



Please keep these operating instructions in a safe place.

Dear Customer:

Check this product for visible damage immediately upon receipt. Inform the shipper if there is any shipping damage. Note that damage resulting from improper handling or operation is not covered under the warranty.

Before putting the device into operation:

Read all operating instructions carefully.

Familiarize yourself with all controls.

Ask the service company installing the device to write its address below for any subsequent repairs, emergencies, etc.

Address of your technical service company: Name:
City:
Street address:
Telephone:
Contact person:

Table of Contents

1. Introduction 22
2. Safety Regulations 23
3. Illustrations 24
4. Installation Site Requirements 29
5. Installation 29
6. Operating Instructions 29
7. Cleaning Instructions 33
8. Troubleshooting 34
9. Technical Data 35
10. Flow Charts and Circuit Diagrams 36
11. Installation Checklist 41

1. Introduction

Our foremost aim is to produce a quality product. If you encounter any problems not covered by this instruction manual, call or write us. We will be glad to be of assistance. If you write, please include the model and serial number of the device.

Our address: IMI Cornelius Deutschland GmbH
Carl-Leverkus-Strasse 15
D-40764 Langenfeld, Germany
Tel. 0(xx49) 2173 793-0
Fax: 0(xx49) 2173 77438

2. Safety Regulations

2.1 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 good condition whenever operated. Any modifications that detrimentally affect the safety of the device are therefore strictly prohibited. Please contact your service company if you wish to obtain more information about how to safely operate the device.

No safety equipment (such as safety valves, overload protection devices, etc.) is to be removed, modified or put out of commission (at risk of injury or death!).

Only authorized persons should work on the device, and operators should be sufficiently trained. No unauthorized persons should change the settings on the device or tamper with it.

You are obligated to check the device on a daily basis for externally discernible damage and defects. Immediately report modifications that might affect the safety and functioning of the device to the service company nearest you.

Note that only original **Cornelius** replacement parts and accessories which have been checked and approved are to be used. IMI Cornelius Deutschland GmbH assumes no liability whatsoever for damage resulting from the use of non-original parts and accessories or from improper handling.

2.2 Safety Instructions for 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 disconnect the main power plug before doing any cleaning on or near the device. As delivered, it features a molded grounding-pin plug which must be connected to a grounded electrical outlet. If no appropriate grounded electrical outlet is available, the connection must be made by authorized persons only, with the regulations applicable to the installation site (e.g. VDE standards in Germany).

2.3 Safety Instructions for CO₂

Place the carbon-dioxide cylinder in an upright position next to the workstation and secure it to prevent it from falling over. Keep it away from heat sources (e.g. not in the sun). Minimum distance from heater: 0.5 m (TRSK).

Carbon dioxide is heavier than air and may present danger of suffocation if large quantities leak out and collect in an enclosed space. Remember that parts of the device are at operating pressure. Do not loosen or dismantle any components at operating pressure.

3. Illustrations

3.1 Illustration of parts - SC 85

1. Compressor
2. Condenser
3. Carbonator bowl with housing
- 3a Lid - carbonator bowl
4. Carbonator pump motor
5. Carbonator pump
6. Control box
- 6a Lid - control box
- 6b Electronic control board
7. Motor - recirculation pump
8. Recirculation pump
9. Pressure gauge
10. Check valve
11. Carbonator electrode
12. Connection for cleaning
13. Connections

3.2 Illustration of parts - SC 150

- 1 Inlet - Syrup / Premix / CO₂
2. Carbonator Safety Valve
3. Outlet - Syrup / Premix / Soda
Python out / in
4. Water bath filling point
5. Water inlet
6. Water bath level indicator

3.3 Illustration of parts - SC 250

1. Compressor
2. Condenser
3. Carbonator bowl with housing
- 3a Lid - carbonator bowl
4. Carbonator pump motor
5. Carbonator pump
6. Control box
- 6a Lid - control box
- 6b Electronic control board
7. Water pressure regulator
8. Solenoid
9. Pressure gauge
10. Motor - recirculation pump
11. Recirculation pump
12. Check valve
13. Carbonator electrode connections
14. Connection for cleaning
15. Connections

3.4 Illustration of parts - SC 300

1. Compressor
2. Condenser
3. Carbonator bowl with housing
4. Carbonator pump motor
5. Carbonator pump
6. Control box
- 6a Lid - control box
- 6b Electronic control board
7. Water pressure regulator
8. Solenoid
9. Pressure gauge
10. Motor - recirculation pump
11. Recirculation pump
12. Check valve
13. Carbonator electrode connections
14. Connection for cleaning
15. Syrup inlet / outlet

3.5 Illustration of parts - SC 1300

1. Compressor
2. Condenser
3. Carbonator bowl with housing
- 3a Lid - carbonator bowl
4. Carbonator pump motor
5. Carbonator pump
6. Control box
- 6a Lid - control box
- 6b Electronic control board
7. Water pressure regulator
8. Solenoid
9. Pressure gauge
10. Motor - recirculation pump
11. Recirculation pump
12. Check valve
13. Carbonator electrode connections
14. Connection for cleaning
15. Syrup inlet
16. Agitator
17. Syrup outlet

4. Installation Site Requirements

4.1 Installation Site

Comply with the valid national regulations for installation sites and electrical connections. Ventilation of the installation sites must be appropriate for device output. Inadequate ventilation of the device will result in its overheating and malfunction. Always make sure that no inlet or outlet vents are covered.

Soda Circuit Cooler	SC 85	SC 150	SC 250	SC 300	SC 1300
Heat output in watts	1280	1200	2200	1960	2800
Air flow in m ³ /hour	600	400	600	600	700

4.2 Electrical Connections

A grounded electrical outlet with a maximum protection of 16 amps is required.

The wiring voltage must always be within the following tolerances: 230 VAC +6%/-10% / 50 Hz

Soda Circuit Cooler	SC 85	SC 150	SC 250	SC 300	SC 1300
Power consumption in watts	850	700	1200	1260	1700

5. Installation

The device must be installed by a trained service technician.

Please take care, that the socket for the unit is always accessible.

There is no user serviceable items inside the equipment.

If the power supply cable to the unit is damaged, it has to be replaced by the manufacturer, the service partner or an other qualified person to avoid maintenance.

5.1 Water Connection

Connecting only to drinkable water.

Connect the device to a water inlet line with an inside diameter of 10 mm. We recommend the use of a water filter and water pressure regulator. To permit flushing of the filter, a T-piece should be mounted downstream of the water pressure regulator. The water pressure should be at 2 bar. (Mount a pressure gauge control on the water pressure regulator). The device will not start with a water pressure below 2 bar.

5.2 CO₂ Connection

You will need a two-wire pressure regulator, 7 bar. Using tubing with an inside diameter of 4 mm, connect the pressure regulator to the carbonator. Set the CO₂ pressure at between 4 and 4.5 bar.

5.3 Connecting Soda Water and Still Water Premix/Postmix Syrup

Connect one tube with an inside diameter of 6 mm to each device fitting. Connect the tube fitting to the correct cooling coil inputs of the cooler circuit carbonator.

5.4 Connection of Still Water Control

For still water, one switching cable (2 x 0.75 mm²) must run from the soda circuit cooler to the still water tap. The electronic control system is actuated via this cable. Refer to the circuit diagram for the connection. The flow rate of the still water is set via the water pressure regulator. The setting should be 170 ml in 4 to 5 seconds.

6. Operating Instructions

6.1 Putting into Operation

Comply with the cleaning regulations defined by law before beginning each operation.

Always clean the beverage/syrup couplings on the container before attaching them. Then connect the beverage/syrup couplings to the container. Note: gray = CO₂, black = beverage/syrup.

Open the cylinder shut-off valve on the CO₂ cylinder and the shut-off valve on the pressure regulator. Check the CO₂ pressure on the pressure regulator. It should be within the following standard pressures:

Syrup:	3.5 to 4.0 bar
CO ₂ carbonization pressure:	4 to 4.5 bar
Light product:	0.5 to 1.0 bar
Drinking water:	4.0 to 4.5 bar

Set the CO₂ pressure by turning the control screw:

Clockwise to increase the pressure

Counter-clockwise to reduce the pressure

Afterwards check the CO₂ lines for leaks by closing the CO₂ shut-off valve. The inlet pressure displayed at the pressure regulator should not drop. If it does, notify a service technician immediately. Do not forget to re-open the CO₂ shut-off valve after the test.

Open the water inlet line and check the water pressure. Standard pressure: 2.0 to 2.5 bar. Set it by turning the control screw on the water pressure regulator:

Clockwise to increase the pressure

Counter-clockwise to reduce the pressure

Check the beverage/syrup lines for leaks. Only a visual inspection is possible. If liquid is leaking, call a service technician.

Close the water inlet line. The pressure displayed should not drop. If it does, notify a service technician immediately. Afterwards, re-open the water inlet line.

6.2 Turning On the Device

6.2.1 SC 85

Connect the power plug for the cooler to a grounded electrical outlet.

Open the control box by loosening the three screws. Remove the lid of the control box.

When the machine has power, the red LED-display lights for L9 and L10 should be lit.

Turn on the carbonator pump with the S1 switch. The L1 and L7 LED-displays should light up green and yellow, respectively. The carbonator pump will fill up the carbonator bowl and turn off automatically. The L7 LED-display will turn off.

Release air from the carbonator bowl by pulling the safety valve for 2 to 4 seconds.

Turn on the recirculation pump with the S2 switch. The L2 and L5 LED-displays should light up green and yellow, respectively.

Turn on the compressor with the S3 switch. The L3 and L4 LED-displays should light up green and yellow, respectively. The compressor turns off automatically when the ice bank is built up, and the L4 LED-display will turn off.

The unit is now ready for operation. Close the control box lid and fasten the screws.

6.2.2 SC 150

The water bath must be filled to overflowing with tap water. Refer to the technical data for the amount required.

To prevent algae from forming in the water, add the disinfectant Molco (PN 14-9670-150). The 150-ml container of disinfectant is sufficient for 30 liters of water. **(Not to be used with SC 85 and SC 250.)**

Connect the power plug for the cooler to a grounded electrical outlet.

The device starts automatically when the water bath is full and switches off when the ice bank is built up. The carbonator pump switches on automatically when the water inlet pressure is more than 1.3 bar. The pump switches off when the carbonator bowl is full.

Release air from the carbonator bowl by pulling the safety valve for about 2 to 4 seconds.

The recirculation pump switches on automatically when the water inlet pressure is more than 1.3 bar.

6.2.3 SC 250

Connect the power plug for the cooler to a grounded electrical outlet.

Temperature-controlled units must be turned on at the electronic control board. The temperature can be adjusted by turning the knob, and the compressor will turn off automatically when the desired temperature is reached.

Open the control box by loosening the three screws. Remove the lid of the control box. When the machine has power, the red LED-display lights for L9 and L10 should be lit.

Turn on the carbonator pump with the S1 switch. The L1 and L7 LED-displays should light up green and yellow, respectively. The carbonator pump will fill up the carbonator bowl and turn off automatically. The L7 LED-display will turn off.

Release air from the carbonator bowl by pulling the safety valve for 2 to 4 seconds.

Turn on the recirculation pump with the S2 switch. The L2 and L5 LED-displays should light up green and yellow, respectively.

Turn on the compressor with the S3 switch. The L3 and L4 LED-displays should light up green and yellow, respectively. The compressor turns off automatically when the desired temperature is reached, and the L4 LED-display will turn off.

The unit is now ready for operation. Close the control box lid and fasten the screws.

6.2.4 SC 300, SC 1300

The water bath must be filled to overflowing with tap water. Refer to the technical data for the amount required.

To prevent algae from forming in the water, add the disinfectant Molco (PN 14-9670-150). The 150-ml container of disinfectant is sufficient for 30 liters of water. **(Not to be used with SC 85 and SC 250.)**

Connect the power plug for the cooler to a grounded electrical outlet.

The device starts automatically when the water bath is full and switches off when the ice bank is built up.

Open the control box by loosening the three screws. Remove the lid of the control box. When the machine has power, the red LED-display lights for L9 and L10 should be lit.

Turn on the carbonator pump with the S1 switch. The L1 and L7 LED-displays should light up green and yellow, respectively. The carbonator pump will fill up the carbonator bowl and turn off automatically. The L7 LED-display will turn off.

Release air from the carbonator bowl by pulling the safety valve for 2 to 4 seconds.

Turn on the recirculation pump with the S2 switch. The L2 and L5 LED-displays should light up green and yellow, respectively.

Turn on the compressor with the S3 switch. The L3 and L4 LED-displays should light up green and yellow, respectively. The compressor turns off automatically when the ice bank is built up, and the L4 LED-display will turn off.

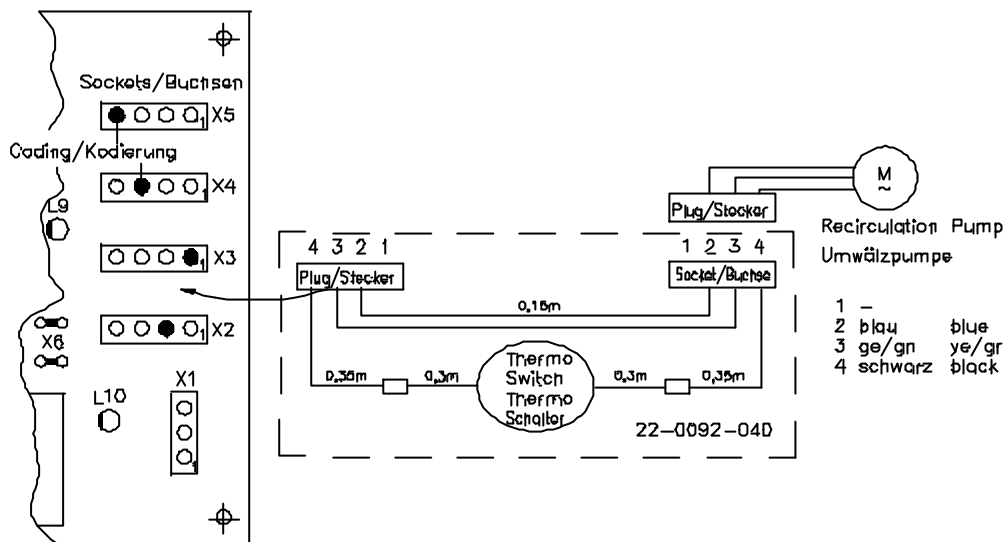
The unit is now ready for operation. Close the control box lid and fasten the screws.

6.3 Safety Switches SC 250, SC 300, SC 1300 (not for Switzerland)

The stainless steel recirculation pump is protected by a temperature safety switch. This safety precaution is to protect from water damage due to a frozen CO₂ water line caused by electrical failure of the control board.

The temperature safety switch (PN 22-0092-040) is mounted directly to the pump, and is electrically wired between the recirculation pump and the control board.

The electrical wiring for the temperature safety switch is shown on the wiring diagram.



6.4 End of Operation

It is imperative that the CO₂ cylinder and water inlet line be turned off each time operation is ended.

6.5 Daily Inspection

Check whether the CO₂ and water inlet lines are open. Working with closed water inlet lines will result in draining the Python and the carbonator bowl.

Check the beverage/syrup lines for leaks. Only a visual inspection is possible. If there is a leak, call a service technician.

Check the CO₂ lines for leaks by closing the valve on the CO₂ cylinder. The inlet pressure indicated on the pressure regulator should not drop. If it does, call a service technician immediately. Do not forget to re-open the CO₂ cylinder valve afterwards.

6.6 Disconnecting the Device

Perform the following steps in case of an extended period of nonuse:

Close the CO₂ cylinder, the CO₂ shut-off valve on pressure regulator, and the water inlet line.

Disconnect the power plug.

Detach the couplings from the beverage containers.

Have the device emptied and cleaned by trained specialists.



7. Cleaning Instructions

Comply with the national regulations for cleaning bar equipment which are valid at the particular installation site.

Clean connection parts and tap fittings in advance whenever making connections or changing the type of beverage.

Clean any parts that come into contact with air and beverages (e.g. the tap opening) on a daily basis.

The risk of serious injury exists when handling liquid cleaners. Always wear safety glasses and appropriate clothing during cleaning. Follow the instructions of the cleaner manufacturer.

A drainage tube is located at the bottom of the carbonator bowl, connected with a blind nut (7/16"). Depressurize the carbonator bowl and close the CO₂ line before removing the blind nut.

The condenser fins must be cleaned at regular intervals according to the amount of contamination (approximately every three months). This is best done with a brush and a vacuum cleaner.

The water bath level must be checked regularly and the contents must be changed at least once a year. Algae formation can be reduced by adding disinfectant.

The device is to be cleaned and emptied by trained specialists only on the basis of the following recommendations:

To be cleaned by trained personnel	CO ₂ lines	Beverage lines	Syrup lines	Soda water lines
Before commissioning		X	X	X
Before changing a beverage		X	X	
Before and after a period of nonuse		X	X	
Every 2 weeks		X		
Every 3 months			X	X
Every 12 months	X			

8. Troubleshooting

Before looking for problems with the dispensing equipment, first check:

Is the device getting electricity?

Is the flow of water to the device interrupted?

Are the beverage containers empty?

Is the CO₂ cylinder empty?

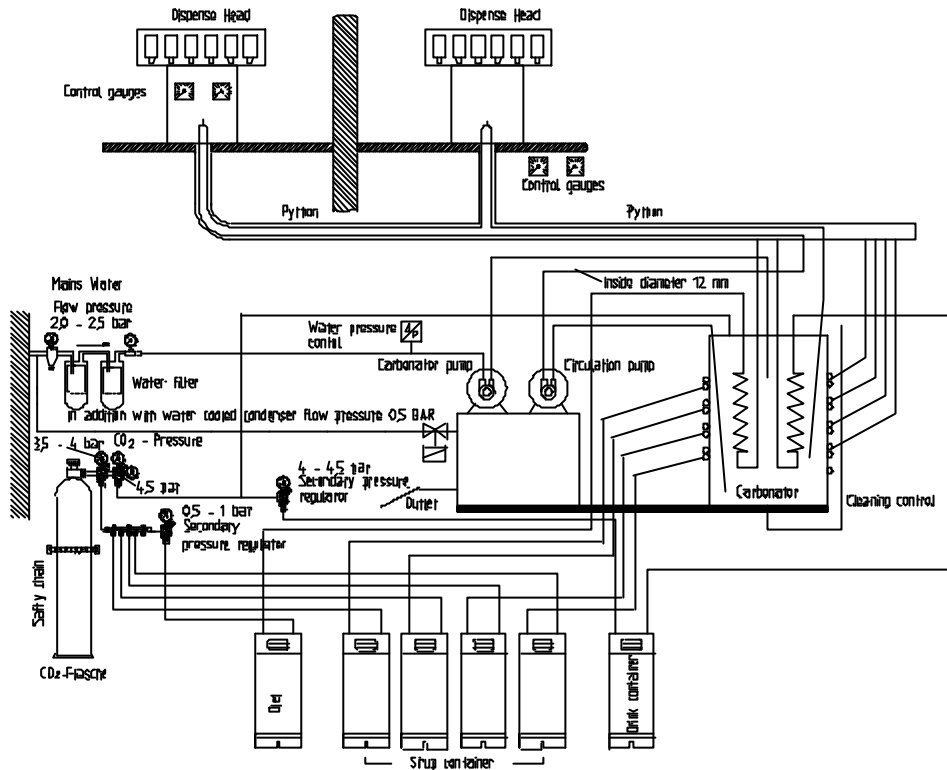
Type of problem	Cause	Remedy
Beverage too warm, compressor running	Temperature set too high. Condenser dirty or covered. Too much beverage being dispensed.	Adjust the temperature in the electronic control box. Use brush to clean between condenser fins. Check output capacity.
Beverage too warm, compressor not running	Compressor not turned on.	Turn compressor on; otherwise call service technician.
Beverage foams at a tap	Syrup stored too long with CO ₂ .	Connect a new syrup container.
Beverage foams at all taps	CO ₂ pressure too high. All syrups have too much CO ₂ . All beverages too warm.	Reduce pressure. Connect new syrup containers. Check storage temperature. (See "Beverage too warm ...")
Tap only dispenses syrup	Carbonator pump is not running.	Check if water inlet line is open. Check for water pressure of 2 bar. If carbonator motor is still not running, call a service technician.
CO ₂ concentration in the drink is too low	Air in carbonator. Too much dispensing. CO ₂ cylinder empty. Shut-off valve on CO ₂ cylinder is closed. Safety valve on pressure regulator is closed. CO ₂ pressure too low. Water temperature is too high.	Pull safety valve to release air. Check output capacity. Change CO ₂ cylinder. Open shut-off valve. Open safety valve. Adjust pressure. Adjust to lower temperature (only possible with a temperature regulator).
Too much or not enough syrup in the drink	Regulator in tap is clamping. Delivery pressure for syrup too low or too high.	Call a service technician. Adjust CO ₂ pressure.

9. Technical Data

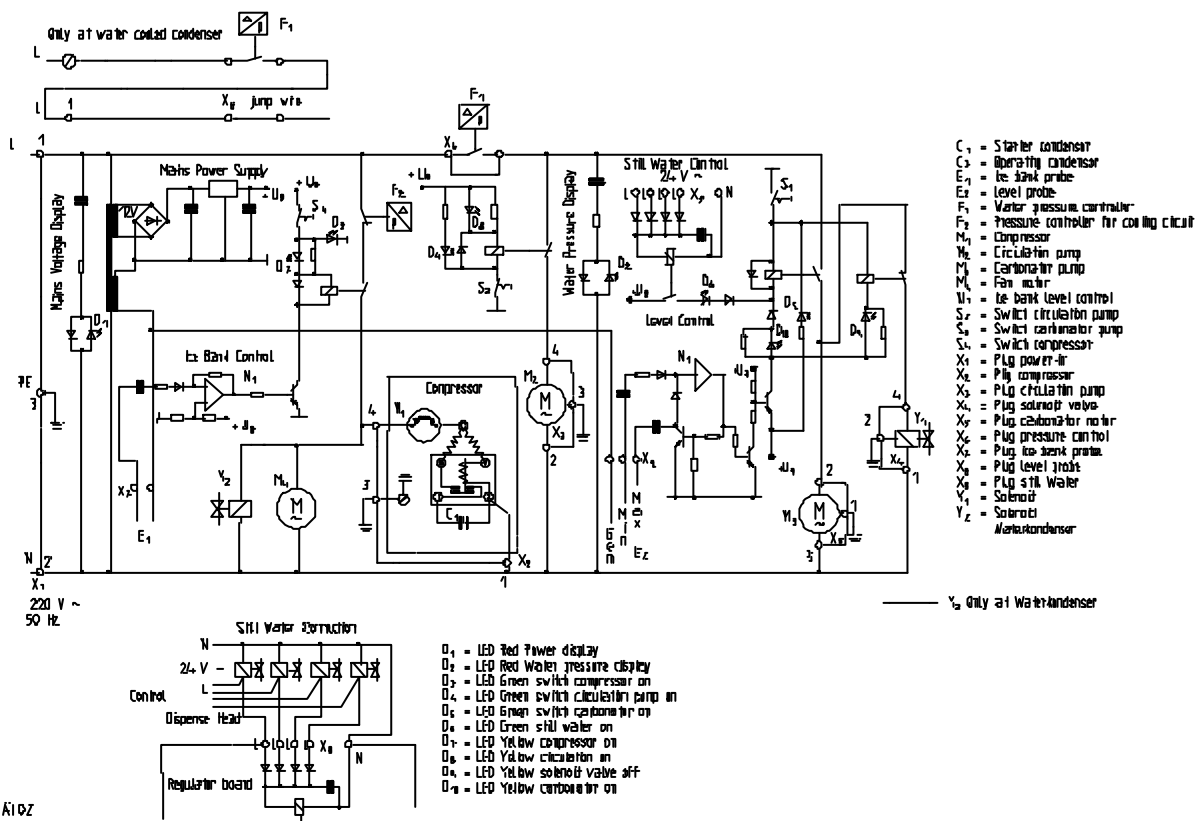
Soda Circuit Cooler	SC 85	SC 150	SC 250	SC 300	SC 1300
Drinks capacity (300 ml)					
Peak drinks/minutes	85/43*	140/72**	160/60	300/150	880/110
Continuously - drinks/hour	76*	80**	160	110	175
Ice bank weight (kg)	2	7	0	11	37
Ice bank capacity (kcal)	160	560	0	880	2960
Recovery (minutes)	39	80	0	85	160
Refrigerant R 134a (kg)	0.160	0.200	0.350	0.375	0.900
Voltage			230V/50Hz		
Power consumption (Watts)	850	700	1200	1260	1700
Compressor output in Watts (Hp) ***	310 (1/4)	450 (1/3)	1080 **** (2/3)	680 (2/3)	1270 (1)
Carbonator pump output in liters/hour at 10 bar	284	96*****	284	284	284
Recirculation pump in liters/hour at 2 bar	320	320	320	320	320
Cooling/ice bank capacity in Watts	330	500	1000	700	1100
in Kcal	255	430	860	600	950
Number of cooling coils					
Syrup	4	6	6	6	6
Drinking water	2	2	2	1	1
Still water	0	0	1	1	1
Beer/wine	0	0	0	2	0
Dimensions (mm)					
Height	500	570	670	680	700
Width	400	550	395	400	1005
Depth	445	375	635	750	520
Shipping weight (kg)	46	42	63	75	105
<p>* 200 ml drinks ** with 10m Cornelius SC-Python *** at -10° C evaporation temperature **** at 0° C evaporation temperature ***** at 8 bar</p> <p>Cooling capacities and output capacity are based on air temperature of 24°C, water or syrup inlet temperatures of 24°C, and beverage outlet temperatures of less than 5°C. When Cornelius Pythons are used, a cooling loss of 13 kcal/hour per running meter must be included in calculations. We reserve the right to make modifications.</p>					

10 Flow Charts and Circuit Diagrams

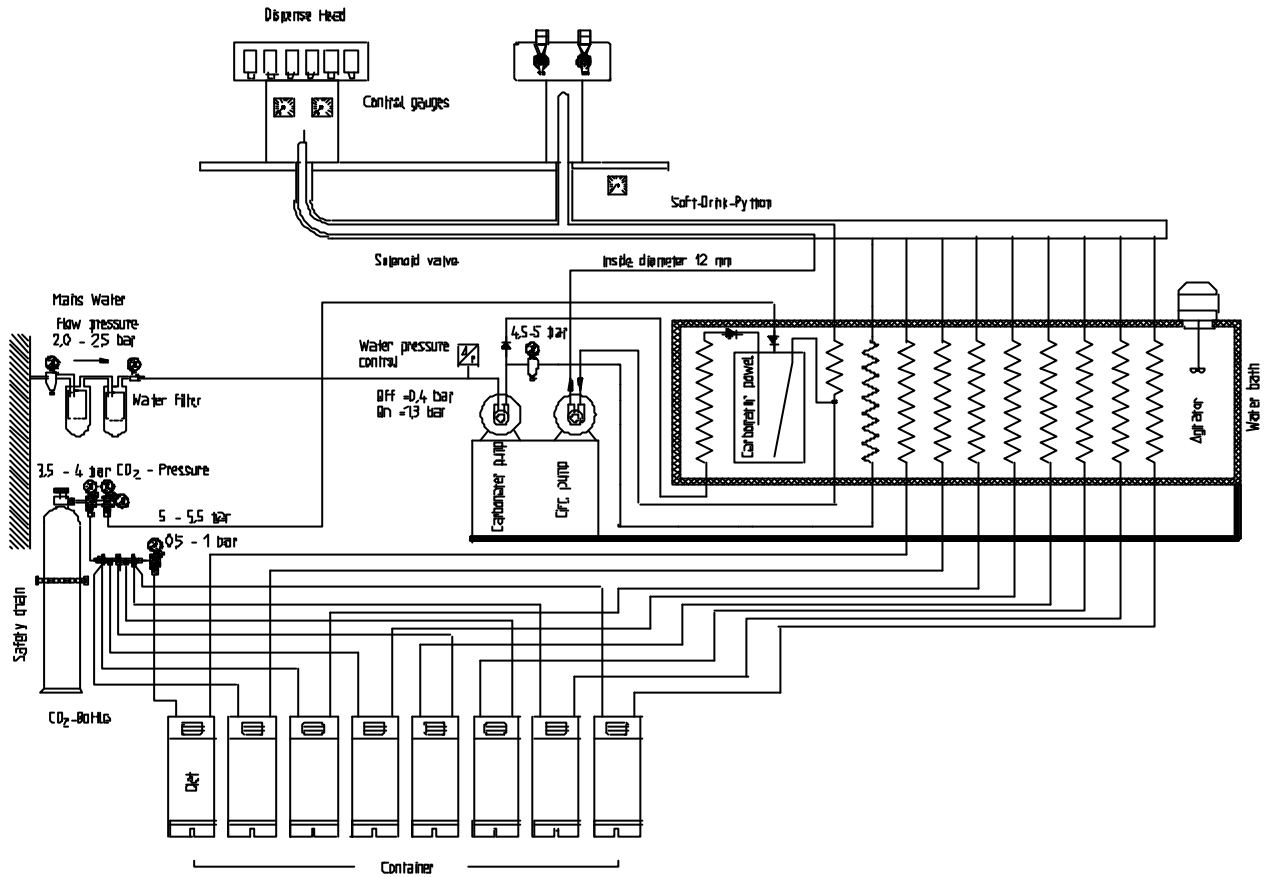
10.1 Flow Chart of the SC 85



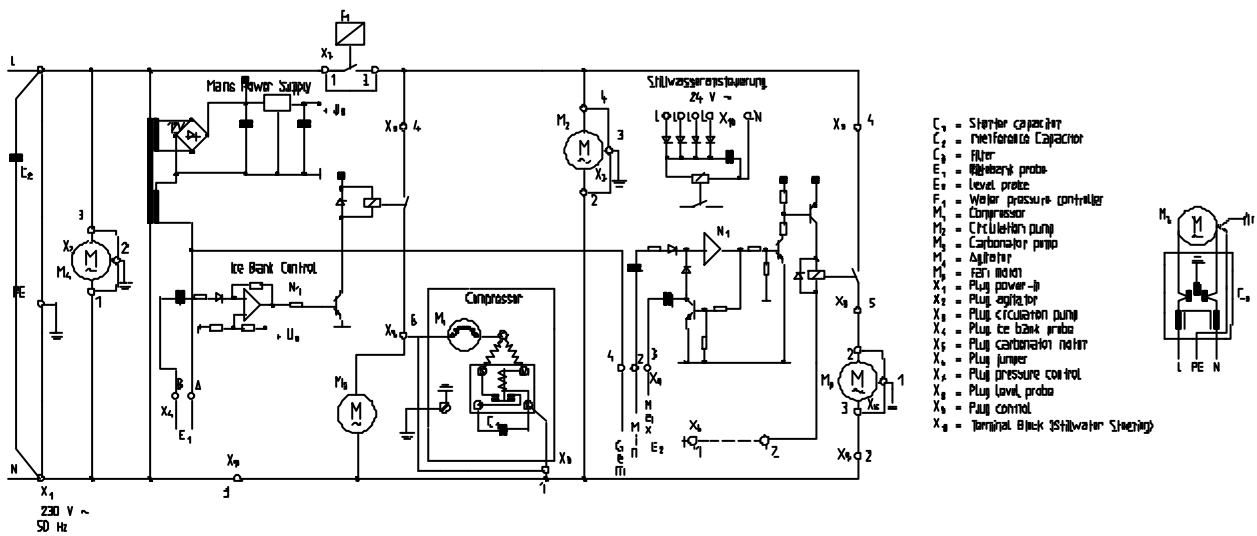
10.1.1 Circuit Diagram of the SC 85



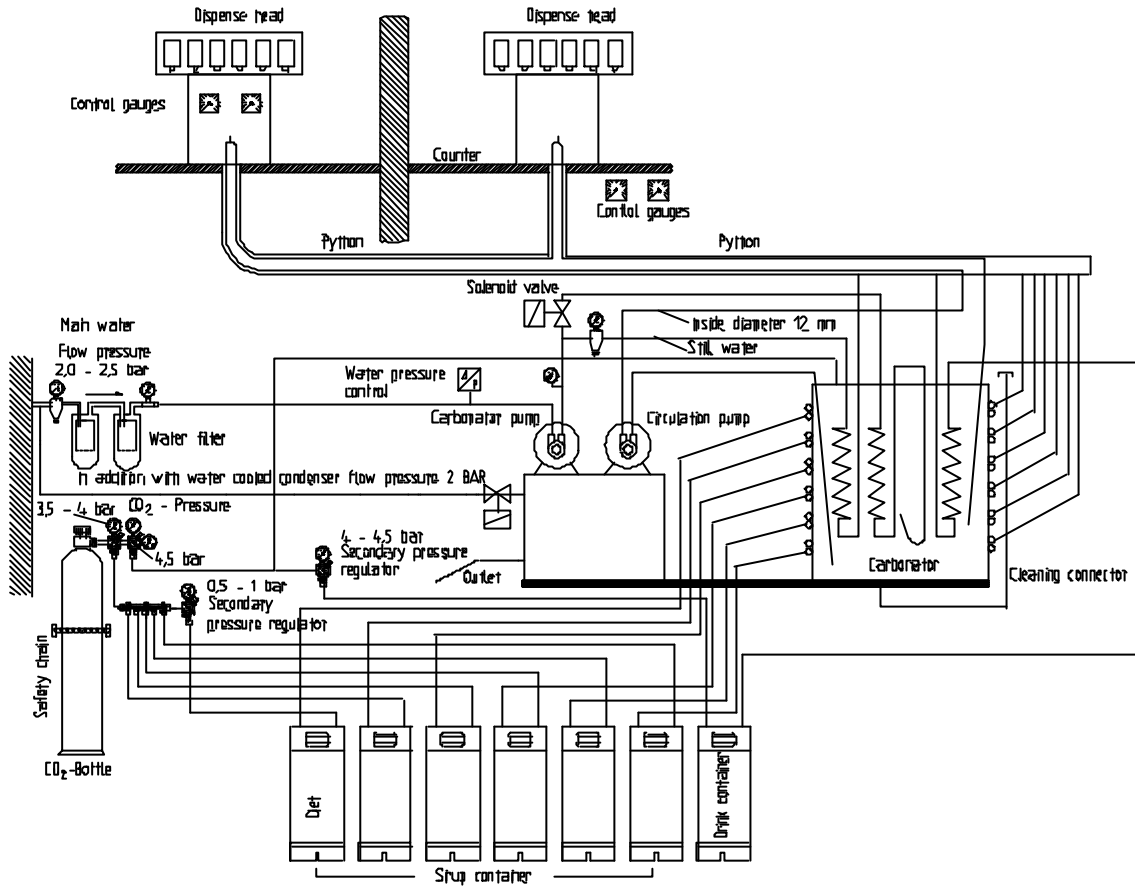
10.2 Flow Chart of the SC 150



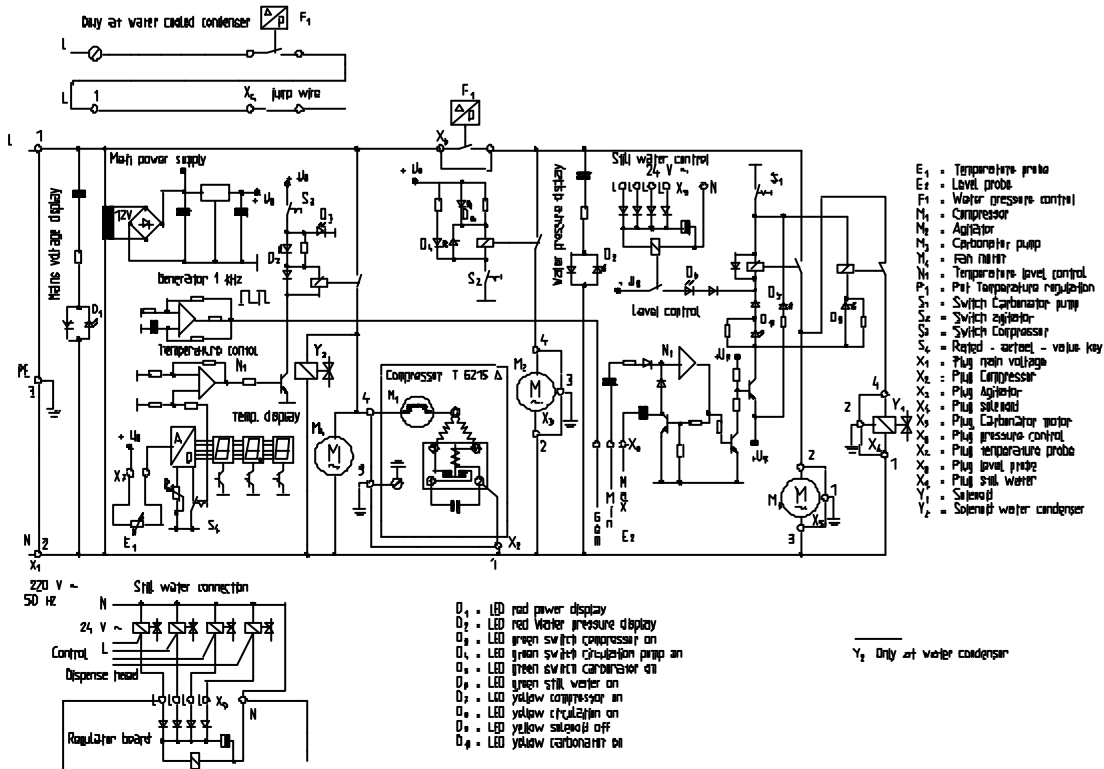
10.2.1 Circuit Diagram of the SC 150



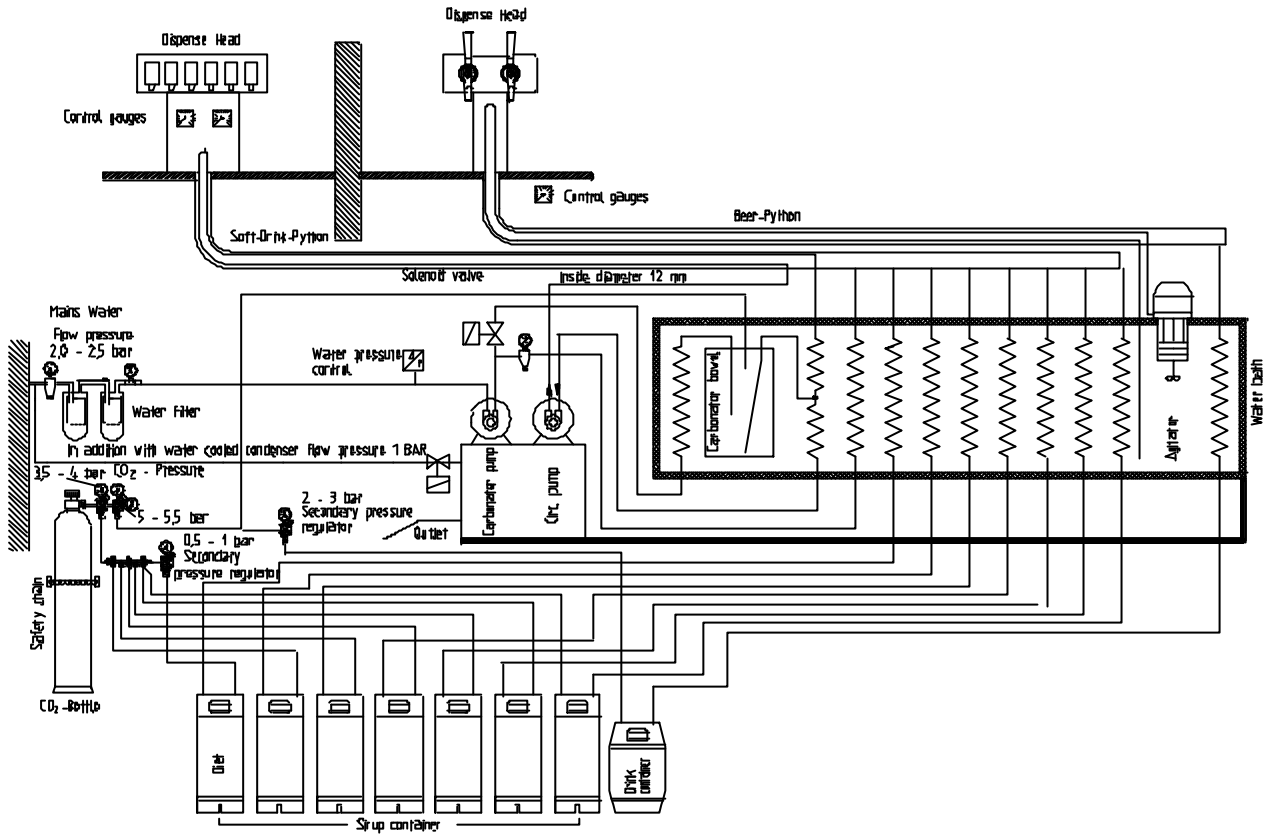
10.3 Flow Chart of the SC 250



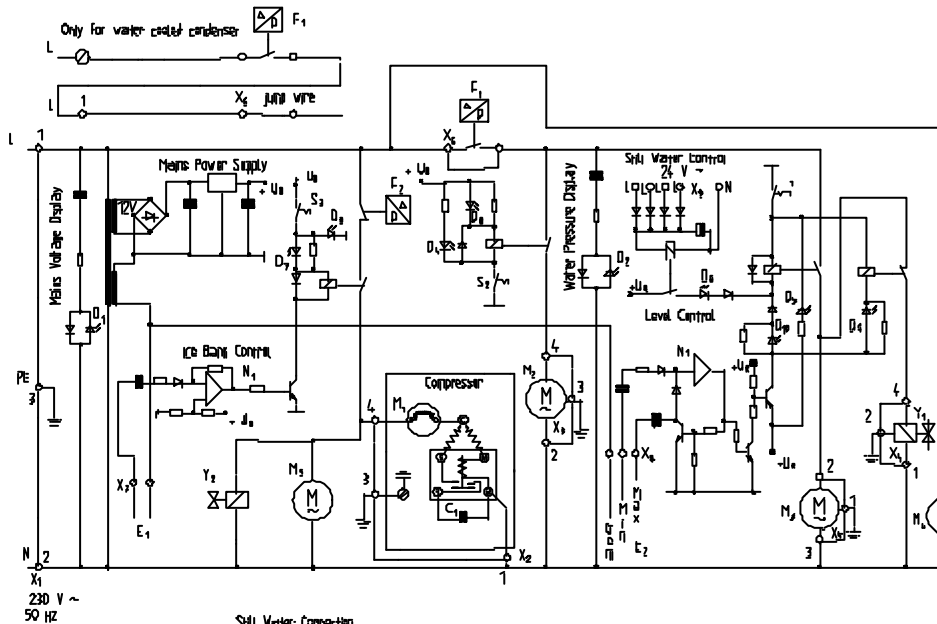
10.3.1 Circuit Diagram of the SC 250



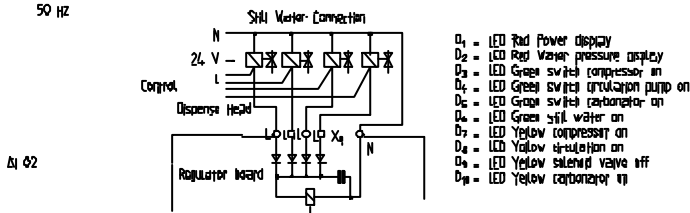
10.4 Flow Chart of the SC 300



10.4.1 Circuit Diagram of the SC 300



- C1 = Starter condenser
- C2 = Operating condenser
- E1 = ICE bank probe
- E2 = Level probe
- F1 = Water pressure controller
- F2 = Pressure controller for cooling liquid
- M1 = Compressor
- M2 = Circulation pump
- M3 = Carbonator pump
- M4 = Agitator
- M5 = Fan motor
- N1 = Ice bank level control
- N2 = Switch carbonator pump
- S1 = Switch circulation pump
- S2 = Switch compressor
- X1 = Plug power-in
- X2 = Plug compressor
- X3 = Plug circulation pump
- X4 = Plug solenoid valve
- X5 = Plug carbonator motor
- X6 = Plug pressure control
- Y1 = Plug ice bank probe
- Y2 = Plug level probe
- Y3 = Plug still water
- Y4 = Solenoid
- Y5 = Water condenser

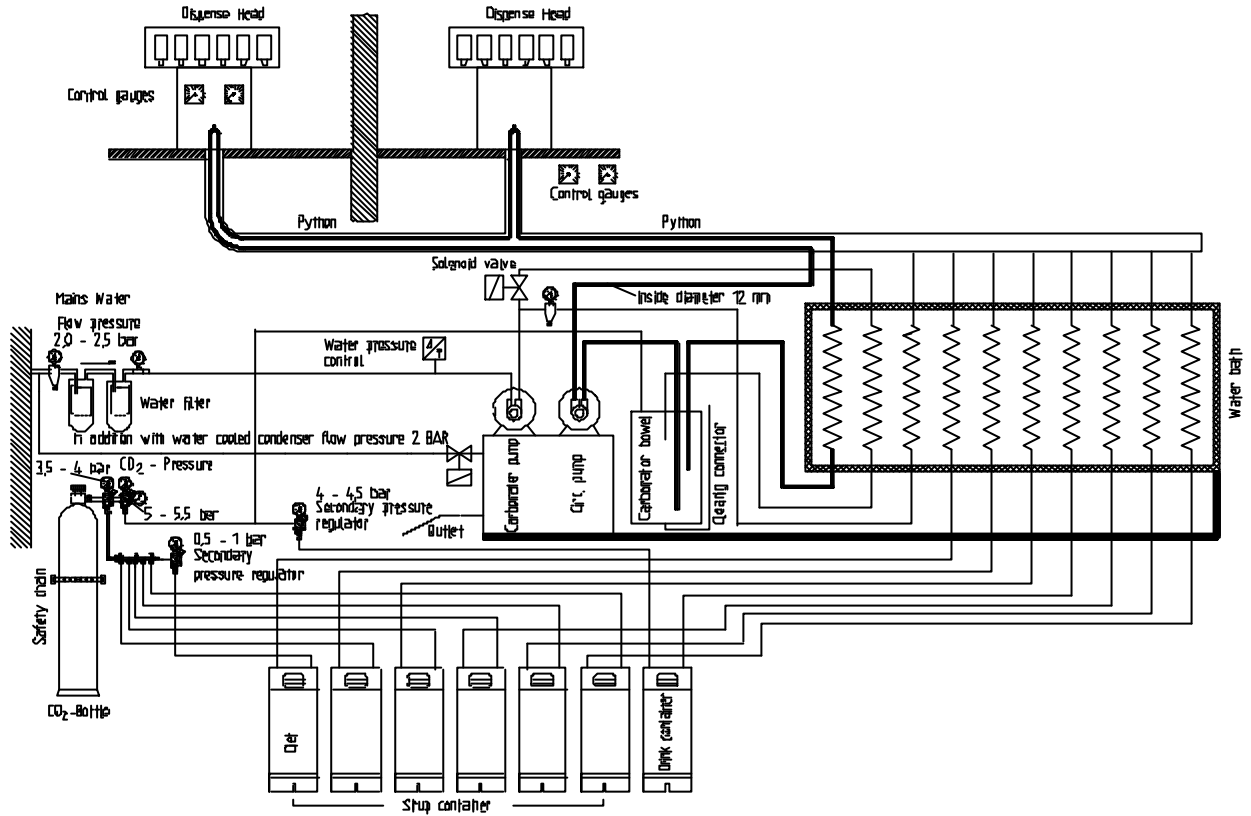


- D1 = LED Red Power display
- D2 = LED Red Water pressure display
- D3 = LED Green switch compressor on
- D4 = LED Green switch circulation pump on
- D5 = LED Green switch carbonator on
- D6 = LED Green still water on
- D7 = LED Yellow compressor on
- D8 = LED Yellow circulation on
- D9 = LED Yellow solenoid valve off
- D10 = LED Yellow carbonator on

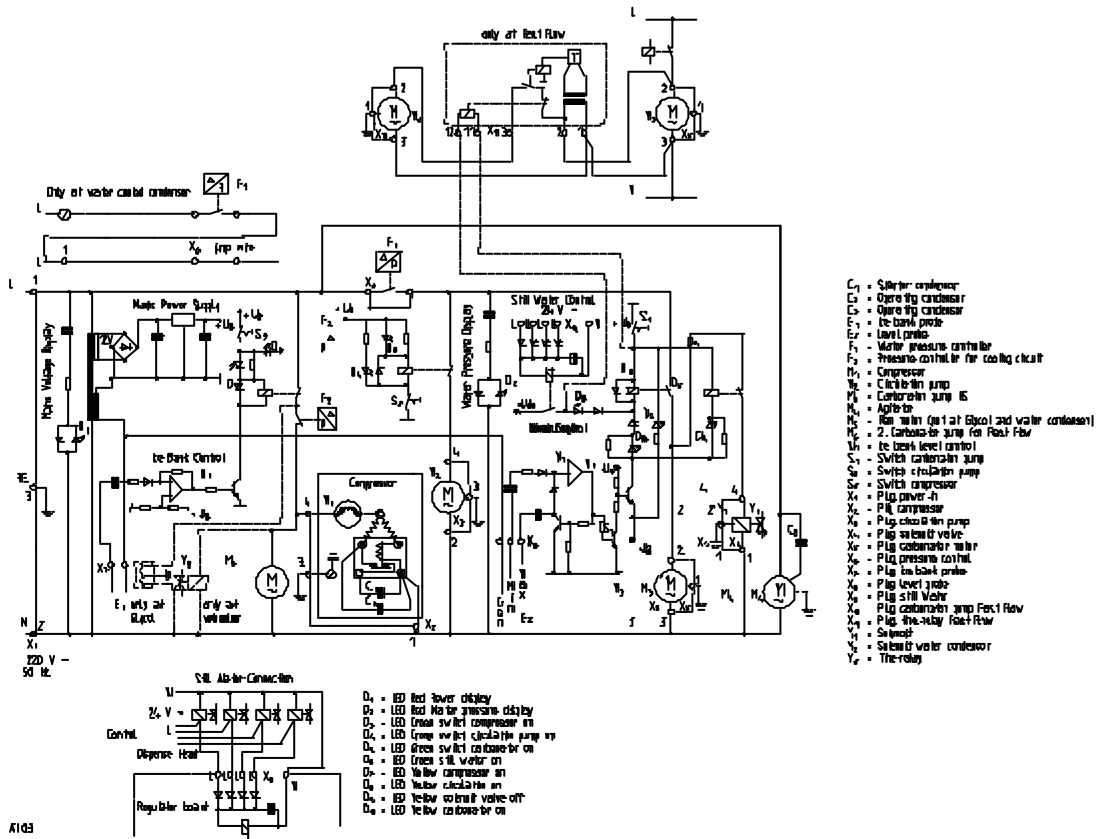
— Y1, ONLY water condenser

AI 92

10.5 Flow Chart of the SC 1300



10.5.1 Circuit Diagram of the SC 1300



11. Installation Checklist

You can use this checklist to review the installation of the device. Fill out the checklist and file it with the operating instructions.

Part number of the device:	_____	
Serial number of the device:	_____	
Installation site:	_____	
Installation date:	_____	
Installed by:	_____	
Settings:	Target	Actual
Water flow pressure:	2 bar	_____ bar
CO ₂ pressure:	4 to 4.5 bar	_____ bar
CO ₂ volume at 4°C:	4.0% by vol.	_____ % by vol
Carbonator filling time:	about 15 seconds	_____ seconds