Nitro Dispenser Operation Manual

230V/50 Hz Models: ND-20-XX-01 DI

ATTENTION:
Before start of operation, study this manual

Carbotek Systems GmbH, Germany

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1. Safety Instructions

1.1. Setup / Commissioning

The use and maintenance of the machine shall be limited to trained personnel only.

Place the unit upright standing in a horizontal, level, dry, and clean place. Ensure that the power connection cable is routed directly to the socket. Do not locate multiple portable socket-outlets or portable power supplies at the rear of the appliance. The connecting cable must never be kinked or squeezed and the lateral openings require a free distance of 5 cm to provide the required air circulation. The free distance behind the dispenser must be as well 5 cm. The dispenser front, with the tap outlet must stay open and uncovered.

As an operator pay attention to the listed safety measures:

- Operate dispenser within a temperature range of +6 to +35°C
- Prevent dirt (dust, fibers, etc.) from entering the unit
- Connect only the specified supply voltage.
- The wall socket used must be connected to an overcurrent protection device (16A).
- The device may only be operated with a properly wired protective earth conductor.
- Protect the device against moisture
- Do not insert objects into rotating parts (fan or compressor)
- Observe the warning, safety and service instructions in this manual

1.2. Operations

The device described here may only be operated by suitably trained persons. Children shall not play with the machine. This machine can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision and instruction concerning use of the machine in a safe way and if they understand the hazards involved. Cleaning and user maintenance shall not be made by children.

Do not use a water jet for cleaning purposes.

Keep ventilation openings, in the appliance enclosure, clear of obstruction. The air circulation must be possible at any time.

Do not damage the refrigerant circuit. The R290 refrigerant is an extremely flammable gas.

Serious personal injury and material damage can be caused by:

- Improper use
- Incorrect installation or operation
- Unauthorized removal of the necessary protective covers or housings
- Invalid opening of the device during operation
- Failure to comply with the applicable legislation / standards for beverage dispense installations.
- Service and repair jobs where access to the machine inside is required, may only be carried out by a trained or instructed technician

If, for any reason, it can be assumed that the safety is impaired or when it is changed from normal operation, the appliance must be put out of service and marked so that it is not inadvertently put back into service by a third party. In addition, the customer service has to be notified. Safety may be impaired if the appliance is not working properly or is visibly damaged.

1.3. Spare Parts

If modules or parts are replaced, only identical & original assemblies or parts may be used.

1.4. Transport and Storage

Damages determined after delivery must be communicated immediately to the carrier. Commissioning may be excluded. The device must only be stored in a dry environment at temperatures of 0 to 60°C.

1.5. Electric Connections

All work must be carried out only if:

- The electrical system is switched off and protected against unintentional reconnection
- Verified that no current is present.
- It is ensured that additional monitoring and protection devices, which are provided for the operation of this control, are installed in a professional manner.

When connecting, ensure that applicable local standards and regulations are observed.

1.6. Service

For service and repair jobs please refer to the technical service manual.

1.7. Intended Usage

The Carbotek Nitro Dispenser is a ready-to-use dispenser to tap nitrogenated and cooled beverages in particular cold-brew coffee or coffee cocktails. This machine is intended for indoor use only. Such as: Small shops, convenience stores and kiosks, bars and restaurants, staff kitchen areas in shops, offices and other working environments, hotels and motels. It may be used in private households as well.

The device is only approved for this application and is not suitable for cooling hot liquids, unfiltered liquids, chemicals or similar.

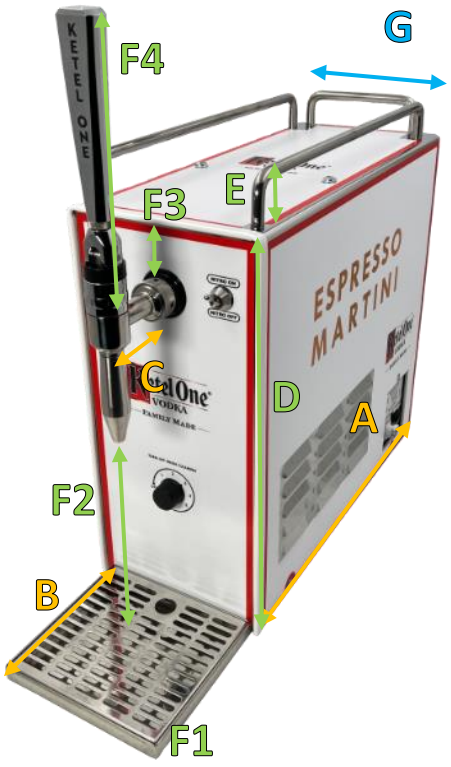
2. Before Start

2.1 Dispenser Functionality

The Carbotek Nitro Dispenser combines different functions in one device.

- Suction of filtered liquids (e.g. cold-brew coffee) from an unpressurized or pressurized container, possibly from a bag-in-box.
- Cooling the liquid in the dispenser cooling block
- Injection of filtered compressed air into the liquid. The atmospheric nitrogen (78%) and the oxygen (21%) in the air creates the cascading nitro effect. A built-in compressor is used. There is no nitrogen generator embedded.
- The liquid and the gas are blended in the jet-nozzle spout of the tap.
- Dispense of nitrogenated beverages in the typical Guinness style.
- With a toggle switch the operator can switch between nitrogenated and non-nitrogenated drinks.
- Outlet temperature control.

2.2 Dimension



The outside dimensions between 1-tap and 2-tap versions are identical.

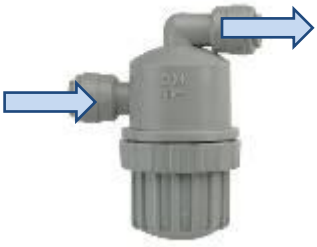
Depth		
A:	body depth	40.5 cm
B:	drip tray	14.5 cm
C:	tap	10.5 cm
A + B:	total depth	55.0 cm
Height		
D:	body height	37.5 cm
E:	railing height	4.5 cm
F1:	drip tray	1.5 cm
F2:	max glass height	20.5 cm
F3:	above tap	5.0 cm
F4:	tap with handle	20.5 cm
D – F3 + F4	total height	53.0 cm
Width		
G:	width	17.5 cm

2.3 Technical Data and Properties

Taps	**1 Tap**
Model	**ND-20-01-01 DI**
Picture	
Beverages	Coffee-Cocktails, Cold-Brew-Coffee, Tea
Electrical & refrigerant	
Power supply	220 – 240 V~ / 50 Hz
Wattage / amperage	408 W / 1,7 A
Refrigerant / amount	 R290, 47g **Propane is an extremely flammable gas**
Electrical connection	C14 socket
Power cable	Country specific plug with C13 plug
Cooler type	dry
Climatic class	N
Accessories	
5l cleaning or product canister with CPC socket	1 x
5l cleaning or product canister with blank red cap	1 x
Intake hose with strainer and CPC coupler	1 x
Inlet strainer for particles > 0.1 mm	1 x
Drip tray	1 x
Cleaning agent	1 jar (566 g) of ONE PRO cleaner from URNEX
Features	
Nitrogen source	Filtered compressed air (78% nitrogen)
Jet Nozzle Mono with spray crowns flowrate: 0.6 l/min	1 x
Nitro toggle switch to switch between NITRO and NON-NITRO	1 x

Gas amount control	No adjustment – default factory setup
Particle air-filter	Yes
Nitro-Port to connect nitrogen bottles	No
Temperature setup	5.0 – 6.0°C (at level 4 on front scale) For Espresso Martini e.g. -1°C at level 7 on front scale.
Liquid volume inside dispenser	1 x 370 ml
Cooling effect during nonstop dispense	Δ 7.0°C (at 0,6 l/min)
Continuous (non-stop) dispense is only possible until an ambient temperature of 30°C. Between 30 and 35°C non-stop dispensing is possible up to 30 min. Then the dispenser needs a recovery break of 15 min to cool down again.	
Device connections	
Product inlet	1 x CPC coupler 3/8" hose
Others	
Noise emission level	<= 64 dB
Warranty	2 years
Weight & dimensions	
Net / gross weight	22.3 / 24.6 kg
Dispenser dimensions (H x W x D) including tap handle	53.0 x 19.5 x 55.0 cm
Packaging dimensions (H x W x D)	68.0 x 26.0 x 59.0 cm

2.4 Filtration



Ensure that the drink was filtered with a fineness of at least **100 µm** (100 micron). Coarser filtration sizes lead to clogging of the filter in the intake line or in the jet-nozzle outlet-spout of the tap. Make sure the filter adapter is installed in the product intake line. The filter adapter includes a mesh filter with 100 µm particle size.

Attention!

By not using an appropriate intake filter the internal dispenser pump might be damaged or destroyed through particles in your liquid.

3. Commissioning

3.1. Scope of Supply

The Nitro Dispenser is delivered with the components as listed below.
The model specific differences are listed in the table.

	1-tap Nitro Dispenser
	1) 1x Nitro Dispenser 2) 1x Accessories box 3) 2x 5l product / cleaning canister
	**Accessories box parts** 2.1) 1x drip tray 2.2) 1x intake hose 2.3) 1x ONE-PRO cleaner 2.4) 1x dispenser tap 2.5) 1x tap handle 2.6) 1x tap & filter key 2.7) 1x power cord *[1] 2.8) 1x User manual + temperature notice

*1: The power cord has a C13 plug to connect to the dispenser. The socket plug is country specific

3.2. Setup and Start

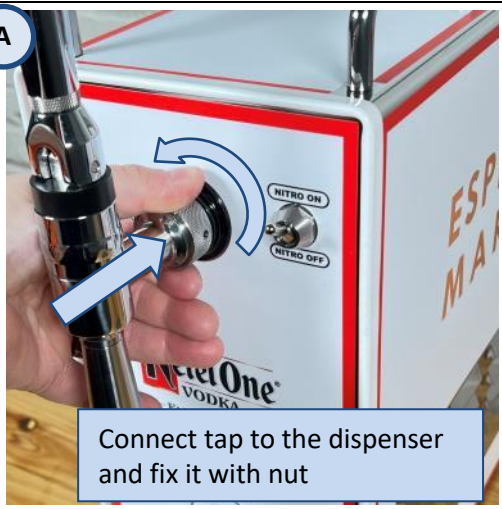
The setup and starting procedure between one and two tap versions in principle is identical except the number of taps, intake hoses and canisters differ between the models.

1. Remove foil from drip tray

Remove foil from drip tray

2. Connect tap and handle to dispenser

A



Connect tap to the dispenser and fix it with nut

B

Use wrench to tighten the connection

C

Connect the handle and fix position with locknut

3. Establish electrical connection

A

Connect power cord with C13 plug to the dispenser.

B

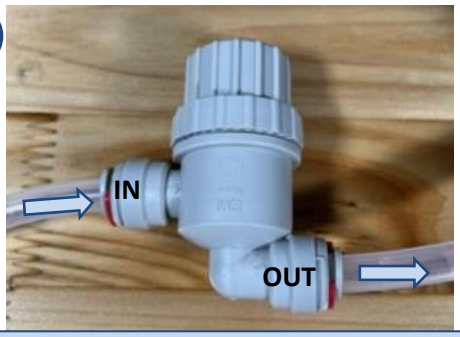
Connect to wall socket.

4. Connect canister and rinse with water

A

Fill canister half with water.
About 2.5 l

B

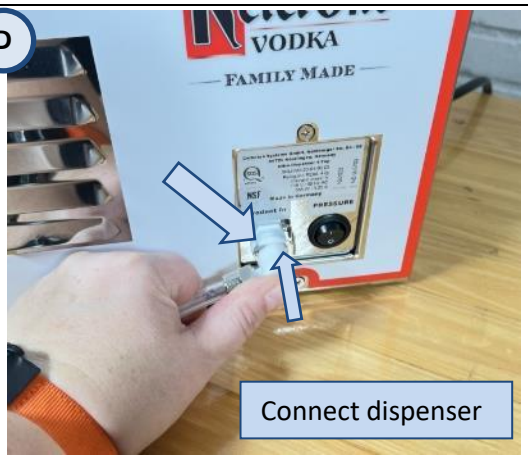


If filter is in the intake line: Check flow direction at the filter connection.
Filter might be also part of the canister lid.

C

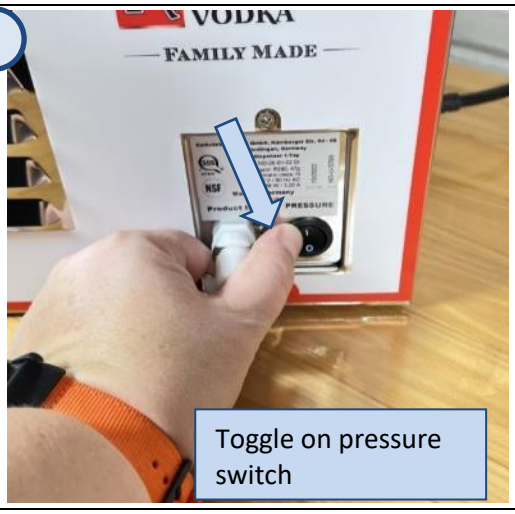
Connect canister

D



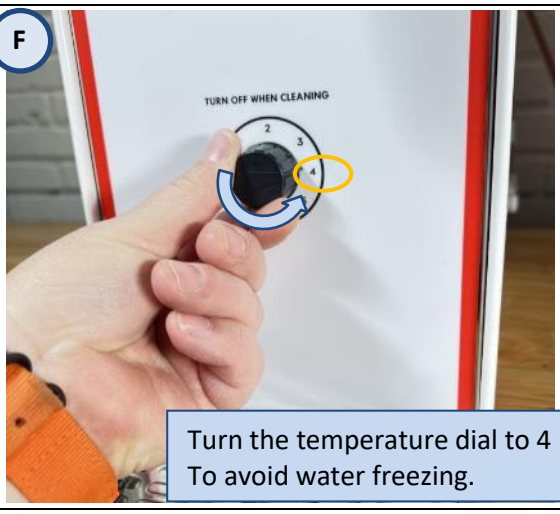
Connect dispenser

E



Toggle on pressure switch

F



Turn the temperature dial to 4
To avoid water freezing.

G

Flip nitro toggle switch into ON position.

H

Rinse the dispenser with water. Flowrate should be 0.6 l/min

5. Start product dispense

A

Prepare some Espresso Martini in your canister

B

Tap until your Nitro Espresso Martini is coming

3.3. Adjustments

Things that can be adjusted from the operator are:

1. Nitro On/Off Toggle-Switch
2. Target dispense temperature

1. Nitro On/Off Toggle-Switch

Nitro ON: Switch UP	Nitro OFF: Switch DOWN
	

When changing from NITRO-ON to NITRO–OFF it takes about 50 ml of product until the remaining nitro gas is out. Open & close the tap handle a couple of times (3-4) and dispense the 50 ml in small batches, like this the gas in the tap is flushed out faster.

2. Temperature

The target dispense temperature can be adjusted at the thermostat knob at the front within a range of 12°C.

Turning it clockwise = make it colder (max position is 7)

Turning it counter clockwise = make it warmer or switch cooling off at a position of 0.

Coldest temperature is: -1 °C (+/- 1°C)

Warmest temperature is: 11°C

When tapping non-alcoholic beverages during cleaning and rinsing, the unit must be set to level 4 or lower (3,2,1) - otherwise the beverage may freeze. Level 4 corresponds to approx. 5°C.

The dispenser has an internal liquid buffer that is kept cold according to the thermostat settings. In a non-stop dispense situation the cooling effect is a reduction of Δ 7°C from the intake temperature of the cocktail (at a flowrate of 0.6 l/min).

4. Decommissioning

Before putting the dispenser out of service, we recommend a chemical cleaning – especially if you want to keep it out of service for a longer time.

1. Provide a chemical cleaning (as in chapter 5.4) OR flush the dispenser and canister with clean water.
2. Let the dispenser suck in air until air is coming out of the nozzle.
   Do NOT disconnect the intake line from the dispenser in order to suck air. The CPC coupler system has a check valve that prevents air sucking and by this the internal liquid buffer cannot be emptied.
3. Disconnect the intake line and remove power plug from electrical socket.
4. Pull handle to open tap and release internal pressure

Protect the dispenser against rain and dust and store it in a temperatures range between 0 °C and 60°C.

5. Hygiene, Cleaning, Maintenance

5.1. Product shelf life after connection / opening

The product shelf life after connection to the dispenser depends on a couple of circumstances that are independent from the dispenser. Such as:

- Shelf life of product before and after connection
- Product type and product sensibility
- Ambient or cooled environment before and after connection
- Tapping frequency and break times

Carbotek recommends a weekly cleaning interval – however this is just a general recommendation. The appropriate, product specific shelf life after connection and the corresponding cleaning interval needs to be evaluated with the concrete product.

The product shelf life and the product quality are in the responsibility of the operator. Carbotek can just provide general recommendation at this stage.

5.2. Break times

Consider the points below only as a general guideline to provide enduring high product quality to your customers. Product specific differences may exist.

- Keep the cooling on “max cold” during dispense break times
- If the dispense break is longer than 2 days, disconnect your product and flush the dispenser with fresh water before restart of cocktail dispense.
- If the break time is more than 4 days follow the “Decommissioning” steps in chapter 4.
- After a break time always check the product quality with a small sip, before restart of operations.

5.3. Recommended Cleaner and Strength

As a cleaner we recommend the product ONE-PRO from URNEX
with a strength of two teaspoons (11g) of powder
to 2.5 l of warm (40°C) water.

ONE-PRO is a so-called one-step cleaner that combines cleaning and disinfection.

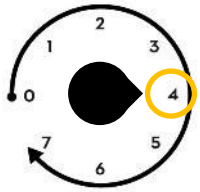
2 x  of ONE-PRO powder (11g)

+ 2.5l of WARM WATER (40°C)

= 2.5l of CLEANING SOLUTION

5.4. Chemical Cleaning

Track the cleaning activities in a cleaning protocol in case cleaning records are requested from a food inspection.



If the machine is setup/used for coffee cocktails the dispensing temperature might drop below the water freezing point. In such cases we recommend to reduce the temperature settings during the cleaning process. The thermostat dial at the front should be set on pos 4 or less. Otherwise, the detergent or rinsing water might freeze.

It's recommended to wear gloves and safety glasses when working with chemical detergents. Pay attention to the local safety standards.

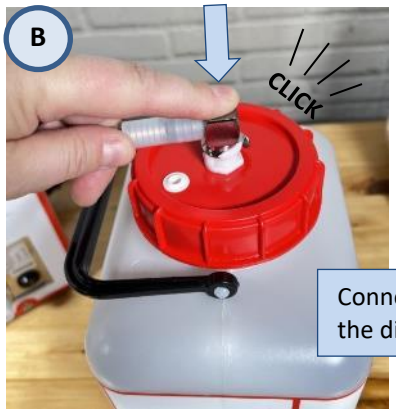
CLEANING PROCESS

1. Cleaning equipment

You need:
- Cleaner
- Brush
- Teaspoon
- 2l jug
- Filter wrench

2. Rinse with water

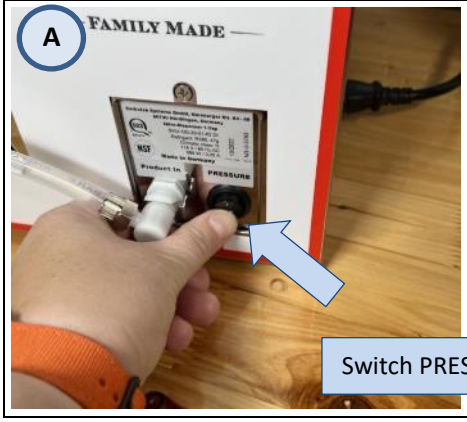
Dump remaining coktail. Clean canister inside with a brush. Fill canister half with water (=2.5l) and shake it.



Connect canister to the dispenser.

- Open tap and dispense 1.5l of water.
- Put nitro toggle switch in **NITRO-OFF** position

3. Release system pressure



Switch PRESSURE OFF

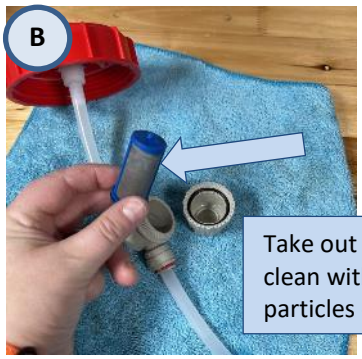
Keep the tap open to release pressure

4. Check intake filter, jet-nozzle and tap valve

A

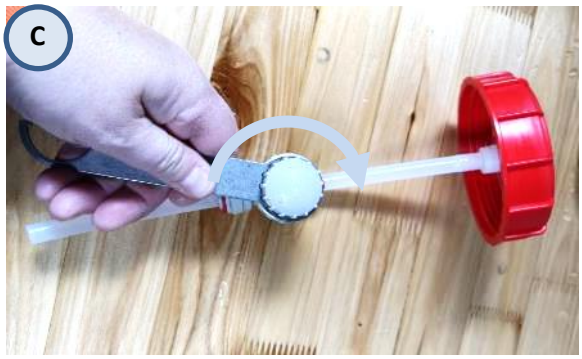
Open filter adapter with wrench
Note: Filter adapter might have different position

B



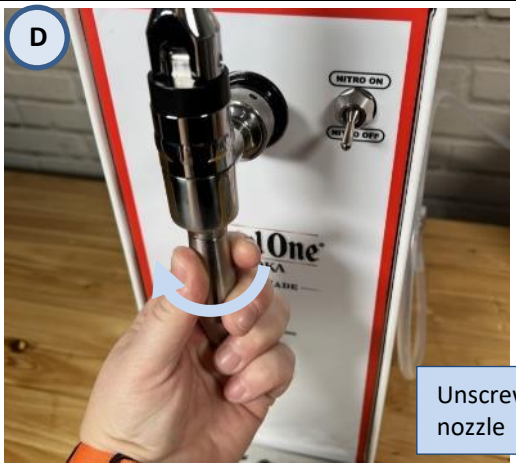
Take out filter element and clean with water in case of particles or clogging.

C



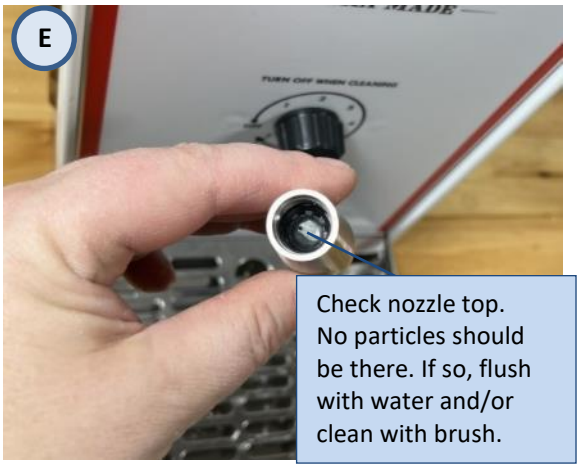
Close filter again

D



Unscrew jet nozzle

E



Check nozzle top.
No particles should be there. If so, flush with water and/or clean with brush.

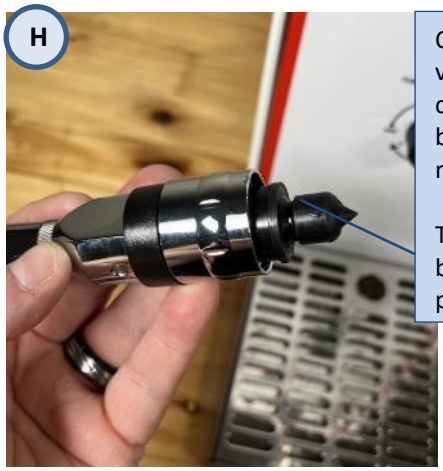
F

Reconnect the nozzle to the tap.

G

Unscrew the tap valve

H

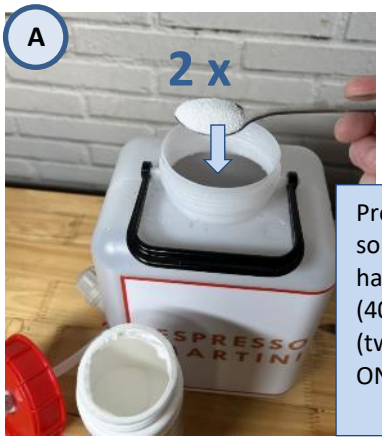


Check tap valve and clean with a brush if required.

Then put it back in its position.

5. Prepare 2.5 l of cleaning solution and flush dispenser

A

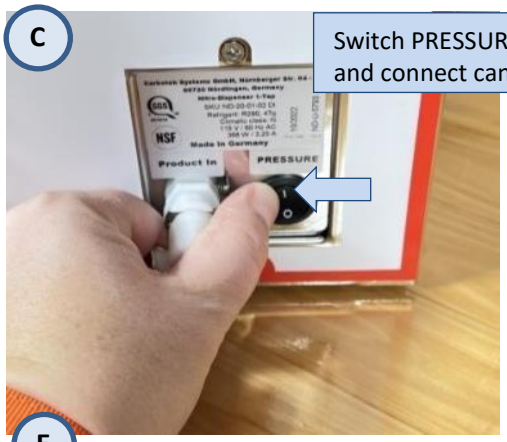


Prepare cleaning solution with 2.5l hand warm water (40°C) and 11g (two teaspoons) of ONE-PRO powder.

B

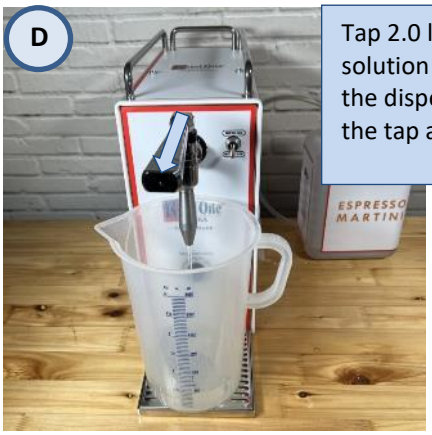
Shake canister

C



Switch PRESSURE ON and connect canister

D



Tap 2.0 l of cleaning solution through the dispenser. Close the tap after.

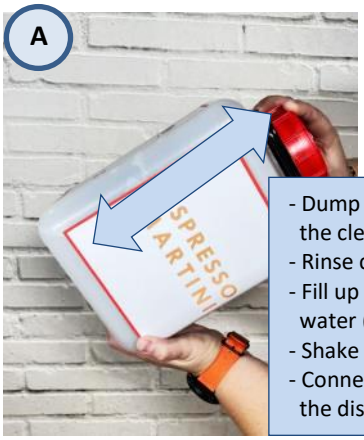
E

WAIT 10 MINUTES

Clean drip-tray mean-while

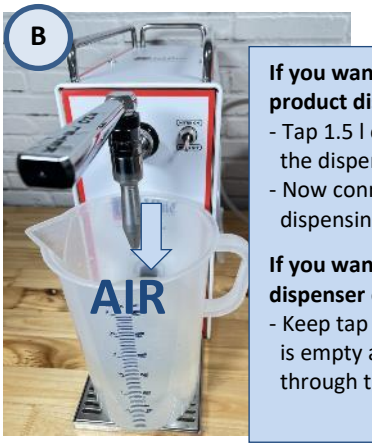
6. Rinse with water

A



- Dump the rest of the cleaning solution.
- Rinse canister with water
- Fill up canister with fresh water (around 2.0 l)
- Shake it
- Connect canister to the dispenser

B



If you want to continue with product dispense:
- Tap 1.5 l of water through the dispenser.
- Now connect back to your dispensing product

If you want to take the dispenser out of service:
- Keep tap open until canister is empty and air is coming through the tap nozzle

7. If required set the temperature back to the setting before start of the Cleaning Process.

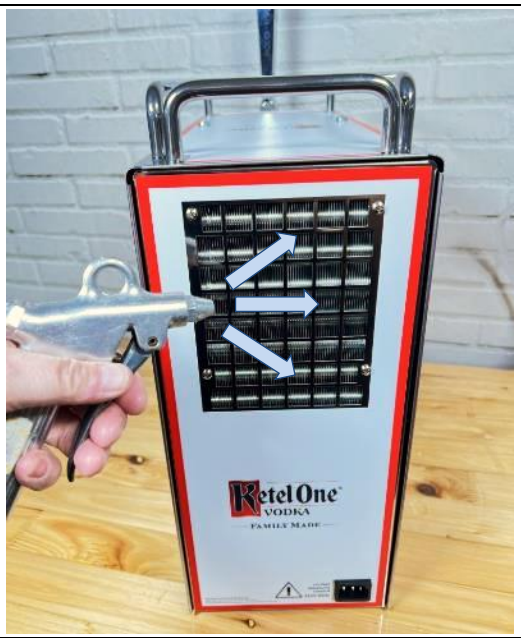
5.5. Preventive Maintenance

As preventive maintenance jobs are considered:

- **Rinse the vacuum valve at the canister with warm water.** **Every 4 weeks**
  This is required if the canister is used as a product canister for beverages.
  For sugary liquids this is recommended to be done with every cleaning cycle.

Take out the silicone vacuum valve at the canister lid.	
Rinse it with warm water to remove cocktail residuals. These residuals might lead to a clogging effect of the vacuum valve.	

- **Dust removal from condenser grid at the backside** **Every 6 months**

Blow away the dust at the condenser grid with compressed air.	

6. Packaging and Shipping

If parcel shipping is intended, please ship the dispenser ONLY with the original packaging components as shown below. The dispenser tap must be detached before packaging.

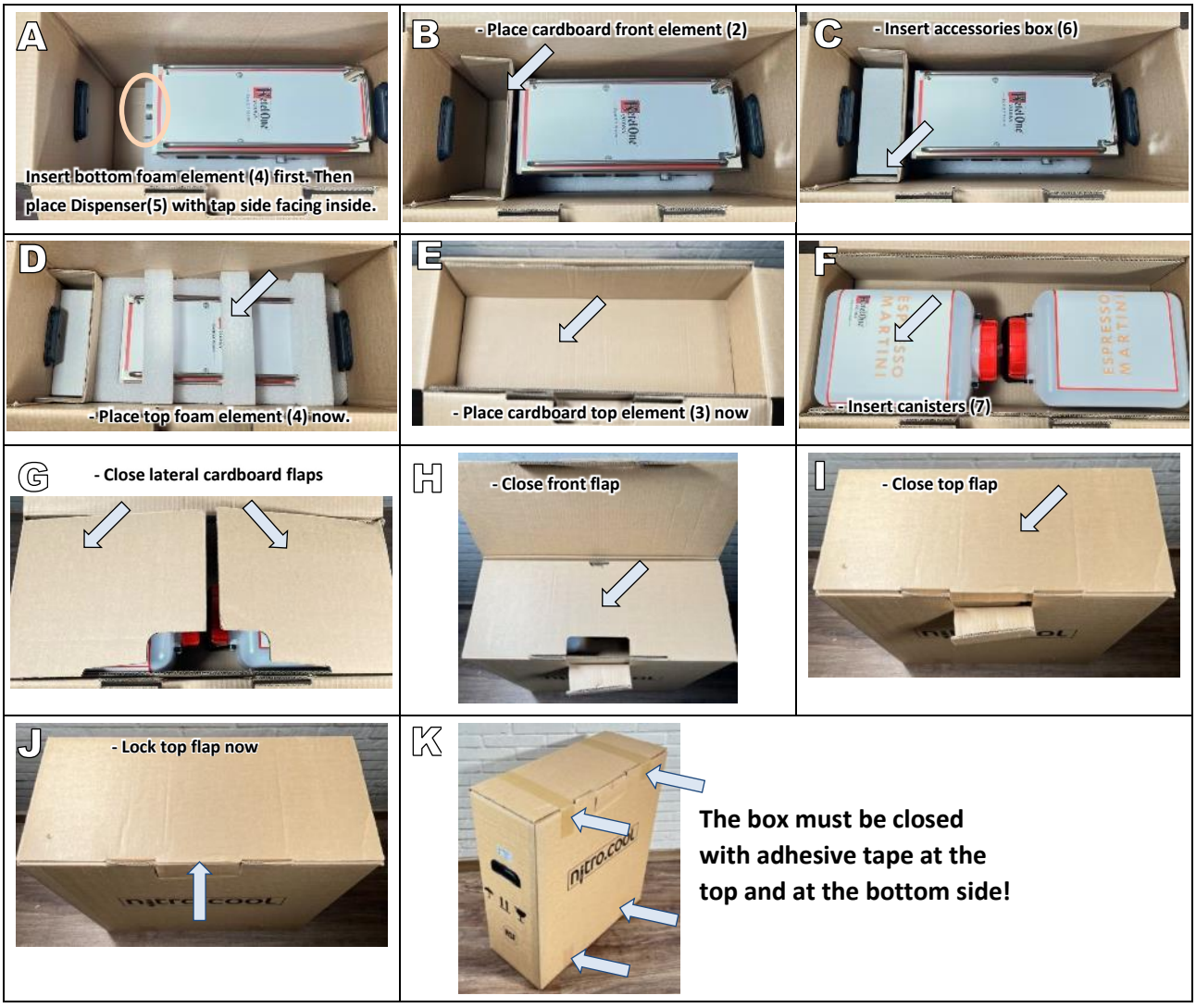
Packaging Components

Parts and article numbers

1) Transport carton (art 413) with handles (2 x 420)
2) Cardboard cut-out front (art 417)
3) Cardboard cut-out top (art 418)
4) Bottom and top foam elements (art 414)
5) Nitro-Dispenser
6) Accessories box
7) Two Canisters

Transport carton SET ND 2020
419 = 413 + 417 + 418 + 420 (2x)
Foam elements not included!

Step by Step (Tap must be detached)



7. Troubleshooting

7.1. Online

https://youtu.be/R2wHw6kXgUU

Nitro-Dispenser Service:
Troubleshooting 1-Tap | Ketel1 | 115V

Helping the operator to identify and resolve problems

7.2. Step by Step Guide

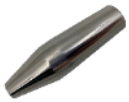
Technical problems, fixable through the operator					Operator experience ID							
					E1	E2	E3	E4	E5	E6	E7	E8
Problem ID	Problem	Effect	toDO	Verification	Too much foam during dispense	Not enough foam during dispense	Liquid flowrate is too slow	No liquid is coming out anymore	Drinks are not cold enough	Leaking	Bad taste / Collapsing canister	Others
CP1	Pressure toggle switch OFF	No power built-up of the pneumatic circuit. -> No dispense happens, as the pumps runs on pneumatic pressure.	Switch pressure toggle switch in ON position	Dispensing becomes possible				X				
CP2	No electrical power	Without electrical power no cooling and no air compressor runs. -> No dispensing, no cooling	Check if power cord properly is plugged in. Check if any fuse trapped. Check whether the dispenser makes any noise.	You should hear some noises when opening the tap. (e.g. pump, air-compressor, cooling-compressor)				X				
CP3	Dispenser frozen	If temperature was not reduced during cleaning or dispense of non-alcoholic drinks, freezing can occur.	Disconnect from electrical power and let it sit to let the internal ice melt down. This can take up to 8 hours.	Dispensing is possible				X				
CP4	CPC adapter not connected	The CPC adapter of the intake line is not properly connected to the socket of the dispenser or canister.	Check the socket connections of intake line and reestablish connection.	Visual check if intake line socket connections are ok.				X				
CP5	Thermostat setup	The thermostat dial is not in its coldest setup position.	The thermostat dial in the dispenser front must be turned clockwise to 7.	When cooling compressor switches off, the second glass of 200 ml should be around 0 - 3°C					X			
CP6	High volume dispense	If there is high volume dispense in peak moments, the cooling compressor cannot cool down fast enough.	The canister connected to the dispenser must be pre cooled in a fridge. This reduces the required cooling energy for the dispenser.	In high volume nonstop dispense the cooling effect is only around 7°C between input and output.					X			
CP7	Intake filter clogged	Liquid flowrate too slow -> Mismatch of gas and liquid stream	Open and check intake filter	Target flowrate: 0.6 l/min (+/- 10%)	X		X	X				
CP8	Tap outlet nozzle clogged	Liquid flowrate too slow -> Mismatch of gas and liquid stream	Open and check nozzle. Try to tap without nozzle.	Target flowrate: 0.6 l/min (+/- 10%)	X		X	X				

Technical problems, fixable through the operator					Operator experience ID							
					E1	E2	E3	E4	E5	E6	E7	E8
Problem ID	Problem	Effect	toDO	Verification	Too much foam during dispense	Not enough foam during dispense	Liquid flowrate is too slow	No liquid is coming out anymore	Drinks are not cold enough	Leaking	Bad taste / Collapsing canister	Others
CP9	Smaller air leak at intake line	Together with the liquid, air is sucked into the dispenser through a leak in intake line or canister lid. -> Mismatch of gas and liquid stream	Check all connections at intake line and in canister lid.	Visible check: There must not be any air bubbles sucked into the dispenser during dispense.	X		X	X				
CP10	Big air leak at intake line	Due to a loose connection at the intake line or canister lid, ambient air is sucked into the dispenser instead of product out of the canister.	Check all connections at intake line and in canister lid.	Visible check: There must not be any air bubbles sucked into the dispenser during dispense.				X				
CP11	Wrong setup at nitro rotary switch	The gas setup at the rotary switch is not ok any more. -> Mismatch of gas and liquid stream	Close rotary switch clockwise. Locknut has to be released. Then open carefully in small steps and check dispensing result	Good dispensing result								
Note: Problem is not applicable on dispensers with Nitro toggle switch												
CP12	Recipe or glass issue	Ingredient based foam instability or detergent traces at glass border.	Instructions as in manual Chapter 3.4	Reference liquid could be used		X						
CP13	Recipe issue	Beverages with CO2	Instructions as in manual Chapter 3.4	Reference liquid could be used	X							
CP14	Tap valve not screwed in entirely	The valve is not in the end position. -> Liquid will spill out although tap is closed	Tighten tap valve to its end position.	No liquid must spill out when tap is closed.						X		
CP15	Leaking in terms of liquid spilling or dropping out.	Leaking from intake hose are probably due to a bad hose connection. Leaking at the coupler are probably caused through a damaged O-ring. Leaking from inside the machine require service technician.	Reestablish connections at the intake hoses. Check the O-ring from CPC couplers at intake line. A bad O-ring at a coupler can be the problem.	No leaking from intake hose or coupler must occur.						X		
CP16	No cleaning	Without regular cleaning, the quality of the drinks will suffer. The canister can collapse if the venting valve in the lid is not cleaned.	Apply cleaning procedure as described in manual chapter 5.4	After cleaning check smell / taste with pure water. There must NOT be any OFF taste.							X	
CP17	Canister venting valve blocked	Canister is collapsing as venting valve does not open when liquid is sucked out through the dispenser.	Regular cleaning of venting valve in canister lid is required to avoid this. See cleaning procedure in operation manual chapter 5.5	When venting valve is cleaned it will open when product is sucked from canister.							X	
CP18	Part damaged or broken	If parts are damaged those can be ordered through the website on the last page.										X

If the problem is different from the listed ones, the root cause is inside the dispenser.

8. Spare Parts for Operators

Article Code	Picture	Article Text	Notes
432		Canister 5L, PE, food safe BLANK RED CAP	Canister for cleaning and / or product storage
434		Canister 11L, PE, food safe BLANK RED CAP	Canister for cleaning and / or product storage
495		Lid for 5L-canister with CPC Panel Mount Female 3/8	Lid with valve for canister (432)
496		Lid for 11L-canister with CPC Panel Mount Female 3/8	Lid with valve for canister (432)
438		Canister lid red for 5l, 11l canister	
490		Canister 5L PE food safe, with CPC panel mount 3/8	Canister for cleaning and / or product storage with. With CPC valve socket.
493		Canister 11L PE food safe, with CPC panel mount 3/8	Canister for cleaning and / or product storage with. With CPC valve socket.
659		Check valve - combination valve 7.7 mm material: ML-153 silicon white	Vacuum valve for lid (495)
196.1		Double click Intake hose CPC Coupler / 0.13 m hose / filter / 1.5 m hose /CPC Coupler	Intake hose
822		Strainer adapter, 100 micron for JG 3/8" intake line 3/8" - 3/8"	Intake filter
1179		Fine filter - strainer, 200 mesh per inch 100 micron particle size	Filter element of filter (822)
1316		CPC Elbow coupler 3/8 PTF - NSF valved, POM hose 9.5mm OD, 6.4mm ID	
1310-Q5		O-Ring 7.65 x 1.78 mm (QTY 5 each) for CPC Elbow-Coupler (1316) Type: AS568-011 / FDA Buna-N	5 x O-Ring for CPC Elbow (1316)
382		Drip tray NSF compliant dimensions 165x150x16mm AISI 304	

1447		Tap handle - stainless (BI)	
1411		Tap handle - Oak wood Height 16 cm, conical	
1472		Stout-Tap NSF (BI) without nozzle, handle and shank	
410		Jet Nozzle Mono (0.6 l/min) Connection thread IT: 9/16" - 26 TPI	
1419.1		Nitro Dispenser Combi-Key	Tool for filter (822) , tap (1472) and Nitro Rotary needle valve (937)
783		Rubber feet 7,2/11 LDPE, black	
419		Transport carton SET ND 2020 slim with handles and carboard inserts Size: 650 x 255 x 590 mm (H x W x D)	Transport packaging components
414		Packaging foam parts ND 2020 slim	Transport packaging components
506		ONE-PRO Cleaner Jar 566 g	Good for approx. 100 cleaning cycles

9. Disposal

The dispenser can be disposed in a recycling center for electrical appliances / refrigerators. Do not dispose it in domestic waste. Please notice the relevant national regulations.

10. Warranty

The guarantee and warranty period during proper and intended use is 2 years.

Defect components are replaced from Carbotek.

11. Declaration of Conformity

Carbotek Systems GmbH, Germany, declare under our sole responsibility that the product is in conformity with the following standards:

12. Contact Data

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