



Energize 5

Product Manual

Model number range 22 1002 5XX





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1. Introduction

IMI Cornelius is proud to introduce a new environmentally friendly soda circuit product range: Energize - the cooler with an integrated diagnosis system. Using state-of-the-art active process control technology, Energize saves up to 40%* of energy compared to conventional cooling systems with the same capacity. This amounts to 3 tons* of annual CO₂ savings per installed system. Additionally, we integrated a new diagnosis system. This unique self-diagnosis-feature detects and identifies failures and problem areas within the system before they actually occur. This allows pro-active troubleshooting by a technician before the unit fails during the sales period, thus preventing actual system downtime. Energize collects various sorts of sales data, allowing statistical analysis of sales volume and the unit's technical performance overtime. You can also choose whether to obtain data from selected taps or from the unit as a whole, respectively.

The Energize soda circuit cooler is designed for cooling non-alcoholic drinks (premix products and their base/syrup). Food suitable CO₂ is used for propellant. The cooling of other drinks or liquids is forbidden. The inlet temperature of the liquids must not exceed 32°C otherwise the pressure in the refrigeration cycle will rise above specification.

Minimum ambient temperature 10°C, maximum ambient temperature 40°C

The energy exchange from the cooling coil to the drink takes place in a liquid bath with water. No other liquids are endorsed for use in the liquid bath other than water. The unit is suitable only for fixed installations in a closed area and not for the mobile application. It is prohibited to use the unit in an area, where water jet is possible. Cleaning with a water jet is forbidden.

Our foremost aim is to produce a quality product. The units are manufactured on high hygiene standard and correspond in full amount to the relevant standards. Each unit receives a special Cornelius hygiene label in proof. This label is beside the nameplate of the unit. If you should encounter any difficulty, which these operating instructions do not help you with, call or write us. We will be glad to be of assistance. If you write, please include the model and serial number of the unit.

Authorised service person

Caution - Only technicians who are competent with carbon dioxide (CO₂) gas, electricity and plumbing should service this unit. All wiring and plumbing must conform to national and local codes of practice.

Our contact details are as follows:

IMI Cornelius UK LTD
Russell Way
Brighthouse
United Kingdom
HD6 4LX
Phone: +44 (0)1484 714584
Fax: +44 (0)1484 400592
Web: www.corneliusuk.com

IMI Cornelius Deutschland GmbH
Carl-Leverkus-Straße 15
Langenfeld
Deutschland
40764
Phone: +49 (0)2173 / 793-0
Fax: +49 (0)2173 / 77438
Web: www.imi-cornelius.de

2. Specification table

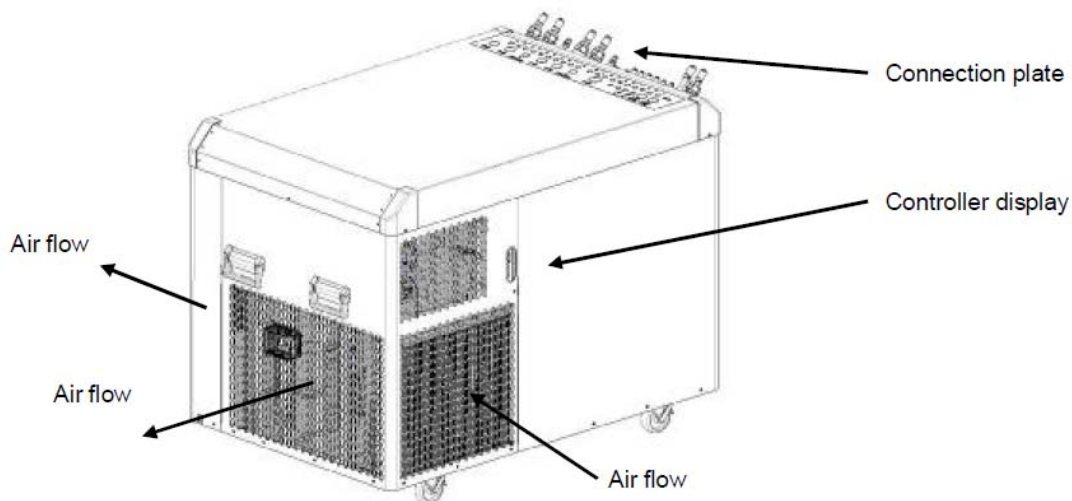
Table reference:

- * = at -10°C evaporator temperature
- ** = Python at (15m for E2 and E3)
(30m for E4 and E5)

Cooling capacity and dispense capacity at 32°C ambient temperature, and 32°C water inlet respectively 32°C Syrup inlet temperature and drink temperatures of less than 5°C

	Energize 2 22-1002-200	Energize 3 22-1001-300	Energize 4 22-1001-400	Energize 5 22-1002-500	Energize 5 Dual 22-1002-501
Dispense capacity at rate of 4 dinks a minute, 355ml each **	100	250	350	500	500
Ice bank weight in kg	12	20	30	60	60
Ice bank capacity in kcal	960	1600	2400	4800	4800
Initial pull down time min. without Python	200	150	390	500	500
Supply voltage	230V / 50Hz	230V / 50Hz	230V / 50Hz	230V / 50Hz	230V / 50Hz
Energy consumptions	950W (5,5A)	1200W(5,5A)	1700W (9A)	1850W (9A)	2000W (10A)
Compressor power in Watt (PS)*	400 (1/3)	800 (2/3)	885 (3/4)	1437 (1)	1437 (1)
Refrigerant R134a in kg	0,240	0,520	0,490	0,800	0,800
Carbonator pump power in litre / h	280	280	2 X 280	2 X 280	2 X 280
Recirculation pump power in litre / h	320	320	320	320	2 X 320
Cooling capacity / Ice bank capacity in Watt in kcal/h	400 464	768 660	825 709	1160 1000	1160 1000
Cooling coils					
Syrup (optional)	6 (Standard)	6	8	8	8
Premix (optional)	1	2	2	2	2
Still water (optional)	1	1	1	1	1
Outer dimensions in mm					
Height	635	605	660	810	810
Width	620	850	950	1080	1080
Depth	410	470	515	690	690
Dispatch weight in kg	55	80	110	115	115

Engineering diagram



3. Safety

3.1 General safety regulations

- This device is of leading-edge design and manufacture. If used and maintained in accordance with these operating instructions, it will be safe to operate. Please comply with the following safety instructions to avoid hazards and damage.
- The device must be in satisfactory condition whenever operated. Any modifications which detrimentally affect the safety of the device are therefore strictly prohibited. Please contact your service company if you wish to obtain more information about safety.
- No safety equipment (such as safety valves, overload protection devices, etc.) is to be removed, modified or put out of commission (risk of injury or death!).
- Take care that only authorized persons work on the device and that the operators are trained. Make certain that no unauthorized persons change the settings on the device or tamper with it.
- The unit is filled by the service technician with water and adjusted to temperature or ice bank mode. The operator must not open the unit.
- You are obligated to check the device on a daily basis for externally discernible damage and defects. Immediately report modifications which affect safety and function to the service company nearest you. Discontinue operation if necessary.
- Note that only original CORNELIUS replacement parts and accessories which have been checked and approved are to be used.
- IMI Cornelius assumes no liability whatsoever for damage resulting from the use of non-original parts and accessories or from improper handling.

3.2 Safety instructions electricity

- An electric shock may be fatal or result in serious injury. For this reason, any unauthorized tampering is strictly prohibited. Water and electricity are a fatal mixture!
- Always pull out the mains plug before any cleaning work on or near the device.
- As delivered, it features a moulded earthed-pin plug and it must be connected to a socket outlet with an earthed contact. If no appropriate socket outlet with an earthed contact is available, the connection must be made by authorized persons only, with the regulations applicable at the installation site (CE standards, for example) being observed.

3.3 Safety instructions CO₂

- Place the carbon dioxide cylinder in an upright position next to the workstation and secure it against falling over.
- Protect it against heat (e.g., against sunshine). Minimum distance from heater 0.5 m (TRSK).
- Escaping carbon dioxide is heavier than air and may present danger of suffocation if large quantities collect in enclosed spaces.
- Use Food suitable CO₂ only
- Remember that parts of the device are at operating pressure. Do not loosen or dismantle any components at operating pressure.



Directive Compliance:
EMC Directive (2004/108/EC)
Low Voltage Directive (2006/95/EC)
Machinery Directive (2006/42/EC)

4. System explanation

4.1 Energy reduction

Cooling of liquids takes significant amount of energy like electrical power. To keep the need on energy as low as possible in order to save costs and reduce environmental pollution, Energize cooler decides between dispense times and operational readiness. During operational readiness, for example over night, Energize runs in stand by mode. All functions are reduced to a minimum, which means the power input is minimal and supplies sufficient energy to keep recirculation at required temperature. Energize identifies when drinks are dispensed, automatically switching to maximum power to wash required amount of ice to supply enough energy as required for demand. After dispensing, energize switches back to stand by mode automatically. Largest energy savings are seen when the Energize cooler is installed alongside Energize towers. When using the Energize tower as 'point of dispense', all connected product lines are being cooled inside the skeletal tower instead of inside the cooler. The product/syrup containers (or bag in boxes) are connected directly to the tower, thereby eliminating energy loss via the Python.

4.2 Diagnostic

Energize has an on board diagnostic system. During operation the most important operating parameters are being recorded and stored in main controller of the machine. In case of malfunction or system overload, that could endanger entire machine. It's components or drink quality, the diagnostic system decides whether to indicate a warning or switch off machine or dispense tower. A list containing all messages of the systems is shown in appendix.

4.3 Communication module

The communication module allows Energize to send out an error warning via SMS or a remote read out of operating parameters by using IMIC Diagnostic Software. The communication module allows Energize to send an error warning or fault condition message directly to the cell phone of the responsible field service technician or field service provider. Based on the warning, the next scheduled maintenance inspection can be planed better or being initiated. The error warning describes the nature of fault, which required spares could be required for next service. An online check of the machine also allows an evaluation of operating parameters at any time, which gives a realistic overview of the system, and its condition. An online check can be done with any computer with installed browser.

4.3.1 IMIC Diagnostic software and field monitoring

The IMIC diagnostic Software allows the Operator to dial into an installed system to request current operating parameters. All parameters are displayed in a concise tabular form and warnings are marked up in "red". The status of each machine in the field is marked in green or red. Defective machines or error warnings are obvious by the first view. Each call one full set of parameter of each machine is stored in a database and allows further processing. Each machine needs a license to get onto the network. For more than one machine an additional license is required.

4.3.2 IMIC Diagnostic software and machine history

The collected data from field monitoring is stored in a database and allows further data processing of an individual machine or entire field installation. Conclusions of the cooler (or its components) usage are possible. It is worth looking into machine history data before a service is scheduled. There might be a component that still works but it is known as critical part or way beyond its scheduled life time or has shown warnings because of wear without actually failing, it could make sense to change the component before it breaks to prevent cooler down time.



Energize 5



4.4 Product consumption monitoring

It is possible to collect energy consumption and water throughput data of products. A Flow meter device, which is connected to the skeletal tower and Python, is needed to gather this information. The flow meter device recognizes the opening times of each dispense head and calculates the throughput based on the product ratio, provided that product, product ratio and flow rates have been preset correctly during installation. Required values are listed on the installation protocol of the dispense tower. These values need to be adjusted when a product line or one of its components has changed.

5. Installation requirements

Authorised service person

Caution - Only technicians who are competent with carbon dioxide (CO₂) gas, electricity and plumbing should service this unit. All wiring and plumbing must conform to national and local codes of practice.

Installation must only be carried out by suitably trained person and comply with national and local codes for connection to electrical supplies. It is recommended that the installation is protected by an RCCB (Residual Current Circuit Breaker).

Electrical connection

The electrical supply must always be within +6% or -10% tolerance of 230VAC 50Hz supply with a maximum protection of 16amps.

Ensure the mains electrical socket is always accessible, also ensure the mains cable is not damaged, and not vulnerable to becoming damaged. It is recommended that any spare mains cable is secured away from castors to prevent damage, should the need to move the cooler be necessary. Should the mains cable be or become damaged, it must be replaced by the manufacturer or service partner with no exclusions.

Siting

The Energize 5 should be sited on flat even ground, a maximum acceptable pitch is +/-2°.

Water connection

The water supply must be potable, & where specified connected to an adequate taste & odour filter system. A minimum pressure of 2 bar (29PSI) is required. A water boost system maybe required if this pressure is not obtainable or constant.

CO₂ connection

Primary CO₂ pressure regulator must be capable of 7 bar (102PSI). CO₂ pressure to the carbonator must be set at 6 bar (87PSI). All CO₂ tubing must be ¼" or 6.35mm ID.

On certain models the Energize system includes a CO₂ pressure switch and a 24V transformer; these are used to switch off the dispensing valves in the drinks tower when CO₂ pressure drops below 4 bar (58 PSI)

Connecting premix Energize cooler (No heat exchanger)

Using a minimum ID size tubing of 8mm, connect premix coil directly to the premix tank.

Connecting postmix syrup to Energize cooler (No heat exchanger)

Using a minimum ID sized tubing of 6.5mm, connect syrup coil direct to product tank or to syrup pump which supplies syrup via the bag-in-box container.

Premix/postmix syrup connection using premix/syrup coils (No heat exchanger)

Connect syrup lines/python (6mm I.D is the minimum recommended) to the dispenser. At the opposite end connect to correct premix/syrup cooling coils on Energize.

Connecting premix to an Energize tower

When using an Energize tower with heat exchanger, use a minimum ID sized tubing of 8mm, connect the heat exchanger direct to the premix tank.

Connecting postmix syrup to an Energize tower

Using a minimum ID sized tubing of 6.5mm, connect heat exchanger directly to product tank or to syrup pump which supplies syrup via the bag-in-box container.

Soda water recirculation

The minimum ID tube required is 10mm.

Still water line from cooler to point of dispense

The minimum ID tube required is 10mm. If still water boost option is being used, then the flow pressure is set at 3.2 bar (46PSI) which can be adjusted to local requirements where necessary.

Power supply to dispense valves (Where applicable)

Where specified Energize units are fitted with a 24V 100VA transformer, for the supply of power to the dispense valve at the point of dispense. Please see wiring diagram for connection points. Using this facility low CO₂ pressure at the carbonator inlet will isolate power to the valves. In addition to this a LED on the main controller panel indicates low pressure. This facility will prevent the carbonator bowl from emptying its contents and also stop the system being drained of carbonated water. Once the CO₂ supply has been replenished & carbonator bowl has refilled, normal can resume.

Connection of Still Water Control

For still water, one switching cable (1 x 0.75mm²) per still water tap must run from the soda circuit carbonator to the still water tap. The electronic control system is actuated via this cable. An additional cable from one of the still water valves is necessary to close the circuit. Alternatively, there are some units which can be controlled by a pressure switch for the still water. It is recommended to adjust the still water flow pressure to 3.2 bar (46PSI) and the switching point of the pressure switch to minimum 4.2 bar. If a different flow pressure is required the switching point of the pressure switch must be set accordingly. Refer to the circuit diagram for the connection. The flow rate of the still water should be 300 ml each 4 seconds.

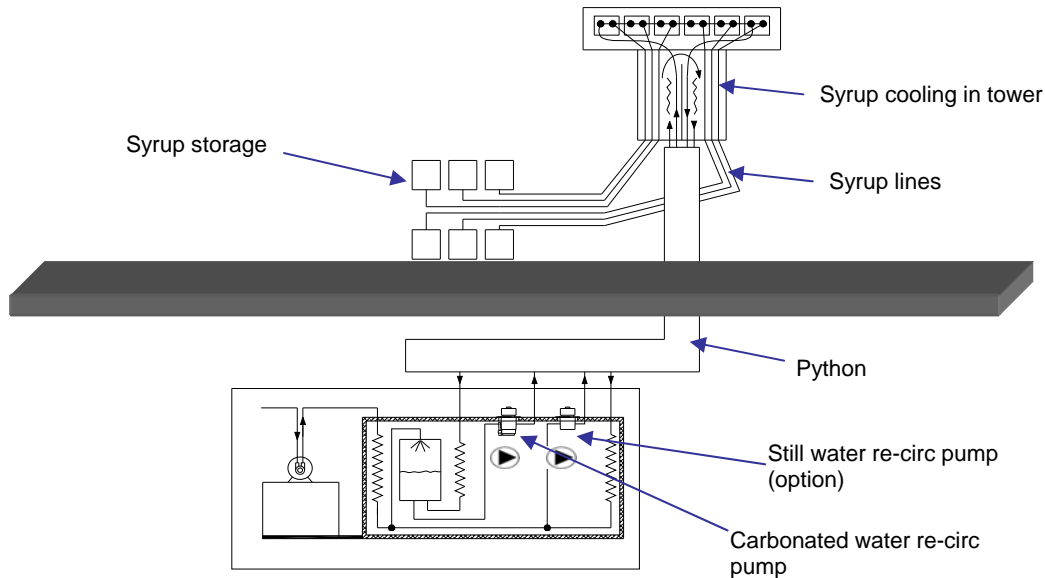
The 1989 Electricity at Work Regulations require periodic testing of electrical equipment and this should only be carried out by a competent person.



Directive Compliance:
EMC Directive (2004/108/EC)
Low Voltage Directive (2006/95/EC)
Machinery Directive (89/392/EEC)

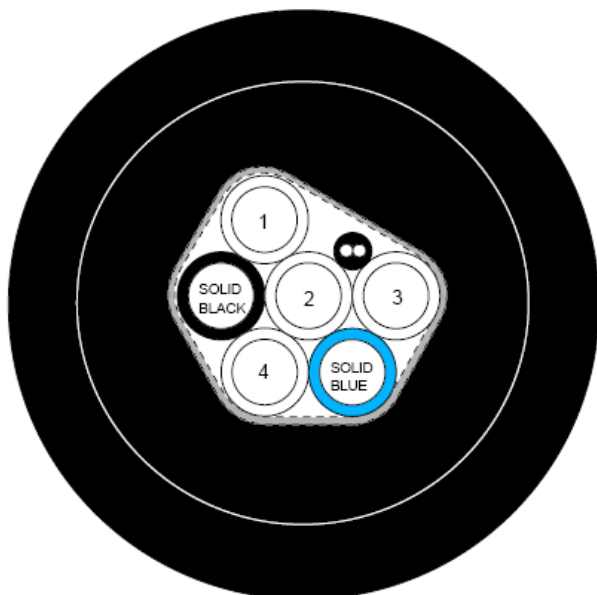
6. Installation instructions Heat exchanger + Backroom package (BRP)

Installation example



The above diagram shows how two pythons are used. The 1st ambient python or called syrup bundle – see figure.2 on next page (usually 8 x syrup lines, local specifications may differ, due to requirement) is used to pass syrup from storage containers i.e. Bag-in-box containers, to the heat exchangers mounted below the point of dispense or tower. The 2nd python (*figure 1 below*) includes six lines & a 2 or multi core cable depending on local requirements. The example below shows a 6 x line soda python. Lines 1 to 4 are soda recirculation lines from the Energize cooler, which pass through the heat exchanger, cooling the syrup coils as they circulate. The solid black & blue lines carry still water to the point of dispense. This specification can vary depending on local requirements.

Figure.1 – Example of a Soda python



PRODUCT LINES

2 @ 9.5mm X 12.7mm (0.375" X 0.500")
MDP SOLID BLACK & BLUE

RECIRCULATION LINES

4 @ 9.5mm X 12.7mm (0.375" X 0.500")
MDP NATURAL NO 1-4

ELECTRIC CABLE

1 @ 2 CORE X 0.5mm

INNER WRAP

FOOD QUALITY BARRIER FILM

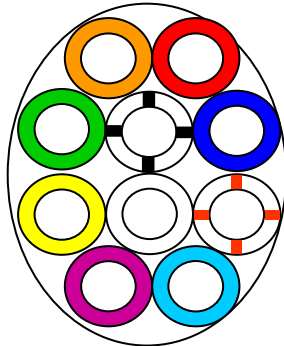
ALUMINIUM FOIL

VALRAP INSULATION 19mm & 13mm
32mm WALL THICKNESS (AVERAGE MIN. 29.5mm)

COVERING

*BLACK PVC TAPE

Figure. 2 – Example of Syrup bundle



Product Lines
10 @ 9.5mm x 12.7mm
MDP SOLID & STRIPED

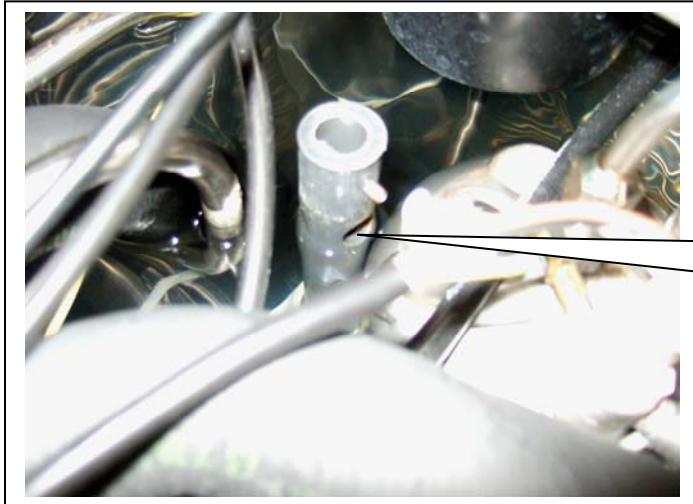
Covering
Black PVC tape

Installation must only be carried out by a suitably trained person and comply with national and local codes for connection to water and electrical supplies. It is recommended that the installation is protected by a RCCB. (Residual Current Circuit Breaker)

Installation process – syrup cooling with heat exchanger

Prior to connecting the Energize cooler

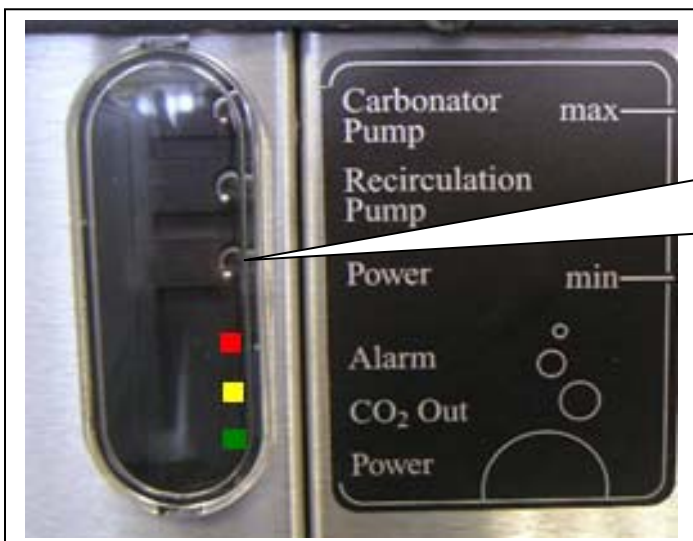
Install BRP and dispense tower as per manufactures instructions; ensuring all mains water & CO₂ connections are made.



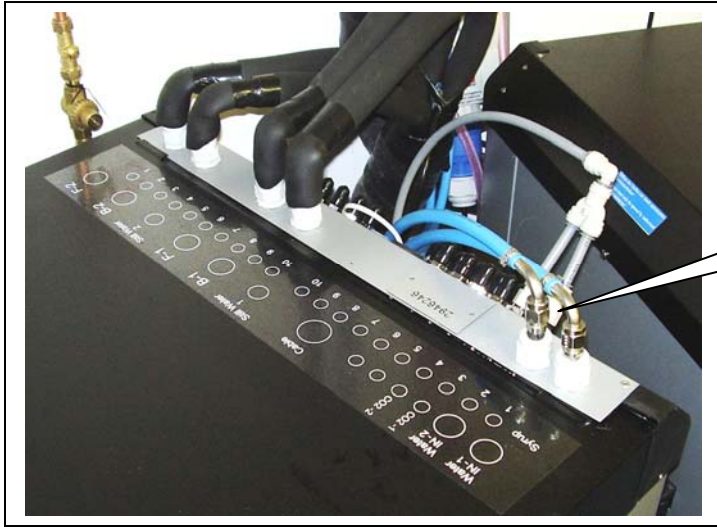
1. Position cooler, fill water bath to overflow level with mains water (Not filtered). Where available connect overflow drain outlet & route to drainage point.



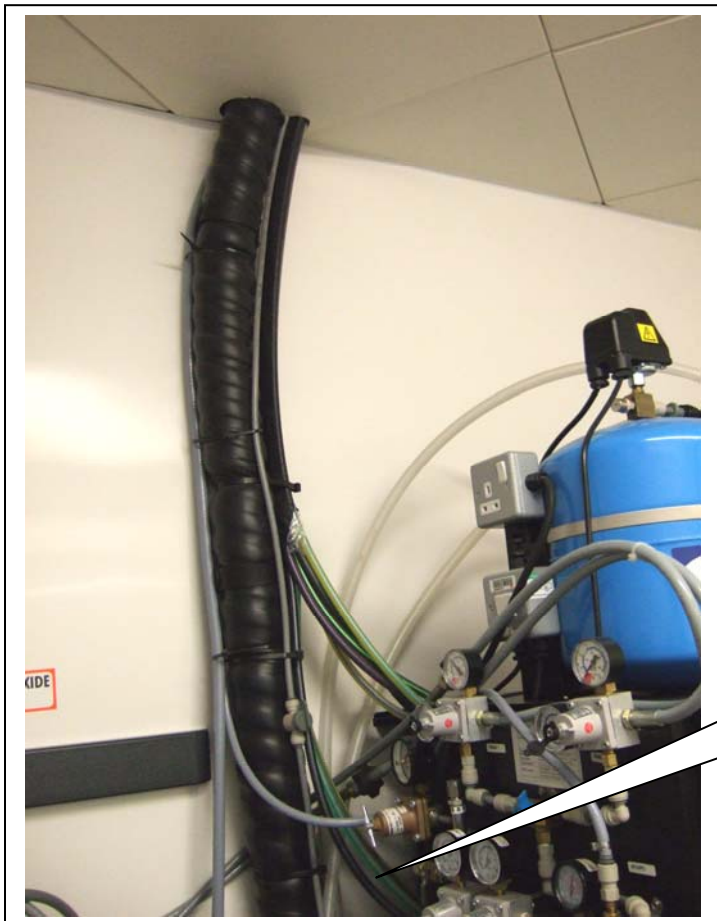
2. Ensure all switches on Energize cooler are in the 'Off' position. This includes both top & bottom controllers mounted on the bulkhead – Remove lid to access top controller. Bottom (main controller) can be accessed through side panel.



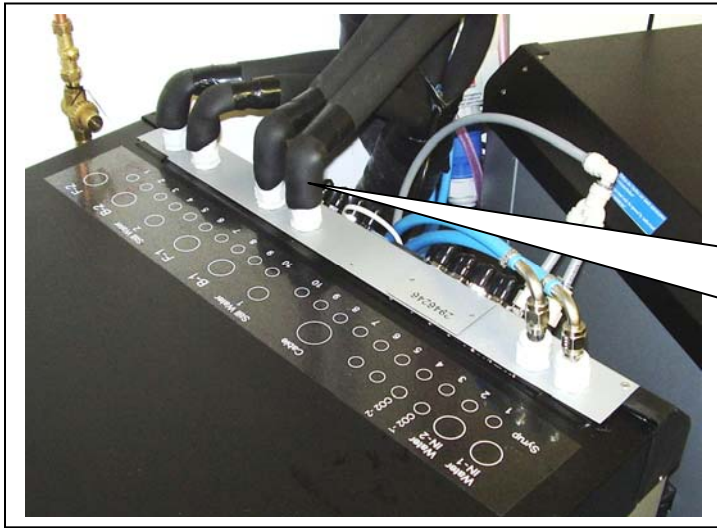
3. Turn on mains power supply to cooler. Then, turn on the power switch located on the bottom controller **only**. This will activate the refrigeration system after a four minute delay. **Note** Turning on other switches at this point could cause damage to components that may run dry.



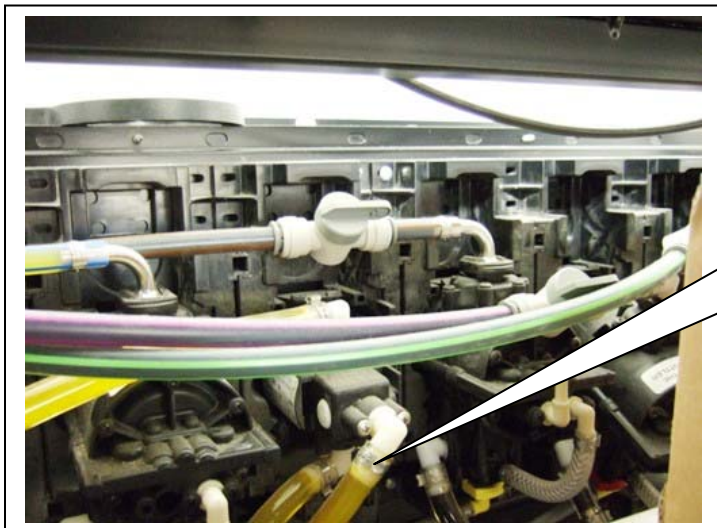
4. Connect water and CO2 to inlet as shown on Energize cooler. **Note:** Do not turn on supplies at this stage.



5. Install soda python (1 x python per tower) & syrup bundle (1 bundle per tower) from BRP to Tower(s) **Warning** – When running pythons or bundles, joints should be made in close proximity to the BRP not in the ceiling above the towers.



6. Connect soda python to Energize connections as shown. Insulate all lines and connections out of cooler.
Note: Please ensure excess python, water & CO2 lines are available to allow movement of the cooler for future routine maintenance.



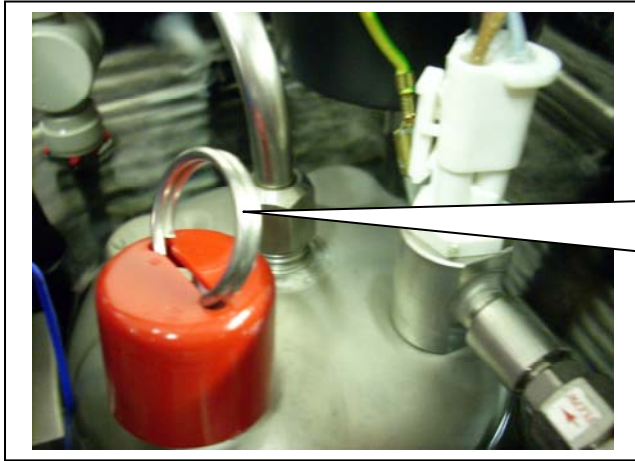
7. Connect syrup bundle, to syrup pumps as per local specification.



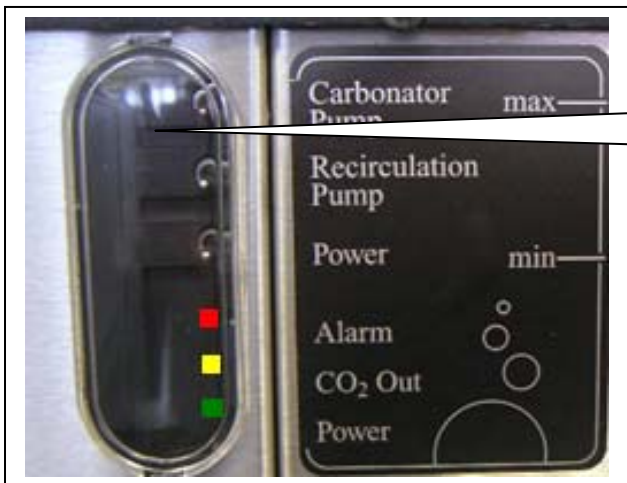
8. Connect syrup bundle & soda python to heat exchanger(s) at tower.

7. Commissioning procedure using heat exchanger – page 1 of 2

Note: The following procedure should be applied for each soda system, individually in-turn. Soda system 1 is controlled by the controller which is accessible via the front panel. Soda system 2 is controlled by the controller accessible by removal of the lid.



1. Turn on CO₂ supply & pressurise soda system, Check soda system for leaks & repair where necessary. Briefly purge CO₂ gas from carbonator bowl using ring pull as shown.
Note: Do not turn on CO₂/air supply to syrup pumps at this stage.
Reminder: Carbonator CO₂ supply pressure must be set to 6 bar (87PSI).

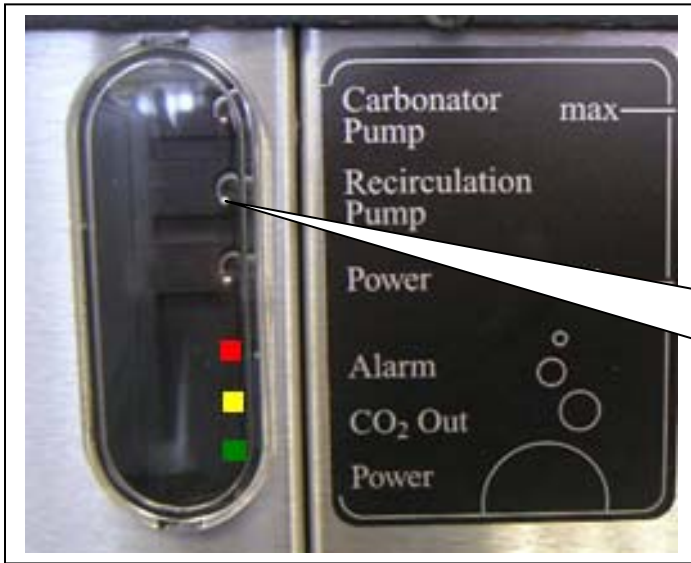


2. Turn on water connection & turn on carbonator pump.
Reminder: Minimum water pressure to carbonator pump is 2 bar (29PSI).



3. Allow carbonator to fill until pump stops. The pressure can be monitored on the gauge as shown. Check & repair any visible leaks around the system.

Commissioning procedure using heat exchanger – page 2 of 2



4. Switch on soda recirculation system, check for leaks. As the Energize soda recirculation system is self-priming, you will hear the carbonator pump activate as it refills the system. Where still water dispense is used, dispense valves should be purged manually.

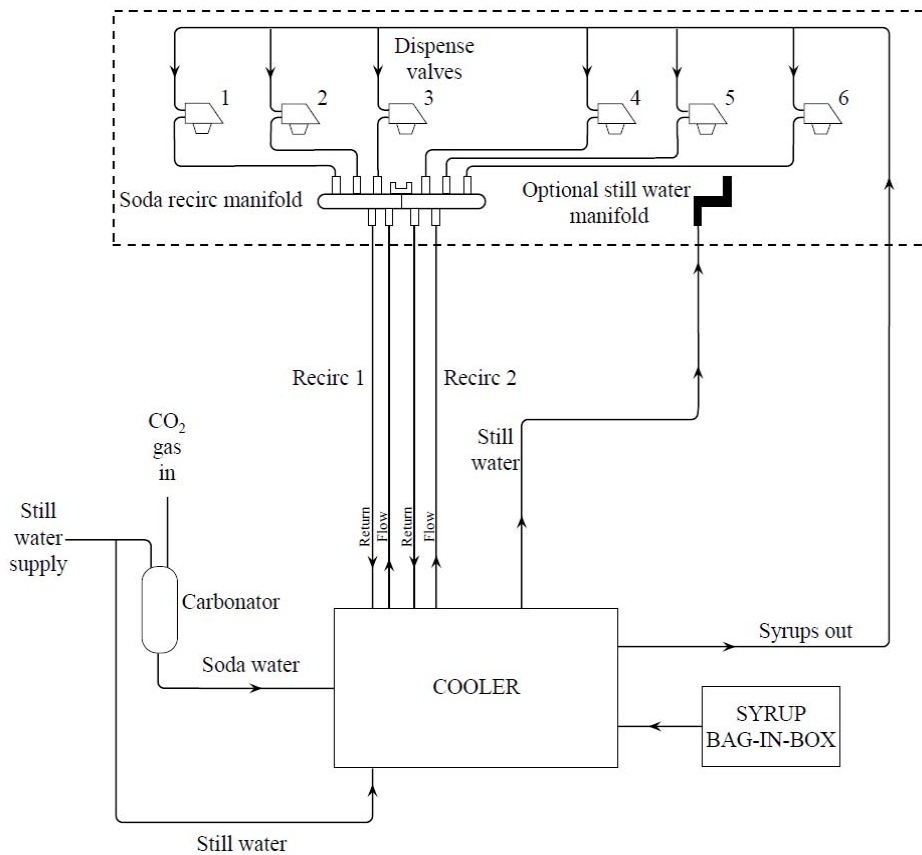


5. Turn on CO2/air supply to activate syrup pumps and purge syrup as stated by dispense valve instructions. Perform leak check on syrup system.
Note: CO2 pressure to syrup pumps should set at pressure stated locally.

6. Repeat the commissioning process for 2nd soda system (where applicable), then perform a final leak check before insulating all joints & connections.

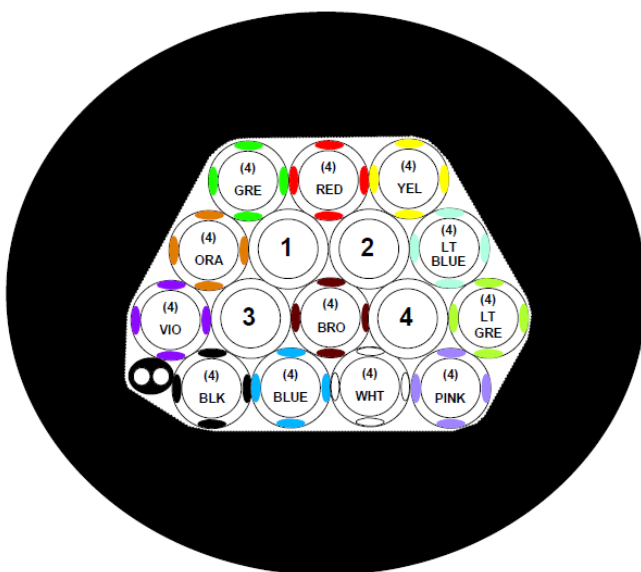
8. Installation instructions – syrup cooling coils (No heat exchanger)

Installation example



This method is most commonly used when only the cooler is to be replaced, as existing pythons, BRP and dispense tower can be used. The Energize cooler supplied for this application will be assembled with syrup cooling coils. The python from the cooler to tower is a traditional 16 line soft drinks python. *Figure.1* below shows an example of the python used.

Figure.1 – Example of a python



PRODUCT LINES

12 @ 0.375" X 0.500" (9.5 X 12.7mm) MDP
CODEMASTER SK
COLOURS AS SHOWN (4 STRIPE)

RECIRCULATION LINES

4 @ 0.375" X 0.500" (9.5 X 12.7mm) MDP
NATURAL NO'S 1-4

ELECTRICAL CABLE

1 @ 2 CORE X 0.5MM²

INNER WRAP

FOOD QUALITY BARRIER FILM

VALRAP INSULATION 19mm

19mm WALL THICKNESS (AVERAGE MIN. 17.5mm)

COVERING

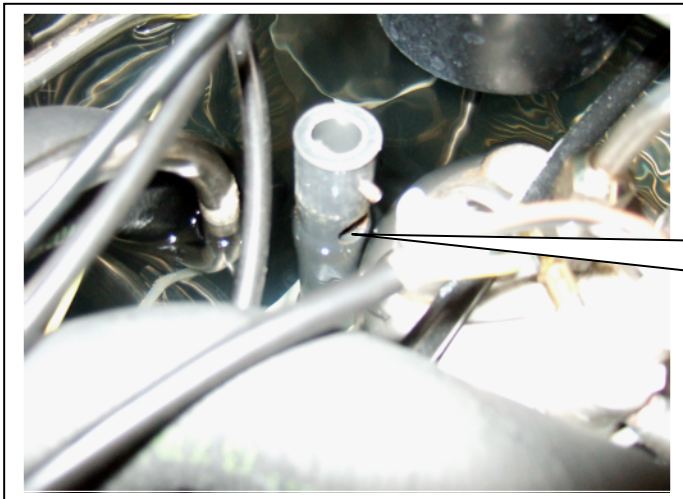
*BLACK PVC TAPE

Installation process – syrup cooling coils (No heat exchanger)

Installation must only be carried out by a suitably trained person and comply with national and local codes for connection to water and electrical supplies. It is recommended that the installation is protected by a RCCB. (Residual Current Circuit Breaker)

Prior to following the below process:

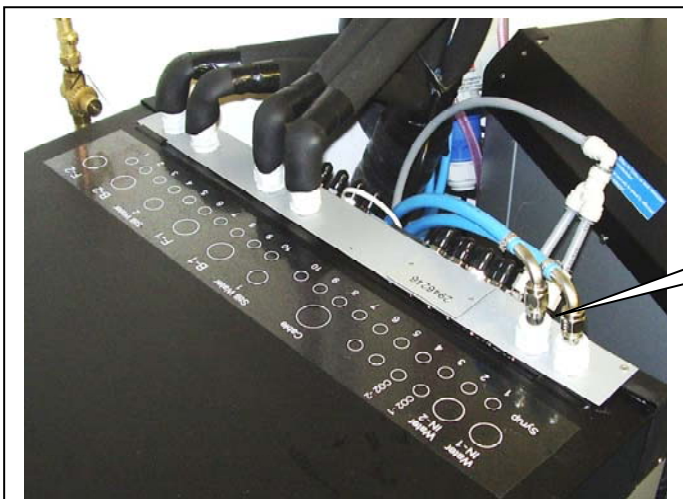
Ensure current or new BRP (Back Room Package) is installed & fully operational & connected as per manufacturers instructions.



1. Position cooler, fill water bath to overflow level with mains water (Not filtered). Where available connect overflow drain outlet & route to drainage point.



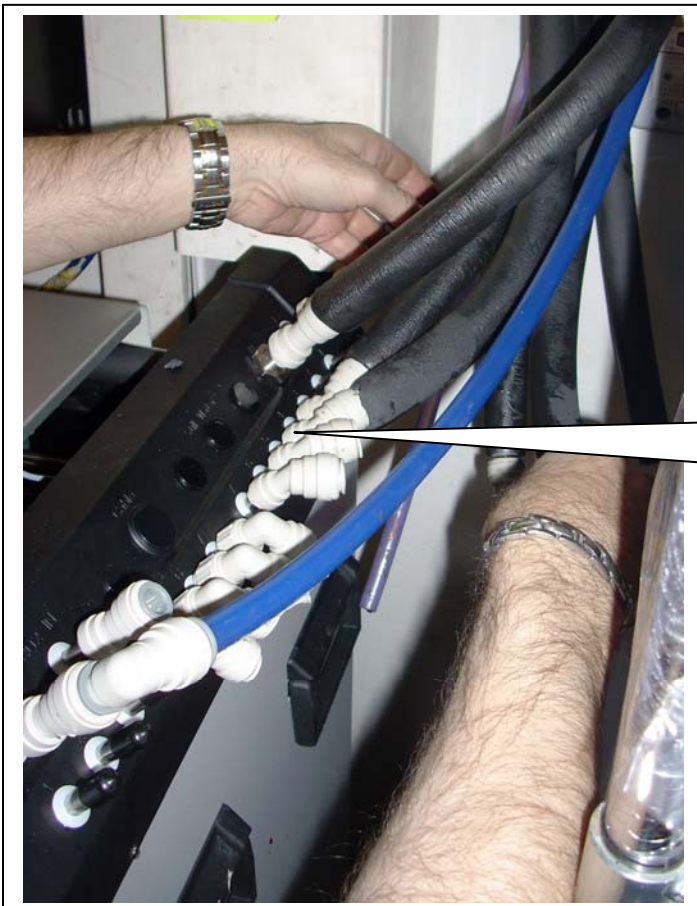
2. Turn on mains power supply to cooler. Then, turn on the power switch located on the bottom controller **only**. This will activate the refrigeration system after a four minute delay. **Note** Turning on other switches at this point could cause damage to components that may run dry.



3. Connect water and CO2 to inlet as shown on Energize cooler. **Note:** Do not turn on supplies at this stage.



4. Install python (1 x python per tower)
Warning – When running pythons, joints should be made in close proximity to the BRP not in the ceiling above the towers.



5. Connect cooling recirculation and syrup lines to Energize connections as shown. Insulate all lines and connections out of cooler.
Note: Please ensure excess python, water & CO₂ lines are available to allow movement of the cooler for future routine maintenance.



Commissioning procedure Using syrup cooling coils (No heat exchanger)

Note: Please revert back to commissioning process on page 13 as the commissioning procedures are identical.

Additional support

Technical support can be obtained from IMI Cornelius by any of the following methods:

Telephone... 0044 (0) 870 905 0773
Fax... 0044 (0) 114 232 1070
Email... CustomerService@Corneliusuk.com

Alternatively, product literature can be downloaded via our corporate website at the addresses below. Please select the Document link before registering for access to the secured area.

Corporate website United Kingdom www.corneliusuk.com
Corporate website Germany www.imi-cornelius.com

9. Service maintenance

Service information (fault/repairs)

- There are NO 'user' (OPERATOR) serviceable items inside the unit.
- Maintenance must only be undertaken by a qualified and trained person.
- Only replace the fuse protecting the circuit to the unit with one of an identical type and rating.
- Isolate the power supply to the unit during maintenance operations.
- Only use Cornelius parts for cooler maintenance. Failure to do so will invalidate cooler approvals and warranty.
- The carbonator bowl relief valve ring pull to be operated annually to check its operation.
- Double check valve – isolate the water supply and remove the bleed screw once a year to check for water backflow, if the unit is supplied to a UK installation.

10. Preventative maintenance

Once the maintenance is carried out, follow the Installation/commissioning procedures

Condenser

- Ensure grilles and condenser fins remain unobstructed and free from particles at all times to ensure reliable and consistent operation. A soft brush or vacuum cleaner may be used for cleaning.


Sanitizing product coils

- Under no circumstances should boiling water or steam be used with this unit as it may result in permanent damage. The maximum temperature permissible is 40°C.
- Sanitize when taste is tainted or periodically as advised by the beverage supplier.
- Flush with potable water, then chlorinated alkaline solution. It is important that the sanitizing agent manufacturer's procedure and safety precautions are followed.
- Rinse through with potable water to remove cleaning solution and test with litmus paper.

Water bath

- Melt the ice bank and drain the tank annually. Follow INSTALLATION PROCEDURE / Commissioning / Filling the tank with water to refill the unit.
- If the cooler becomes noisy – makes a gurgling sound, this is due to a low water level and will result in reduced cooling capacity. To remedy this follow the instructions for filling the water bath illustrated in INSTALLATION

The 1989 Electricity at Work Regulations require periodic testing of electrical equipment and this should only be carried out by a competent person.

 Directive Compliance:
EMC Directive (2004/108/EC)
Low Voltage Directive
(2006/95/EC)

11. Fault finding

11.1 - Identification		
Symptom		Fault finding section
Totally inoperative	Yes	Go to section 11.2 (page 20)
No		
Warm drinks	Yes	Go to section 11.3 (page 20)
No		
No cooling	Yes	Go to section 11.4 (page 21)
No		
Carbonator & recirculation pump timed out	Yes	Go to section 11.5 (page 21)
No		
Flat drinks	Yes	Go to section 11.6 (page 21)
No		
No carbonated water	Yes	Go to section 11.7 (page 22)
No		
No dispense	Yes	Go to section 11.8 (page 22)

11.2 - Totally Inoperative		
Fault		Possible cause
Is supply fuse blown or has circuit breaker tripped?	No	Loose connection or broken supply wiring to unit.
Yes		
Is fuse or circuit breaker size correct?	No	Incorrect size device.
Yes		
Is line voltage high or low?	High	Reduce line voltage.
Low		
Is other equipment on the same circuit/mains supply socket?	No	a) Loose or corroded connection. b) Supply wiring undersized. c) Low line voltage. d) Electrician maybe required.
Yes	→	a) Remove all other equipment from circuit. b) Install new dedicated circuit.

11.3 – Warm drinks		
Question		Possible cause
Is compressor running?	No	Go to 11.2 - Totally Inoperative.
Yes		
Is water bath level low?	Yes	Possible leak on bath
No		
Is there an ice bank around the evaporator coil?	Yes	Ensure agitator motor is working, replace if necessary.
No	→	a) Faulty ice bank controller b) Blocked/choked condenser c) Defective condenser fan motor

11.4 - No cooling		
Question		Possible cause
Is line voltage within 10% of nameplate voltage?	No	Go to 1.2 - Totally Inoperative.
Yes		
Is compressor cold?	Yes	a) Faulty ice bank controller b) Compressor overload protector faulty (stuck open). c) Faulty start relay on compressor. d) Improper or loose wiring - no power to compressor.
No		
Does the compressor start, hum and trip out on overload.	Yes	a) Start relay will not close or is burned out. b) Compressor motor has open or short circuit windings. c) Compressor motor locked.
No		
Does compressor starts but start winding do not switch off.	Yes	a) Improper wiring. b) Relay failing to open. c) Excessively high discharge pressure. d) Compressor motor has open or short circuit winding. e) Tight compressor (binding internally).
No		
Does compressor start and run but in short cycles on overload protector	Yes	a) Defective overload protector a) Excessively high discharge pressure – check for restricted airflow through the condenser or inoperative condenser fan motor b) Excessively high discharge pressure. c) Compressor motor has open or short circuit winding. d) Tight compressor (binding internally).
No		
Are LED error indicators showing an error	Yes	a) Refer to diagnosis on page 24.

11.5 – Carbonator & recirculation pump timed out		
Fault		Possible cause
Carbonator pump timed out (not running)	Yes	a) Control box defective b) Liquid level probe defective c) Leaks in the dispense system d) No or inadequate water supply e) CO ₂ pressure too high f) Frozen product/water coils g) Not correct specification (Over demand)

11.6 – Flat drinks		
Question		Possible cause
Are the drinks below 5°C	No	Go to 11.3 – Warm drinks.
Yes		
Is CO ₂ pressure set correctly	No	Adjust pressure to specification range
Yes		
Is inlet solenoid valve stuck open causing carbonator to flood	Yes	Faulty solenoid
No	→	Possible water boost pump failure

11.7 – No carbonated water		
Question		Possible cause
Is carbonator pump running?	No	<ul style="list-style-type: none"> a) Carbonator pump timed out, go to 11.5 b) Loose connection c) Faulty carbonator pump assembly d) Defective level control box e) Defective level probe f) Restricted inlet water supply g) Inlet solenoid valve remains closed h) Blockages in carbonator bowl inlet i) Unit freeze up j) Has power been off, if so try resetting the controller
Yes		
Are LED error indicators flashing?	Yes	Refer to on pages 23 & 24
No		
Is soda recirculation pump running?	No	<ul style="list-style-type: none"> a) Faulty soda recirculation motor b) Faulty soda recirculation pump assembly c) Carbonator bowl is empty d) Defective control box

11.8 – No dispense		
Question		Possible cause
Is water supply to unit connected and syrup supply to tower connected?	No	Connect water and syrup supplies
Yes		
Is power supply to dispense connected and switched on?	No	Connect power supply to tower
Yes		
	→	<ul style="list-style-type: none"> a) Faulty supply to tower b) Faulty tower wiring

12. Diagnostic messages

Message	Cause	Remedy
CO2 pressure error	CO2 inlet pressure below operating pressure of 6 bar	Check CO ₂ supply Change CO ₂ cylinder Adjust pressure regulator Check CO ₂ pressure switch Check electric connections Check carbonator bowl
Carbonator pump error	Carbonator pump pressure below operation pressure of 10 bar	Check CO ₂ supply Change carbonator pump Change carbonator pump motor Check Carbonator pressure switch Check electric connections
Water inlet pressure error	H2O inlet pressure below operating pressure of 0,2 bar	Check water supply Check electric connections
Agitator error	Agitator RPM speed below adjusted settings of 1570 min ⁻¹ respectively 3880 min ⁻¹	Check agitator motor Check electric connections
Water bath temperature error	Water bath temperature above operating temperature of or dispense rate at capacity	Check temperature probe Check electric connections Ice bank used up, allow time to build new ice bank and/or reduce dispense rate
Ambient temperature error	Ambient temperature above maximum specification of 40°C	Check temperature probe Check electric connection Improve room ventilation
Soda temperature error	Soda return temperature above operating temperature of max. 2°C, or dispense rate is at capacity	Check temperature probe Check electric connection Ice bank used up, allow time to build new ice bank and/or reduce dispense rate
Hot gas temperature error	Condenser temperature above operating temperature of max. 120°C	Check temperature probe Check electric connections Provide sufficient ventilation Clean condenser fins
Compressor run time		For information only
Carbonator pump run time		For information only
Voltage check error	Power supply out of specification	Check power supply conditions

12.1 Key to LED diagnostic indicators (Energize main board)

Sequence	System Status	Condition	Reactive status	Possible remedy
LED Green:				
ON	OK	Supply voltage > 200V and < 250V	Normal operation	Not applicable
FLASH 1/ sec	Fault	Voltage < 190V	All motors disabled	Correct supply voltage
FLASH 4/ sec	Fault	Voltage > 260V	All motors disabled	Correct supply voltage
LED Amber:				
OFF	OK	CO ² Pressure > 4.2 BAR	Normal operation	
ON	Error	CO ² Pressure < 3.5 BAR	a) Carbonators & Solenoid Valves disabled b) 24-Volt Power supply interrupted to the Tower (Where applicable)	Adjust CO ₂ pressure
LED Red:				
OFF	OK	Normal operation		
ON	Error	Carbonator Time out (20 minutes)	Carbonator System locked	Manual Mains power Reset
FLASH short	OK	Data transfer to Communication Box (When connected)	Normal operation	Not applicable
FLASH 1 per sec	Error	Water-inlet pressure Time-out (3 per minute)	Carbonator system locked	Mains power Manual Reset
FLASH 4 per sec	Error	Motion Controller over-temperature (> 85°C)	Soda Recirculation System locked	Cool down < 75°C Automatic Reset
LED's Green & Red:				
ALTERNATING:	Error	Carbonator Triac defective •	Carbonator System locked	Manual Mains power Reset

12.2 Key to LED diagnostic indicators (Motion controller for water Recirculation)

Sequence	Status	Condition	Reactive status	Possible remedy
LED Red:				
Short FLASH & long FLASH – break – short FLASH & long FLASH	OK	Break 8.8 seconds = Low speed – Soda water < 1.3°C Break 4.4 seconds = High speed – Soda water > 2.8°C	Not applicable Not applicable	Not applicable
FLASH 1 per second	Error	Over current > 550mA	Soda Recirculation system locked	Manual mains power reset
Double FLASH x 4 per min	Error	Over operating temperature >85°C	Soda Recirculation system locked	Automatic reset when temperature falls <75°C

Note: After repeated cycling of 5 times per 3-hour period, due of over-temperature (> 85°C). The Soda Recirculation will change from normal to System locked. Manual Mains Power Reset is necessary to reactivate the system.

13. Product data sheet

Date: 21 Aug 2008
 Issue No: 1
 Page 1 of 2

Energize 5 AC – Single/Dual Soda Recirculation
 Number range: 22 1002 5XX

Performance			
Ambient	40°C, 75% RH	32°C, 65%RH	24°C, 45%RH
Python length (m)	30		
Python Insulation	32mm	32mm	32mm
Dispense rate (dpm)	4 x 12oz (355ml)	4 x 12oz (355ml)	4 x 12oz (355ml)
Dispense flow rate (oz/sec)	3	3	3
No. of heads	1	2	2
No. of valves / head	8	8	8
No of drinks < 4.4°C	30	764	1980

Dimensions		
Height:	810mm	810mm
Width:	1080mm	1080mm
Depth:	690mm	690mm
Weight: Unloaded	115kg	TBC
Packed	120kg	TBC
Operational	275kg	TBC

Electrical	Single soda circ	Dual soda circ
Mains supply:	230V 50Hz – Single phase	230V 50Hz – Single phase
Run current:	9A	10A
Start current:	TBC	TBC
Fuse:	16 Amp	16 Amps
Energy consumption:	3,8 kWh/24h at 40°C	

Connection details	Size	Coil quantity
Syrup coil (optional):	8mm ID, ½" BSF	8
Still water coil x 1:	10mm ID, 5/8" UNF	1
Premix coil x 2 (optional):	8mm ID, ½" BSF	2
Soda re-circulation:	10mm ID, 5/8" UNF	1
Water inlet:	10mm ID, 5/8" UNF	1
Carbon dioxide (CO2) inlet:	6mm ID, ½" BSF	1
Coil material:	Grade 304 stainless steel	

Refrigeration	
Maximum ambient temperature:	40°C
Icebank size:	60kg
Compressor size	34cc
Compressor starting torque:	HST
Evaporator type:	stainless steel
Condenser type:	Air Cooled – CuAl
Expansion device:	Thermal expansion valve
Refrigerant type:	R134a
Refrigerant charge:	See rating plate
Fan motor:	34W
Fan blade:	300mm
Air flow direction:	Suck (air passes through condenser and fan blade before motor)



Energize 5

**Product data sheet**

Date: 21 Aug 2008
 Issue No: 1
 Page 2 of 2

Energize 5 AC
 Number range: 22 1002 5XX

Controls	
Control type:	Energize controller – electronic

Carbonator bowl	
Carbonated water reserve:	3l (optional 2x3l for dual circuit units)
Refill differential:	2x0,45l
Refill rate:	2x4,7l/min
Control:	3 pin probe, Energize Controller
Protection:	Inlet pressure sensor at 0,5bar

	Carbonator pump	Soda pump	Agitator
Type:	Rotary vane x 2	Rotary vane (Optional quantity of 1 or 2)	EC motor variable speed
Flow rate:	4.7 litres/min	5.3 litres/min	N/A
Protection:	Thermal	Thermal	Electronic

Standards and Legislation

Product conforms to EMC Directive (2004/108/EC)
Product conforms to Low Voltage Directive (2006/95/EC)
Product conforms to Machinery Directive (89/392/EEC)



IMI Cornelius UK Ltd,
 Russell Way
 Brighthouse
 HD6 4LX
 Tel: 0044 (0) 1484 714584
 Fax: 0044 (0) 1484 400592
 Web: www.corneliusuk.com



Energize 5



14. Parts lists & exploded views

Part list

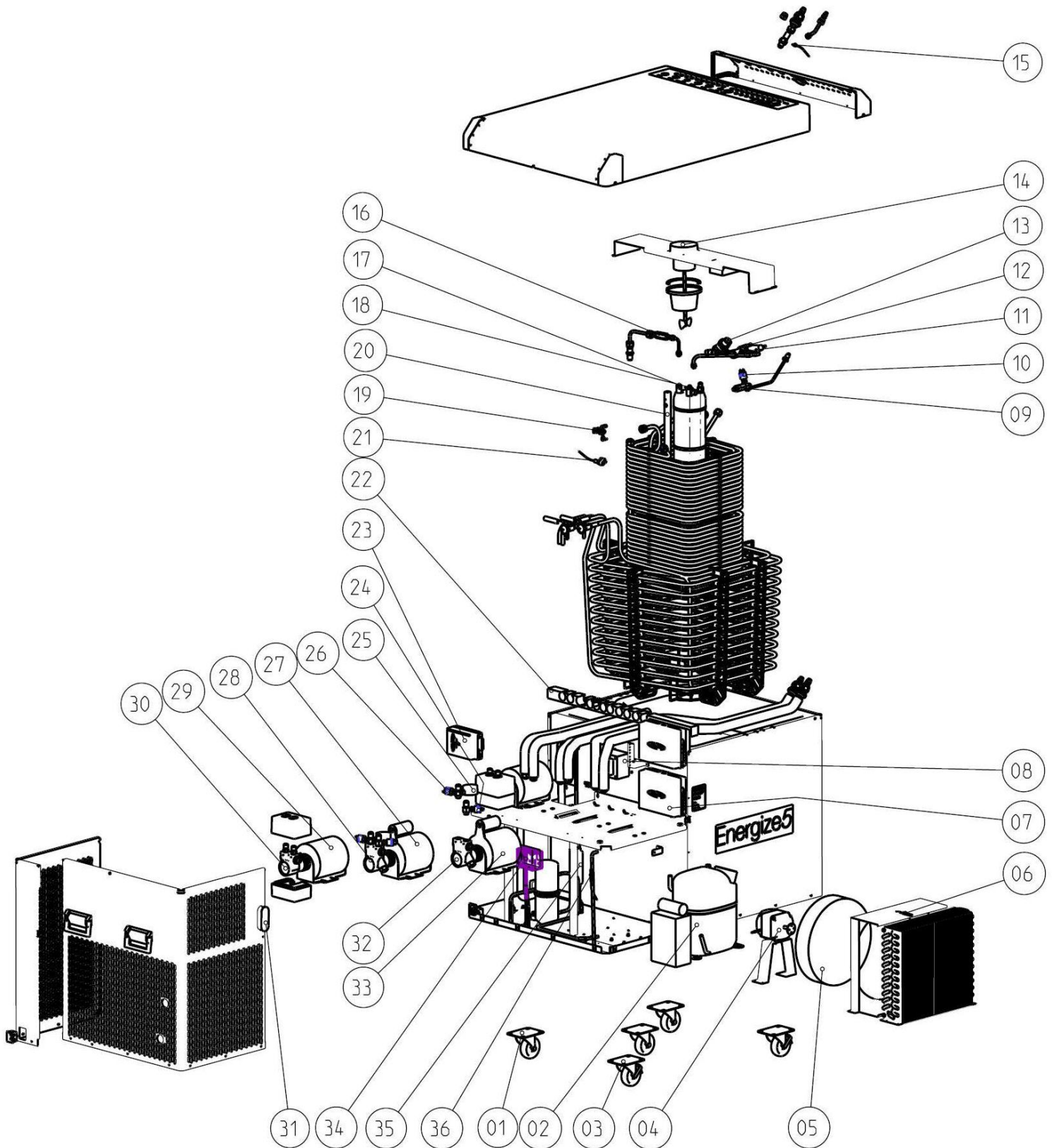
Description: Energize-5 Single Recirculation

Part number: 22 1002 500

Item number	Part number	Description
1	22-0107-782	Castor lockable
2	44-0000-236	Compressor GS 34 TB
3	22-0107-781	Castor
4	44-0000-018	Fan motor 34W 230V 50/60Hz
5	44-0000-061	Fan blade 300mm sucking
6	22-0105-775	Probe Hot gas / Ambient
7	14-1647-605	Main Controller Energize V20
8	22-0107-889	Transformer 200VA
9	22-0105-782	Double-check-valve CO2
10	22-0107-389	Pressure switch CO2 IN 50/60psi
11	22-0105-624	Double-check-valve Water
12	44-0000-672	Solenoid valve
13	44-0000-752	Water pressure regulator G3/8"
14	22-0107-620	Assembly Agitator
15	22-0105-776	Probe Soda return
16	22-0106-873	Double-check-valve Water
17	00-0001-116	Release valve Carbonator 11,2bar
18	22-0096-822	Level probe with cable
19	22-0108-442	Assembly Ice bank probe
20	22-0107-816	Drain tube
21	22-0105-778	Probe (water bath)
22	22-0108-288	Separator wall 1
23	14-1647-604	Motion control for 3x180V motor
24	22-0107-390	Pressure switch H2O IN 7/15 psi
25	14-2440-100	Low pressure gauge 0-25bar
26	22-0107-391	Pressure switch Carbonator out 130/145psi
27	44-0000-842	Carbonator motor 400W-185W
28	44-0000-761	Water pump 100 GPH MS
29	44-0000-838	Pump motor 3x180V 50Hz 3Ph
30	44-0000-771	Water pump 100GPH VA
31	22-0105-715	Vision panel MC
32	44-0000-761	Water pump 100 GPH MS
33	44-0000-842	Carbonator motor 400W-185W
34	14-7051-000	Thermostat KP 7 W
35	14-7047-134	Filter dryer 8,1/8,1 - R134a
36	22-0105-775	Probe - Hot gas/Ambient

Exploded view

Description: Energize-5 Single Recirculation
Part number: 22 1002 500





Energize 5



Part list

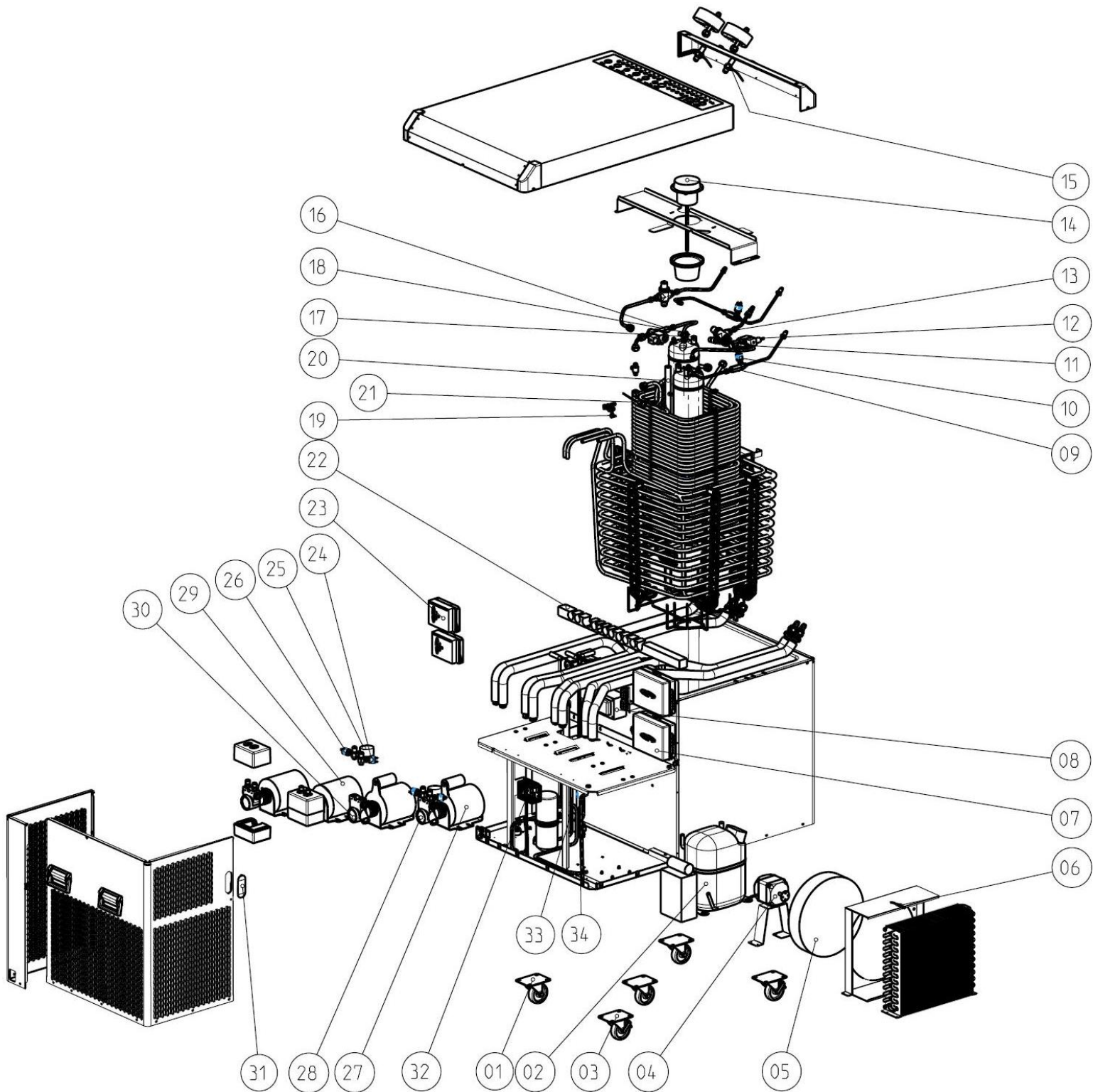
Description: Energize-5 Dual Recirculation

Part number: 22 1002 501

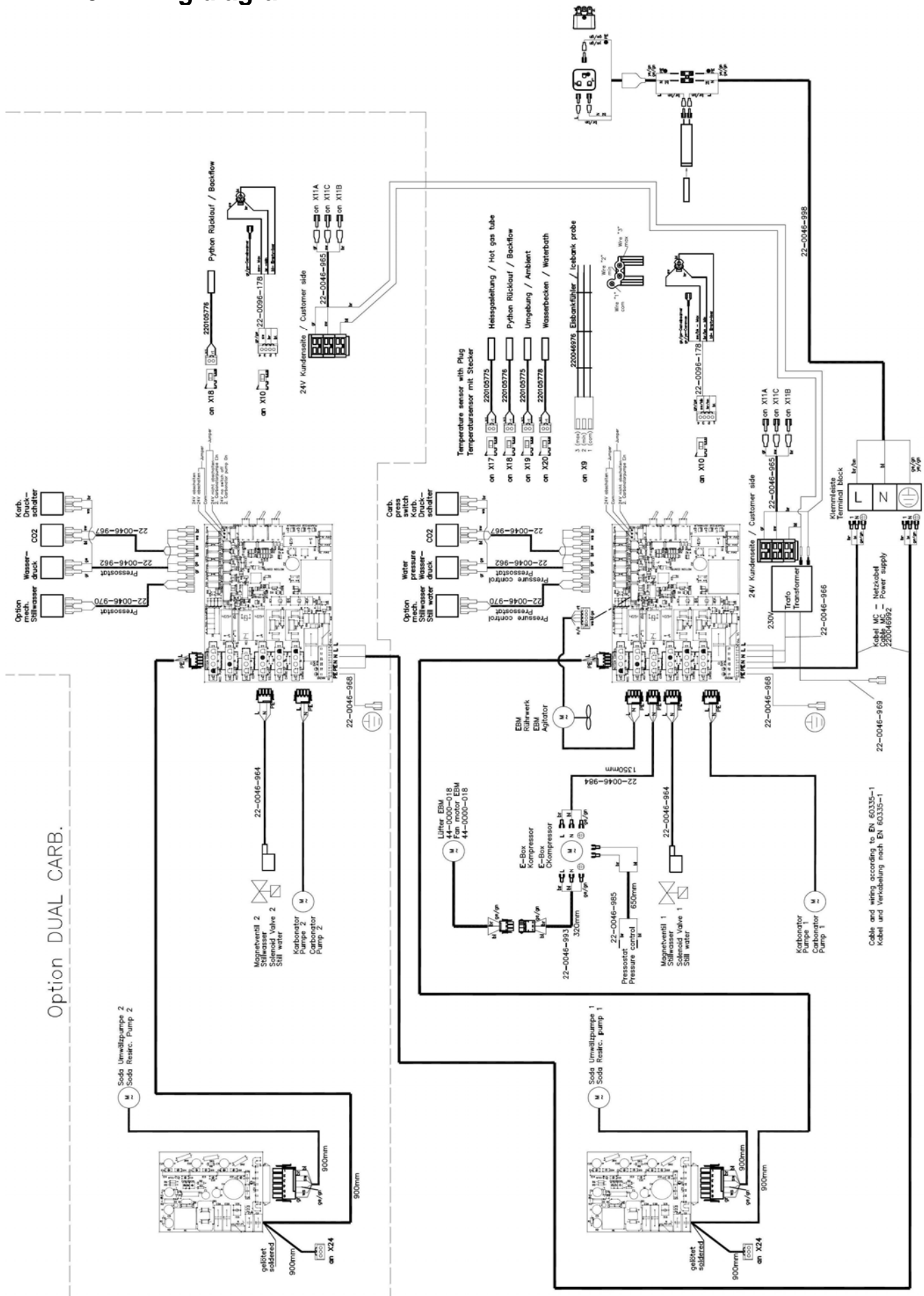
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5	44-0000-061	Fan blade 300mm sucking
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7	14-1647-605	Main controller energize v20
8	22-0107-889	24V transformer 200VA
9	22-0105-782	Double-check-valve CO2
10	22-0107-389	Pressure switch CO2 IN 50/60psi
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29	44-0000-838	Pump motor 3x180v 50Hz 3Ph
30	44-0000-771	Water pump 100GPH VA
31	22-0105-715	Vision panel mc
32	14-7051-000	Thermostat KP 7 W
33	14-7047-134	Dryer 8,1/8,1 - R134a
34	22-0105-775	Probe Hot gas / Ambient

Exploded view

Description: Energize-5 Dual Recirculation
Part number: 22 1002 501



15. Wiring diagram



16. Plumbing schematic – Dual circulation with heat exchanger

