# Nitro Dispenser **Operation Manual**

115V/60 Hz Models: ND-20-XX-02 DI

**ATTENTION:** Before start of operation, study this manual

etel One

ESPRESSO

MARTINI

Carbotek Systems GmbH, Germany Doc Version: ND-20-XX-02 DI OM 1.7 EN / 17.7.2024

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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 +43 to +95°F
- 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 32 to 140°F.

### 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 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.

	The outside	dimensions betweer	1-tan and 2-tan			
			1 1-lap and 2-lap			
	versions are identical.					
	Depth					
G	A:	body depth	16 in			
	В:	drip tray	5.7 in			
2	C:	tap	4.1 in			
E	A + B:	total depth	21.6 in			
E3 E						
1550	Height					
SPREIN	D:	body height	14.7 in			
AR I ST	E:	railing height	1.5 in			
	F1:	drip tray	0.59 in			
	F2:	max glass height	8.07 in			
A CONTRACTOR	F3:	above tap	1.9 in			
F2	F4:	tap with handle	8.07 in			
		total height	20.86 in			
	0 13 14	total neight	20.00 11			
B						
	Width					
A A A A A A A A A A A A A A A A A A A	G:	width	6.9 in			
The second se						
T L						

### 2.2 Dimension

## 2.3 Technical Data and Properties

Taps	1 Tap
Model	ND-20-01-02 DI
Picture	ESPRESSO NARTINI
Beverages	Espresso-Martini, Coffee-Cocktails, Cold-Brew-Coffee
Electrical & refrigerant	
Power supply	115 V / 60 Hz
Wattage / amperage	368 W / 3.2 A
	A R290, 1.66 oz
Refrigerant / amount	Propane is an extremely flammable gas
Electrical connection	C14 socket
Power cable	NEMA 5-15P plug (type B – grounded)
Cooler type	dry
Climatic class	Ν
Accessories	
5I cleaning or product canister with CPC	2 x
socket	
5I cleaning or product canister with	1 x
blank red cap	
Intake hose with strainer and CPC	1 x
coupler	1 x
Inlet strainer for particles > 0.1 mm Drip tray	1 X 1 X
Cleaning agent	1 jar (20 oz) of ONE-PRO cleaner from URNEX
Features	
Nitrogen source	Filtered compressed air (78% nitrogen)
Jet Nozzle Mono with spray crowns	1 x
flowrate: 0.6 l (20 oz)/min	
Nitro toggle switch to switch between NITRO and NON-NITRO	1 x
	ł

Foam level control	No adjustment – default factory setup			
Particle air-filter	Yes			
Nitro-Port	No			
to connect nitrogen bottles				
Temperature setup	For cleaning put at level 4 on front scale			
	Coldest temperature is at level 7 on front scale			
Liquid volume inside dispenser	1 x 370 ml (12.5 oz)			
Cooling effect during nonstop dispense	Δ 13°F (at 0.6 l (20 oz)/min)			
	ossible until an ambient temperature of 86°F. g is possible up to 30 min. Then the dispenser needs a recovery			
Device connections				
Product inlet	1 x CPC coupler			
	3/8" hose			
Others				
Noise emission level	<= 64 dB			
Warranty	1 year			
Weight & dimensions				
Net / gross weight	49.2 lb. / 54.2 lb.			
Dispenser dimensions (H x W x D) including tap handle	20.86 x 7.6 x 21.65 in			
Packaging dimensions (H x W x D)	27.0 x 10.0 x 23.2 in			

### 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 jetnozzle 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!

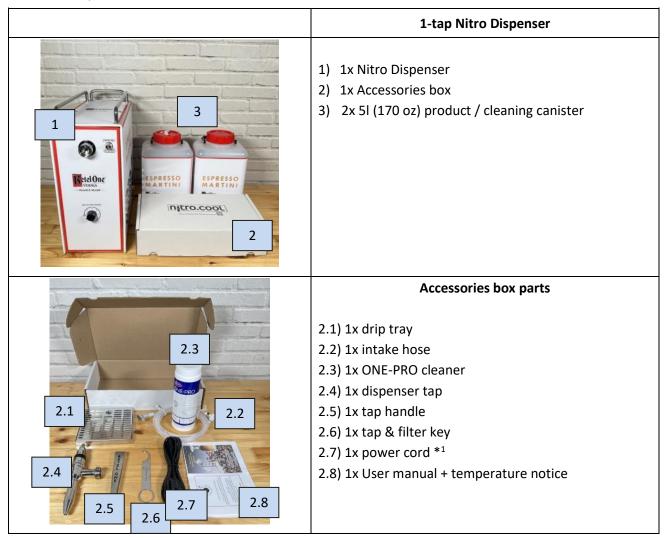
By not using an appropriate intake filter the internal dispenser pump might be damaged or destroyed through particles in your liquid.

## 3. Commissioning

### 3.1. Scope of Supply

The Nitro Dispenser is delivered with the components as listed below.

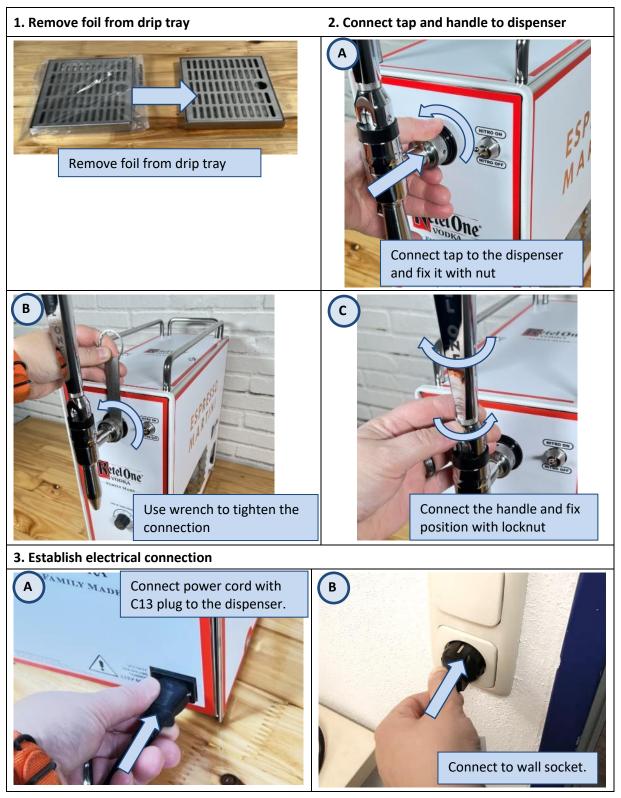
The model specific differences are listed in the table.

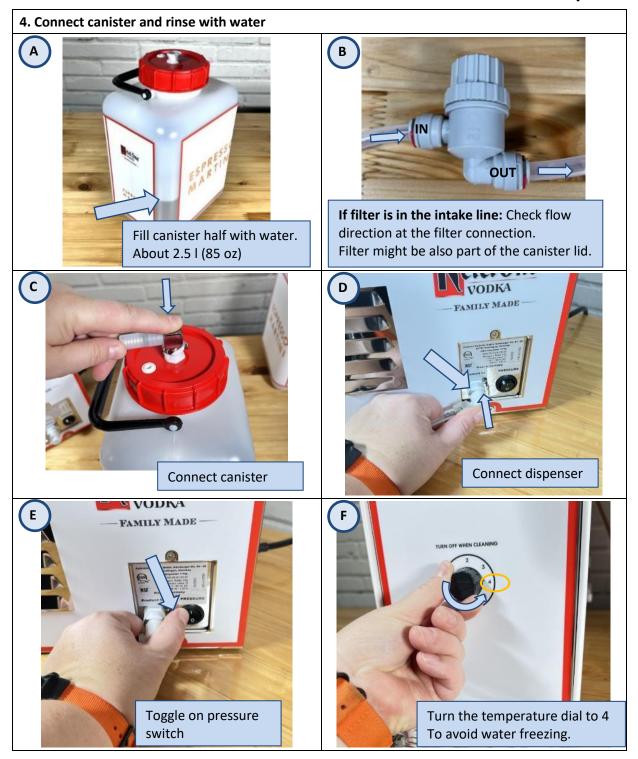


\*1: The power cord has a C13 plug to connect to the dispenser. The socket plug is country specific

### 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.







### 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



When changing from NITRO-ON to NITRO–OFF it takes about 50 ml (1.7 oz) 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 (1.7 oz) 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  $\Delta$  24°F. 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 position 7 Warmest temperature is position 1



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. 41°F.

The dispenser has an internal liquid buffer that is kept cold according to the thermostat settings. In a nonstop dispense situation the cooling effect is a reduction of  $\Delta$  13°F from the intake temperature of the cocktail (at a flowrate of 0.6 l / (20 oz)/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.
- 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 32 °F and 140°F.

## 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 / 0.4 oz) of powder to 2.5 l (0.7 gal) of warm (40°C / 104°F) water.

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

## 2 x f ONE-PRO powder (11g/0.4 oz) + 2.5l of WARM WATER (40°C/104°F) = 2.5l of CLEANING SOLUTION

### 5.4. Chemical Cleaning

### We recommend to reduce the temperature settings during the

### entire cleaning process. The thermostat dial at the front should be set to 0 (Off).

Otherwise, the detergent or rinsing water might freeze, which could damage the pump or burst hoses.

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

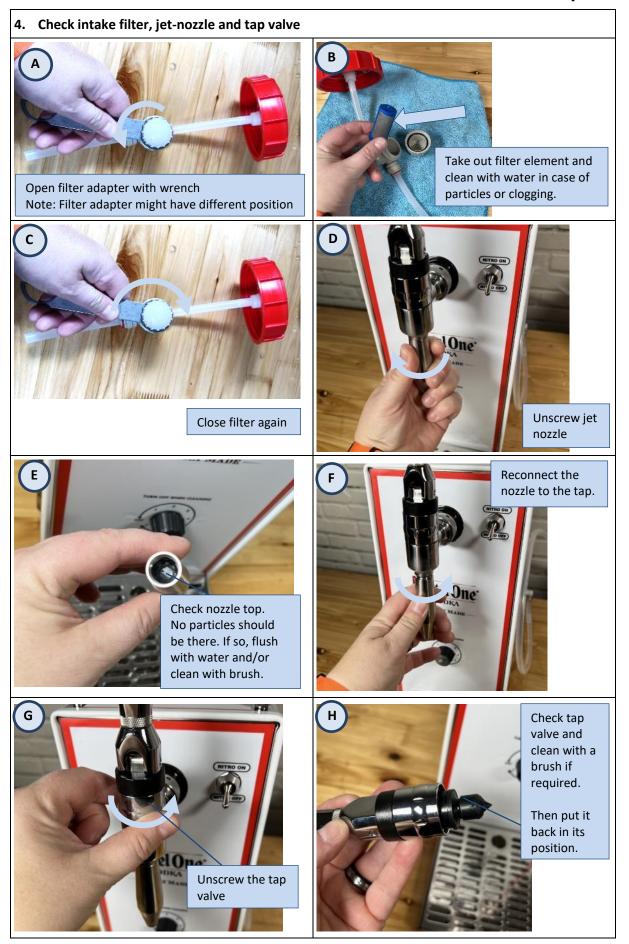
It's recommended to wear gloves and safety glasses when working with chemical detergents. Pay attention to the local safety standards.

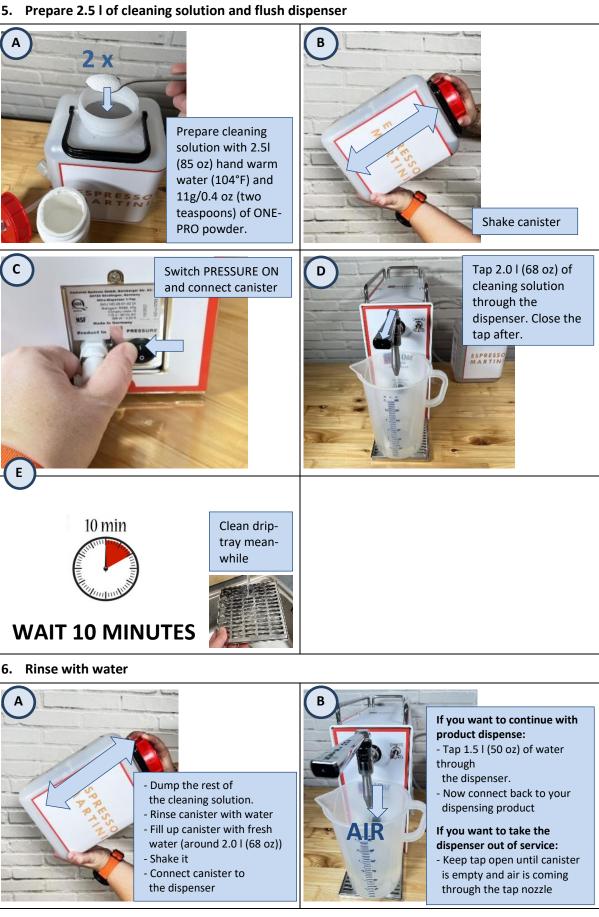
### 1. Cleaning equipment 2. Rinse with water Dump remaining You need: coktail. Clean canister - Cleaner - Brush inside with a brush. Fill canister half with - Teaspoon water (=2.5l (85 oz)) - 2l (68 oz) jug and shake it. - Filter wrench В CLICK - Open tap and dispense 1.5l (50 oz) of water. - Put nitro toggle switch in Connect canister to NITRO-OFF position the dispenser. **Release system pressure** 3. FAMILY MADE Keep the tap open to Switch PRESSURE OFF release pressure

### **CLEANING PROCESS**



SWITCH OFF COOLING

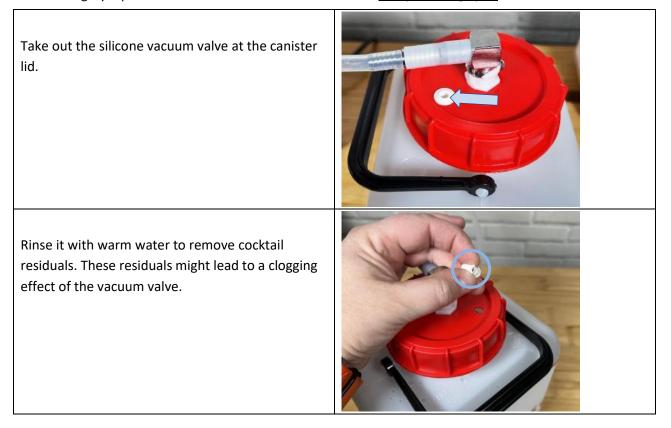




### 5.5. Preventive Maintenance

As preventive maintenance jobs are considered:

Rinse the vacuum valve at the canister with warm water.
 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.



### • 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**



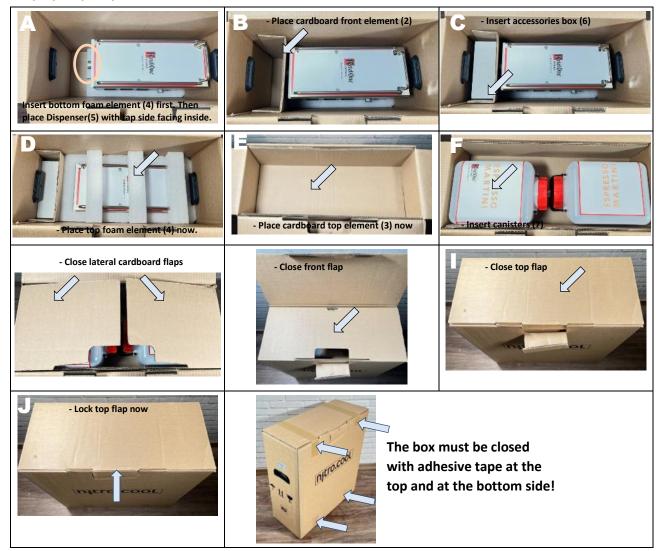
### Step by Step (Tap must be detached)

### 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!



## 7. Troubleshooting

### 7.1. Online





Nitro-Dispenser Service: Troubleshooting 1-Tap | Ketel1 | 115V Helping the operator to identify and resolve problems

### 7.2. Operator Experience – Problem Options

	Technical problems, fivable through the operator						Oper	ator ex	xperier	nce ID		
	Technical problems, fixable through the operator						E3	E4	E5	E6	E7	E8
Probl em 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				
СРЗ	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		х	х				

Tooknicol problems fivelus through the exercise							Oper	ator ex	perien	ce ID		
	Technical problems, fixable through the operator					E2	E3	E4	E5	E6	E7	E8
Probl em 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 Fix locknut when result is good.	Good dispensing result	x	x						
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.						х		
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. See last page.										x

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

Article Code	Picture	Article Text	Notes
432		Canister 5L, PE, food safe BLANK RED CAP	Canister for cleaning and / or product storage
488	a de la companya de l	Lid for 5L-canister with CPC Ketel 1 Panel Mount Female 3/8 Filter in uptake line	Lid with valve for canister (432) Used from Ketel1 USA
495		Lid for 5L-canister with CPC Panel Mount Female 3/8	Lid with valve for canister (432)
659		Check valve - combination valve 7.7 mm material: ML-153 silicon white	Vacuum valve for lid (495)
195		Double click Intake hose Ketel1 USA CPC Coupler / 1.5 m hose / CPC Coupler	Intake hose – KETEI1 USA
196		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	I	Fine filter - strainer, 200 mesh per inch 100 micron particle size	Filter element of filter (822)
1316	) (0	CPC Elbow coupler 3/8 PTF - NSF valved, POM hose 9.5mm OD, 6.4mm ID	
1310-Q5	0	O-Ring 7.65 x 1.78 mm (QTY 5 each) for CPC Elbow-Coupler (1316) Type: AS568-011 / FDA Buna-N	O-Ring for CPC Elbow (1316)
382		Drip tray NSF compliant dimensions 165x150x16mm AISI 304	
1437		Tap handle - chrome plated plastic (BI)	
1447	I	Tap handle - stainless (BI)	
1411		Tap handle - Oak wood Height 16 cm, conical	

## 8. Spare Parts for Operators

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		Nitro Dispenser Combi-Key	Tool for filter (822) and tap (1472)
783	4	Rubber feet 7,2/11 LDPE, black	
856		Power plug cable North America type B - C13 plug / Nema 5-15 P 1.8 m	
1779	[hjtro.cool]	Accessories box Nitro-Dispenser (Spare part) All parts 1-tap Ketel1 (USA/CA)	All parts included as shown in manual
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	T.	Packaging foam parts ND 2020 slim	Transport packaging components
506	D D	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 1 year.

Defect components will be replaced

## 11. Declaration of Conformity

US

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

### 12. Contact Addresses

### Manufacturer

80151

Carbotek Systems GmbH	Phone:	+49 9081 24087-00
Nuernberger Straße 64-68	eMail:	info@carbotek.com
86720 Noerdlingen, Germany	Website:	www.nitro.cool

### Service and Warranty - USA

KYK Marketing	Phone:	+1 800-847-6963				
2600 Constant Comment Place	r none.	1 800-847-0303				
	eMail:	service@espressomartinimachine.com				
Louisville, KY 40299	0					
, 	Website:	www.espressomartinimachine.com				
United States						

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### Service and Warranty – CANADA

Duke Service Company

Phone:	+1 (800) 896-8237
eMail:	NITRO@dukeservices.com



