etc. submitted with the Company’s quotation, are approximate only, as is the descriptive literature contained in any catalogue of the Company, price list and other advertising mater. Where specifications are to be supplied, the Purchaser shall supply such specifications in reasonable time to enable the Company to complete delivery by the named date.

COPYRIGHT

All drawings and specifications prepared by the Company shall remain the property of the Company and any copyright arising shall belong to the company.

FOREIGN TRADE CONTRACTS

Where goods are sold abroad they will be governed by the terms laid down under Inco terms 1953 and its subsequent re-printings.

DELIVERY

Any date for delivery named by the Company is an estimate only and in no circumstances shall the failure of the Company to deliver on or before the named date either entitle the Purchaser to rescind or terminate the contract or make the Company liable in any way for the consequences of any delay. Material from stock is offered subject to being unsold upon receipt of order.

DEFERMENT OF DELIVERY

Where the Purchaser has given firm instructions for the manufacture and delivery of goods and subsequently requests the Company to defer delivery any goods completed will be invoiced and any goods in the process of manufacture will be completed and invoiced on completion, holding and storage charges will be invoiced subsequently when applicable.

CLAIMS FOR DAMAGE, SHORTAGE OR LOSS

No claim for damage in transit, shortage of delivery or loss of goods in transit can be accepted unless, in the case of damage in transit or shortage of delivery, a separate notice in writing is given to the carrier concerned and to the Company within three days of the receipt of goods,

followed by as complete claim in writing within five days of the receipt of goods, and in the case of loss of goods, notice in writing made within twenty one days of the date of consignment. Where goods are accepted from the carrier concerned without being checked, the delivery book of the carrier must be signed “not examined”.

SUSPENSION OF DELIVERIES

Without prejudice to the provision of Conditions 9 or 10 hereof, deliveries may be wholly or partially suspended and the time of such suspension added to the original contract in the event of stoppage, delay or interruption of work in the establishment of either Company or Purchaser during the delivery period as a result of strikes, lock-outs, trade disputes, breakdown, accident or any cause whatsoever beyond the control of the Company or Purchaser respectively.

NOTICE OF TERMINATION OR PARTIAL DELIVERY

In the event of an outbreak of hostilities (whether war is declared or not) in which Great Britain is involved or in the event of national emergency, or if the Company works should become either directly or indirectly so engaged on the Government orders or orders under priority directions as to prevent or delay work on other orders , the Company shall be entitled at any time, on notice to the Purchaser, to make partial deliveries only or to determine the contract, without prejudice in any case to rights accrued in respect of deliveries already made.

DETERMINATION OF CONTRACT

If the Purchaser shall make default in or commit a breach of his contract or any other of his obligations to the Company or if any distress or execution shall be levied upon the Purchaser’s property or assets, or if the Purchaser shall make or offer to make any arrangements or composition with creditors, or commit any act of Bankruptcy, or if any Petition or Receiving Order in Bankruptcy shall be presented or made against him or if the Purchaser shall be a limited Company and any Resolution or Petition to wind-up such Company’s business (other than for the purpose of amalgamation or reconstruction) shall be passed or presented, or if a Receiver of such Company’s undertaking property or assets or any part thereof shall be appointed, the Company shall have the right forthwith to determine any contract then subsiding and upon written notice of such determination being posted by him to the Purchaser’s last known address, any subsisting contracts shall be deemed to have been determined without prejudice to any claim or right the Company might otherwise make or exercise.

INDEMNITY

The Purchaser will indemnify the Company against all damages, penalties, costs and expenses to which the Company may become liable as a result of work done in accordance with the Purchaser’s specification which involves the infringement of any letters patent or registered design or copyright.

IMPRINTS

Where the Company’s patents, registered designs or copyright features are incorporated in the design of the goods, an imprint to that effect may be affixed by the Company and shall not in any way be defaced, obliterated or removed by the Purchaser.

RETENTION OF TITLE

Until the Company has been paid in full for the goods comprised in this or any other contract between them the goods comprised in this contract remain the property of the Company although the risk passes to the Purchaser at the point of delivery named in the Contract.

a) If the Purchaser fails to pay for the goods on the due date or commits any act of bankruptcy or if any resolution of petition to wind-up the Buyer’s business shall be passed (other than for the purpose of amalgamation or reconstruction) or if a Receiver of the Purchaser’s undertakings is appointed the Company may recover possession of the goods at any time from the Purchaser and for that purpose the Company, its servants or agents may enter upon any land or building upon which the goods are situated.

b) The Purchaser has a right to dispose of the goods in the course of its business for the account of the Company and to pass good title to the goods to his customer being a bona fide purchaser for value without notice of the Company’s rights. In the event of such disposal the Purchaser has the fiduciary duty to the Company for the proceeds (which shall be kept separate and identifiable from the Purchaser’s own monies) but may retain there from an excess of such proceeds over the amount outstanding under this or any other sale contract between them.

CANCELLATION

No cancellation shall be deemed to have been effected by the Purchaser unless confirmed in writing by the Company; any costs incurred by the Company which upon cancellation, are not recoverable by the Company will be for the Purchaser’s account and will be so invoiced to the Purchaser.

TERMS

20th of the month following date of invoice, unless a separate agreement has been reached.

ERRORS OR OMISSIONS

Errors or omissions are subject to correction.

VAT

The prices quoted are exclusive of VAT, which will be added to the invoice at the rate then current and appropriate to the transaction.

LAW APPLICABLE

All contracts shall be deemed as subject to the Law of England.

WEEE DIRECTIVE

We reserve the right to negotiate separate commercial terms, pre or post purchase, to mitigate the additional costs associated with collection and authorised treatment under the WEEE directive, and other environmental legislation.

CONSUMER PROTECTION ACT 1987 (hereinafter referred to as the Act)

a) In circumstances where the Company supplies parts or products to the Customer for incorporation with, or use ancillary to, any composite products to be produced, manufactured, processed or supplied by the Customer then:-

b) The Customer shall forthwith on demand produce for inspection by the Company copies of all written instructions, information and warnings to be supplied by the Customer in relation to the said composite products provided nevertheless that such inspection or right to inspect shall not of itself constitute acceptance or approval on the part of the Company of such instructions, information or warnings and

c) The Customer shall indemnify, reimburse and compensate the Company for all losses and damages (including costs, expenses and charges for legal actions in which the company may be involved) that the Company may incur in the event that any claims are made against the Company pursuant to the Act relating to the said composite products of the Customer or products in circumstances in which the part or product supplied by the Company was either (i) not the defective part of the said composite product, or (ii) was only rendered the defective part or become a defective product by reason of actions or omissions of the Customer or (iii) was only rendered the defective part or become a defective product by reason on instructions or warnings given by the Customer or other Supplier of the said composite product or products.

d) For the purposes of this condition the word “defective” shall be interpreted in accordance with the definition of the Act.

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